IMMERSIVE JOURNALISM AND THE DIGITAL AUDIENCE

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Abstract:The paper aims to research the best case scenarios used by the mainstream media in using new technology such as Augmented Reality (AR) and Virtual Reality (VR) to inform and interact with the public which is becoming more and more interested in new ways of consuming information and content in general. This means, analyzing the technological aspects and even the sociological boundaries needed to be overcome so that the journalistic message can be packaged in such a way that virtual reality and augmented reality have a purpose in being used by mass-media companies. This means that the audience must understand the practical aspects of using these two technologies and the mass media institutions must be willing to invest and create new content based on the technology that is being created by companies such as Google and Apple. This paper should reveal at the end of the research that a new way of creating reality and offering information through it can benefit both the public by offering a more dynamic and immersive experience in consuming news, and by the mass-media institutions by having a broader range of tools in engaging the public, which translates into more revenue and a more faithful audience to your product. If virtual reality and augmented reality are seen as substitutes of reality, then the public is almost ready, due to the fact that most of the audience wants to escape reality through movies and games. Given the technological breakthrough in cinema andthe gaming industry, it becomes really hard to fully grasp what is real and what is computer generated on the big screen. Virtual reality and augmented reality are a new medium in delivering information to the public. Being dependent on the evolution of technology, both these new mediums will need a shift in understanding how reality can be constructed as a platform for delivering information. Until now, reality has been subjected to various forms of creation and deformation, but the audience still understood that it lives in the real world. With the evolution of virtual reality and augmented reality, the audience can choose to consume information from a reality constructed by them or for them that is best suits their needs. If big companies are investing in the technology, it is the duty of the professionals in communication, especially in Journalism to be up-to-date with all of the tools available to create a stronger message for the audience and make the audience more engaged with the message being offered to them by having a dynamic approach by both the producers and the consumers of journalistic content.

Keywords: Augmented reality, virtual reality, immersive journalism, digital audience, 360 video.

Definition of augmented reality

According to the Merriam-Webster online dictionary[1], the term of augmented reality is defined by an enhanced version of reality with the help of technology capable of overlaying digital information of any sort in front of a display that is being viewed upon the individual in real time. The display in question doesn't need to record the environment for the information to be displayed and depending on what kind of application is being used to view that particular information, content can vary from a dynamic overlay to a preset animated product that interacts with the display in regards

[1] https://www.merriam-webster.com/dictionary/augmented%20reality

with its position and also with the viewing angle of the individual and any motion put in place by the user to the display in question. By summarizing, augmented reality is real-time motion graphics, computer generated imagery and neural information being deployed on a viewable surface that has the capacity of both displaying the content and to interpret the environment from which it gathers the subsequent information. Augmented reality can refer to the technology used by the gadgets, a category of technology among current technologies in computer science or simply a term to define the entire set of equipment used to produce and view a content other than classical pieces of equipment.

According to (Lugmayr 2016, 39), augmented reality is momentarily an auxiliary medium or service since it requires specialized gadgets that aren't currently in mainstream use by the public. This doesn't make augmented reality an evolutive technology in comparison with television. It makes it an evolution of the viewing experience, not the medium on itself. If we expand the definition of television to that of information being displayed for the audience, augmented reality will be television reimagined for the digital audience. Having the same interface as television and offering similar information, although with an emphasis on real-time information and dynamic update of such information, augmented reality can be viewed as a next step in consuming TV, having gone past the step of consuming TV on the internet. This does have some drawbacks if we are to define it in regard with current technologies and making it seem widespread. Although smartphones are the go-to gadgets that have both the operating system and the capability to be portable, they don't have the omnipresence of television, not regarding the number of smartphones existing on the market, but to the availability of capable handsets to display or make use of augmented reality. Certain applications do require a level of processing power and computational prowess to be able to display the amount of information a developer can introduce into the augmented reality app.

Furthermore (Lugmayr 2016, 54) states that society will reach a level of convergence necessary to make augmented reality a current state of affair. If television needed several decades to be used by almost the whole globe, or at least reach a status of ubiquity all around the planet, augmented reality will need less than a decade from commercial use to be adopted by the younger audience which will become in time the new, up-to-date and always connected audience, the digital public. This is being made possible by having the biggest technology companies working to expand their portfolio and developing capable smartphones to take advantage of the developer kit released by the same companies and also, to create auxiliary devices to enhance the reality that is being viewed, more and more, through the display of a smartphone, a tablet, a wearable watch and lastly, through a bigger display like a laptop or TV. The level of convergence required to make augmented reality a common application to view information is being updated every quarter by the releases of the big tech companies like Apple, Google, Facebook and Microsoft. And if they aren't the ones responsible, they buy the start-ups that are doing such advancements in developing new uses for augmented reality.

This makes the skills of people developing and the users overlap in certain areas, due to the complexity of the medium being used. A simple user, without having a degree of tech-savviness, won't be capable to enjoy the full spectrum of effects and rewards the application is offering him. To summarize this idea, the convergence is moving away from basic functionality of a certain hardware and the input from the user into an ecosystem of experiences that intertwines hardware with software and a larger measure of content and user interaction. Smartphones are becoming more and more

automated due to artificial intelligence and this causes more and more input from the user to achieve more and more effects to release the same amount of self-reward.

