The Faculty of Fine Art, Music and Design (KMD), The University of Bergen

Frozen Moments in Motion

An Artistic Research on Digital Comics by Fredrik Rysjedal

NB: This PDF is a supplementary document with the text from www.researchcatalogue.net. To see images, figures and videos from the project, you need to read the original online document.

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Introduction

The digital comic is a relatively new art form that emerged hand-in-hand with the development of personal computers. By 2018 digital comic books and self-published webcomics have become widespread. Despite this, physical comics in books and magazines are still the most predominant forms of comics today.

I became aware of digital comics in 2006 when Professor Ashley Booth challenged me to explore new forms of comics for my master's degree (completed in 2008). Since then, I have found this new field and its qualities exciting from both an artistic and an academic perspective. I claim that most digital comics are made in the image of the traditional comic. In contrast to these, there is a certain type of digital comic – one could call it a movement or direction within the genre – that emphasizes the properties of the digital form. These digital comics are rarer, and voices promoting alternative digital comics that expand the comic form beyond text and image are unfortunately few and far between. The works of the avant garde in digital comics, referred to as the 'reinventors' by the historian T. Campbell (2006: unpaginated), inspire me, and are the reason why I chose to work with digital comics.

In the artistic research project *Frozen Moments in Motion*, I investigated the aspect of motion in digital comics with the aim of contributing to the international discourse in the field and offering new knowledge and reflection on digital comics. I investigated the topic through making two digital comics: *Sound of the Aurora* (2014) and *Close, Closer, Closest* (2016). These two digital comics are my artistic results. My project has addressed the following research questions: *What are the concepts of motion in digital comics? What types of motion can be used in digital comics, and how does motion affect the presentation, the story and even the reader/viewer?*

This written documentation will present my research process, methods and reflections. My comics tell stories, and from the start of the project, the stories have posed a challenge in that they easily overshadow my research focus. It is not the message in the story that I am researching, but the vessel, the medium. On the other

hand, the way I use digital comics is connected to the story context, so it is impossible to 'divorce' the narrative context from the medium. This is why I maintain such a theoretical and technical focus in this text. In some artistic research projects, the artworks speak largely for themselves. In this present project, by contrast, the stories all too easily become the focus of attention, so I think the written reflection is necessary for making my research on the medium of digital comics accessible.

In chapter 1, I reflect on the relationship between comics and film. I start by addressing some of the fundamental concepts of the screen that identify the position of motion in digital comics. I then address how motion is received by readers and comic artists. From there I take a brief look at the differences and similarities between the medium of digital comics and the medium of film. I also look analytically at presentational forms in which comic media intersect with film and TV productions. Towards the end of the chapter, I search for the boundary between comics and film, closing with a question: Why use motion in comics?

Chapter 2 concerns the digital comic *Sound of the Aurora* (2014) and the concepts of spatial motion. I introduce the framework for the work, which includes its origin and story development, then I explore the predecessor of digital comics, the *laterna magica*, or magic lantern, and the live performing format it represents. From there I start my investigation into spatial motion. The focus on spatial motion is subdivided into 'motion graphics' and 'mobile framing'. First I address motion graphics and look at how the magic lantern used them, then compare motion graphics with the comic panel sequence and classic animation to find out how they correspond. I then address interactive motion graphics and look at the concept of 'flying panel delivery', examining how motion graphics relate to time and responsive panels. In analysing mobile framing, I analyse the motion of the mobile frame in negative space, in fictional space, in 2D, 2.5D and 3D space. Filters and lenses as elements that can affect the imagery also come into the discussion. Finally in my investigations, I give my thoughts on automated motion. I close this chapter with my experience of the performing comic format by addressing the live editing and the performance, ending with personal reflections.

In chapter 3, I write about the digital comic *Close, Closer, Closest* (2016, designed for reading on iPad), and the concepts of motion made through the 'image stream', which is the second method for presenting motion on screen. After establishing a framework for this comic – that is, its story development and reflections on the choice of format – I present my process of making a digital comic for the reading tablet, discussing the user interface, programming and soundtracking. I then investigate the image stream, with special focus on 'cinematic panels' and 'panel delivery'. I define cinematic panels and clarify their two forms of presentation: the instant transition and the dissolving transition. In the section on panel delivery, I explain the concept and its presence in digital comics, elucidating how it overrules reading direction and how time is approached in panel delivery. The chapter closes with a section on automated and interactive image streaming, and finally my personal reflection.

In chapter 4, I build the theoretical foundation for my perspectives in the previous chapters. I discovered early in my research that existing theory on digital comics did not give me an adequate basis on which to work. I therefore decided to reflect on what a digital comic is, with the aim of finding room for the use of motion. In the chapter I search for the fundamental parameters of the digital comic. On the way I discover concepts that shape my perspective and affect how I understand the various types of motion discussed in chapters 2 and 3. Chapter 4 is thus a theorization and reflection on fundamental concepts integral to the digital comic, so if this art form is new to you, I recommend that you read this chapter first. The reason why I present it as the fourth chapter is that it is at the core of my main research, and I keep it where it is because I recognize it as a relevant result of my process.

The literature for this research project relates mostly to my reflections in chapter 4, which, as I have just explained, provides the theoretical basis for the whole project. I would like to emphasize *Reinventing Comics* (2000) by Scott McCloud, which I have used as the main building block in the foundation for my research. Another building block is Lev Manovich's *The Language of New Media* (2001), which has helped me develop an understanding of digital comics as a new medium for art. At the same

time as I have been doing my artistic research, Daniel M. Goodbrey in the UK has been researching hypercomics and game comics, and his articles have been very useful and inspiring to me. The same can be said for the texts which Craig Smith has written on motion comics. In theorising and reflecting on comics, I have taken recourse in the writings of Scott McCloud, as mentioned, but also texts written by Will Eisner, Thierry Groensteen, Fredrik Strömberg and Aaron Meskin. With respect to film theory, I have used foundational literature such as *Film Art: An Introduction* by David Bordwell and Kristin Thompson. This is because the field is more unfamiliar to me as an illustrator, but also on account of my project being foundational research on digital comics and because I unfortunately have not found relevant PhD-level research that could be used for this project. Since the project also includes artistic development, my reflections are partly based on practical work and experiments, but also on studies of other artists' digital comics.

Chapter 5 summarizes my conclusions on the concepts of motion in digital comics. I end by addressing aspects of the project which have been interesting to study in depth, and by proposing other areas of research on digital comics which I would like to see in the future, based on the perspective I have built in this artistic research project.

Chapter 1:
The Relationship between Comics and Film

In this chapter I explore the relationship between comics and film, mapping the position of motion in digital comic media. I address the status of digital comics that make use of motion and look at the similarities and the differences between comics and film. Limited animation, the motion comic and the split screen are also addressed, as are presentation forms in which the media of comics and film approach each other to the point where they are difficult to distinguish. Towards the end of the chapter I search for the boundary between comics and film, and I close with a question: Why use motion in comics?

Positioning Motion in Digital Comics

Digital comics have many sub-forms, examples being webcomics, digital comic books, motion books, motion comics, scrolls, hyper comics, game comics and so on. Some of the variations have motion in their name, but even those that do not can involve motion. The principles of new media explain how motion in comics is possible (Manovich 2001: 30, 36), but I wonder: What other visual properties can co-exist with motion in digital comics?

The screen theory developed by Lev Manovich has helped me put motion in a useful perspective. I define the screen as one of four parameters of the digital comic (see chapter 4, the section 'The Fundamental Parameters of Digital Comics'). According to Manovic, there are four types of screens: the classic scree, the dynamic screen, the real-time screen and the interactive screen (2001: 95–99). Since the screen is a central parameter of digital comics, I suggest that these four screen types can describe the visual properties of digital comics, as shown in Figure 1.

At the top of Figure 1 is the umbrella-term 'the screen-based comic', which I define in

chapter 4 (the section ‘Fundamental Parameters of Digital Comics’). From there it splits into an analogue and a digital form. Under ‘digital comics’, I have listed the four properties which I think define the visual possibilities for a digital comic. The second, ‘dynamic visuals’, indicates the possibility to show movement or motion.

The four possibilities can be combined, but sometimes one property may dominate the others. To make it easier to navigate in digital comic theory, I suggest that we can also use these four properties to categorize directions in digital comics. The following examples can serve to elucidate the directions:

a. Static visuals:

This is the presentation form that we know from print, and it is characterized by static visual material and fixed frames. The digital comic book *The Underwater Welder* by Jeff Lemire (2012, available from Comixology, Amazon’s comic app) has static page-based structures and could be placed in this category (Video 1).

b. Dynamic visuals

A digital comic such as Boulet’s *Our Toyota Was Fantastic* (2013) has looped gif-animations in the panels (Video 2). His scroll comic *The Long Journey* (2013), which only has a mobile frame, can also be included in this category. Motion comics such as *Watchmen: Motion Comic* (2008, based on the comic-book series *Watchmen* by Alan Moore and Dave Gibbons) and digital comics such as my own *Close, Closer, Closest* (2016) use interactive cinematic panels, panel delivery and show motion and change, thus classify as having dynamic visuals.

c. Interactive visuals

Navigation is the simplest form of interaction (Dixon 2007: 566), and all digital comics that exceed a single screen frame need navigation. I therefor put digital comics that use interactivity in a way that goes beyond the concept of navigation in this category.

The comic artist and researcher Daniel Merlin Goodbrey has defined 'hypercomics' as digital comics with a multi-cursal narrative structure. One type of hypercomics is non-linear stories in which the reader must choose paths and how to conceive the story. An example is Goodbrey's *The Formalist* (2004). Another type is the game comic. In the digital comic *The Empty Kingdom* (2015), Goodbrey includes game structures such as puzzles and phenomena that must be explored.

d. Real-time visuals

Real-time visuals only exist in the moment of viewing, here and now. This direction in digital comics is exemplified by *Modern Polaxis* (2014) by the Australian comic artist Sutu, who explores augmented reality. The comic is based on viewing a physical printed comic through the camera of a smartphone. The smartphone screen reacts to the existing graphics and reveals new graphics on top of them. Comics that intertwine with real-time images are also possible, but very few experiments have thus far been made in this direction. I use physical real-time visuals in my comic *Sound of the Aurora* (described in chapter 2), however, they are not a big part of the comic, so I do not put the work in this category.

With this overview of the four directions in digital comics, it is possible to see both of my digital comics, *Sound of the Aurora* and *Close, Closer, Closest,* as fitting best in the category of dynamic visuals. I could therefore also describe 'Frozen Moments in Motion' as an artistic research project on digital comics within the field of dynamic visuals.

Bastards

> When it comes to time-based immersion, the art of film already does a better job than any tricked up comic can. (Scott McCloud 2000: 210)

A comic consists of the combination of the two modules text and image, or only one of them. When yet another module is added, motion, for instance, the comic becomes a hybrid (see chapter 4, the section 'The Computer'). Comic hybrids, especially those involving motion, are not so well recognized or received by many comic artists and readers. Craig Smith documents this tendency of how comic hybrids are received in his article 'Motion Comics: The Emergence of a Hybrid Medium' (Smith 2015: 3).

Through the past 100 years, the comic medium has been defined and solidly established as a printed medium. Whilst digital comics have been introduced in the last 30 years, they are still compared to and evaluated in relation to their printed counterparts.[1] In light of the four fundamental parameters of digital comics – static, dynamic, interactive and real time – which I presented in the previous section, I fear that treating printed comics as the ideal can be an unfortunate limitation because it can lead to a less constructive debate and hamper the development of digital comics.

Mark Waid, a high-profile American comic writer and pioneer in digital comics, made this statement:

> I kind of think of Motion Comics as the devil's tool honestly, because they're many things, with voice over, music and so forth, but they're not comics. (Mark Waid quoted in O'Reilly 2013)

With this statement Waid expresses that he only acknowledges the 'pure' form of comics – images plus text – and that he does not acknowledge motion comics as

[1] The first digital comics seem not to be of the traditional kind, but hybrids. Some of the early digital-motion comics that I have seen came as cut scenes in video games, but Daniel M. Goodbrey, in his research, presents an early game comic that I would say even today is a rare hybrid form. He refers to *Redhawk* (1986, Silhouette Software), which is a game that uses the comic medium in its gameplay. Goodbrey also thinks it can be defined as a hypercomic, which is a comic with a multi-coursal narrative structure (Goodbrey 2013: 3).

authentic comics. If it is motion in general that he does not acknowledge, he shuts the door for one of the digital comic's four properties, thus making it difficult to draw a full picture that can help us understand digital comics.[2]

In a review of my own comic performance *Sound of the Aurora* (2014) at the Norwegian comic news site Serienett.no (Sætre 2014), the use of animation is described as cheating. I find it interesting that the journalist is protective of the original comic form, and I think this is a good example of how the pure form involving only text and images is seen as sacrosanct. Unfortunately, comic hybrids will probably continue to be distained as impure and inferior, as have all types of bastards through time.

> Once motion and sound are thrown into the mix, it becomes much harder to achieve this perfect degree of integration: often, they remain disparate elements, aggregated but not fused, unsystematic. (Thierry Groensteen 2007: 71)

The French comic theorist Thierry Groensteen asserts that time-based media destroy the harmony that text and images can achieve together. I will not argue against Groensteen's assertion, but I think it is a defensive point of view which could be interpreted as an argument to avoid mixing comics and motion. Is perfect integration crucial for the art form? I understand the striving for harmony, and I will address it myself as I write about phenomena such as broken motion in chapter 3 on *Closer, Closer, Closest*. However, I think disharmony can be *as* valuable as perfect integration.

[2] The quote is from a talk by Mark Waid about the digital publication of comics. I must emphasize that his statement is a rhetorical contrivance, since his intention was to present an alternative direction later in the talk. This alternative direction is a technique that I refer to as 'panel delivery' in this dissertation.

As Craig Smith points out (2015: 3), an aversion to motion in comics exists amongst comic artists, theorists and readers. I have therefore concluded that as a researcher, I need to be careful not to encourage a right-and-wrong-discourse, but to initiate an open-minded discussion, so comic artists can see the diversity in digital comics. As stated above, by not recognizing even one type of digital comic, we limit our perspective. The devil's tool or not, harmony or not, I think the motion comic is a valuable and relevant form of expression in digital comics, and digital comics should be allowed to extend beyond the framework of traditional comics. A motion comic is perhaps not a comic according to Waid's conception, but it is a digital comic, and motion is part of the true nature of digital comics. Motion can by choice be omitted from a digital comic, but it cannot be excluded from digital comics as an art form.

Similarities and Differences between Comics and Film

The comic (per se) represents a distinct art form just as does a film or a work of prose. It consists of both text and images and therefore relates to both written art and visual art. A comparison with prose, film and fine art is therefore quite natural, and in this section I look at the similarities and differences between the comic and the film. I will not discuss similar and different types of contents and genres, but focus on the fundamental elements of the two art forms. The comic and the film are close relatives, given that both are graphical narratives (Eisner 1996: 17). These art forms were developed in the same era, at the turn of the 20th century (Lente and Dunlavey 2012: 13). Especially early comics and animation share the same originators.

> The comic form, like film, is intimately rooted in the sequential images of Zoetrope wheels, magic lantern slides, and praxinoscope ribbons, and thus it is not surprising that they shared many concerns and formal properties. (Jared Gardner 2012: 7)

Film, comics and theatre share one ability: they can all present a story directly, without a narrator. Readers and spectators can observe the actions in the performance or the images, also known as drama (Scholes and Kellog 1966: 4). This is an ability that prose lack. The matter is a bit ambiguous, however, since comics

are half literary. It might therefore be more correct to say that comics exist at the boundary between prose and drama. They have one foot in both lairs.

How do comics and film differ from each other? To begin with, they represent two different directions of temporality, "the concrete, measurable time of motion and sound and the indefinite, abstract time of comic narration" (Groensteen 2013: 70). While a film shows moving images and sounds, a comic is static and simulates motion and sound through its images and text. The film's full motion is the aspect that I find contrasts most strongly with the comic. While the comic is read by a person, the film is automated, read by a machine and watched by one or more persons. The panels in the comic are often organized next to each other on the same surface. This juxtaposition, according to the theorist Scott McCloud (1993: 7), is a defining parameter of comics. This side-by-side presentation of comic panels enables rapid reading. It can also be said to characterize the traditional film strip, where images are organized in a vertical column to achieve fluid reading, not by the audience but by the cinematograph. The comic strip, meanwhile, is not organized in the same way as a film strip. The layouts of the two art forms are distinguishably different from each other and are strong identity indicators for both forms.

Another big difference is that the total amount of frames in the film is hidden from the viewer. Film frames appear as a single image and are exposed only at the moment of watching. In a short comic strip, the whole multiframe is visible on a single page. 'Multiframe' is a term used by Thierry Groensteen in his book *The Systems of Comics* (2007: 24). In a longer comic, the reader traditionally only gains access to portions of the multiframe, as for example through pages, which in Groensteen's terminology are called hyperframes (Ibid., p. 30).[3]

[3] At first I found these terms that originate from Henri Van Lier (2007: 24) and Benoît Peters (2007: 30) alienating because it is hard to tell what they actually mean just by reading them. However, in digital comic theory, I find that 'multiframe' and 'hyperframe' act as neutral terms that are unattached to a certain format, in contrast to terms such as 'page', 'scroll', 'map' or 'panel delivery'. I therefore find 'multiframe' and 'hyperframe' more relevant to refer to.

‘Closure’ is another important parameter for the reading of a comic (McCloud 1993: 67). Closure is when the reader fills in the gaps between the images/panels to create meaning and progression. Is there closure in film? A panel, or a single object, is the smallest unit of the comic, and I consider a single shot as the smallest unit of a film. Closure in film takes place in-between the shots, while closure in comics takes place in-between the panels. This means there is closure in both, but that in film and comics, the closure takes place at different levels. I do not believe closure is dependent on juxtaposing images. However, the images must stand in relation to each other in one or other way. This means that the panels of the comic do not need to be on the same display simultaneously, but the reader must experience them together. This perspective opens for presentation forms other than juxtaposed panels in comics.

Film was the first true multimedia (Manovich 2001: 51), which means it has properties that go beyond showing moving images. It can also show still images, text, even show images in a chronological order to tell a story, just like a comic. Film can therefore present a comic in all the visual ways a traditional comic can be shown, for instance as a strip, a page, a scroll and so forth. Comics have not had this property – until recently. Now that they can be a screen-based art form called digital comics, they can use new presentation forms, one being film. The tables have turned. The digital comic is multimodal.

A film might show a comic because of its multimedia form. Nevertheless, there is no reader control in a traditional film because it is automated. The automation is what makes the motion and progression. Traditionally a film runs 25 frames per second to give us full motion. The presentation of the comic, on the other hand, is traditionally not automated and must be read manually. The reader interacts by navigating through the comic content with hands and eyes. The reader controls the pace and his or her acquisition. As already mentioned, the first reader of a film is the video player or cinematograph, not the audience. The audience are spectators, relatively passive observers, receiving and perceiving. The reader of a comic also observes, receives

and perceives while reading and navigating (McCloud 1993: 49). If a comic can be automated like a film, a film could be navigated by interaction just as a comic. This conclusion is based on one of my first observations, which I think turns motion in comics upside down, as it were. (I explore reader-controlled motion in Chapter 3, in the section 'Automated and Interactive Full Motions', and you can read more about reader control in Chapter 4, in the section 'The Digital Comic, Reader Control'.)

The Meeting Points of Comic and Film

Studying the history of animation film, it becomes clear that film is a multimedium that can approach comics. When I approach film from a comic point of view, I am reminded of a technique for reducing the amount of motion as much as possible so it almost becomes a sequence of static images. This technique, called 'limited animation', was developed by animators and producers in the 1950s and '60s (Cavalier 2011: 398). Tezuka Productions in Japan and Hanna-Barbera in the USA are animation studios that pioneered in the development of this technique. The function of limited animation is to lower the amount of animation to a minimum in a production. This results in a screenplay where all shots capture static objects or poses. When edited together, they create motion with closure just as in comics.

2001 is probably the year motion comics emerged. I cannot find any documentation to identify the first motion comic, but the first I have observed, where the creators defined it as a motion comic, is *Broken Saints* by Brooke Burgess, Ian Kirby and Andrew West. It consists of 24 chapters that were published online from 17 January 2001 to 2003. A revised version was released on DVD in 2004 (Burgess 2001). This motion comic was made with Macromedia Flash (Adobe Animate in 2018), a software that at the time made a small revolution for interactive graphic content on the web because it was easy and intuitive to use. *Watchmen, the Motion Comic* (2008) is known for establishing the concept of motion comics for a worldwide audience. These works are very similar to animation films with limited animation, and sometimes they are difficult to distinguish from animated films, one example being the *Marvel Super Heroes* TV series from 1966. How do we distinguish between animation films and motion comics? I would answer this by saying I do not think we

need to try. I think animation's limited animation and digital comics' motion comic constitute a meeting point between the two art forms.

It is not just with limited animation that film approaches comics. At a motion comic workshop at *Fumetto International Comic Festival* in Lucerne (2015), the instructor Eric Loyer pointed my attention to the split screen in movies. Films like *Grand Prix* (1966) and *The Thomas Crown Affair* (1968) use the split screen to create multiplicity, rhythm, motion, tension, chaos and repetition. The title designers Saul Bass (*Grand Prix*) and Pablo Ferro (*Thomas Crown Affair*) made split-screen designs that can be associated with magazine layouts and panel layouts in comics. However, the split screen in film does not show chronological sequences as in a comic. I think it is most suited to showing simultaneous events in all the frames. Split-screen editing feeds new, smaller screens into the main screen, and this approach is similar to the presentation form called 'panel delivery', which I write about in Chapter 3, in the section similarly titled. At the workshop in Lucerne, I ended up experimenting with a comic that used a fixed split screen in combination with panel delivery. This resulted in an alternative and more rigid form of panel delivery that is known to have more dynamic and mutable forms (Video 8).

