Immersion, from Goggles to Transmedia

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ABSTRACT
Immersion has been a keyword of virtual reality since its origins. It is now heralded by the transmedia, in a very different sense. With VR, immersion is mainly sensorial, with transmedia, it is mental and social. But why not aim to get the best of the two worlds. They have a lot in common, beginning with their digital base. Transmedia can profit of the deep physical engagement of VR, as well as open for it wide gates to larger audiences and markets. This convergence offers business and career opportunities, but also ethical issues.

Categories and Subject Descriptors
J.3.5 [**Fine Arts**]:

General Terms
Design, Experimentation

Keywords
Art, cave, convergence, goggles, immersion, storytelling, transmedia, virtual reality.

1. ONE WORD, TWO WORLDS
Immersion was the word which summed up the features of virtual reality (VR). The word is now used also used in the transmedia field, as indicated by the book of Frank Rose, "The Art of Immersion" [1]. This evolution runs parallel with with the swelling presence of “pervasive”, “ubiquitous”, “ambient” and even “cloud” computing. We are immerged in the space covered by surveillance cameras. Every object becomes “immerged” in the “internet of things **"**

At the same time, the initial fascination of VR is fading, with only marginal progress being made in technologies and applications, even though there are still interesting novelties on show every year in “emerging technologies” trade shows. From an art standpoint, this is not so surprising. The classical VR with its goggles, caves and haptic interfaces never penetrated deeply into the world of art, even though we can quote several artists who have explored the field (see below). And from an industrial standpoint, it seems to be rather confined to specialised niche markets in medicine, defence or maintenance.

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By contrast, transmedia has budgets of millions and markets of billions in the entertainment industry (video and games). It does not need expensive and specialized hardware and is able to use basic equipment even in remote or poor regions, i.e. TV, cell phones and PCs. And it is intellectually challenging : what are the limits of the concept (for example, how does it compare with multimedia or crossmedia) ? How to design transmedia from scratch (native transmedia) **?** Immersion puts emphasis more on psychological (values) features than physical devices : how to write “compelling” stories, how to 'hook' fans, how to trigger buzz and foster communities. Up to now, our research has found that the literature on transmedia is more practical than theoretical. More “user experiences” than formulistic definitions.

But these two modes of immersion converge. Transmedia is by itself a convergence of the medias (It is the title of Henry Jenkins' book [2]. It is a long-term trend of all forms of digital devices, processes and objects. So it seems to be the right moment to outline a theoretical framework that would enable a global understanding of these movements. We shall start with the concepts, then go more deeply into the technologies and structures, and finally conclude with the economic considerations and a an appeal to artists.

Our main conclusion is that research and industry must concentrate more and more on conceptual and psychological issues. Although 'matter' still matters, of course, for devices as well as for our bodies, “spirit”, broadly speaking, matters still more.

2. FROM SENSORIAL TO MENTAL

2.1. Virtual reality: sensorial immersion
The term "artificial reality", has been in use since the 1970s. According to our 'Dictionnaire des sciences et technologies de l'information' [3], "VR is a synthetic environment, created with the use of a computer, which gives the user the feeling of an immersion in such an artificial world
Indeed,at start, its creation was demanding specific input/output devices: datagloves, headset with goggles, 3D sound and ad hoc software. In some cases, goggles are replaced by caves. *(Cave Automatic Virtual Environment)* A fully rigged cave is a heavy investment (hundreds of thousands euros at least). Cheaper environments can be implemented but the image and sound quality is not so good.

The main objective is to increase the sensorial saturation and realism: better resolutions, stereoscopy, and real time, with more

