

The Truth, The Whole Truthiness and Nothing But Alternative Facts (lenticular print, 100 x 120 cm), Cors Brinkman, 2017



The Truth, The Whole Truthiness and Nothing But Alternative Facts

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ABSTRACT

The Oxford English Dictionary voted Post-truth as Word of the Year 2016 as an adjective ‘relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief’. People support their post-truth claims by using ‘alternative facts’ to convince others. In itself the expression ‘alternative fact’ comes across as contradictory, but it simply means competing facts. In politics, alternative facts typically do not match reality. As a result they are mostly perceived as falsehoods, lies or bullshit. I am fascinated by construction of truth of the individual and the way alternative facts have the ability to alter the perception thereof. Starting with literary research, followed by creating a lenticular poster using photographic manipulation, I hope to achieve a better understanding of the phenomenon ‘alternative facts’. The goal of this exploratory study is to translate both the political and scientific alternative fact into visual presentations to be experienced by a broader audience. By changing the point of view, people can experience an alternative truth.

1. INTRODUCTION

In contemporary society clicks and views seem to influence our personal opinions and beliefs more and more. Mainstream media share fake news, cars are being bought with YouTube views, presidents and politicians talk in ‘alternative facts’. These are just a few examples. Even products we produce and consume as ‘truth’ –for example reality TV shows or anti-aging make-up are simply staged feelings of familiarity, but made to be a little bit more interesting than they actually are. We like to think that we are somewhat better or a bit more interesting than just “average” [1]. Just like we hate to lose or be wrong, at least more than we like to gain or be right [2]. In essence, it seems to be very much not the truth we experience ourselves. Deep down we feel and suspect there are a lot of non-truths being spread, but as we repeatedly inform ourselves of these falsehoods, we fall further into the traps of confirmation biases and sooner or later conveniently start to believe them as truth. These are part of the cultural shift that make up the society we currently live in. Which in mainstream media [3,4,5] and science has come to be known as the post-truth society [6,7,8].

The concept of post-truth in itself is not new. During an TV episode of The Colbert Report in 2005, host Stephen Colbert introduced the same concept as “truthiness” describing it as the belief in what you feel to be true rather than what the facts will support. Warning the viewer about the risks of accepting arguments and information, simply because they appeal to their emotions instead of their rationale.

The expression ‘alternative fact’ took the world by storm after the U.S. presidential elections at the beginning of 2017. During the elections, wild post-truth claims were being supported by alternative facts. These ‘alternative facts’, that play into the belief of the audience are exactly the ‘facts’ that Colbert warned us for.

With this research I hope to gain a more in-depth understanding of the alternative fact. Together with the initial research on the phenomenon, I created a work to visually represent the alternative fact. The goal of the work is for the audience to experience alternative truths. By doing so I hope the viewer questions their own truth, if even for a moment.

1.1 POST-TRUTH

Post-truth, the Oxford English Dictionary's Word of the Year for 2016, is described as an adjective 'relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief' [9]. In literature, mentions of post-truth can be found as early as 1992 in an essay by the late Serbian-American playwright Steve Tesich. In his essay "*A Government of Lies*" Tesich tries to describe what he called "the Watergate syndrome", whereby the facts revealed by the presidency of Richard Nixon during the Watergate scandal were not well received by the American public, which made the public contemptuous towards truths they would rather not know of. Tesich concluded that "In a very fundamental way we, as a free people, have freely decided that we want to live in some post-truth world." [10].

Harsin (2015) furthermore, argues that a set of developments have created the conditions of the post-truth society, where power exploits its newly gained "freedom" to participate, produce and express, as well as consume, diffuse and evaluate information. Harsin ends his essay by describing the post-truth society as a regime of post-truth. Techniques such as micro targeting, fragmentation, together with developments that lead to a lesser amount of trust in authorities to distinguish between truth and non-truth, social-media algorithms and rankings based on what users want and not necessarily what is actually factual, plus the news media that are being critiqued for scandals, plagiarism, hoaxes and propaganda created a favouring towards trends instead of the more traditional style of reporting information. It is not that truth and facts have disappeared altogether, but that they have become objects of deliberate distortion and struggle [11].

2. ALTERNATIVE FACTS

On January 22, 2017, during the Meet the Press interview, U.S. Counsellor to the President Kellyanne Conway defended White House Press Secretary Sean Spicer's statement about the attendance and viewership at Donald Trump's inauguration as President of the United States.

Conway: "You're saying it's a falsehood and Sean Todd: "Alternative facts are not facts. They are Spicer, our press secretary, gave alternative facts to falsehoods." that."

Fitting the descriptions of post-truth given by Tesich and Harsin, Conway gave new life to the 'alternative fact', which immediately took the world by storm. The noun fact is described in the Oxford Dictionary as 'a thing that is indisputably the case'. Alternative, is described as 'available as another possibility'. Nelson et al. (2009) note that at first the expression alternative fact comes across as a contradictory statement in itself, but it simply means competing facts. In civil cases for

example, there would not be a trial if there were not alternative possible facts [12]. In the literature of law the expression 'alternative facts' can be traced back to over a hundred years ago. Rich, Farnham & Parmele (1914) described this phenomenon as 'alternative facting'. "So alternative facting should mean providing a competing theory of what the events actually were, based upon true evidence." [13] Although, the concept of alternative facts is far from new, the recent exposure the term was given seems to differentiate from its original meaning.