The author (Batsell 2015, 58) sees this technology being put to us by journalists to reach that audience, one in need of content that is dynamic and is a part of an experience. Journalists need to understand the reality of modern news-reporting and adopt the changing landscape. Because the media has become an evolving interaction between reporters working for mainstream outlets, freelance journalists that tell compelling stories and reaching the online audience through independent projects and the ever-growing public that is also trying to create their own content, their own piece of story and trying to distribute their share of information just like the journalists. This mix and match between the mainstream media and the new digital wave of producer and consumer audience will leave a dent on the responsibility that a journalist has. It's not about being factual and true to the story anymore, it's also about being true to the audience that identifies with the same moral beliefs with you, as a human, not just as a professional. Because you're telling a story for them and by using the same piece of technology they are using, you are being viewed as a fellow pier, not just an official figure that spurts information. This process of evolving for and with the public is full of challenges, littered with problems and doesn't guarantee success for the reporter that involves with technology just to reach a niche audience.

Evolution of augmented reality

If we are to consult (Sterling 2009, 343), augmented reality is being viewed and defined as a cousin of virtual reality, both having the same inclination towards enhancing the reality in which the user is using the gadget capable of transporting the imagination of the individual using that piece of technology. And since most of the gadgets are pocket sized, augmented reality is defined as a mobile technology, almost dependent on the evolution of mobile phones, wearable watches, future eye-glasses with an augmented overlay, like the Google Glass project once tried to achieve for the users daring enough to buy and use an innovative piece of technology to ahead for its own sake. Referring to augmented reality as a type of media, the author is categorizing it as a mash-up media, because is grabs aspects from television, online press and cinematography in some regards. Although online media is a much more evolved type of journalism than traditional media, the benefit of augmented reality in correlation with online media is the benefit of having a personal computer doing all the calculations and displaying pieces of information that weren't being thought possible in real-time. Hollywood has been doing an excellent job of showcasing the use of augmented reality through its movies, tv shows and works of animated movies to such an extent that society has certain expectations towards this new type of media and technology is evolving at such a pace that the newer, younger and much more technological inclined audience is using without thinking about the absence of augmented reality. For youngsters with a smartphone, having an augmented reality overlay in their favorite social media platform is something they take for granted. Facebook has all of its applications capable of overlaying images, videos and graphics with the help of augmented reality and this makes the company a developer and a media outlet to some extent.

A better example of using technology in correlation with media is by having input from the audience in developing a story, solving a crime or simply creating a new medium for interaction between the emitter and the receiver of information. The New York Times is using augmented reality to tell a brand-new type of story, filled with information, but classified and organized in such a way that the reader can choose, mix

and select the pieces of information it needs to grasp the story to his level of understanding. Having a map filled with various information and selecting the degree of complexity the map can show to the user, a media company can tell that story in unique ways for each consumer. And this translates into a niche audience from a broad audience, which in turn translates into loyalty towards the storyteller capable of addressing to each and every individual in a personal way, just by using overlays of information and by giving choices to the audience that is being bombarded with information and wants to focus just on the things it can understand.

Taking a note from (Sanchez-Vives 2005, 12), augmented reality is being viewed as the evolution of reality but beneath virtual reality in terms of converging the real reality with the computer-generated reality. Augmented reality maintains a level of trueness for the audience by including aspects of technology within tangible boundaries of reality. First of all, augmented reality needs a camera sensor to capture the environment in which it is going to include information from the application. Without the sensor, any overlay needed to show information can't transpose itself over a particular segment of the real world. The smartphone needs to look at something so that the user can receive information in real-time about that something, including itself, if we are talking about selfie cameras and the masks that they project unto the faces of users and stay glued to their faces in the application. The movement of the head or of the smartphone makes the overlay adapt and so, makes the existence of the camera essential to differentiate between augmented reality and virtual reality. Video games that have HUDs (heads-up-displays) mimic a real-world use of augmented reality for a character in need of real-time information from its surroundings and from itself when talking about health status and geographical position. Games do this just by programming and designing the graphical information in such a way that the user can enjoy the reality in which the character is being placed as well as consuming the pieces of information that the HUDs offers to the player. The most famous example of HUD overlay used to display a virtual correspondent of augmented reality is that of Ironman, both in the games and in the movies. The overlay and the multitude of information it offers to the wearer of the suit can be catalogued as a best-case scenario of developing an environment to use augmented reality to benefit the user.

Also, according to (Sanchez-Vives 2005, 13), augmented reality can be used as a projected overlay on buildings or larger surface areas around the city. This in turn can achieve a level of understanding of proper architectural planning that would make the citizens aware of the changes the city has for them. By using augmented reality, the public administration office can offer solutions and real-time viewing of the changes that need to be done to a building or a street. The next step and already envisioned by cinematography and games in their stories developed for the consumer audience is overlaying information unto street lights, crosswalks, police cars, window shops and in general, any surface that can project or transmit information for the citizen. And by having the dynamic element embedded to the definition of augmented reality, users can expect changes done in real-time with their input. And this is done, like previously stated with the help of sensors, which are crucial pieces of technology in defining augmented from virtual reality.

The author (Djick 2013, 157) has a different point of view regarding the mixture between augmented technology and humans which make up the real world, and it calls that mixture augmented reality, which are in essence pieces of technology, like smartphones or wearable technology (watches, Google Glasses), that enhance human social action, although the social aspect still needs to be under scrutiny due to the egocentrism perceived by using a personal computer in your pocket. Even still, people

who are in a new segment of audience, those referred as technological unconscious, view this new layer of reality nothing more than a black-box influence for socializing, meaning with the help of the information given by augmented reality, people have new motives and new boundaries to explore in interacting with each-other. This is possible to the fact that augmented reality makes the individual aware and directly implicated in using the technology to convey a message. It's not simply passive consumption, it's active and reflexive usage of augmented reality to receive and transmit bits of information that make the user unique in a way never found in traditional media.

Keeping in line with augmented humanity, the author (Djick 2013, 203) details how creating smarter computers will allow for augmented reality to be used into more diverse areas of everyday life, such as translating a conversation between two individuals who share completely different ways of writing their alphabet or by helping the driver of a car to be more aware of the road and also more protected by the computer of the car in taking decisions to ensure a safer drive from point A to B. Momentarily HUDs for cars that display information aren't as widespread as the driver would need them to be, but the future is pointing towards a window with smart capabilities, with augmented abilities in showing the driver information to save him from a collision or by helping him to better understand the road ahead.