The Boundary between Comics and Film

Aaron Meskin, in his article from 2007 entitled 'Defining Comics?', argues against Greg Hayman and Henry John Pratt's attempt to distinguish comics from illustrated books or picture books and especially children's picture books. In such works as well as in digital comics, the formats blend together in ways that make them hard to define. When their boundaries are challenged, the question of *whether a work is a comic or not* will eventually emerge. In my artistic research, I have developed my own answer to this question and come to a conclusion that corresponds with that of Meskin. He draws a parallel to reflections from art theory and takes recourse in Jerrold Levinson's intentional-historical definition of art. He concludes thus:

> Perhaps something is a comic just in case it is/was nonpassingly intended for regard-as-a-comic … (Aaron Meskin 2007: 375)

With this perspective, artists have the power to define their own work, and their intentions should be considered in the defining process. In my case, *Sound of the Aurora* and *Close, Closer, Closest* might be perceived by the audience as films when I perform them, but for me as creator, I regard them as digital comics, which was also my intention (the former is only a performance; the latter can also be read on a tablet/iPad).

So where is the boundary between comics and film? Since film is a multimodal medium, I think the differences are in the imagery, not in whether or not the work is automated. My subjective opinion is that the boundary lies between full motion and image sequences. If the main presentation relies on conveying actions through full motion, the work is a film. If actions are communicated through pure static sequential imagery, it is a comic. If the work mixes both forms, it can either be a motion comic or a limited animation film, depending on the artist's intentions.

Why Use Motion in Comics?

Years before I began my artistic research, I was confronted in a panel discussion with this question: Why use motion in comics? It was a critical question, and the rhetorical undertone was, as I interpret it, a claim about there being no need for motion in comics. Perhaps it is unnecessary, since the comic functions well in its established static form. But the question has continued to follow me through the whole of my artistic research, and I want to address it in this section.

I will start with my personal motivation for exploring motion in comics. I was born in 1980 and grew up watching animated TV series from the 1960s and ‘70s. Some of these were broadcast on TV while others could be rented from a video store. These were also the productions that made heavy use of the limited-animation technique. I think it was because of this exposure that I developed a nostalgic relationship to limited animation and maybe a higher tolerance and love for the form. I have heard people call it poor man’s animation, so I understand it is a matter of taste. When it comes to comics, I have read them and drawn them since kindergarten. I think my

fascination for drawing has attracted me to all illustrated media and art. This perhaps does not explain why I mix comics and motion, but it is definitely a cultural backdrop that may have facilitated my personal motivation.

Another aspect is my artistic motivation. As a comic artist, I search for an approach that distinguishes my work from the mainstream and traditional comic scene. In Norway, digital comics are mostly known as web-comics that lie close to the comic book format. Motion in comics is not fully explored in the Norwegian comic scene.

To close this chapter, I stress that computer technology is the real reason for the modern development of motion comics and digital comics in general. The high standard of technology which we experience today enables the use of movement and lowers the difficulty-threshold for creating digital comics. As long as movement is technologically possible to create, there will be artists who use it – or any other technologically enabled quality – as a means for expression in their digital comics.

Chapter 2:
Sound of the Aurora

In this chapter I record my process and development of the performance comic *Sound of the Aurora* (2014). The research subject of this chapter is spatial motion, which includes both mobile framing and motion graphics. I will also address the performance comic format used for *Sound of the Aurora*, and aspects related to live editing.

Before discussing spatial motion, I present a framework for *Sound of the Aurora*. This includes an account of the project's origin, my discovery of the lost *laterna magica* (magic lantern) tradition and a description of the performance comic as an art form, thus to place it in an historical perspective.

Making *Sound of the Aurora* has involved collaboration with other artists. I engaged the improvisation trio called '1982', consisting of Nils Økland, Sigbjørn Apeland og Øyvind Skarbø, to play live during my performances. I have also collaborated with Aslak Helgesen and Thomas Tussøy from the Bergen-based game developer Rain Games. They assisted me in my experiment with a three-dimensional (3D) comic. Dylan Stone at the London Film School pointed me in the direction of magic lanterns, and Preus Museum in Horten let me study its collection of magic lanterns and slides. I invited Mervyn Heard, a magic lantern expert from Bath, to give a lecture and hold a real magic lantern show at a conference on the theme of visibility at Bergen Academy of the Arts.

This chapter also introduces readers to some technical aspects. I use Modul8, a type of video-jockey (VJ) software, in the performance and live editing of *Sound of the Aurora*. I also use the virtual reality technology Oculus Rift and the programming software Unity in my experiments with spatial motion in a 3D comic.

Sound of the Aurora premiered in June 2014 and was performed twice before I gave the first official performance of it as a 3D digital comic with live mobile framing in March 2016. It has been performed 15 more times in the period 2017–2018.

Framework

Origin

Sound of the Aurora was originally intended to be a small sidestep experiment in my artistic research, a method to facilitate possible new discoveries and opportunities. It was a daring stunt, with the premiere date announced the very day I started on the experiment. I gave myself one and a half months to create a performance comic. It premiered on 5 June 2014, and the experience surprised me in many ways. I enjoyed performing the comic and the positive response from the audience. No one in the room had ever experienced a performance comic before. The form appealed to me because it was a less common digital format than webcomics and apps. I also saw the potential for experimenting with live editing and live motion. Therefore, from being a sidestep, *Sound of the Aurora* morphed into one of the final works in my artistic research project. It also affected my final comic, *Close, Closer, Closest* (2016), which I made with performance in mind.

Story development

I brought with me a new autobiographical and biographical comic project when I started this artistic research. I interviewed relatives on the subject of my grandfather who died 15 years before I was born (Picture 5). Five versions of a manuscript were written during this process. The first draft, titled *I Don't Know Grandpa,* was the subject for my first experiments, but it was not realized. *Sound of the Aurora* is one of two manuscripts/ideas that was realized.

The story I tell in *Sound of the Aurora* is from my aunt Astrid. It takes us to a Saturday afternoon in her family's living room in 1951, to an incident she still remembers today at the age of 77. Her father, Andreas, has settled down to listen to his favourite radio show featuring classical music. However, Gerda, Astrid's mother,

turns the radio off. She is provoked by the German theme of the programme. She cannot stand listening to German, she has heard enough of it, and cannot stand Germans because they occupied Norway during World War II. Astrid's father addresses her anger, saying "Well, if this is how it will be, there will never be peace in this world". He shows forgiveness for sake of a bigger purpose, even though Astrid knows the war treated him terribly. The story tracks unspoken stories from the war, and it paints a post-war scenario that I believe many Norwegian families still relate to.

The magic lantern: a lost tradition

The impulses that pointed me in the direction of performance comics came quite early in the artistic research project. In November 2012 I attended a storyboard course for directors at the London Film School. There the instructor Dylan Stone talked about the magic lantern tradition, which can be seen as the forerunner of film and TV. He introduced me to an old painting of a magic lantern session and explained how the lantern worked. It was an epiphany for me, a turning point when I realized that the concept of comics on screen had existed long before computers and film, approximately as early as 300 years ago. This gave the screen more existential weight than the computer itself, and the concept of screen-based comics gained new meaning for me. (Read more about the concept of screen-based comics in chapter 4, the section 'Fundamental Parameters of Digital Comics'.)

I studied the magic lantern tradition by travelling to Preus Museum in Horten to look at real lanterns and slides. I invited a British expert on the topic, Mervyn Heard from Bath in England, to present a lecture at a conference on the theme of visibility at Bergen Academy of Art and Design in 2014. He performed a magic lantern show at the culture scene Bergen Kjøtt, which is the first time I saw a live performance of this type.

My encounter with the magic lantern tradition inspired me to make a digital comic in the form of a performance. I noticed that magic lantern slides used spatial motion and motion graphic techniques in their presentation, and I decided to use these techniques in my own production. The creation process necessitated that I reflect on

spatial motion versus image-stream motion. To this end, I devoted a lot of thought to Scott McCloud's (2000) theories and adjusted some of his concepts to make them relevant for my own motion theory (see chapter 4, the section 'The Screen').

The performance comic

The performance comic is a rare art form in Norway. I have mostly experienced it as readings from web- and printed comics in lectures and artist talks. It is related to reading aloud, which is a well-established practice amongst authors and picture book creators. I remember such readings at my primary school, when the teacher read from a small booklet and showed an illustrated narrative in a slideshow. This was a modern version of a magic lantern show. The first original comic performance I experienced was watching the artist Kim Holm sing his comics at pubs in Bergen during 2008–2010. Accompanied by his guitar, he projected his comic pages in the background.

I made my first performance comic in March 2013. It was not part of this artistic research, but a collaborative project made with the comic artist Eirik Andreas Vik. We performed a reading of our latest fanzine *When We "Met" Lucy Knicley* (2012). The printed edition was adapted to screen by presenting panels in Apple's Keynote software. Most often one panel was presented at the time, and we also introduced music and sound effects. Since this comic originally was designed for print, it did not have any sequences that took advantage of the extra possibilities a screen enables. Had it been made with screen reading in mind, the comic would have looked very different. It was a fun thing to do and the audience had a good time, we received feedback from several people who thought it was a great experience to see a comic read aloud. I had no idea then, that a year later I would do a performance of a new and original work.

There is no mention of performance comics in any theory or history of comics that I have found. To begin with, I used terms such as 'reading' and 'live comic' before I was introduced to the term 'comic performance', which is used by other performers such as the Scottish artist and researcher Damon Herd and the American comic

artist Robert Sikoryak. A similar and relevant live practice is mentioned in comic history. The American Winsor McKay is one of the most important pioneers in Western comic history. He made the classic cartoon series *Nemo in Slumberland*, and he also loved to perform. He practised a Victorian tradition called chalk talks, which involved drawing on a chalkboard in synch to his talk (Lente 2012: 13). McKay is also one of the most important pioneers of animation and film, making history with the animation-film performance *Gertrud the Dinosaur* (1914). In this work he communicated with the dinosaur, threw an apple to it, and as a finale, 'broke the fourth wall' (cf. chapter 4, 'The Screen') by transporting himself from the physical room into the pictorial room and the fictional reality. This marked the beginning of multimedia theatre, where film was used in theatrical performances (Dixon 2007: 73). McKay was not the first animation performer, however, since the film pioneer J. Stuart Blackton made an animation performance with his show *The Enchanted Drawing* as early as in 1900 (Gardner 2012: 6).

In Norway, the opera *Blob* from 1997 could perhaps be called the first original performance comic. Written and drawn by the renowned comic artist Steffen Kverneland and with music by the composer Ole-Henrik Moe Jr., this was a comic opera, first performed in January at Angouleme International Comic Festival, then without drawings. Illustrations were later added to the performance at Astrup Fearnley Museum in Oslo, at the opening of their comic exhibition in May 1997. Shown as a slideshow, the illustrations functioned as backgrounds for the singers Tage Talle and Hege Høisæter. The music was played by the composer himself with Rolf Lennart Stensø on percussion. Judging from the available written documentation, it seems the performance was not perceived as a comic presentation, but as an opera performance using the language and semiotics of comics in the singing and the music (Skjærvøy 1997).

In 2013 Damon Herd organized DeeCAP (Dundee Comics Art Performance) at the University of Dundee in Scotland. In his report of the event (Herd 2013), he mentions Robert Sikoryak's Carousel, which presents comic readings and visual performances from comic artists (cartoonists) and theatre artists. Since 1997 over 180 artists have

performed at Carousel (Sikoryak 2011). In a mail correspondence, Sikoryak wrote me that Carousel is low key and mostly features adaptations from print and sometimes hybrid formats. Unfortunately, I found out about Carousel at the end of my artistic research, so have been unable to do any research on the works it has presented or to experience the events myself.

As stated, 5 June 2014 marked the premier of *Sound of the Aurora,* my first original performance comic. From then on, I became more aware of the art form and started searching for other performance comics as they were announced. In April 2015, for instance, the famous French comic artist Tardi performed at the Fumetto International Comic Festival, and later that year in June, an excerpt of Geir Moen's and David Mairowitz's comic adaption of *Peer Gynt* was performed at Oslo Comix Expo. Performance comics is an art form that I interpret as a modern version or a continuation of the magic lantern tradition. *Sound of the Aurora* and *Blob* are probably the first original performance comics in Norway, and they both contribute to establishing performance comics as an art form in the country. Nevertheless, how widespread the phenomenon is internationally, remains undocumented.

Investigations into Spatial Motion

One of my key aims for *Sound of the Aurora* was to translate the motion of magic lantern presentation slides into comic form. I reasoned that spatial motion is the natural motion of physical magic lantern slides. Based on my practise and observations, I divide spatial motion into two types. The first is 'motion graphics', which include flying panels in the negative space and moving objects in the fictional space (Figure 2). The second is 'mobile framing', which concerns both the frame of the negative space and the frame of the fictional space. I will also, in this investigation into spatial motion, address filters and lenses, for I have used them to create various effects in *Sound of the Aurora*, not least to modify the images and the reader's or viewer's focus. The investigative section ends with addressing the aspect of automated motion.

Motion graphics

The term 'motion graphics' has a broad scope encompassing visual music, abstract animation, broadcast design, kinetic typography, title design and more (Betancourt 2013: 10). When I refer to motion graphics in this research, I refer to the movement of graphic images or parts of images, whether abstract or figurative. Whilst the origin of the phenomenon of motion graphics is connected to the emergence of abstract film (Ibid., p. 40), I think my use of the term can be compared to the idea of shadow-play figures, the static parts of which are combined and physically manipulated to create motion. I also include cut-out animation as a form of motion graphics, even if in film it is captured through an image stream.

I travelled to the Preus Museum in Horten to study the real magic lanterns and lantern slides in the museum's collection. I investigated several types of lanterns and sets of slides, both regular and mechanical. The mechanical slides had levers that could make static objects in the illustrations move, or they could make body parts move, much like cut-out animation or dolls in a shadow theatre. There were also panorama slides that could create a mobile frame as well as filters for adding the effect of falling snow. Browsing in Preus Museum's library, I found an old instructional book by Lewis Wright, *Treatise on the Use of the Lantern in Exhibitions and Scientific Demonstrations* (1891), which gives a detailed overview of techniques and equipment. Wright describes the various types of mechanical slides and the effects they can add to a presentation. The following are the slide types that use motion graphics:

a. Uncovering slides. With moving layers of glass, one can uncover hidden graphics and change an image (Wright 1891: 141).

b. Lever slides. Moving parts of illustrations such as flickering eyes or an arm wielding a hammer are achieved with a lever enabling one to control a mobile layer of glass (Ibid., p. 142). These motions can be repeated, as in a loop, or executed only once.

c. Rackwork slides. More technical in their mechanics, rackwork slides can make circular glass rotate in a loop.

d. Experimental slides. Wright also describes experimental slides which show optical graphics such as a kaleidoscope rather than scenic subjects (Ibid., p. 144).

e. Roller slides. Acting as filters, roller slides can be rolled onto other slides to add the impression of snow or other atmospheric effects (Ibid., p. 143).

The motion graphic techniques outlined here result in moving objects and figures. Rotating motion graphics can create kaleidoscopic abstractions as well as masked and unmasked images. The filters are an aspect I will return to later in this chapter. The most common motion graphics in *Sound of the Aurora* are the objects that move from one point to another. Examples are the ship that moves, the ocean passing by, the ship sinking (Video 16), and the lifeboat that crosses the screen. In my second digital comic, *Close, Closer, Closest,* I use motion graphics in two scenes (Video 15 and 16). Since my focus when making this comic was to explore the image stream, I noticed a technical aspect of motion graphics; I found the moving graphics are more file-size-friendly than image streams. Instead of loading an image-sequence animation, the computer loads the single graphics only once, and the programmed algorithm produces the animation. The motion graphics in *Sound of the Aurora* are made with film cuts. The animated sequences are not pure motion graphics, but montages of image streams and motion graphics. An example of this is the sequence with the sinking ship, where the ship is a moving graphic whilst the background is a photographic film of ink being poured (Video 16).

The French comic theorist Thierry Groensteen (2007: 71) claims that motion does not fuse perfectly with the texts and images in comics. The reader may recall that I did some reflection on this in chapter 1. I think one of the main differences between comics and film – that is, sequential images versus full motion and closure that take place on different levels – exemplifies Groensteen's point. However, I also think it is too simplistic to claim, as Groensteen does, that motion does not work well. In a

multi-modal composition, the motion can vary from being subtle details to being a major part of the presentation. The disharmony, or even harmony, will vary depending on which elements are combined. So how does the expression of motion graphics compare with that of classic animation and traditional comic sequences?

Comparing motion graphics and classic animation, I find the expression of classic animation more dynamic in an organic way. This is because classic animation can imitate realistic movement, while motion graphics have a more static expression that becomes a stylized representation of realistic movement. This static expression of motion graphics lies closer to the comic sequence's static expression than to that of classic animation. Does this mean that motion graphics harmonize better with static comic sequences than with classic animation?

Taking a closer look at motion graphics, I find a difference within the motion graphic expression itself. It is between static objects/figures and dynamic cut-out figures. In cut-out animation and shadow play, there is a tradition to create and use multiple moving limbs to animate for example a walking person. This is what I mean by a dynamic cut-out figure (Video 19). A static object, in this context, is an object that is static in its original form, also when it moves, like a ship for example (Video 14). I claim that a static object makes a more realistic motion than a dynamic cut-out figure in motion graphics, because the static object moves according to our expectations. A figure that in reality has dynamic and organic movements will never achieve a realistic representation with a dynamic cut-out figure. It will remain a stylized representation of reality.

I do not use dynamic cut-out figures in *Sound of the Aurora*. I hide the organic and dynamic motion in-between the images, as in limited animation, or I show the movement through comic sequences. In the limited animation sequences, I focus on moments where the static presence of objects and characters seems natural. I do this to preserve the comic language of sequential imagery, since a fully realistic motion is the opposite of that. Despite this, I do also use static objects in full motion (Video 18). Somehow, I do not find the motion of a static object to challenge the

comic sequence as would a dynamic cut-out figure, for instance, of a person running. Somehow the static object in full motion harmonizes with the frozen moments of the comic. This may seem like an illogical conclusion since both the static object and the dynamic object represent full motion. I think the representation of reality is the aspect that comes into play. Static comic sequences create an illusion of realistic motion through the reader's closure, and static moving graphics show realistic motion. A dynamic cut-out figure would, I think, have disturbed this level of reality. Classic animation is capable of maintaining the level of reality, which is why I think I have intuitively mixed moving static objects and classic animation together with comic sequences in *Sound of the Aurora*. These three expressions correspond with each other in their portrait of reality. This is also why I do not use dynamic cut-out figures in *Sound of the Aurora*. So: my conclusion is that a comic sequence is more similar to a classic animation sequence than it is to motion graphics. This is due to the stylized representation of real movement which the motion graphic enables. This is despite the fact that the motion graphic and the traditional comic sequence (e.g., in a comic book) both share a static expression. The exception to this conclusion – that is, the situation where a motion graphic is more similar to a traditional comic sequence than to classic animation – is when the motion graphic presents static objects that move, for instance cars and ships, because their static quality still represents a realistic movement.

Even though I have avoided dynamic cut-out figures in *Sound of the Aurora*, this does not mean I think it is impossible to create serious content using this visual expression. Nevertheless, it is undeniable that cut-out animation has great potential for humour. This is exemplified in the American animation series *South Park*. But unintended humour can also arise. To give an example: in *Watchmen, the Motion Comic* (2008), the creators made some animation choices that break with the otherwise grave and serious mood. This comic film, rich in movement, is well animated, but some of the figures walk in such a weird way that they can trigger unintended laughter. This is one reason why I think it is important to be aware of the potentially humorous aspect of stylized representation in combination with comic sequences.

The motion graphics that I use in *Sound of the Aurora* are automated, but motion graphics can also be interactive and present movement in real time. Such real-time graphics are well-known from shadow theatre, but they are also found in some computer games. At Preus Museum I observed that magic lantern slides could create real-time animation with their mechanical apparatuses. Such interaction is also possible in digital comics.

I did not use interactive motion graphics in the first editions of *Sound of the Aurora,* mostly because I was unaware of the concept at the time. In retrospect, it seems like a lost opportunity, since the live performance format facilitates collaborative interaction between me and the musicians. Synergy between the musicians and the direct control of the movement on screen would have been an exciting addition. The Modul8 software that I now use while performing the work lets me access all layers of the presentation (Video 21). I have therefore, in my latest edition of *Sound of the Aurora*, made single figures for the final *fata morgana* scene, so I can move the objects and figures directly (Video 21). This gives me much more freedom than with prerendered video. There is also a type of interactive motion in the work, but it relates to a filter, and I will describe it in the section called 'Filters' later in the chapter. Other than this, I did not use interactive motion graphics in *Sound of the Aurora.* I have, however, used it in the opening menu of *Close, Closer, Closest.* If the reader tilts the tablet, the characters will slide towards each other but still keep a bit of distance (Video 17).

Flying panel delivery

Sound of the Aurora does not juxtapose panels in its presentation, so it does not have a negative space where panels are presented. It has the basic structure of an image stream based on cinematic panels (this concept is explored in chapter 3, in the section 'Cinematic Panels'). The motion graphics in *Sound of the Aurora* are in fictional space. I have therefore not had any experience with motion graphics in negative space, most particularly, with 'flying panels', which are a form of panel delivery made with motion graphics.

I explore panel delivery through image streams in chapter 3 (in the section 'Panel Delivery'), and many aspects I address there are also relevant for understanding panel delivery made through motion graphics, which I choose to call 'flying panel delivery'. Since I have not explored flying panel delivery myself, I refer to other artists who use it. Brendan Cahill, in his digital comic *Outside the Box* (2002) (Video 22), uses flying panels to make panel delivery. Another example is the Norwegian Jenny Jordal, who switches around fictional space and negative space in her scroll-activated comic *Hvorfor ananas heter ananas* (2014, ['Why Pineapple Is Called Ananas in Norwegian']) (Video 23). This is a digital comic with a basic spatial structure. Pictorial elements fly in and out of the screen like birds. The curious and interesting aspect is that Jordal treats fictional space as if it were negative space. The figures are presented as if they were flying panels, using the fictional space as the backdrop. It is represented through pure colour backgrounds and shapes that change throughout the story.

When I use motion graphics in the fictional space in *Sound of the Aurora*, I establish a realistic fictional world. Jordal's fictional world, by contrast, is a coloured canvas, an abstract representation of reality. This gives her the opportunity to treat her characters in the same way as Cahill treats his panels in *Outside the Box. Hvorfor ananas heter ananas* represents in one sense the opposite approach to *Close, Closer Closest,* which has a basic image-stream structure. *Sound of the Aurora* is more an even mix.

