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BACHELOR'S THESIS

Illusion in Visual Media

A guide to the use of illusionary methods in film alongside technological evolution and their impact on reality

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Content

1 Prologue

"There's always fear of the unknown where there's mystery." (The City of Absurdity: David Lynch Interview,1992 2023)

Speaking of illusion, first opinions seem ambivalent and lead to topics such as deception, false hopes, invisible traps. Others might think of images of spirals that start to move when looking at them – classical visual illusions of entertaining character.

Illusion in film is only a narrow sector in the whole spectrum of visual deception, yet it is incredibly diverse once diving into it. Over the years various cameras, lights, cutting methods, editing styles, effect methods and so on have been invented, all related to film and all of them advancing and being developed further over the years. When it comes to visual deception, the term often loses its harmful character in place of an entertaining one. Until film was invented, visual trick artists were found at circuses and amusement parks, attracting a wide audience. Magicians are nothing else than professional illusionists and they hold a certain fascination. Artists of illusion mesmerize people, as do movies and since movies themselves are in a way always illusive, they are both objects of similar fascination.

However, when talking about illusion, what is also meant is deception and it is not in a person's nature to gratefully be deceived. Apart from its entertaining character, there supposedly must lie another, deeper purpose or meaning, something that can only be depicted through such techniques. Since in a way, film in general is a work of created reality, a very well-known deception, there needs to be a point to it and a core that connects the audience to its intentions.

This work shall examine the methods and techniques of creating illusion. It will give an overview about the possibilities and moreover, look into the question of what it is that keeps viewers mesmerized about the effects. After all, illusion is all about making up what is not there, so what happens to reality once an illusion is created, built, visualised, and sent out into the world for millions of people to perceive? Its effect on reality is of very special interest in this work since it shall examine a delicate topic. Usually, reality shapes art and art shapes reality. These artefacts are related inseparably and to seek out what was inspired by what at some point is hard to tell. As illusion always resembles reality, once released it could possibly cause confusion in its witnesses if not used in proper doses. Or is it possible this has happened already? Could a film be re-

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leased to cause public waves of confusion through filmic deception? Even more important is the question about the potential of illusion, because apart from the dangers of its impact there might as well lie a certain potential, a sensitivity for something that can be activated. Chances are likely that our perception changes through irritation. These next chapters shall examine this topic to find this potential, unmask it and give an overview of what influence these methods already have on reality.

2 Reality and Illusion - Explained and Defined

First of all, there needs to be an explanation of what illusion is at all. This is not possible without first understanding reality and giving the term common ground since it is the origin and the prototype for illusion. These two phenomena are closely related, they interact and sometimes are hard to distinguish from one another. In the further chapters, the discourse will be about how to separate the two terms and how to know what is real, so as to be able to eventually see how, through examined approaches, reality changes or if it changes at all. However, let this chapter start with what one perceives as real and how.

2.1 Defining Reality at Different Points of View

"We accept the reality of the world with which we're presented. It's as simple as that."
(IMDB 2023i)
 ("The Truman Show", P. Weir 1998)

There is a way through which humans perceive light, colour and shapes, in the following called "seeing". It is also said that the way we perceive differs from every individual to another and lastly, our experience lets us put different meanings to objects, lights, and shapes in different contexts depending on our experience, necessity, or one's cultural background. Saying that eyesight has an enormous influence on the way humans build our world and our reality opens the question of what exactly can be seen as "real" or as "true". Since an illusion automatically implies that something isn't exactly the truth at all or not for everybody, one needs an approach to define reality before talking about unreal experiences. If there is one way we all perceive as a species, the question for a

universal and common truth is surely valid, yet over the years this question has been answered in many different ways.

Philosophy has made several attempts to give definitions and from whichever position, the answer is always less definite than a single sentence. William Fish attempted to explain both reality and illusion, and how one results from the other, based on the stance of Naïve Realism:

"This claim-that naive realism takes a stand on the specific way in which external objects and properties feature in the conscious character of visual experience--is also apparent in the following characterizations of the thesis:

[T]he phenomenal character of your experience, as you look around the room, is constituted by the actual layout of the room itself: which particular objects are there, their intrinsic properties, such as color and shape, and how they are arranged in relation to one another and to you.

(Campbell 2002: 116)

[T]he featuring of a quality or relation in the phenomenal content is ... its external realization in the perceived item...made transparent to the mind-the external qualitative situation becoming experientially present. (Foster 2000: 6o) [P]erceptual consciousness is, at least when veridical, an immediate registration of a normal physical object, in the sense that the sensory character of your conscious state...is accounted for by the possession by that object of perceptible qualities, together with the fact that you stand in a relation of awareness, or receptivity, to it.... (That which gives sensory character to perceptual consciousness is a public quality of some physical object.) (Smith 2002: 43-44)

In order to enable us to reach a clearly defined characterization of the thesis, let us begin by clarifying some of the terminology that appears in these statements." (William Fish 2009, pp. 6–7)

To put this statement in other words: your experience of a space is shaped by what surrounds you and how every object is set in relation to all other objects you perceive. Fish uses the word "sensory character" (William Fish 2009, p. 6) for experience to address the fact that perception is mainly sensory stimuli of the brain. To be a stimulus, an object is supposed to have perceptible qualities – you can see, hear, or feel it - and perceptual consciousness needs to be of a public quality, which means not only perceptible for you but for other human beings with your sensory abilities. To cut it even shorter, the essence of what a naïve realist states reality to be is: What we collectively perceive through senses is real.

Now, there are exceptions to make and cases in which this statement needs to be explained further. One must also take the public qualities into account, in other words the general perceptibility of an object, so we don't start calling a hallucination reality but in general, Naïve Realism speaks for everything perceivable to be real. Since other people surround us, it has to mean that if they experience, their experience shapes ours as well in a way as much as the absence of others' experience shapes our perception. Now going back to the question of reality, what is to be understood by Naïve Realism is the fact that sensory inputs which belong to a common truth shape our reality, therefore the sources of these sensory inputs which surround us are all part of reality.

This will be of relevance later when talking about the impact of film and the debate about how much illusion reality can take, but for now, I'd like to address another problem: the question of a common reality.

If we wanted to separate Illusion from reality and detect illusionary content, how would that be possible if everything is a part of reality? There seems to be a general understanding of both words but if you look at it closely you find them sometimes representing the same phenomena.

Let's have a look at the example of H.G. Welle's "War of the Worlds". In 1938, Orson Welles did an adaptation of the book's story under the same name for a radio show, which got immensely out of hand when broadcasted across the USA. On October 30th, O. Welles read the Halloween Radio Special, also called "The War of the Worlds", on CBS, telling the story of an alien invasion on Earth including detailed descriptions of the aliens' actions and well selected, for that time highly realistic, audio effects. As many people missed the introduction which stated that the following program was purely fictional and of entertaining character, they later tuned in on the channel and found themselves severely irritated by what they heard. In fact, the radio play caused a nationwide panic across the US with "Thousands of listeners rushed from their homes in New York and New Jersey, many with towels across their faces to protect themselves from the 'gas' which the invader was supposed to be spewing forth[…]" (Mindy Weisberger 2018)

Analysing the situation from modern perspective, the play resembles a perfect illusion, so real that it was almost not distinguishable from reality but also the only piece of information separating illusion from reality were a few minutes of radio introduction. Many listeners who missed the introduction fell into panic and urgently tried to leave their homes, running from the Marsians. Hearing the recording today, it would truly not be part of anybody's reality. Most people could distinguish between fiction and audiobook

in this case, not only since they already have all the information given to detect the illusion, but also because they are used to better equipped media and building an illusion today works differently than 90 years ago. This fact will also be of importance later, when looking at filmic illusions over the years.

Now, as we look back at the statement of naïve realism, one can state that indeed what the audience was perceiving undoubtedly was of sensory quality and impact. Moreover, the truth that this piece was an authentic play and entertaining artwork might have been just as real for some people as the alien invasion thousands of listeners were fleeing.

There are a few problems with the theory of naïve realism that might leave lots of open questions, also in regard to separating truth from illusion. Naïve realists count in everything of sensory quality but leave out the impact of thinking and processes of emotion, excluding all mental operations that aren't raw sensory input. Therefore, the result of cognitive processes is not counting in and forming a truth or reality which is not reflected again through mental conducting. From this point of view, one could not distinguish illusion from reality in this case. Since a great variety of people perceived the play as true and acted according to, after the theory of naïve realism the experience would be of veridical nature for a group of peers and therefore a real one. However, anybody would agree that the people were dealing with an illusion, also by the time they heard the play. Therefore, naïve realism puts an interesting aspect into regard because it gives general acceptance to different stands of perception, but at times the theory does not provide enough reflective character. Only regarding the receiver's subjective point of view can lead to problems as reality is more than one-dimensional, which is very clear to see in the case of the "War of the Worlds".

In order to add another idea on consciousness, an opposing stance is what philosophers call radical constructivism. Apart from giving a concrete definition to reality as it is the case in naïve realism, reality is seen here to shape itself individually out of the experience of everybody in a different way. Contrary to the statement before, it is set that reality is subjective for every person and constantly shaped anew. Radical Constructivism rejects the belief of an objective reality external to the observer. This philosophical stance contends that reality is a subjective construct, put together by the individual's unique perceptions, experiences, and cognitive processes. According to this view, humans actively engage in constructing their reality through mental processes, social influences, and past experiences.

Comparing both stances on the examples given, one sees Naïve Realism and Radical Constructivism standing on opposite ends of the philosophical spectrum regarding the nature of reality. Naïve Realism implies an objective external reality, while Radical Constructivism emphasizes the subjective construction of reality. Each perspective offers valuable insights into the complexities of human perception and the interplay between objective and subjective elements in our understanding of reality.

In any case, what we know from research and scientific as well as philosophical points of view, humans have a deeply rooted instinct for orientation and forming a reality. This is not only to be able to survive and be an accepted individual amongst peers and society but also because they react to survival instincts and orientational reflexes. In other words, humans can't help but make sense of their surroundings.

In the later progress of this work, this will be referred to as it takes a certain place in the development of illusion in film, such as light transformation or induction of movement.

Now from this perspective, talking about reality means not solely talking about the mere existence of an object, an impulse, or an idea but moreover about the impact it is having on its surroundings. The following chapter will shortly deepen the topic of human eyesight and right after, the upcoming chapters introduce classical ways of optical illusions, how they are constructed or used to lead over to the main topic of this discussion's interest: illusion in fictional film under the regard of their use and its impact on reality.

2.2   Perceiving Reality: Functioning of the Human Eye

"If real is what you can feel, smell, taste and see, then 'real' is simply electrical signals interpreted by your brain." (Wachowski and Wachowski 1999)
(*"The Matrix", L. and L. Wachowski 1999*)

Human eyesight is a complex system which is not yet fully understood and is still being researched. We know today that through visual perception a big part of our reality is built. Sighted events give us certainty and we build big parts of our memories and our reality based on visual perception. It is incredible that our eyes have evolved so far - we see light which is several trillion kilometres away from us. Yet still, eyesight can be deceiving as many visual illusions are being constructed in the brain as result of visual

inertia or mistaken perception. In order to understand visual illusion, we need to know what is going on behind our built-in lens and how our eyes function in a way we perceive or misperceive.

Colour vision, to begin with, happens by so-called photons, light particles, reflecting from surfaces, loaded with electromagnetic energies. These particles hit our eyes and, dependant on the wavelength of lights, we perceive certain colours. These colours slightly differ from person to person because of our physis. In general the process of seeing lights and seeing colour is the same for humans. The colours an average human eye can perceive range from wavelengths of 340nm to 720nm, which is the colour spectrum from red (low) to blue (high) as shown in image no. 2.1. When this electromagnetic radiation, in the following called light, hits the cornea, it goes through to the pupil which is enclosed by the iris. Since the iris is connected to muscles, it can regulate the light income by closing and opening the pupil. The light then is led through the lens whose shape is altered by muscle movement according to the object's distance. This ciliary muscle is activated for focussing an object; it is called accommodation.

After being led through the shaped lens, the light accumulates on the fovea, an area on the retina on which our eyesight of the incoming light is sharpest. Inside the retina we find rod cells and cone cells. The fovea is densely packed with cone cells which work best in bright light conditions. They process and filter the incoming wavelengths and are responsible for colour sight. Rod cells are accumulated outside the fovea. They work best in dim light and are used for peripheral vision, which means processing incoming lights outside the area of focus. They also are responsible for night vision.

Rods and cones are located at the outer layer of the retina: They initiate photosensory transduction, which is the conversion of light energy into electric signals that are then led by bipolar cells and ganglion cells right through the optic nerve into the brain.

Before the electrical signal reaches the brain, the visual nerves close to the nose cross ways so that the left visual hemifield is led to the right optic tract and the right hemifield is led to the left tract. This nerve construction is called optic chiasm. All of the information though is bundled and then processed so we have one field of vision. It is then led to a part of the brain's thalamus, then to the corpus geniculatum laterale and at last arrives in the visual cortex.

At the end of this functional chain of electrical impulses that are transmitted from the outside of the individual to the nervous system, ending in the brain and being processed there, we receive visual information with which we build impressions and lastly, our version of reality. This process in the big picture is the same for all humans.

Whether we see it from the perspective of a biologist or philosopher, the chain of transmitting visual information to the brain is the same for people with functioning eyesight.

Nevertheless, there are differences and exceptions where the information entering the brain is altered. To mention a few, the most known ones are different forms of colour blindness (achromatism or dichromatism) where a person sees shades of grey instead of colour (0,01% of all population (Ditzinger 2013)) or doesn't see specific colours in certain contexts such as with red-green-blindness (6% of all men). For these people, there are fewer rods or cones, or the existing ones are malfunctioning. This means, alteration in a normative physis has a big impact on one's visual perception.

Another, even more common cause for alternated eyesight is far- / near-sightedness (hyperopia / myopia), among distortion in sight field, unclear vision or double-vision. For each of these cases we can assume that a person has a different picture of the world, an altered field of vision, and has developed different methods to visually focus the external world. Some people might not notice malfunction over the years or only at older age since the mind always finds its ways to adapt and make sense of its surroundings. As mentioned earlier, forming reality is a survival reflex and any person would find their way of orientation no matter what parts of sensory input they're lacking. We know today from various tests and studies that the red or blue one perceives probably differs from the red or blue any other person perceives, maybe only slightly different, yet still eyesight is never the exact same for two people.

At the end of the information chain, we also need to analyse the way information is processed – or not. Since we don't have all our knowledge stored in our brain, part of our knowledge is stored as an informational impulse in our muscles and nerves, ready to be accessed. Moreover, we learn and develop knowledge, coming back to the belief that a human's perception evolves with experience.

Now that there is a debate on reality and how it builds, let's move on, taking a look at illusion under given circumstances.

2.3   Defining Illusion

Media is filled with illusions and deceptive methods. Their use and practice vary in between different genres as well as in how they are supposed to function for the viewer. Sometimes illusions are meant to be seen as a method of storytelling or a detail to provoke interest, other times they are sold knowingly as false reality. This is also why a lot of times illusion is mentioned together with media, there is a negative connotation to the word, meaning something which is supposed to deceive rather than entertain. Anyhow, it doesn't do justice to the term as there exists a great variety of uses and many of them aren't even seen by untrained eyes.

To begin with an attempt to explain, the word itself is defined by Cambridge Dictionary as following:

"[I]llusion

noun

uk /ɪˈluː.ʒən/

us /ɪˈluː.ʒən/

[A]n idea or belief that is not true, or something that is not what it seems to be:

- We have no illusions about how difficult the job will be.
- [+ that clause] I was under the illusion that trains ran frequently on weekends (= I wrongly believed this).
- They managed to create the illusion of space in a tiny apartment."

 (Cambridge University Press)

There are two types of illusion in this quotation: the first two statements are cognitive illusions which trigger a false mindset. The last one is of visual nature, indicating a distorted sense of space.