and more sensors and actuators, including smells, moves (cinaxes), winds, possibly haptic hand interfaces. But applications of these costly contraptions are limited to niche markets (medicine, defense, industrial maintenance). And they may be dangerous (immersive headsets in particular). As a consequence, by the end of the 1990's, after the commercial failure of entertainment headsets, the term was extended to normal screen and speakers applications, but with at least some 3D imaging.
In spite of these difficulties, several artists use these techniques, more often than not on a DIY basis, since professional equipment is too costly. Here are some examples.
- A minimal environment may give a convincing immersion feel, as shown by Benoit Berry (alias Tekno-mind, at Laval, in 2011): a classic game on computer is turned downwards in a cabin and the player is lying on his back, looking upwards and using a mouse on the flatbed near his hip.
- Visitors are sucked into the impressive "legible city" of Jeffrey Shaw (1999): they pedal on a bicycle fixed to the ground in front of several large screens with street images and some text. (ZKM Karlsruhe museum).
- Immersion in German mythology, with generative graphics and musical evocation has been staged in a full cave installation by Olivier Auber in the German town of Worms Niebelungen Museum. Unfortunately, this work has been destroyed.
- Interactive immersion is effectively achieved by the work 'Trackers' by Lozano-Hemmer. The spectators move between projectors set at floor level, and their shadows, densely black on white, move on a white wall opposite. When the spectators move near the projectors, their image becomes very large, and the sounds very loud. When they move laterally, their position is transformed into a frequency which selects the nearest emitter frequency. But, in spite of the technical sophistication of this device, the visitors stick to simply playing with their shadows, recording their feats with their smartphone cameras (somehow also a grassroots example of transmedia.
- Generative representation of mind spontaneous moves is made perceptible in a fully immersive cabin, with several projectors and 3D sound, by Thomas Israël, for 'Metacrane' (2009). It uses a selection of video cuts and shows them in an order which combines random and computation according to preset features of the cuts.

- Deep and complex psychological immersion is induced in Outre-Ronde (2000), by Anne-Sarah Lemeur, using a circular screen, a proprietary headset and generative software. The work now belongs to the ZKM museum in Karlsruhe. She explained her vision and works at Laval Virtual in 2009: "Body, numbers, light, color phenomena" [4].

- Extreme and violent immersion, using stroboscopic and sound effects is staged by Kurt Hentschlager [5]. And that up to a real risk of seizure for visitor with cardiologic problems.

2.2. Transmedia: psychological immersion

The term transmedia is much more recent than VR. It was first coined in 1991 by Marsha Kinder, but its present proper acception is no older than 2003, with its reformulation by Jenkins [2]. Its scope is much wider. Jenkins is not a computer geek, but a specialist in media, and the markets are not some hot nests in industry but the whole gamut of entertainment, from TV and games to social media.

Broadly speaking, transmedia is nothing new. The term comes after audiovisual (1960's); multimedia (1966), hypertextuality (2003), cross-media (1980's) or communication 360°… that list is not exhaustive.

A true transmedia work (or series) must (as says Jeff Gomez [6]) "consist of three (or more) narrative storylines existing within the some fictional universe on any of the following platforms : film, television, publishing, comics, animation, mobile, DVD/Blu-Ray/CD-ROM, emerging technologies, narrative commercials and marketing rollouts)... these narratives extensions are NOT the same as repurposing material from one platform to be cut or repurposed to different platforms" (The latter case is cross-media).

Most transmedia works started with one or two medias (film, book, TV series), then be extended to others. Nuno Bernardo [7] tells his own career path. But the finest projects are "native transmedia»: they are from scratch designed for several platforms and channels, and possibly audiences.

Transmedia is strongly linked with storytelling. Basically, there is a technical reason: A story can be reduced to a short text. And possibly one word, if this work evokes a story that many if not all of the spectators know, called for instance by its eponym actor (Adam, Frankin or Cinderella, for instance). And a name, technically, is a short string of bits, easily communicated on any channel, then along the channel up to the final presentation, an appropriate enrichment with any kind of appropriate assets. Let's say, the "telling" of the story.

If the "work of art" is in art the basic object of creation, distribution and property right, in transmedia the "franchise" takes this role. This kind of property is protected by the law of brands more than copyright of patent. With a plus for the producers : as long as it is used, a brand remains proprietary. That fits the needs of projects which can last indefinitely and develop products of different nature like texts, music, figurines, shops.

Here, the immersion is not physical, but psychological. And Jenkins stresses : "A strong fantasy identification or emotional connection with a fictional environment, often described in terms of "escapism" or a sense of "being there".

Let's quote some of the most famous franchises.

Matrix (from 1999) has perhaps been the first fully fledged transmedia project. It is mostly known as a series of three films. But, according to Jenkins, it is a composition of many religious, mythological and religious topics and images, voluntarily not clearly connected, so that the audience is pushed into cooperation with others to solve the mysteries, then reinforcing the success of the franchise.

Starwars is the most successful of transmedia franchise, along with Tolkien's Lord of the Rings.

