Feeling One's Way: In Search of a Symbiotic Vocabulary of the Virtual

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Abstract

This article aims to present the collective research that has been made in the framework of the research seminar "Vocabulary of the Virtual" organized by IRCAV (Institute of Research on Cinema and Audiovisual Studies), Sorbonne Nouvelle and the "Spatial Media" group, EnsadLab. The main topic is to clarify the notions that refer to the concept of the "Virtual" in order to define it through an interdisciplinary approach according to different fields of science (aesthetics, philosophy, film theory, sound theory, ergonomics, design, engineering, cognitive sciences, etc.). This article presents many different conceptual tools such as cartography, mental maps, notional diagrams with several dimensions, etc., that have been conceived over the last three years, to show how the reflection on the concept of the Virtual was first established and constructed, and how it has been developed. The notion of symbiosis seems to be defined as a structuring notion of the concept of the Virtual across the process of anchoring the levels of virtuality inside technological devices and concrete sites, as well as inside the physical body of the VR users. The user's body serves as a catalyst for the concept of the Virtual which then becomes organic.

Keywords

Virtual Reality, Symbiosis, Aesthetics, Philosophy, Experience, Phenomenology, Design, Media Studies.

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Introduction and theoretical objectives of the research seminar “Vocabulary of the Virtual”

This article aims to present the work that has been developed since 2020, during the research seminar "Vocabulary of the Virtual" (IRCAV, Sorbonne Nouvelle /Spatial Media, EnsadLab). The main point was to clarify, through a deliberately interdisciplinary approach (aesthetics, philosophy, film theory, sound theory, ergonomics, design, engineering, cognitive sciences, etc.) the theoretical notions that constitute our experience of the concept of the virtual from its concrete manifestations into the immersive devices and new film and media forms resulting from virtual, mixed, and augmented reality technologies. This research, the stages of which are reported here, has materialized through a certain number of experimental methodological conceptual tools such as dictionaries, cartographies, mental maps, and notional diagrams with several dimensions, proposed with the aim of grasping the concept of virtual from its relation to the adjacent philosophical and theoretical concepts.

The initial problem of our research seminar comes from an observation of a lack of precision regarding the vocabulary for analyzing new artistic and media forms emerging out of the use of new digital and cybernetic technologies, the virtual, mixed, and augmented reality devices. This lack of vocabulary, from the first stage of the analytical gesture, namely the description of the audiovisual structures of immersive spaces and their interactions with the user or the *immersant*, required a deepening of the definitions and terms that describe the aesthetic units and sets that make up the experience of virtual reality because, as Daniel Mestre and Philippe Fuchs remind us, “virtual reality is, in essence, an ambiguous concept. It is difficult to completely distinguish what the responsibility of technology is (virtual reality as a digital, mechanical, electronic tools, etc.) and what the responsibility of experience is (virtual reality as a subjective construction).” [1]

Thus the initial question, which has consisted in verifying the viability of the vocabulary of traditional film analysis1 applied to VR contents, has permitted to forge a broader semantic field of study, focused on the definition of the concepts involved in the construction of immersive levels of reality, in particular the hybridization factor according to Milgram's continuum principle (between digital or cybernetics and psychical reality, which includes, among others, Michel Serres [2] concept of "hors-là" as well as the concept of fiction, of "narrative presence" [3], etc.). In this regard, the very definition of the term "virtual reality” poses a problem from a semantic point of view: the term described as an oxymoron by

Philippe Fuchs comes, following Jean-Paul Papin's remark [4] , from the English expression introduced by Jaron Lanier in the 1980s where the meaning of "virtual" ("in fact, "practically") seems in the first place to reduce the immersive device to the act of simulacrum, to a production of an immaterial world where it would necessarily miss something compared to the real world. Our working hypothesis consisted first in verifying the relationship between immersive environments and the very concept of reality, which required in-depth reflection on the definitions of this couple of problematic concepts that is real/virtual, based on philosophical theories, which were able to raise this question long before the appearance of new technologies. Following this idea of a lack, in particular of materiality (of density of matter) or following the idea of interactivity (as a fictional, potentially open word and which requires the interactive presence of the spectator), the term of virtual is often confused with notions such as immaterial, possible, potential etc. and is defined either by negativity in relation to reality or tends to become a generality, a portmanteau word, even a label for commercial products. It is, however, a strong and autonomous philosophical concept, whose contemporary definition we owe to Gilles Deleuze’ work who, inspired by the proposals of Henri Bergson [5], reverses the classical Aristotelian position, and replaces "power" by " virtual”, by proposing the famous double opposition: “if the real is opposed to the possible, the virtual, for its part, is opposed to the actual” [6] . Deleuze thus endows the virtual with "full reality, as virtual", with an ontological dimension, and proposes to consider any object as having one of its parts in the virtual, which, far from the indeterminate being, would rather constitute an objective dimension at the origin of the process of actualization.