To keep it simple, illusions are perceived as veridical experience. They, however, never are which distinguishes them from reality. They can be proven wrong as there needs to be certain indications of their lack of a realistic character and they exist for all our senses. Some examples exist psychologically as in the form of thoughts or hopes regarding a situation, others are sensory triggers for a distorted appearance of reality which takes place only in the head of an individual. As can be read from the given ex-

amples, those types of illusions which provoke hope usually are indeed connotated negatively. After all, when checking the facts, reality has a disappointing outcome. As in the third example, we see that illusions can be used to create space where there is less. The art of illusion therefore is not only to deceive and manipulate but to create but certainly there needs to be differentiation between the cases. As one can guess, examples of all of these exist in media and especially with the rise of digitalisation it has become rather easy to create digital illusion since animation is nowadays on a level close to realistic photography and displays show video material so high in resolution it provokes our body to drastic physical reactions, panic, or even sickness (app. A06).

As this text only discusses illusion in film, this next chapter will start reducing information down to visual illusions and it will define it in relation to the previously discussed perception of reality as well as it usage and meaning in film.

2.4   Illusions of the Eye: Physical Triggers

When thinking of illusion, what comes to mind for most people are the classic and most popular visual illusions: deception by geometrical shapes, colours, movement in pictures triggered by specific colours or shapes or lastly mirror installations.
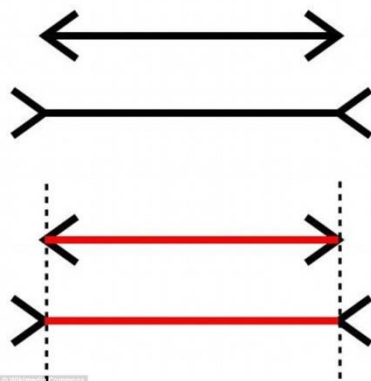
Only few of them are practically being used in film, nevertheless, understanding how they work will give a hint on how illusions are created in the mind – which phenomenon indicates illusion and what separates it from a normal realistic image. In order to understand how illusion in film actually works, it is also important to take a look at the history of film technology to specify what motion picture actually is. There is a wide variety of examples for illusionary images and although in film they usually have no use, the way they work tells us about perception and the human eye so understanding how these images work will give an insight into what illusions are built on.

Image   2-1:   Müller-Leyer-Illusion (Kuhn 2016)

There exists a list of names, scientists and artists who have committed their work to the art of illusion because finding out about it also means finding out how the human brain

works and how we are structured. Illusionary images have taught us about human vision because recognising the cracks in a system gives hints on how to understand it. In the following, let's look at a few examples. The Müller-Leyer-Illusion, to begin with, was discovered in 1889. It shows a row of vertical lines with additional lines positioned at both ends. To the untrained eye it looks as if the lower line is of different length. Putting them right next to each other and measuring the middle lines' lengths provides the reality check for the eye, revealing the fact that all the lines are of the same length. Why and how does this effect work?

The human brain has an automatic tendency to create 3D shapes in the head. This happens when the incoming visual information is processed and we try to put our surroundings in order. Since the brain is equipped with the instinct to make sense of a huge amount of sensory input every second, humans developed mechanisms that help compress information, group it, categorise and interpret it in such a way that we can store information as something we know and access it to compare it to new and unprocessed information.
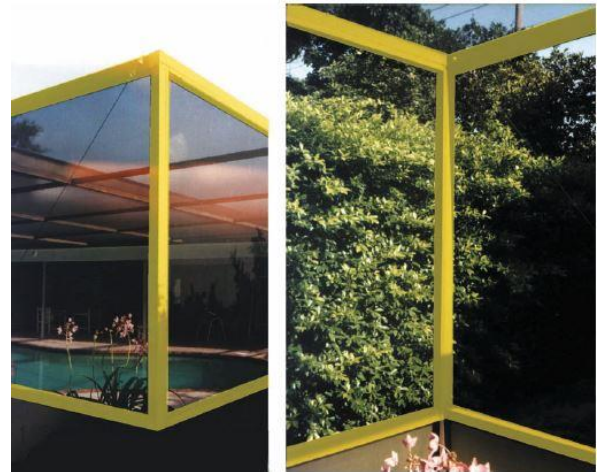

Image 2-2: Müller-Leyer Illusion in real life (Ditzinger 2013, S. 25)

As our sensory system builds a three-dimensional version of visual sensors, it happens that looking at the two bars in comparison, the brain puts the lower bar closer to the eye than the upper bar. This effect works on a drawing just as well in photography as in
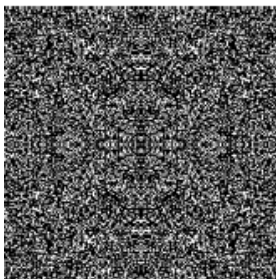
Image 2-3 : randomly generated noise, mirrored at the y-axis (Ditzinger 2013, S. 45)
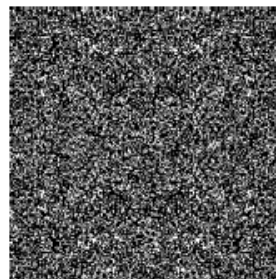
Image 2-4: the same noise image - but with eight pixels of difference at the symmetrical axis (Ditzinger 2013, S. 45)

the real world. As we orientate our vision along geometrical lines and angles, we arrange everything in less order around shapes we recognise easily. It can be seen in figure 5-2, a photograph made of two sides of a window – one from the inside and one from the outside. Not only does the vertical line on the left appear smaller, but so does the scenery behind the window. In this kind of illusion,

the brain's attempt to maintain size consistency leads to misperceptions of the size of objects. The same can happen when it comes to light contrast and the consistency or distance of real-life objects. For example, a hill on a cloudy day will seem to human perception to be further away than the same hill on a clear and sunny day. This illusion occurs because the human eye perceives bright, clearly sighted objects closer than darker and blurrier ones. This phenomenon is also supported by the lack of contrast that ocurrs when the sun is fully out shining. (Ditzinger 2013)

Image 2-5: associative Illusion (Ditzinger 2013, S. 48)

As light and shadow are the basic components of our three-dimensional colour vision, active use of it can also reshape a face or spatial situation. Since this is material which already goes beyond the origin of optical illusions, it will be discussed in a later chapter related to the common and popular usage in film and video media.

In addition to the effect of searching one's surroundings for shapes and orders, another case should be discussed in this context: the aspect of optical comparison and the need for symmetrical order. For this case there exists an experiment (see image 3-3), in which the author generated a random noise image of square size which was then mirrored to the lower x-axis. This resulting image was then again mirrored to a full square noise image. As in this image the symmetrical structure is clear to see and subconsciously gets in the images' focus, the effect is completely gone with a slight alteration. In image 3-5, this symmetrical effect and with it all optical structure is erased for a change

Image 2-6: associative black and white image (Ditzinger 2013, S. 12)

of 8 pixels along the symmetrical axis. In comparison to the original image, all structure is gone to the spectator and immediately the picture becomes less appealing to the eye for there is too much random information that can't be sorted.

This proves another characteristic for visual perception: when trying to structure their surroundings, humans compare neighbouring optical aspects. Lines, borders, structure,

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and contrasts are built this way in our head and fade as visual differences dissolve. Structure and symmetry always tend to be in focus, so it is easier to orientate. This aspect leads to another astonishing effect. This image shows groups of pixels in different colours. At first glance, the resolution is not high enough to show a definite image. One can't make out a lot of information from the colour blocks but when relaxing the eyes and looking at the image, the pixels blur together. The human ability of associative comparison leads to the shaping of a face as known aspects and colour contrasts are compared to pixels next to each other. Simultaneously, the whole picture is being compared to images of memory. The colour blocks are the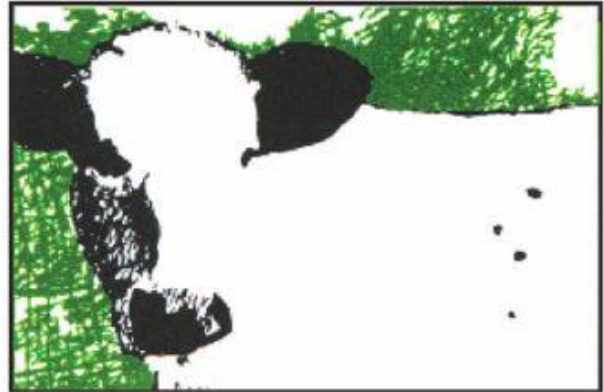n put together into a familiar image, also driven by the tendency to focus on what is already known and familiar. Of course, this effect works only in the case where the person regarding the blocks knows this certain image of Marilyn Monroe. In case the person has never seen the original picture, or any picture of Marilyn Monroe, perhaps it is a person who hasn't been exposed to this part of film culture so far, they only see an accumulation of coloured blocks. Maybe they discover a face when relaxing their eyes but as stated in the previous chapter, reality builds up for people individually and is shaped by our knowledge and experience. Therefore, this example shows how some illusions are dependent on certain knowledge in order to be perceived. The human brain tries to sort images into known shapes. Additionally, people also tend to prefer seeing what they're used to and what they already know.

Image 2-7: Dallebach's Cow Original (Ditzinger 2013, S. 16)

Talking about colour in picture and association, let's take note of the associative image by Dallenbach (image 3-6). Looking at the black and white version, it is hard to make sense of the dots and the accumulation of black lines. They seem to randomly be put on the surface, leaving a big space left in white. Looking then at the coloured version of the same picture (image 3-7) the green colour added now forms a background, revealing the actual image and shape of a cow. As it is shown here, colour can be used to stress content and evoke contrast. The human eye compares perceived objects to adjacent surfaces and recognises their contrast in light and shadow. If colours are added to neighbouring objects, the brain will also measure the contrast it perceives through

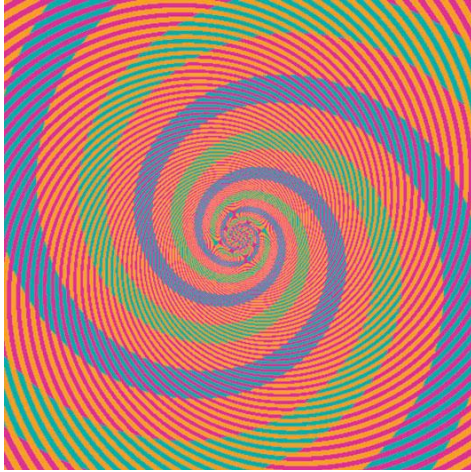the colour wavelengths. The more these differ, the higher the contrast gets, since then there are different cones responsible for processing the incoming light. Like before in the Monrow example, this alienising effect on the cow only lasts until the spectator has seen the coloured image stressing the animal. After taking a look at the image with the green background, the cow in the black and white version also shows up when looking at it. Again, the shape here is associative and can only be discovered by people who know the shape of a cow from their memory.

Image 2-8: Akiyoshi Kitaoka spiral (Ditzinger 2013)

Speaking of colour and contrast, colour can be used to highlight information, especially by using only a few shades of colour that are perceived by different receptors in the human eye. It can just as well be used to hide information. Since colours in a picture are being processed by corns and cells in the eye, which are right next to each other, colour wavelengths can interfere in the process of visual perception leading to our colour misinterpretation such as in the Akioshi Kitaoka Spiral (image 3-8). When looking at the image, there is more happening in the eye than we actively notice. The green tones shift, the orange turns into a brighter shade, the blues seem to shift the purple tones to a more saturated shade, and they trick spectators into believing there is at least one more colour tone stretching through the spiral. This phenomenon is evoked by optical inertia or so to say, the consequence of certain imperfections in the functioning of the human eye. When diving deeper into the topic of film, the word will probably be mentioned again since a variety of visual illusionary effects in film are evoked through optical inertia.

Image 2-9: Phenakistiscope - Courtesy the Richard Balzer Collection (Jobson 2010)

In fact, film itself can be seen as a resolve of optical inertia caused by a high rate of frames exposed to viewers in a single second with the number of frames high enough for spectators not be able to distinguish the single images anymore.

The very first versions of projectors which were later developed into moving picture projectors, the phenakistoscope or praxinoscope – a later version with integrated mir-

rors - were painted wheels on a device that would show you a small sequence of movements when mirrored and spun. These devices were called the phenakistoscope (from gr.: "eye deceiver"), zoetrope (gr. "wheel of life") or praxinoscope (gr. "action viewer") and existed as different versions of a similar phenomenon (app. A01 (YouTube 2021) and A02 (YouTube 2023)). Both share similar ways of functioning: a rotating wheel shows a chain of 8 to 12 images which are of slight difference. Each following picture in the sequence is alternated by tiny aspects, the first and the last image complete one fluent movement. As the wheel is turned fast enough and watched through a mirror, the viewer sees movement instead of single drawings.

While shadow plays existed for a long time which were the result of earlier of theatre artists projecting images by using light, the discovery of photography in the 19th century enabled the later invention of photo projectors, followed by the very first film projector device, T. Edison's (1891, app. A03 (YouTube 2009)). (The Editors of Encyclopaedia Britannica 1998)

The way the device induces movement happens again because of optical inertia: a spinning wheel which carries a film roll was, back then, turned by hand. At a certain speed rate of frame changes humans can't distinguish between picture a and b anymore and as a result, the single frames dissolve into fluent movement. This, of course, happens if each image before and after varies only by a minimal difference, as already dis-

Image 2-10: moving Praxiniscope (YouTube 2023e)

covered with the invention of the praxinoscope wheel, and visual changes stay fluent and connected.

Now as this chapter has pointed out, speaking of film already means discussing illusion since the movement we perceive does not really exist, it only happens as a cognitive process inside the head of the spectator. Though it does work for all people with functioning eyesight, the illusion can easily be seen through when looking at the details and discovering the moving picture to be an accumulation of single frames, compared, bundled, and put together as a whole sequence inside the brain.

2.5   Identifying Illusion

"Television. The strange thing about television is that it - doesn't tell you everything. It shows you everything about life on Earth, but the true mysteries remain. Perhaps it's in the nature of television. Just waves in space." (IMDB 2023k)
(*"The Man who fell to Earth", A. Kurzman, J. Lumet 1976)*

Now that there is a common definition and examples have been introduced, this chapter shall introduce illusion from the perspective of filmmakers. Moving from the more general context to that of the moving picture, Identifying Illusion needs a few more notes on what must be given as information so illusions can be discovered. As stated before, the illusion must be separable from reality by information that clearly points out the missing veridical character of the sensation. It is also said that illusion is intersubjective – the illusion appears to many subjects in a similar way.

There is the aspect of illusion carrying a high veridic character, so the feeling conveyed through illusion can feel rather real while the experience lasts, if people haven't gotten used to it. Just as in the example mentioned in the beginning, where a whole city fled in panic from an alien invasion that proved to be a radio show, there are rumours about similar incidents happening when film was invented. The first cinematic film reportedly ever shown for a paying audience was named "L'arrivée d'un train à La Ciotat" (app. A04 (YouTube 2024h)) and it shows exactly what the title says: A train rolling into a train station. Now there are myths about the screening, saying that when the audience first watched this 1-minute-long projection, they were so startled that they jumped up and out of the way. Some viewers are reported to have run to the back of the screening room, trying to get out of the rolling locomotive's way. (Spiegel 1994) However, this story can't be proven anymore by today's resources as all reports are only verbal transmissions of information. There is no recording of the situation, IMDB reports that: "This legend has since been identified as promotional embellishment, though there is evidence to suggest that people were astounded at the capabilities of the Lumières' cinématographe." (IMDB 2023d), although this statement has also not been verified by them. There are voices in favour of and against this rumour, however in the end it is not unthinkable that something like this panic could actually occur when looking at footage of people trying out new VR technology of the 21st century (app.: A05 (Grice) and A06 (Sim Design VR 2016)). Eric Grundhauser writes for "Atlas Obscura": "It's almost hard to imagine a black-and-white short creating much of a splash, but it seems like it was a

hit. According to Loiperdinger there are no accounts of how the audience reacted at the time, but journalists who wrote about their experiences at the showings of the Ciné-matographe Lumière, the program of short films in which La Ciotat first began appearing in 1896, seemed reasonably amazed." (Atlas Obscura NaN), and of course, from today's technologically advanced and cinematographically experienced view, this old footage of a train comes as no surprise. People have gotten used to more realistic sequences and immersive media, but it needs to be taken into account that the footage of an arriving train was the first in history to be reportedly shown to the public. Video strips had existed but had not been exposed to a great variety of viewers. Viewing habits of moving content were completely reduced to theatre and opera at that time, so judging experience can only be veridically done at the specific time period. Because an experience of an event does not only happen cognitively, reducing a sensation to the cognitive knowledge about it would equally deny its veridical character. Critics should not forget the impact of non-cognitive sensational events – such as the experience of movement or an incoming danger whose immediate sensational character is taken up by the body before having it actively processed and stored as unrealistic by cognitive processes.