2.1 FACT OR TRUTH, LIE OR BULLSHIT

During the Dutch parliamentary elections of 2017, leader of the PVV, Wilders tweeted a manipulated image of Pechtold, leader of D66, at an Islamist rally. Wilders avoided accusations of "fake news" by stating that he never actually claimed that the photo was real [14]. Manipulation of photographs and information is not something newly used in politics. Circa 1860's the iconic lithograph of U.S. President Abraham Lincoln shows a composite of Lincoln's head on Southern politician John Calhoun's body [15]. More recent examples constitute of President W. Bush holding a book upside down [16], or Vice Presidential candidate Sarah Palin posing in an U.S. flag bikini, while holding a rifle [17]. We encounter conflicting arguments and truths on a daily basis. In both recent and not so recent cases as described earlier, these 'alternative facts', as they typically do not match reality, either have strong believers, or strong sceptics whom highly likely think of alternative facts as being falsehoods, lies or bullshit.

According to Frankfurt (2005) a distinction can be made between a lie and bullshit. A liar knows the truth and tries to convince the other of something different. A bullshitter either does not know the truth, or does not care. A bullshitter is just trying to impress, overwhelm or persuade the other [18]. Alternative facts on the other hand relate more to the interpretation of fact construction, whether intentional or unintentional (Harsin, 2015). It is not as much the result of the fact that convinces the public, but how the fact was created or by whom. According to the description given by Rich et al. an alternative fact should be based upon true evidence. However the political alternative fact is freed from this requirement of true evidence, since it does not matter anymore if a fact is supported by empirical evidence.

Wilders was deliberately sharing false information as to play into the feelings of the public. Presumably the goal was never to admit or pretend the photo was real, but simply to convince the voter of his own truth. It would not be fitting to call his act a 'lie', because it was never about the manipulation of the photo itself, but the message he wanted to get across to his followers. Even when Wilders was accused of deliberately creating fake news, it was too late to stop his message from being

spread. By removing the goal of a fact - convincing others of a certain truth - it is easier to distort and distract the attention of the audience from the original discussions and claims. It is not about the fact or event itself, but what happens after when information can be fitted freely to what one wants to believe.



figure 1. A composite image shows the inauguration crowds for Barack Obama in 2009, left, and Donald Trump in 2017, right. Emily Barnes—Getty Images; Lucas Jackson—Reuters

However it is difficult to differentiate what is fake from Observing the photo's made during the inauguration what is fact. Sharing facts does not automatically mean of Trump and Obama (figure 1) objectively, one can sharing the perception of what a fact is. For example, not agree with Sean Spicer's statement. Following the if you were in the crowd at Trump's inauguration you statement, multiple arguments regarding metro use and might think it was the largest ever because it was online viewership were mentioned and added to support the largest crowd you had ever experienced. As the the original post-truth claim on the crowdsize [19]. It is numbers of people attending the inauguration are not hard to fight back against the production and distribution given out by the National Park Service, which controls of deliberately false information. Especially in online the National Mall, numbers involving crowd size can media, misinformation and disinformation are already only be estimated. This could have lead to the different widely spread before the facts can catch up to them. estimates from both media and the white house press.

2.3 ALTERNATIVE FACTS IN ACADEMICS

2.2 ALTERNATIVE FACTS IN POLITICS

Scientific research tries to separate and define both facts The meaning that the alternative fact has taken on is and non-truths. Philosopher of science Karl Popper not necessarily the meaning that Conway originally (1959) rejected the classical inductivistic views on the intended. Soon after the Meet the Press interview, the scientific method and argued for a methodology based term 'alternative facts' has taken on a new definition on falsifiability. Using this method of falsification, no as 'a politically declared "fact" that does not match number of experiments can ever prove a theory, but reality; a fiction, a falsehood, a lie, not a fact [20].' Thus a single experiment can contradict one [21]. Using deviating from the original meaning given by Rich et al. Popper's methodology, it has become everyday practice as competing facts based on true evidence, to approach research and theories with alternate

truths, as long as they are theories. Many theories are After Conway's initial given statement, a group of law disregarded as they simply do not fit the current models professors filed a professional misconduct complaint in their respective academic fields. It is the real facts in against the White House counsellor, wherein they science that defy common sense [22]. (e.g. Copernican

state that Conway should be sanctioned for violating heliocentrism). In contrast to politics, alternative government ethics rules and "conduct involving theories in academics are completely viable. dishonesty, fraud, deceit or misrepresentation" [23].

This further proves that the alternative fact, which American philosopher Daniel Dennett stated in an originated from the field of law, differs from the newly interview that what the post-modernists did, was truly born political kind. Typically the political alternative evil and holds them responsible for making it possible fact does not match reality. It either holds a complete to be cynical about truth and facts. [24] Dennett disregard towards authority, or is spoken from authority. blames continental philosophy that refers to thinkers For example a statement tweeted by President Trump like Latour and Derrida. Critics of post-modernism in 2014 on global warming: "Snowing in Texas and like Dennett and American linguist and philosopher Louisiana, record setting freezing temperatures Noam Chomsky [25] often criticize Derrida's theory of throughout the country and beyond. Global warming deconstruction, which aims to show that things— texts, is an expensive hoax!" The wild claim, that global institutions, traditions, societies, beliefs and practices of warming is a hoax, is supported by the 'alternative' fact whatever size and sort you need— do not have definable that record setting freezing temperatures are measured. meanings and determinable missions [26]. Recently It is colder than ever, so global warming must not be Latour acknowledged that the relativist and "social-happening. More recently Trump also tweeted about constructivist" views and the following criticism on multiple investigations into Russia's meddling as a academics had created a basis for anti-scientific thinking "hoax" [27]. In response to the announcement by [28, 29]. This approach can very well have paved the Facebook CEO Mark Zuckerberg that 470 "inauthentic" way for the denial of climate change and ultimately the accounts had spent a collective \$100,000 to promote alternative fact. However, the aim of the deconstruction divisive political and social messages between June theory was to show that our appeal to facts is very much 2015 and May 2017 [30,31]. naive. Ideally, deconstruction should aim for a better

explanation when we speak about terms like truth and During the March for Science on April 22, 2017, facts.

