



Storytelling in the Digital Age: How It Came to be and what should or Should Not Be Done

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Abstract

Background and Aims: This research focuses on the importance of storytelling in a digital world where telling stories has become paramount to engaging an audience. Whether the aim is to get the listener or reader to adhere to an ecological or scientific cause, or to prompt a purchase for marketing purposes. This paper highlights the evolution of storytelling, from its theorization in the 90s to the present day. How, through storytelling, one can influence audience engagement and win their support. It will also bring to light how digital storytelling can be misleading through trailers, ads, or stories. It's important to remember that it's a means of communication. We need to emphasize the importance of theory in correlating the impact of the use and application of storytelling in many areas of our daily lives, including entertainment but also in a professional environment.

Methodology: We conducted a systematic review of scholarly articles, books, and firsthand accounts published since the 1990s, focusing on the evolution and impact of storytelling. We focused on experts in their fields, favoring a qualitative rather than quantitative approach. We've selected authors such as Carmine Gallo, keynote speaker and bestselling author of *Talk like TED*, or Annette Simmons, author of several books on storytelling.

Results: Our analysis revealed a variety of storytelling methods across platforms, each effective in its context based on audience engagement and narrative authenticity. The takeaway is that the only variable determining successful storytelling is the accuracy of the story being told.

Conclusion: The research highlights that storytelling is broadly used nowadays, in a lot of different ways. The research suggests that successful storytelling hinges on a genuine narrative and audience relevance. This underscores the importance of strategically aligning narratives with communication goals.

Keywords: Digital Storytelling; Narrative Impact; Narrative Communication; Storytelling





Introduction

In the past decades, we have entered an era in which everything we are exposed to is powered by storytelling. Storytelling is everywhere, from the ad campaigns you see in public transport; Patrice Georget, Senior Lecturer in Psychosociology, points out that "*62% declare that humorous advertisements are the most effective in terms of persuasion*" (Georget, 2004). The reels or stories you find on TikTok; to the trailer that gets you hyped for the next big movie that pops up on your computer, all of it is based on the concept of storytelling. We are poised to demonstrate the existence of a scientific basis underlying our inherent inclination toward narratives. This paper will explore how different scientific principles, such as psychology or neuroscience, can explain why storytelling is so effective. For instance, after a comprehensive two-year examination of 108 Super Bowl commercials, researchers at Johns Hopkins University have identified a correlation between the narrative structure of advertisements and their effectiveness in engaging audiences. The publication in *The Journal of Marketing Theory and Practice* by Quesenberry and Coolsen delves into the significance of plot development in commercial content, revealing that regardless of the specific themes or features utilized, the structural elements of storytelling play a pivotal role in determining the success of advertising campaigns (Quesenberry & Coolsen, 2014). This study underscores the enduring appeal of narratives in capturing consumers' attention and driving brand engagement. This link was also highlighted by neuroeconomist Paul Zak in one of his scientific studies. This article aims to highlight the evolution of storytelling, but above all to show, through numerous neuroscientific and psychological studies, the importance of storytelling and, above all, of maintaining veracity in storytelling, particularly since the advent of social networks. We'll be mentioning the term "storytelling" several times. This means the art of telling a story by adding emotion. The use of the term "efficiency" refers to storytelling's ability to evoke emotion in others as they read or listen to it. To understand, in a concrete and therefore scientific way, which parts of our brain light up when we are exposed to a story full of storytelling, means enabling everyone to understand what makes us vibrate with emotion, but also to adhere to concepts or ideas that up until now were foreign to us. It is understandable to think that it is impossible to scientifically prove the power and weight that a story can carry. There are, however, scientific components to storytelling in addition to the literary ones. Understanding them could help us design better marketing campaigns, create more effective educational materials, or craft even more engaging entertainment. In addition to studying our brain's reactions to storytelling, we'll also look at the





different hormones involved and their levels present in the body. We aim to show the importance of storytelling in helping people understand ecological or humanitarian causes, but above all to demonstrate that it is possible to prove the neurological impact of a story.

Objectives

We aim to point out that, we discover that storytelling is present in many aspects of our environment. Mainly in communication and entertainment but it is also rooted in management, politics, and the army. It is pertinent to be aware of its emergence and how storytelling has invaded and taken possession of our lives and means. This article aims to make a useful connection between the neurological impact of stories and the psychological effects of storytelling.

Literature Review

Man has been telling stories, always and continuously, since homo became sapiens. Imagination and fiction are not mere attributes of the species but constitute its very presence in the world. A unique faculty, guarantor of cultural treasures, but which distances it from this stranger known as reality. Joseph Henrich highlights in his essay Collective Intelligence the importance of cultural transmission in the destiny of Homo Sapiens. This transmission can be found in different species but the use of myth, tale, or narrative is man's very own creation. However, it is important to distinguish between stories that can be imaginative, highlighting our ability to romanticize, and storytelling, which takes root in its authenticity. Psychologists Fritz Heider and Marianne Simmel proved this by conducting an experiment consisting of showing a very simple film with two triangles, a circle, and a large square, interacting with each other for ten seconds. After the viewing, each participant had to explain what they had seen through a story, attributing intentions to a simple random sequence of abstract symbols. The emergence of storytelling is a much more recent notion that possesses the possibility of using all the tools available to the story while seeking to take its essence in the life experience of an actual individual. To be interested in storytelling is to understand a new means of communication and marketing.

What is storytelling? Patrice Bollon, a French writer and journalist, describes it as a communication tool that originated in the United States in the 90s. To understand storytelling,





we must differentiate it from other forms of communication. It is defined, first and foremost, by its structure. Built like a tale, the story is told in a way to provoke a certain emotion that will, in time, make people adhere to it. Is it therefore no wonder politics and marketing quickly grabbed onto the concept?

Grammatically speaking, storytelling is a noun as well as an adjective. It is defined as “*A political, marketing or managerial communication technique that consists in promoting an idea, a product, a brand, etc., through the story we make to attract attention, seduce and convince by emotion rather than by argumentation*”. It is in essence, the art of telling a story and magnifying its content to touch an audience. This calls for emotion instead of reason. A spreadsheet filled with accurate data won’t inspire anyone, whereas bringing emotions to a topic will add value to the words, maybe even a soul, and keep the audience’s attention. Storytelling also takes root in psychological narration. Theodore Roy Sarbin, an American psychologist, introduced the term “narrative psychology” in his 1986 book *Narrative Psychology: The Historical Nature of Human Behavior*. It consists in articulating life experiences in a meaningful way. It allows an individual’s life to be part of his or her identity, but above all to find the right angle this individual can use for their story.

We can also speak of narrative communication. To appeal to emotion is to decide to rely on our feelings, on something intangible in comparison to reason: instinct. It’s putting forward who we are and how we present it to our audience. It is also interesting to look at the different archetypes of personality. An archetype of personality is a primordial psychological model conceptualized by psychiatrist Carl Gustav Jung. They are universal models that embody our unconscious motivations and behaviors. The 12 archetypes of Jung represent the great tendencies of the human psyche. Jung developed his psychoanalytic approach known as "analytical psychology". The 4 main archetypes are as follows :

1. The Persona represents how we present ourselves to society, and the world;
2. The Animus or anima is the male or female representation that everyone can have within the psyche of the opposite sex. It represents the "true self" in comparison to the persona archetype;
3. The Self represents the conscious and the unconscious in each of us, it is often represented as a circle with a point in the middle, the point represents our ego



4. The Shadow is one of the archetypes that are part of the unconscious. It consists of everything that is considered by society and by ourselves as reprehensible (lust, hatred, jealousy, etc.)