Indeed, the sequence of the arriving train is in black and white and definitely contains a high amount of grain, but the audience still saw a moving picture. If seen for the first time, surely the effect is of mentionable sensational character, even if the rumor of people jumping out of the way might be a fake. Thinking of 100 years in the future, people might report the same about the recordings of people trying VR-glasses for the first time, unable to believe that these animations could be felt as a veridical sensation. This statement will be of importance later as this happened many more times during the advancing of film technology. There will be more examples about outdated techniques and films that were saved by history as classics, to give a hint on understanding how viewing habits change over the time. However, there needs to be clear evidence on how to separate sensational illusion and reality in film. Therefore, a few factors should be named.

"[...] [I]llusions are cases in which a particular can appear to us to exemplify a property that it objectively lacks, then unless we are willing to endorse a realm of objective non-facts, there appear to be no suitable facts with which the subject could be acquainted in illusory experience. So while we are unwilling to give illusions the same treatment as

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hallucinations, we are unwilling to give them the same treatment as veridical perceptions." (William Fish 2009, p. 146)

Seeing the colour red, according to naïve realism, would therefore not be an illusion as most people see red and there are medical factors and proof for why a small number of people doesn't see red. Seeing movement through a series of abruptly changing images is an illusion because a wide variety of people perceive it in the same way. It also can be proven to be unreal (the spectators aren't moving forward after sensing movement) and there is additional evidence of a medical nature that distinguishes the sensation of movement in the viewer from reality. Motion in picture is perceived because of optical inertia – the fusion of abruptly changing frames in the spectator's mind. To prove it, one could simply look at the projection process to see that a film roll is made from a large number of single photo negatives being maximised by lenses and projected with light.

The threshold for visible motion is often cited as being around 20 frames per second (fps). This means that if a video is played at a frame rate below this threshold, viewers may perceive a stuttering motion and the illusion of fluent movement dissolves. Up from 20 frames per second, viewers can't distinguish single frames anymore and therefore start to see motion instead.

To perceive motion as smooth and continuous, most people require a frame rate of around 24 to 30 fps. (Schmidt 2011)
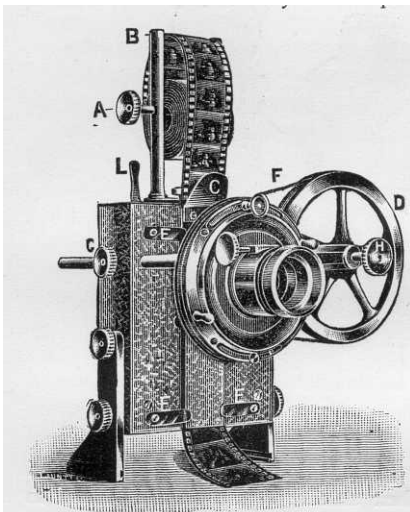
Image 2-11: Early Detailed Version of a Cinematograph (cinematographwray.jpg (JPEG-Grafik, 429 × 534 Pixel) 2022)

"Like physical illusions, optical illusions are similarly predictable and intersubjective - if they were not, there would not be much of a market for books of the illusions. And, like physical illusions, they also require the world to be a certain way in order for us to be subject to the illusion." (William Fish 2009)There needs to be an indication, a sort of proof for an illusion to exist which at the same time distinguishes it from either reality or hallucination (hallucination in this case is meant as an unreal experience that somehow can't be proven to be unreal. This won't be explained further since it differs from the topic and would need a whole new chapter). What does this mean for the plot?

Reality depicted in film usually looks like the reality people are used to, more precisely, the reality of the target audience. Therefore, reality is easier to adapt, and viewers are more likely to immerse in it than into that of a strange environment. If this is not the case, film establishes another reality, most of the time in the beginning of the film, giving a visual overview on the physical appearance and rules of the world created. In case there is a story in which people live, breathe, and communicate under water, it needs to be clearly established in the first place to the audience for them to believe it. It also has to be introduced as a natural order of nature. If the audience sees people struggling to breathe and move under water, the illusion is not established and nobody will believe this world exists, not even in their minds. The same rule applies to any other abnormal activity people would not perceive in their everyday life such as talking animals, humans with superpowers or showing a different time period.

Moreover, there are more types of illusions existing specifically for film which have often been found by trial and error methods which have evolved and been discovered together with the progress of analogue and later digital technology. Not every method works equally well, therefore certain indicators need to prove that a sequence creates a sense of illusion for a group of people. An illusionary film artist or cinematographer as a result needs to experiment not just by the judgement of their own eyes. These indicators additionally differ each other from the method of illusion and the context of usage. It is hard to name a concrete list which needs to be worked through through so that a filmmaker knows for sure their method will work with the audience. Instead, in the rest of this chapter, a variety of methods will be introduced, together with concrete film sequences, use cases and additionally cases of illusions gone bad to see through which missed criteria an illusion could not be established.

Hypothetically, the illusion of film might be broken as soon as the immersion doesn't work with the peer group anymore. In general, this is provoked as soon as viewers see the film as film, as something produced, detecting any indication that there was a crew, there was a camera, or that there was an artificial set artist and costumes. As the audience fails to immerse themselves, the film is uncovered and the viewers are disillusioned and fully aware that what they are seeing is a faked replication of a made-up reality, scripted and cut together into the order of a timeline.

Nevertheless, there might be positive effects in breaking an illusion as it sometimes surprises the viewers who then must rearrange their perspective, activating the natural orientational instinct. After all, there is a certain fascination to illusion that leaves the

audience mesmerised. These next chapters attempt to find out more about the captivating effects of being lured into a fake reality – more or less knowingly.

3 Illusion in Motion Picture as a Creative Tool

Film itself is an illusion as stated before. Talking about film as an illusion is therefore correct but only scratches the surface of the topic. Therefore, by giving an overview of the typical illusionary methods from the time where the film was born till today shall dive deeper into exploring the phenomenon. Film, in the development of this paper, is introduced as a way of storytelling and illusion as the technical equipment, a way to build contrast and convey a mood or story as well as being a creative tool to evoke specific effects.

Moving forward, this paper will not only examine how illusions are created and how they might change over time, but also give analyses and focus on the possible deeper meaning.

Let's start by naming different methods and how they build up, then look at what they have to do with the narrative of the film, how they evolve the narrative and how grave an impact they have on narrative. Lastly, this section shall analyse scenes and meanings of used methods. The word real will here be used as something going in one direction of time and space and that is perceivable by the rest of all characters, not just the protagonist, equal to what has been stressed earlier in the definition. A film's reality usually resembles our perceived reality or is something initially established as status quo and not to be altered.

3.1 Naming the Tools: An Overview on Illusionary Methods

To be able to categorise and analyse illusionary methods this chapter shall give an overview, a collection of scenes used to give a variety of examples for comparison and interpretation. The following methods are those used several times since the discovery of film.

3.1.1 Distortion through Light and Colour

Light sequences planned with lighting sources moving to different sides in different colours can work as an illusion since our three-dimensional vision builds depth through light and shadow progression to predict size or movement over time of an object. The depth of a shadow, its length and the shades of grey are subconsciously analysed by a spectator as a source to give orientation. This happens in real life as well as in picture and film.

Light strobes or light movements make it hard for the eyes to process the movement and environment. They create an uneasiness and the need for viewers to concentrate, focus and orientate to be able to make sense of what they are seeing. It has been mentioned that people have a deep need to make sense of everything perceptible. It is programmed into the human brain to orientate and sort experiences, connecting them to former experiences.

Image 3-7 (Dallenbach's Cow) showed that a colour can stress an object and give radical contrast. Fast changes of light usually indicate fast movement by a light source. If this movement doesn't happen externally around the object, one logical reason would be that the object itself is changing the shape – otherwise a change of light and shadow would naturally not happen. Therefore, a facial shape or the shape of a room changes in a visible manner when an unnatural and hard light source is moved around the object. The same rule applies to changing colour, because again, the only natural way of a colour change would be a change of location, requiring movement of the object. As different tones of colour reflect the light differently and seem to us darker or brighter, throwing different shadows, an object can seem distorted by rapid changes of light colour.

3.1.2 Illusion of Time and Montage

Film uses associative methods to create an illusion of time and movement. The following methods are only a small selection of popularly used editing techniques to trigger time shifts or apply parallelism.

Multi-Screen:

Is used to induce parallelism of action and happenings. Different scenes can be put into the same timeline to show they are different views on different scenarios that are not connected by location but still run synchronised.

Slow-Motion and low shutter speed:

These methods both play with the duration of the timeline. They stretch the action of a sequence to make it seem as though it is happening for a longer time. For showing slow-motion, fewer frames are shown per second than were shot. It mostly shows a fluent image and provides detail for the viewer. Meanwhile low shutter speed means shooting in under 20fps, it also means gaining more light so the movement becomes blurry and the lower frame rate adds staccato.

Sped-up time or fast cutting:

Both methods create the experience of a faster running timeline. Sped up time means showing more frames than those used while shooting a sequence. Fast cutting does not refer to the process of cutting itself but to the technique of cutting out frames to seemingly speed up the timeline, thus leaving out details, or cutting from one scene to another rapidly. Also, this suggests a high rate of actions right after another during the passing of a short time.

Match-Cuts:

Match-Cuts use associative effects to show a time transitioning and the passing of time while the situation or character stays the same. The scene is cut from one to another while dominant aspects of the image stay unchanged and equally positioned. It looks as if everything around a character changes but the character stays at the same position. This creates parallelism and simultaneity. Viewers are under the impression shot 1 and 2 are in some way connected by time, place or action. In reality, two different events are brought together and connection is built through editing technology, similar shots, movements or colours. As shown in figure 3-4, people build visual connection in the head by comparison. In the case of visible similarity, comparing neighbouring frames leads to the conclusion of relation so that they're associated with one another which arises from our brain's need to put actions in order and sort events by optical comparison.

Reversed timeline:

In this case, the sequences are reversed, so that everything is seemingly going back-wards. There are cases in which this is done to go backwards in the storytelling. Other cases plan a reversed sequence which is then played backwards.

The resulting movement indicates the strangeness of the situation, an unreal experi-ence, separating the scene from the real world. It is one of the rarer techniques, not only because it requires a high level of professional acting and planning the sequence but it also confuses the audience if it is used too often.

3.1.3 Illusions of Room and Space

People orientate in room and space by known relations between objects and people as well as light and shadow depth, which was mentioned before. The brain uses the effect of comparison for orientation through angles and known size relations. Regarding the fact that we rate relations in size through comparison and again, known patterns of size, these stored attributes can be used to manipulate a room or set in general to make characters appear bigger, smaller or distorted in any way..

Another special case is the Vertigo Effect. This method uses back-and-forth camera movement in combination with lens distortion provoked by zooming movement. Push-ing the camera in and zooming out makes the background stretch out to the sides and come closer to the person in the foreground. Normally, by only using one of the two movements, spectators don't notice these distortions since they are too subtle but us-ing both actions at a time stresses these lens distortions, so they become overly visi-ble.

3.1.4 The Illusion of being in Movement

This phenomenon comes from how the brain perceives movement. When movement in film is shown, or rather the camera or protagonists are put into movement, viewers can feel this in their own body. The psychological trick behind it has been discovered way

before film was invented. Records of the "witches' swing" or haunted swing (image 4-1) date back to the 19th century (Wood 1895) where it was often found in amusement parks. Visitors found themselves inside a room, sitting in a sort of gondola attached to a pole in the middle of the room. The room itself then starts to revolve around the visitors, causing the feeling of moving in circles in the room. This trick works because the environment passing by the spectators creates fast moving light impressions on their eyes' retina which creates a feeling of being in movement without actually moving (for a modern example, see app. A07 (Eftelweslay Theme Park Channel 2017)).

In film, this effect works just the same. Since passing light reflections naturally indicate movement for the brain, it is put into the same psychological state when these similar light stimuli move over a scree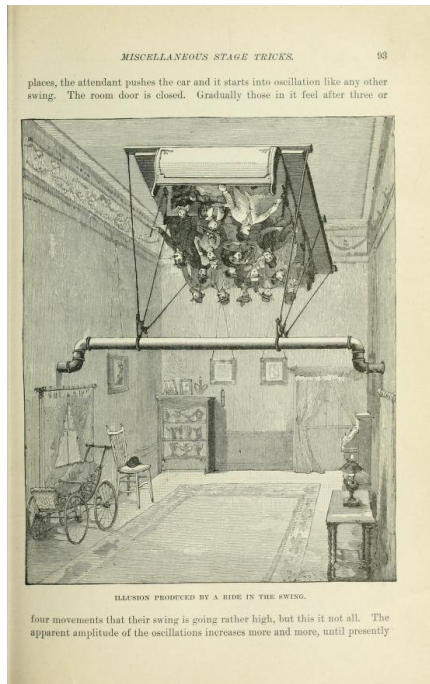n, from the middle to the outer edges. A human's sense of orientation is activated when they're experiencing several stimuli right after each other and it provokes an instinct to instantly orientate anew. In a way, it resembles a cat's hunting mechanism which is much more distinctive than in human behaviour. Still, several quick movements right after one another subconsciously activate a human's automatic orientation system and furthermore draw their attention towards the impulse, into the movement.

Image 3-1: The Haunted Swing (Internet Archive 2023)

Movement is felt intensely when the actual experience of a train ride or skydiving off a cliff is shown in point-of-view-perspective (where the camera resembles the protagonist's view) on a screen that surrounds the audience completely as they don't perceive the cuts on the sides where the screen ends and their actual surrounding is revealed. This effect can thus be maintained in different environments, using several tricks and well-placed stimuli, e.g.: centred focus of field view and a surrounding which contains a lot of objects besides or under the driving camera. Train tracks work well for this purpose but also rocky grounds or paved streets as we see a pattern moving beneath the camera. Additionally, the field of view should contain irregularly appearing objects which force viewers to focus on different points in the picture constantly. When applying these characteristics, immersion can as well be achieved on a normal screen or even on a

small phone's screen because the intensity of an experience is moreover a question of focus. How well does a film activate a viewer's reflex for orientation?

(Author's translation resembling the german original text: 'In settings of induced motion, [the director] has the cinema audience race with Gene Hackman between the columns of the elevated train and, in a way, at the location of the train, speed across the tracks. In this way, the chase becomes immediate reality, and the recipient is fully immersed in it because they literally feel its speed in their own body.' (Mikunda 2002, p. 213) Moreover, the effect gets intensified by placing single items like trees or houses or single objects alongside the camera's tracks. These cause a brain to work faster, give input and switch on the natural survival instinct of reflexive orientation.

3.1.5 Digitally Produced Illusion / VFX

With the rise of digital technology, film has evolved and progressed and filmsets have drastically changed during the process. In the early years of cinema filmsets needed objects on the stage as well as costume and dramatic make-up to be seen through black and white. Around 100 years later, a filmset often only contains the actors and actresses and a green screen room. Animation and visual effects are dominant in Hollywood productions, especially when talking about modern Marvel cinema or the genre of action or horror. VFX have advanced together with

Image 3-2: Escape from Gringotts, green screen footage (fxguide 2015b)

the invention of new technology over the years. Naming all methods though would expand the topic and open a whole new chapter, therefore they will be named as one category of digitally produced illusions.