Other pairs of concepts were founded to support our reflection that goes from its conceptual state to its concrete state, verifiable by experience: following an ontological reflection (presence / immersion / threshold of presence; site / space; place / territory); following the experimental and pragmatic reflection (place of anchoring / place of immersion; realization / derealization; interactivity / agency; space / sound staging; frame/editing), following the phenomenological reflexion (interaction and environment). Thus, the question of site has become the starting point of our common reflection, since it makes it possible to problematize the paradoxical relationship between the

concert concrete? place (concrete site) and the virtual site of implementation of the experience, as well as the quality of the experience itself, even from the point of view of the notion of "threshold of immersion".

The research results proposed in this article concern theoretical advances in the context of the definition of the term of virtual, through the following stages:

1) a philosophical deepening of the term of virtual, 2) the proposal of a mental map, 3) a theoretical study, following a graphic schematization of the Deleuzian philosophical system, of the notion of presence from the phenomenon of oscillations of presence of the *immersant* during the VR experience, 4) a study, based on the restricted practical application of the Deleuzian system, of different modes of mediation constituting the act of presence, 5) a proposal for a theoretical evaluation tool which makes it possible to identify the lack of presence and to propose a typology of it, 6) a reflection on space-based montage, 7) a critical approach to the concept of the virtual placed in the larger context of the history of art and the moving image.

Incorporation of the virtual: places of anchorage and organicity

The site (physical space) as physical anchorage of images and processes of virtualization and actualization constitutes one of the central points of our reflection in the study of the concept of the virtual. The site should be understood as space, territory, but also deterritorialization, device, network, interface, but also body which in turn incorporates virtuality through its proprioceptive properties or through the organization of a space or sound medium which makes perception tangible (processing of sound at the level not only of volume but also of phase, etc.). Olga Kobryn suggests thinking about the virtual outside the static framework but in the dynamic sense of the term and insists on the fact that the virtual is not an object but a process and only becomes perceptible as a process of virtualization and actualization. The idea of the site as anchorage then seems to be best suited to reveal the trace and grasp the issues. The space of the virtual can only be conceived and made perceptible as an oscillation of presence and extension both in space and in time, as movement and process. “How does actualization take place in the things themselves? Why is differentiation [the characteristic process of actualization] correlatively qualification and composition, specification, and organization?” [7] We can notice here that thinking about the virtual calls for dissociative pairs, the ramifications of meaning: thus, if actualization is defined by Deleuze as composition and organization, the process of virtualization is defined by Pierre Lévy [8] as problematization and not disorganization. There is thus a displacement of meaning and the appearance of new pairs: problematization / solution that diverts the problem of the most expected pairs: visible / invisible, material / immaterial, concrete / abstract. The level of reflection moves from structure and static physical and spatial characteristics to conceptual, temporal, and mobile characteristics. Thus, it can be deduced that the virtual is only sentient and is probably only as a process and not a static entity. Thus, the notion of symbiosis seems to impose itself as a structuring notion of the concept of virtuality: the anchoring of the levels of virtuality in technological devices [dispositif] and concrete sites, in the body which updates and serves as a catalyst for the concept which then becomes organic.

This organicity of the virtual is part of its very nature, Deleuze having demonstrated the concept through the image of an embryo [9]. The virtualization / actualization processes are at the very origin of the VR device as a symbiotic device - the association of a concrete place which accommodates a differentiation of levels of reality, a stratification of reality whose different strata represent qualitative changes instead of canceling each other out. Paradoxically, the virtual needs anchoring in the real to be able to differentiate itself from it.