There are still 8 different archetypes divided into four main families of values. They evoke each of the attributes and a repository of distinct values:

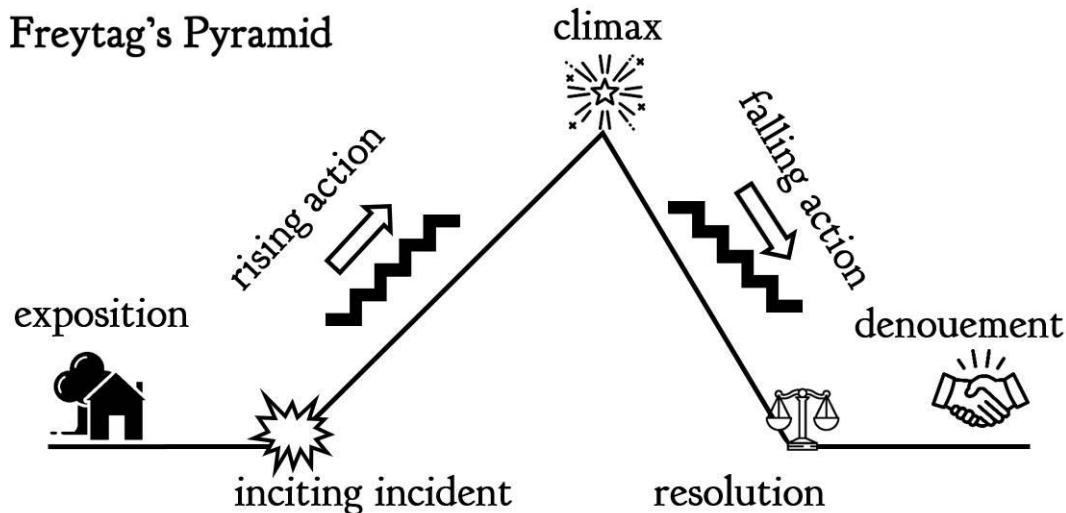
- Adventurers embody the values of freedom and discovery. They push the limits of knowledge and are in search of notions such as happiness or spirituality. They include, for example, Google, Patagonia, Jeep, The North Face, National Geographic, etc.
- Builders refer to social value as well as success. They are the architects who make our society work. They include LEGO, Rolex, IBM, Dyson, etc.
- Connectors are social archetypes, they evoke the social bond, the connection to others. They include, for example, Haagen-Dazs, IKEA, Taco Bell, eBay, M&Ms, etc.
- Impactors are archetypes that chart new paths and leave a deep mark on the world. Apple, Nike, Harley Davidson, TagHeuer, TEDx, etc.

This principle is often adopted in marketing strategy and storytelling by brands to successfully reach their audience. Archetypal analysis encourages original and disruptive thinking. It also makes it possible to understand that they are the stories that will resonate in each of us, unconsciously.

In his book published in 2007 "*Storytelling, the machine for making stories and shaping minds*", French researcher Christian Salmon (2023) focuses on these new uses of narrative communication. According to him, storytelling is reserved for marketing, politics, the army, and management. Almost twenty years later, storytelling has grown present in every branch of communication and entertainment, as well as through celebrities or companies. It has become a fundamental pillar of communication. However, Salmon does not put forward nor raise the idea that storytelling could, in entertainment, have the same limitations it raises for its use in politics. While also using concepts borrowed from psychology, storytelling takes shape and brings together several concepts to resonate even stronger. What are the limits? Are we able to resist a story that is meant to seem irresistible to us?

Gustav Freytag, a Russian writer and editor, speaks of a narrative ark. The exposition of the situation in the beginning, the action coming in, the climax all the importance it holds, and the resolution. The story begins with a new environment brought about by a problem, usually the product of a fear or a trauma the character has to overcome. A series of events occur at an

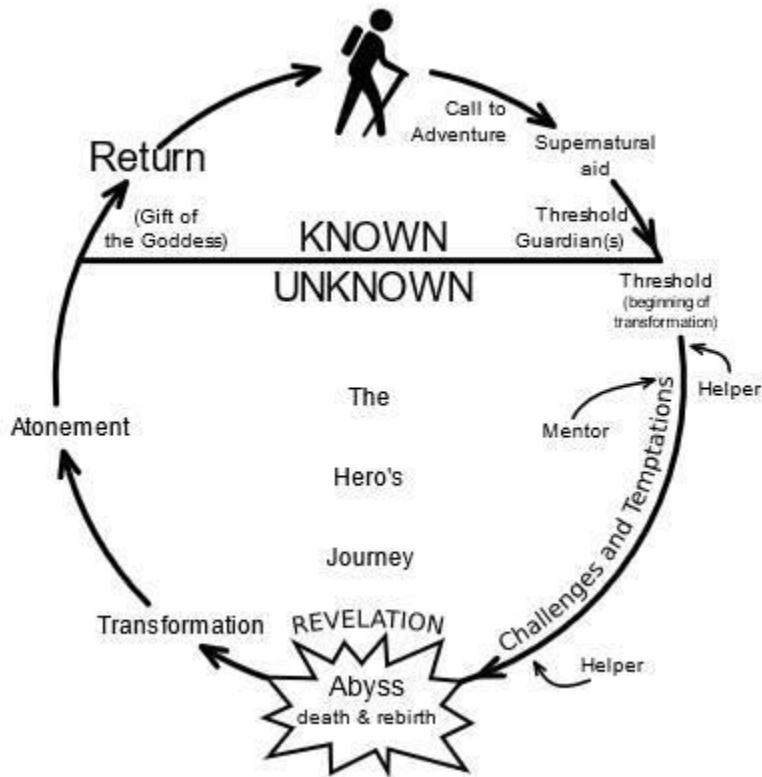
accelerating pace to reach a moment of paroxysm. Only at that moment does the character realize he has to look inside himself to defeat his last ordeal. This moment, Deus Ex Machina is the climax of the story, during which the character is forever changed. After this transformation, the story pretty much resolves itself.



Source: <https://rookreading.com/2018/08/12/story-structure/>

Let's use Lord of the Rings as an example.

In the beginning of the story, Frodo is shown living a peaceful life and the problem arises with his discovery of Sauron's ring of power. He and his companions leave their home, the Shire, the trials and adventures get in their way and the more Frodo approaches his final destination, Mordor, the harder it becomes for him. With the weight of the ring and the physical and psychological injuries he suffers, we can see that his condition is getting worse as his journey goes on. It is only at the time of the destruction of the ring that he is miraculously rescued, still alive, and the story resolves itself. We can also refer to the concept of the monomyth that was advanced by Joseph Campbell in the 1940s.



Source: Wikipedia (public domain)

It is a question of theorizing the idea that there has been a common thread in the writing of myths or stories since antiquity in our collective unconscious, which also refers to what the psychologist Jung advanced with the different archetype images cited above.

However, in her book "*The Story Factor*", published in 2000, Annette Simmons (2006) emphasizes the fact that there is no actual recipe for storytelling. According to her, the beauty of it resides in the very fact that every storyteller has his way and there is no right or wrong. The most important thing in storytelling, according to the author, is the veracity of the facts being told. This is the difference between creative writing and storytelling. The story ensuing from creative writing draws its source and its beginning in the imagination and then uses the same tools as the story while the storytelling that we experience nowadays, in the digital age and through social networks, must take its source in the real-life experience of an actual person. This research aims to highlight the usefulness of storytelling as well as the importance of digital storytelling by its ability to convey much more complex messages thanks to its method that relies on the



different sources we cited above. It is interesting to highlight that storytelling can also be used in the education of younger generations.