Pottermore, the transmedia version of Harry Potter, was announced on Fall 2012. Starting from a series of books, it will be intesting to see how it makes it on the transmedia scene.

2.3. A new reality

Transmedia includes VR as mental includes sensorial. They are both forms of immersion. They both present to the audience new kinds of reality.

Present forms of VR and transmedia call for new synthetic terms : augmented reality is an extension of VR, alternate reality is an aspect of transmedia. In 1989, WE proposed the term

"hyperworld", inspired by hypertext. This perhaps corresponds to the convergence of transmedia and VR, though Jenkins uses “hypertext” as nearly a synonym of transmedia.

From a philosophical standpoint, this convergence is the recognition that the world of today, and even more of tomorrow, is a composition of nature and artefacts. And this is also true for the “objective” world as well - for the cultural frameworks through which we look at it, and for the multiple channels through which we communicate with it.

3. TECHNOLOGIES : SOFTER

3.1. VR: interface with the head

The headset was the most typical device of original VR. It includes a screen for each eye with stereoscopic presentation, earphones (possibly with elaborate surround sound system) and accelerometers (or other devices) to capture the position and movements of the head. It is basically designed for one user.

Caves obtain similar effects by projections upon the walls (genrally three), the ceilings and sometimes the ground. The user may interact, generally with rather elementary device (a joystick, for example). Here the users may several users (say a dozen).

More complete contraptions include :

- a mobile cabin, controlled by a set of six hydraulic jacks, giving more or less realistic impressions of movement ; such cabins can be individual or collective (professional flight simulators, Cinaxe cabins, Pegase horses) ; a collective cabin may be spherical, for example for surrounding Imax cinema ;

- haptic devices, so that the user may perceive the forces to be applied in the simulated world.

- pedals and full suits to let the full body play its part.

- diverse effectors to enhance realistic effects (wind, water sprinklers...), giving the "cinema 4D" environments.

A lot of sophisticated devices, mainly at interfaces, are presented each year, in particular at Laval Virtual and Siggraph.

This kind of hardware calls for substantial computing power. Goggles, for instance, demand that the images presented to each eye be recomputed for any head movement. Inside the hardware boxes, specific software is developed: processes and contents, giving life to these spaces. These products are generally rather specific, limited to ad hoc machines, and sold with them.

Due to the costs, and possible security issues, these devices remain rare, and the term virtual reality is frequently extended to include basic environments, typically a laptop or a game box with 3D graphics and sound. Here, the software is less dependent on the specific product. It may create an independent market; including free products.

But technology is opening up a new future to this kind of immersion. Headsets are becoming lighter. The time will soon come when the full capabilities of the heavy 1980’s headsets will be integrated into normal eyeglasses, even into contact lenses. Technically, it will even be possible to integrate more deeply in the body, with connections grafted onto the nervous system. However, because this raises ethical issues, it will be a long time before it is used for the general public. In military defense and new technical aides for the physically handicapped will open up the field and finance ulterior research.

Meanwhile, projectors are becoming cheaper, and giant screens are using LED’s. This means that any place, even outdoors, can become a sort of cave. At the same time, miniature projectors are embedded in boxes the size of smartphones. Then this kind of VR also becomes ubiquitous. And it’s even easier for sound, of course. Every day on public transport, we see people, with their eyes closed, immersed in the sound space of their favorite music stars.

Direct interaction with the brain is a fascinating challenge. Affordable headsets and open source software has even led to some artistic developments [8]. But the bandwidth of signal interchanges and the difficulty of any control directly by thought will probably continue to limit any practical applications and the creation of attractive music or art for a long time yet.

The integration of all these devices into coherent environments will require ergonomic research by the industry and psychological efforts by each user for himself : buy the proper equipment and learn to use it consistently.

3.2. Transmedia: interface with the minds

Transmedia has to distribute a same story through several channels. That requires the development of technologies (or techniques) at three levels.

At the low level, transmedia uses standard hardware and software. But it has to combine them, to use them according to their specific functionalities and to manage the whole process. That stresses the importance of formats, protocols, and control systems. But all that is mainly dealt by servers or by proprietary systems of the main producers.

At a medium level, transmedia authors and producers have to manage assets, control workflow and use CMS (content management system). The main actors on the field develop their own tools.