Image 3-3: Escape from Gringotts, final image (fxguide 2015)

Green screen technology has developed to be a form of room and movement illusion itself. It provided for filmmakers an opportunity to create a whole new level of imaginary worlds. Film before was limited to physical limits of a filmset, of mask and costume. Green Screen technology brought film illusion further away from our reality, yet still

resembling the world we know from our own perception. Thus nowadays, the industry has discovered the ability to defy the rules of physics on screen.

Filming the works of Star Wars, Lord of the Rings or Harry Potter were made possible by montaging images that weren't related to each other on the film records, plus adding digital effects. Thanks to this, images could be portrayed closer to how they were described in the books.

In 2019 LED Screen technology officially entered the world of cinema, lifting the process of filming to a new illusionary level. While with chroma key technology, the animation could only be added in the editing process and often the keying took a high amount of time and effort, virtual sets display background and surroundings during the shooting. They also are adjustable to focal length and in their setup as single objects can be dragged around the surrounding digitally. New experiments and camera or visual technology is tried specifically in film and attracts a lot of attention, so we can say film not only represents actors and filmmakers but also digital technological innovation.

Visual effects haven't only been used since the rise of digital technology. There are various examples of VFX coming from the time of analogue cinema with some of them being done so well, they haven't lost their stunning effect on viewers over the years at all. Now that there is a selection of important methods, the following will give insight into how they are used and possible meanings of this.

4 Reading Illusion – Inspection of Concrete Scenes and Sequences

"If you immerse yourself into a foreign language, then you can actually rewire your brain." (IMDB 2023e)

(*"The Arrival", D. Villeneuve 2016)*

The key to understanding illusion is to look at its use and to understand its role within the plot. Illusion can be seen as mere entertainment with no higher use or meaning but there is a high possibility that it is used consciously. When looking at all the referenced methods, many of them require precise planning. Even though some were discovered accidentally, it usually is no coincidence at an obvious illusion is placed in a scene.

There needs to be a reason why filmmakers intend to bend the reality they created and since there might be a deeper connection to the plot, it is essential to take a closer look at exemplary film scenes that use such methods. The following chapter will give examples for the illusions listed above to examine their use and possible patterns.

4.1 Analysis: Why Illusion is used and its Place in the Story
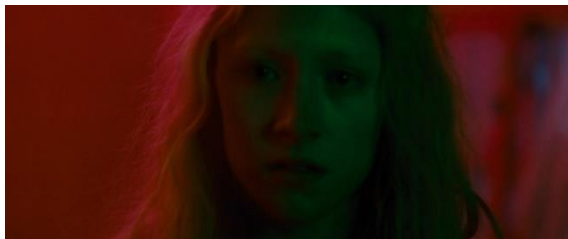
Image 4-1: Hanna, 2011; Timestamp approx.: 01:36:00 (YouTube 2023b)

Image 4-2: Hanna, 2011; Timestamp approx.: 01:36:00 (YouTube 2023b)

The film "Hannah" (2011) tells the story of a girl who is raised by her father in the forest to be a highly trained professional assassin. On a mission, she is being followed by secret agents, trying to capture and stop her.

In the very end of the film, she is entering a house in an abandoned amusement park with flashing lights after an assassination, moments after she realised she is not human but a clone, bred and trained for physical combat. She realises that she doesn't have parents, she is less human than she thought and raised to serve a purpose.

As she enters the house, flickering coloured lights go on and off from switching directions, shaping her face in a manner that makes it look for viewers as if the face itself is changing in shape rapidly (app.: A08 (Wright 2011; Netflix 2024, 2024)). This setup mirrors her inner conflict, her falling apart and represents inner instability.

A similar effect can be found in "Euphoria" Season 01 Episode 07, a series that has gained a lot of international success and attention, positive reviews and opened the art of expressionistic cinematic lighting by daring surreal colour sequences.

Image 4-3: Colour palette from "Barbie" scene - the "Barbie" world (Warner Bros. Pictures 2023)

As Jules, one of the main characters, is experiencing hallucinations at a party, the background vanishes, revealing characters changing in match-cuts under drastically changing light in different colours and directions (app. A09 (Google Play 2019)). As stated before, coloured light reflects differently and appears to a spectator in different shades of luminosity. This illusionary method is similar to how it has been used in Hanna, but with 10 years of difference between the shootings, LED tubes have entered cinematic lighting and Euphoria shows much more daring and powerful colour lighting due to higher colour saturation coming from modern LED tubes.

Image 4-4: Colour palette from "Barbie" - colours of the real world in the "Barbie" world (Warner Bros. Pictures 2023)

The film "Barbie" (2023) uses colour to create separated worlds. It has been mentioned before that to create contrast, colours can be used supportively. In this movie, this method plays a major role since the separation of two different realities is made clear predominantly through the use of two opposed colour palettes.

The plot of the movie is about Barbie, who finds herself showing symptoms of reality such as her feet being flat on the ground and thinking about death. As a cure, she is sent to the 'real world' in order to search for the cause of these changes.

The colour palettes are clearly separable, so the contrast immediately lets the spectator distance the Barbie and Ken in their heritage from the scenery of the real world. The real world is here a world that resembles that of the viewers by optical appearance, language, physical order and social behaviour.

Taking a look at the "Barbie world" colour palette we see oversaturated and artificial bright shades, pastel colour and a look resembling that of a child's bedroom. The colour palette for the "real world" contains more natural colours, more grey and brown shades or darker shades. It resembles the world one would see by stepping outside the door and looking at an average US city landscape.

Image 4-5: Colour palette from "Barbie" - Barbie entering the real world (Warner Bros. Pictures 2023)

These looks put a border and associative mark so viewers immediately recognise the Barbie world as a fake and artificial one,

but also as the leading reality since when crossing the border to the real world, both main characters are dressed in artificial colours so that their looks fit in as little as possible.

Image 4-6: Morgiana, 1972; Timestamp approx: 00:54:00 (Eastern European Movies on English Online 2023)

Overall, this theme does match with the sociopolitical message that a perfect environment should be checked for flaws and does not really exist. This is again evoked by association, for saturated colours give a flawless, happy, polished and artificial look. On the other hand, the second colour palette is built from brown, green and grey shades that are associated with natural looks as well as sometimes unhappy, unpleasing characteristics.

Another example combines both the use of colour and post-production colour editing with the use of concrete camera equipment to create illusions, those reflecting inner state of mind and point-of-view-shots. In "Morgiana" (1972), we see two sisters, Klara and Viktorie, living together, only not in harmony. Out of jealousy, one poisons the other to get the pretty and nice sister's money and her house.

When the sister Klara has effectively been poisoned, she experiences hallucinations which the filmmakers show in point-of-view subjective shots. These psychedelic sequences show a drug induced mental state by shifted colour layers, creating multi-coloured contrasts. Additionally, this effect is supported by slow shutter speed and the use of a wide-angle lens of around 15-18mm, creating heavy image distortions around the images' middle (see app. A10 (Eastern European Movies on English Online 1972)). The audience dives into Klara's hallucinations in a shot-reverse-shot exchange between Klara stumbling through nature and her

Image 4-7: "The Whale"-Trailer, 2022; Timestamp: 00:10 (The Whale | Official Trailer HD | A24 - YouTube 2023)

unclear vision. By this, the audience immerse themselves into the character, experiencing her confusion with their own eyes.

Introducing the split-screen method, it is dominantly found in "The Whale" (2022), where an overweight man gives online teaching through a turned-off camera to hide his body image from the students. Over time he tries to build and repair the relationship with his teenage daughter, who is admonishing him for his medically dangerous body weight.

In the online teaching scenes, we see a split screen of a conference situation. Over the years and through the COVID-19 pandemic, this situation became rather familiar. Its use in cinema though needed a few years to fully establish the aesthetics of an online-teaching course situation. "The Whale" reaches another meaning, an accumulation of people and actions, parallelism of action and showing how several plots run together at the same time. It also shows the exclusion and isolation of the main character who's screen is the only one that is blacked out in the very centre of the frame.

Long before the pandemic and times of digital conferences, multiscreen montages had already been used for showing parallelism in a timeline in the early 20th century. Those back then looked way different than modern examples due to the technological progress that has happened over the 100 years of filmmaking. The first attempts were back then still rather theatrical, for example in "Histoire d'un crime" (1901) where a dream sequence is shown parallel to the thief character sleeping in his cell, dreaming of an alternative reality - him living a normal life (see app. A11 (Internet Archive 1901)).

Image 4-8: Histoire d'un crime, 1901: the robberer's dream - Split-screen sequence; Timestamp approx.: 02:26 (Zecca 1901)

For the second image layer – the dream - filmmakers built another room into a hole in the set wall where the action is played. The effect is very similar to the multiscreen technique mentioned in "The Whale" – it resembles parallelism, two actions happening at the same time. On top of that, seeing the thief sleeping in his cell clarifies the sequence's intention, showing that there isn't a new plot starting in another location, but that the actions are connected, running parallel in time. Also, the rising interest for the science of psychoanalysis and dream analysis in the 20th century is witnessed around

that time and later on. While in the beginning of film screenings, film preferably contained concrete content such as trains, city life or human interaction, cinema later developed the ability to show imagination or dreams and symbolise imaginative worlds inside a character's mind. This will later be deepened when talking about illusion and symbolism in chapter 5.2.

In "Histoire d'un crime", there is another effect to be witnessed which also resulted from technological progress over the years. Speeding up time was an unforeseen effect in these early years of cinema, which was caused by the invention of automatically rolling projectors. In the beginning of 1900, film cameras had to be rolled by hand, so they only sped up to around 16fps, including inevitable speed changes due to the imperfection of human movement coordination. Later, when sound was added to cinema around 1930, 24fps became a standard for film projections. (Read and Meyer 2000) When showing older films on new projectors with a higher frame rate, the film roll was projected faster than the original recording rate had set. Motion therefore seemed to run faster; movement looked edgier under altering speed conditions. 1936, in Chaplin's "Modern Times" factory scene, in the very beginning of the film, we see a conscious use of this effect (app. A12 (Internet Archive 2024b)). The film shows the hustle of a worker in a modern factory, the complications of humans working like machines and the absurdity of it. The sequence of the protagonist working in the factory is visibly sped up, underlining the fastness and the increasing life speed they experience.

The use of this effect has since then not really altered. Sped up sequences are used for the purpose of rolling through the story, showing jumps in time, the ongoing of a story or symbolising an inner state of a rushed mind. For the short film "The Box" (1996, app. A13 (MUBI 1996)), Benstock and Losey filmed the whole script with a person moving drastically slow during the recording process. When speeding up the film, it looks as if the protagonist is moving through a city that rushes past her at high speed. Here, we have again a comparison effect, something that is set in action, mostly to underline another aspect of the video.

Match cuts, on the other hand, are a way of switching through time and action, leaving out long passages of time without losing connection in the story. This kind of illusion forms parallels between two settings and connects scenes without them being shot sequentially or even on the same set. Naming one recent example, "Everything, Everywhere, All at Once" (2023) has mastered the art of match cut, sending their protagonists through various infinite multiverses or displaying the antagonist's power over reali-

ty, not only once or twice but multiple times (app. A14 (Everything Everywhere All At Once ansehen | Prime Video 2024)). This is a surreal film that follows a Chinese American housewife, who discovers she has the ability to access alternate dimensions. As she navigates these parallel worlds, she must confront her own identity, family dynamics, and personal choices.

The included match cuts mostly show the jumps between multiverses. They were a highly difficult cinematographic task that required matching of all positions, film angles and movements in each shot. Like previous illusionary examples, these work by the associative method, in this case we experience movement through space and a rapid change of surroundings.

On the contrary, other filming techniques give the ability to slow down a film or a time-line. This is used in "Chunking Express", a 1994 Hong Kong romantic drama film directed by Wong Kar-Wai (app. A15 (Amazon 2024a)). The film tells two interconnected stories of love and longing set in the bustling urban landscape of Hong Kong, capturing the fleeting moments of romance and the search for human connection in a fast-paced world. It includes two plots interfering with each other but running parallel, one of them telling the story of Brigitte Lin, a mysterious woman with sunglasses and a blonde extravagant wig who's involved in crimes such as drug smuggling. The opening shot of the film is fully shot at a low frame rate, supposedly way below 1/16 as the pictures move along creating visible staccato when Brigitte descends into Hong Kong's underground. This effect has been mentioned before in the scene from "Morgiana", and the use cases differ only in their details. The slow, shaky, distorted looks it gives the camera image are there used to recreate confusion and loss of orientation. In this case it is not the character who loses orientation but the audience. It gives the impression that she is ungraspable and mysterious. The spectator receives a similar dreamy atmosphere but while in "Morgiana" the effect makes the character look weak, Brigitte looks unreachable and powerful as it is almost impossible to get a clear image of her. It seems as if the camera is lost in the big, fast city, while trying to follow Brigitte the drug smuggler, losing track of her through the countless sensory impressions. This happens only through the manipulation of camera frames, as our eyes would see a clear image walking behind the character like that.

Using illusionary filming techniques to underline the plot is used for another, rather different and rare method that involves the whole production process from scripting to

acting and post-production. Since it takes a lot of effort by script writers and actors, and the aesthetics only fit to specific niches of genre, there are only a few examples. The most disturbing one is taken from the series "Twin Peaks" by David Lynch. It tells the story of a detective coming to a small American town to investigate the mysterious murder of Laura Palmer who discovers that the city is apparently hiding a lot more secrets than the crime on Palmer. In season one, episode two, he experiences a dream that is shown in a strange sequence, filmed completely backwards, including all dialogues (app. A16 (Amazon 2024d)). Editors then reversed this scene, so the action made sense and dialogue is understood.

The characters' movement therefore becomes odd and unnatural and the speech sounds artificial. The looks of the scenes are those of characters being pulled on by the director with strings.

We see a similar script and editing in the short film "A Short Story" (app. A17 (MUBI 2024)) in which a cat is going out into the world to find reason, asking three demons for a hint. The third demon scene is shot entirely backwards, playing with movement and aesthetics but also with the set dimensions. As the set in the foreground is built like a puppet theatre stage but set up right in front of the camera, we see a doubled illusion of a reversed timeline as well as hidden levels of height. As the demon walks to the front, the actual size of the theatre is revealed together with the special illusion it created.

Image 4-9: "The Thief of Bagdad", 1940; Timestamp approx.: 01:07:00 (Der Dieb von Bagdad. Ein Märchen aus Tausendundeiner Nacht Bilder, Poster & Fotos | Moviepilot.de 2023)

Regarding spatial illusions, green screen is the most used illusion for the creation of space. It combines the footage of several places into one sequence and with its discovery, it provided the technology of creating worlds on a whole new level. Also known under the name of chroma key, blue screen or green screen are methods of keying out one colour tone of an image and making its field transparent. Before the use of chroma key, filmmakers used double exposure to put characters in another surrounding. "The Invisible Man" (1933) (app. A18 (Internet Archive 2021)) can be seen as an early use of the idea to combine two recordings with each other and create a new sequence that could not have been filmed without it. For

this film, filmmakers used double exposure filming technique, putting the villain into black velvet clothing and filming in a darkened set so that only the clothes and parts around the velvet wrapping were made invisible. These shots were combined with the actual sequence; thus, the effect of double exposure and an all-black set and costume were still not perfect which led to the film roll being painted over in post-production. This was a very time-consuming method, although the outcome of the special effect is still breathtaking today.

Later, chroma key technology was introduced to cinema in "The Thief of Bagdad," a 1940 film directed by Michael Powell, Ludwig Berger, and Tim Whelan. Its name and topic today surely are problematic in its sub-context but since it did set a milestone it should be named and then again discussed in a later chapter. While the blue screen technology is not the same as the green screens used in modern filmmaking, it still works the same as green screen keying, only that it uses blue background that is later keyed out and replaced by other footage. This allowed the filmmakers to combine the acted footage of characters with background footage from various places or even miniature landscapes. The crew therefore could save travelling costs for the crew. But they could also insert footage you could not possibly find but only create. The blue screen process was later refined and evolved into the green screen technique, which is more commonly used in the film industry today.