Presentation of the themes studied cartography of the vocabulary

To return more concretely to the construction of this vocabulary, it is important to detail the research method of our working group. During twenty sessions of regular three-hour meetings, from 22 November 2019 to 20 April 2022, several researchers from different backgrounds dialogued around a common debate. Retrospectively, we can say that the thinking process took place in three phases of reasoning. Firstly, several presentations made it possible to explore all the meanings that a term could cover. Then, these presentations gave way to more restrictive exchanges around a definition. Finally, the group consolidated in order to build a global theoretical reflection. Far from being indifferent to each other, these major stages of demonstration (exploratory, definitional, theoretical) brought together study and theory through a particular

analytical method, made up of experimentation and failure, by groping around. In order to explain the functioning of this scientific approach, we propose to study here the first tool that emerged from it: the mapping of a virtual glossary.

This "visualized" dictionary was constituted after several exploratory exchanges and focused on the resonances of the following concepts: the immersion/presence couple and the real/virtual couple. The delimitation to four terms is not arbitrary as it tends to prove that they cover various notions, whether they are shared with other domains (cognition, derealization, threshold, affordance) or specific to virtual media (actualizing, immersing). The first principle of mapping is to systematize these lexical encounters to account for conceptual advances and resistances. In this way, we can observe that the concept of immersion, although it can be distinguished into three categories (real immersion, fictive immersion, virtual immersion) with precise specificities (environment, imaginary, interactive, proprioceptive), nevertheless summons a plurality of uses which intersect and merge. Plotted on the map, these very different uses of the concept are linked by a color code, which distinguishes them, a set of icons, which associates them, and a hierarchical structure, which ranks them. These multiple entries finally come together around two key words: narrative, or iconic, immersion and sensory, or a-iconic, immersion.

However, this system of cross-referencing through a two-dimensional cartography suffers from several conceptual problems. First, it is based on an excessive heterogeneity of tree structures, which leads it to accommodate very different scientific elaborations (aesthetics, philosophy, cinema, ergonomics, design, engineering sciences or cognitive sciences) in an unlimited expanse. It is then subjected to extensible fields of reflection that can lead to an infinite expansion of the map object. Without limit, cartography can be interested in questions of production (theories of virtual creation), design (realization of virtual objects) or use (virtual receptions and uses). It has now become essential to move from a summary map, containing all the definitions, to a prospective map, capable of providing an active theorization.

This updating of the map through its results eventually led to different volumetric cartographies reshaping the debates contained in the definitional stage. Before detailing the specific intellectual path from one set to the other, it is interesting to look at their results. At the heart of the new "Virtual/Actual/Possible/Real" or "Affective Participation /Presence/Action/Dispositive '' sets, we can find the debate around narrative or sensory immersion. Even if the conclusions remain similar in the maps to come, their justifications specify the differences. On the one hand, there is affective immersion, which enables the apprehension of an environment from stimuli linked to the aesthetic device and psychic presence, and on the other hand, there is agentive immersion, which is based on abilities to participate in the environment, and which are linked to action and affective participation.

Paradoxical relationship between concrete place of the experience and virtuality

The paradoxical relationship between the concrete place of the experience and virtuality (in the Deleuzian sense) which always needs an anchorage in actualisation may be found in early *dispositifs* such as Robertson's phantasmagorias. Before cinema emerges in the Capucines district in Paris (at Café de la Paix), Robertson used phantasmagorias in the Couvent des Capucines to actualize different virtualities of the place and played with the idea of bringing back ghosts, especially in relation to the political and at the same time symbolical and geographical turmoils since the French Revolution and the First Empire (removed bodies and statues of famous people, religious apparitions). This dimension also works in a contemporary cinema that is interested in this power of actualisation, as, for example, in the movie *La Vierge, les Coptes, et moi* (2012) by Namir Abdel Messeeh. With the exception of some rare experimental productions, VR seems very little 'virtual':

rather, it tends to enclose the action within a few possible scenarios. This distinguishes it from interactive documentary, for example, in which inventive or *creative abduction* often plays a role in the investigation, with very interesting back-and-forth between tree structures and actualisations (geolocated concrete places, for example). The production of the Raspouteam group on the Paris Commune in 1871 and its re-actualisation in contemporary Parisian space underlines this dimension (https://raspou.team/1871/). By definition, indeed, *simulation* belongs to the realm of the possible. VR is, therefore, not *virtual-friendly* from a Deleuzian point of view but it may be interesting to ask, on the one hand, how simulation dismisses the Deleuzian virtual, and on the other hand, whether the Deleuzian Virtual, linked to creativity itself (from the biological to the human), can be completely evacuated and how it 'comes back' [10].