At the high level, the authors must think globally. From the core of the story to the audience minds. It is not easy, and no handbook can give them the keys, in spite of some hands on oriented books like Phillips [9] or Bernardo [7]. Some interesting ideas, at a research level, can be found in Subsol [10]

To keep the audience attentive and engaged, the creator of transmedia works must primarily focus on contents, make them compelling enough to prevent the audience from scattering away. Art become primarily “cosa mentale”, to take the Da Vinci phrase in a new context.

Bernardo says ”Every person has a bubble surrounding them that encompasses their personal space. Within this bubble is the viewer’s personal space an existence and outside it the world they perceive. This is important because, by using personal tools, like email, social media and SMS to connect the viewers to the characters and story, you are in fact entering the viewer’s personal space. You are going into their personal bubble”. (p. 16).

Then, to keep a coherent set of spaces, characters and actions, the transmedia author must write, store and update a “bible” which will “literally set down the rules and parameters of the entire universe that your story exists in”. (Bernardo, p 21).

Andrea Phillips stresses the “cost of fragmentation” of transmedia : it relies “upon the audience’s ability to collect and make sense of multiple story fragments”. Then she gives four advices :

- cross-link heavily (make sure to provide links from every one of the sites to all the others),
- provide rolling recaps (you audience loses track of what’
- map-out your intended audience path in a flowchart.

3.3. Converging into intelligence and ubiquity

In traditional VR, immersive spaces were specific (and rare) spaces. Entering them was quite cumbersome, and costly. In traditional media, at least since the transistor radios of the 1950’s, immersion could b be ubiquitous and permanent, but into very limited environment (poor sound and few channels).

The digital as core of the two worlds

Deep in the core of machines and processes, VR as well as transmedia use a same technology, the digital. The bit as well and the Von Neumann machines bring several features essential to both : universality, quasi absence of error in copying, storing or transmitting, and exponentially shrinking physical and monetary demands per bit or computing elementary power.

To VR, that affords to deal with moves and commands as well as with images and sound, and also to gather them into more and more complex processors and smart behaviors.

To Transmedia, it affords to transform, combine, record, broadcast, stored and indefinitely reused and remixed without quality loss; it opens very large storing spaces for assets; it let transform them from any media onto any other one.

And these common technological bases, it offers convergence. VR assets are digital files as well as cinema, games and video assets.

Rich and clever input/output devices

Both virtual reality and transmedia make good use of new interaction peripherals. Let us quote some present of near to come novelties.

- Interfaces for games: WII, Kinect.
- Musical instruments tend also to augment their input affordances, but also their outputs, opening possibly on multimedia performances.
- Lightweight glasses instead of heavy goggles, and some near day, just special eye lenses if not direct nerve connection.
- Wearable computing [11].

These devices are more VR oriented than transmedia, which tends to use comparatively simple and cheap hardware, and overall more versatile and mass-distributed, with the smartphone as typical.

Dematerialization of the processes and systems

As long as human beings will have bodies, matter will matter. With all our electronic toys and software games, we still (and perhaps more than ever) spend for clothes, jewelry and, in a typical paradox, a nowadays purely ornamental mechanics: the wristwatch. But the core processes, at work and at home, for culture or mere entertainment, is more and more “soft”, i.e. dematerialized.

It’s a facet of digitization. A progressively dominant part of the complexity lies into software, hidden into the most intimate parts of the hardware. Taking a today’s inkhet printer to pieces clearly illustrates that. Part of the complexity is cast into the plastic and (few) metallic parts, hosting some simple motors and sensors, and one and alone chip enables the machine to respond with clever and precise behaviors to the commands sent by the PC.

It is more and more the same for VR as well as for the medias and still more for their combination in transmedias. Content management and workflow required yesterday a lot of material transport, handling and storage of film boxes, video and audio cassettes, let alone paper documents. All of these are now digital files stored in vast disk systems and managed online through workflow and content management systems.

The specificity of medias as well as their convergence is now expressed by their different formats, established by public instances (normalization properly speaking) or by dominant actors (de facto standards) become of primary importance. See among many PAD (Portable Application Description), IMF (Inter-operable Master Format), DCI (Digital Cinema Initiatives)…

This technical evolution has its counterpart in the models we use to understand ourselves, the humans. From the Middle Ages, progress in optics and animal anatomy has stressed the importance of the eye structure, with its focusing system and projection on the retina. Today, with neurosciences, we are discovering the importance of the brain and the high complexity of vision. Hence, the design of VR as well as media projects concentrates on more central topics than sensorial saturation or time spent in front of a screen.