With her flying figures and abstract backdrop, Jordal create sequences within a continuous fictional space. This could be compared to a film made in one take. I also do this in *Sound of the Aurora,* but not throughout the whole comic as Jordal does; I only do it in a cut. We both rely on a mobile frame to create the sequences, so our works are not pure motion graphics. *Outside the Box* has a fixed frame. Cahill use a panning image of a map in chapter 4 of his work, which is one of two places where he imitates a mobile frame. He also moves in depth by scaling the images in his chapter 6. Most of the presentation in *Outside the Box* consists of combinations of

image-stream panel delivery, flying panel delivery and cinematic panels, with flying panel delivery as the dominate strategy.

What is similar for *Outside the Box* and *Hvorfor ananas heter ananas* is that graphics enter and disappear. Paper theatre is probably comparable to this spatial presentation, since all the objects and figures on screen are continuous. Entering and exiting the screen is time consuming. I find this aspect to be one of the challenges of using motion graphics in comic sequences. Since the eyes conceive information rapidly, the intro and the outro of a figure, object or panel slows the pace, and readers might experience this as delay. The image stream, by contrast, appears as a much more time-effective presentation form.

I came to this conclusion through doing an experiment on mobile framing. The test was a full-screen strip that was scrolled horizontally (Video 24). The outcome was that I decided not to use this format because readers would spend more time in-between the images than actually perceiving the images. This issue of entering and exiting the screen is therefore a challenge for both mobile framing and motion graphics within a continuous frame.

An example that demonstrates swift-paced flying panels is *Upgrade Soul* (2013) by Ezra Claytan Daniels. Its presentation form, which is made by the programmer Eric Loyer, makes it look like a vertical scroll comic, because the feed of panels enters at the bottom and exits at the top. But it is not a scroll, since every panel enters and exits the screen (Video 25). Loyer's programming allows the panels to enter swiftly, and the entrances and exits use no more time than it takes to swipe your thumb. The swift pace of Loyer's panels emphasizes an aspect I have experienced as crucial, namely reading pace. Automation turns the reader into a spectator, which is why I wanted to develop a scheme of reader control in digital comics (see chapter 4, 'Reader Control').

Another aspect of motion graphics and comic panels that I have not had experience of in my own work is 'responsive panel layouts'. In October 2015, I presented my

research at the Comics Electric Symposium at Hertfordshire University. At this symposium, web designer Pablo Defendini showed his experiments with responsive comic-panel layouts, where panels shrink, expand and rearrange themselves when the screen size changes. The moving panel frames demand a dynamic illustration with independent components arranged in layers, and where live text and resolution-independent illustrations make a more adaptable content. In these adaptable layouts, the graphics move only when they need to adapt to something, for example to changing screen sizes, as would be the case when viewing a comic on the screen of a smart phone or reading tablet, first holding the device vertically and then switching to a horizontal position (Defendini 2015).

The afore-mentioned *Uprise Soul* also uses a responsive panel layout. It is not responsive in the sense of adapting to different screen sizes, but in the sense that the panels adapt to a continuously changing panel layout. From my perspective, I categorize it as panel delivery with motion graphics, which includes flying and adapting panels. Eric Loyer (the programmer of the work), told me at a motion comics workshop at the Fumetto International Comic Festival in Lucerne that he based the flying panels on a 'sum zero' concept. This means that the volume of any subsequent frame equals the exact volume of the foregoing frame. All the panels are dynamic, so they can sometimes rearrange and reframe the motif. Even the graphics inside the fictional space adjust. These changes are not recorded; they are generated in real time by programming.

Mobile framing

Motion graphics and mobile frames can easily be confused, largely because motion graphics can give the impressing of moving frames. An example is a horizontal panoramic view ('a pan'), as in the 2D pan of the living room in *Sound of the Aurora* (Video 27). This is a digital version of a panoramic magic lantern slide and it is also a traditional animation technique. By moving a rectangular image horizontally (or vertically), traversing a landscape for example, the motion creates an imitation of a mobile frame (Wright 1891: 141). I therefore only call a frame 'mobile' if it actually moves.

The technique of mobile framing is used in traditional comics all the time. An example of a comic where the frame changes position from panel to panel is Martin Vaughn-James's *The Cage* (1975) (Video 28). Mobile framing in full motion, however, is a new feature that digital comics and screen-based comics have introduced. Both of the screen levels in a digital comic can become mobile. This means that the screen that frames the negative space, and the panels that frame the fictional space, can move.

The motions of the mobile frames in *Sound of the Aurora* are bound to the same motions as one finds in motion graphics. They are either directional movements or rotating movements. Directional movements move the frame horizontally, vertically and in depth. If a lens creates the movement in depth, it is called zooming, but then it is not an actual movement. Rotation can be a circular rotation around an object (Video 30), a rotation around the frame's own axis, as in pan and tilt motions (Video 31), or it can be a rolling rotation (Video 32). In *Sound of the Aurora* I only use mobile frames in fictional space. Before I address mobile framing in fictional space, I want to comment on mobile framing in negative space, based on my observations.

I find three ways to handle a mobile frame: through a fixed track, a dynamic track and free mobility. Dynamic tracks are relatively rare in digital comics. Nevertheless, around the year 2000, Marvel developed a concept that uses a dynamic track in its presentation form called Guided View. This is basically a mobile frame mode for a digital comic book. Instead of only reading page by page, Guided View gives the reader the opportunity to move the frame closer to the panels to focus on one or two panel at the time. As the reader navigates, the frame jumps from panel to panel. It zooms out if there are bigger panels or splash-pages. A dynamic track can move the frame in all possible directions, like a rollercoaster ride, but it is still a programmed track. An example of a comic that uses a dynamic track that not is Guided View is *Meanwhile* (2010) by Jason Shiga (Video 34). An alternative approach is the game comic *Icarus Needs* (2013) by Daniel Merlin Goodbrey, which has a dynamic track that is tied to the panels. The reader controls the main character, who can move

freely inside the panels. When the character moves, the mobile frame follows. The panels define the track of the mobile frame (Video 35).

Free mobility is the only model that craves interactivity and full reader control, so the reader can roam freely around in a defined or infinite space. This type of mobile framing is rarer to find than dynamic tracking. The only example I can give of free mobility is Cayetanos Garza's webcomics, comic number 130 (example: http://www.magicinkwell.com/archive.html). It involves free roaming within a very small and defined space, and I long to see a good example on a larger canvas. These three ways of handling a mobile frame are universal and count for mobile framing in negative space as well as in fictional space.

The intention of a mobile frame in negative space is to expose off-screen panels. Horizontal and vertical movements are traditional mobile framing for webcomics, also called scroll comics (Video 36). An example of a digital comic where the frame moves in the depth of the panel space is Daniel M.Goodbrey's hypercomic *PoCom_UK-001* (2003) (Video 37). This is also a type of movement I do not have experience with, since I do not operate with negative space in *Sound of the Aurora.* On the contrary, I approach the mobile frame in fictional space.

Since the mobile frame's function in negative space is to expose panels, the role of the mobile frame in fictional space is to expose more of the fictional world within the same frame. This is a major difference, because in the negative space, the reader browses sequences of images which create a series of events. In the fictional space the reader browses an environment and its contents. Having said this, it is possible that the offscreen content is composed so as to create a sequence when the mobile window passes by.

Directional movement on top of a 2D image is an established presentation form. It is a common effect in slideshow software such as Keynote and Powerpoint. It is also often used in digital comics such as motion comics. In documentary filmmaking, this effect is called the 'Ken Burn Effect', named after the filmmaker who was known for

using pans and zooms on photographs in his documentary films (Mattise 2006). Directional motion creates a pace. Slow motion creates calmness and flow while rapid motion can be hectic and energic. In *Sound of the Aurora* I use the y-axis for introductions. When we first meet Astrid, the frame approaches her (Video 38). Another example is the scene of the sailors who are left behind in the Atlantic. The frame moves away from them to reveal the survivors one by one, but also to introduce the vast ocean (Video 26). A directional movement can also bring us from location to location (Video 41).

Fictional space is traditionally 2D in comics due to the 2D illustrations. Because the digital comic represents new media (discussed in chapter 4), it is not bound to 2D as is a traditional comic on paper. 2D elements can be arranged in layers, even in a 3D perspective like what one finds in paper theatre. This way of handling 2D is also called 2,5D. Ultimately, the content can be sculpted into 3D objects and figures, full 3D.

I have experimented with all these three approaches: 2D, 2,5D and 3D. In 2,5D and 3D, the mobile frame can move in-depth into the environments, but only the 3D space lets the reader explore it from all angels without breaking the illusion of a realistic environment. Turning around in a 2,5D environment would reveal that the elements are just flat, like cardboard figures. In scenes such as my 360-degree pan in *Sound of the Aurora*, I position the 2D graphics so that they always face the point from which they are viewed. I do this to retain the impression of the realistic world I established in the 2D drawings (Video 39).

Late in 2015 I made a 3D version of the story frame of *Sound of the Aurora*, which takes place in a living room. My intention was to have a free mobile frame within this space. With help from 3D modelator Aslak Helgesen, I made a 3D space with a virtual camera. The presentation was programmed in Unity by Thomas Tussøy. I used a highly sensitive sensor controller – an Oculus Rift headset – to handle the virtual camera and move around inside the virtual tableau.

Moving the frame around in a 3D static scenario is a bit like watching an installation of sculptures, or it creates an association to a *tableau vivant,* a theatrical expression that reached its height of popularity in the 17th century. Actors dressed up, posed and imitated known statues or famous paintings; such tableaus could also involve staged environments (Scavenius 2007: 864). This way of presenting a narrative is also used in film, one example being *Risttuules* (*In the Crosswind,* 2014) by the Estonian Martti Helde. Its story is told by sequences of *tableau vivant* with an active mobile frame. The way I present the 3D sequences in *Sound of the Aurora* is much the same as Helde does, only that he stays closer to the *tableau vivant* tradition since he uses live actors. But there is still more to say about my experience with 2,5D and 3D.

Just as the *Tintin* creator Hergé created a sequence within a single panel (Picture 14), it is possible to present a sequence with a mobile frame in the fictional space. Jordal's *Hvorfor ananas heter ananas* is an example of a comic that uses this in a stylized way (Video 23), with a combination of moving graphics and a mobile frame. A more realistic approach is found in a student work by Gro Sørdal, who attended a visual storytelling course I co-taught at Bergen National Academy of the Arts.[4] Sørdal made an open world with visualization software from the oil industry, and placed characters in the environment. She used keyboard controls to move around in the environment. An open space with a mobile frame that can be moved freely poses a challenge: How can the chronology of the narrative be preserved? This would perhaps not be a problem in a non-linear story, but with a linear story, there is always a chance that the reader will approach the content in an unintended way. I think the problem can be solved with a strict composition that indicates a clear reading direction, just as comic artists arrange panels and subject matter on a traditional comic page in a way that helps readers follow the intended chronologic path. The same approach would be necessary in the 3D space. Another solution would be to move away from a free mobile frame and use a fixed or dynamic track, controlling the motion through the 3D environments. This is what I do in the 2,5D evacuation clip in

[4] I co-taught the visual narrative course at Bergen National Academy of the Arts in 2013 and 2014, together with Liv Andrea Mosdøl.

Sound of the Aurora (Video 41). Sørdal solved this challenge by performing the story, so she was in control of the navigation.

Sørdal's story was set in a big forest. The 3D scene in *Sound of the Aurora* is set in a small living room, a space that does not allow enough space to arrange a sequence with the same number of characters as I have in the evacuation clip. I solved this by making a 3D image stream – that is, 3D cinematic panels. I had never seen cinematic panels in 3D tableaus before, and with them, aspects such as broken motions occur, just as with instant transitions in 2D cinematic panels (see chapter 3, 'Instant Transitions').

While working on *Sound of the Aurora*, I intuitively used two types of effects that arose from the mobile frame. The first type were hand-held camera effects, the second were parallax effects. The 'hand-held camera' is a film term, and it is the opposite of the 'steady camera'. It is, however, unnatural to use the term 'camera' in the context of making comics. 'Point of view' and 'frame' are my own preferred terms. Nevertheless, in digital comics and screen-based comics in general, a camera or a virtual camera can be used to capture the visuals. In *Sound of the Aurora,* all the mobile framing is made with a virtual camera, either in Unity or Adobe After Effects. In the sketches for *I Don't Know Grandpa,* I experimented with hand-held camera effects. I filmed illustrations with a camera, adding shakes and movement when holding it in my hands (Video 43). These movements were intended to represent the dramatic environments affecting the camera, to make the reader/viewer feel closer to the event, as if the camera was present in the situation.

In *Sound of the Aurora* I used a hand-held camera for three reasons. The first was to create the illusion of being close to the event. I used it for close-ups of the character called Andreas, the intention being to have the shakiness help convey a sense of vulnerability (Video 44). The second reason was to imitate the surroundings by recreating the motion of a small boat in rough waves. I recorded real camera movement and adapted it to Adobe After Effects' virtual camera, which again captured the illustration (Video 45). The third reason is that it gave me the possibility

to use an Oculus Rift headset in the same way as one would use a hand-held camera, in real time during the performance. This gave me the freedom to choose the excerpts and the movement in the pictorial frame during the performance.

Parallax effects also spring from the mobile frame. These visual effects occur when 2D or 3D graphics are organized in 3D space and are observed through a mobile frame. When the frame moves, the spatial relationships between the objects change and create motion in the image. Parallax motion communicates space and spatial relationships and does not challenge the sequentiality of the comic. This is because parallaxing creates motion in the image without the objects actually moving. The illusion of parallaxing is also possible to manipulate through motion graphics and classic animation, but the easiest way to achieve it is by using a virtual camera.

While physical masking was used in magic lantern slides to hide objects, in digital comics, parallaxing can be used to hide or mask information and objects and then reveal them again by moving the camera (Video 46). This is an effect I used in the 2,5D evacuation clip. I moved the camera so that objects and environments would mask figures, then used other environments to increase the pace in transitioning from one moment to another (Video 41).

Since I do not focus on juxtaposed panels in my own productions, I want to mention a mock-up made by the Swiss animation student Melanie Wigger. I saw her work at Eric Loyer's motion comic workshop at the Fumetto Festival in 2015 (Video 47). She used material from a game she was constructing in Unity. She and Loyer made a page-based presentation with multiple panels, but the environments inside the panels were 3D. The reader could move the cursor on top of the panels in order to tweak the perspective and look around. The negative space functioned as a mask, although the contrast between the flat negative surface and the 3D fictional space strengthened the presence of the mask, and the fictional world became a space that really seemed to exist.

The opposite of automated motion is reader-controlled motion, also called interactive motion. I did early experiments with 360-degree pans with a mobile frame, but it was the Oculus Rift VR-technology that enabled me to use a free mobile frame in *Sound of the Aurora*. As I mentioned earlier, it was the story frame, the scene in the living room, which was the subject for the mobile framing.

The mobile frame also became a tool for collaborating with my musicians in the trio 1982. I could 'float' on their music and they could react to my motions. For every performance, I see new possibilities for how to frame the scene differently. A mobile frame also allows me to act in relation to the context, to build on the drama in the sequences. Examples of this would be a dramatic move to a close-up, or to use a shaking camera effect (Video 48).

My experience with free mobile frames is similar to my experience with motion graphics. Each motion consumes time, and the movements I make as a performer affect the rhythm. If the time the panel represents is long, I can move more freely. In the opening panel where the family is seen in the living room, there is enough time for me as performer to wander around in the panel and observe, just as the 2D edition spent time slowly panning the living room (Video 27). In my first official performance of the 3D edition of *Sound of the Aurora* in 2016, I used the free mobile frame and moved it constantly. The problem with this was that the scene I had created did not fit the concept of a continuous long take. The motion came in conflict with higher paced action-to-action sequences, where every panel represented a small amount of time and created a lag in the presentation (Video 48). A solution to solve this is to create cuts and fixed frames in the sequences that were supposed to have short and swift screen time.

The whole point of performing the work is to achieve close and direct communication between the performers and the audience. To create this connection, I think it is imperative for the audience to realize how close they are to the interaction in the performance. The audience have no control in the acquisition of *Sound of the Aurora*,

and I, the performer, have only partial control. This is because I present material that is both automated and interactive.

My audiences are used to watching films. When watching a film, the technique used to make the film is not present in the acquisition. I have observed that unless I inform audiences that they will be experiencing an interactive performance, it can be difficult for them to realize it. Audience response is sometimes more positive when the interactive aspect is understood, because viewers otherwise presuppose that they are watching a traditional film. With this in mind, I see the importance of either introducing the concept before the performance starts, or at least of being sure that I create a performance that does not hide its means and conditions from viewers. This means the audience can see me working with my editing equipment, and they can see the sensor which controls the interactive mobile frame. It is similar to watching a musician playing an instrument.

Filters

There are historical references to magic lantern performers scaring audiences by projecting images of phantoms onto smoke (Heard 2006: 51). Smoke creates a dynamic screen surface, and the idea of it inspired me when I was making *Sound of the Aurora*. I interpreted the ocean waves, the Atlantic wind and the sail of the lifeboat as interesting aspects that could be communicated through a flexible and dynamic background. I came up with the idea of a thin textile that could react to wind.

For the performance, the textile is hung as a sail and projected upon. When the story reaches the point where the ship *Berganger* starts sinking, I summon waves to the comic canvas by using a wind machine or just by pulling the canvas controls. I have not animated the ocean in the images of *Sound of the Aurora*, so this physical manipulation provides the motion at the same time as creating an association to the ocean's movement.

My first canvas was made with industrial plastic. When it was projected on from the front, it created moving and reflective highlights that could be associated with water.

My second canvas type was a textile that gave an association to a sail. The expression permitted me to create a softer effect as I projected images on it from behind. Also, I no longer had to worry about whether the screen leaked light. Because the screen was moving, light could pass through it and hit the background. With a back-lit solution, this leakage would hit areas where the audience normally would not look.

I have also performed the work without the dynamic canvas, but experienced that it lost a distinct expression and depth. Given that the animated parts of the work are subtle, they are designed to be juxtaposed with a screen interaction. An important value of the performance is that I can produce interactivity by adding elements such as physical and real-time spatial motions. To look at a screen that forms waves on its surface is a simple but expressive effect. It is an element of surprise that is popular with audiences because they have never seen it before. After every performance, the feedback from viewers has focused on the experience of this effect and how unusual it is. According to my findings, it is not just the waves in the canvas that fascinate people, but also the merging of animated motion in fictional space with real motion in our real space.

The motion of the textile functions as a filter, which makes filters a concept for motion and visual presentation in digital comics. This is why I have added filters to my sub-screen map, a figure that I define in chapter 4 (see the section 'Screen Levels') (Figure 3). Filters can be used in all levels, on the panel screens or on the main screen. This means that the 'window' we look through or at, regardless of whether it is a computer screen or a surface on which an image is projected, can affect the imagery. In filmmaking, there are a few basic camera filter types: diffusion, exposure, focus, colour balance, colour alteration and special effects filters (Brown 2012: 256).

My filter adds physical motion and functions as a 'real-time screen', which is one of the four types of screens that Lev Manovic describes in *Language of New Media* (2001). The screen and the wind create a visual image that can only be seen then and there. It is a simple and analogue real-time screen that does not require

technical devices such as a webcam, sensors or sonars to create the live image. The dynamic canvas adds unique motion to the presentation of *Sound of the Aurora,* and it will differ from performance to performance.

The lens

A camera lens is one of the prime tools in filmmaking. It controls the viewer's focus by blurring out all areas except the field that is in focus. Focus manipulation is not a technique I have used in my digital comics, and it does not directly relate to motion. Nevertheless, it does transform an image in a way that creates graphical motion and change, and it can be used to create sequences within one and the same image. An example of this is in Marvel's *Wolverine: Japan's Most Wanted Infinite Comic – Issue #1* (2013). This is a modern digital comic that uses focal manipulation in its panel delivery, causing the focus to shift in the sequence (Panel delivery 1).

Focus manipulation is a technique that has not traditionally been used in comics. In my research, I have found that solid backgrounds and stylized images in comics have involved focus – that is, sharp imagery. However, after photo manipulation software such as Adobe Photoshop became standard in the making of comics, I have seen deliberately blurred images in printed comics. What a selective focus does with an illustration is just as in film: it takes some control from the viewer/reader and directly controls what the viewer/reader should focus on. In a sharp image, the reader can freely look around within the frame and decide what to focus on.

Focusing can be used to hide or reveal information, and like a semi-transparent mask, it can also create visual metaphors, for instance of drug-induced states or madness (Brown 2012: 61). Soft lenses or filters can create associations to the early years of cinematography, to beauty, romance or dream-like situations.

Automated motion

Automated motion is the opposite of interactive motion. Traditional films and animation films are automated motion pictures. A software or machine runs the film

or animation at a given frame rate. Both the image stream and the spatial motion can be automated, and they can be executed as a linear animation/film or a looped animation/film.

A linear animation is a motion picture with a beginning and an end. In film, this unit can be called a cut. In a digital comic, as in games or even a PowerPoint, this linear animation can also be an intro or an outro animation. It can be a full-screen animation, or a module (a part) of the composition.

The premiere of *Sound of the Aurora* was a fully automated film. I had intended to control the presentation, but due to technical problems, I executed my plan B, which was to play it as a pure motion comic/film. The later editions I have edited live, entailing a catalogue of stills, cuts and loops that I play as I want. Sometimes the cuts can be small actions such as an exploding boat or a sinking ship. And, if a sequence becomes too hectic to live-edit because of a rapid pace, I can introduce small automated edits that make the performance easier, at least with the Modul8 live software.

A repetition can be a repeated linear clip or a looped clip. I use repetition in a sketched scene with the cannon firing, and I repeat the same clip to convey that it fired seven times (Video 51).

A loop, in this context, is an animation/film that is automated to run in a circle. I find the loop to be a type of 'passive' animation in digital comics because it does not create actions that push the story forward. On the contrary, the loop is potentially an eternal moment. It can describe a long journey or a moment when time stands still. In a reading experience, readers themselves can choose how long they will dwell within this moment. The passive aspect makes the loop a type of animation or film that blends into traditional static comic panel sequences, because it does not create progressive sequences such as are seen in linear animations/films (Video 52).