The cartography and the mind mapping of our first collective works could be re-problematized according to this axis while taking into account the principal points of connection of the experience, namely the question of the “dispositif” (in particular the position of the spectator inside and towards technology) - D, that of the affective participation at the time of the experiment (PA), that of the presence and its effects (P), that of the action (A) with different means (joysticking, walking, etc.) finally. The Set theory in mathematics (Georg Cantor), which allows to consider that an item can belong to several orders according to its properties (i.e., 10 may belongs to two sets: set A which includes the multiples of two, and set B which includes the multiples of five) could give a framework to the description of the experience in order to observe how the virtuality could emerge, or not, from a VR experience.

The Deleuzian approach can be drawn through a cross taking the place (Lieu) at its middle (see illustration 2a below) and two lines crossing in this middle, the first from Virtual to Actual, and the second one from Real to Possible. The interactive documentary has to deal with our virtualization of what may emerge by abduction in browsing the internet from page to page, that is on the upper right of the cross, between Virtual and Possible, whereas the VR headsets trap us in the Actual and offer us possible choices to act (or not) with and within the technological device, on the lower right of the cross, between Actual and Possible. If we project the four main points of connection on this cross, we can describe experience paths, such as one that may explain that we act to turn right, or left or whatever (A, Action), to face a new challenge because we felt confidence by overcoming a previous success (PA, affective participation). These paths may be related to one of the four Sets (Virtual, Actual, Possible, Real), so we can have a kind of 3D representation in order to describe an experience (as below).

In this figure, we can see the experience Guillaume Soulez met when he tried to “disturb” the device of a VR experience named *A Fisherman’ s T ale* during the NewImages festival (Paris, Forum des Images) in 2019. The *immersant* is a fisherman locked in a lighthouse and s/he must manipulate objects (grab a teapot…), open windows, etc. A representation of the lighthouse in the form of a model, in which an avatar of the fisherman is represented, offers a sort of miniature vision of the room and the actions undertaken (see for example: https://culturevr.fr/a-fishermans-tale/). In a kind of fractal vertigo of dimensions, I am, at certain moments, myself the miniature of a figure which overhangs me.

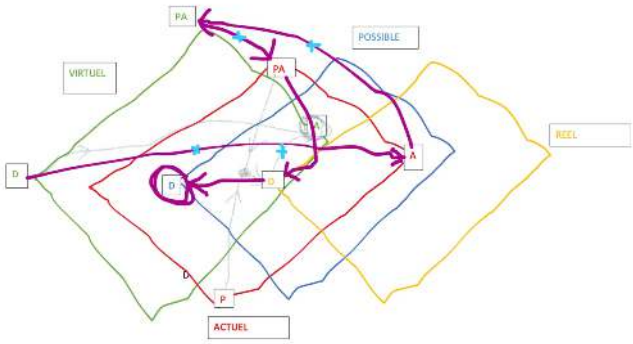

Figure 1. 3D representation of relationships between four sets (Virtual, Actual, Possible, Real) during an experience - by Guillaume Soulez.

All my actions were then *possible* actions—mainly suggested by the setting and the presence of objects—to try to make the starting situation evolve, except one. I tried to act on the model, making the hypothesis that to modify the model was to impact the principle of the device itself, thus perhaps to act on the system to "get out" of the confinement of the lighthouse (or to disturb the device and see how it reacted). This virtuality was not actualizable (no modification occurred by trying to touch the model, etc.), but, unlike the other thoughts and actions, it was not foreseen by the system that had fixed a certain number of possibilities. In the figure, we can see the path from a virtual (green) D (dispositif) to a idea of action to actualise (red) an action (A) in order to get a new virtual affective participation (PA green), but it doesn’t work: so in the Set of the Actual, this non-actualisation brings a dysphoric feeling of failure (PA red) and I have to admit that the real dispositif (D yellow) makes it impossible rather than possible (D blue). In light gray, you can see the virtual path I imagined (from the same D green but to an A yellow not actualisable) which could have actualized (in red) for me a conjunction of new sense of presence (P red) and of (euphoric) affective participation (PA red).