Human computer interaction in search of empathy

Even more than intelligence, we are looking for intuitive, emotional and empathic relations with our tools and toys. We can take this at two different levels:

- the material interfaces, with their sensors and effectors (screens and graphics included),
- the stories themselves.

From the interfaces, for instance, Florent Aziosmanoff [12] invites the authors of interactive installations to deepen their perception of the audience (physical audience of a work in his case) : don't only detect if somebody is present, and possibly use their moves into the action, but recognize their attitudes and pay attention to their attention.

This is increasingly present in any kind of data acquisition: we are replacing heavy, cumbersome and costly hardware by multiple cheap sensors and intelligent syntheses of the data. 3D scanners, for example, give way to 3D modeling of an object through multiple shots with a standard camera, be it simply a cheap camera of a cell phone. Or, for animation films, the "markerless mocap", correctly capturing the body movements and facial expressions of an actor without sticking markers on his clothes and skin.

This aspect is seldom considered in VR or games. But in transmedia, it becomes a crucial process. Producers pay a lot for metadata about how their shows are received, and even more how spectators react to it it, with a particular emphasis on community

exchanges, for example by counting a measure of the number of tweets exchanged during a broadcast episode.

On the emitting side, the computer graphics community (research as well as marketing), has made considerable progress over the last decades in very physical aspects:

- from 2D to 3D, to 3D stereoscopic and now 4D and even 5D [13],

- from 24 fps (frames per second) for films, to offer higher images frequencies,

But to get an audience's attention and engagement, this is better obtained by a care for audience psychology than by high resolution display or sound producing.

From the stories themselves, the anecdotal aspects of the narration matter, or course. But it is more important to dig deeper. As Jeff Gomez says [6]: "Great fantasy universes often hold only a single, but vital message. Themes and variations on that message must be embodied in the hero and woven through every aspect of the franchise. .. Truly compelling comes not out of a blanket mission statement, but rather from the depiction of the complex, conflicted individual decisions that must be made at individual times in individual places".

Somehow, far from the pixels and sound bits, let's look for "the DNA of what you have to say... planting specific seeds that hatch spectacular results".

The transmedia artist must look at the different medias as an music composer, and create a symphonic narrative.

The technical architecture of transmedia

It's here that rules and guidelines are progressively taking form. The books on transmedia are mostly telling the tales or the big franchises, and from them deducing good practices. But a more theoretical – or at least formal – approach would be useful, and will probably be borne in the frameworks of education and training. They could find structural bases even on old texts such as the Aristotle's Poetics, or in Wagner's The art of the Future. But they will have to draw as well out of the technological features. In architecture, Vitruvius is still read, but reinforced concrete of carbon fiber arise beyond their views, of course.

Let us try to draw a first sketch of this new construction site.

4. STRUCTURES: FROM SPACES TO STORIES

As the term "virtual reality" suggests by itself, VR evokes a sort of metaphysics. Transmedia does a similar thing, with wizards talking about "alternate reality". This raises the old and repeatedly debated question: What do we mean by 'real'. This is a central topic in the Matrix series, and a particular concern for social authorities, teachers and parents. We shall deal with these aspects in the last part, but we shall here technically describe the kind of "ontology" (a term which in older times related to metaphysics, but is nowadays more a facet of terminology) implied by these new technologies.

4.1. VR: a space, at any time

A space is what VR offers to the developer as well as to the user, visitor or spectator. A world, in perspective, where he can enter, move, build.

This space may be totally imaginary, fiction or fantasy, or represent a real space, past, present or future.

It may have no connection to the real location of the user, or on the contrary may be related closely to it in varying degrees (augmented reality).

By itself, virtual reality has no reference to time. This comes from the user's actions of the user, and sometimes from the nature of the game: a flight simulator has the time constraints of the plane presented. Sometimes it comes from the dynamics of presented structures, notably characters.

Beings: you (alone) and the automata

The first of all beings present in a virtual space is the user, generally in the FPS (first person shooter) stance. In VR, especially highly immersive environments like goggles or moving cabins, the spectator is alone. It is less true caves or collective cabins like in the Paris Cinaxe (a flight simulator adapted to artistic VR immersive shows), but the individual receiver remains the primary target, and the social aspects and are not recorded as metadata nor fed back to authors and producers.