Loop animations can be ambient backdrops, subtle gestures or mechanical motion. They create rhythm, increase the impression of speed and intensity, or do the opposite by creating a sense of calm and harmony. In *Sound of the Aurora* I also use the loop in sound symbols (Video 53). These image-stream animations that symbolize radio noise and music indicate that there is diegetic music even if the musicians decide to play non-diegetic music. I also use looped image-stream animation in the sailors' hair when they abandon the ship. In the lifeboats, they are more exposed to water and wind, so I wanted to strengthen the impression of the weather conditions. I also use a technique I have seen in anime, where the eyes shiver, to show a stage of fragility when Andreas almost breaks into tears (Video 54).

Loops can also be used to compress information in a panel sequence. A looped cinematic panel can show the same content as two panels would have communicated. One example of this is in one of my auxiliary projects, a short scroll comic called *Ovis Ariesaurus Re*x (2015) (Video 52). All the loops in *Sound of the Aurora* are relatively short. In retrospect, I admit that I have been too focused on achieving seamless mixes between comic sequences and motion, and perhaps it is a result of trying to disprove Groensteen's afore-mentioned claim that motion does not fuse perfectly with texts and images in comics. This approach has hindered me from exploring the opposite direction that involves montages with contrast and disharmony. I think I should have done more exploration of full motion animation, both linear and looped, to see how they could work with the existing content. However, a performance comic is never fixed, so it is possible to explore this by adding new content to future performances.

The Performance Comic Format

Live editing

In filmmaking, editing means to coordinate cuts and relationships between images and shots. When a comic artist arranges the scenes and the panels of a comic, this is also an editing process. A similarity between physical comics and film is that the editing is part of the production process, and when the film and the comic are

published, the editing has been completed. The new medium of digital comics differs from physical comics and film because it is never fixed (Manovich 2001: 36), so it is possible for makers to re-edit and change publications they have already sold.

The editing processes of comic artists are diverse and vary from artist to artist, and speaking for myself, they change from project to project. I will therefore not attempt to define comic editing or compare it with film editing, as this topic is too large to be included in this project.

I will, however, mention one production aspect that I believe marks a difference between the two. In film making, more film material is usually produced than is needed for the final result. This material needs to be adjusted and cut down, and much of the refined rhythm and pacing is created in the editing process. In the traditional comic-making process, there is no need to create an excess of material for the editing process, at least not to the same degree. And if there is an excess, it might be edited out during the ideational and sketching phases.

To make *Sound of the Aurora*, I therefore had two options: I could use the comic approach and just make the material needed for the performance, or I could use the cinematic approach and make more than necessary. I chose the latter. I created the images, linear and looped animations, single shots and pre-edited montages, and in this way made a catalogue from which to edit. The live editing process has shown me that if I want the freedom to improvise and make variations, I need more material than strictly necessary. Loops and stills that can be exposed on screen for shorter or longer periods are good tools for achieving greater freedom in editing. Portrayed environments and objects help create moods that do not affect the story progression, and they are also a type of additional content that can create flexibility. The software Modul8 lets me control the fade-in between every image and clip, and I have used this live control tool to dissolve images to vary the rhythm of the presentation.

Alternative storylines can take the form of alternative paths with different beginning and endings and are typical for hypercomics. They are also possible with live editing.

Nevertheless, a nonlinear approach has not been relevant for me in the story of *Sound of the Aurora*, because I want the biography to be true to the source material. If I had addressed a theme such as 'perceptions of reality', alternative storylines would have been reasonable to include in the performance.

To make an excess of material requires additional effort, and the new-media principle of variability comes into play (Manovich 2001: 36). I mentioned earlier that a digital comic is an unfixed medium. This is also the case for a performed comic, but the performance differs from a regular publication in that it exists only when it is performed. This aspect gave me the possibility to make new material after the premiere and to keep adding material in-between every performance. As long I perform, my catalogue can grow and develop.

Performing Sound of the Aurora

The premiere of *Sound of the Aurora* was on 5 June 2014, in the drawing hall at Bergen Academy of Art and Design. The impro-musicians in 1982, Nils Økland, Øyvind Skarbø and Sigbjørn Apeland, made the live soundtrack for the performance.

As already stated, the performance was initially intended only as an auxiliary experiment, but the experience of it surprised me and I decided to turn it into one of the two final works in my artistic research. I held a new performance in September 2015 at the culture scene Bergen Kjøtt, updating the presentation to be controlled with the video jockey (VJ) software Modul8. This software let me do live editing of images and film.

VJing – a phenomenon that evolved from video art, liquid shows that project dynamic and abstract water motifs, colour organs and even the magic lantern – is traditionally about creating visual backdrops at concerts and music clubs (Spinrad 2005: 17). A related phenomenon is live cinema, which emerged at the same time in the video art scene of the 1970s, with artists like David Rokeby, Myron Krueger and Erkki Kureniemi being some of the pioneers (Willis 2009: 14). The form re-emerged and enjoyed even greater popularity during the first decade of the 2000s (Ibid., p. 11),

probably due to the improved computer technology and easier access to it. Live cinema differs from traditional cinema in emphasizing the VJ performance rather than storytelling (Ibid., p. 13).

A performance comic does not need to emphasize a story, but *Sound of the Aurora* is a linear story. Live editing, however, gives me the freedom to vary the pace and chronology of certain aspects and allows for more fluid cooperation with the musicians and potential interaction with the audience. In live editing, I become the reader together with the machine, since I control the editing and some camera controls that traditionally are automated features.

By performing my comic, I reach out to audiences who would perhaps never otherwise experience comics in any but the most traditional formats. They seem to appreciate it. I also experience that to perform a comic lowers the 'reception threshold' for audiences since it does not require that anyone own an iPad, as is the case if they want to experience *Close, Closer, Closest.* This means that in future, I will probably continue to perform my comics before I launch them on a digital platform.

Personal Reflections

I had three important turning points during the process of making *Sound of the Aurora*. The first was epiphanic, when I gained insight into the magic lantern and its (in my opinion) close relationship to modern digital comics. Its screen format and implementation of motion inspired me to investigate the live format and discover the screen-based comic form called performance comics. I chose to follow this direction because it represented an approach that I think most people would not expect from a digital comic, and I found the live format conducive to working with motion in comics. Performance comics caught me by surprise. I had never heard about it before, and it appealed to me more than I could have imagined. My professional aim is to develop and communicate comic stories that have an emotional and social appeal. I therefore find the performing format appealing; its personal setting encourages and supports

my personal narrative style. Performing will probably be a part of my projects from now on.

When making *Sound of the Aurora*, my focus was not on spatial motion at all. My biggest concern at the time was to decide whether I should continue making comics with a full screen panel or whether I should use a panel layout. My second turning point came the day after my first performance. I realized that a single-image presentation form is suitable for communicating with crowds. The overlapping images that I later called 'cinematic panels' keep the audience's focus within the same frame. This full-screen format therefore had relevance, and the fact that the relevance related to performance made it a constructive finding. I therefore continued working with a full-screen panel when creating *Close, Closer, Closest*, and with performance in mind. Although I had this experience while making *Sound of the Aurora*, I have chosen to write about it in chapter 3 where I address cinematic panels.

The third turning point came when I was reflecting on spatial motion and the mobile frame and concluded that it made good sense to use 3D effects. Although this was late in my artistic research period, I decided to spend my last moths testing it out. Although I could not explore it in depth, I am glad I dared to explore it, as it resulted in me addressing three possible ways to work with mobile framing: in 2D, 2.5D and 3D. My use of virtual reality also is conditioned by the technological development of creative tools during the time of my research. The focus on virtual reality escalated from 2012 onwards, when the pioneering firm Oculus Rift heavily promoted its developer kits around the world. This marked the beginning of a new era in digital entertainment and digital comics, and I am glad my project could reflect part of this development. Development goes fast, however. Google Tilt Brush, from 2016, makes it possible to do 3D drawing in a virtual space. Since its launch, I observe that it has led to many new comic experiments around the world. As this artistic research is realized, a new 3D chapter in digital visual art will have begun.

I had to decide to focus on either full-screen panels or panel layouts in this artistic research, and I chose full-screen panels. This was a good choice because it is a

format that differs from the traditional comic formula of juxtaposed panels. The result is reflected in chapter 3 and manifested in *Close, Closer, Closest*, but also through the definition of the concept of cinematic panels. A weakness, however, is that I discovered the structural differences between spatial and image-stream presentations during the process of making *Sound of the Aurora*. In hindsight, I believe this research would have been stronger if *Sound of the Aurora* had a basic spatial structure. Since *Sound of the Aurora* was made during a period of searching for an optimal format, it is more an equal mix of an image stream and a spatial structure, and its basic structure is an image stream. With a basic spatial structure, it would have differed more from *Close, Closer, Closest* in form, and the contrast could have facilitated other reflections and discoveries, as I believe it would have strengthened my experience and reflection on motion graphics and the mobile frame.

Something little explored in this artistic research is interactive motion graphics that can be controlled live. I have addressed the phenomenon but have not reflected on it to any great extent. Notwithstanding, my awareness of interactive motion graphics has at least resulted in some newly added material to the *Sound of the Aurora's* image bank, which allows me to use such graphics. Studying interactive motion graphics could have been a project in itself, but this can be said of many topics I address in this research. I see my artistic research more as an orientation, a giant first step into a new discipline, and future researchers can have the privilege of narrowing their scope to a specific subject. Something else that is little explored is panel delivery through motion graphics, or 'flying panel delivery' as I have named it. This is because I do not use panel layouts in *Sound of the Aurora*. Despite this, I have contributed with thoughts on the time consumption of flying panels and graphics, and elucidated the phenomenon of responsive panels.

Mobile framing has received more attention than motion graphics in this project. Mobile framing is interesting because it adds motion to a presentation without involving motion in the visual subject matter in fictional space. Since the mobile frame is related to observation and exposition, the artwork keeps the static form and presence of a traditional comic. Of the three different types of mobile frames I have

mapped in this chapter – fixed track, dynamic track and free mobility – the dynamic track is the one I have least experience with, and that I find rarer than the other two in existing digital comics. The most ordinary mobile frame in digital comics is the fixed track, as in a web-comic scroll, which most often has a fixed vertical scroll. The dynamic track, however, is a concept I would like to see more of in webcomics and scroll comics in general. The motion of the mobile frame is still attached to a track, but it can move in all possible directions. I only use it in one clip in *Sound of the Aurora,* but the potential of the dynamic track – especially together with panel layouts – is a technique I know I will address in future digital comic work.

Sound of the Aurora is produced in black and white in order to allude to an era before colour photography and film. The figures are stylized so as to represent distance to the material. Since it is impossible to create a realistic representation of what really happened 76 years ago, I chose a stylized expression. This is also why *Close, Closer, Closest* has a more realistic expression; it is a personal story with me as the original storyteller. It therefore made good sense to draw it in a personal line and to use a more realistic approach.

Sound of the Aurora has a rough look aesthetically. It was initially intended to be a stunt production, so was made quickly. The 2D edition had a production period of only one month. I value intuitive processes and have a lot of experience with them from making comic fanzines. The illustrations are rough, but this roughness sometimes results in a certain energy that cannot be achieved with a more refined look. Nevertheless, while I am satisfied with some of the rough drawings in *Sound of the Aurora,* there are others I would like to replace. Luckily for me, the digital comic is editable, so there are always possibilities to make changes as long I perform it.

The techniques used to make the comic would suit motion graphics. The visual roughness and pencil colouring, for example, would look very different if the work was made with classic animation. Then the pencil lines would create a more vibrant expression because they would vary from frame to frame, whilst with motion graphics they remain static. I admit that adding a full-motion, classic animation in this

technique would have created a contrast I could have used to mark out a special event. It could be effective because the integration between motion and static sequences is intuitively made very seamless in this production.

It was challenging to get the 3D edition to match the 2D graphics, and I concluded that they had to look different, especially in the colouring. Personally, I like the 2D edition best from an aesthetic point of view. However, creating a comic sequence in 3D is one of the most exciting things I have experimented with, and even though I lacked time and funding to refine the visual standard, it is still an experience I am happy to have had. I want to work with it more extensively in the future. That virtual reality and augmented reality are becoming more common in our daily life is an aspect that makes this approach interesting to keep up with.

Sound of the Aurora is about the stories that the sailors who experienced World War II did not tell their families after they returned home. Their silence is something which the children of the sailors commonly experienced. These children are the parents of my generation. When I perform this piece, I often get feedback from the children and grandchildren of war sailors, who tell me they recognize themselves in the situation I depict. They also comment on the format as a visual form of presentation they have never experienced before, but which they highly appreciate.

Chapter 3
Close, Closer, Closest

After the premiere of my performance comic *Sound of the Aurora* in June 2014, I returned to making a digital comic for the reading-tablet platform. Creating a comic for a tablet was one of my aims in this research project because when the tablet capabilities are compared with those of other types of computers, it distinguishes itself as an ideal platform for digital comics. This made the reading tablet highly relevant for comic artists, and I thought it should be a subject for digital comic research. *Close, Closer, Closest* (2016) was developed for the iPad.

The project I returned to was an earlier manuscript I had developed called *I Don't Know Grandpa*. I concluded that it was a bit too long, so I chose a shorter manuscript that became *Close, Closer, Closest*. With this script, I explored image-stream motion, which is the subject of this chapter.

Following the pattern set in chapter 2, I will describe the framework of the comic before I explore the subject. The framework differs from that of *Sound of the Aurora* because the work has a different form and is experienced via a different platform. I start with the story development and my choice of format, which is full-screen panels, following up with aspects concerning the tablet platform, namely its user interface, programming and soundtracking. The choice of format was challenging to make, and I started deliberating over it even before I started on *Sound of the Aurora*. The solution I came up with relates to the image stream, which is why I devote the main part of the chapter to investigating it. I divide the investigations according to the concepts of 'cinematic panels', 'panel delivery' and 'automated and interactive full motion', closing with personal reflections.

In making this digital comic, I worked closely with the programmer Hans Philip Eide, who programmed it in Actionscript for the Apple iPad. I also worked with the musician Stephan Meidell to create the musical score for the comic. I took recourse in my

second supervisor, the professor of film Septimiu Moraru, and the comic artist Kim Holm as consultants at the storyboard stage, and to discuss the user interface. The work was first performed at St Mary's Church in Bergen in March 2016, and finally published on iTunes Store on 8 May 2017. After the launch online, I performed *Close, Closer, Closest* four times in 2017 (at the book conference Nordisk Barnebokkonferanse at Sølvberget in Stavanger, at the art centre Hordaland Kunstnersenter, at Meridan Space in Beijing, and at the cultural centre Stormen in Bodø). In April 2018, the work won the Gold Award in the Norwegian Visuelt Competition. It won in the category of illustration / books and was the only digital publication represented.

Framework

Story development

Close, Closer, Closest is an autobiographical story with a theme dealing with family history and family relations. It is based on researching my own grandfather and his experience of the German occupation of Norway during World War II. It is a prose text, and my narrator voice is present almost all the time, except in the imagined scene inside a submarine.

The comic starts with a story that was told to me by a man who visited my artistic research-process exhibition in 2014. He told me about a war sailor who experienced being torpedoed three times. This story sets the tone and the theme. The comic continues with an exposition of my research on my grandfather. I present him as a war sailor, and I interview relatives to learn more about him. I find it challenging to catch the persona of my grandfather from what they tell me, and although I do not get any closer to my grandfather, I grow closer to the people I interview.

I describe my mother's sudden death, which in the given context emphasizes the loss of stories as long as they remain untold. It exemplifies for me that stories from the war could disappear with my generation – if we do not pass them on. The loss of a parent and the loss of a close relationship are universal experiences that many adult children can identify with. At the end of the comic, I make a visual comparison

between my loss and the lost situation of the war sailors in the introduction. Their ship has sunk, and they swim alone in the ocean.

This short story portrays a common post-war scenario experienced by people of my generation who want to relate to deceased family members. It is personal, but the theme of relationships is universal.

Format choice

In the beginning of my artistic research, the seemingly endless possibilities of new media were almost paralyzing. I could not see the limitations, so neither were the possibilities clear to me. I did not yet know that two structures – the image stream and the spatial model – were the two possible ways to present a comic on screen. My limited perspective made it difficult to choose which digital comic format to work with.

I could have asked myself whether I should work on a spatial structure or an image stream structure. Instead, I focused on whether I should use a panel layout with a negative space or a full-screen panel without a negative space (Figure 4). Since the full-screen format was the most rarely used, I started there. I sketched the manuscript *I Don't Know Grandpa* with a full-screen panel format and made *Sound of the Aurora* with the same format. However, I was not convinced I should continue with this format for *Close, Closer, Closest*. Why should I make a digital comic with a full-screen panel format?

A brief conversation with the comics researcher Daniel M. Goodbrey from the University of Hertfordshire incited me to explore the image stream metaphor.[5] Goodbrey told me about 'panel delivery', which was his term for the format where panels are fed into the screen. He reminded me about 'spatial models' and 'pages', which are McCloud's terms for describing the two structures. This made me reflect on

[5] I invited Daniel M. Goodbrey to give a lecture on game comics at the *Visibility Conference* at Bergen Academy of Art and Design in 2014.

whether or not my full-screen panel could be classified as a page. My reflection on this question can be read in chapter 4, and my conclusion was that I would replace the term ‘page’ with ‘image stream’, because I found the page to be only one of three forms within the fixed-window structure. Moreover, ‘page’ was not a good enough descriptor for a main structure in digital comics.

Goodbrey’s influence did not stop there. In our conversation, he told me that he personally would not consider making his own comics by abandoning juxtaposed images. In his opinion, discarding the panel layout was like removing a large portion of the visual language of comics. This statement made me reflect: What aspects or properties would be lost if my comic panels were not juxtaposed?

One aspect that would be lost – McCloud mentions it in *Reinventing Comics* – is the distinct identity of comics (McCloud 2000: 215). Juxtaposed panels and their layout give the art form a distinct identity that distinguishes it visually from other art forms. Another aspect is the collective visual relationship between panels that are presented together on a page or in a spread. Their composition and expression, both contextual and graphical, affect the overall reading experience. A third aspect that would be lost is speed, because our eyes can read a juxtaposed sequence much faster than when we click through a sequence panel by panel. This also relates to a fourth aspect: by placing panels next to each other, readers are free to create their own reading pace and flow. This freedom would be lost. These four aspects could be considered big losses when seen from the perspective of traditional comics. Nevertheless, I decided not to use juxtaposed panels, arguing that if something was lost, something new would fill the void, and I wanted to find out what that would be.

Full-screen panels

In the foregoing paragraph I wrote about the aspects that are lost if the panels of a comic are not juxtaposed. In this section I want to focus on what I gain if I present the panels of my comic in full screen. I want to mention that the full-screen panel structure is not solely found in digital comics. There are examples of comic books with one panel per page, for instance *The Cage* (1975) by Martin Vaughn-James.

The Chinese pocket book comics have this structure too (Video 58), however, it is not very common in the West.

The first aspect of a single full-screen panel could be described as a small benefit. It relates to Scott McCloud's concept of the 'infinite canvas' (McCloud 2000: 200). This concept, which is based on the principle of numerical representation (Manovich 2001: 27), means that the canvas of a digital comic, in theory, has no size limitations. McCloud's metaphor of a canvas is what I identify as negative space and fictional space in a digital comic. The metaphor of an infinite canvas is mainly referred to when talking about spatial models, in the sense of an unlimited canvas, but the principle of numerical representation is also, I think, relevant for the image stream structure. An image stream in digital comics has no physical limitations. That said, the aspects of there being no size limitations is only a theoretical truth, because the computer has limitations in its hardware technology which affect the possible complexity of graphics and digital-comic programming. These limitations, I think, can be compared to the limitations on the size or length of a physical book. The difference would be that the size of a digital comic can increase as technology develops. Despite the limitations of hardware technology, the aspect of numerical representation is beneficial for full-screen panels in digital comics. I can use the whole presentation surface on one single image at the time, without paying heed to any physical restrictions that would dictate the length of my piece if it were produced on paper. I do not need to compress my sequence to a definite panel layout in order to have it fit into a given space.

The second aspect concerns what visually happens when one full-screen panel is replaced by another. If the images share the same frame, they overlap. This aspect is not only relevant for full-screen panels; it is relevant for all panels that feed a stream of images into the same fixed frame. This means that overlapping panels can be made with all types of panels, from full-screen panels to panels in a layout on a page or on a spatial surface. I want to emphasize that juxtaposed images can present the same information as overlapping images, the only difference being that overlapping images make the changes within the same frame. Juxtaposed panels

are a spatial presentation, whereas overlapping panels are an image-stream presentation. When comic panels overlap, the changes in the fictional space are exposed in the transition. The comic sequence approaches the motion picture as an art form, for we can see the changes happening in the imagery. Because overlapping panels share the same image-stream structure as the motion picture, I call this presentation form *cinematic panels*. I could have called it overlapping panels, but I want to emphasize that the two art forms come closer to each other with this presentation form. The second aspect is therefore the appearance of cinematic panels, and I will return to this subject and investigate it more thoroughly in a dedicated section later in the chapter.

The third aspect of the full-screen panel comic is its ability to control viewers' focus. To discuss this, I return to my performance comic *Sound of the Aurora* (discussed in chapter 2), which was my first longer comic with full-screen panels. After *Sound of the Aurora* became a performance comic, I reflected on my experience of performing a comic live. It prompted me to think back to the time I read comics for my son before he was old enough to read himself. I recall that I always used my index finger to mark where I was on the page, so he could follow the story. This flashback made me understand that a comic with juxtaposed images is designed for individual reading. When I read the comic for my son I had to control the focus. This marks a conceptual and practical difference between comics and film, but also between comics and a good many children's picture books. I would claim that children's picture books are mostly designed to communicate with more people than just the reader, because the reader is mostly a performer for others. Furthermore, the pictorial pages usually have large layouts designed to keep the focus on the page or on the double-page spread. A film is not a reader experience, so the focus of its single-image presentation communicates well to crowds. This focus, however, is disturbed if viewers must read a text on the screen; then they will need to revert to an individual reading experience. Some will read slowly, others quickly. It is then hard for the film to control the focus of viewers. When I present the panels of a comic in full-screen mode, I have full control over the focus of the audience. From this, it is clear that full-screen comics are well-

suited for communicating to crowds. This third aspect – focal control – is a value that traditional comics with juxtaposed panels do not have.