protesters demonstrated in over 500 cities against the A more recent example is the Emergent Gravity current administration under president Trump. The theory by Erik Verlinde (2016) [32]. Dark matter is a demonstration was held to warn the public of the results hypothetical theory to explain cosmic entities gravitating of these kinds of claims and to raise awareness for the towards things that can not be seen. Verlinde's theory is political alternative facts that are being distributed due interesting, because it hypothesizes that dark matter is to the lack of interest in science of the administration. not necessary to explain the gravitational pull of cosmic

structures. Emergent gravity could prove that gravity When alternative facts disregard authorities, academic itself works in a different way than either Newton or research becomes obsolete. Because the public and Einstein predicted. When these alternative theories in politicians do not like their underlying basis, the science are offered, they appear to be contradicting outcome and consequences of scientific research can other known facts. Using deconstruction, they can then be ridiculed. This adds further to the feeling of bring subjects to greater depths. Emergent gravity aversion towards truth and facts, which the public theory might be proven false, but it will create a rather does not know of. Allowing the concept of the better understanding of theoretical physics. Just like Watergate syndrome by Tsesich to continue to exist. By the political alternative fact making science obsolete, disregarding authorities the alternative fact, as a result, science has the potential to dismiss the alternative fact can lead to an alternative truth. through empirical research.

3. DANGERS

In the previous section I have made a distinction between the original definition of the alternative fact, the new political alternative fact and the scientific alternative fact. In science it is taught to question, that which we do or do not know. In politics people have the goal to convince the public of a truth, but at the same time to convince the public that the truth, promises, actions or statements of other politicians are not as good or maybe just plain wrong. Multiple 'truths' are created and presented to the public. It has become harder for the public to distinguish what is true or not. People have become more aware that not everything that is known or can be known is simply true or not. Using the example of the Watergate scandal, or the use of manipulated images in politics to distribute fake news, some things can be true or false. However, they can still feel, or be interpreted as, right or wrong depending on the perspective of the audience. This results in the public not knowing what is true or not and leads to some dangers in our society. These dangers are discussed in depth in the following sections.

3.1 CONFIRMATION BIAS

Post-truth has given authorities more 'freedom' to influence information being produced and consumed. It is no longer necessary in a post-truth society to prove a statement with true evidence. Just having an audience willing to believe you is enough. Disregarding or distrusting authorities makes one susceptible to confirmation biases— to search for or interpret information that confirm to one's own preconceptions. An example given in science education is the universal generalization that 'all swans are white'. These sort of preconceptions, more than likely will lead to statistical errors. When one would observe swans for a day, week or even longer, and not come across a single different coloured swan, the statement that all swans are white would be correct. Popper's methodology of falsification is used to counter confirmation biases and statistical errors through empirical gained evidence. One needs to only observe one black swan to falsify the hypothesis.

However, post-truth claims to appeal more to one's emotion. To achieve this, doubt is cast on the subject of discussion using the techniques earlier described in the paper by Harsin (2015). This is done to distract the other of the information that opposes your own. To convince another from your own perspective, the alternative facts can be used as cognitive ease. As long as we produce, consume and share false information, sooner or later people start to believe it to be true. People tend to believe something to be true if it is easily recognisable, comprehensible and does not contradict other points of view. Cognitive ease is the mental state in which "things are going well – no threats, no major news, no need to redirect attention or mobilise effort" [33].

3.2 ASCH CONFORMITY EXPERIMENTS

Alternative facts, however do contradict in points of view, they can be viewed as threats and they have certainly become major news as of early 2017. Yet on both sides of post-truth claims there are strong believers. Solomon Asch researched a phenomenon now known as "conformity", with experiments originally carried out in the 1950s [34]. In Asch's classic experiments it was found that group pressure leads others to conform to a truth that is not their own. When asked on their own, the test subjects had an error rate of 1%, but using group pressure error rates raised up to 33%.

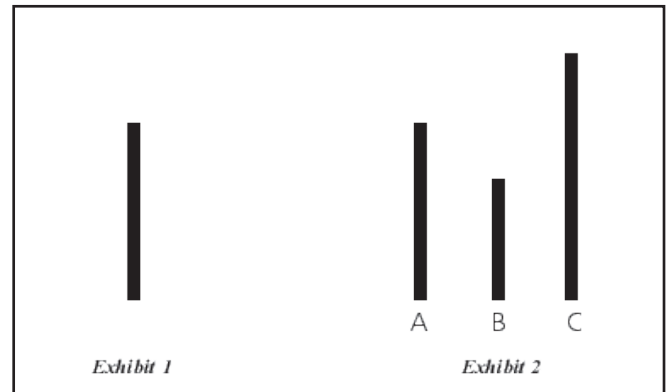


figure 2. Asch conformity experiment, exhibits 1 and 2.

During the interviews taken after the experiment, participants admitted that they were aware of giving the wrong answers. Given how simple the question is that was asked, participants still gave wrong answers one third of the time. Together with confirmation biases, conformity can forcefully alter the point of view of the individual, even if it is known to be wrong.