Then there are all the material objects of the world, but also animated beings, and above all autonomous objects, the most important being other humans or humanoids "non player characters", friends of foes.

In VR artworks, up to now, the interaction with the users is limited. The public is called to take its part, but only for a short time, and without real agency onto what is told.

Indeed, in some cases, we have seen the public divert the artist's intention for its own enjoyment. For instance - in La Gaité Lyrique: (Paris), presenting Lozano-Hemmer Trackers (see above). Instead of meditating upon the surveillance main topic of the work, they hijack the optical shading system to play their own stories.

But this mode cooperation cannot take very far. To put it bluntly, the user is more of a guinea pig for the authors experiments. And unfortunately, there is not even a systematical way of recording of users behavior and reaction, which could be the basis of further scientific study and more advanced works of art.

The Second life is the exception which confirms the rule, but must now be considered more as a transmedia franchise that just a virtual world.

Generative art [14] finds here a natural development space, as can be seen in the works of Auber, for instance. The pixels of Antoine Schmitt or the geometrical lines of Hugo Verlinde.

Stories, scenarios and other "formats" are typical of transmedia, not constitutive of VR. But

- the games present a kind of story, with the scale of "levels" that the player has to successively reach up to the final victory;

- some works present a story in a virtual environment, for instance Metacrane of Thomas Israël.

4.2. Transmedia: once upon a time, anywhere

The places are here mainly virtual. Conversely, storytelling conveys by itself a rich set of time structures. We have known it at least since Aristotle's Poetics [15].

Beings: you (in community) and the characters

In transmedia, you don't live alone. That is a normal consequence of the combination of several medias which address different audiences and contribute to develop communities, be they in diverse places, taking part at different times or sharing different cultural environments.

This collective feature of transmedia is deliberately played by producers in order to widen their constituencies an, of course (we are here in a highly commercial environment), their profit. The audience of a given franchise is no longer a single kind of spectators (those present in a hall, the (average) receiver of a radio or TV emission...) but a variable assembly of "fragments", according to various criteria, both technical (the devices they own and use) and cultural.

The collective behavior of spectators is a major aspect of the business. For example, the number of tweets exchanged during an emission is taken as an important success criterion, even more than the traditional audience metrics

Transmedia gives a major status to "user generated contents" (UGC) . That was developed with games, where amateurs can develop "mods" extend the game with activities offered to all. So more so with the MMRG (Massively multiplayer role games).

As explains at length Jenkins [2] (and other authors), UGC are at the same time a bonanza and a threat to transmedia producers. A bonanza since they make the work more attractive, enhancing the fidelity of present audience and gathering new categories. A threat for several reasons:

- it may become a kind of plagiarism,

- it may alter the nature of the work, if the new contents change the profile of the characters and the general philosophy of the franchise,

- the original producer corporation could itself be assigned as plagiary if it develops new episodes or complements which resemble to some external UGC.

Some producers are rather liberal, encouraging users to develop and giving audience to their productions (the collaborationists). Others prevent any UGC, or impose very strict limits (prohibitionists)

Stories and formats: the end of linear immersion

With traditional media, a story is basically linear. Whether you are seated in a place, reading a record or receiving a channel, you follow the storyline. Of course you may more or less swap from a line to another one. Nor if you are in a cinema hall, but certainly if you are at home with our TV telecontrol in hand. If you own a record, book, sound of video, you can jump forth and back through the pages or. And even the linearity of a film may result of sophisticated editing with its flashbacks or discontinuous cuts. But basically, these worlds remain linear.

Hypertext broke that radically, and transmedia has pushed it very far.

By the way, we can comment here the relation of stories with other media. A painting, for instance, may explicitly tell a story, so more it has been designed on that purpose, and easily evoking the moves in spite of it still material nature. For instance Rembrandt's Pilgrims at Emmaus. Even a still-life or a landscape can evoke a story: fruits are here to be eaten, roads to travel, and houses to live in...