“The effectiveness of digital storytelling in the classrooms: a comprehensive study” (Smeda et al, 2014) is a study from 2014 that brings forward the importance and relevance of storytelling: « *The impact of new technologies in educational contexts has been mostly positive as new technologies have allowed educators to enhance their knowledge, skills, and therefore enhance the standard of education. Researchers have found that student engagement, achievement, and motivation are enhanced through the integration of such technologies.* »

Conceptual Framework

The research framework makes it possible to create a road map highlighting the three different factors of our analytical approach that come into play for effective and impactful storytelling in the digital age. We are bound to highlight that there is an interdisciplinary link in our research we will explore research on neuroscience, psychology as well as literature related to storytelling. It is the link between these three disciplines and the analytical analysis that we implement that allows us to highlight the impact of storytelling in our lives and in different aspects of our society.

How we tell a story, how we receive it but especially what makes us vibrate and adhere to a real-life story. This is where storytelling comes into play. In the table below, we approach our methodology layer by layer, defining the points we will develop later on.



Narrative Theory: Literary studies use examples or theories from literary studies that show storytelling's pervasiveness and its role in society. Consider ideas like narrative identity, collective memory, or how stories transmit culture.

Identified a correlation between the narrative structure of advertisements and their effectiveness in engaging audiences. Archetype of personality conceptualized by psychiatrist Carl Gustav Jung

Cognitive neuroscience: How stories affect the brain
The presence of specific areas of the brain that light up
Observation of hormones synthesized by the body

Studies have identified oxytocin as the neurotransmitter that allows us to feel empathy. We are also able to bring to light the amount of oxytocin and cortisol involved

Psychology: Emotional engagement and empathy

Universal patterns that embody our unconscious motivations and behaviors - Narrative psychology: to articulate life experiences in a meaningful way

New research from neuroscience within psychology demonstrates leads to which stories are hardwired into human brains

Storytelling's impact in the digital age



Methodology

This research methodology is documentary research integrating three transversal university subjects. We will base our articles on academic papers as well as on works from authors specializing in storytelling, therefore regrouping observations from several specialists. We will integrate theories of world-renowned psychologists as well as psychiatrists such as Theodore Roy Sarbin, Carl Jung, and Joseph Campbell. We also took into account research conducted between 2004 and to present day, which allows us to bring forward the ever-present impact of storytelling. Regarding our neuroscientific approach and how stories impact our brain, we will refer to several studies including the one conducted by neuro-economist Zack (2014), as well as the one from the same year conducted at Johns Hopkins University. This approach allows our research to be based solely on reliable and verifiable sources to gain credibility in the reader's eyes. We intend to bring forward the evolution as well as the abuses we can encounter when looking at storytelling in the digital age. We will discuss the emergence of digital storytelling in the 1990s to understand how it came to be and we will bring to light its evolution over the past decades.

To approach the chosen documents, we opted for a thematic analysis method. We emphasize the fact that each quote or source used in the establishment of this research will be either identified in the paper or rendered available in the reference section.

We intend to create a bridge between the three fields of study - psychology/psychiatry; neuroscience and literature -, to give a comprehensive overview of the current state of storytelling research. It is however crucial to point out that it is hard, almost impossible even, to obtain data from platforms such as Instagram, Facebook, or TikTok. The numbers shown in this study are therefore an estimation built according to the little data accessible.

This article remains an interpretation of academic papers, books, and studies that have been selected. Despite its willingness to remain impartial, we cannot ignore the limitation brought about by a non-exhaustive selection of our sources. It is also necessary to remember that we will analyze and combine data related to the different fields covered (neuroscience, psychology, literature, and marketing), allowing us to emphasize our study's focus: the impact of storytelling in the digital age.



Results

The rise of social media is actively and exponentially spreading storytelling, which raises a couple of questions. What is being told and how? To whom and in what context? Are we more inclined to believe a story or a perception told in a compelling way than actual statistics? What are the limits to storytelling and who is abusing this concept? In a world where we are bombarded by the need to constantly make choices - what refrigerator to buy; which brand to turn to; what to watch on TV -, storytelling is often the trigger that will allow us to make this decisive choice. From a business angle, it can also determine our choice of company, coworkers, and so on. The best example of the rise of social networks is, naturally, TikTok. This social network works on an interest-driven algorithm, meaning it recommends content based on accounts, topics, and hashtags that users engage with. This algorithm leads to the creation of an FYP (For You Page) focused on a user's interests, containing videos usually not longer than 15 seconds. Currently, the number of active TikTok users is 1.7 billion worldwide.

TikTok: Global Average Monthly Active User Base
Global Users across iPhone and Android Phone

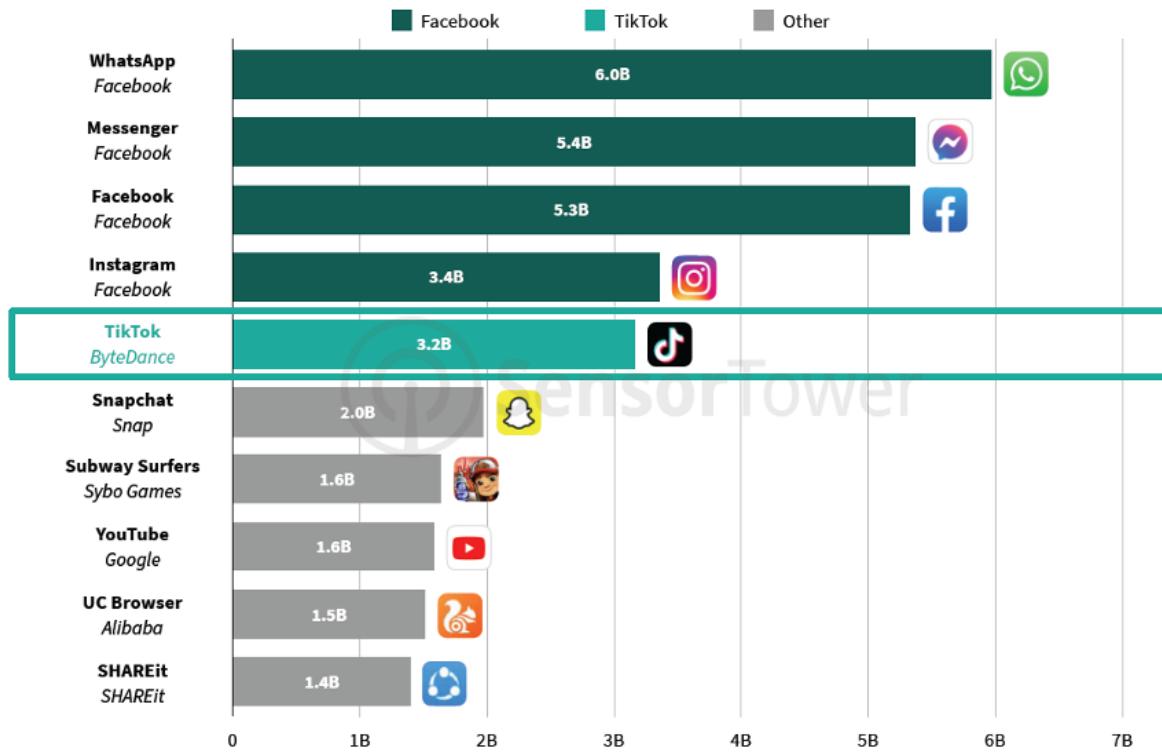


Source: Sensor Tower Store Intelligence Data Digest Q4 2020. Sensor Tower Store Intelligence Data Digest Q3 2021.