3.3 SOLIPSISM

3.3 REPRODUCIBILITY CRISIS

Solipsism is the philosophical idea that only one's own With the use of empirical observations that are judged mind is sure to exist. For the solipsist, it is not merely against one another using established bodies of method, the case that he believes that his thoughts, experiences, theory and logical argument, scientific research should and emotions are the only thoughts, experiences, and be able to oppose the alternative fact by separating fact emotions. Rather, the solipsist can attach no meaning from fiction. However, in a survey published in Nature to the presumption that there could be thoughts, [35], 1,576 researchers took a brief online questionnaire experiences, and emotions other than his own [36]. on reproducibility in research. More than 70% of In a post-truth society authorities are more easily researchers have tried and failed to reproduce another disregarded when they do not fit one's point of view. scientist's experiments, and more than half have failed This freedom and acceptance can ultimately lead to to reproduce their own experiments. As a result, one solipsists. The alternative fact can act as a powerful tool can doubt these observations, methods, theories and for the solipsist to convince others of their own truth. arguments. It can no longer be argued as more true Together with conformity and confirmation biases, as a than other facts or 'alternative facts'. However, science part of cognitive ease, one can be convinced of a truth acts ons these doubts by experimenting further. One they may know is not necessarily correct, but they still can believe in an alternative truth even when they may choose to believe it. know it is not necessarily correct.

4. STATEMENT

The 'alternative fact' is a vague term. It should be able to be distinguished as either fact or fiction, but even if that would be the case, human emotion is winning over human rationale. The alternative fact is a strong tool in our post-truth society to influence the point of view of others. The original meaning of 'alternative facts' has lost its relevance since the Meet the Press interview with White House counsellor Conway. Soon after the interview, discussions worldwide on both alternative facts and facts were mostly about wild claims either being true or not. The purpose of the alternative fact is not necessarily about being true or not, but to show a different truth and possibly to convince the other of said truth. The one claiming, however, might fully believe it to be the truth.

*By changing people's point of view, you can
By changing point of view, people can experience
convince others of your truth.
an alternative truth.*

Having a purpose that is not restricted only to truth allows for even more bold claims and alternative facts. This further strengthens the confusion on what the public and individual should interpret as true or not according to others or authorities. In the end, these developments together with the techniques described earlier in this paper can change the point of view of people, either to belief in one's truth or to experience alternative truths. A deeper understanding of the alternative fact is gained in previous sections, but a clear definition is not yet realized. I believe that the meaning of the alternative fact should be understood and in the end defined by both the public and the individual itself. Opening up the discussion in the way we approach issues and discuss them. To obtain the potential to reach such a big audience, the 'alternative fact' was researched and a visual presentation on the subject is created in the form of a lenticular image print. In the next few sections I will further explain the development and choices made during the creation of the lenticular image print as well as this paper.

5. PROJECT REALISATION

Inspiration for this project is drawn from art-science collaborations that visualize theories and concepts into artistic or design projects. Visualizations try to convey complex information in a comprehensible form. Art, however, asks the viewer to complete the piece by presenting layers of visual connections, analogies and metaphors. Unlike visualization, the intent of art is to raise questions rather than provide answers [37].

The goal of this project is to have the audience experience a different truth by changing points of view. When successful, this should result in the audience questioning their own perception of truth.

5.1 CONCEPT

In previous sections, a distinction is made between the original meaning, the political kind and the scientific kind of alternative facts. Alternative facts defy common sense or they can be consistent to what we observe. Cognitive ease, confirmation biases and conformity are powerful tools to influence the point of view and perspective on truth of the individual or the public. In the next sections, a visualization is sought after that uses the perspective of the viewer to influence the content of the piece.

Images that change when viewed from different perspectives are probably known since the late 15th century and continued into the 16th century. Perspective was the most characteristic and familiar feature of European art around that time. One of the earliest modern examples that can be found is Leonardo Davinci's Leonardo's Eye (ca. 1485). Another known example using the technique of anamorphosis, is a painting by Hans Holbein the Younger (see figure 3).



Figure 3. Hans Holbein the Younger; *The Ambassadors with a memento mori anamorph skull in the foreground*, 1533

More recent examples can be found in Op Art (or Optical art). Op Art is a more modern style of visual art that focusses on perceptual experiences in relation to how human vision functions [38]. Perception influences the pieces of art and alters the experience of the viewer.

During this research I am going to try to visualize alternative facts. A few requirements must be made to fit the concept. The end result must be low in technology, thus easy to engage with, durable, big in size and presentable in public spaces. Most importantly, the image must change based on the perspective of the viewer.



Figure 4. Poster design from the Pandora Foundation (n.d). Printed on mirroring paper, 1964.

5.2 DESIGN

For the design of the poster, inspiration is drawn from public campaign designs by Pandora (see figure 4). The text “ooit ‘n normaal mens ontmoet? en..., beviel ‘t?” is in Dutch and roughly translates to “Ever met a normal person? and..., did you like it?”. Using special paper with a mirroring layer, the poster projects the question onto the reflection of the viewer. An example of a simple but very effective and direct visualized method of getting the viewer to ask a question to themselves. In the case of this poster to raise awareness on psychotic behaviour and that everyone can be a little bit crazy sometimes. To achieve the same result, but on the subject of ‘alternative facts’ both the image as well as the technique have to reflect the findings found in the previous sections. The final necessary part for a successful experience is to translate the phenomenon of alternative fact to a human scale.

Different options and subjects were researched in the context of alternative facts contained examples such as; the flat-earth society, pseudo-science, vague predicates like measurements not being exact, or subjected to change, and nutritional values on food labels not matching the name of the product itself. These examples could function as metaphors for alternative facts or alternate truths, however a direct relation to alternative facts was not immediately noticeable. Instead of painstakingly trying to design a new icon to represent the alternative fact, the choice was made to use the news photo of the inauguration of President Trump in the design (see figure 1, right). This is the image

that instigated the phenomenon of the new political alternative fact. Using a news photo also ties in with the ability to manipulate the image, while its underlying credibility of photographic truth remains.