By reaching the third stage of the internet, or Web 3.0, (Djick 2013, 179), views augmented reality as a necessary step into the development of media consumption. The semantic web as it is called, needs a greater degree of understanding human speech, human thinking and overall, reaching a fluent level of understanding of human input, so augmented reality fits really nice with this evolution. You still need the same rules as for other pieces of technology that construe the category of web 3.0, but you have the ability of adding either a neural network that can greatly influence the speed and the complexity of the information shown on the screen, either of a very niche usage of an application to showcase small portions of what can be seen as a next step in using the internet and communicating with the equipment in our hands, not just by typing, or talking, but also by using the camera to enhance our message besides taking regular videos and photos. This aspect of using augmented reality is seen by futurists and mass-media specialists as the next step in communication, where the blend between human input and technological output is used to such a degree that it's going to be ubiquitous like texting or calling someone. It's already widespread by teenagers who use animojis (graphical images that rely on overlaying on to the face of the user) and masks from Snapchat, Instagram or Facebook Messenger to convey a message that is unique from anything that has been used before. The mixture between computational power and image processing is being used by a 12-year-old to show to another 12-year-old that it can "grow" a snot and ears, just like a dog. This is childish, but also, it shows where evolution can head if anyone can grasp the uses of different sorts of technical gadgets that grant the user futuristic abilities.

(Philips 2015, 32) explains how the term itself came into existence, in part, due to the researcher Thomas Caudell who worked for Boeing and needed to define head-mounted displays used by engineers in assembling the complex electrical sub-unit of an airplane. From head-mounted displays to heads-up-displays it was only natural that augmented reality had a say in it. Television used it to mark the position of the ball in football matches in America and started to be developed into car windshields to reach a more commercial success than it was first envisioned. Google is regarded as the first company to integrate augmented reality into a prototype product that never reached commercial success, but which had commercial awareness, especially among those interested about the next big thing in the world of technology. Although Google Glass

never took off as a ground-breaking product used by millions, it did make a splash regarding enhancing the experience of the user when it comes to fill reality with bits of information relevant at that particular time.

That was a key factor in acknowledging the difference between augmented reality and just watching at your screen to find information. Augmented reality has to be relevant at that moment and show information needed only then by the user. This is the case for smartphones, wearables and HUDs in cars, not the projection mapping augmented reality previously mentioned. Besides the prototype glasses from Google, augmented reality never managed to make a splash until Apple made the smartphone capable in displaying a whole new category of apps specifically designed to take advantage of the evolution of reality. Before then, the only apps being created used a niche approach to augmented reality and simply displayed masks on the faces of users. After the introduction of an ARkit (a software developer kit using particular elements that take advantage of the hardware and software of a smartphone), application began to be more diverse and expanded into something the user never knew it needed.

Augmented reality as a medium

(Papagiannis 2017, 3) describes augmented reality as something much greater than just an evolutionary piece of technology used as a new medium, but something that can augment humans all together. Instead of making a distinct separation between humans and the reality they are consuming, such is the case with television, film and the newer virtual reality, augmented reality allows a blending of reality with technology, enhancing the audience in a new experience. Because that is the defining aspect, experience and ecosystems of sensorial inputs from the gadgets we interact with. And having an experience gives the audience the power to feel empowered, like a new class of cyborgs or androids, humans with embedded technology in them, although the case is that we just have around us phones so often they become a part of our human appearance. For this empowerment, developers and users alike need to imagine new ways to tap into this piece of technology. We have to think in what ways we can program and teach the computer to learn new ways to display information for us.

Another aspect to take into consideration about augmented reality is that being a new medium, it can give new degrees of freedom to tell non-linear stories. If games have options to chose in a dialogue so the user can feel a part of the story and engage with the story how he sees fit, augmented reality can allow the user to explore alternative realities that make the experience unrelated to the laws of physics or usual human behavior. The author suggests beginning writing a new book of understanding the interaction between the humans and their world, because it has become more than real now. It has become augmented and virtual. (Papagiannis 2017, 5) underlines one key aspect about the gadgets that are capable in our pockets, the aspect of making the human more alive, not more stagnant. The audience, in a broader sense, doesn't need to wait for the computer to think, it needs to act on the moment, because it knows that technology has progressed to such an extent, that the processing power comes second, and the experience derived from that gadget comes first. All the applications that are being created are done with the purpose of enhancing the lives of people. To a smaller or greater degree, depending on the developer or the expectation of the audience, but nevertheless, augmented reality is here to enrich, not take away from our current reality.

(Papagiannis 2017, 9) differentiates between augmented reality and virtual reality by explaining how virtual reality immerses the audience in another space and time, whereas augmented reality enhances the space and time of the audience. You don't leave the space you use your phone, and you don't have another part of reality manipulated to make you travel somewhere you can't reach in normal circumstances.

Augmented reality differs from virtual reality because it allows you to feel human and connected with technology without losing track of the current reality. One example is the application Word Lens that translates in real-time with the help of the camera of a smartphone foreign words into English. This made sense for those who travelled and needed a real-life translator that could adapt to different signs, while making the user feel assured that what they say was completely understandable, although they didn't know the language they were translating from.