TikTok is the first app outside of the Facebook group to reach 3 billion downloads. The other four apps to reach that number of downloads are WhatsApp, Messenger, Facebook, and Instagram. (Ronteau et al., 2022)

TikTok Became the Fifth App to Reach 3 Billion Downloads

Top apps by worldwide downloads between Q1 2014 to Q3 2021, App Store and Google Play



Source: Sensor Tower Store Intelligence Data Digest Q4 2020. Sensor Tower Store Intelligence Data Digest Q3 2021.

Yet, a user named Reesa Teesa made fifty videos of ten minutes each where she tells us her story piece by piece. Each of the fifty videos was seen over a million times. Between the beginning and the end of her videos, meaning between February 14th and 20th, she gained over 3 billion followers. By the end of the month, her account was up to 3,3 billion and is currently, at the beginning of April, up to 3,7 billion.

N.b. : Some of the data were handpicked while others were taken from studies and API platforms.

This goes to show that, when our storytelling is compelling, with drama, twists, and turns, we remain hooked to know the outcome, even if we have to watch over 8 hours of content.

According to an article on Kleiner Perkins, users worldwide spend about 52 minutes a day on TikTok. We notice that there is a need to follow trends and want to have fun above all: dance challenges; beauty, care, or fashion tutorials; tips and advice from everyday life; and even cute or funny animal reels. However, a new trend is starting to emerge: storytime, directly inspired by storytelling, the most interesting thing being that we don't usually come across storytelling on TikTok. In fact, before Reesa Teesa's success, nobody had managed to succeed on the app with storytelling, which is what makes her achievement even more meaningful.

TikTok has the highest engagement rates according to a study of 100,000 user profiles with up to 100,000 followers. (Hudders et al., 2021)

Average Engagement Rate on Instagram, TikTok and Twitter in 2019

We analysed 100.000+ influencer profiles across leading Influencer Marketing Platforms



Source: Influencer Marketing Hub. 2019

And TikTok is not the only platform to be interested in the principle of micro-communities. (Abidin, 2021) The term "micro-community" is to be understood as an online space where we



can meet and communicate with other people who share our interests. Reddit, Discord, or Twitch also follow this model, maintaining a sense of belonging while connecting with other people who share our interests. This raises many other questions: How does it affect people from online communities, namely how they see themselves and how they interact with each other? If we choose to focus on ethics, it becomes relevant to ask who benefits from these online stories and at what cost. We will also be able to answer the questions raised in this research: what kind of stories resonate most with the audience and why? These answers will be provided in the second part of this paper, notably with the research at Princeton, directed by Uri Hasson.

It is also legitimate to ask what the negative effects of online storytelling can be. One of the problems that can be addressed is that a story can go viral around the world as we are no longer limited to its country or language, without having been verified before getting out publicly. Addressing this, the director of the Centre for Research in Media Psychology, Dr. Pamela Rutledge said “*The digital age has only amplified the impact that stories can have, and this is increasingly recognized in higher education, as well as the impact it can have on students, institutions and even society in general.*”(Rutledge, 2023).

How to deal with misinformation on social networks? It is currently the author’s responsibility to pay attention to the authenticity of their speech, as well as privacy issues when talking about someone other than themselves. It is important to take into account that storytelling can also be used to propagate conspiracy theories because, when we are emotionally caught in a story, we tend to focus less on the facts. That being said, no link has yet been made to any negative impact on mental health. Storytelling in the digital age is expanding. It is a way to continue to use an ancestral means of transmission with the new modern tools inherent to our century. This study will not answer all of our questions about storytelling in the digital age but will allow us to bring forward new questions about its management and limitations that can be expected in the future. There is yet to find new methodology or theoretical frameworks that could be used.

There are ways to scientifically study our reactions when we listen, read, or watch a story that captures our attention. We can examine our body’s reactions, but also see the areas of our brain that light up when we feel emotions regarding a specific subject (captivated, moved,





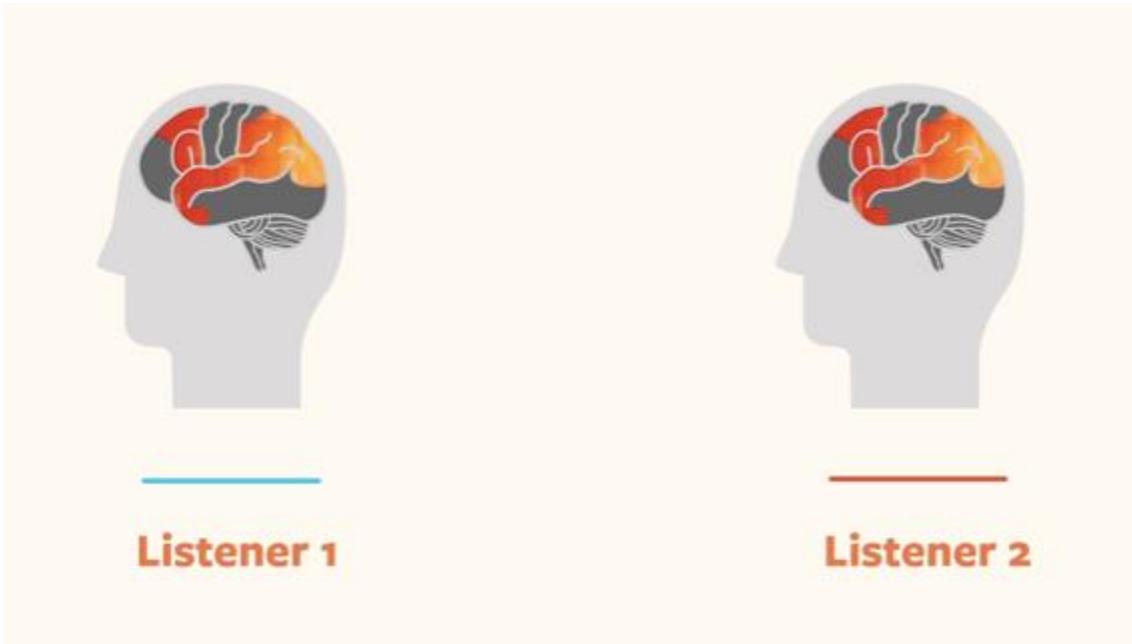
interested, etc.). We briefly mentioned the study conducted at Johns Hopkins University by Keith A.Quesenberry and his research partner Michael K.Coolsen. The two-year-long study examined 108 advertisements aired during the Super Bowl with a particular focus on brands that use celebrities or animals. It was published in *The Journal of Marketing Theory and Practice*. A correlation was established between the narrative structure, present in various advertisements, and its effectiveness on the public through the audience. Looking at it in more detail, we understand that whatever subject is addressed in advertising, it is the structure set up by storytelling that plays a key role in the success of the advertising campaign (Yelkur et al, 2004). The study highlighted that keeping in mind the importance of the narrative structure, the viewer's attention is captured in addition to creating engagement for brands. It was discovered that whatever content was offered in the advertisement, the storytelling's structure, and the study of it made it possible to predict the ads that would get the best results. Keith A. Quesenberry explained that "*People are attracted to stories [...] because we're social creatures and we relate to other people.*"(Quesenberry & Coolsen, 2014)

To tell a story is to put a part of yourself in it, storytelling is personal, and it is the level of intimacy that you build that allows you to connect with your audience. Connecting with your audience is creating an emotional link with them by, naturally, speaking to specific areas of their brain. This area corresponds to the ability to infer and represent another person's mental state. It's called Neural substrates for theory of mind. It is also known as the capacity of the brain to construct a map of other people's intentions. In a research published in 2018 by McMaster University (2018), we find out that: "*Researchers found that no matter what form of storytelling the participants used, the brain networks that were activated were the "theory-of-the-mind" network, which is affected by the character's intentions, motivations, beliefs, emotions and actions*"(Donovan, 2018). This brings us to question our ability to be manipulated by a story.