This abduction (hypothesis) was undoubtedly suggested to me by the *place and the atmosphere produced by the festival*: this one proposes to multiply very varied experiences in a relatively short time, to play with different devices, to pass from one to the other, which incites finally to practice a meta level. Therefore, we can provisionally conclude that the place of the experience (here the festival as a place) must be taken into account (as we’ll see below with the semio-pragmatic approach) in order to understand how symbiosis may occur, or not, with an immersive technology such as the VR headsets. One could also say that a variant of our abductive trial is *hacking*, which consists in "hijacking" a device, i.e. opening a virtual space beyond the system of

possibilities that it constrains. Therefore, we could ask whether a successful hacking would mean a kind of translation to another symbiosis, the hacker's one, his/her own personal (but sometimes shareable) universe. This approach and this VR experience suggest deepening the analysis with other VR products, especially "experimental" ones, in order to test other types of virtualization. But let's now analyse the way this Set model may be concretized in specialization of VR experiences.

Comparing spaces of mediation

Based on Guillaume Soulez's proposal to apply set theory to a cartography of the virtual while affirming the concept of place as the meeting point of the axes of Deleuze's real/possible and virtual/actual schema, Francois Garnier proposes to pursue this idea to the point of considering place as the space of an experience, where the Deleuzian axes would be the driving forces of a new representation of the affordance action/perception loop.

The place is thus no longer a concept at the point of intersection of these relations (Figure 2a), but a closed and open space encompassing the space of expression of the mediation where a specific experience takes place. It marks the limits, even if it remains open to external influences. To form the affordance loop, we add two arrows to the diagram, opening up two questions: how does the imagination of the Possibles prepare us to be present in the Virtuals? How do the Actuals enrich the Real of the device and the experience? (Figure 2b)

On the map of this Place, it is possible to situate the 4 sets proposed above: the Device set, which regroups the Real pre-existing the experience, the Affective Participation set, which is the stimulator of our projection in the Possibles, the Presence, which is the condition to the setting-up of activation, of vibration or of reasoning (see the quotation of Proust by Deleuze above) of the Virtuals, and the Action, which is the bodily engagement actualizing a Virtual as an Actual, emerging to enrich the Real, the experience. (Figure 2c).

Based on this conceptual scheme it should be possible to try to study the differences existing in the affordance action/perception loop when applied to a technological mediation site such as cinema, virtual reality, or shared virtual reality.

In an experience of mediation, a dialogue is established between the author and the spectator-actors.

The 2 flows Real > Possible and Virtual > Actual can be associated to the reciprocal roles of the author and the spectator. The author stages the Reals, opening up paths and guiding the spectator towards Possibilities (act of narrative), the spectator-actors acting out the Virtuals and allowing the unfolding of the experience to progress.