There are also other presentation forms than full-screen panels to control the focus in digital comics. *Panel delivery* is a presentation form based on the image stream. This technique feeds panels into the negative space, and even if the panels are juxtaposed, the latest panel to enter the screen claims the focus. Panel delivery therefore functions like my index finger when I read comic books for my son. Another focus-controlling presentation form was mentioned in chapter 2, namely Guided View, which is a mobile frame that focuses on one image at a time in a panel layout.

The aspect of focal control strongly influenced my decision to present the panels of *Close, Closer, Closest* in full-screen mode, for it would enable me to perform the comic for an audience even if it was made for a reading tablet. But the second aspect – overlapping panels – became the main reason to choose this direction, for it gave me the opportunity to do more research on the image stream and cinematic panels.

Creating for the tablet

User Interface

In this section I want to describe how the user interface in *Close, Closer, Closest* was developed. Presenting a single image at the time, as in a slideshow presentation, may seem simple. However, on a touch screen, which is the controller system of a reading tablet, there are several possibilities.

The user interface gives the reader access to all the content of the digital comic. In *Close, Closer, Closest*, it involves the input controls for navigation, which are visible or invisible buttons or control mechanisms. The user interface also includes input controls that create a more subtle form of interactive participation (Dixon 2007: 20), where a reader can control some reflections in the imagery and the gliding characters in the menu (Video 60).

In a workshop with my secondary supervisor Septimiu Moraru and the Bergen-based comic artist Kim Holm, we established that it was important to facilitate a comfortable and relaxed reading position. I ended up adopting a suggestion from Holm: readers hold the tablet with both hands and only use their thumbs, almost like a game controller (Picture 23). Thumbs are very flexible and can do vertical, horizontal, diagonal and circular motions, so are not that limited at all. However, when I observed people using a reading tablet, they mostly held it with their right hand and used their index finger to tap the screen. Since my user interface differed from this, it became unconventional. I therefore needed to inform readers about the control system with a small tutorial. That the user interface needs to be accompanied by a tutorial does not need to be perceived as negative. Tutorials are common in computer games because user interfaces can vary from publication to publication. Digital comics and computer games share the same premises as new media. The fact of needing a tutorial is more a confirmation of the principle of variability in new media (Manovich 2001: 36). Since user interfaces can vary, not informing readers about the controls can result in negative user experiences. I placed the tutorial for *Close, Closer, Closest* at the beginning of the app. There is always a possibility that readers will skip over it, but it is there and always available in the main menu.

My goal from the start of the project was to make a user interface that was as simple as possible. During the reading of *Close, Closer, Closest*, I wanted the screen only to contain content from the comic, without any visual disturbance such as visible buttons or navigational icons. My first user interface had two gestures to navigate through the comic: tapping and swiping. Tapping was for fast-paced navigation through the cinematic panels, while swiping was for 'scroll activation', a term for a highly sensitive control scheme that makes it possible to control video sequences and animations. Both the tapping and the swiping were possible to do with one thumb. Nevertheless, when I practised these gestures of the minimalistic and button-free user interface with my programmer Hans Phillip Eide, we found that while tapping was effective, there was a barrier to making readers understand the swipe. Simplicity and consistency are important in a user interface; without them readers

become confused. This made my combination of two control schemes challenging. I had two aims: to make a digital comic that experimented with cinematic panels and full motion, and to give readers full control of the reading process most of the time. With these goals in mind, I also had to acknowledge that reader control is lost when a film or animation is automated. (I address this aspect of reader interactivity or control in chapter 4, in the section called 'Reader Control'.)

Instead of inserting a visual cue to make readers change their navigation gesture during the reading experience, we removed tapping as an option and only used the thumb swipe. The swipe gesture was functional for both instant inputs and highly sensitive inputs, which meant that I could combine two presentation forms in one gesture. The new user interface was thus to swipe upwards for forward navigation and downwards for backward navigation. Tapping was later reintroduced as a gesture that activated the menu, which contained pages and language settings (Video 62).

We had an additional problem with the change between swipes for instant transitions and swipes for scroll-activation. It could be difficult to notice that the control scheme changed from instant transitions to scroll-activation. To solve this, we added a subtle glide mechanism to the scroll to give more feedback from the thumb swipe (Video 61).

Programming

Hans Philip Eide programmed this digital comic with ActionScript, using AIR SDK to cross-compile from ActionScript to a native app (iOS). The new aspect for me in this project was that we always had to take into account file size, and that the compression of files and file management needed to be file-size-friendly. To reduce the size of files, it became important to reuse textures and backgrounds. In sequences where I use steps, some graphics, for instance backgrounds, remain constant, while moving objects or figures change from step to step. These figures must be made as 'sprites'. Similar to the old cells in classic animation, a sprite is a single object or figure in a digital file; it has a transparent background and is saved in

the PNG-24 format. Eide used the software Texturepacker to organize all the graphics in the comic. This software makes sprite sheets, which contain all the graphics the computer needs to load at a given time. How Eide arranged the sprite sheets was part of the logistics for how he wanted the programmed comic to load graphics while running.

Eide did not want the whole comic to be loaded at the beginning, largely because it might cause a delay and the reader might not be willing to wait. The graphics are stored in the memory, and if the user has several applications open at the same time, this memory space is already occupied. To prevent bad performance or to avoid having the application crash, freeze up or be switched off by the reader, Eide loaded the graphics in portions. He *hid* the loading into fades during some of the transitions. This has resulted in some unwanted fades in my instant transitions, but I consider it better than using a loading screen that interferes, or better than risking that the performance of the comic can be unstable on older iPads. These fades will be more invisible as the next generations of iPads become more powerful, but this is an aspect that can be planned more fully in future works, to take advantage of these fades. I also want to mention that Eide used a software called Adobe Texture Format to do PVR formatting, which helps render the graphics directly on the screen memory.

Soundtracking

I have not addressed audio in my research, partly for sake of limiting the scope, partly also because Goodbrey has addressed this subject in his doctoral research at the University of Hertfordshire. I use his article *The Sound of Digital Comics* (2015) as a source when I now describe the music made for *Close, Closer, Closest*.

Music had a central role in *Sound of the Aurora*, and so also in this comic. In the story, music is one of the links between my grandfather and me. I engaged the musician Stephan Meidell to create the soundtrack for *Close, Closer, Closest*. He is a contemporary musician and his main instrument is the guitar. His musical interest is somewhere between the ambient and the melodic, and I thought he could make a soundtrack that did not require additional sound effects, since there are so many

different noises in his soundscapes. I also wanted original music, with roots from my hometown, Bergen. We equipped Stephan with an iPad so he could keep up with the development of the comic, and we met frequently to implement his sounds into the comic. For these sessions, Eide, Meidell and I worked together in Meidell's studio at Bergen Kjøtt, giving him the opportunity to create new tracks on site if needed.

Meidell, in this comic, made minimal use of 'diegetic sound', meaning sound that is present in fictional space (Goodbrey 2015: 4). An example would be a sequence in which a vinyl record is playing, and we hear the crackling as well as the music when it starts playing. The sounds synchronize with the animated content in the frame. The looped crackling is synchronized with the loop of the vinyl record's rotation, and when we hear the music, I cut to a flashback sequence, which causes this diegetic music to have a non-diegetic relationship to the image presented in the frame (Video 63). Another example of diegetic sound is the sequence with a torpedo launch. The launching gives a short and instant sound, so there is no conflict between the static image and the time-based sound. Goodbrey refers to these short sounds as 'spot sounds'. Longer sounds can conflict with the frozen moments in a comic sequence, so it is important to make sure that the sounds are timed to fit the visual context, and vice versa. In *Close, Closer Closest*, the torpedo sounds relate directly to or are caused by the action we see happening in the illustrations. The music from the vinyl record, on the other hand, gives new information, telling us what kind of music is spoken of in the text. It is therefore a more independent component of the narration. The soundtrack is mainly non-diegetic, acting as a musical frame that creates and communicates moods. It also emphasizes reading rhythm (Goodbrey 2015: 7). It is slow and calm there where we want the reader to take more time, and it is faster there where we want the reader's pace to increase. The increased pace in the soundtrack also increases the tension in the scene. But I am not letting real audio do all the work in this digital comic. In traditional comics, sound is communicated through visually expressive text and symbols, and this is also the case in *Close, Closer, Closest*. The dialogues are written text, and animated lines represent or indicate the ringing of a smartphone (Video 64). Meanwhile, the talking animated

head of Aunt Tulli represents the ambient sound of speech. The speech bubbles themselves represent non-diegetic carriers (Ibid., p. 5).

Meidell was also asked to participate in the project because he had experience in making modular music. With modular music, I was able to create a 'responsive soundtrack' (Goodbrey 2015: 7). 'Responsive' in this context means that the music can change or adapt to every input made by the reader when he or she navigates through the contents. The programming activates modules of music, for instance loops and linear compositions, which play and stop at given positions in the comic. One example is the opening scene of the war sailors swimming in the ocean; more tones are added to the soundscape as the reader scrolls forward. When reading that the men are drowning, the visuals do not change, but the music does, and it eventually disappears along with the men, as described in the text. The soundtrack is thus responsive in the scroll-activated sequences. An example is that the volume of a sound effect increases while the reader scrolls through the first word in the main title. The soundtrack adapts to the process of reading.

There is no extra-diegetic sound in my comic, for instance navigation sounds (Goodbrey 2015: 2). The only feedback the reader gets when advancing with the navigation are the visuals and the related diegetic and non-diegetic soundtrack.

Image Stream Investigations

In the following sub-sections I investigate the image stream and some of its forms of presentation. The image stream is important to my research partly because I use it as the main structure for *Close, Closer, Closest.* It is also the main structure in traditional films. I have decided to use the term 'image stream' based on a reflection made in chapter 4, in the sub-section 'The Screen'. An image stream is created when images overlap each other or are fed onto the screen. It is one of two ways to present information on screen, the other way being through spatial models (explored in chapter 2). According to my observations, the image stream has three presentation forms in digital comics:

1. Pages

2. Panel delivery
3. Cinematic panels

In this list, I place ‘panel delivery’ in-between ‘pages’ and ‘cinematic panels’ because I think it represents a middle stage between the other two presentation forms. I will, despite this order, first address cinematic panels, since this form has been the main focus of my image-stream investigations. I will then address panel delivery. Traditional printed comics are presented on pages, so I do not focus on this form in my artistic research.

Cinematic panels

The term ‘cinematic panels’ denotes comic panels that overlap each other sequentially within one and the same frame. I describe the panels ‘cinematic’ because the comic moves away from its original identity with juxtaposed panels to share the image-stream structure with its sibling, the film. If we look at a digital comic made with full-screen cinematic panels, only one panel from the multi-frame will be visible at any given time, just as is the case when viewing a traditional film (Groensteen 2007: 24).

Since the imagery of a film also changes within the same frame, cinematic panels and the film are closely related presentation forms. As I mentioned in chapter 1, the only difference between the two is that a cinematic-panel comic has sequential images with closure between each panel, whereas a film has full motion with closure between each cut. By ‘closure’, I refer to the reader’s ability to mentally fill gaps in the visual imagery, which is necessary to make sense of the story (McCloud 1993: 67). Because both presentation forms relate to a fixed frame, they make it possible to create seamless shifts between full motion and cinematic panels. There is consequently less contrast between the motion film and the type of comic with cinematic panels.

I first understood the presentation form of cinematic panels when I was able to distinguish it from a presentation form called ‘panel delivery’, which was introduced to

me by Daniel M. Goodbrey. Panel delivery, which I will discuss later in the chapter, feeds panels onto a screen instead of onto pages. It shows the changes occurring within the frame of the negative space, whereas with cinematic panels, the changes happen within the frame of the panel (Figure 6).

Although I had previously used cinematic panels when making digital comics (Video 66), I had only done so intuitively. The first time I sketched cinematic panels with their properties in mind was when I sketched my first draft, *I Don't Know Grandpa* (2012). This was an experiment with the spatial relationships between the images, where the changes in the panels created a mobile frame that moved from one side of a fjord to the other (Video 67). I also did other experiments, for example by using cinematic panels in a panel layout and by treating the screen as a mix of a page and a split screen (Video 68).

The idea to sketch cinematic panels that made the panel frame move in fictional space was inspired by the computer game *Myst* (1993). I played this a lot as a teenager. McCloud (2000: 208) also refers to *Myst* but does not address the concept undergirding its visual presentation. In the original game, the player navigated through 3-D environments that were different than those in most games of today. These environments were built from a bank of sequential images that let you go from image to image, creating the illusion that you were moving through a 3D space (Video 69). Another more well-known example is Google Street View, yet Google adds an in-between transition that creates the illusion of moving in space (Video 70).

When I became aware of the presentation technique that I chose to call cinematic panels, I began searching through early digital comics to see how the technique was used. The oldest I found was Marvel's *Cyber Comics* that runned from 1996–1998 (Video 71). The Frenchman Balak (Yves Bigerel) is one of the modern comic artists who uses cinematic panels in his digital comics. He mediates the technique in his digital comic *about DIGITAL COMICS* (2009), and the presentation form is called 'turbo media' on the webpage where his text is published (https://www.catsuka.com/turbomedia/index.php). Then there is Thrillbent, an online

publisher established in 2014, which only publishes comics with panel delivery and cinematic panels, but its artists do not formulate concepts in order to verbalize the technique. I have tried to contact Mark Waid, one of the persons behind Thrillbent, but have not succeeded in getting an interview. At one point I registered that the digital comic-book shop Comixology called comics with panel delivery 'Native Comics'. This was only for a short period, and they do not use that term today. Marvel, on the other hand, has its own production line at Comixology, which it calls 'Infinity Comics'. These are digital comics with panel delivery and cinematic panels.

'Cinematic panels' and 'panel delivery' are specific terms for two distinct forms of presentation. In most digital comics I have seen on Comixology and Thrillbent, they are combined. They are two presentation forms amongst other forms such as the page and spatial models. Because they all can mix and vary, finding adequately descriptive terms for the various types of digital comics is challenging. I believe, however, that in the future, some combinations will become more mainstream than others and that terminology will emerge, just as with hypercomics, motion comics and performance comics. It will then be easier to examine each module individually, as I do here. Let us now take a closer look at cinematic panels.

Cinematic panels are static, sequential images that overlap each other. Each overlap is a transition to the next image. I find cinematic panels to have two types of transitions:

1. Instant transition
2. Dissolving images

For the instant transition, one image is directly replaced by another. The dissolving-image transition is more time-consuming, since one panel must dissolve while the next comes into view. It can be done in different ways, but one example is that the second image gradually changes from transparent to opaque.

Instant transitions create time-effective reading. The imagery is perceived instantly by the eye/brain as the reader navigates (Video 73). Nevertheless, I do not think this

sort of transition can compete with the rapidity and flow achieved just by browsing juxtaposed panels. Before starting on this artistic research project, I had some finished and some unfinished attempts of making digital comics. I was intuitively delving into cinematic panels and had problems with the instant transitions. These problems resurfaced when I started experimenting with cinematic panels in this artistic research. In particular, I had a problem with the direct replacement and thought the changes were too sudden.

In comics, the temporal relationships between the panels always vary in relation to the context. With an instant transition, the change is sudden, so the temporal shift feels much more apparent than in juxtaposed panels (Video 74). With juxtaposed panels, the reader's closure seems softer. Maybe this is because I as a reader can browse freely around while figuring out the relationships between the images. I fill in the gaps while I read (McCloud 1993: 63). With instant transitions between cinematic panels, I still fill in the gaps and create closure in my mind, but there are some sequences where sudden changes feel brutal and hard on the eyes, because I can observe the changes. In some transitions I can see that the temporal and spatial relations between the panels get broken. I find this happening in moment-to-moment and action-to-action sequences (Ibid., p. 70), where the point of view is consistent throughout the sequence. Motion in these sequences, even if it concerns moving objects or a moving frame, becomes staccato.[6] I see the motion happening, but I also

[6] When I write about the sequences in cinematic panels, I refer to McCloud's (1993: 70–72) panel transition scheme and Bordwell and Thomson's (2010: 225) terminology from film editing. For sake of orientation, here is a list of parameters of such sequences in cinematic panels:

McCloud:

A. Moment to moment transitions
B. Action to action transitions
C. Subject to subject transitions
D. Scene to scene transitions
E. Aspect to aspect transitions
F. Non-sequitur transitions

Bordwell and Thomson:

A. Graphic relation between cut A and B

see that footage is missing. I have called this phenomenon 'broken motion'. It is a negative term because this type of motion initially did not seem right to me and I tried to avoid it. I first tried to soften the transitions by making them dissolve, but this only slowed down the experience and did not solve the problem. Changing the point of view, however, hid the motion or change that happened in-between the panels. This is a trick I have often seen in TV-series with limited animation (Video 6 in chapter 1)

After trying to avoid broken motion when making *Sound of the Aurora*, I decided to embrace it when making *Close, Closer, Closest* (Video 74). Instead of seeing broken motion as a flaw, I tried to see it as moving a step closer to film. This presentation form could give me animation and closure at the same time.

The animation occurring with cinematic panels encouraged me to experiment with motion more than I would probably have done had I been making a traditional comic with juxtaposed panels. Perhaps I overdid the animation in *Close, Closer, Closest*, but it is my first comic in this format, and I allowed myself to get carried away. I found that if I included broken motion in my cinematic panel sequences in a consistent way, a 'reader contract' would be formed and readers would start to accept it.

The instant transition applies to more than just low frame-rate animation. It was also observed in the magic lantern technique called 'the startling change', which was described by the theorist Lewis Wright. The lantern's 'slipping slide' had the ability to make an instant change between two images, and it was used as an effect to surprise the audience (Wright 1891: 141). The element of surprise in a traditional comic book is usually dependent on turning a page. Thanks to cinematic panels and panel delivery, a surprise can lurk behind every single panel or object in a digital comic. The startling change is a contrast in the graphical relationship between two images. It is a technique used in the American horror comic *The Eighth Seal* (2013)

B. Rhythmic relation between cut A and B

C. Spatial relation between cut A and B

D. Temporal relation between cut A and B

published by Thrillbent. I also use it in *Close, Closer, Closest*, but not in a startling way. In one scene where I, as the main protagonist, make a sound recording, I am unsure whether the smartphone has successfully recorded what I intended it to record. Through the visual expression, I show the uncertainty in the situation by giving the lines of the image a sketchy or uncertain quality. The room surrounding the character is not visible, but the reader can get an idea of it because it is drawn on a piece of paper that lies underneath the drawing the reader looks at. When the reader clicks forward, the character is suddenly more finished and the room that was initially only glimpsed under the paper emerges, as a visual metaphor implying that the recording was indeed successful. In this scene, the text and images are symmetrical, so the visual metaphor reinforces the text (Video 75).

In a comic book, the panel layout and panel shapes create rhythm in combination with the comic book's visual content. In cinematic panels, by contrast, the frame is fixed, so all I have to create rhythm with is the visual content and the transitions. I introduced this section by stating that instant transitions are time-effective. They help when creating rhythm because their instantaneous quality is always consistent and never dependent on variables. The instant transitions made me approach rhythm in relation to the frequency of reader interactivity, that is, every time the reader swipes from one panel to another.

I created contrasts between sequences where the reader flies through the content, contra sequences where the interaction tempo is reduced. In sections with high reader interactivity, I often show animated motion. These sequences have almost no content on which to dwell and are received so fast that the reader moves on instantly (Video 76). When I wanted to slow down I needed to do the opposite. The panels would then contain more content for the reader to receive, and most importantly, to perceive (McCloud 1993: 49). Text, which must be perceived, is the most efficient tool to calm the pace. It requires that the reader pauses to read. I use longer texts when I want the reader to dwell on an image. I find two ways to do this with text and instant transitions.

The first way is to place all the text together with the image (Video 77), thus causing the reader to stop interacting until all of the information is perceived. The second way is to make the reader dwell on an image while still interacting. An example is in the intro of *Close, Closer, Closest* (Video 78). In this sequence the rhythm is slow and the reader dwells on only one image while reading a longer text. The text is presented in portions, giving the reader medium-paced interaction frequency. The image in the intro could have been static, but I made it into an animated loop. The animated loop creates an 'eternal moment' within which the reader can take however much time he or she needs to read. It also creates rhythm, and I will say more about this shortly in the section called 'Automated and Interactive Full Motion'. Just now, however, I want to point out that cinematic panels have a third way to control rhythm, and this is through 'dissolving images', the opposite technique of instant transitions between overlapping panels.

When an image dissolves, it creates a fluid transition to the next image. This was called a 'dioramic effect' (Wright 1891: 143) in the context of the magic lantern (which, as already stated, I consider the predecessor to digital comics), and it was made by using two or more lenses. As well as causing one image to dissolve into another, the technique can make fluid changes within one and the same image. Classic magic lantern slides with this effect show transformations from day to night, or from one season to another within one image. I experimented with the technique in my first draft, *I Don't Know Grandpa* (Video 79), but instead of making panel transitions, I made subtle transformations or changes in light and shadows that supplemented to the mood. In this way the static images became more vibrant and could be stocked with additional information. I continued using the technique when making *Close, Closer, Closest* in order to present illustrated material. All the images were photographed with different light settings, so they could dissolve into each other and give the illusion of reflection in the plastic surface (Picture 30).

In contrast to the instant transition, the dissolving image transition is a full motion that consumes time. I must also mention that it is possible to make a dissolving image

sequence with an instant transition, but it will not be fluid or able to consist only of two images, as does the dissolving image transition (Video 80).

Most of us are used to experiencing a dissolving image as an automated effect, for example in computer games, on websites and in presentations made with Apple's Keynote software. But even if its automated form is an established norm, it does not have to be automated. When I reflected on reader control and animation, I understood that the reader could have full control over dissolving images as well as other types of animation. In *Close, Closer, Closest,* this is executed in one panel transition and in all the light reflections in the Scotch tape (Video 81). I will write more about automated motion in *Close, Closer, Closer* later in this chapter, and I address reader control in chapter 4. But there is yet another aspect of dissolving images to mention: their semiotics.