Another research was conducted by neuroscientist Uri Hasson at Princeton University and published in October 2014. A lot of his work is based on the neurological basis of human communication and storytelling. He explains that: "*Storytelling—an ancient way for humans to share individual experiences with others—has been found to induce neural synchronization among listeners. In our exploration of the dynamic fluctuations in listener-listener (LL) coupling*



throughout stories, we uncover a significant correlation between LL and lag-speaker-listener (lag-SL) couplings over time" and also "This study delves into how the storyteller guides the audience through the multi-dimensional space of brain states, reflected in a series of shared activation patterns. We reveal that the listeners follow along the trajectory outlined by the speaker's brain activity moments before, forming a tighter cluster at the more engaging moments of the story" (Chang et al, 2024).).



MRI shows similar brain activity in two people listening to the same real-life story.

"When pedagogy blends with meaning, telling a story can enlighten us, make us understand and make our minds «take off» (Bordeau, 2008).

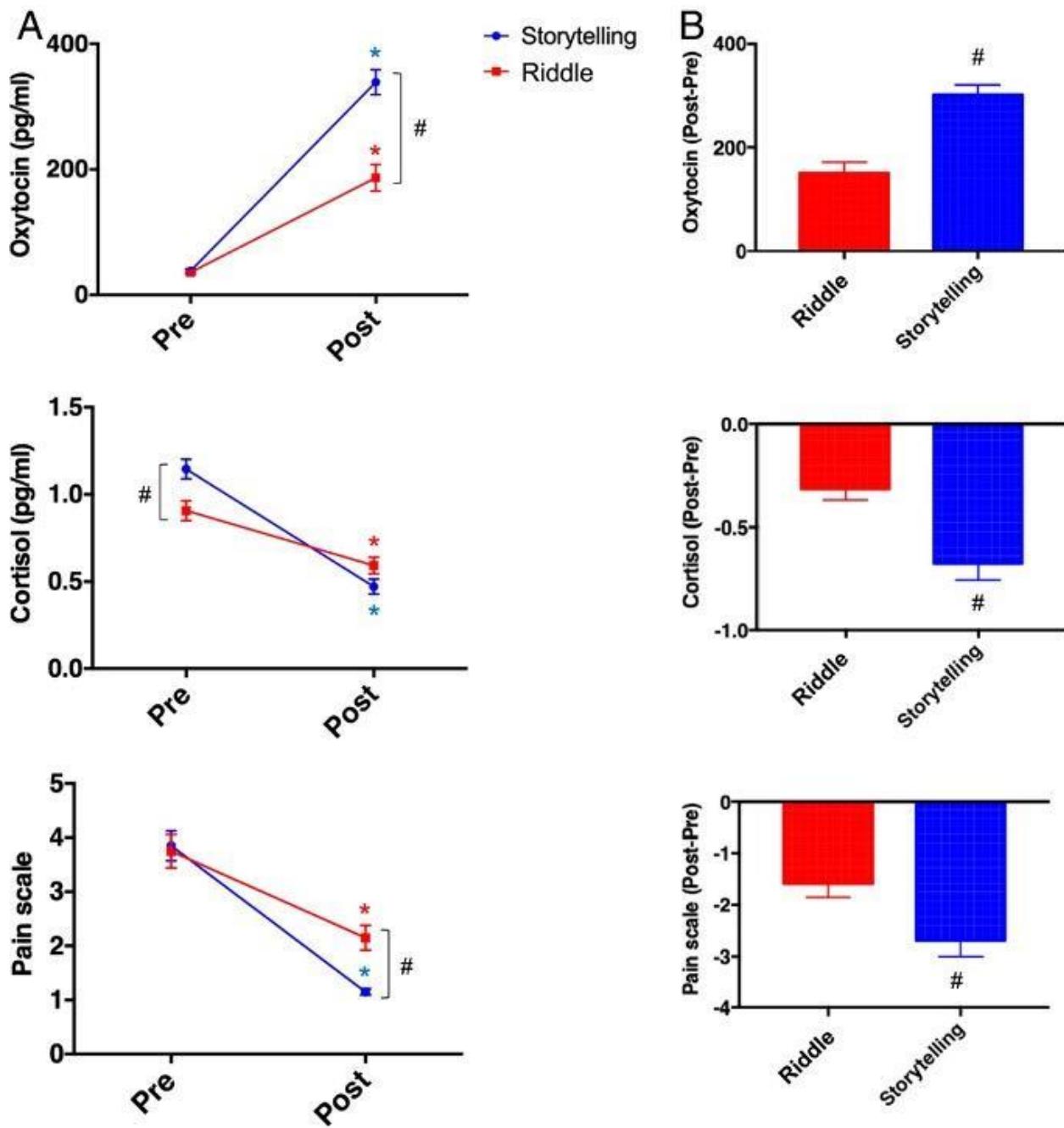
Telling a good story, one that will move us, make us vibrate, and allow our brain to release several hormones including cortisol and oxytocin. Cortisol is considered to be the stress hormone, often used by our body in dangerous situations. It is a steroid-type hormone naturally produced by the human body. It also helps to control our attention. The most interesting thing about this is that the biological process that we have to release cortisol in a real, stressful situation also occurs when we are told a captivating story. The danger might not be direct nor real but that does not prevent us from feeling the same degree of urgency and danger as is a real-life situation.



However, cortisol alone is not enough to captivate us with a story. This is where oxytocin comes in. It is known as the hormone of attachment. Oxytocin belongs to the category of pleasure hormones together with serotonin, dopamine, and endorphin. It is therefore a chemical produced by our body that will allow us to identify with the heroes of a story. It also amplifies our empathy. According to neurosciences, the brain isn't capable of differentiating a legend from a true story. This statement was corroborated by American author Annie Murphy Haul who also wrote *The Extended Mind: The Power of Thinking Outside the Brain*. “*The brain, it seems, does not make much of a distinction between reading about an experience and encountering it in real life; in each case, the same neurological regions are stimulated*”(Paul, 2012).