The question gets more difficult for abstract painting. Does a Mondrian, a Kandinsky tell a story? It is certainly more difficult for the spectator, and most of people will more easily find a story in a soap opera than in a Black square by Malevich. The story will then be generated along two ways:

- the spectators build their own history ; for instance, they give different looks, first from a distance then as close as possible ; they have heard of the work and to see it in a museum ; they chat about it with friends ; they may also read about it ;

- there is a transfer, from the story told (or supposed to be told) BY the canvas to the story OF the canvas ; which is a very frequent trend of critics, would it be only because it is more easy to tell the "bio" of an artist than to comment explicitly on a work.

Such a reversal from the work to the work creation history is frequent in contemporary art. And the ready-made of Duchamp, and specially the Fountain, is the perfect example : the buzz, the commercial hype and, if we can say so, the UGC, are what make the work.

And for music? No problem for songs and lyrics, where the story is really told. It is less evident with purely instrumental music. Some works intend explicitly to tell a story (For instance the Pastoral of Beethoven), and generally of the "programmatic" music. For the others, the problem is the same as with painting, but the fact that music has a built-in time dimension which can (or has to) come in resonance with the internal rhythms (heart specially) and dynamics of the human conscience.

As for story structures, ideas date back to Plato and Aristotle. A lot of precisions can be found on Wikipedia items: narrative structure, dramatic structure, sonata form...

4.3. The whole is more than the sum of its parts

Beings: characters with flesh and behavior

The whole is more than the sum of the parts… this motto is frequently used in transmedia creation communities. It may also apply to the combined use of VR and transmedia, in spite of their technical, economic and cultural differences. That can only be good for the two forms of immersion.

For VR, transmedia can bring two bonuses:

- a sense of drama and time structures which until now is rarely present in its realizations,

- a permanent attention to audience(s),

- a widening of its audiences, along with better budgets for extended experiments.

For transmedia, VR could then be considered as a particular media, with as main feature its rich sensorial immersion. Then it would widen the range of expressions open to the artist. Goggles will open virtual spaces and augmented reality wherever the transmedia franchise will find it attractive. Caves will be an enhancement of present highly fitted places.

The two domains can make good use or richer objects and characters, with higher level behaviors. Generative art can play its role if it gives more flesh and empathic charisma to its autonomous beings and life processes,

This evolution is suggested by terms as "behavioral art" or "living art" [12].

Another important issue: how far can go automated story tellers? Though a lot of experiments have been made, beginning somehow with Weizenbaum's Eliza, the products are not really convincing today.

That will go naturally with the two precedent modes of convergence. International conferences such as ICVS (International Conference on Virtual Storytelling, for instance [10]) show the way. The stories could even be written by automata, but as shows extensively Wardrip-Fruin [16], the results have still to meet the expectations;

5. VALUES AND STRATEGIES

5.1. Money, markets and jobs

Virtual reality holds industrial market niches

VR, with its expensive contraptions, has thus far been paid by public research and industrial applications. Art comes around a sort of public relation showcase. Some works are acquired by museums (for instance the ZKM in Karlsruhe). But, as for digital art in general, the true "Art market" did not succeed until now to integrate this form of expression.

Then it opens mainly computer professional jobs: researchers, teachers, engineers. Artists working in the field are most of the time earn their living with other jobs (developers or teachers, mainly).

The technicality of full immersive VR demands the cooperation of several specialties (hardware, software, interfaces, ergonomics. That applies of course when artists come in the scene. And, as with digital art in general (and any sophisticated digital activity as well), is not very easy. An artist, a sociologist and a C++ geek do not easily share their cultures agendas and career plans.

But, seen at large, for instance with WII or Kinect interfaces, VR is an important aspect of the games market. Artists, there, are not the Van Gogh like genius type, but large hierarchized teams, as well expressed by Co.

Transmedia sails on the mainstream

Transmedia is an evolution of the media industry, with its worldwide operating corporations, mythically centered in Hollywood. The keys are held by the major producers, and the key is a "franchise", a global term for property combining the laws of copyright and brand. The books of Jenkins (see above), Phillips [9], Bernardo [7] and Rose [1] are full of examples of these big adventures, from Starwars to Harry Potter.

But this world is not forbidden to small entrepreneurs, or even to the individual creator. If you develop a blog hosted by an ad hoc server, abile to manage contents as diverse as text, sound and video, and if around your blog you are active on social networks, you are not far from the definition of transmedia by Jeff Gomez (see above). For you, Bernardo's book will be a practical guide more than an autobiography. He will show you how to start with a comparatively small and local project and bring up your audience to worldwide size.