Next different techniques were collected that could alter the content based on the perspective of the viewer. Examples of such techniques are Virtual Reality, 3D glasses, optical illusion, anamorphosis, 3D street drawings, holograms, lenticular printing and anaglyph. There is a number of current developments involving computer programs that change the perspective of an image as the viewer moves around, as well as others that exploit visual illusions. There are also systems that produce genuine three dimensional images (‘integral imaging’) using complicated arrays of microlenses. But for the present, lenticular printing presents the most convincing for three dimensional and animated autostereoscopy. These techniques force or make the viewer able to change their perspective, altering the content of the work and make it possible to create illusions of depth or motion. Matching the requirements earlier stated of a big, low-tech, durable, easy to engage with and public work, the decision was made to use lenticular imagery and anaglyph. These techniques are interesting tools to visualize and portray alternative facts.

6 PHILOSOPHICAL TOYS

To understand or explain the alternative fact, one must be aware of the multiple perspectives that a viewer or listener can take on the subject. In this section a closer look will be given into the history of looking at multiple images simultaneously and techniques that were invented to create illusions of depth and motion. The goal in this section is to explain the history of lenticular and anaglyph techniques that combine visualization, as well as create an artistic presentation of the phenomenon alternative fact based on the discoveries made in the previous sections.

One of the earliest instruments with a profound impact on art as well as science was the Camera Obscura. The camera obscura was primarily used to create images in art, but at the end of the seventeenth century scientists found that it could be applied as an analogy to the eye [39]. Soon they became interested in replicating and experimenting with depth and motion in images. Instruments and techniques, also called ‘philosophical toys’, were invented, which served both the function of scientific investigation and popular amusement. One of these instruments was the stereoscope. In stereoscopy, paired images of distant scenes can be seen in depth. Its invention nearly coincides with that of photography, owing much to Sir Charles Wheatstone’s 1838 theory of stereoscopic vision and Sir David Brewster’s 1849 development of the lenticular stereoscope, an improved

version of the stereoscope applied to photography. Wheatstone established that we see three dimensional objects because the eyes are presented with slightly different images. He wanted to know what the result would be if similar images were presented to each eye while they were projected on a flat surface [40, 41].

6.1 LENTICULAR PHOTOGRAPHY

Lenticular imagery is used to create various forms of animation for motion effects, offsetting the layers at different increments for 3D effects, or to alternate between images, which then appear to transform into each other. Modern examples of lenticular products are postcards, posters, packaging and trading cards where the illusion of depth and/or motion can be experienced by the viewer. They are also recognisable by their rippled layer of lenses on top of the image which makes a distinguished sound when scratched. Lenticular objects are used to view multiple images simultaneously, but without the need of devices like the stereoscope or modern 3D glasses.

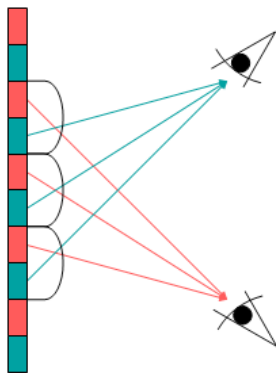


figure 5. Two or more images are cut into strips and combined. A specially shaped lens is placed over a pair of strips. As the viewing angle changes, different images are seen. [42]

Lenticular techniques came into existence while experimenting on autostereo¹ techniques for a more comfortably viewing of stereographs. One of the first examples of an autostereo technique that is found is the vertical lath system developed by the artist Bois-Clair in 1692. Two distinct pictures are painted on a plane surface over a grid of vertical laths. From one side the viewer sees one picture, while from the other side of the laths a different picture can be seen (see figure 6) [43].

In May 1896 an article by A. Berthier was published on using a line sheet as a parallax barrier to produce an autostereogram [44]. Berthier's line screen idea used a pair of stereoscopic images cut into wide strips (see figure 7). Placing a line-screen a few millimetres in front of the photo alternates the image that is seen beneath the line screen, allowing the illusion of stereoscopic depth.



Figure 6. Gaspard Bois-Clair, *Double Portrait of King Frederik IV and Queen Louise of Mecklenburg-Güstow of Denmark*. Oil on wood strips, laid on panel, 39.4 x 32.4 cm.

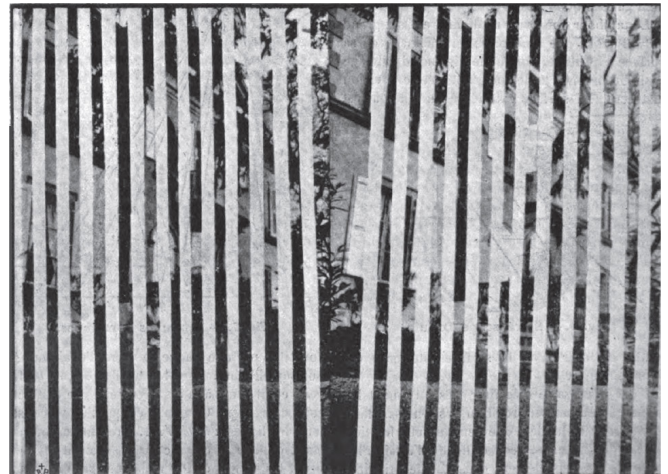


Figure 7. A. Berthier, *Making a photographic composite from a stereoscopic view*, Le Cosmos, May 1896, p. 231.