(Jung 2018, 169) further details gadgets with augmented reality abilities, called wearable augmented reality devices, such as Microsoft HoloLens and Google Glass. These "W.A.R.D."s will be responsible for influencing social media behaviors, even more so than they are now, growing in appetite not only for the youngsters, but for the general public in years to come. Institutes preoccupied with market research predict a substantial growth year over year for these pieces of technology, especially given the slow rate at which smartphones then to develop, a new niche of product or category of application within a smartphone can represent the new trend in consumer technology. Still, both the media and the audience have discussed the advantages of using augmented reality and the concerns that so much information can be accessed at one time by the public. This can lead to a greater degree of manipulation by those uneducated to understand the complexity of the information that is shown to them, or a greater degree of automation by the society due to the fact that augmented reality goes hand in hand with virtual reality, artificial intelligence and a utopic environment where computers to more and more for us without our input.

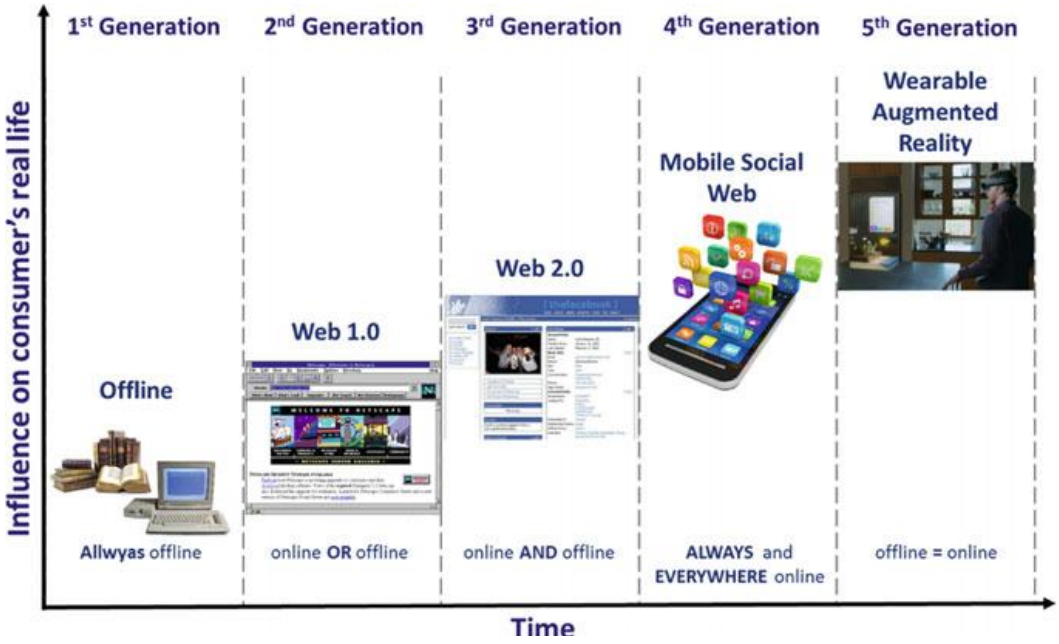

Fig. 1 The evolution of internet technology

(Jung 2018, 171) illustrates the evolution of technology in relation with our society and especially, with the advent of the internet. This has led to the appearance of augmented reality, due to the fact that it needs an always online presence when calculating real-life information to display to the user. Apps that are augmented reality capable and don't need an internet connection still use a connection when subsequent information needs to be updated or when another user needs to connect with the application in order to collaborate with the first user. What is clear is that the internet has played a big role in developing an audience that is connected to its core. The fear of missing out has emerged from the evolution of the internet into a right, not a privilege,

and so, youngsters need their gadgets to communicate their thoughts in other ways than it was possible when basic chat rooms were available. The forth generation of gadgets that appeared has shown as that offline isn't an option anymore and smart watches, smart clothes, smart wristbands, smart glasses are the present, a forever updating present and the audience that makes this generation of users is showing us how to communicate by using augmented reality. In the not so distant future, they will show how augmented humans are the better humans when it comes to being informed. These pieces of technology allow access to a social media environment at all times. This translates into being the most downloaded applications for a smartphone, like Facebook and Instagram are. And we're just at the bottom of the evolution for applications capable into reaching the uses of augmented reality.

The WARDs described by (Jung 2018, 172) are the next step into merging virtual and physical realities. They melt technology with reality and make use of virtual elements to enrich the experience of a human. The existence of these wearable devices is made possible by the evolution of communication, not just as a term, but as a technology, in a sense of transporting large data with higher speeds than ever before, allowing an almost lag free experience, which in essence mimics real-time communication and information. That's why the fifth generation of the internet is also similar with the 5G network being developed by phone operators and internet providers. Knowing the fact that more and more people will be connected makes it urgent, necessary and vital to ensure a fast connection between devices. And those devices outgrow humans because the population is using more than one connected device. Humans have a smartphone, maybe two, a watch, an Internet-of-things device like a fridge, washing machine, smart speaker, thermostat, smart lightbulb. Let's not forget cars that are being made to be more and more autonomous, houses which are called smart because they automate things your normally had to do by hand. This makes the human at the center of this communication evolution, by making him aware of all the things he can buy and use to enhance his life. And by developing applications that use augmented reality, the companies ensure that users are forever connected and they produce more content than ever before. This is a blessing and a curse for media companies, one which will be better understood as time shows demonstrates how journalists can adapt to tell better stories using technology.

One thing the author (Jung 2018, 202) explains in relation with the usage of augmented reality is regarding the physical context in which the user acts with his WARD. For example, the game Pokémon Go used augmented reality to overlay a character in the real life through the means of a smartphone display and it created unusual problems for users. First, they needed to pay attention to their environment more than normal because they were focused in searching their monster and they forgot to watch out for puddles, lakes, trees, holes. This makes a safety issue to be raised when using augmented reality in such a dedicated manner. Another aspect to take into account is the impact of making the individual more extrovert by going outside and interacting with people he won't interact lacking the context to do so. By having a WARD capable of augmenting reality, the user can develop different psychological traits not found before using the gadget.