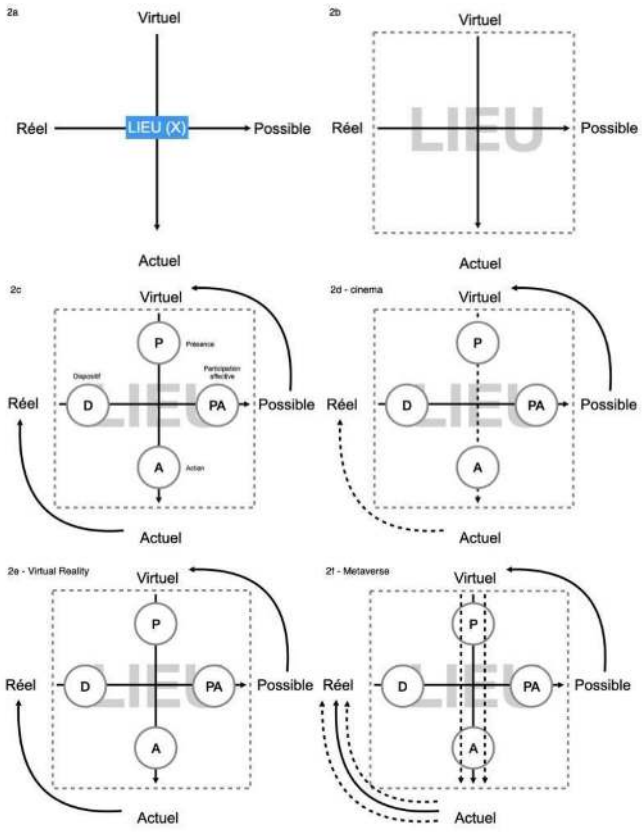

Figure 2. a, b, c, d, e, f by François Garnier

In the cinema (Figure 2d), the spectator does not have the possibility of acting on the loop of affordance between Possible and Real via the actualization of the virtuals. He cannot intervene in the unfolding of the experience; this role is given to the actor whose actions are predicted and are already part of the Real included in the device which will be revealed progressively in the time of the narrative. The actual is predicted, recorded in the device, it is included in the Real pre-existing the experience.

In Virtual Reality (Figure 2e), the immerser enters the affordance loop between Possible and Real via the actualization of the virtuals, he can act on the unfolding of the experience and make it his own. Within the limit of the possible and of the interactions proposed by the author, which make up the device, the immerser actualizes the virtuals. This actualization requires a Presence and produces the Actuals which come to enrich the Real of the Device.

In shared Virtual Reality or Metaverse (Figure 2f), the experience becomes an open space, the presence of the others gives an identity to the *immersant* and influences his perception of the possibilities and his affective participation. He is no longer alone to act and to produce actuals, he must cooperate, make society in the Real of the experience in constant becoming.

Bodies and Spaces: methodological aspects

The mode of embodiment, or mode of existence in virtual reality environments is quite specific as it engages the whole body of the participant in its sensory, physical and physiological dimensions, as well as in its cognitive and socio-cognitive dimensions. The transactional situation unfolds between a physical space in which the participant physically moves and experiences sensations and a digital space where he/she experiences interacting with the narrative, processual and procedural levers of the programme.[11]

Roger Odin [12] builds a model of mediated communication that he considers as a methodological tool for research. From a semio-pragmatic perspective, he proposes to move from the notion of a communication situation in context to one of “spaces of communication.” The space of communication is the place where the "actors" in the production space, as in the reception space, produce meaning on the same axis of relevance. They share the same constraints (cultural, symbolic, cognitive, social, etc.) which constitute a common and shared framework that allows for the orientation of communicative skills related to a specific and contextual space. This proposal has consequences, as it is situated in an approach which allows interpretative processes in a form of non-communication. If the instance of production constructs/produces signs that can be apprehended by the one who is supposed to receive them, it is not certain that the receiver receives them as they are proposed, that he even perceives them. It is therefore not certain that he, in turn, sends signals on the same axis of relevance, in the same space of communication.

From a phenomenological perspective, the model developed by Philippe Bonfils[13] transposes R. Odin's model to immersive environments. He considers four distinct spaces of communication to explain the engagement of "subjects" during their experience in an immersive environment.

The first division is between digital space and physical space, the second distinguishes the space of possibilities from the space of action. The space of possibilities corresponds to what the subjects "do" with the sensations and information perceived in the physical space and in the digital space.

This makes it possible to observe and describe the way in which they actualise, interpret, give meaning to, and organize these sensations and information (R. Odin's vibrations) according to their own capacities/knowledge. The space of action corresponds to the actions that the participants carry out through their bodies in physical space and/or in digital space. In the course of the action, these four modes of instantiation of the body, which are or act in as many communication spaces, operate in a loop. The adjustment of perceptions and actions is permanent, as is the updating of representations and knowledge, thus allowing the construction and circulation of meaning on the activity proposed by the mediation of an immersive device. This engagement is not only due to the immersive or interactive qualities of the device. It is just as much about what the "subjects" want to do and can do or understand in the space of physical possibilities with what they perceive of the space of digital possibilities; and what they can do through their actions in the space of physical action to achieve their objectives in the space of digital action.

To conclude, while this division into (four) spaces of communication is purely theoretical, this modeling has a strong methodological interest. The fact of making these distinctions makes it possible to observe, during the immersive activity, what the participant perceives, understands and acts upon and what he does not perceive, understand or act in the virtual reality device. This modeling allows for a better understanding of what is known and shared about the constraints that constitute these shared spaces of communication between the participant and the experience imagined and designed by the creators, and what is not. In other words, this methodology applied to the observation of the activity allows us to better understand what makes symbiosis, or what does not make symbiosis between the immersive device imagined by the creator and the participant who experiences it.