Studies have identified oxytocin as the neurotransmitter that allows us to feel empathy, as well as transmit it. It has been proven that the mind synthesizes oxytocin, which allows an individual to feel more generous, trustworthy, and compassionate. *The neurobiology of collective action* is a study conducted by Paul J. Zak and Jorge A. Barraza that proves Oxytocin can be measured in blood and cerebrospinal fluid. Another study on the matter was conducted by Guilherme Brockington, Ana Paula Gomes Moreira, Maria Stephani Buso, and Jorge Moll, entitled “*Storytelling increases oxytocin and positive emotions and decreases cortisol and pain in hospitalized children*”. In one table, they put down that “*Even though pre-intervention cortisol levels were higher in children from the Storytelling group (which we interpret as being a random occurrence) compared to the Riddle group ($P < 0.05$), children in both conditions (Storytelling and Riddle) showed reduced cortisol responses post-intervention ($P < 0.05$). When testing each intervention's differential effect (calculating post values – pre values), we observed a significant difference between the two groups (Fig. 1B). Storytelling increased salivary oxytocin levels [$t(79) = 5.34, P < 0.001$] and reduced salivary cortisol levels [$t(79) = -3.87, P < 0.001$] and pain scores [$t(79) = -2.89, P = 0.005$] in comparison to the riddle intervention. These results were not influenced by age, gender, or time of sampling in hospitalized children*” (Brockington et al., 2021)

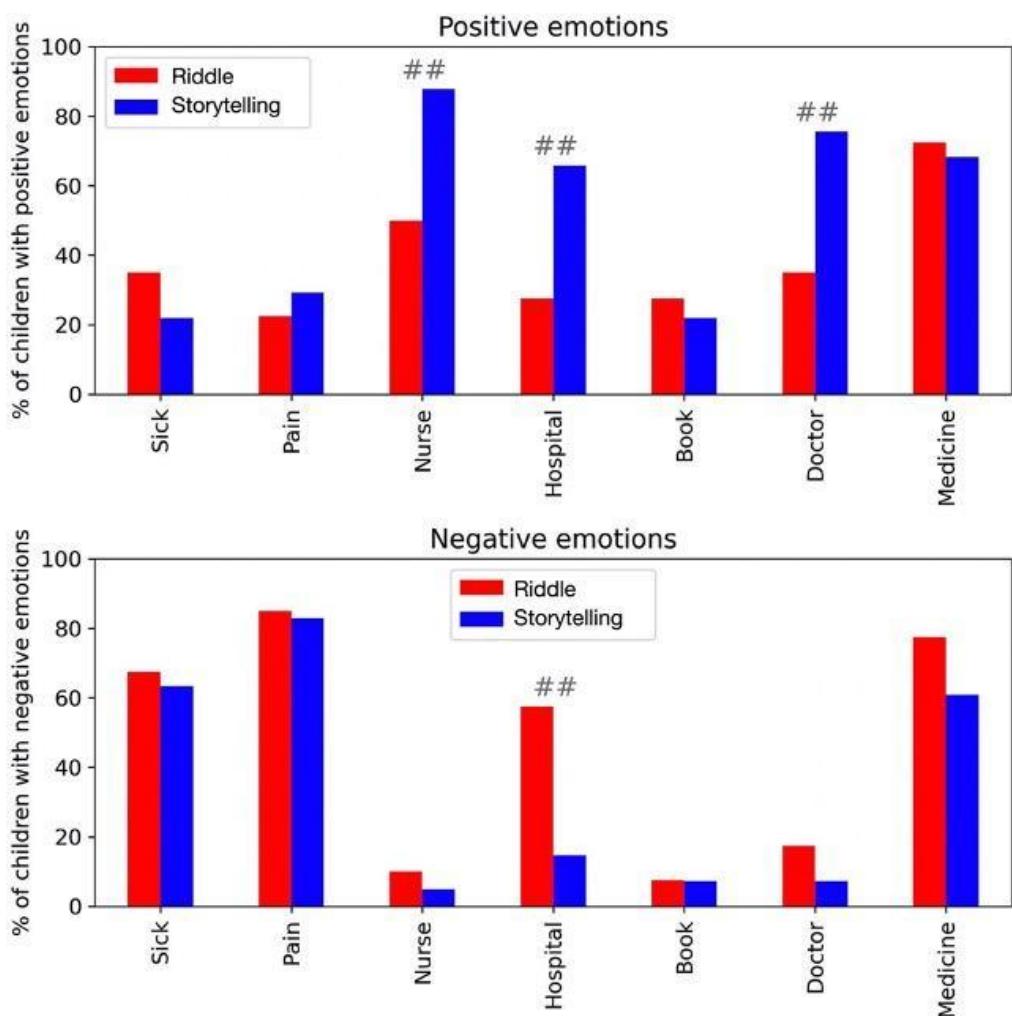




(A) Oxytocin and cortisol levels and pain scale of children in pre-and post-intervention moments comparing storytelling and riddle interventions ($n = 40$ for the Riddle group and $n = 41$ for the Storytelling group). The significant difference compared with pre-intervention moment* or group#. (B) Delta effect of storytelling and riddle interventions on oxytocin and cortisol levels and pain

scale in children ($n = 41$ or 40 for each variable and group). Significant difference between groups is indicated by # and significant effects are indicated by *.

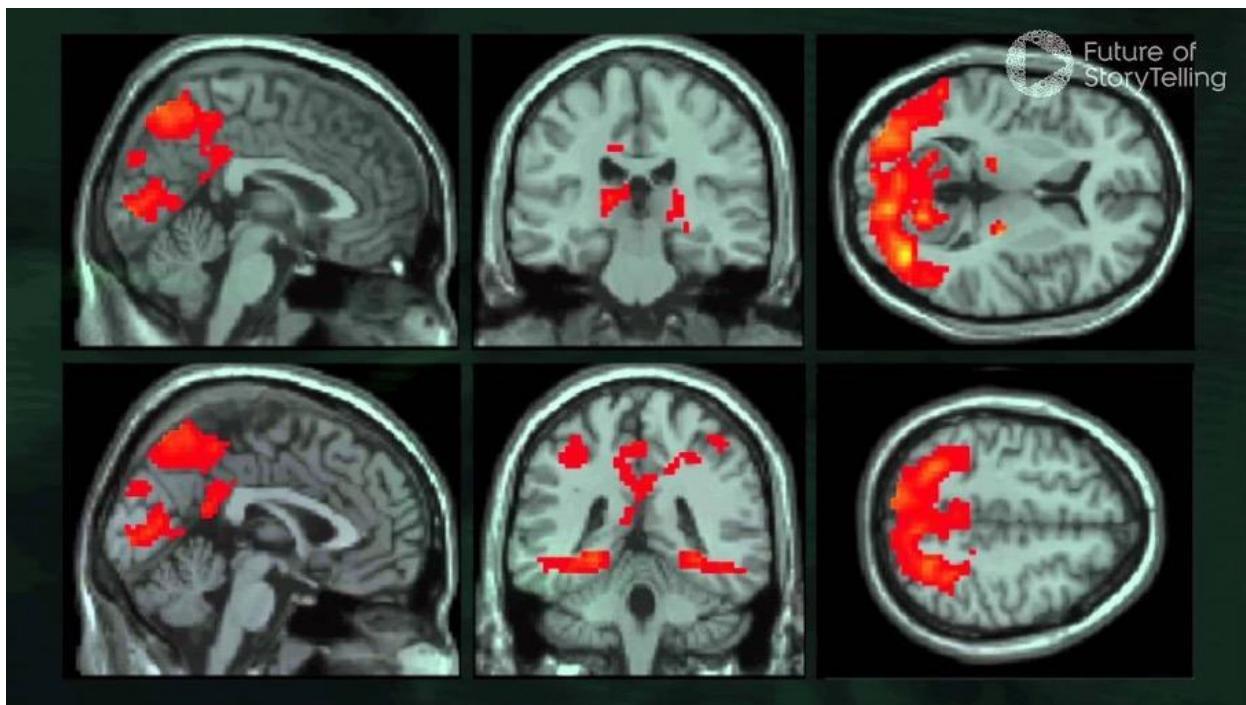
The following table highlights the positive and negative emotions. “The Storytelling group showed a higher proportion of positive emotions in the free-association task as compared to the Riddle group for the nurse (Cramér’s $V = 0.38$, $P < 0.001$), hospital (Cramér’s $V = 0.36$, $P = 0.0012$), and doctor stimulus pictures (Cramér’s $V = 0.38$, $P < 0.001$). The Storytelling group also reported a lower proportion of negative emotion words than the Riddle group for the hospital stimulus (Cramér’s $V = 0.42$, $P < 0.001$)” (Brockington et al., 2021)



Sentiment analysis of post-intervention free-association task. (Top) The percentage of children with positive emotions. (Bottom) The percentage of children with negative emotions (n = 40 for the Riddle group and n = 41 for the Storytelling group). ##Significant difference between groups (Pearson's χ^2 test; $P \leq 0.001$).