With the rise of digital technology, animated surroundings were added to chroma keying film technology and allowed producers to create worlds apart from our definition of reality. It made it possible to not just combine different shots from unrelated situations, but also to defy the rules of earthly physics. Chroma keying made a lot of popular and legendary film series possible, such as "Star Wars" or "Lord of the Rings" and is still used in films today, as some filmsets only contain a green room and room structuring green artefacts. "The Mandalorian" recently elevated artificial filmsets to a new level, a popular Star Wars TV series that follows the adventures of a lone bounty hunter, Din Djarin, in the outer reaches of the galaxy. The most notable illusionary innovation was the use of large LED screens and real-time computer-generated backgrounds to create highly realistic and immersive environments for the actors to perform in. This not only allowed for more efficient and cost-effective production but also raised the bar in terms of what could be achieved in on-set visual effects, providing a new level of realism and flexibility in creating otherworldly settings. The surroundings are made to fit the camera frame to lens and the spherical character during the recording process. On top of that,

all surfaces and objects are adjustable during the filming process - missing green screen allows actors to immerse into scenery.

This method has technologically made a huge impact in film history, for the borders of the set and details are not visible. The eyes don't perceive the difference to an original film set. The keying method also has its disadvantages. Regarding the editing process. In the early years, it was difficult to key out details and the edges looked rather sharp and unnatural. Complex chroma keying takes up a lot of time, effort and of course money to be done properly so that lights and shades not only fit the moving character but also the added surroundings.

Image 4-10: Making Of: "The Mandalorian" (Disney Les Making-Of : The Mandalorian (2020) 2020)

The last category of illusion to be mentioned is the illusion of movement through film. "Star Wars: Episode IV - A New Hope" (app. A19 (Amazon 2024b)) is a 1977 Star Wars film that follows the journey of Luke Skywalker, a young farm boy who becomes a key figure in the Rebel Alliance's fight against the oppressive Galactic Empire. With the help of Princess Leia, Han Solo, and Jedi Master Obi-Wan Kenobi, Luke embarks on a mission to destroy the Empire's planet-destroying space station, the death star. As the destruction of the death star takes place, viewers experience the induced feeling of movement through the screen. While Luke Skywalker is flying a starfighter over a narrow space on the surface of the death star, the director used geometrical shapes and the structure of the death star surrounding Luke's fighting starship to give the ground and sides of the sequence more structure. Referring back to the previous chapter, the audience is given impulses of light which move over the retina and trick their brain into feeling like they feel the action of movement themselves, stressed by the surrounding's structure. A similar effect can be found in Star Wars Episode 1 (app. A20 (Amazon 2024c)) where the camera follows pod racers through narrow rocky landscapes. The immersion is intensified not only by seeing the pod racer move very low over the ground, but also by added objects such as rocks, trees, and other pod racers which seem to almost collide with the narrow flying racers. A wide angle intensifies the effect.

The fast cuts additionally draw the viewer's attention, since we already learned that the sense for orientation is highly activated when the sensory input changes in rapid frequency, urging the brain to focus and form a new surrounding again and again.

As we see, visual effects evolved quite fast through the development of digital technology and became incredibly authentic. However, early light and double exposure effects, to only name a few, have marketed the way for later modern cinema. Many phenomena we see today have been invented already decades before, only the technology and efficiency behind its making has changed it to make effects look increasingly realistic.

4.2 The Symbolism of Illusion

"Some things are easier to do than to say." (IMDB 2023h)
(*"The Taste of Cherrie", A. Kiarostami 1997*)

The previous analysis has already proved that illusive methods are very much consciously put into scenery. They often are complex to plan and create and their visual character points out a scene where extravagant lighting or acting might not be enough. The methods are deeply connected to the plot and the character. Images speak a different language than words and their expression might often be more complex, yet the approach to transport a feeling, an atmosphere, through symbolic images seems to reach a deeper understanding than any dialogue.

Erich Fromm has put humans' connection to symbols into words, trying to articulate the necessity of common symbolic language. He wrote: Engl. Transl.: 'Let's assume we wanted to explain to someone the difference in taste between white and red wine. This might seem quite easy to us. After all, we know the difference very well, so why should it be difficult to describe it to someone else? However, the biggest challenge for us would likely be to put the taste difference into words. Eventually, we might end up saying, "Oh well, I can't explain it to you. Just have a glass of red wine and then a glass of white wine, and you'll notice the difference." It's not hard for us to explain the most complex machine to someone, but apparently, we lack the words to describe a simple taste sensation.' (Fromm 1981, p. 17)

Some illusionary images stand in substitution for a sensation we couldn't express any other way, even not through dialogue. Some conditions of the mind need imagery which goes beyond a direct and undistorted depiction of reality. In the previous chapter there are several examples of illusionary sequences where an illusion is created exactly for the purpose of displaying these inner states of mind. Whether it is a dream being depicted, a daydream, a sensation, hallucination, or an atmosphere, some of them can't be described in a script through dialogue. Instead, filmmakers use illusion to support the immersion into a character's mind. When regarding the timeline of methods, we find examples in the earliest years of cinema that created spatial illusions or specific lighting situations, editing alterations which are all associatively speaking to the viewer. As stated before, film itself is the illusion of watching real movement bound to a screen, while the actual movement does not really happen. And since film does not necessarily depict reality – or rather can't even for all the movement and action visible on screen was scripted and already happened in the past, filmmakers use it for the possibility of creating something that speaks out of a soul, therefore those images were created to resemble an inner state of mind instead of a recreation of what already exists externally.

Through the example of Chunking Express using slow shutter to resemble dreamlike appearance, walking in a daydream, the character's state of mind is expressed through the silky movement given by the camera. These shots are not just to slow the action down or serve the aesthetics, neither do they expose any of the written plot itself. The reason this technique of filming is used is in order for the viewers to be immersed into the dreamlike mental state of Faye and her unclear vision as well as showing that she moves differently through the fast-moving city. It turns the character visually inside out into a psychologically expressive cinematic sequence. In comparison to this, in "Euphoria", the audience is thrust into the main character's inner conflict between her wants, needs, rejection and her fears. She is equally split up in time and space as the flickering lights seem to transport her, surrounded by black and split mentally from the whole surrounding, until the image of the two protagonists finally rests on one colour.
It is a whole different way of storytelling if the story is told by the image and not by dialogue. Immersion intensifies if we get to see more of the character than just the facial expression. If directors manage to successfully transport the inner state of a character, viewers start to identify, see similarities, or feel understood in a way they could not describe by words. In "Euphoria", the distorted pictures also symbolise the character's

loss of control over herself. In her psychotic states, the colours split up, the recordings are still recognisable, but the sequences are not clear in vision like those that happened before the sequence.

The examples of "Modern Times", "The Box" and "Everything Everywhere all at once" represent fastness, restlessness of time, rushing, and action without breaks. The sensation of sensory overload in an increasingly complex technological society are shown through match cutting and illusionary editing techniques. Also, here the methods are not just serving the ongoing of the story itself but symbolise a fading feeling for time and space in a surrounding that happens too fast to clearly witness it.

This can be taken even further, some films make use of religious symbolism, using surreal sequences of daydreaming to address topics that lie more hidden in a plot at first view. "The Lighthouse", from 2019, directed by Robert Eggers makes extensive use of metaphorical symbolism. Two lighthouse keepers descend into madness while isolated on a New England island in the 1890s and the film is known for its atmospheric and surreal elements. Starting with the lighthouse itself, it represents isolation and the harsh reality of the characters' existence. It serves as a symbol of guidance and entrapment. The light at the top of the lighthouse is often associated with knowledge and enlightenment, although none of the protagonists are ever able to reach this light as a symbol of a higher, unattainable wisdom. The mermaid figurine and hallucinations symbolise the lure of the unknown or the forbidden and the seagulls in the film are seen as both protectors of the island and messengers of tragedy. This is only a small overview of symbols which could be taken so much further, although this would need another full chapter of analysis. However, a lot of these symbols are created by lighting and visual animated effects whose increase of blending into "real" camera footage symbolises also the slow descent into delusive madness.

Image 4-11: "Pan's Labyrinth" warm orange surrealism (IMDB 2023m)

As was mentioned previously, the split screen in "The Whale" is used to display parallelism of action. At the same time, in this specific example, it also symbolises isolation since you only see a single screen that's blacked out among the others.

Lastly, the depiction of dreamlike states of mind has always been deeply connected to film illusion. From the early beginnings of film to the works of Lynch or Lars von Trier until today, being able to show a dream as lively as you'd see it in your mind at night opened up a whole new world for artists and filmmakers. Also, with the rise of psychology, cinematographers were able to fuse mental science with film and dream sequences were seen from another stance as the science of dream analysis evolved. The famous dream scene in "Twin Peaks" exemplifies this in a dreamlike appearance and the look is fascinatingly close to an actual dream experience. The way the people move, the aesthetic of the red room and the wandering of the shadow, together with the slow gestures of the characters immediately give the idea that the viewer is seeing something unusual, something that is very far from a real experience. It is not only psychology that is depicted, but also a symbolic way of reflecting the strangeness of the detective's mind, as well as his interconnected awareness and different way of sensing the surrounding. In "Chunging Express" the low shutter sequences reflect daydreaming and floating through life only halfway conscious. Moreover, films such as the fantastic "Pan's Labyrinth" from 2006 carry the atmosphere of a very long never-ending day-

Image 4-12: "Pan's Labyrinth" cold blue realism (IMDB 2023m)

dream sequence. It depicts a young girl's dark reality in post-Civil War Spain with a mystical and perilous fairy tale world she discovers, as she undergoes a series of fantastical tasks to prove herself as the reincarnation of a lost princess. The dreamlike states blur into reality and it is hard to distinguish between inner and outer world. The film uses cold-to-warm lighting and white balance manipulation to distinguish between the worlds and show the crossing over from reality to imagination (images 5-6 and 5-7). Altering lighting, as well as – again – VFX and animation or extravagant costumes symbolise the transition from reality to imagination and moreover the main character's loss of sense of reality while her surrounding world gets increasingly cruel.

In "A Short Story" the effect of reversing the timeline is more hidden at first and creates less of an uneasy feeling. The unnatural gestures from the third demon come with an impression of superiority that is displayed by the demon raising his arms and feet to magically pull over his clothes and put them on. The objects leave their place and form

in his hand. The whole action takes place in favour of the demon. Defying the rules of time and physics is impossible to humans, therefore, showing a character being able to alter physics symbolises superiority over humans.

4.3   Distinguishing Narrative Illusion from Reality

"Dreams feel real while we're in them. It's only when we wake up that we realize something was actually strange." (Nolan 2010)
(*"Inception", C. Nolan 2010*)

As several examples of illusionary methods have been mentioned we should take another look back at reality.

in "Barbie", the colour palettes separate a fake from the real world, shapes and physical conditions are introduced in the first sequences. Its illusionary world is introduced in the beginning of the film, establishing a look, the social behaviour of the habitants and the rules of physics in this world (no water in the shower, people don't eat food, feet are stretched up from the ground). The real world therefore is established as a "strange world", although it resembles the world most of the viewers probably see as true reality but since the Barbie world with its characteristic look and physical features is introduced at first, it is believed to play the main role in the film.

Similarly, the 1967 film "The Little Mermaid" shows an establishing shot diving under water, then a blue surrounding (app. A21 (Eastern European Movies on English Online 2023)). Then two characters appear from an underwater tribe, standing on the ground

Image 4-13: "The Little Mermaid" opening scene (Eastern European Movies on English Online 2023)

of the sea, talking to each other. As in "Barbie", the illusion is depicted as reality and underlined by the use of a certain associative colour palette connected to water, such as blue light and light, wavy costumes. Very soon after the establishing shot, the audience doesn't perceive the illusion anymore but accepts it as the reality of the world depicted.

These are films in which there is a clear distinction between the worlds and the illusion is introduced right away. It doesn't dissolve into reality since there is a drastic break in

the colour palette. When picturing a dream, filmmakers also often include a waking scene, a hard cut to the character waking up or similar action which shows the audience that the dream is over.

Image 4-14: "The Little Mermaid" opening (Eastern European Movies on English Online 2023)

When talking about VFX illusions, they can be often found used together with the topic of psychedelic experiences or psychosis. While examples earlier than 1960 usually showed altered dream states of minds, drug induced psychoactive experiences became increasingly interesting in the later 20th century. Filmmakers started to dive in and out of hallucinatory scenes, using the tools of visual effects to represent altered vision or adding unreal artefacts.

One extremely popular use case for animation built into a film used to show a drug induced state of consciousness is "Fear and Loathing in Las Vegas" from 1998. While the main characters move in a road movie through Las Vegas, they embark on a drug-fuelled journey to cover a motorcycle race, delving into the chaotic and surreal underbelly of American culture in the 1970s. As they stop at a hotel, they park the car, already under strong influence of substances such as acid (app. A22 (Movieclips 2011)). Outside the hotel, the image shows a normal angle with a sweaty protagonist giving the car to the valet, the eyes opened wide. Entering the hotel, the camera switches to a point-of-view-shot that in this case separates the character's field of view from the spectator's gaze. While the carpet on the ground not only starts to slowly move and distort, we also see the patterns of the carpet moving out and up, climbing up the guests' and hosts' legs. Apart from the POV shots, the animations symbolise the loss of touch with reality. They represent the beginning of hallucinations and dissolution of the boundary between real and drug induced vision, as the realistic shots and artificial effects also dissolve into another on the screen.

Something similar happens in "Midsommar", a 2019 horror movie which wrote film history for being almost completely shot by broad daylight. In a psychotic sequence, the characters eat hallucinogenic mushrooms and start hallucination shortly after. As this hallucinating state of mind takes over the plot, the protagonist sees grass growing out of her hand (app. A23 (YouTube 2024a)). Although a slight difference to the real grass is still visible, we see here not only the introduction of illusion through VFX but also the development of digital effects. The grass is three dimensional and physical activity, its

movement in the wind, fits to the real filmed grass on the ground. Additionally, following the introduction of VFX in the scene, the landscape is distorted digitally in POV shots as the character gets up and starts to walk around. Again here, the POV marks the action dissolving from an outer spectator's view to an inner view, representative of the person's dissolving mental state.

In "The Big Lebowski" from 1998, dream sequences are shot by using poorly edited green screen. The main character enters the unconscious state after a hard hit in the head, flying over a city (app. A24 (YouTube 2024c)). Later, a person on a flying carpet appears and Lebowski finds himself as a tiny figure in a large bowling alley – visibly montaged to the background. This is a unique example of visible illusion that also serves as such, not being hidden by any tricks.

Another genre of fantasy film is, on the other hand, achieving the exact opposite. There exists a variety of films, some mentioned in the previous chapter, that don't show a clear switch from illusion to reality or let viewers distinguish between manic state, dream state or realism. "Pan's Labyrinth" gives hints to where the dream world ends, and reality starts but both worlds seem to be woven into each other. Only in the end when the child is shot and lying on the ground, viewers experience an immediate, drastic change of the light situation from blue and cold white balance to warm red and yellow tones (app. A25 (YouTube 2024b)). The light flashes up and the child finds herself at the end of two thrones, where she is being awaited by the parents, including the dead father. The mother is sitting on a throne, already waiting for the daughter, while we earlier see her holding the dying child. The whole surrounding brightens up, resembling a harmonic and peaceful place, but this clear separation only happens in the end. Before that, one can only guess where the real world ends and the fantastic world starts, although the colour division into cold and warm gives hints and orientation throughout the film. Even more drastic is "The Lighthouse" as well as "The Holy Mountain" (1973), directed by Alejandro Jodorowsky, which is a surreal and allegorical journey that explores themes of spirituality, consumerism, and human transformation through a series of visually stunning and often bizarre sequences. In both movies, a clear border from realistic to psychotic experience is missing. The "Lighthouse", for example, includes highly realistic animated VFX, such as a siren appearing, the older character turning into an octopus or the killing of a seagull, which he finds out later brings bad luck for the killer. The surreal scenes seemingly blend into reality. In addi-

tion, we find dream sequences, slowed down in time but stylistically hard to separate from reality (app. A26 (YouTube 2024f)).