Dr. P. J van Waegeningh (1870 -1944), *Women shooting a candle, parallax stereogram*, 17,8 x 13 cm (object) / 15,6 x 10,7 cm (image), collection Leiden University, inv. nr. 54.1.487

Figure 8. Dutch amateur photographer Dr. P.J van Waegeningh (1870-1944) [45] developed more than two thousand photo's between 1897 and 1915. In his collection of photographs, experiments with parallax stereography can be found [46]. His use of mechanical grids is highly likely inspired by the inventions of Ives. Although van Waegeningh was not the first, making autostereoscopic photographs as an amateur was very unique at that time.

¹ Any method of displaying stereoscopic images without the use of glasses

Berthier's idea did not gain much of an audience, but the American inventor Frederic Eugene Ives had more success since 1901, with a similar technique called parallax stereogram. Ives soon patented the technique for a "Changeable sign, picture, &c." in 1903, which showed different pictures from different angles [47]. This patent shows that Ives was aware of the possibilities towards animated photographs, alternating images and the illusion of motion.

The illusion of motion in stereoscopy can be found in animated portraits around the turn of the twentieth century. Small postcards from around the time of World War I are the most visible early examples of animated photography using line-screens. Animated photography lead to a different viewing experience of autostereoscopic images. To perceive the illusion of depth the viewer needed to sit still, concentrate and be patient, whereas with animated screen photographs the viewer had to move in order for the image to change to experience the illusion of motion. This makes for a more playful and interactive experience. Due to these traits, the line-screen animated portraits were quickly commercialized and brought into mainstream popular culture.

From the late 1930s on, autostereoscopic photographs took the illusion of depth and motion to their practical limits. They were inspired by French physicist Gabriel Lippmann's idea of Integral Photography, based on insect eyes. In 1908 Lippmann proposed the idea of photographs with a screen made of tiny lenses. Providing "a window onto the world" that showed a scene with depth and with changing perspective as the viewer moved. 3D portraits were at the time the main source of income for photo studios. Research in France and the U.S. continued the development of lenticular photography for other appliances, such as commercials and outdoor photography. Lenticular imagery started to move its production from glass to all-plastic and continued on to be made thinner and more precise in the hopes that they could be used in new ways— in for example postcards, magazines, 3D movie posters, packaging and trading cards. Smaller and cheaper cameras were developed for both amateur and professional photographers, which made it easier



Figure 9. Lenticular Packaging design by Stranger & Stranger, from <http://www.strangerandstranger.com/lo-tengo/>

to create autostereoscopic photographs. In the 1970s the lenticular postcards brought the process to the attention of a wider audience and quickly raised interest in contemporary art circles. The production was further developed, ultimately making it easier to have lenticular images made to order.

6.2 ANAGLYPH

Other ways to comfortably experience stereoviews had been sought since the 1850s. The oldest known description of anaglyph images, or "Farbenstereoscope" (color stereoscope) was published in August 1853 by W. Rollmann. Rollmann concluded he had the best results viewing a yellow and blue drawing with red and blue glasses. Although at the present many people are most familiar with the red and blue images, Rollmann found that the red lines were not as distinct as yellow lines through the blue glass [48]. The "Anaglyph" principle was invented by Joseph d'Almeida in 1858: two images of a stereoscopic pair were printed one on top of the other using complementary colours. The viewer would use coloured glasses with red (for the left eye) and blue or green (right eye). The left eye would see the blue image which would appear black, whilst it would not see the red; similarly the right eye would see the red image, this registering as black. The viewer would experience the illusion of looking at a three dimensional image. The first printed anaglyphs were produced in 1891 by Louis Ducos du Hauron [49]. This process consisted of printing the two negatives which form a stereoscopic photograph on to the same paper, one in blue (or green), one in red.

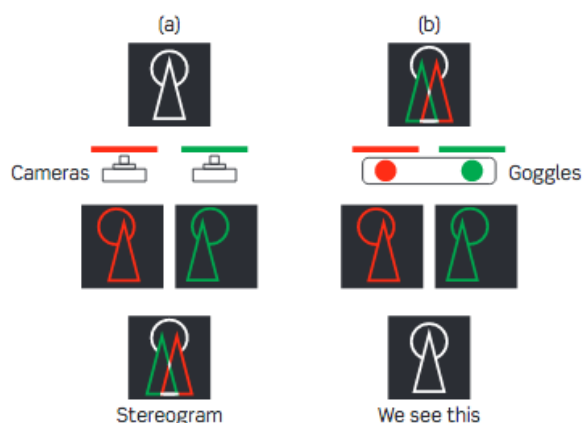


figure 10. How stereogram (a) to anaglyph (b) works. [42]

The technique found applications in advertising and other fields into the 1930s [50]. Anaglyphic films called "plasticons" or "plastigrams" were popular in the 1920s. In 1922, an interactive plasticon, entitled "Movies of the Future," opened at the Rivoli Theater in New York. Using a green image emulsion on one side of the film and the red image emulsion on the other provided an optional ending based on which coloured glass the viewer would look through. Many science fiction films of the 1950s were in anaglyphic 3D and have been shown on television (today they are often

shown in theatres using polarized 3D). Since anaglyphs are considered to be on the low end of 3D visualization methods, not much research and developments have been done to increase its visual quality. Some works focused on calibrating the image hues to the colour filters to decrease cross-talk between the eyes and matching red/green/blue (RGB) colour values used for screens to the coloured glasses [51, 52].