Fig. 2 Pokemon GO! developed using ARkit

This is influenced as well by the user's savviness towards technology and the gratification that he expects from using that WARD. A greater degree of aptitude in using a gadget will result in a fuller experience and such will make the user feel more gratified and will boost his self-esteem. The down-side is that a bigger expectation towards an experience will yield a greater depression as well for the user. This fact makes an interesting concept to study regarding an immersive audience and a dynamic journalism towards that audience. Due to the nature of the medium, mass-media needs to understand it has a greater role in educating and informing the public, although the public can be also be a creator of media, without having such a responsibility in creating educational and informational content. The vast majority of content created is for recreational purposes, even though their nature could imply a degree of knowledge to be accessed, the creators during their first steps towards a finished product will try to deliver an entertaining result.

Trying to summarize the existence of augmented reality, I would refer to the enhancements brought by humans towards their own goal of reaching a bigger usage of information and having a more connected experience between themselves. This makes for an interesting landscape for mass-media companies, for the big technology companies and for the researchers who will have a new way of understanding how people interact in the presence of technology and how this influences their message, their reaction to the message and how their creativity is being pushed further and further towards something never before seen. Until virtual reality surpasses augmented reality. Then it will be another challenge to pursue and study.

(Convington 2006, 35) explains how in the digital era, where all start and end up into a digital interface such as web-sites varying from the classical html page where your only presence is that of a reader, way up to the dynamic web-sites that allow your thoughts to be displayed and read by the masses, either by text, by photos, by videos. The manner in which these are produced isn't as important as the messages itself. Being a digital era, information must travel must and must be present as fast as possible to the consumer. The digital aspect determines that a culture is formed following the structure

of a digital environment, and afterwards it's development in more specific structures for a certain means of transmitting information, be it radio, TV, online, press. The end product is that this kind of culture is mostly like the pop-culture or the hippie culture when the digital didn't have such a strong presence in society.

To underline the existence of the digital concept in correlation with a culture and day to day practices, over 95% of the information broadcasted and received are by strictly digital or have started from ones and zeros. And in the good old days, what was touchable was considered healthier because you knew for a fact that it existed. Now, paper money translates into plastic cards, salaries are bank accounts, our tax forms which were written on thousands of sheets of paper are now just pages of internet with small filling areas with a YES or NO. And the list can go on endlessly in explaining how 3000 years of history can be summed up in the last 5 to 10 years in the digital form. And the most convincing argument that supports digital cultures is related to the invention, development and naturalization in the human culture, in the collective thinking of the user and consumer of information of the social networking sites, of the new-media theories and of the practices of new-media. The internet and its welfare for humanity.

(Ford 2006, 48) mentions „to speak of the digital is to call up, metonymically, the whole panoply of virtual simulacra, instantaneous communication, ubiquitous media and global connectivity that constitutes much of our contemporary experience. It is to allude to the vast range of applications and media forms that digital technology has made possible, including virtual reality, digital special effects, digital film, digital television, electronic music, computer games, multimedia, the internet, the world wide web, digital telephony and wireless application protocol, as well as the various cultural and artistic responses to the ubiquity of digital technology, such as Cyberpunk novels and films, Techno and post-pop music, the new typography, and so on." The link between the digital and the human culture is easily understandable in the environments where culture emerge from social structures that developed in the course of evolution of a certain technology or media concept. Until technology as we know it appeared, popular cultures, social cultures were based exclusively on direct communication, afterwards a bit superficial through the means of the printing press that made communication and broadcasting information more efficient and be transmitted far and wide. Know, people from the same city, sometimes from the same flat of apartments, use digital structures: chat, e-mail, telephone to communicate an idea, a status quo, a thought, and a communicational situation with social implications.

(Chapman 2009, 24) states even more, the social networking systems, which depend on the technological development for their evolution of fundamental social structures following the saying: Sharing is caring. The population active in the digital environment creates pseudonyms to create themselves a virtual existence. For those who take part from these social structures before the advent of new-media technology or trends in social media, the avatar and pseudonym are just as valid as the iron mask or the ball mask worn by those in the classical age. Your quasi-existence on digital form still has a very real background or mimics the real life as much as possible. And this makes your presence very solid of flimsy as a deck of cards. The internet grants you limitless powers but also grants people that like or dislike you, people you follow or follow you back and people you search to correlate your thoughts with theirs, just as you would do in real life. Virtual people still have a real background and although your virtual presence is somewhat to blame for your lack of real presence, in the digital media, if you don't exist on the internet, you hardly exist in real life.

I lean to think that although studies like these are a great help for mass-media, sometimes the education of the audience isn't that important as is the sodomization if the audience. The transformation of written publications into instruments of intellectual torture, broadcasting cheap values or people with money and little or no moral values and moving away from relating to the public to emphasize the last drops of real values that exist in humanity. When speaking about television, things are even more atrocious, the entire world displayed as a cheap performance, more and more vulgar, more and more filled with non-values become sensations instead of broadcasting news that have a real value attached to them. When speaking about the online, anthropology could become a social science that studies the habits of consuming mass-media in the virtual realm. How you communicate and how you relate to someone has to do more with how much technology you use and how much you accept that technology has become a part of your life just like breathing. Each individual has an open-mind regarding technology, but the social structures exist because the individual is deindividualized. You become the mass and you are absorbed by the mass unless you become a gravitational center for others.

Definition of virtual reality

According to the Merriam-Webster online dictionary[2], virtual reality can be defined as an artificial environment that is experienced by the user using sensory stimuli, especially sight and sound, with the help of a computer and a headset that ensure immersion in the world that is being shown to the user. To some extent, virtual reality is both the technology and the principle that stands when it comes to an environment built by a computer with the purpose of immersing a person into a particular scenario.