Filmmakers leave it open where reality ends and madness begins. The whole film could be either an illusionary expression of the protagonists' dissolving into madness or a symbolic view on reality. The plot represents a struggle for power and superiority while getting to the core of humanity in the face of nature's power. While the main character slowly loses power over himself, he is driven into madness. Parallel to that, the audience loses track of the timeline and reality since both get mixed with dreamlike surreal sequences.

These mentioned films, as well as several others, play with leaving viewers unclear about the amount of reality taking part in the story, because illusions and daydreams keep being sold as the normal world. A clear separation is seemingly impossible as soon as the whole story seems to be taken over by fantastic events. In contrary to what has been discussed earlier, many times, filmmakers introduce a real world at first. It resembles ours in terms of visual characteristics and physical order. After a while, fantastic elements get mixed into this world, first as surprising elements but with the continuation of the story, they appear more and more to be part of the protagonists' reality, until it is hard to distinguish between dream (as in "The Lighthouse"), daydream (as in "Pan's Labyrinth") fantasy or hallucination (as in "Midsommar"). As long as the story still catches the viewer's attention enough to be immersed into the film and stay fascinated, this characteristic of illusion is taken up positively in critiques as well as box office performance. This topic shall be deepened in another chapter, as measuring successful, working illusion is to be discussed further. As stated before, illusion sells itself as reality while it is never of veridical character. Other than hallucination though, viewers can spot the illusion and distinguish it from real artefacts when doing reality checks. Anyhow, obviously false reality, meaning spottable illusion, is not a sign of quality and hypothetically, cinematographers create illusions, so the audience believes them. Why create the illusion of movement if viewers don't feel movement? Why create film if viewers know they are watching a scripted screenplay? The goal is usually to hide an illusion. What happens if this goal is missed will be the topic for the next chapter.

4.4   Limitation: Where we spot the Illusion

"Ye pretended to some mystery in yer quietudes, but... there ain't no mystery. Yer an open book. A picture, says I." (IMDB 2024b)
("The Lighthouse", R. Eggers 2019)

In the previous section, illusion has been discussed as a detectable but hidden phenomenon. However, one example plays very openly with its use of illusion – still gaining success and a lot of good reviews until today. "The Big Lebowski" includes green screen scenes with, so to say, intentionally sloppy chroma keying. The writers of the formerly discussed dream sequence do not put a lot of effort into hiding the tricks used for the effect of Lebowski flying in the air or finding himself in a bowling alley as a tiny version of himself, fusing into the bowling ball, after being hit in the face.

The phenomenon of "Trash Cinema" probably deserves its own essay so it shall only be mentioned here without being explained in detail. It will be of interest later though, when giving cinematic conclusions and discussing success from an illusionist's perspective.

In case of imperfect produced green screen technology, the illusion breaks, and the effect is visible to the audience. The immersion is stopped and the outcome rather hilarious, which usually has to do with contrary elements being seen together. In the case of a non-working illusion, viewers begin to think about the filmmaking process itself – not in a detailed and philosophical way, but they start being aware that they are not seeing a real story but actors and actresses performing a script in front of a camera. When the illusion doesn't work, a lot of times it reveals the technology used together with the actual surrounding of characters. This is evoked by the way the character is added to the surroundings, looking unnatural as the sharp contours would never appear in real life.

Image 4-15: Visible Green Screen Effect in Indiana Jones and the Temple of Doom (Indiana Jones)

In "The Big Lebowski", the movements of artefacts such as costume and body movement don't fit to the surroundings anymore and the whole image looks artificial. By revealing acted movement, the actor's performance often turns goofy, looking dramatically overacted.

Seeing how characters don't fit into an environment makes a spectator be aware of the artificiality of the filmed situation. We fall back into believing somebody is standing on solid green screen set ground or lying flat on their belly, moving their arms, so all movement looks fake and acted.

In Lebowski's case, this effect was planned and wanted, as the whole film fits the clumsy aesthetics. In other cases, technology hadn't been developed enough to completely avoid the detection of chroma keying (The American Society of Cinematographers 2023), as can be seen in image 5-10, a scene from "Indiana Jones". When looking closely, the sharp edges of the character's costume are revealed, especially around the rock that he's hanging from. In addition, although editors seemingly put lots of effort into the overlay and shadowing, the right arm doesn't throw any shadows onto the rocks under him, which in reality should be the case as the sun is shining down on him from a high upper right corner angle. The image's montage is revealed, as in the example from image 5-11, which is a frame from "Labyrinth" from 1986. The frame looks rather like a collage put together to form a single image. The protagonist's hair seems

Image 4-16: The Labyrinth - visible Green Screen technology (the Labyrinth (1986))

cut off especially around the hair, but also around the costume. The light reflections are layered on top of the character, which hides the illusion a little bit, but then, the bubble around her also seems to be layered on top of the surroundings. When in movement, viewers could not spot the montage as easily, but because during the shooting of the film in the later 80s, hyper realistic animation didn't exist yet. Filmmakers had to invent a fantastic world by building a concrete stage

with artefacts, then adding creatures and actors onto it by using black velvet background and double exposure technology.

Anyhow, the time of release is no excuse and doesn't seem to save films from sloppy chroma keying as the example from "Gods of Egypt" from 2016 in figure 5-7 shows. Not only is the background visibly added in post-

Image 4-17: "Gods of Egypt" - sloppy green screen lighting (Moviepilot)

production without trying to conceal the contours of the person, but cinematographers

also gave little to no attention to the white balance and nightlight set lighting when shooting the scene. Since the background is supposed to be set at nighttime, the lighting setup for the character should accordingly be of a cold blue tone. In this case, presumably for the aesthetics, cinematographers chose to give the character a warm yellow to orange lighting – coming from a different angle than the background lighting. When looking at the face, one would assume the light source to be on the upper right, in front of the character. However, the light source in the background is falling in from the left, creating shadows in front of the stone wall's bricks. There are two layers in this exemplary picture that make the image look artificially constructed and therefore reveal its illusionary character.

There are many more cases where chroma key is not the only source for spotting illusion. In general, as technology evolves, illusions get better, more detailed, and more realistic, so in a lot of old films the illusion comes not as a surprise anymore, even if it was ground-

Image 4-18: "The Phantom Carriage" double-exposure illusion – timestamp approx..: 21:10 (The Phantom Carriage)

breaking at the time the film was released.

"The Phantom Carriage" from 1921, directed by Victor Sjöström, used double exposure and multiple exposures extensively to create ghostly and supernatural effects. This technique has already been mentioned in the previous chapter, examining film montage and multi-screen effects. In this case, it allowed characters and objects to appear transparent, and it was a remarkable work of film editing in the early 1920s. However,

there nowadays exists digital technology and the audience is used to a lot of the old effects. With every invention and advancement of film technology, viewers also get used to seeing increasingly realistic footage.

Image 4-19: "Suspiria", 2018 - the witche's costume (Film Grab 2018)

Also, since knowledge on film-making is also openly accessible online, people can get an idea of how a film is shot. It gets harder to conceal the filmmaking

process with older filming equipment and in this example, viewers get an idea of the filming process as the carriage is seemingly rolling over solid ground.

Apart from camera and editing technology, mask and costume can be indicators of an illusion if they are not detailed enough for the audience. There exist two different versions for "Suspiria", a horror film originally released in 1977 by Dario Argento and remade in 2018 by Luca Guadagnino. Comparing the two films, not only the slight differences in the story are of relevance. The later version also gives a much more brutal and horrific impression. This is due to – again – technological improvement of animation, but also improvement in mask and costume.

Image 4-20: Sherlock Jr. breaking the fourth Wall – timestamp approx:. 42:25 (YouTube 2023a)

While the first version from 1977 plays with exaggerated colour lighting and a lot of fake blood, the later version seems much more realistic due to advanced costume and mask techniques. Whether it is the budget or actually the material used for the witch's costume, the first witch appears slightly clumsy and artificial in movement with regards to the skin's texture. The later witch appears more natural, which could be for many reasons. On the one hand, the image all in all is darker so it doesn't reveal the costume and mask as fast. The witch also has more human-like features such as her skin and movement. Additionally, camera technology has advanced, and the camera used shows higher resolvution images. Lighting technology in 1977 barely contained lights with the saturation of 21st century LED technology. In fact, Argento's lighting was groundbreaking as he used any kind of material to produce coloured lighting with saturated colours. His films were even rewarded being named for the genre of "pink noir". Nowadays technology supports a more realistic look, yet still, Argento's works serve as classics in film history rather than being known for clumsy looks.

Their story and characters work well and the story is immersive and convincing to the audience. Also, camera work and cuts play a big part in storytelling. A well-

Image 4-21 Sherlock Jr. and the fourth Wall – timestamp approx.: 42:25. (YouTube 2023a)

produced film catches the audience enough even when illusion is spotted and this lets old films survive technological innovation over the years.

There is another special case which should be named under the topic of "spotting the illusion" – the breaking of the fourth wall. The term originates from theatre in the classical way, where a stage usually consisted of a background wall and two walls on the sides. The fourth wall is always open since it is the direction from which the audience watches the play. When actors would talk directly to the audience, they would so to say 'break the fourth wall'. Although there wasn't a concrete and visible wall, it existed as an idea of a border between the stage and audience, keeping the play in one area and spectators in another.

Later, in 1924, this method was adapted in "Sherlock Jr." by Buster Keaton, who in the end turns around looking straight into the camera. The reverse shot from his point of view then shows a theatre, closing the fourth wall again, but for a short moment, the audience of the concrete film becomes aware of themselves through his eyes. Only in this case of method, it is not clear to say whether it fully breaks the illusion of film and introduces the spectator's perception of themselves watching a film, or if it even creates the illusion of closeness to the character. It might differ individually or even both be the case - if done properly. In this example, the effect is introduced in the very end of the film, and it hits the viewers unexpectedly. The sequence is subtle enough and does not stretch over too much time, which could make viewers give too much attention to themselves. The action is connected to the rest of the plot, so the next scene conceals the effect again in a smart way. It is just a short moment of confusion to the real audience, so they are given the chance to then dive back into the illusion of film.

Anyhow, if this effect is used over-dramatically or in the wrong place, it might just throw back the audience into perceiving that they're watching a film without creating a connection to the character breaking the wall. This connection is essential to keep the audience immersed in the illusion. In the case of missing immersion, again the method seems clumsy like a forced attempt to achieve the audience's attention for a moment.

In "The Dead don't Die", a zombie movie from 2019 directed by Jim Jarmush, filmmakers included a sequence in which the fourth wall is broken by dialogue rather than visually (app. A28 (YouTube 2024e)). Suddenly, in the beginning of the last sequence which usually should be the dramatic peak when all the strings of action come together, the director chose to address himself through the dialogue of a. Surprisingly, by this choice the sequence loses its dramatic effect as the characters are surrounded by a horde of zombies, sitting in their car and facing death as one protagonist brings up the

film script where he read how the plot would end. Indeed, the plot ends as he expected it and even the other character's supposedly funny cursing of the Jim Jarmush does not make up for throwing all the film's potential for immersion down the drain right before climax.

Following this, viewers become fully aware of the present without being immersed back into the tension, since they perceive themselves as watching a movie with a destined ending and actors following a script. The illusion then does not build up again.

Anyhow, in the case of a spotted illusion that is not compensated by good storytelling, reviews turn out bad and the film, if at all, is remembered as trash classic. To only name a few such examples, the "Voyage to the Planet of Prehistoric Women", shot in 1968, is definitely one of these as it is barely known and is neither innovative nor mentioned for any success in film history. Looking at the action scenes, viewers detect no

Image 4-22: "When the Cat comes" colour editing (IMDB 2023a)

visible effort in acting or costume (app. A29 (YouTube 2024g)), no character development or metalevel story, but eventually reused footage from another older movie. Bogdanovic, named as director for the movie, stated that he only added a few recordings of women to

an older Russian production dubbed into English, so the production company would buy it. (Rabin 2002) The film was voted 2,9 of 10 by the official Internet Movie Database. (IMDB)

There still are a few cases in addition to those listed above, where the illusion is hard not to spot. Either way, the film itself works and the audience does not complain. One of these is "The Big Lebowski", named above with its hilarious green-screen dream scenes. There are films such as "When the Cat comes" featuring a cat with sunglasses, which gives people's souls' true colours by looking at them, only that this effect is very obviously a film roll painted over in the editing proces. Yet still, the film is rated 7,2 of 10 on IMDB and won two prizes at the Cannes film festival, including the Palme d'or 1963. There is "Amélie" from 2001 by Jean-Pierre Jeunet, telling the love story of a woman following her daydreams, but showing a few slightly clumsy animated animals that speak (app. A30 (Internet Archive 2024a)). Lastly, also in "Chungking Express", we spot the illusion right away as in the dream scene from "Twin Peaks", whose altered

timeline editing is not at all hidden for the viewers, nor does it show typically big dramatic Hollywood aesthetics. Why then are all ratings for these films above average and why are people still fascinated with their storytelling?

This leads back to the topic of immersion. As discussed before, there are effects which work well under perfect conditions. Chapter 3 includes the mentioning of orientational instincts. Humans are equipped with the need to orientate in their surroundings and make sense of what they see. They prefer what they know already and immerse themselves more easily if their attention is activated through an approachable character, memory, and orientation. There will be a more detailed explanation of this aspect when talking about illusion and success. For now, there are several examples of detectable illusion. Some of these don't try very hard to hide their methods and leave people in the state of falsely believing. Nevertheless, the illusion works as the audience gets the chance to immerse themselves in a story or a character and if the aesthetics fit the film's character. This topic will be further continued in the upcoming chapter.

5   Cinematic Conclusion

"All your technology, all those blast furnaces, wheels, and suchlike hustle and bustle, so that people can work less and consume more, they're all crutches, artificial limbs. Mankind exists in order to - to create works of art. At least that's unselfish compared with all other human activities. Great illusions. Images of absolute truth." (IMDB 2023g)
("Stalker", Tarkovsky 1979)

Before leaving the field of cinema to examine the outcome and film related media, this chapter will recapitulate what has been worked out in the previous chapters.
As time proceeds, illusions become more groundbreaking, innovative, and realistic. An illusion which is newly used for a film is most likely to attract a big audience and guarantee success for a film but as time emerges, illusionary methods age with the technology used. As a result, the audience develops and shapes their viewing habits over the years and older illusions get detected more easily. For some of the illusions this means losing their thrill and excitement for a newer audience, however, if the storytelling is done right, a film can be saved and remembered as classic cinema. Some effects even remain stunning for the viewers after decades. Nevertheless, time and modernity

does not entirely seem to save a film with its techniques. Some of them might simply just not work for an audience as proven by "The Voyage to the Planet […]".

Illusionary methods of the visual field can be achieved in almost various parts of a film department. All aspects can create certain illusions and their intensity evolves together with the invention of more efficient technology or, in the case of VFX, animation technology. Indeed, many films include animations to symbolise the dissolving of reality, while formerly in the early and mid-20th century VFX produced by camera, lens or double-exposure technology were deeply connected with the field of illusion. Until the late 20th century, double exposure was used to create stunning effects, but it often included a troubleshoot editing which took a lot of time and effort.

Illusionary methods are often connected to the display of dreams or have symbolic meanings as they depict altered states of mind. Since a lot of the techniques are of surreal character, these are often used for meta level purposes and the descriptions of inner processes inside characters' minds. Their aesthetics offer imaginary potential that goes beyond a human's reality and therefore is not bound to a purely objective or descriptive look on events. Like theatre and literature, films use a symbolic narrative bound to an audience's interpretation and many times, visual trick illusions play a role for their display. Thus, this does not necessarily have to be the case.

 Visual effects and above all, chroma keying technology are nowadays the most frequently used illusionary methods. They offer a great variety of styles and methods and broaden the possibilities on what worlds can be created since as digital animation evolved, it became possible to create the most realistic effects on the screen. As analogue technology and effects were mostly reduced to lighting/shading effects, concrete stage design and mask manipulation as well as on-film-editing and digitalisation made it possible for filmmakers to define new physical rules on screen.