Paul J. Zak, a PhD graduate, and American neuroeconomist, is the author of Trust Factor: “*The Science of High-Performance Companies*” and “*The Moral Molecule: How Trust Works*”. He conducted a scientific study inviting participants to watch a video telling the story of Ben. Ben is a two-year-old child, his father tells the camera that Ben has leukaemia and that he will die, but his little boy does not know. He talks about the difficulty of being genuinely happy in front of his son while knowing what the outcome will be.

When watching this video, the participant’s brain was observed to know which parts lit up, and the brain substrates of the theory of the mind were found as well as the areas of the brain where oxytocin is. Indeed, it is also in the prefrontal cortex (where emotions are managed) that decisions are made.





Neurochemistry, that is to say, the chemical phenomenon that will occur when listening, viewing, or reading a successful storytelling does not exempt us from an ethical use concerning narrative communication.

Those scientific studies bring to light that when we can create an authentic story - thanks to psychology and psychoanalysis as well as literature-, that follows the *Hero's Journey*'s narrative, we are also able to measure and check the impact of this storytelling in our brains and bodies. These factors bring us to ponder the responsibility of a storyteller, as well as their impact on their audience. Questions on the matter are only just emerging in response to the growing importance of storytelling over the years. It has become a pillar of numerous fields such as marketing, public relations, communication, and advertising. If telling a story creates a certain emotion in an individual, influences one's behavior, increases a product's sales, or questions one's beliefs, it is natural to wonder what storytelling could make us do. As a result, we should come to realize that it would be crucial to integrate ethics into storytelling.

By addressing the imagination, we need to keep in mind the marketing part. By talking about an experience or telling a story, we will address the inner child we all have, arousing dreams and emotions. There have been many examples of successful storytelling over the years, we will try to create an accurate overview of what it can be through a couple of ad campaigns.

Coca-Cola's "*Share a Coke*" campaign used storytelling to talk about community. The advertising campaign consisted of printing people's names on cans and bottles (ex: Thomas, Jane, etc.) to encourage people to buy and share a Coke with the person whose name was on the product and who was important to the buyer. It was a global success and reconnected Coca-Cola to its audience on an emotional level. In the "*Live There*" advertising campaign, put in place by AirBnb, we see several short films showing what the AirBnb experience could be like between guests and hosts. The advertising campaign used personal stories to highlight the idea of living like a local during a trip. This created an emotional connection with the audience and future potential customers. Nike, with their "*Dream Crazy*" advertising campaign, went one step further, seeking to contribute to the dialogue regarding social and racial injustices as well as equal opportunities. It featured Colin Kaepernick and is a powerful example of storytelling. The





campaign received a lot of attention by seeking not only to promote the brand but also to participate in the global discourse on the subject, having a real impact on society.

We can also look at personalities who have always been inspired by storytelling like Steve Jobs. One of the best examples is the fifteen-minute speech he gave at Stanford University. It's inspiring and has all the key elements that we seek in storytelling. One of the main successes of Apple, besides revolutionizing computer design, was Steve Jobs's ability to give great speeches that resembled a Broadway play and had all the classic components of a great narrative: sets and surprises, heroes and villains. Even now, Apple tries to recreate "Steve Jobs-like" presentations. In this research, we are also able to question the impact storytelling can have on fundraising or on the financing of a scientific project, two fields of research that go, naturally, to highlight facts and figures more than personal stories. In the academic article *Dialogues: The Science and Power of Storytelling*, the authors explain in the introduction that: *"Indeed, the art of storytelling has experienced a kind of renaissance with storytelling-based approaches used in all fields, from the promotion of new startups to the inspiration of creativity in the workplace, through the corporate leadership strategy"* (Suzuki et al, 2018). In an interview with Professor Rachel Yehuda on how *storytelling helps you communicate with your scientific colleagues*, she answers: *"I have always used storytelling to communicate science to my fellow scientists because the history of how a science question is asked and answered is as interesting as the data generated. Engaging listeners in the science journey creates a stronger and more meaningful knowledge transfer, as it engages and creates an intellectual investment and emotional connection between the speaker and the audience"* (Yuan et al, 2018).

Despite a marketing dimension often present in the use of storytelling, in the way that we keep in mind our target audience and the audience we want to reach, we do not lie in storytelling. Lying would have the opposite effect of what we are looking for. We are in a world where successfully telling a story is a way to convince, seduce, or influence your audience. Michel Foucault talks about a discursive format to approach storytelling. By "discursive practices", Foucault means the power dynamics in society; how a relationship is created by asserting power through the use of language.





Indeed, it must be taken into account that in narrative communication, the content, as well as the language we use, are formalized. It is through narrative communication, that is to say, effective storytelling, that we come across what is called “narrative transportation”. We then talk about this feeling of being caught in a story. It is crucial to point out the importance of ethics in marketing, a notion that is too often undermined, blinded by the desire and need to promote a brand and increase sales, whatever the cost. It is relevant to highlight the guidelines between manipulating someone or simply persuading them.

Technologies that are used also come into play, we can even talk about digital storytelling nowadays. Blogging is a striking example of our appetite for stories. A blog is created every second according to Pew Internet & American Life Project, the survey conducted by two researchers Amanda Lenhart and Susannah Fox shows that 77% of authors who started a blog do so to tell their own story.

“If you are not communicating with stories, you are not communicating. Facts speak but images sell” - James Carville and Paul Begeba (Bordeau, 2008)

It is important to recognize that we are in unknown territory in the face of storytelling in the digital age. This research can give an idea of the context in which we stand, keeping in mind that we are in a world where technological advances and marketing trends evolve at every moment. We remain guarded and in search of new questions on the evolution that storytelling will go through in the upcoming years. This article provides a non-exhaustive portrait of the place we give to storytelling and how it affects us physically or intellectually.

It seems relevant to come back to the questions and intention of our research. How, through storytelling, one can influence an audience’s engagement and win their support, as well as how digital storytelling can be misleading through trailers, ads, or stories. That is to say, it can be used in a way that does not give the expected results, or that the story we started telling does not match what we offer the audience at the end, whether it be for a film or a product.

There are many examples of movies such as *Madame Web*, *Spring Breakers*, or *Passengers* which, when viewing the trailer, are perfect examples of narrative communication giving us the wrong impression. The first one gives us the impression of a “girl power” movie, filled with action, in the Spider-Man universe. The second announces a teenage movie with an exciting robbery.