Figure 11. The moon in the first quarter. Anaglyph obtained by means of two photographs taken at the great equatorial bent of the Observatoire de Paris May 9, 1897 and February 7, 1900. Léon Gimpel. Paris, March 20, 1923 Coll. LG - n° An.3 Autochrome plate 12 x 9 cm

Anaglyphic images have since been found in comic books, newspapers, magazine ads and even in science [53]. In 1953, 3D comic books were invented and distributed with red/green “space goggles.”[54] Three- and four-color anaglyphic images can be found today in comic books or sometimes in advertisements, but most often anaglyph images are in two colors. Other works, for example in contemporary art, focus on using anaglyphic images not for the illusion of depth or motion, but utilized the overlaying colors to alternate between layers of different images (see figure 12) by using coloured glasses or external RGB light sources.



Figure 12. Dan Forbes. Analgyth Beauty, from: danforbes.com

6.3 REALISM VS. MANIPULATION

Lenticular photography was strongly associated with the on-going challenge of mastering photographic “realism.” (Timby, 2015). However, manipulation in photography, no matter how well executed, can transform fiction into factual authenticity. Stalin used photography since the beginning of the early 1920s to strengthen and reinforce his public image. In the late 1930s, when Stalin launched the Great Purge, using a more extreme form of photographic manipulation designed to rid the party of his enemies, real and imagined [55]. Before the political applications by Stalin, manipulating photographs was mostly innocently used in trick photography. The genre of trick photography, born in the studios and darkrooms of professional photographers in the late 1850s, turned stiff and unsmiling portraits into photos depicting clients with three arms, or with two heads.



Figure 13. London Stereoscopic Company's hand-colorer series “The Ghost in the Stereoscope,” featuring semitransparent cloaked figures playfully menacing the living.

Trick photographs, as the author of another popular manual stated, “look very much like the pictures taken and reproduced in any illustrated paper, but, while the eye accepts them, the brain will not” [56]. The appeal of such images stem from the friction between the literal language of photography and the impossibility of what you actually see. We are taught that paintings are interpretations of the artists perception of reality and not photo-realistic photographs. After the invention of photography, photographers soon realized that their images could be manipulated to convey messages that were not only equal, but possibly more interesting than the messages in traditional paintings. Photographers started to recognize that they could control, create and enhance visual elements and narratives in their images. As a result, image manipulation began to be more widely used and gained a greater role in historically significant photographs. For example, those that depict war and political leaders like Stalin.

American sociologist and photographer Lewis Hine recognised, however, that the common belief that “the photograph cannot falsify” was itself a powerful myth that could be manipulated and exploited for ideological ends. Hine was well aware that the camera’s testimony may be powerful, but it is not infallible;

“while photographs may not lie,” he wrote, “liars may photograph” [57]. This variety of standards of optical “truth” is unique to photography; neither is the difficulty of guaranteeing “natural” relationships between a picture and its real-life original. Art historian Ernst Gombrich states that illusionistic images are not those derived from nature but, instead, those which have been so made that under certain conditions they will confirm certain hypotheses which one would formulate, and find confirmed, when looking at the original scene [58].

The history of lenticular photography and anaglyph demonstrates that autostereoscopic and animated illusions were about trying to come as close as possible to reality, but have more often been about entertainment. The illusions they provide have remained attractive over the years because of the playful interactions and curiosity gained from their observations. We are entertained by just a few pictures that show us illusions of depth and motion. We are not expecting realism, but want to enjoy the spectacle. Photography is decidedly man-made. Its most marginal cases lead us back to our own cultural relationship to the photographic image, underlining that photographic techniques and images are social constructions—and in the case of stereoscopy and animation “invented truths.” (Timby 2015). To quote French poet and screenwriter Jacques Prévert:

“Lenticular photography confronts us with our contradictory reactions to photography’s naturalism, both pursued and pushed away in an ongoing process that has maintained it over the years as an ideal medium for contemporary practices of visual representation.”

7. FINAL WORKS

The decisions that I made during the practical process of this project will be explained in further detail in the following section. The concept as described earlier in this paper is to have the viewer experiencing multiple perspectives and to question their perception of truth. Requirements were made to fit the concept as explained earlier, the final work has to be low-tech, easy to engage with, big in size and presentable in public spaces. The choice was made to create a poster, together with this paper functioning as its theoretical background. The knowledge gained on the subject of alternative facts, together with the research done on autostereo techniques and philosophical toys, such as lenticular imagery and anaglyph a combination between design (visualization), art (completing the picture) and science is sought after.

figure 14. Final result of the lenticular printed poster, 120 x 100cm. The position in which the poster is viewed alters the image that is seen. Image A, top. Image B, middle. Image C, bottom.



A. POSTER

As medium, the poster, or large format print, fits the requirements that are made. The biggest challenge is to find a technique that allows for multiple images to be experienced simultaneously. In the previous section inspiration was drawn from lenticular imagery, which historically are based on philosophical toys and stem from stereoscopic inventions. The illusion of motion and animation that can be found in lenticular imagery since the beginning of the twentieth century is particularly interesting. It grabs the attention of the viewer, without the needed of technical equipment. The viewer has to participate by moving around to observe the complete image, creating a small but effective form of interaction. In turn this raises the curiosity of other passerby. For the final lenticular print design, three different images were made, which make up the final lenticular print. The use of three different images is to achieve the most optimal effect of spectacle of the images changing for when one would walk by it. With every additional image added to a lenticular print the motion or animation perceived will become more smooth, which in return results in the illusion of the image changing becoming less and less observable. The choice to use the iconic 'alternative facts' news photo of the 2017 inauguration of President Donald Trump ties in with the ability to manipulate the image, while the underlying credibility of photographic truth remains. Using Adobe Photoshop, a photo manipulation software programme two images were manipulated, while the last image is the original news photo kept as is.



figure 15. Clone stamp tool in Adobe Photoshop. Applies (clones) a different part of the photo onto the selected area.