(Papagiannis 2017, 36) points out a difference between virtual reality and augmented reality, regarding the point of view of the user, because due to headset he must wear to experience virtual reality, his point of view will be limited and decided by the images he receives through the headset. This makes for a compelling argument towards immersion that virtual reality has and how gamers in general want this kind of immersion to experience a greater understanding of their game. Before virtual reality was being used in games, it was used to block pain by focusing the attention of the user towards the images he received. Having a conscious and undivided attention due to the headset, the user could have less pain receptors firing him information about a certain pain he may have. This is important to mention, the pain aspect, because more virtual reality systems offer also digital tactility, or haptic feedback, and if the user could choose to, it can simulate a small degree of pain he may suffer within a game.

The fact that a complete attention towards the game makes the pain signals weaker helps in medical studies, but also it can make the creators of virtual reality systems more confident in offering another sensorial stimulus to the user to such an extent that it makes the experience much more immersive than using the classical attributes of sight and sound. One test on how users react to haptic feedback is included in the products built by Apple, which offer a haptic motor in their devices for a digital response when the screen needs to stimulate a touch from the user. It is the case for the home button, the trackpad and the digital crown in its line of devices that make the user aware of a response from a device he is using, other than audio-visual cues that he was used to before the introduction of this system of ensuring the user has the complete confidence in his input towards the device.

[2] https://www.merriam-webster.com/dictionary/virtual%20reality

With the body being used to haptic feedback, virtual reality systems could implement a module so the user can walk and so, ensure the game is being as realistic as possible, although the user is trying to immerse himself in a reality completely different from the one he wants to escape and unwind.

A distinction between virtual reality and 360 video must be made. One can include the other, but not the other way around. Although cameras capable recording video in full 360 degrees create a virtual reality for the user, this aspect is misleading because the reality is only surrounding the user when he watches with the same headset he watches a computer-generated virtual reality environment. This confusion is due to the fact that reality has been warped into more and more complex scenarios and anything that makes you interact with what you have filmed or with what you are watching makes it virtual. But this is not an accurate depiction of what virtual reality is, because the headset in question is linked to a powerful computer necessary to display a virtual reality that is generated and build from scratch in a virtual environment.

It can be at the bottom of the see, at the time of dinosaurs or in the distant future among the stars, whatever the developer chose to create. Or, even more simply, what game will be developed fully in the virtual reality system. Because this is being transformed into something to catch the gamers in playing games that have been adapted to make use of the power of technology evolving to suit the needs of those reaching towards complete immersion. 360-degree video doesn't need a powerful computer to run, it can be displayed on the screen of a smartphone and with the help of the human brain that sees stereoscopic, the images will appear to be all around the field of view of the user watching the content through the goggles that house the smartphone. This fine distinction makes this term of virtual reality a very sensitive one for those who want to market themselves like virtual reality systems and being nothing more than 360 video and a cheap VR goggle.

Fig. 3 Virtual Reality immersive system

Another aspect that ensures a clear separation between virtual reality and 360 video is the sound. It's very hard to publish surround sound on YouTube that takes into account the movement of the head and the direction of movement of the user. Because 360 video is static, even though it follows the movement of the head. The sound is stereo, because it is very hard to manipulate sound once it has been exported. But virtual reality systems, creating environments, have this luxury and make it a necessity. Players that have headphones with surround sound capabilities can attest of the importance in

knowing the direction of a particular sound to react accordingly. When participating in a virtual environment and having the expectation to be fully immersed, you need to obey at least a law of physics that our body considers vital. Our head moves in the direction it hears a sound, well before it sees something. Movies done with this in mind been exported with spatial sound cues that guide the viewer into predefined locations in the movie, so it can match the movement with the intensity of the sound. This detail of spatiality of sound steers the attention of the user through a story narrative so it can react how it should by hearing sounds like he would in real life.

Practical usage of virtual reality

After tackling the technological challenges that are needed to be resolved for a proper immersive experience, we need to see the uses of virtual reality, not only as a breakthrough in technology, but also as a medium to tell stories that can't be told in other manners. Afterall, if games can be played in a fully immersed way, there isn't a reason to think that news and stories derived from news can't be consumed in a new way, to make the audience engaged and active in being surrounded by the subject they are interested in watching a story about.

As it is stated by (Lugmayr 2016, 262) in the IAB Report[3], the year 2016 can be considered a historic year because virtual reality started to achieve mass scale; the Virtual Reality experience that was reserved for gaming enthusiasts is now enabled on a daily basis to all mobile and computer users. There is still an ongoing debate on clarifying the definition of virtual reality. The main differentiation in explaining VR and other similar, but not the same terms that appear, such as augmented reality, interactive reality, and mixed reality lies in immersion, or even better to say in the level of immersion. The definition of immersion is wide and variable, but at its core it means to become or make somebody completely involved in something, and in the virtual reality context it is an experience that allows the user to interact and gives a sense of presence in an unreal/alternative environment.

Our experience of presence depends, in part, on notions of physical immersion in artificial space. Depending on the virtual reality application, several degrees of physical immersion can be imagined:

presence, or visual immersion: visual observation through a virtual reality headset (without the user's hands represented), head-tracked motion alone creates interaction. This is the kind of presence felt in 360-degree video and virtual reality applications simply meant to provide place or product observation, as in industrial project reviews. But such applications are generally seen in large screen environments and rarely via a virtual reality headset;

Presence, or semi-physical immersion: users wearing virtual reality headset see virtual representations of their hands, which can be used to grasp objects; it is a more immersive virtual environment experience, some might argue. Semi-physical immersion is also possible without a virtual reality headset. For example, observers can see their actual hands through a semi-transparent screen, placed directly opposite them at chest level, on to which virtual objects are projected in stereopsis. The users' hands are tracked to allow object manipulation.