And the third one also seems like an action movie, the story of a human colony sent by a ship in hypersleep for 90 years. Yet when viewing each of his films, nothing is what it seemed. The *Madam Web* trailer contains all the action scenes available in the movie within 3 minutes of communication, giving us a false impression of the action movie. Regarding *Spring Breakers*, the director himself announced at the premiere that the trailer should not be trusted and that his movie was about the rupture of the American Dream, a nation invaded by precariousness. The actual subject was not at all highlighted in the trailer. Regarding *Passengers*, we expected a science fiction film and, all in all, it is a love story set in space. The public's reaction to those movies was mitigated. A lot of people expressed their disappointment online, tanked the reviews, and highlighted the fact that they felt lied to, which goes to show that bad storytelling can harm you and your product.

One of the most used websites regarding film and series reviews is IMDB (<https://www.imdb.com/>). It is used both by audiovisual professionals and the public. It is on this website that we find the 3.7/10 rating for the *Madam Web* movie. The film is a crushing failure at the box office with only 91 million dollars raised internationally (and only 40 million in the US) since its release in theatres on February 14th. With a start of \$15 million for its first weekend of theatrical exploitation against \$39 million for the film *Morbius* (both films were produced by the same directors and production house Sonyfilm), *Madam Web* is one of the most unsuccessful comic book-based adaptations in history. It is also important to take into account that reviews published in the press are communicated to the public slightly before the release of the film to promote sales. However, if the reviews are wrongful and the film does not meet the expectations of viewers and critics, the opposite effect occurs and the sales drop drastically.

We can ask the simple question of what elements the successful stories have that the others lacked. This refers to what our research brought up in previous parts including the inability to properly use the Freytag model (the hero's journey) or the monomyth advanced by Joseph Campbell. We must add to this the feeling of having been deceived, for each of the films, by the trailer bringing forward a certain topic that is afterward not addressed in the actual movie. You don't mislead your audience. The most important consequence that can be mentioned is the





producers' massive loss of money, even if it is impossible to quantify. We can speculate that the public's confidence in the production company Sony was also undermined.

We are also able to highlight some advertising campaigns whose misuse of storytelling brought them to suffer a backlash. An example is a 2017 McDonald's ad in the UK featuring a mother and son. The commercial begins with the mother talking with her son about his late father, explaining that he loved the "Filet-o-Fish" (one of the famous sandwiches of the fast food brand). It goes on, showing the child in a better mood after eating the sandwich. The public thought McDonald was misusing grief, taking advantage of a very real and serious emotion, and the brand had to apologize. The same goes for the Pepsi brand. Also in 2017, the soda brand ran an advertisement featuring celebrity Kendall Jenner offering a Pepsi soda to a policeman during a protest. The public felt that the brand was cynically exploiting the social tensions that existed in the country at the time. The backlash was so important that Pepsi had to withdraw its advertising campaign. These two examples highlight that the mistake is not to take into account the sensitivity of the consumer and to be insensitive by wishing only to promote consumption.

We now have a more precise idea of what does not work. However, when talking about storytelling, there is not a single precise recipe to follow to find success. We can list the essential steps such as the authenticity, the veracity of what we want to tell, and the narrative structure to follow to succeed in generating emotion. This is what makes storytelling so interesting, its intangibility to respond to a specific model.

Conclusion

What are we looking for in storytelling? It is the belief in what it evokes, what it shares, and to make its lessons, its story, ours. Our research highlights the undeniable link between neuroscience, psychology, and literature. It is these three disciplines that will create relevant and effective storytelling. However, it is important to note that, in the digital world, we must be extremely careful with the way we approach storytelling through either method. It is easy to be seduced by a storytelling that will promise us mount and wonder as in a trailer for a film but if the final product does not meet the expectation that the public has, it breaks the intrinsic trust with the target. However, when it comes to brands, it is also possible to experience a backlash





after being insensitive and wanting to surf on societal issues or the exploitation of human pain. Our article relied on many academic articles and scientific studies as well as theories developed by psychiatrists and psychologists to show the evolution and importance as well as the appetite we have for storytelling in this digital age. That being said, we are also aware of these limitations in many aspects, we have focused our examples on movies and advertising campaigns without including reels, books, or even video games. It is also relevant to point out that there is little or no study highlighting the excesses of storytelling. We notice that it is up to the listener or viewer to succeed in sorting out the myriad stories that they are being told every day. Our research aims to offer a non-exhaustive summary of the universe in which we operate while keeping in mind the limitations it exhibits.

We remember that telling stories makes it possible to illustrate complex concepts and integrate moral values into our message. It is about circulating information attractively and entertainingly and illustrating the ability to convey information and ideas. It could be relevant to study the impact of storytelling in video games, in crowdfunding campaigns as well as to highlight its limitations. Could we be able to study the use of storytelling about conspiracy theories that are widely disseminated on the internet, putting forward a certain idea of distorting reality? Have we gathered enough information to figure out how storytelling can influence consumerism? There are still many questions to ask on the vast subject that is storytelling, especially at a time when information is largely connected through social networks. We think it is important to emphasize the importance of bringing ethics to storytelling. A notion that remains little respected regardless of the fields of exploitation of storytelling.

Psychologist Jennifer Aaker explains that “a story sticks to our mind 22 times better than a statistic”. We’ll note that this very statement can be attributed to cognitive psychologist Jerome Bruner. There is however one problem with this statement: we cannot verify the supposed fact. It was reappropriated by Psychologist Jennifer Aaker but no scientific study corroborated her statement. With a simple Google search, we realize that this quote has been used over 190 times and repeated by storytelling professionals, coaches, etc. without relying on any tangible element. This perfectly illustrates the danger of storytelling, getting carried away by a story without taking the time to verify its statements.





Recommendation

Our recommendations are addressed to marketers, corporate communicators, and storytellers. It is necessary to remember that even if storytelling favors the imagination, it must be built from real-life elements, it must not be completely fabricated. The public is not there to be manipulated and pushed to buy, and being a storyteller is not synonymous with being a liar. We saw that good storytelling creates a bond between the storyteller and his audience, a bond of trust that must not be broken by false promises. It is important to make a distinction for filmmakers, audiovisual works being for the most part works of fiction. Subsequently, it is especially important to pay attention to the means of communication used in this specific context. It will be necessary to show authenticity by trying to work on the very essence of the film in a trailer without seeking to attract an audience that will be disappointed when viewing the film.

It is necessary to succeed in finding a balance between creative storytelling to convey and highlight real societal problems through stories without neglecting the facts or misleading the audience. We can offer suggestions about the path to take to create more ethical storytelling, but it will always be the responsibility of the author, the storyteller, and the person who will create the content, to find a balance to gain transparency and not exploit too sensitive subjects for the sole purpose of promoting consumption. Are we able to find the balance between storytelling and authenticity? Keep in mind that bad storytelling will always be found out. It will not bring the desired emotional result, as we saw with Pepsi's advertising or *Madam Web*'s trailer and promotion. Storytelling remains personal. Therein resides its strength for we cannot criticize an experience that happened as long as it is imprinted with veracity. Despite all the bad reviews that Steve Jobs received, this did not prevent him from telling his story: he never went to university but still founded Apple, from which he was fired later on. And no one has ever questioned his story because it was full of truth.

It is this very fine line that must be drawn when approaching storytelling especially because it can play on our emotions, on our hormones, on something intangible. Yet, if a viewer, reader, or listener feels misled, it is because they feel a lack of sincerity and authenticity. It is possible to





ask a fashion brand advocating greenwashing to provide evidence that their entire advertising campaign uses that angle. It is up to the storyteller to continue to educate themselves, to follow their moral compass to try to relay stories that are marked by veracity and authenticity. The ultimate goal of storytelling should be to enlighten, entertain, and educate, not to deceive or manipulate.

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