What can dissolving images mean or signify? For starters, they can suggest a span of time, as Bordwell and Thomson (2010: 233) point out, or they can signify a dream sequence by shifting from everyday life to an imaginary reality. This is what I do in *Close, Closer, Closest* when thinking about my grandpa (Video 80). I also use dissolving images in a scene at the end where I levitate. The scene is a visual metaphor for the loss of a parent, a secure haven. This is also an imaginative and surreal happening, which is why the sequence, which starts with hard transitions, is softened by dissolving images towards the end of the scene (Video 82). The time-consuming dissolving effect adds more rhythm to cinematic panels. It is a graphic, temporal and rhythmic contrast to the instant transition. Even if the change is fluid, it harmonizes well with static form.

Panel delivery

I defined the concept of 'cinematic panels' in order to differentiate my practice from what is called 'panel delivery'. I will describe panel delivery as an image stream and a motion graphic technique that feeds or replaces panels, either through automation or interaction/reader navigation. If a given case of panel delivery involves instant and/or dissolving images, it uses an image stream; if the panels fly in and out and move

around in full motion, it (the given panel delivery) uses the spatial form of motion graphics. In this chapter I will mainly refer to the image-stream form of panel delivery. If a panel overlaps the previous panel, then this is not a case of panel delivery but of cinematic panels. The difference is that while cinematic panels change the fictional space within a single frame, panel delivery changes the panels in the negative space. Panels can appear, disappear, shrink, grow, change format, cover each other, move around, and so on. Since panel delivery, cinematic panels and pages are all image-stream forms, they can readily be combined with each other. That said, in my study of digital comics, the most common combination seems to be panel delivery with elements of cinematic panels (Video 83). *Close, Closer, Closest* is mainly made with cinematic panels, however, I have added a stanza of panel delivery to create a rhythmic and temporal shift in the comic (Video 84).

'Panel delivery' is not a well-established concept. Comic artists who are new to digital comics might find it confusing because the technique has different names from publisher to publisher. Marvel calls its panel-delivery comics 'Infinite Comics', but I see this more as a product tag. Comixology called its panel-delivery comics 'Native Guided View' for a while. 'Native' could mean a comic that is designed specifically for the digital platform. To combine 'Native' and 'Guided View', however, I do not think was a good idea. The Guided View mode was, according to my own observations, introduced in the early 2000s. Marvel has also launched digital comics on its website, and members pay a fee to access them online, either reading page-by-page or entering the Guided View mode. In this mode the screen becomes a mobile frame, moving in on the first panel on the page, then moving from panel to panel and adjusting the frame when necessary (Video 85). The mobile frame follows a programmed track with dynamic motion – a 'dynamic track' as I call it in chapter 2 (the section on 'Mobile Framing'). The mobile frame exposes panels by browsing over a comic book page. The screen plays the role of the eyes, navigating on the spatial surface, and it takes control away from the eyes, which makes the term quite accurate. I do, however, see a similarity between Guided View and panel delivery, for both focus on one or a small group of panels at the time. But Guided View is a spatial model using a mobile frame. The screen moves rather like a slow and fixed

representation of what the eyes would ideally choose to focus on. In panel delivery, by contrast, panels are fed onto the screen. As such, the image stream affects the layout, building up, moving and continuously developing the onscreen content. Thrillbent, the digital comic publisher which was established by Mark Waid and John Rogers in 2014, is a pioneer in panel delivery because all its publications are based on panel delivery and cinematic panels. However, this company, as far as I know, has not introduced any terms for these two presentation forms. The term 'panel delivery' is suggested by Daniel M. Goodbrey, and I find it quite accurate because it describes the actual function of the presentation form.

Comics in general rely on the concept of 'reading direction'. Reading direction relates to all continuous, spatial arrangements. In a comic, these are the panels, texts and elements of the illustrations. If the reading direction is not taken into consideration when composing a comic, the reader will misunderstand the chronology, and the relationships between the various bits of information will be hard to understand. In the West, this direction goes from left to right and from top to bottom. The panel or object on which the eyes focus represents the present time.

In panel delivery and cinematic panels, however, I find the reading direction to be overruled by what is called the 'order of appearance'. When a panel appears on screen, regardless of whether it happens through an instant transition, a dissolving image or a spatial change as in motion graphics, I find that it claims the reader's focal attention and becomes the most relevant information on the screen. It overrules the control of the eyes and represents the present time. Because of this, a panel can appear wherever it likes in panel delivery. The same principle applies to speech bubbles in cinematic panels. Still, the rule of reading direction does not disappear entirely, for it is still active within the composition of the panel or object that appears. Two or more panels can be fed onto the screen at the same time, and they will also need to relate to reading direction.

But a panel-delivery feed is not tied to the reading direction in the same way as is a comic with a pure spatial arrangement. The panels that appear can be built in a

direction that moves from left to right or from top to bottom. Either way will create a flow, since the pattern is based on a norm that the reader can predict. Breaking the reading direction can convey contrasts and chaos. It will change the rhythm and probably generate surprize. Two things – the order of appearance and the reading direction – give the digital comic artist more opportunities to create variations in composition and rhythm than would be possible in traditional static comics. In *Close, Closer, Closest*, I use a split screen in my panel delivery. The three first frames of the panel delivery build the split screen. From then on, the panel grid is fixed and allows for a seamless mix of panel delivery and cinematic panels. The panels in the grid are cinematic panels, but I do not change the same panel consecutively; I jump to the next panel to make a change there, and then to the next as the reader advances. This is panel delivery made through cinematic panels in a split-screen layout. It is a short sequence, but I have tracked the rhythm of the order of appearance in a video (Video 86):

Start>follow>break>follow>break>follow>follow>full-screen

I break the reading direction from the start, jumping back and forth, as if trying to establish rooms in the submarine. Breaking the reading direction creates a staccato sequence that conveys the tenseness of the situation as well as the communication between the rooms the panels represent. Before the captain gives the order to fire, there are two panels that follow the reading direction on a row. They create a short but flowing leap to the picture of the lever that is pulled in the full-screen image. This panel-delivery sequence represents a shift in *Close, Closer, Closest's* rhythm and presentation form. It stands in contrast to the more static full-screen cinematic panel sequences that dominate the comic, and it shows one way in which panel delivery and cinematic panels can co-exist and cooperate.

Another aspect of panel delivery is how it relates to time. On a traditional comic page with a panel layout, all the panels that are exposed have the opportunity to represent the past, the present and the future. It is the eyes' focus that decides the status of the panels: whatever is focused on at any given time represents the present, whereas

previously focused-on panels represent the past and upcoming panels represent the future. Previous pages are always the past and future pages are always the future. In the case of cinematic panels, the future panels and the panels of the past are hidden from the reader, just like the pages in a book. In panel delivery, however, panels coexist much as do panels on a page, but at the same time they are different because new panels are always being added and removed. The most recent panel in the feed must relate to the other panels on screen. I have formulated four models to describe how panel delivery deals with time:

A) Future – present – past:
This model of panel delivery has a panel layout in which all panels are visible. They can be presented on pages or a larger canvas. Instead of feeding panels, panels are activated. An early example made with this structure is Marvel's first *The Amazing Spider-Man Cyber Comic, Sandblaster* (1998). The panels of the page are shaded and lit up when activated in a form that can remind of model B. This comic mixes cinematic panels and panel delivery (Video 71).

B) Present – past:
This model only shows the panels of the present and the past. The future is always hidden. It is a common panel delivery model in which the layout is built panel by panel (Video 87). Every new panel represents the present, and every previous image represents the past. In some comics, the panels are erased when the screen is filled, then a new series of panels begins and builds a new layout. It can be explained as building page layouts. Other comics of this type create the layout by building and removing panels simultaneously. This last approach, in which the oldest panels give way to new ones, is used by Eric Loyer, who did the programming for Ezra Claytan Daniel's digital comic *Upgrade Soul*. Here Loyer uses a model he calls 'Zero Sum', meaning that when a new image comes onto the screen, an earlier image must exit the screen. If a large image enters, an equally-large image (or images which in combination are equal in size to the new image) must exit the screen. The result is that the frame size of all the frames in the layout adapt to the new content every time the reader moves forward in the comic (Video 88).

C) Future – present:

This model is the opposite of model B, and I have never seen an example of it. In this model all the panels are visible, but when the reader interacts and navigates, panels disappear as the reader advances. This means the past is never visible to the reader. The reader is like Pac-Man eating up the panels (Video 89). It can symbolize that time is spent, wasted or gone. I would guess this is not a very functional model because the eyes would read faster than the reader would interact, and I will claim that it is more functional to feed new panels than to discard read panels. It can, however, be an interesting model for a hypercomic: if there are multiple pathways and no possibility to go backwards to retrieve erased panels, the choices the reader makes are decisive – perhaps even devastating. Being able to look at future panels can help the reader make a choice.

D) Present:

This model, which only shows the present time, is the one I use in *Close, Closer, Closest*. The past and the future are hidden just as in cinematic panels. Panels are still fed onto the screen, but all the on-screen panels must represent the present (Video 90). In chapter 1, I wrote about how the split screen in film shared similarities with the magazine in its visual expression. Well, this model of panel delivery can be compared to the split-screen technique in film, where multiple frames show simultaneous events. When all images on screen need to represent the same moment in time, past actions must always be removed or masked away. While making *Close, Closer, Closest*, I also explored this form in an experiment I made at Eric Loyer's motion comic workshop at Fumetto International Comic Festival in Lucerne (2015) (as I also mentioned in chapter 1). In this experiment, I worked with this time mode within a fixed panel layout, which can be compared to a fixed split screen. The sequences I made within this fixed panel layout had a combination of cinematic panels and panel delivery (Video 8 in chapter 1). The fixed panel layout is a form that differs from most panel-delivery comics I have seen. The most normal approach is adaptable dynamic-panel layouts, at least layouts that change over time. The small stanza of panel delivery in *Close, Closer, Closest* builds up the layout,

which turns out to be fixed. Basing a whole comic on a fixed panel layout is a form I want to explore further after this artistic research. A slightly different approach than the one I used for my panel delivery sequence in *Close, Closer, Closes*t and my experiment at Fumetto is the one used by Daniel M. Goodbrey for *Empty Kingdom* (2014). In this game comic, all the panels on screen represent the same time. Every hyperframe forms an open world via fixed panel layouts that the main character (who is controlled by the reader/player) can move around in (Video 3 in chapter 1).

I will close this section with a brief look at terminology used when working with panel delivery and cinematic panels. The Norwegian digital comic pioneers Morten F. Thomsen and Lars Schwed Nygård made a (short-lived) publishing app for digital comics in 2012 called Oxicomics. In making the app, they consulted with Mark Waid from Thrillbent, a publisher known for digital comic publications that use the techniques I call panel delivery and cinematic panels in this artistic research. According to Schwed Nygård, Waid had not developed terms when they worked with the Oxicomics format, so Thomsen and Schwed Nygård made their own concepts to verbalize the process (Schwed Nygård 2017).

A ‘step’, in their terminology, is when a reader advances to the next panel or change through an input action such as a click, tap or swipe. They used the term ‘screen’ for a sequence of steps that constructs a panel layout that forms a page (Video 91). At a time when the medium of digital comics is still finding itself, terms like this will always vary from artist to artist. To collect terms would therefore be an interesting research project in itself. To contribute to this, I will present the terminology I used when working with the programmer Hans Philip Eide and the composer Stephan Meidell. I also used the term ‘steps’, but gave it a different meaning.

I used the term ‘frame’ to describe all the panels, including their steps, and all the frames in the full-screen animations in the comic. I used ‘scene’ as a term to divide the scenarios, as in film, and I gave the panels numbers within each scene. If a panel sequence was represented through several panels with the same point of view, as in a take in film, I used the term ‘steps’ within this sequence. For example, the first

panel in *Close, Closer, Closest* consist of 19 steps (Video 92). *Close, Closer, Closest* has 12 scenes, as shown in the top menu (Video 93). It has 46 panels which then form the multiframe. However, when counting all the frames with full motion, the multiframe consists of a total of 2,238 frames. There are frames in animated loops too: for instance in the swimming sailors, the record player and the cell-phone video, but these are not counted in the total amount of frames. These animations represent what I call 'sub-sequences' within the frames. There are 12 sub-sequences in *Close, Closer, Closest* (Video 94).

Automated and interactive full motion

Most of the motion in *Close, Closer, Closest* is connected to the cinematic panels, however, I also present full motion through classic animation, and I use spatial motion in much the same way as one finds in motion graphics. The reader will notice that among all these full-motion sequences, few are automated film. They are interactive film. This is because the cinematic panel experience results in a type of animation that gives the reader full control over his or her acquisition. Full reader control is a property that stands strong in physical comics, so I wanted to challenge myself to make a digital comic that allowed as much reading control as possible while still using animated full motion in the presentation. In this section, I will first present the automated full motion in *Close, Closer, Closest* and then present the interactive full motion.

I start this digital comic with a long automated-animation sequence of sailors swimming in circles. This presentation, however, is not a pure full-motion sequence but a combination of full motion and cinematic panels. The image is automated full motion and the text is a cinematic panel sequence (Video 92). The swimming sailors are made with classic animation and the motion is looped. The text consists of single images set in sequence.

The animated loop is meditative to look at and creates an eternal moment. The sailors are swimming for their lives. They keep swimming to avoid drowning. The automated motion creates tension because the reader cannot control it. I also think

the fate of the sailors becomes real to the reader when the sailors are shown in full motion. This is closer to reality than a traditional comic sequence can get. The loop represents a certain moment in time, and the text begins before this moment appears and then passes the moment during the text sequence (Video 92). The text and image create an asymmetric-symmetric-asymmetric sequence, which I never have done before. This could have been executed in a traditional comic sequence as well, but it was the combination of full motion and cinematic panels that led me to create this passage in the way that I did.

There are more automated loops in *Close, Closer Closest.* With the spinning vinyl record, I attempt to evoke nostalgia in the reader, to create the mood of putting on a record, or at least to describe it for readers who have no experience with this form of recorded music (Video 95). Later in the comic I use an automated loop to show how Aunt Tully talks incessantly (Video 96) while the narrative text moves on. Just as in the opening sequence, the text surfs atop a loop that creates an extended moment.

Another loop distinguishes itself from the others. It is the film on the iPhone, seen towards the end of the comic. This represents an Instagram loop that I actually made from some film material I found in the Norwegian Military Film Archive. I came across it while watching the documentary called *Krigsseilerene – Med æren i behold* (2008, loosely meaning 'The War Sailors: Retained Honour'). In this material I found footage that seemed to be of my grandad, because it was identical with a photograph we (my family) have from the same situation. This loop is not an everlasting moment; it is a clear repetition of a series of events that are edited together (Video 97). I used motion graphics and mobile framing when I animated this sequence. The repetition creates a rhythm that differs from that of the fluid and seamless loops seen in the earlier frames.

There are also automated loop animations that indicate sound and vibration. These iconic lines function as fine static, but the threshold to animate them is low, and their presence increases in strength when animated because the motion draws the reader's attention (Video 98). The last loops I will mention are vibrant speech

bubbles. These are automated loops presented within an interactive film, which is also a combination that I have never done before. In this case, if the reader stops to dwell on a speech bubble, the loop perpetuates a frozen moment.

What does an automated loop add to the imagery that a static image could not add? I think a loop communicates an everlasting moment in a more effective way than does a static image. It encapsulates the reader in an ongoing cycle. A long sequence of images that dwells on a single moment can also communicate an everlasting moment, but the loop is more compressed. The possibility to create eternity in one frame is a powerful property. I categorize loop animation in a comic context as 'passive animation'. By this I mean that the action and motion, rather than pushing the storyline forward, cause the reader to dwell on a moment in time. This makes loop animation easy to blend into traditional static-panel sequences because it does not interfere with the comic sequence that causes progression in the storyline (Video 99).

Close, Closer, Closest is a rather static digital comic because of it full screen presentation. The loops are therefore welcome devices for creating and varying rhythm. Rhythm can control the speed and intensity of the imagery, and in this digital comic, I have used it for calm sequences such as when Tulli is speaking (Video 96), but also for more intense sequences such as the video on the cell phone (Video 97). I also find that loops can create moods when they are used as ambient backdrops. We find ourselves in the presence of repetitive motion all the time, for instance sea waves, traffic, wind through grass, flames in a fireplace, and so forth. These rhythms create moods that we instantly react to and create associations to. Ambient loops can therefore strengthen the emotive power of an image. Despite this, and despite my having worked with looped backdrops earlier (Video 83), I have not used them in *Sound of the Aurora* or *Close, Closer, Closest*. Automated loops are also known on the web as gif-animations and are popular on social media such as Facebook. I would also claim that gif-comics have become a type of digital comics that treat gif-animation as a stand-alone effect (Video 99).

Of all the instances of automated full motion in this comic, the loops are the most common. However, I also have a linear automated full motion sequence at the very end of the work. The last scene has a sinking ship, which is an automated moving graphic. It is programmed to sink on a vertical canvas, from the top and all the way down and off screen (Video 100). The frame, however, does not follow the ship, since it is interactive. The reader controls it in a fixed vertical track. When the reader thumb-swipes, the window moves downwards, and the reader can either follow or pass the ship that is sinking to the bottom of the ocean. This makes the reader an observer of the sinking ship, which the reader cannot control. The semiotics in this mix of automated motion in the fiction and interactive mobile frame can symbolize the helplessness of the situation. The scene, for me personally, is a metaphor for the loss of my mother, but it also reconnects the story to the opening scene of the swimming sailors. The reader controls the frame, so is also in control of how long he or she wants to spend in this vertical space. With this mix of automated and interactive motion in mind, I will proceed in describing the cases of more interactive motion in *Close, Closer, Closest*.

Two linear film sequences in this digital comic are interactive. They are reader controlled by using the technique called 'scroll-activation'. Scroll-activation is connected to the navigational action of scrolling. The scroll-activation technique became widespread in webpage design in 2012 because of the new code standard HTML5. This has allowed animations and changing graphics to be programmed directly in a page's source code, rather than through plug-ins such as the Adobe Flash software. This Internet trend made me aware of reader-controlled animation, and it incited me to reflect on reader control in general (the reflection can be read about in chapter 4).

Close, Closer, Closest is not a scroll comic: as I mentioned in this chapter's section called 'User interface', the navigation gesture in this digital comic is a thumb swipe, which is the gesture a reader would use to scroll a webpage on a touch screen. Instead of scrolling down on a vertical space, which is the norm, I make the reader scroll the timeline of my full motion animations. The first interactive full motion is the

title screen. In this sequence, the illustration moves closer and closer to us as viewers, until it is as if we travel through the picture, literary doing what the title says. It may look like a mobile frame, but it is a motion graphic sequence, and the programmer Hans Philip Eide has connected the touch control to the animation timeline.

The second interactive sequence was made using classic animation. I did several experiments with time-lapse animation, also called automated drawing or speed drawing. Despite my experiments (Video 101), I only used the technique in a small section of the main title. Here the final word of the title, *Closest*, is written on the screen as the reader swipes/scrolls (Video 102).

The third interactive full motion animation – the explosion of the merchant ship – is also classic animation, and it is strategically placed just after a sequence where I expect the reader's navigation frequency to escalate (Video 103). The panel before the explosion is a cinematic panel with ten steps. It shows a clock, and the reader, by navigating, counts seconds. My intention is that the minimal change of information will make the reader increase the pace of swiping. When the next panel appears, the reader will not be able to stop, so the upcoming swipes will activate the animation of the explosion. I can of course only have intentions for the reader; how the reader actually reads is beyond my control. The explosion ends with an interactive dissolving image, the only one of its kind in this digital comic.

The fourth interactive full motion animation is the phone call scene (Video 104). This is also classic animation, made by rotoscoping motion from video footage (Video 105). I had originally planned to show the narrator's text in the whole animation, but it did not work in practice. It was too easy to scroll past the text, thus a crucial flaw. Another problem was the iPad's technical limitations. An image sequence is a heavy type of animation, even more so when it includes dialogue, so when making the comic, the image sequence soon became too long for the iPad to handle. As mentioned earlier, we used old iPads to make sure that if a reader had old hardware, it would not crash. This scene therefore did not turn out as I intended, and the

compromise was to freeze and create a cinematic panel sequence in the middle, then end with the rest of the interactive animation. The shaking and wiggling qualities of the film are due to the hand-held source material. I wanted to add a 'nerve' to the imagery by using a mobile frame, in contrast to the continuously fixed frame that dominates the comic. Despite it being a challenging scene to make and despite not turning out perfectly, it still marks the turning point in the comic, and it differs from the rest with is full motion animation, which was my overall intention.

There are also interactive motions or changes connected to the gyroscope that makes the iPad register how the reader is holding the tablet. The first gesture-controlled motion is in the opening menu, where the portraits of me and my grandfather can slide towards each other. They never end up exactly side by side, which is a visual metaphor of one of the comic's conclusions. I also used the gyro controls to affect the illustrations. For example, the glossy Scotch tape, which is a graphic element in the illustrations, reflects light differently depending on how the reader holds the tablet (Video 106). This creates subtle vibrant motion in the static images.

The third gyro-controlled motion did not make it into the comic. The time schedule ended and we already had pushed the project financially, so there were no more resources to realize the idea. My intention was to use mobile framing in the panel-delivery sequence showing the inside of a submarine. The idea was that if the reader moved the tablet, the perspective would change a bit, making parallax motion in the images. The motion was intended to be 'sensitive' in order to imbue the scene with nervous tension. The graphics for this sequence were made in pieces and layers, and all that is left to do is the programming. This makes it possible to add the gyro-controlled motion later on, if resources allow. This comic is filled with different approaches to making a digital comic, and almost every scene draws on different technical solutions that are chosen based on the context of the story. The fact that I was unable to realize all my ideas is typical for this type of creative process. Another comic that uses the technique of gyro-controlled motion is *Upgrade Soul* by Ezra

Claytan Daniels and Eric Loyer, but there it is an overall effect and not used solely to create tension in a limited section, which was my intention.

Personal Reflections

There are three turning points that I want to highlight from the process of making *Close, Closer, Closest*. To begin with, I want to repeat the second turning point that I mentioned in the last section of chapter 2, about presentation forms that communicate well to crowds, and just put it in another light. *Close, Closer, Closest* is my first digital comic published for a reading tablet. The reading tablet was my medium of choice when I started this artistic research in late 2012. The reason for this was the arrival of the iPad in 2010 – the first widely-available reading tablet in the West. As a portable computer, I think it was, aside from the smartphone, the first platform for reading digital comics since the PC. Furthermore, since it was a new platform, it was highly relevant to explore. Nevertheless, I am grateful that *Sound of the Aurora* was created before I made this digital comic for the iPad. Without that experience, I would never have thought of performance when I designed it. The result is a digital comic with a double functionality: it can be read on a tablet by a single reader, but also in front of many people in a live performance. I also experienced that there is a lower threshold to performing a comic than to finalizing a digital comic publication. I first performed *Close, Closer, Closest* in 2016, but it took a whole additional year before I could publish it online. Because of the slow process of making a digital publication ready for release, I assume that I will also in future perform digital comics before they are ready for digital release.