Presence, or full physical immersion: a virtual reality headset is worn to create a sense of presence and immersion. The user's body needs to be visually represented its entirety; it can make free use of all of its members. This type of immersion requires the

[3]https://www.iab.com/wp-content/uploads/2016/04/IAB_Internet_Advertising_Revenue_Report_FY_2016.pdf

user's hands and feet to be tracked. Here, too, virtual reality headsets are not a prerequisite. For example, the user can be immersed in a CAVE, which allows the entire body to be present naturally. This is the CAVE's primary advantage over the virtual reality headset, the second advantage being its higher image resolution, which is unmatched by current virtual reality headsets. But can we speak of "total immersion'' simply because VR headsets are being used? To do so, a minimum of three conditions must be met:

1. The representation of the subject's body in the virtual environment must be appropriately rendered in real time;
2. The sense of visual immersion must be total, requiring the field of view of the virtual reality headset to match that of the immersed participant;
3. The virtual environment must spatially correspond to the real environment to ensure the accessing of the subject's proprioceptive sensations (muscular and kinesthetic). Only thus can a sensory experience of a coherent environment be delivered, one merging the virtual environment and the real environment – the participant's body being physically present in the real environment, of course! But to better understand this last condition, we must take a closer look at our so-called five senses, of which, as mentioned earlier, there are more than five. This is the subject of the following chapter. Past and on-going studies have looked at the philosophical, psychological and technical aspects of the sense of presence.

Immersive storytelling through virtual reality

(Lugmayr 2016, 280) defines "immersive journalism as production of news in a form in which people can gain first-person experiences of the events or situation described in news stories, and the fundamental idea of it is to allow the participant to actually enter a virtually recreated scenario representing the news story. The sense of presence obtained through an immersive system affords the participant unprecedented access to the sights and sounds, and possibly feelings and emotions, that accompany the news." (Philips 2015, 143) in her book about virtual reality in journalism explains that virtual reality as an emerging medium presents new technical and narrative forms, and at the same time raises questions on the relationship and position of journalists and audience. Users now have control over what, in a scene, they'll pay attention to, but journalists still decide how they will construct the story. It changes how audiences engage with journalism, bringing them into stories in a visceral, experiential manner that creates a feeling that a user is really "there", so-called social presence, which strengthens the empathy for the subject much more than it was possible in other media.

While the concept of mixed reality is best expressed in the real-virtual continuum, (Louis Johnson 2010, 16) which proposes a classification system for interfaces, going from reality to virtual reality, via the intermediate states of augmented reality and augmented virtual-reality, it must be emphasized that the concept of reality has a very specific meaning for these authors. In effect, (Severin 2009, 36) sees reality here not as "natural reality", but a mediatized representation of this reality: the perceived reality with which the subject interacts is an image of reality, which may be augmented using virtual elements. The presupposition that the author hold is that being captured through a camera neither augments nor diminishes reality but simply represents it in the form of an image, mainly visual and auditory, using an interface. This presupposition is not deliberately an epistemological one, it is the direct consequence of the purpose of the contribution that the authors wish to make without reflecting on the relevance of reducing reality to its mediatized representation in an

image. This contribution falls within a technical and, in this case, taxonomic approach to the real-virtual continuum.

And this approach is the reason that the author does not examine the question of presence, even though it may have implications for their model relative to the subject's experience. Thus, how can you confine the real environment and the virtual environment to two extremes of a continuum if the interfaces only differ in degrees? In other words, how can you not study the concept of presence if the binary (real vs. virtual) is actually more of a continuum? That is, there are only differences in degrees, but they are not completely contradictory concepts.

Virtual reality according to (Papagiannis 2017, 90) requires three real features: real-time rendering with viewpoint changes as head moves, real space, either concrete or abstract 3D virtual environments, and real interaction, possible direct manipulation of virtual objects. This definition is helpful since it distinguishes virtual reality from other forms of interactive virtual environments. In particular, the first aspect of head-coupled perspective rendering provides an immersive or semi-immersive experience. Such immersive virtual environments seek to invoke a place illusion, having the impression of being in a real place, as well as plausibility illusion, having the sensation that the scenario being depicted is actually occurring. Those illusions occur despite the fact that the user is aware that the virtual environment is only a simulation. Furthermore, the combination of place and plausibility illusions often induces physical reactions. For instance, people tend to show increased heart rate or nervous sweating when they experience stressful situations in the virtual environment. The notion of an interactive virtual environment according to (Lugmayr 2016, 71), which is indistinguishable from the real world, has been addressed repeatedly in science fiction arts, literature, and films ranging from Plato's Allegory of the Cave from the ancient world to several science fiction movies from the modern era like "The Matrix", "Surrogates", "Avatar", or "World on a Wire". These are just some prominent examples of fictional works, which play with this perceptual ambiguity, and constantly question whether our perceptions of reality are real or not.

The future of virtual reality

The first 15 years according to (Philips 2015, 104) of the twenty-first century have shown exponential advancements in the field of virtual reality. Computers, in particular, mobile technologies, have dominated our lives because of their power, relatively low costs and small form factor. The raise and ubiquity of smartphones have enabled a generation of lightweight and practical virtual reality devices and have led to a resurgence of the interest in virtual reality. Today's principal main components of smartphones such as high-density display panels, gyroscopes, or accelerometers are built in most devices. This is one of the main reasons that virtual reality technology costs only a fraction of the price of virtual reality machines in the early 1990s. Moreover, the video game industry has continued to drive the development of consumer virtual reality. Depth sensing cameras, motion controllers and natural user interfaces are on the edge of becoming the standard way of modern computer interfaces.