These different images are achieved by using the healing brush tool (see figure 15) together with the clone stamp in Adobe Photoshop. The first image (see figure 14, image A) contains a crowd which is manipulated to be less, or almost non-existent compared to the original. This is deliberately done, supporting the wild claim

and lie, that there was barely any crowd during the inauguration. Of course, this is hard to believe on its own as true. The next and second image (see figure 14, image B) is the original photo kept as is. The final and third image (see figure 14, image C) is manipulated so that the crowd is bigger compared to the original, supporting the claim of largest audience ever witnessing the inauguration by the administration of President Trump. The distinction between the original and third image that is manipulated is smaller than the obviously manipulated first image. As such the wild claim that the crowd was almost non-existent seems far fetched, while the wild claim, or alternative fact, of the audience being the largest ever suddenly seems more plausible.

B. PAPER

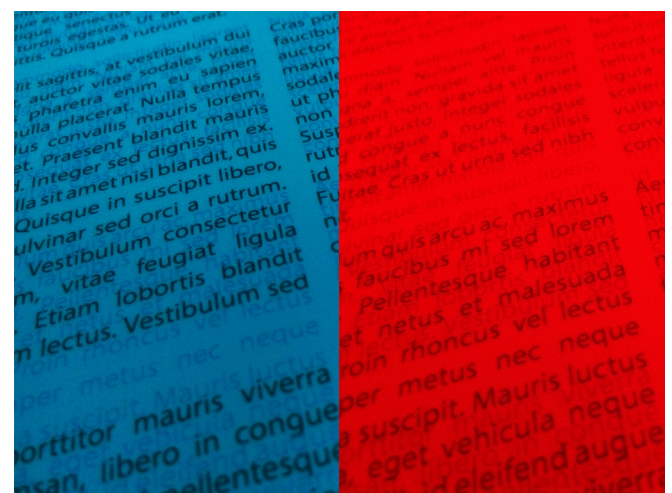


figure 16. Coloured text experiments.

In addition to the lenticular poster, this paper functions as part of the final project. In this paper the anaglyph technique is used in the text. However, not as commonly intended. Instead of creating the illusion of a three dimensional image, the technique is used in coloured text to represent different views on subjects. Blue is used to represent the sciences, while red represents the political approach. The decision for red and blue was made, because foremost, the glasses already exist and are still being mass-produced. The glasses do not

have to be specially made. Secondly the colours work better when they are complementary as well as high in contrast. Better readability is thus achieved by using red and blue. By using coloured glasses the reader can filter out which part he or she chooses to read (see figure 16). Presenting the reader with different perspectives, or truths, the paper serves the same function of reflection by the viewer as achieved with the lenticular poster. The blue coloured lens filters out the blue text making it almost disappear in print. On screens this tends to work better, due to the larger colour spectrum of RGB (red, blue and green). In comparison, the colour spectrum used for print, CMYK (cyan, magenta, yellow and black) has a smaller colour spectrum. Multiple tests were made on colour and intensity in print, where I tried to reach a close as a result as possible on a screen. Besides the glasses some RGB spotlights as external light sources were tested for a setting more befitting of an exhibition. However, the use of external light sources were found to be too straining on the eyes for continuous reading of small complex texts. Using spotlights also require a controlled settings in order to read the work as intended, which does not coincide with the purpose of reaching a broad audience using low-tech means this project is meant to achieve.

8. CONCLUSION

The purpose of this project is to develop a better understanding of the concept of alternative facts and to create a work that translates the research done to a larger audience. At first the alternative fact as phenomenon is researched by a broad literary research. By collecting different points of views, multiple descriptions of the subject are examined.

The goal of this project was to develop a visual method that would convey the multiple perspectives that can be found when taking a closer look at alternative facts. To complete the project I created a lenticular print and wrote this paper for more context. The techniques and simplicity of the works created in this research catch the attention of the viewer, while providing multiple perspectives at the same time. Using recognisable visual and textual formats (e.g. news photography and the scientific paper) in the design, which the viewer is already familiar with, allowed me and most importantly the audience to reflect on both the medium and the message.

Looking back at the process and trying to combine design, art and science I have found it to be a very interesting approach to explore “vague” subjects or phenomena. While the goal of science remains to be separating fact from fiction, subjects like alternative facts, which boil down to having multiple “truths” can not be separated in such a clear manner. The rise of these post-truth phenomena still need to be understood and

documented in an academic context in order to broaden our understanding of the world we live in, now and far in the future.

Even while doing this research, new theories are created and discussions on the subject of (alternative) facts and (post) truth are held on a weekly basis. By developing this method during this project I believe to have achieved my first goal to better understand the alternative fact, what it consists of and where it came from. As a trial for the second goal, the lenticular print was exhibited on a small local public event. Here I gained the first insights and reaction of viewers. Most agreed that the almost empty field had to be fake, but between the two crowded fields viewers started to debate which was real and which was not. Immediately you could hear the words inauguration, crowd, alternative facts and the name Trump, which means the viewer did connect the image to the subject of alternative facts. Someone walked up to me and told me:

“At first I recognised the news photo, but when I walked by I started to doubt it. Can you tell me which image is actually real, or are they all fake? It is so easy to belief in what you see or hear or what others tell or show you.”

By doing this exploratory research and project I belief to have successfully completed my second goal and created a visual representation of the alternative fact, making the viewers able to question their own perception of truth, even for a small moment. By changing the point of view, people can experience an alternative truth.

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