In general, chroma keying is a kind of illusion which combines several sequences and surroundings, so filmmakers gain the flexibility to not have to shoot a scene completely in one surrounding. It also allows them to simply change the laws of physics in favour of the film, if it is needed for the story. A lot of times though it just enables a scene to play in another country or different surroundings without having to build it in a studio.

HAW HAMBURG

6   Illusion entering Reality

"Theodore: Well, you seem like a person but you're just a voice in a computer.

Samantha: I can understand how the limited perspective of an unartificial mind might perceive it that way. You'll get used to it." (IMDB 2023f)

(*"Her", S. Jonze 2013*)

The previous chapters started with a description of reality and different views on what it is and how to define it. While referring to that, the later parts led over to the main topic of illusion as they dived deeper into the world of filmic illusionary methods and their potential or symbolic character, always seen in relation to technological progress over the time.

Now that illusion has been looked at from all sides and points of view, now that it is examined why they are used and for what purpose, let us take a step back again to look at its influence on reality. Since the world of illusion is, as stated above, always a constructed one impersonating reality, reality needs to be taken back into account.

Therefore, the following chapters will finally examine the influence of illusion on reality.

6.1   The Perfect Illusion: How to measure Success

Methods of illusion in movies are diverse and powerful tools that can shape a film's success. The impact of illusion extends to audience engagement, box office performance, and critical recognition. Anyhow, the audience's acceptance of these illusions depends on its realism, narrative coherence, alignment with expectations, and genre context. Since the previous chapters listed various types of illusionary methods and gave their analysis this chapter shall take a look at how they affect the audience, how they are taken up. Is there a point to using illusion other than entertainment and does it give an upgrade to the film?

The answers depend on the production but also on the use of the right method in the right time for the right scene that makes a difference. Well-executed illusions captivate audiences and keep them engaged. When audiences are immersed in a world of illusion, they are more likely to become emotionally invested in the story and characters. Films like the "Harry Potter", "Star Wars" or "Lord of the Rings" series, known for their magical illusions, have achieved critical acclaim and commercial success, being listed

in the highest ranks for box office performance (Statista 2023). Movies that use groundbreaking, technologically innovative illusions often perform well when regarding yielded profit. Above that, films that push the boundaries of illusion are likely to receive compliments and awards.

One recent example proving this is "Everything, Everywhere, All at Once", mentioned here for its famous match cutting and special effects, which has won 390 prizes in total, including Oscar Awards for best screenplay, best motion picture of the year and best editing. In addition, the editing has been recognised several more times and the visual effects have been nominated at various international film festivals. (IMDB 2023b) "The Whale" on the contrary, released about the same time, uses less groundbreaking visual effects and focuses on acting and screenplay as the story development is emphasised more. Accordingly, it won 45 prizes at festivals, including Oscar awards, mostly for acting but also for Hair and Makeup – Brendan Frazer was equipped with a heavy prosthetic suit that would make up for the character's weight, a type of concrete illusion created through costume.(IMDB 2024a) In comparison, it received no rewards for editing or visual effects.

Other examples give similar proof: "Avatar", released in 2009, was the first film shot completely on a 3D camera. After this release, several more 3D movies were released to be shown in big commercial cinemas, including "The Hobbit" film series. However, not all of them used 3D cameras to shoot 3D films. "Avatar" won three Oscars for cinematography, visual effects, and art direction. It was nominated for editing and cinematography several more times as well as being awarded "Top Box Office Films" (IMDB 2023a).

However, groundbreakingly new illusionary technology is not always enough to guarantee a film's success. As stated before, Dario Argento's 1977 "Suspiria" uses expressive lighting and make-up to create surreal imagery, which is today known as a horror classic (the Guardian 2018b). Strangely, it barely received any awards or nominations, also two of total four nominations were given in 2018 for the digital remake. Additionally, official reviews around the time of release had a very different opinion on the movie than those written around the time of the remake's release. The "Los Angeles Times" wrote about the movie: "In this new film the Grand Guignol effects Argento likes to indulge in are fairly obviously fake, so it tends to be more grisly than it is scary" (Article clipped from The Los Angeles Times 1977). The "Chicago Reader" wrote in 1985: "Dario Argento's grossly overstated mise-en-scene adds some perverse interest to this routine (if unusually gory) horror film from 1977" (Kehr 1985). For sure, not all reviews

sounded like these but also at the box office it achieved an income of 1.8 million dollars (Solomon 1988) - in comparison to that "Eraserhead" from the same year achieved in total 7.1 million(The Numbers 2023), "Close Encournters of the Third Kind" by Steven Spielberg achieved 116.4 million (Close Encounters of the Third Kind - Box Office Mojo 2023).

When did the reviews on Argento's work change so drastically? It is hard to tell a concrete date but around the release of the 2018 remake, newspapers suddenly wrote of it in the highest regards such as the "Hollywood Insider": "[...]it has become iconic in the world of cinema for its manipulation of lighting and color. Critics and audiences alike agree that Suspiria pushes the boundaries of non-diegetic lighting in film, subsequently opening up new possibilities for how color can be used in the medium. The jarringly bright colors combined with slow-paced editing merge together to create a film with an atmosphere of surrealist horror like no other" (Hollywood Insider - News Entertainment & Culture 2021). An answer to that might be found in "The Guardian". It compares the remake as "yet weirdly saggy "cover version" of Argento's biggest international hit" (the Guardian 2018a) but also refers to the violence depicted in both movies. The "Guardian" writes: "Dario Argento's dazzling 1977 chiller "Suspiria" first opened in the UK in a censoriously truncated version, having suffered significant cuts to blunt its extremities. Horror fans were appalled and sought out more complete versions of the film, videotapes of which were promptly confiscated during the "video nasties" hysteria of the early 80s. How things have changed! Today, Luca Guadagnino's grandiose Suspiria remake can sail into British cinemas with all its bone-cracking, skin-slicing, blood-letting intact – a cause for rejoicing, no doubt" (the Guardian 2018c).

Of course, this movie from 1977 contains so much more blood and brutal scenes than Lynch's classic and it might not have been received too positively back then. Luckily for Argento, not only technology evolves as time progresses but so does the degree of brutality newer audiences are used to as well as the increasingly realistic looking scenes of violence. When the movie came out, cinemas requested drastic censorship and cutting of scenes due to the amount of brutality that scared away a large number of people. However, as discussed before, viewers develop their view together with the reality of film and new possibilities bring more realistic images. Not only did the audience therefore get used to cracking bones and distorted faces, but it also detects outdated effects more easily as mentioned together with "The Phantom Carriage". Seeing Argento's thriller after the "Suspiria" remake, which gives no mercy to the viewers,

probably just isn't that shocking anymore. Whether this is a positive outcome or not is not on this work to decide. In regards to the original classic, it definitely had its perks. "Suspiria" has experienced a revival together with the remake and was introduced to the world again, this time as classic horror cinema. Not only did the remake achieve mentionable awards, including best costume design and best Makeup VX (IMDB 2023c), it also brought back an old, underrated movie to a new, probably more open audience.

At the same time there were the exemplary movie scenes mentioned above which never achieved big success although the illusion is not interrupted by the measurements of reality or improper use of character technique. Niche underground films may measure their success differently according to critiques or festival nominations. They might also have lower budgets and therefore don't even get the chance to achieve attention equal to films listed above, since the size of budget does decide on advertising. But also, film festivals require submission fees which rise together with the size of the festival itself. Therefore, achieving an Oscar award is not only a question of exceptionally good editing or cinematography but also of the money producers are able to spend on the prize. There might supposedly exist several more groundbreaking attempts to write illusionary film history, only it is also possible that only a small number of viewers ever get to see these.

Going back to Trash Cinema, there is still one question left open: What happened to badly constructed illusions that achieved success, awards and good reviews?
It works as has already been examined before, talking about the immersion into the story and identifying with story and character. Going back to the cat with sunglasses and Lebowski, these films never made a promise of perfection to the audience. Considering the improvable use of VFX, green screen, or animation, there probably are other characteristics in the film which make up for that and in addition, the illusion is accepted as it fits the films' imperfect aesthetics. The Guardian wrote 1998 about Lebowski: "When I came out of the Coen Brothers' new film, it was with a smile on my face and the thought that I couldn't remember ever laughing so much at such an unsatisfactory film" (The Big Lebowski | Reviews | guardian.co.uk Film 2014). This statement already indicates the absurdity of the story and that none of its features were to groundbreakingly change film history, but to make the audience laugh. "When the Cat Comes" and "Amélie" also show a certain kind of imperfect aesthetics while at the

same time transmitting almost poetic imagery. While the style of filming, the effects, sometimes seem even a little clumsy in comparison to sci-fi or action genre movies, they perfectly fit the dreamy art design, the work with colour and costume as well as the characters' screenplay. As a result, the effects used add up to the associative and dreamy style of the whole film without the need for perfection. When watching both movies, viewers would not even impose the expectations they would have on action movie productions that often rely completely on visual effects. "The Matrix" (1999), to only name one example, embraced its illusionary theme, and audiences readily accepted the simulated reality concept. In addition, cultural and genre preferences can influence audience acceptance. For example, science fiction audiences may be more accepting of futuristic illusions, while horror fans may embrace supernatural or psychological illusions.

6.2   Illusion leaves the Cinema

'After an initial paralysis, every state of confusion triggers an immediate search for clues that can serve to clarify the uncertainty and the associated discomfort. This leads to two consequences. Firstly, if this search is unsuccessful, it may be extended to all possible and impossible connections, and under certain circumstances, it may include the most insignificant and absurd associations. Secondly, in a state of confusion, there is a particular tendency to cling to the first concrete explanation that one believes to perceive through the fog of confusion.' [writer's translation] (Watzlawick 1976, pp. 39–40)

It is in a human's nature to look for reason and conclusion in all things. It is the aforementioned search for orientation that is built into every human being that gives the drive to make sense, to understand and to solve irritations. Usually, people don't like irritations as they arouse a mental state of uneasiness, a certain tension that needs to be solved right away. This says a lot about why illusions work at all and why they keep hypnotising the audience. Illusions create irritation, they create a tension that needs to be solved. As viewers get the feeling that something is not what it seems, something is different or does not add up to what they are used to seeing. Therefore, using illusion automatically grabs the audience's attention and keeps them focussed until the situation is solved. This is also the reason why illusions are of so much more interest when

they are being released as opposed to those that have existed for a while already because they also have been solved for a while. "The Invisible Man" grabbed the viewers' attention because they saw something on screen that they'd never witness in real life, and it deeply irritated them.

Now, what to do with this effect once a film is out in the world? Watzlawick also comments on the potential these irritations can bring – if used well:

'…[T]he fact that they [confusions] sharpen our perception for potentially the smallest details, is of much greater interest to our topic.' [writer's translation] (Watzlawick 1976, p. 40)

Nowadays, in a consumerist society, films seemingly give us an answer and supposedly lure us into thinking patterns by showing certain behaviour and images over and over. All films show illusions, or better all films are an illusion, as we now know, and there is no genre of film, not even documentary, that gives a pure and undistorted view on reality. If we want to see reality on screen, we'd have to install a live camera somewhere and have it screened in a movie theatre but still then it would only show us a one-dimensional perspective of a much bigger picture. As we've seen before, films can be used to create worlds that dissolve all our viewing habits for physicality and pose questions on how we should know what is real and what is not. At the same time, it can do quite the opposite and manifest viewing habits or beliefs.

Viewers can be deceived into taking what they see for real, therefore in another example, they might believe that Amadeus Mozart and Antonio Salieri were working in co-operation, highly destructive and concurrent to one another, as it was scripted in "Amadeus" by Peter Shaffer and Zdenek Mahler in 1984. Only that in reality, these two characters were good friends and their hate for each other was made up by the script writers to give tension to the plot.

Referring back to "The Thief of Bagdad", various examples, including this one, recreate foreign landscapes to set their plot into an existing place on earth - Bagdad. This is common as it is what supposedly most filmic illusions do, especially those which use green or blue screen. When even including real footage, it might look real enough for viewers to take it up as inspired by reality. Nevertheless, the case named above indeed does not mirror the writer's realities but merely the outer view of foreign North American authors who sell the story in their name whilst reproducing stereotypes on the culture represented. As a conclusion, viewers see a distorted version of reality through the eyes of someone who's barely familiar with a place or culture. Since in the past years

awareness for this issue has been rising, cases like these are more debated on while film productions are giving more effort to represent foreign realities more accurately, explicitly because of these problems.

Illusion and disillusion can be used to create or actively question and break interpretation for a scene. Media has the power to shape our thinking and behaviour, to shape "reality" for we have discovered before that the perception of what is real is built on personal experience and judgment of situations, repetition and memory which draws us into comparisons. It is also stated that our image of the world is built by comparing new input to known images, neighbouring impulses – in a visual as much as in a cognitive way. Illusionary methods can be used to push our ability to challenge our understanding of reality. The groundbreaking film "The Truman Show" (1998), directed by Peter Weir, introduced the concept of a character unknowingly living in a constructed reality. Others such as "The Matrix" (1999) questioned the boundaries between reality and illusion, leaving us with the big question on how real the perceived reality actually is. We might also experience a phenomenon as more real than it is since we judge them by sensational character. Only reflective processes on experience let us distance ourselves from our raw sensory perception. This enables viewers to build and reflect a broader perception of reality.

As societal discussions on topics such as artificial intelligence, virtual reality, and surveillance move on to new levels within rapid time, films such as "Blade Runner" (1982) have led to philosophical debates about the moral and ethical implications of creating human-like androids, pushing society to reconsider its perception of what it means to be human. This debate evolves along with the rise of AI technology and upcoming hyper-realistic digital future technology.

In 1999, "The Matrix" was released and created the idea of a parallel world that is artificially built by modern technology to trap society in a faked reality. People are infused with this fake universe and unaware of their actual existence, with the reality they perceive only being projections in their heads. In a further and abstract way, the series therefore predicted a few phenomena that are still discussed today or some that are on their way to becoming very relevant. Over time, consumer technologies such as smartphones, tablets and smartwatches have made their way into people's lives and are now inseparable from society. Moreover, they mark a new digitally interconnected age and influence our information chain, creating a digital second reality that is untouchable to us, yet still has huge impacts on real life. There still is a sense of aware-

ness of its presence, but digital reality increasingly fuses people's thinking and has built a form of an artificial, yet still very much perceptible parallel world. "Beyond shifting perceptions of truth, our increasingly interconnected online presence, known as a digital footprint, realizes elements of the original Matrix film in ways that felt pure science fiction at the time of release.

Our willingness, tacitly or otherwise, to share personal information and agree to monitoring via technology, from mobile phones apps to machine learning tools like smart speakers, has allowed a very detailed picture of our personal lives and habits to be generated.

[…]

Elsewhere, the overlap between our digital and real-life profiles has been increased by augmented reality and virtual reality, which mirror the way the rebels in the original film plug in and out of the simulation" (The Matrix's real-world legacy - from red pill incels to conspiracies and deepfakes - BBC News 2023). This leads to the question of how society wants to live in this new digitally interconnected world? How do we navigate through it and is there a way of combining virtual and analogue reality? "The Matrix" and other movies mostly give rather dystopic outlooks on virtuality, illusion and digitalization. However, there are to be seen positive outcomes that should be stressed and deepened.

A lot of illusionary influences are of imaginative or symbolic character. For example, psychology and dream theory influenced artists in the early 20th century, including cinema artists. When in the European cinema of the 1920s surrealist and expressionist cinema showed extravagant, distorted landscapes as well as exaggerated use of colour, the art of surrealism was on the rise which was rooted in the growing prominence of psychology which allowed a deeper screening into the human mind. The films of that time can be understood in a similar way, "Dr. Caligari" and "Nosferatu" depict horrific worlds, layering a dark reality on the expression of a subjective experience (app. A27 (YouTube 2024d)). They look like long dream sequences of a nightmare projecting a human's mind. Surrealist cinema of the subconscious developed into the 1960s and 70s, where there were a high number of films produced to depict psychedelic states of mind, naming for example "Holy Mountain" by Alejandro Jodorowsky, David Lynch's "Eraserhead" from 1977 or "The Hourglass Sanatorium" by Wojzech Jerzy from 1977. By that time, society opened up to the topic more, but also to the discussion and dis-

play of psychedelic drugs that were shaping society at this period of time between the 60s and 70s.