Regarding these advancements, it seems clear that 2016 was a key year in the VR industry. Some high-end virtual reality headsets and multiple other consumer devices for input/output have come to market. Among them, there is the first consumer Oculus Rift developed by Oculus VR. Palmer Freeman Luckey, the founder of Oculus VR, worked as an engineer at MxR as part of a design team for cost effective virtual reality. Luckey developed a series of different HMD prototypes and posted regular updates on his work on a virtual reality enthusiast forum-based website. 4 One of the

latest units was named the Rift, which was intended to be sold as a do-it-yourself kit on the Kickstarter crowdfunding website. Oculus VR was started in order to facilitate the Kickstarter campaign.

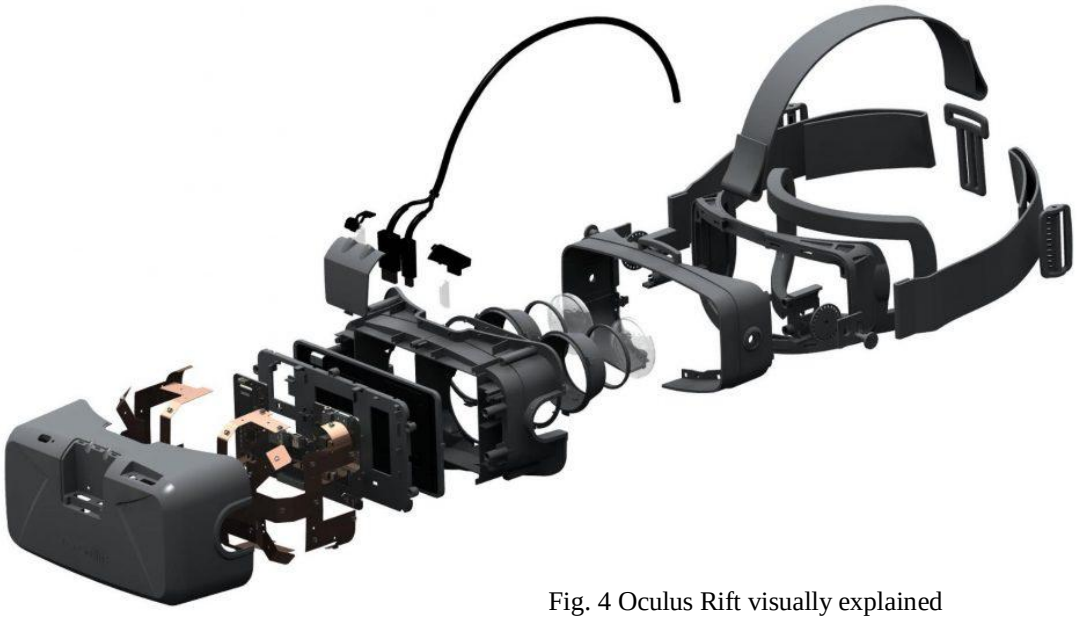

Fig. 4 Oculus Rift visually explained

During its period as an independent company, Oculus VR raised US$2.4 million for the development of the Rift. On March 25,2014, social media giant Facebook bought Oculus VR for US$2.3 billion. Certainly, this is an incredible vote of confidence, which underlines the global interest in this immersive virtual reality technology. When the Oculus Rift was released in 2016 it was already competing with products from Valve corporation and HTC, Microsoft, as well as Sony Computer Entertainment. But other companies like Google and Samsung have released VR products essentially based on smartphones such as Google Cardboard or Samsung's Gear VR, which are do-it-yourself and mass-produced headsets, respectively, that use a smartphone as VR device. Many other enterprises will follow these new virtual reality heavyweights. In numerous media appearance, 2016 is referred to as "the year of virtual reality". Many of the VR enthusiasts are confident that this time the technology will answer the unfulfilled promises made in the 1990s.

Conclusions

Although both of these technologies have been present for more than two decades, it's with the rapid increase in computational power and internet bandwidth, that the companies involved in delivering mobile products or services related to mobile gadgets have taken an interest in developing and sustaining a new market, that of augmented reality applications with smartphones capable in running them and that of virtual reality headsets with games created to take full advantage of the hardware on which they run. This in turn creates new experiences for the users, undocumented processes that need to be fully studied in order to understand the magnitude in which the change of behavior and media consumption habits will affect the industry of mass-media. For now, journalism is making small steps towards implementing aspects of augmented reality or virtual reality into their storytelling campaigns. Even though the

audience is prepared to embrace technology and how it can tell new types of stories, that particular audience isn't the one making money for the publications. It's the audience that will create in turn their own stories when it reaches a level of maturity worthy of being noticed by the mass-media outlets. For now, vloggers and online gurus have the upper hand when it comes with experimenting and taking risks in telling a new type of story through a completely new immersive medium.

Another key aspect to consider is how the big technology companies will use these two new mediums to tell their stories and divert the attention from mass-media towards their own platforms, increasing the chances of a bankruptcy in the media, not for the foreseeable future, but surely when it is time to address the audience in a more engaging manner than journalism is doing today. Long form storytelling is compelling to read and a better freedom in creating video features makes for some viral videos, but the newer audience, the one that is putting cat eyes or is using emojis to convey a message instead of speaking are waiting for the next big thing. If not for the advent of Snapchat and the augmented reality layers it uses, which were copied by Facebook, the social media landscape would have been boring and stale. Thanks to the innovative thinking of companies to keep their audiences engaged, we have uses for a medium that awaits new ways to enhance the story. As for virtual reality, it has never been simpler to create in real-life likeness a past event to better explain to the audience what happened. The only downfall is that technology has to keep up with the entire population, not just with those who are tech-savvy or those who can afford to live in the future. Until then, journalism is pacing as it should, telling stories and fighting the post-truth dilemma.

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