What ended up becoming *Close, Closer, Closest* in 2017 started with a storyboard of another manuscript in 2012. In this draft, called *I Don't Know Grandpa*, I made a sequence that was inspired by the computer game *Myst*. I made overlapping comic panels to create a mobile frame that moved around in fictional space. Even though I had already been intuitively using overlapping images in digital comics, this was the point when I understood that the overlapping comic panels had properties that approached animation while still retaining the identity of a comic. But the second turning point did not really come before I met Daniel M. Goodbrey at the Visibility

Conference at Bergen Academy of Art and Design in late 2014. He introduced me to the concept of 'panel delivery'. This challenged me to find out whether I was making panel delivery, or something else. My conclusion was that what I was making was different, thus my coining of the term 'cinematic panels'.

The third turning point that had a huge impact on my artistic research came early in 2013 when I discovered the comic demonstration *Soul Reaper* from 2011 (Video 29 in chapter 2). HTML5 programming had become more common in web design by this time, and the concept of scroll-activation became a widespread effect in webpage designs the following years. *Soul Reaper* functioned as an early showcase. It had full motion, but the motion was not automated in the traditional way. The instances of full motion were bound to the action of scrolling, so they were reader-controlled. This was a big game changer. Before this, motion had been automated and stood in contrast to the reader-controlled comic experience. Film, from the start, had been able to show an automated comic. But from now on, the comic could show motion that could be reader controlled. This led to my reflections on reader control and the interactive full motion of *Close, Closer, Closest*.

Close, Closer, Closest had a different starting point than *Sound of the Aurora,* and I see this as one of the strengths of its development process: the image stream was defined, I had a prototypical concept I call 'cinematic panels', and I knew I wanted to address interactive motion and create a comic in which full reader control was dominant. This made my research focus on the image stream more apparent in *Close, Closer, Closest* than was my focus on spatial motion in *Sound of the Aurora*. Panel delivery as a presentation form was already starting to establish itself as a technique, so I chose to focus more on cinematic panels. Despite this, and despite how little I practiced panel delivery, I found out more about it than I had expected to. A weakness in my research (which is also relevant for the research discussed in chapter 2) is that I did not narrow my focus further. I managed to create a fundamental overview of concepts and techniques of motion graphics, and I gained some experience with each technique. But I did not, for example, take the two comic devices and look at text and motion and image and motion in my reflections. Yet just

as I have built on the reflections and research of others, I hope my research can contribute to the next steps of research taken by others. I think we need more artistic and academic research that concentrates on panel delivery and cinematic panels and which can narrow its focus to experimenting with smaller modules, for example with text in motion.

The visual expression of *Close, Closer, Closest* is very different from that of *Sound of the Aurora*. The biggest difference is that the drawings are simpler and only have solid outlines. This expression can be animated through classic animation techniques without setting up a disruptive contrast to the static comic sequences. I would describe the illustrations as stylized naturalism. I chose a more naturalistic style because the story is autobiographical. I show through my drawings that I can represent reality in a more confident way than when I draw, for example, my aunt's story in *Sound of the Aurora.* It is closer to reality. The illustrations are drawn with a thick marker, and I have used glossy Scotch tape as a graphic element. The marker is, for me, similar to sketching with a pencil; it is a tool for making direct and honest drawings, since the process from the mind to the paper is short. The marker is also ruthless in the sense that it cannot be erased. I do not regret mistakes in the lines, and I embrace the imperfection in the drawings. This imperfection is lost in the roto-scope tracing of photographs, but the comic is an interesting mix of both. The marker line is a 'naked' expression, like a signature, and it works well in a personal story like this. The paper on which I draw also has a strong presence in the illustrations. This is because I have photographed all the illustrations, so the lighting on the paper surface is included in the final work. The Scotch tape is a material that is only expressive when the illustrations are photographed, in order for the tape's surface to reflect light. I have been fascinated by real light in drawings since my childhood experiences of watching animation films. The backlighting effects in animated works such as *Masters of the Universe* amazed me. Real light, represented on a screen, is also a light source. In *Close, Closer, Closest,* I used the light to make dynamic illustrations. I photographed them with three different light settings. With these light variables, I experimented with dissolving images and gesture controls, where the reader can affect the reflections in the image by tilting the reading tablet.

Close, Closer, Closest is a short digital comic. It dwells on a moment in life and describes the time when my family history became important to me and my own identity. It touches on a problem that many people have, namely, that they do not know their own parents very well. This realization often comes when it is too late to learn to know their parents better. The same is the case with family history and even war history. The stories are there, but they disappear with the people who lived them.

Chapter 4:
The Digital Comic

In this chapter I explore a question: What are the fundamental parameters of the digital comic? This is a step aside from my main research question, but the reason for it is that I could not find any discussion of motion's place in existing digital comic theory. I concluded that I had to investigate this topic myself to be sure that my theoretical understanding and conception of motion in digital comics could be adequate for helping me develop my artistic practice. *Reinventing Comics* (2000) by Scott McCloud is my main source for theory on digital comics. McCloud describes many aspects of digital comics, but the broadness of his scope also results in brief descriptions that do not offer deeper analysis and insight. He mentions motion, for example, but does not explore it extensively.

The reflection presented in this chapter has an objective: to find a perspective that makes more room for the kind of digital comics that expand on the traditional formula of static text and images. I want to find the position of motion in the digital comic's basic structure.

I identify the fundamental parameters of the digital comic and explore them one by one, making references to theory and reflections by Fredrik Strömberg, Thierry Groensteen, Aaron Meskin, Lev Manovic, Daniel M. Goodbrey and Steve Dixon. Towards the end of the chapter I refer to my own experience of making the digital comics *Sound of the Aurora* (2014) and *Close Closer Closest* (2016).

Fundamental Parameters

What are the basic parameters of the digital comic? These would be elements that define it; they would be components of such importance that if one is removed, it would cause the digital comic to turn into something else with a different definition. One parameter must be the medium itself, *the comic*. The comic, however, has to be digitized in its final form to be a digital comic. This brings *the computer* in as a

necessary component. To communicate through the computer, *the screen* is necessary as well. Until technology reaches the point where computers can communicate directly with our brains, computers will always need a screen of some kind to communicate visual content. This makes the screen an elementary part of the digital comic. The fact that the comic is contained by the computer and shown through a screen facilitates the need of a fourth parameter – access, resulting in *interaction*. If a digital comic consists of more than a single image (it could also be called a page or frame), a reader would need some control mechanisms to access the rest of the content. Such mechanisms could include a keyboard, a button, a mouse or a touch screen, just to give a few examples. As stated, I call this parameter interaction. I also see a fifth parameter, at least when I study my own digital comics, namely *audio*. In comics, however, sound is also communicated through text and images shown via the screen. The audial component is therefore not essential or fundamental for the digital comic's existence. It can be seen as an additional parameter.[7] With this in mind, are the other four parameters really indispensable?

To begin with, the comic itself is indispensable in the digital comic; it is the art form of our expression. Then we have the screen: if we remove it we will be unable to see and read the comic. If we remove the computer, we will be left with the screen and no container for the digitized comic. Can a comic and a screen work together without a computer? Yes, but it would not be a digital comic. The screen is a much older technology than the computer. The computer has largely replaced other technical devices from the past, as for example the View-Master, the overhead projector, the cinematograph and the magic lantern. The latter is a 400-year -old technology that represents the first projectors to show slideshows with visual narratives. This is sequential art that I believe qualifies as pre-modern comics. The magic lantern tradition shows us that it is possible to communicate as a comic, with a light source, a lens, illustrated slides, foils and silhouettes. The screen's importance, also that the comic can be presented with other technical solutions than the computer, indicate

[7] For insight into sound in digital comics, see Daniel M. Goodbrey's article 'The Sound of Digital Comics' (2015).

that digital comics are part of something bigger: I suggest that the *screen-based comic*, could function as an overall term, since it includes all digital and analogue formats, even a slide for a magic lantern, a carousel projector, a View-Master, the film in a cinematograph or foils laid on an overhead projector. The screen-based comic, however, is not a well-established term. I used it in my master's thesis *Den skjembasete teikneserien* (2008) to describe a comic designed for screen viewing, but I did not question why I should use it as a term instead of 'digital comics'. With this reflection, I now conclude that the term screen-based comics could be used as an umbrella term, of which digital comics is a part.

The fourth parameter, interaction, remains to be challenged. Is interaction just as essential for making a digital comic as the comic itself, the screen and the computer? On one hand, the answer seems to be no. I can imagine a short comic that only needs one image, or one screen (or frame or page) to be read. As such, interaction, in my sense of the term, would be unnecessary. However, reading is a form of interaction too, given how the reader's eyes navigate through the visual content. With this aspect in mind, I must conclude that interaction is essential. If the comic exceeds a single screen in size, then controls and a user interface are necessary in a digital comic. In my search for a basic understanding of the digital comic as a medium, I will now elaborate further on these four main parameters: the comic, the screen, the computer and interaction.

The comic

Defining the comic seems difficult, almost impossible, according to the foremost experts, one of whom is Aaron Meskin, an associate professor of philosophy at the University of Leeds. He concludes his article 'Defining Comics?' (2007) by saying that we need to get beyond the definitional project. He questions Greg Hayman and John Pratt's essay 'What Are Comics?', deeming it as an example of a definition project that excludes too much. What is the necessity of defining comics, he asks? The well-regarded Belgian comic theorist Thierry Groensteen, in his book *System of Comics* (2007), elaborates on how difficult it is to define comics. Defining an artistic medium, he says, creates limitations, reduces possible meanings and excludes

artistic expressions and variations of the medium (Groensteen 2007: 14). The Swedish theorist Fredrik Strömberg has made a comprehensive analysis of the concept of comics in his book *Vad ër tecknade serier?* (Strömberg 2003). He asks a fundamental question: What are comics? His analysis gives a good overview of the Western discourse on the topic. He also concludes that it is impossible to create a correct or precise definition (Ibid., p. 120). Researchers, he says, must be more careful in presenting definitions as universal truths (Ibid., p. 114), and we should be aware that any definition will always mirror the author (Ibid., p. 113).

Meskin claims in his conclusion that there is no pressing need for a definition (Meskin 2007: 376). I interpret him to mean that each individual work of art should be understood on its own terms and in light of its own history. Meskin and Strömberg thus touch on the same subject. I follow Strömberg's conclusion that defining the comic is difficult and that there is no universal truth, but I am not convinced by Meskin when he asserts that a definition has no purpose. Is there no need to describe the comic art form as a unity? I think there is a need for it if one wants to put a comic in a historical perspective. However, I think it is also important to be aware that the definition of the comic is subjective and will change from culture to culture and from time to time. The comic is a cultural expression (Strömberg 2003: 32).

Why do I need to define the comic? In this chapter, I have already suggested that the digital comic consist of four parameters: the comic, the screen, the computer and interactivity. To understand these parameters, I want to identify the properties of the comic in order to see what happens to it when it gets digitized and presented on a screen. The definition discourse by Meskin, Groensteen and Strömberg has helped me realize that it is impossible to construct an adequate definition. It has also taught me that I must be conscious that I am on a mission, that I actually seek a definition that includes digital comics. This definition, however, does not need to encompass digital comics in their entirety. This is because I realize that at some point, digital comics become something more than just comics. Where is this boundary, and what is beyond it? If I should make a definition that mirrors my intentions, I would want it to be prototypical (Strömberg 2003: 32). This means it would be open enough to include

comics that cross the aforementioned boundary. I would also want the definition of the comic to be an aesthetic definition (Ibid., p. 77). This means that the comic would be defined by its aesthetic form and not by its medium. The 'digital comic', on the other hand, is a media-specific term; it situates the comic within the realm of the computer. For me, it seems logical that the definition of the comic as an art form should be neutral in terms of media types. I therefore find the aesthetic definition more relevant because it include all types of comics, from comic books and webcomics to performance comics, just to give some examples. By making a montage of existing definitions, I would describe the comic art form like this:

> The comic is sequential art (Eisner 1996: 17) that consists of up to two devices, words and images (Eisner 1985: 7). With these devices, or only one of them, the artist forms and arranges content in one or more compositions or panels that are based on the cultural premise of reading direction. The compositions/panels are traditionally arranged in chronological sequences to give a temporal experience (Strömberg 2003: 133) through closure, based on the relationships between the images (McCloud 1993: 63). The multiplicity of compositions/panels can be called the multiframe (Groensteen 2007: 31). How the multiframe is organized depends on its scale and the format of the medium that carries the multiframe. The whole multiframe can be presented on one surface at a time, but it can also be presented in portions, called hyperframes (2007: 30). A hyperframe can contain a single image or panel at a time, or several images/panels at a time.

In creating this definition, I use established concepts from Eisner, and maybe not so well-known concepts from Groensteen and Strömberg. I start the definition with Eisner's idea that the comic is an art form, and that sequentiality is an essential parameter. I state that the comic consists of images and text and mention them in plural to point out that there are traditionally several texts and several images in a comic. I use the word 'panels' instead of frames, because 'panels' is an established term in comic design. I add that a multiframe can consist of one or more compositions or panels. It may seem illogical to say that a multiframe can consist of

one panel, but in my opinion, one single panel can give a temporal experience. I think it is important to acknowledge that a comic can consist of only one frame, and I say this in relation to Scott McCloud's definition of a comic in his book *Understanding Comics* (1993: 9), which excludes the single-frame comic. That said, I think that a comic could consist of one singe panel or composition. If this is the case, what differentiates a single-panel comic from other single images such as an illustration or painting?

Nothing aesthetic, at least. I think it is only the artist's intention for a single image that can define and differentiate it from everything else, making it a comic panel or a single illustration. This conclusion on intention is an aspect I write more about in chapter 1, in the section 'The Boundary between Comics and Film', but I also want to reiterate an acknowledgement I made in chapter 2, namely, that my intention for how to define a work need not coincide with the audience's definition or categorization of the same work.

There are several comic-related terms that I avoid using in my definition. I do not use 'juxtaposition' because I think the preconditions for a multiframe do not require juxtaposition. When I remove a parameter such as juxtapositioning (formerly seen as important), what then differentiates the comic from the picture book? My answer would be the same as for single images. This is where two forms meet. In my eyes, the picture book and the comic are technically the same medium, but they represent or are situated in two different cultures. They can blend and look the same, or the comic can differ from the traditional picture book by having a higher pace between text and images.

Since I do not mention juxtapositioning, neither do I mention the 'gutter' between the images. Rather, I use the word 'relationship' together with the word 'closure'. I think closure happens in-between every image that forms a chronology or unity, whether the images are juxtaposed or not. The word 'chronological' indicates that the compositions/frames are in a relation with each other, and I stress that I use the word in a traditional sense because there are exceptions to the norm. Drawing on

Groensteen's *System of Comics* (2007), I use 'multiframe' (p. 24) and 'hyperframe' (p. 31), but these terms originate from Henri van Lier (multiframe) and Benoît Peters (hyperframe). At first I found these terms a bit too technical. The meaning of 'multiframe' can indeed be intuited – 'many frames'. 'Hyperframe', however, is not intuitively understandable. The hyperframe describes a portion of the multiframe that in printed comics would define the format of a single page. Since the page is only one of many possibilities, both physical and digital, the hyperframe is a uniting term. I find it constructive to use because it does not limit the art form to the book, as one example. It is a term that makes it possible for my definition to remain an aesthetic definition.

The screen

The second parameter for digital comics is the screen. McCloud (2000: 222) refers to the screen as a window. This is an old metaphor, first used by the Renaissance painter Leon Battista Alberti in his treatise *On Painting* (1435, book 1 section 19). A window is transparent, and it frames and shows the world on the other side. The frame of the moving image, however, is different from the architectural window and the frame of the painting. The spectators of a film remain immobile, but their point of view may change according to the content of the moving images (Friedberg 2006: 6).

McCloud presents two ways to treat the screen when making digital comics: as a window or as a page (2000: 222). McCloud's window is actually a mobile window that can scan a larger canvas or move through virtual space exposing the comic panels in all kinds of arrangements. This virtual space he describes as an 'infinite canvas' – infinite because it lacks physical limits. He also presents two ways of organizing digital information: by hypertext and spatial models. Hypertext (jumping from one piece of information to another) can link pages and panels, whereas in spatial models, the screen moves either to expose the panels or the fictional world. But this prompts me to ask: Is this theory still relevant today?

I suggest that the page and the window are incorrect metaphors for digital comics. Instead of the basic screen-window metaphor, it is logical for me to think in terms of a

‘fixed window’ and a ‘mobile window’. The page, as I see it, is only one variation of what a fixed window can present. If I were to describe the page metaphor, I would say it is a flat two-dimensional (henceforth 2D) surface with a fixed format. It is presented in a fixed window or as defined surfaces within a mobile window. A page can contain a whole comic, the whole multiframe, or only part of a comic, a hyperframe. With the fixed window, and by using hypertext, I can deploy the panel-delivery presentation technique, where I feed panels into the fixed window, creating mutable panel layouts. I can also change the content within the frame using a technique I call ‘cinematic panels’. This technique changes the content within the panel frame. (I write more about these techniques in chapters 2 and 3.) There are thus three ways of making comics within a fixed window:

1. The page: a fixed frame with panel layouts, image/images and text/texts.
2. Panel delivery: an image stream that makes panel after panel appear on the screen. The term is suggested by Daniel M. Goodbrey (ref. interview).
3. Cinematic panels: a single, fixed comic panel is replaced with overlapping panels. This term for describing an image-stream structure points to the same phenomenon as we find in the moving image/film, thus the word ‘cinematic’. Cinematic panels are as close as the comic can come to the film without using automated animation. Such panels can appear in panel delivery and probably on a page (I have not observed this), but can also function in full screen. ‘Cinematic panels’ is a term I myself have suggested.

Since I see these three ways of making comics within a fixed window, the multiplicity can stand as an argument for not treating ‘the page’ as a general metaphor for how to conceive of the screen in digital comics.

I also want to address McCloud’s theorization of the two ways in which digital information is organized (2000: 231). He uses the term ‘spatial models’ to describe navigation on spatial surfaces, and ‘hypertext’ and ‘hyperlink’ to describe jumping from one piece of information to another. ‘Hyperlink’ was a term which initially seemed irrelevant for my project, because I associated it mostly with databases and

labyrinths of non-linear structures. Once I eventually realized how important the image stream was in the digital comic's structure, I concluded that it was precisely in McCloud's theory that the image stream belonged. Perhaps not in the way we organize information, as he writes, but in the way we present information. I therefore do not claim there is anything wrong with McCloud's theory, but that I create a parallel theorization in order to describe phenomena related to visual presentations.

'Image stream' is a basic term for describing film and moving images. In an image stream, the images overlap each other, or the transition between them is so fast that they seem to overlap. I would claim that several pages in a digital comic constitute an image stream, but in contrast to film, they have a lower frame rate and have closure in-between the images (this was also mentioned in chapter 1, in the section 'The Differences between Comics and Film'). The digital page, in contrast to the physical page, never uses the reverse side of the surface. In contrast to physical comics that require a page-turn to read the next page, in an image stream you just jump to the next page. The concept of the image stream also covers what happens in panel delivery and cinematic panels, both in digital and analogue screen-based comics. It is not that 'hyperlink' is incorrect terminology, but 'image stream' does a better job of describing what happens in a visual and spatial sense.

As a conclusion, there is no doubt that McCloud's theory is still relevant, but my contribution is to say that it is also important to point out the two forms for presenting visual information on screen, and to see them as equal in status to how we organize other types of screen-based information. Nevertheless, in light of how I observe digital comics today, the umbrella term 'screen-based comics' covers both the analogue format and the digital format. I also suggest rephrasing the terminology in point 1, and add an alternative perspective in point 2:

> 1) The screen in digital comics could be described as 'a fixed window' and as a 'mobile window'.
> 2) The ways of presenting information on screen could be described as 'an image stream' and as 'spatial models'.

In the first statement, I switch ‘page’ with ‘window’ and focus on the fixed and the mobile properties. According to Alberti’s window metaphor, the screen would be a window in both categories. The second statement is not a re-phrasing but a supplement to McCloud’s way of organizing information. Statements 1) and 2) stand in a conceptual relation: the image stream is related to the fixed window, and the spatial models to the mobile window. These are not fixed forms, however, so can be mixed together, an aspect I will address later in this chapter in the section called ‘The Computer’.

Ann Friedman’s book *The Virtual Window* (2006) has made me look at comics in an alternative way. Whereas a physical window frames our perceptual view, the window metaphor in a computer’s graphical user-interface refers to sub-screens within the screen of the computer (Ibid., p. 2). The main screen of the computer is traditionally associated with a workbench or desktop, as it is called in the most common operative systems (Microsoft’s Windows and Apple’s iOS). Such a desktop is the space where sub-screens or windows appear, and these sub-screens enable us to access folders, documents, text, images and so on. This structure with multiple windows within windows is also a fitting description of the structure of most comics, whether printed or screen-based. If I see the digital comic from a sub-screen perspective, what would it look like?

When I count the spaces I observe in-between the windows in a digital comic, I find in total four levels of spaces, and three levels of windows. By ‘total’, I mean that different comics can have different sets of levels. The levels I present under are those I find most common:

- The real world, our space
- The digital desktop, virtual space (most relevant for webcomics)
- The negative space, virtual space (where panels are arranged)
- The fictional space, virtual space

McCloud (2000) introduces the metaphor of the infinite canvas. Where would this concept fit in this picture of levels? The infinite canvas builds on the principle of a numerical representation of images and space, which I will address in the section on the computer. This digital non-physicality opens up for unlimited content. It is often illustrated with a never-ending comic scroll, or an open surface that never ends. But I interpret McCloud as also including networks of hyperlinks, which can include fixed window presentations in addition to mobile window presentations. I also see the infinite canvas as having the ability to be both 2D and 3D. I have previously always thought of the infinite canvas as the negative space with a mobile window, but based on this analysis, I think it is more plausible to think of the infinite canvas as a metaphor for the virtual space in new media. The virtual space will, in my sub-window perspective, include both the negative space and the fictional space.