Marketing is the most visible facet of transmedia. The global websphere has something chaotic and, as has been said for weather, a butterfly's wings can cause a hurricane on the other side of the world. A short sentence about your work on Twitter may end in a large media success and why not in a blockbuster. If Starwars or Matrix were from the start designed as large enterprises, J.K. Rowling did not find easily a publisher or the first episode of Harry Potter!

Then, the users, the fan clubs specially, play here a major part. Their buzz will foster the audience, and then the commercials and the profitable licenses.

But another key facet of transmedia is the importance of metadata. The audience is permanently in view of the creation, with a 24/7 feedback to producers. It can even be real time and have impact on the evolution of an emission during its production.

We are here very far to the technical and comparatively closed environments of VR... but for the games industry.

As with VR, and on a much wider scale, cooperation is required. But with possible solo adventures, since the digital tools of today, at the same time,

- make easier to work alone, with several software tools and communications facilities as well as printing devices;

- call for larger teams, notably to make a professional use of computers, programming and the various media requirements.

Audience fragmentation and aggregation

Immersion has still to find its right business models for corporations and career paths for individuals. As technology will continue to progress exponentially for many years and world economics will change in unpredictable ways, let's not hope for mature doctrine and practice before long.

5.2. Ethics and politics

Immersion in anything other than common reality may be dangerous, be it through VR or through transmedia. Whichever the technology and media, the danger is a loss of contact with the "real reality", if I can say so. In Japan, it takes the form of the post-modernist hedonistic attitude of the Otaku, described by Hiroki Azuma [17]. But there are specific dangers to VR and to transmedia.

VR: don’t forget the real “reality”

The first danger that VR users perceive is physical: when you wear a headset with goggles, you no longer see your physical environment, then run the risk of bumping into an obstacle, or hitting another person, etc. Probably the main reason why goggles did not spread in the public. Some cheap models have appeared in French supermarkets in the early 2000's. They were promptly out of commerce. it is said due to the fear by providers of litigations after accidents

Besides, nausea can also be caused by the divergence between difference sensations, in particular what you see and what your internal ear perceive about accelerations.

Dangers may come also from excessive sensorial stimulation, like in Kurt Hentschlager installations [5]. Some VR experiments include disputable devices, like wrist whipping, leg hammering or arm electros shocking (See Laso report, [18]).

We must quote here the unclassifiable novel “Ender's game” by Orson Scott Card [19] where games intensive practice is used by authorities to prepare warriors apt for extreme foreign threats.

Transmedia: get up, couch potatoes!

Transmedia also has its dangers. The most frequently quoted is addiction,

Traditional media, especially TV, encourage the audience to the "couch potato" attitude. TV spectator and the otaku manga-anime consumer. Putnams “Bowling Alone” [20] has studied in depth the correlations between TV development and loss of socialization. Even cheap video cameras in the 1970’s did not awake new social life [21].

It could go worse with transmedia: artists and producers want "compelling" stories, into which audiences engage deeply. And they look for serenity. That is apparent with the evolution of intellectual property. In older times, copyrights as well as patents had a limited lifetime, after which the works became "public property". The change for brands and franchises breaks that these limits. Hence a possible definitive enslavement of audiences by the mainstream moguls.

Fortunately, transmedia exudes also the counter-poison, the antidote. Up to now, the Internet and social media are not really controllable by any authority. Then abuse of dominant position may be countered not only by legal action but by crowd action. Jenkins tells the striking example of what he calls the "Harry Potter Wars" between user groups and the producer.

Your immersion future is in your hands

If there is a final common point to VR and transmedia, it’s the speed and acceleration of everything. Everybody with open eyes is now constantly in fear of missing something. More: the complexity of these new worlds makes it difficult to foretell anything, but for general hopes or fears about ecology, employment or transhumanism.

A common attitude shift has been made explicit by Johnston, about "machinic life" [22], the convergence point of machine development and biotechnologies. It's a mind shift from cognitive research to creative experience.

That's what we are doing presently, with advanced VR as well as with transmedia: we cannot foresee what will happen. But we have to. That may be a reason why Jenkins, Bernardo, Rose... and the others tell stories about storytelling, and why Laval Virtual immerges us in immersion.

Which demands something that neither engineers nor businessmen do like, and the artist still less: control by the society. The user attention put forth by transmedia is a good beacon on this way.

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