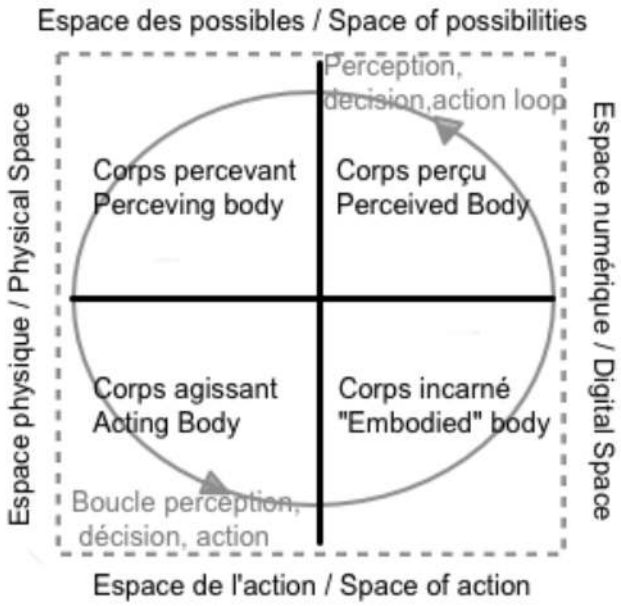

Figure 3. Forms of instantiation of the body in four communication spaces of immersive environments by Sophie Balcon-Fourmaux

A practical case

When conceptualizing and developing a virtual reality device, depending on the constraints of space, time and interactivity left to the *immersant*, the artist can more or less anticipate the actualization of the experience. When conceiving an artwork, he or she may imagine the artistic impression to transmit to the receiver. The artist tries to copy his or her model of thought to one of the subjects, hoping that the artistic impression desired is the one lived during the reception of the artwork. However, according to the possibilities left to the *immersant*, the behavior of the latter can move away from the artistic impressions envisaged. Moreover, the algorithmic nature of virtual reality systems enables the artists to give behaviors to their devices which can influence the aesthetic experience of the *immersant*. In this way, interactive works allow a new expression modality to emerge, that of the relation between the behavior of the work with that of the subject.

Regarding the analytical tools proposed above, we propose a case study around the device "Montage Spatial" developed by Rémi Sagot-Duvauroux within the framework of his research-creation. This device, described in a previous paper,[14] proposes to explore the following questions: How can an artist test the effects of staging and montage that he or she wants the viewers to experience? How might the behavioral rules be programmed whilst taking into account future behaviors of the *immersants*?

This device is based on a practice of film editing and on the states in which an editor might be when editing a film. If the montage is an intellectual act allowing the spectator to think about the film, the editor experiences the process of making it. By seeking combinations of shots that express narrative, discursive and/or poetic intentions, the editor considers and experiments a multitude of possibilities and is regularly surprised by the aesthetic effects that emerge. The virtuality in the practice of editing could then be located in this unpredictability underlying the film structure in progress. In this same dynamic, the device "Spatial Montage" seeks to find the montage's inherent oscillation between the manipulation of the matter and the projection onto the moving image. This quick transition from the state of creation to that of reception might be conceptualized by the passage from the structuring of possibilities to the actualization of the underlying virtual by the mounted moving image.

On a virtual table (Figure 4), an artist builds a model with interactive sets, characters, light cones, and sound bubbles. He or she also may locate and orient different walking areas within the model. By pressing a button, the artist acquires the scale and the point of view of one of the three zones (Figure 5). By being able to oscillate between the scale of the staging and that of the reception, the artist is able to switch at any time to test the actualizations of the possibilities that he or she organizes spatially.

Figure 4. On a virtual table, an artist builds a model with sets, characters, light cones and sound bubbles.

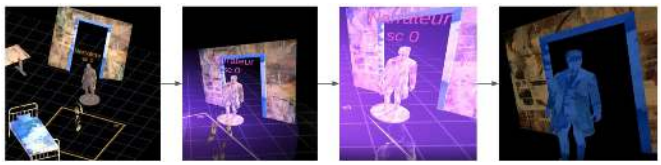

Figure 5. By pressing a button, the artist acquires the scale and the point of view of one of the three zones.