In modern cinema, psychology is having a great impact, depicting unconscious states of mind and the depths of imagination in a sovereign associative way. This allowed the topic of mental illness to be part of regular discussion and broader awareness. "Euphoria" had a big breakthrough, depicting mental health struggles in an approachable and understandable way that looked deep inside the characters, creating an understanding for the depicted individuals. Also "Barbie, the Movie" addressed social issues apart from its purely entertaining and advertising character. It introduced the topic of feminism to a broad international audience, using the same aesthetics that have before fused thousands of girls into accepting unhealthy body images.

Since filmic influence on society is undeniably present ever since its inception, film does not only depict real issues, it can also be used to address them and create awareness for certain issues. Many scientists are asking therefore for more thematization on issues such as the climate crisis. The BBC writes in 2022: "Climate stories do, of course, already exist. A wave of dramatic, often icy, nearly always apocalyptic movies has graced cinema screens since The Day After Tomorrow's box office success in 2004. A handful of research studies looked at the impact this film had on viewers and found that it prompted greater concern about climate change. It also shifted people's understanding of it and made them more likely to say they would take action to reduce their emissions or donate to a climate-related charity." (The climate films shaping society - BBC Future 2023) "The Day After Tomorrow" from 2004 relies on cinematic spectacle and visual effects to portray an extreme and accelerated version of climate-related events. Through illusions of environmental chaos, the film depicts the breakdown of societal order in the face of extreme climate events. This includes mass migrations of people seeking refuge from harsh weather conditions and the struggle for survival in a world transformed by climate-related disasters. These portrayals serve as a cautionary tale about the societal implications of climate change.

Apart from being consumptive material, media therefore has the power to guide viewers into reflective thinking, distinguishing between real and fake, created and documented. It shows us ways of thinking above stereotypical and homogenous levels, as well as developing an understanding for media and how much reality it can contain.

Above all, irritation and confusion help viewers with unlearning the reflex to believe something is true because they've seen it in a realistic video.

When looking at the history of film, we see characteristics reflecting on reality such as patterns of behaviour and technological progress. Reality has an impact on film since it shapes the stories, on the other hand, film has an impact on reality as popular stories have the power to shape a culture and cultural behaviour. They create space for new thoughts, ideas and inventions.

The format of film nowadays has been developed into rather shooting series and social media content, which has slightly altered the way of storytelling and the development of plots over altered periods of time. This aspect leads over to the next chapter, where the deep co-dependency of film and technology shall be taken further into account.

6.3   The Impact of Film on Technology

Together with the appearance of new technological progress, film is not just watched in the cinema anymore but mainly at home. This started with the availability of television on the consumer market and has evolved nowadays to streaming platforms being accessible anytime on various devices. Phones have made video accessible for a wider group of people, now that small smartphone cameras give the ability to record in high quality. Accordingly, also the format has changed, and videos and films are influenced by everyday consumer usage. However, the methods of film storytelling are being taken from old-school scripting methods, therefore narratives in other mediums aren't necessarily changing, only the context is. The influence of cinematic storytelling on video games is evident in titles like the "Uncharted" series and "The Last of Us." These games prioritize narrative depth, character development, and cinematic presentation, drawing inspiration from the world of cinema.

Consumer cameras and software did however create a huge gap between home shot cinema and classic cinematic film as regarding the budget, crew, effort and – as formerly examined – the overall success. There is a growing gap between independent productions, funded art cinema and blockbuster movies, which is mirrored in the size of production and the quality of technology used in a film. "The Mandalorian" is a groundbreaking step towards a new form of stage design and futuristic cinema but not an affordable one for arthouse productions. These same rules apply to the "Avengers" and

the whole Marvel film series, whose amount of VFX use and animation could only be afforded by huge film companies. Sadly, these films aren't necessarily the ones that offer so much of a dialogue but instead are simply a very consumable format. These examples mentioned here that go under the category of experimental or art production usually offer a level of insight and sensitivity in content. They usually are awarded less than the big productions or known mostly just in a region of the world. At the same time, they contain cultural content that tells stories which reach deeper into the human soul and show more effort to reflect on culture and on human nature. "Everything, Everywhere […]" probably is the most notable exception with its amount of awards and mentions whilst still being an independent feature. It is astounding what the film industry has come up with over the years and how motion picture nowadays resembles real sensations. On the other hand, it is important to remember that many important films, underground classics and art productions have shaped cinema without being rewarded too much in awards or income. The box office performance does not solely express a film's worth and importance as much as awards can also go to a film with an unusually high budget, as is often the case with special effects or editing awards. In many cases such as "The Invisible Man" or "When the Cat Comes", poetic cinema is not made from money but a good story and creative implementation. And this independent part of cinema is vital as it often depicts the soul better than a merely consumable product.

There have been several remarks on how technology influenced film in many ways. Looking at its impact on reality, this can as well be said the other way round because there have been countless inventions whose idea was first introduced in film. In addition, the structure of new media formats often resembles the way film is structured. How far does this show?

Especially cutting techniques and timeline manipulation is found in modern media such as social media content. When shooting short video clips, the choice of cutting, camera angle and lens angles is not a coincidence. The basics were already used in cinematography until they were altered, shortened, and brought to a new phone-fitted consumable format. The narrative is clearly changing through new media platforms e.g., TikTok and YouTube, to a faster form of storytelling where even more information is transmitted in a shorter time. While the optical storytelling often stays similar, editing techniques change. Today's internet content is faster cut, contains shorter action and available consumer lighting technology since there are cheap and flexible light sources entering private life. Scripted storytelling is rapidly shortened as videoclips often are of

only one minute or 30 seconds length. Transition cuts and editing are therefore also faster. The story mostly gets reduced to one simple action executed and filmed but the image composition resembles that of a film dialogue.

Apart from social media, series are nowadays a format which is highly popular, and they can be said to be replacing cinema or television. Their length can differ but usually reaches from between 20 minutes up to an hour. Also here, cinematography and story-telling are taken from 100 years of film history and cinematography basics, e.g., shot-reverse-shot, close-up or establishers, just to name a few. This fundamental 'vocabu-lary' is found in all genres and production types from cartoon to animation.

Regarding filming techniques, green screen is in general use and has become a habit-ual tool for news and social media also apps have developed better keying for green tones and background integration. Match-cutting has become a very popular competi-tion on social media platforms, creating worldwide trends in combination with other editing tools that can create irritating or dazzling sequences of action. Since above all, film and advertising are more and more shot on smartphones as well, shooting film is officially a product of consumer use and has therefore lost its exclusive character. For-mats become smaller and shorter as modern technology has entered private life and consumer application.

Modern society is fused with the illusionary material of media, every day and second, some made by people of no great popularity, some by companies or official television channels and film productions (Netflix, Amazon, Disney). While some of the media is bringing us forward into reflective, processed thinking of progressive nature, other, and probably the bigger part is sent out to keep people distracted, keep viewers occupied and in a consuming and passive place.

Digital technology has opened all doors to manipulation of a scene, additionally AI technology has been advancing so far it can artificially create a video sequence without the need of a camera, actors, stage, or costume. With the capability of analysing natu-ral movement, camera movement and human behavioural patterns it developed the ability to recreate typical video sequences. Long before the invention of AI technology though, futuristic illusions, meaning cinematic use of not-yet-invented technology has influenced technological processes. This is a very concrete and measurable form of influence of illusion onto real life.

Talking of concrete influences - measurable technological influence - there is definitely enough material to recall from. There are several cases, of course accumulating in the spectre of Sci-Fi genre, where inventions and ideas were introduced to society that first were used imaginatively in a film. To name just a few examples, films such as "Blade Runner" set the idea to create smart homes, face calls as well as human interfaces. The film "Her" introduced similar topics, only much more advanced and with a closer look on human-machine interaction. The film gave an outlook deeper into human interface interaction and human relationships to computers. It is mainly the film's topic, a man being in love and having a romantic relationship with a smart home human interface. Today, society is getting closer and closer to the realisation of such a scenario as software is already looking deeply into users' minds and psychotherapy applications are being officially introduced on the market as a substitute for human psychologists. It also opens the question on how we should interact with technology and how close we can or should get to a device that is merely imitating human interaction but has no capability for empathy and compassion.

"The Truman Show," a film directed by Peter Weir and released in 1998, explores the theme of pervasive surveillance and the manipulation of reality. While the movie does not specifically address the digital environment, its exploration of constant surveillance and the curated construction of Truman's reality can be interpreted as a commentary on broader societal issues, including those related to the digital age. It serves as a cautionary tale, encouraging audiences to reflect on the ethical implications of surveillance and the potential manipulation of reality for entertainment or other motives. In the digital age, where surveillance technologies have become more advanced and pervasive, the film's themes remain relevant. It invites viewers to question the boundaries between public and private life, the impact of constant observation on individual autonomy, and the ethical considerations surrounding the use of personal information.

Additionally, in the "Star Wars" series, the audience was introduced to war robots and advanced forms of automated war technology. While the technology and warfare depicted in "Star Wars" are fantastical and rooted in science fiction, there are some indirect ways in which the franchise has influenced or provided an outlook on modern war technology, including the concept of war robots (Young 2019). "Star Wars" indirectly raises ethical questions about the use of technology in warfare. The franchise explores the moral implications of creating intelligent machines designed for combat. In the real world, discussions about the ethical use of autonomous weapons, drones, and other

advanced technologies parallel these themes, prompting debates about the potential consequences of relying on machines to make life-and-death decisions. The film's influence on popular culture has indirectly contributed to discussions and perceptions about the future of warfare, including the role of robots and advanced technology.

7   Final Conclusion and Outlook

"We're doomed." (IMDB 2023j)
("Star Wars – A New Hope", G. Lucas 1977)

Back to reality, this excursion should be concluded to looking at the outcome. When separating reality from an illusion there needs to be evidence and usually there also a consciousness about the artificiality of a visual phenomenon. Even if there is not much knowledge about how the illusion takes place, visual illusions are not difficult to spot and to distinguish from reality.

The chapter on concrete analysis of illusionary sequences in film introduced the idea of confusion and how film could be its source. Moreover, there was the question on whether confusion can be important for society, whether it might even need confusion to develop and to stay in a state of mind that does not take reality for granted. Just looking at what has been discussed, there have been examples named that caused big waves of irritation – some of these are highly popular movies with excellent performances at the box office. Films can open big topics and open the minds of the audiences on issues such as climate change or permanent surveillance. Their impact is easy to trace back to the release of a film, at the same time impressions are usually positive. The first chapter posed the question on what makes the audience accept deception as illusion and why it often carries a negative connotation. Nobody likes to believe an illusion - unless if it is sold the right way and is entertaining. Audiences are more likely to accept illusions that are convincingly executed. Illusions need to serve the narrative. Therefore, if an illusion is inconsistent with the story's logic or tone, it can interrupt the audience's immersion. When a movie's marketing sets clear expectations about the presence of illusions, viewers are more likely to embrace them. It therefore never comes as a shock but rather is a main element of how the story is transported. If accepted, a good illusion is accepted and even rewarded and can be a milestone in film history. The form of illusion always represents the time in which it is released and

illusive innovation moreover stands for creativity and technical innovation. Viewers readily open their minds for all kinds of scenarios, as long as there is something that makes the story worth following. Usually, this happens because a large number of viewers can identify with either the plot or, even better, with the characters. They don't like to believe a created world only because it is brought to life on the screen and if the story does not catch the audience enough, they don't even get to be irritated. Irritation seemingly starts with interest and immersion, the willingness to ignore the origin and artificial character of a sequence and accept the possibility of such a reality to exist. This happens especially if there is something new and groundbreaking about the illusion used and it is announced. It is hard to prove the rumour about the first firm ever shown in public but the possibility that it caused panic among all viewers and made them try to escape the train is at least considerable. The idea of parallel realities, whether it is a dystopian sci-fi environment or a sugar-coated outline, causes enough waves to allow the discourse to enter reality.

Apart from technological influence, there is sociological change set free through film if the visual appearance captivates the audience. The strange "Twin Peaks" classic and expressive "Euphoria" have set their focus on psychological phenomena and insight. They have brought the subconscious up and made it subject to today's discussion on mental health and self-consciousness. All examples use stunning illusions as symbolic tools to convey the topic. The symbolic character can take out the harmful appearance of irritation to put focus on its essence, so that this form of entertainment is used to convey an illusion and make it approachable to the audience.

Over the years, film has developed to take up other forms and to fit other formats as mobile devices entered everyday life. Therefore, illusionary methods are closer to our experience of reality. They entered all sorts of video formats, especially when regarding cutting and editing techniques that have a big influence on social media video. Since available mobile devices carry cameras nowadays, video recording became approachable to everybody, and its use now is not reduced to film or advertising companies anymore. As a result, sources and origins of recordings are harder to trace. Used techniques, places, methods - these can all be hidden in the process. Illusion is harder to distinguish from reality and the cyberspace is woven in so closely to personal life that it is reasonable to speak of a parallel reality when addressing cyber activity. This means that in the future there needs to be more regulation, more labelling of sources. Society

needs to become more aware of questioning what they see to not mistake all information for reality, yet there will always be another part of our consciousness that stays unaware of that. Over the years, media became increasingly easier to consume by being shortened down to just a few seconds of action, therefore staying aware in a consuming environment is a challenge that media does not necessarily take up as a responsibility to its customers.

In this regard, the quality of illusion lies in irritation, a reorganisation of the known and the rethinking of patterns. As was stated, the human brain prefers to see what it is used to and compares related information to what it has already learned. Therefore, resolving thinking patterns are being established, which is a natural process that prevents the brain from being flooded with too much information. At the same time, the risk of staying in these patterns is high and even more triggered by mere consumable media. Since illusion can be used to irritate, its potential lies in the creation of un-understanding, the imitation of reality to then break the pattern surprisingly. It also carries the possibility to think of worlds other than the one we live in and invent realities that would not be possible under the given physiological circumstances. As a result, these, if they hold the potential to be immersed in them, can influence the audience and broaden their thinking to new possibilities. It can introduce issues, think ahead in time and create awareness in the actual present. Moreover, it can create awareness of media itself, question our habits and their outcomes, or create images of symbolic character to describe situations and states of consciousness, creating an atmosphere that is able to express emotions that can't be put into words.

Concluding this exercise, it is evident that all scepticism towards illusion is perfectly reasonable. After all, our everyday use shows great potential to lure viewers into a passive position where they are merely consumers of media. At the same time, if used reasonably, illusions hold great potential and the power to irritate their audience out of this passive position.

Since at present, society is experiencing a shift in the information chain, also the world of media is changing rapidly. With the rise of AI technology, production runs faster and video production is not restricted to actors, stages, and physical boundaries anymore. In the future there needs to be different regulation and labelling of sources. Politics are probably going to be more deeply involved with digital issues. Society in the position of consumers will need to be able to distinguish between illusionary and real, although it

is already evident that both are fusing into one another. However, instead of avoiding too much contact with the digital world, a constructive and healthy way of dealing with it is essential to navigate through digitalisation since all signs are showing that technology is likely to develop further rather than regress, and it won't vanish from our lives tomorrow. A healthy way of dealing with these changes will support the development of a conscious use. This fact includes and welcomes mindful irritation, something that can be evoked by illusive methodology.

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Declaration of Originality

I hereby assure that I have independently and only with the specified aids written the present bachelor thesis with the title:

Illusion in Visual Media

A guide to the use of illusionary methods in film alongside technological evolution and their impact on reality

All passages I have taken verbatim from literature or from other sources such as websites, e.g., the internet, I have clearly identified as quotations with the source indicated.

Rike Malottke, Hamburg, 11 January 2024