Moreover, once at the scale of the model, according to the *immersant*'s movements, viewpoint, and distance to the characters, the latter becomes active, animated, slows down or freezes. In a sensorimotor loop, the environment is puppeteered by the *immersant's* bodily actions, which are themselves influenced by the scenography of the unfolding environment. Thus, even by having anticipated realizations, the artist is confronted to the unexpected behaviors of the staging which makes him or her experiment the discovery state of the *immersant*. We might detect here a form of virtuality of the staging. This unexpectedness, as present in the act of creation as in the reception, can thus constitute a relational meeting point between the artist, the artwork and the subject.

Finally, the different zones are connected by wormholes: passage points between two spacetimes set up by the artist and materialized on stage by a frame that might be crossed. The *immersant* acquires thus a "body-editor" of his or her own aesthetic experience. If these extradiegetic portals signify the presence of an artist and his or her point of view during the time of the transition, the temporality of the latter is under the responsibility of the immersed body. In a fast oscillation between the perceiving and the acting body, he or she embodies not as a diegetic entity but as a gear of the ongoing narration, putting in tension his or her own temporality with the dynamic one of the experience. This "body-editor", at the same time anticipator and ready for surprise (or even jubilator) seems in this way to embody the virtuality of the editing acts both in the making and in the reception. It therefore enables a way of thinking in action the relations between artists, virtual environments and *immersants*.

Discussion and Return on experience

Before we conclude our provisional discussion of the vocabulary of the virtual, we would like to go back to the expression of "virtual reality" which seems to resist our investigation. We have proposed several definitions of the virtual in virtual reality but is this really sufficient? What about the reality in virtual reality? In English, a virtual reality is a quasi-reality, a reality which is "almost" real. And in French, the official expression for virtual reality is "synthetic reality,"[15] a reality which is simulated by a computer program. Let us examine where this new terminology leads us.

Compared to cinema, a distinguishing feature of virtual reality is that the images presented to the audience are computed in real time, rather than being pre-recorded. As a result, virtual reality appears to be a realization of the procedural approach to movement, anticipated by Bergson in "The creative evolution"[16] where movement is not produced by a succession of still frames, but as a result of a dynamic simulation. Images and movements produced in this fashion challenge the classification of cinematographic images by Deleuze.[17] How should those simulated images be classified? In virtual reality, the movements of the *immersant* influence the simulation and create a different and unpredictable experience every time. What makes virtual reality different from cinema is not its virtuality or reality, but its relation to space and time. From this perspective, virtual reality may be closer to theater than cinema. Like virtual reality, theater is a tridimensional art where each performance is unique. Variations may be more or less important, but an exact repetition is excluded. What distinguishes virtual reality from theater is that the actors, the settings and the props are all software, no hardware.

Virtual reality is therefore different from cinema because it occupies the "real time" and the "real space" of our experience. And it is different from theater because it is immaterial. As a result, it is better described as a "synthetic" or "artificial" reality[18] than a "virtual" reality.

This redefinition raises new and interesting questions. What is an artificial reality and how can it be constructed? How can it be realized? The French translation for "director" is "réalisateur". It is interesting to contrast the term of "realization" in this sense of "direction" or "mise en scene" with the opposite term of "derealization." In medicine, derealization is a psychological disorder where one loses the sentiment that the outside world is real. The two terms are not meant to be opposed to each other, but they provide some interesting insights on what it means to build a virtual reality experience.

On the one hand, virtual reality requires a director who "realizes" the experience by programming the simulation in the first place. On the other hand, virtual reality also requires an *immersant* who "realizes" the experience as an exercise of make believe. Derealization teaches us that the sense of reality cannot be taken for granted, even in real life, and can in fact be affected by long and repeated exposures to virtual reality.[19] Building this sense of reality in a virtual experience may be the defining factor of virtual reality, one that requires a symbiotic relation between the director and the *immersant* who both contribute to its realization.

Hommage

The authors pay tribute to Roger Odin, who passed away in August 2023, whose wealth of research nourished their reflection; whose benevolent advice will always nourish their path.

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