'Negative space' is an established term in the fields of visual art and graphic design, and I find no argument for changing it. The negative space in a digital comic is not just an empty surface; it can also be an empty three-dimensional space. The size of the negative space and its limitations are decisive for what format the digital comic has, just as the size of a printed page in a traditional comic decides the books format.

The four spaces that I have highlighted in this section are divided by sub-screens. Despite the separation, the spaces can interact with each other. The barrier between these sub-screens can be called 'the fourth wall', a term from theatre, which describes the concept of the invisible wall that separates the stage from the audience (Scavenius 2007: 277). An example of how the term is ordinarily used is in the idiomatic saying 'breaking the fourth wall', which means that fictional reality and our reality interact. A classic example of this is when an actor turns to the camera and speaks directly to the audience. This term is also relevant for comics, where the most common way to break the fourth wall is when characters or objects pop out of the panels. The negative space actually represents an extra space in-between the comic and the reader/audience, and it is something that film and theatre traditionally lack.

In digital comics, the fourth wall can also be broken on a technical level. An example is scroll activation, where the action of scrolling down a page, a motion running through the panel space, affects and activates motions in the fictional space (Video 29 in chapter 2) Motion controls can also break the fourth wall, as I do in my comic *Close, Closer, Closest*. There I use motion controls to affects the illustrations and to connect the real world to the fictional space (Video 114). Another idea for how to break the fourth wall, one which I have thus far not found a reason to use, would be to have the comic collect information from Internet or other real-time sources such as GPS. With this strategy, the comic could have the same weather as the weather where the reader is. If it rains, it rains in the comic, if it snows it snows. Real-time information is an aspect Lev Manovich introduced me to through his book *The Language of New Media* (2001), and I will refer to it again shortly.

In *Sound of the Aurora*, I used real-time information in the real space that affected the fictional space. I did this by using a filter. The term 'filter' denotes an overlay effect that can be added on top of any layer, also on the screen of a digital comic. These visual effects are used in film and animation for colour manipulation and effects and may also be used in digital comics for the same purpose. I used a filter in *Sound of the Aurora* when I projected the comic onto a textile; when wind blew across the textile, it created waves in the image.

At this point it is worth mentioning another system for addressing levels in a visual narrative. The concept 'diegesis' is well-established in film and narration theory and points to where the narrated events and situations occur (Prince 2003: 20). There are several diegetic levels, but the most relevant in this context are the diegetic, non-diegetic and extra-diegetic levels. In film theory, the non-diegetic level is a level where narrative content that is not present in the fictional reality can exist. This can be sound, text and image. Non-diegetic sound can be a narrator's voice or a film soundtrack. Examples of non-diegetic text are expositions, titles, and credits. An extra-diegetic level would pertain to content that is not part of any diegesis (Ibid., p. 20). To give an example, in my own comic *Close, Closer, Closest*, a menu that can pop up whenever the reader likes could be described as extra-diegetic (Video 115).

Should I use the established diegesis rather than the sub-screen map when conceptualizing digital comics? I think both are useful. The concept of diegesis offers a neutral-level system that relates to fictional storytelling. The sub-screen map, on the other hand, is more specific to digital comics and makes it easier to identify, locate and plan the vast operations, properties and formats in a digital comic. The sub-screen map shows the role and position of the infinite canvas in the structure of the digital comic. It defines a space between the fictional reality and our reality, which is the negative space. With these levels defined and the notions of filters and the diegesis, we end up with a terminology fitted to describe my comics on a theoretical level.

Another theorist who has changed my view on digital comics is Lev Manovich. I think his theory in *The Language of New Media* (2001) continues where McCloud's *Reinventing Comics* (2000) stops. Manovich (2001: 95–99) describes four types of screens:

1. The classic screen
2. The dynamic screen
3. The realtime screen
4. The interactive screen

The classic screen is the traditional static picture. Manovick defines it thus:

> …the existence of another virtual space, another three-dimensional world enclosed by a frame and situated inside our normal space. The frame separates two absolutely different spaces that somehow coexist. (Ibid., p. 95)

This definition corresponds well with the window metaphor and the levels of the digital comic that I described earlier. The second type, the dynamic screen, which can show an image that changes over time, can show motion and spatial movement as we know from film and animation. The third is the interactive screen: you gain

access to the content on the screen by using some kind of control mechanism such as a keyboard, mouse, joystick, touch screen or virtual-reality goggles that let you move around in a virtual world and interact with graphical objects. The fourth screen is the realtime screen, and like a live web cam or radar, it captures images that only exist in the present.

I interpret the types of screens Manovich describes as abilities of the modern screens we know today. And since the art form of digital comics is screen-based, I would like to suggest that the four screen types show four possibilities of the visual expression of digital comics:

1. Static visuals
2. Dynamic visuals
3. Interactive visuals
4. Real time visuals

As I will mention in the next section on the computer, the principles of new media such as modulation make it possible to mix and intertwine these abilities. At the same time, each ability can also mark a main direction in digital comics:

1. Static visuals: digital comic books such as those sold at Comixology (Video 116).
2. Dynamic visuals: motion comics (Video 117).
3. Interactive visuals: hypercomics and game comics (Video 118).
4. Real time visuals: augmented reality comics (Video 4 in chapter 1).

The variations within each of these and how you combine them lead to diversity in digital comics. I focus on dynamic imagery within digital comics in this artistic research, but all the abilities and directions are relevant and must be considered when I make a digital comic.

The computer

The third parameter of digital comics is what makes them digital: the computer. Digitized or computerized media are called 'new media' in media science; digital comics are therefore a form of new media. The term 'new media' comprises all types of digital media: text, sound, static images, moving images and spatial constructions (Manovich 2001: 19). Diversity was one of the first things I noticed when I tried to find an entry point to digital comics. I wanted to find theory on why digital comics was so limitless and diverse. Manovich describes five principles of new media that I think also can be used to describe the nature of digital comics.

1. The principle of numerical representation

   A digital comic is constructed using a digital code that can be programmed and manipulated through mathematical algorithms. When a drawing is digitized, it is transformed from continuous data to discrete data. 'Discrete' in this context means that the data is no longer physically available, but in return it is possible to create random access to this numerical code that can form a comic through computers and digital networks such as the Internet (Ibid., pp. 27–30/52). Discrete data, which has no physical limits, corresponds well with McCloud's term the 'infinite canvas'. Because of these non-physical limitations, a digital comic can be both a 2D and a 3D experience. The numerical representation and coding open up for non-linear comics based on hyperlinks, for instance hypercomics and game comics.

2. The principle of modularity

   A digital comic consists of independent units, or modules. The traditional comic consists of two modules – image and text – but in the new media, these are co-existent with other modules such as sound, film, 3D and user-interfaces. These units are built with even smaller units such as letters, pixels and Bassierre-curves, which take us all the way down to the basic unit, namely, the numerical binary code (Ibid., p. 31). The principle of modularity means that the building blocks of digital comics are not restricted to fixed images and text as in print, enabling me to create a digital comic with more

modules than would be possible using traditional comic media. It is also these new modules that transform the comic into something more than 'just a comic', and I prefer to call it a comic hybrid.

3. The principle of automation

   Automation is the mechanics of the mathematical algorithms used in coding. Algorithms are computer operations programmed to run automatically. They are present in the structures that bind together the modules, but also in the module operations and can be used to perform or manipulate content (Ibid., p. 32). For example, the operation that makes a gif-animation stop or loop is automated, and the film playing at 30 frames per second is another. A more complex example is a digital comic that uses augmented reality. In this case, the camera is programmed to automatically recognize visual data from reality, and, using it as a reference, to mix screen graphics with real-time images. An example of this is the comic book *Modern Polaxis* (2014) by the Australian comic artist Sutu. An alternative example of automation, one which I use in my own comic *Close, Closer, Closest,* is the operation of recognizing whether a reader speaks English or Norwegian.

4. The principle of variability

   Variability is a result of the three previous principles. I observe variability in form from comic to comic, but also that a digital comic form can change over time. The differences from comic to comic can be subtle, as for instance the difference between a comic with interactive animation and one with automated animation. The differences can also be more distinct, as for example when comparing a linear reading experience of my own *Close, Closer, Closest* with Daniel M. Goodbrey's game comic *The Empty Kingdom* (2015), which includes exploration as part of the experience (Video 3 in chapter 1). Another aspect of variability is that a digital comic can be changed at any time with an update, or exist in potentially unlimited editions (Ibid., p. 36). There are re-edits, quality upgrades, error corrections and sometimes even entire changes

of content. Nothing is written in stone.

While performing my comic *Sound of the Aurora,* I was able to experience this principle myself. In-between sessions I changed it by adding content. I also edited the comic live, during the performance, which created a subtle form of variation. Rather than being fixed, the comic is still evolving after the premiere. It is as if it only exists when I perform it. But I understand that variability is not always positive, and the negative aspects raise ethical questions about the making of digital comics. I will not address this issue in my artistic research, but the principle of variability makes me wary about the differences between correcting, maintaining and actually changing already-published and purchased material. At the same time, I think the variability in my live comic performance *Sound of the Aurora* makes every session special and non-repetitive for audiences who see it multiple times, even though the story is the same.

5. The principle of transcoding

   The fifth principle, transcoding, is the communication between the different coding languages inside a computer. There are two levels of computer language: the language the computer uses internally and to communicate with other computers, and the language the computer uses to communicate with the user (Ibid., p. 46). Transcoding is like translation. As a visual artist, I am not in direct contact with these kinds of computer activities, but my programmer uses different coding languages when he constructs my comics and transcodes them to fit the iOS system of an Apple iPad.

The computer is the physical framework for virtual phenomena, and it is what makes screen-based digital comics a new medium. But this medium is not fixed because publications and productions can change, and the variability in form can be huge from comic to comic. Such modularity lowers the threshold for the already-established comic art form to be mixed with other art forms such as film, music,

games and so forth. So when does a comic stop being a comic? I think the answer is when the comic gains a module beyond text and images, as for example sound or animation. As such, it is no longer 'pure' but becomes a hybrid. I think the art form of digital comics hosts both pure comics and hybrids. Even if the boundaries between them can be subtle, the hybrid will still represent an alternative and experimental direction, and the pure digital comic will continue as the mainstream. But there is still great variability in the pure digital comic, and I see the hybrid forms as expansions of the pure digital comic.

Interaction

In the first section of this chapter, 'Fundamental Parameters', I suggested that interaction – that is, the reader's interaction with the artwork, also called interactivity – was the fourth essential parameter of the digital comic. Interactivity is also seen as one of the properties of the modern screen (Manovich 2001: 102). In my two comic projects *Close, Closer, Closest* and *Sound of the Aurora*, I approach interactivity in different ways. For any digital comic, regardless of whether or not it is a reading experience, the creator must take into consideration interactivity and choose the level of interactivity the production is going to have.

> All art is an interaction between the viewer and the artwork…
> (Dixon 2007: 559)

Steve Dixon, in his effort to structure a discussion on the wide field of theatre, dance, performance art and installation, suggest four levels of interaction in such works (Ibid., p. 563):

1. Navigation
2. Participation
3. Conversation
4. Collaboration

One of Dixon's conclusions is that the concept of play (as in games) is not a distinct level of interaction because it uses combinations of these four levels (Ibid, p. 597). He also points out that it is not a perfect model, that the boundaries between the levels can be diffuse, and that the levels are mostly combined in interactive works. Despite this, he finds it useful to think of them as anchor points when discussing interaction. The levels of interaction also have increased complexity, with the first level, navigation, simply concerning finding one's way through the content. When reading a comic, regardless of whether it consists of pages, panel delivery, cinematic panels or a spatial scroll, the reader needs to navigate through the content to read it at all. I would therefore say that navigation is an activity related to reading, even if it is in a book or on a screen. Such reading requires activating buttons, going back or forth, deciding the path. This is what Dixon calls the simplest form of interaction (Ibid., p. 566).

The second level of interaction is participation, and it allows a user to affect the outcome. Typical models for this kind of interaction are the voting structures found in dialogue in role-play games. The user chooses options that affect the progress by activating alternative endings to the game. In comics, the traditional path is a linear story through which the reader navigates. A non-linear story gives the reader the possibility to follow multiple paths, or, if the story is an open map of panels on a large canvas, the reader/viewer can freely roam through it. Comics that have nonlinear formats are called hypercomics (Goodbrey 2017: 87), and comics that contain game elements which allow the reader to explore or solve puzzles are called game comics (Ibid., p. 123). Both of these digital types of comics require participation. How the story turns out is in the hands of the reader. In the game comic, the reader must explore and solve puzzles to progress, as in Goodbrey's *The Empty Kingdom*. Another good example is the computer game *Mass Effect 2* (2010, by EA Games). This computer game accommodates new players by starting with a comic that recaps the storyline of *Mass Effect 1* (2007). During the recap, new players make choices which affect the story when playing *ME2*. Those who have already played *ME1*, however, do not need the recap comic, because the settings and data recorded from their playing the first game are transferred to the sequel *ME2*. The sequel thus

functions as a substitute-*ME1* for newcomers, while at the same time allowing experienced players to launch right in and make choices based on their previously recorded data.

Conversation and collaboration are rarer types of interaction in comics. Conversation would require a live performance or a complex artificial-intelligence programming. Collaboration, however, is a type of interaction which I myself have observed. The artist Kim Holm from Bergen had a webcomic project called *Diary of a Space Monkey* (http://spacemonkey.no), in which he encouraged readers to suggest what would happen next. Each week he chose some of the suggestions and made a voting poll. This digital comic used collaboration when Holm invited readers to act as co-authors, also enabling them to participate by voting on suggestions. Holm, meanwhile, retained editorial power by controlling the content of the voting poll and of how a suggested direction was to be executed.

Dixon's levels of interaction help me see how the audience can get involved with my comic art. Examples are the reader navigation in *Close, Closer Closest*, and participation when the reader can control the animation (Video 103 in chapter 3). I also use collaboration when I work with musicians to perform *Sound of the Aurora.* They improvise while I do live editing. Making *Sound of the Aurora* and during the process of its first draft, called *I Don't Know Grandpa*, I thought a lot about navigation and the reader's experience. I developed a perspective on the status of the reader when reading a digital comic, which I present in the next section.

Reader control

Mark Waid, in a talk in 2013 called 'Tools of Change for Publishing', said that his 'north star' when working with new digital formats was reader control. Reader control is related to reading and the reader's control over the acquisition. Making a parallel to Dixon's theories in the last section, reading is classified as navigating with eyes and hands. With a traditional printed comic, the reader has full reader control. Nevertheless, when adding time-based media into the mix of components in digital comics, reader control is disturbed or challenged.

This could mean that reader control is not a matter of course in a digital comic. How, then, can it best be understood? I made a scheme after performing *Sound of the Aurora*, and concluded that three concepts of reader control are relevant for the digital comic:

1. Full reader control (full interaction)
2. Partial reader control (partly interactive and automated)
3. No reader control (full automation)

1. Full reader control

   Full reader control concerns comics where the reader is in full control of navigating through the presented narrative. The reader's eyes browse the panels, receive the images and perceive the text; the composition of motifs and the relationship of the images create closure in the reader's mind. The panels, compositions and text create the rhythm and the pace, but the reader controls the tempo and advances at will. This category cannot contain automated time-based media, since such media remove the full control of the reading.

   Despite this, I have experienced that programming allows a comic artist to include motion in this category through scroll-activation. I choose to call it 'interactive animation' since it can also be used without the action of scrolling. Interactive animation is not automated and played by a video player, but is activated by the reader's navigational interaction. This is possible thanks to highly sensitive navigation controls such as touch screens and pads, joysticks, scroll-buttons and gyro-technology or sensors that allow motion controls. However, it is also possible to introduce a sense of animations in sequences that use traditional click-and-activate controls. By using cinematic panels, the overlapping images are experienced as 'in motion' when the images overlap each other. Cinematic panels contain closure and do not show full motion. (You can read more about this presentation form in chapter 3.)

Examples of digital comics that differ in form but that all have full reader control:

The Long Journey (2013) by Boulet
The Eighth Seal (2013) by Tynion IV and Rock
Batman Year One (publication date unknown) by Miller and Massucchelli
Hvorfor Ananas heter Ananas (2014) by Jenny Jordahl

2. Partial reader control

   The category of partial reader control includes comic hybrids that mix full reader control and no reader control. These comics use automated animation in the presentation, but they only appear as fragments, or portions, and the reader still must interact to make the story progress. Examples of digital comics that differ in form but that all have partial reader control:

   Outside the Box (2002) by Brendan Cahill
   Nico and the Sword of Light (2013) by Studio NX and Imaginism Studios
   Ovis Ariesaurus Rex (2015) by Fredrik Rysjedal
   Metal Gear Solid – Digital Graphic Novel (2006) by Konami
   Close, Closer, Closest (2017) by Fredrik Rysjedal

3. No reader control

   No reader control concerns digital comics that are presented in an automated film format, or comics that are performed in front of an audience. Having no control makes the reader a spectator. Film is the first true multimedia (Manovich 2001: 50, 51) because, from its beginning, it has had the ability to present a time-based presentation of a static sequential narrative, for instance a comic. This is why we have the digital comic type called motion comics. In a performance comic, by contrast, a performer plays the role of the reader and portrays the comic to the audience. This scenario actually uses two sets of reader controls. The first performer, the reader, navigates through a comic that can possess all three types of reader controls. Members of the audience have

no reader control; they are spectators, not readers. This is the case until the performer invites the spectators to interact. Then they can receive and perceive the information on the screen just as in the case of full reader control, but they still lack control over progress, time and tempo. Since the performer is reading and controlling the digital comic, the audience will most likely associate the experience with a film, because their role is similar to that of screening a film. Many who talk about my performance comic *Sound of the Aurora* refer to it as a film. Just as with the motion comic, I think it is fine that it is hard to define the work and to experience ambiguity over whether it is a comic or a film. It operates in a liminal zone between film and comics, and I think it may be up to the creator to define whether the intention is for it to be a film or a comic. In light of the comic performance, I now view the traditional reader as a performer as well, given that reading could be seen as an individual personal performance. Examples of digital comics that differ in form but which all lack reader control:

Watchmen the Motion Comic (2008) by Warner Bros
Sound of the Aurora (2014) by Fredrik Rysjedal

In conclusion, I must say that the most important aspect of my reader-control system is the acknowledgement that a digital comic can be automated and have no reader control, but that makers can also concoct various combinations of automation and reader control. Since the norm of comics and digital comics is that the reader should have full control of the acquisition, I think this is an important point, for it adds force to the notion that digital comics can be hybrids as well as pure comics.

Personal Reflections

There were four turning points in my process of exploring the digital comic, and I would like to write about them in this final section. This chapter is the result of a need to base my research on a foundation that can explain what a digital comic is. McCloud (2000) has contributed to this foundation, but only the two last chapters of his book address the actual form of digital comics. He presents aspects very briefly,

which means that the aspects can function as stepping stones for further research, which is what I have done. A turning point in this orientation happened when I understood that I had to reflect on McCloud's two ways of presenting a comic and information on screen. The way he presents them in the book did not give me a foundation that had room for my field of interest, motion. By reflecting on the concepts and rephrasing his theory by adjusting and augmenting it a bit, it became a solid base for my approach to motion in comics.

Another turning point was when I read Manovich's (2011) theories, as they helped me understand digital comics on a level that made me see the properties and therefore more of the limitations of the medium/art form. By adding his perspective on the screen, the computer and new media, I had more control over what I could achieve. Before this point, I felt I was in a fog and had great difficulty navigating and seeing how a digital comic was put together.

A third turning point was my research on the magic lantern, an entertainment form predating the computer. It gives the term 'screen-based comics' added meaning for me. The screen turns out to be a more important parameter than I initially imagined. In formats where the screen is indispensable, it is also uniting. The conclusion that comics on screen can be both digital and analogue (e.g., a drawing on acetate that is projected onto a screen via an overhead projector), and that 'screen-based comics' can serve as an overall term, contributes to defining the landscape around the digital comic.

The final turning point I will highlight is Friedberg's (2006) presentations of sub-screens. This inspired me to create a sub-screen perspective on digital comics, which became a tool that made it simpler to write about my own digital comics. It helped me locate and assign effects and motions to the fictional space, the negative space and even our real space. Since the sub-screen perspective is not limited to digital comics, it can be used when describing all types of comics. It is an especially practical perspective to refer to when discussing digital comics because the different levels of screens can interact with each other.

This chapter has been challenging to incorporate into my artistic research project because it takes a step aside from the primary research and my digital comics to do some fundamental reflection. Nevertheless, I find my conclusions relevant for my research focus, which is to explore concepts of motion in digital comics. Since the chapter does not directly concern the two digital comics I have created, I decided to position it after my presentations of the two digital comics. I see it as a strength of this project that I took time to investigate and define the digital comic; if I had not done so, my perspective and presentation of the concepts of motion would have been very different. Before developing the ideas and reflections included in this chapter, I had used mapping to reveal the different types of motion and presentational forms. My focus was on modulation and how various techniques could be mixed together. This approach turned out to be inadequate for gaining a clear perspective of the digital comic, and I discarded it medio 2014. The drawback of writing this chapter was that it was quite time consuming to do these reflections and to come to the conclusions. If I had had this base from the start, I believe my research on motion in my digital comics could have gone a bit further.

Chapter 5: Conclusions

In this chapter I summarize my conclusions from this artistic research project. My research questions have been as follows: What are the concepts of motion in digital comics? What types of motion can be used in comics, and how does motion affect the presentation, the story and even the reader/viewer? My main contribution to digital comic research comes through having created two new digital comics and using them as vehicles for reflecting on their components, the techniques used to create them, and how they relate to other works and existing terminology and theory. Through this reflection, I provide new perspectives, coin new concepts and augment existing definitions for phenomena in the relatively new field of digital comics. I start this chapter by reviewing the findings that I think are the most important, then close with thoughts on future research on motion in digital comics.

Close, Closer, Closest

By creating *Close, Closer Closest* (2016), I explored the *fixed window* and the *image stream*. The most important outcome of these explorations was to identify, define and name ‘cinematic panels’ as one of three digital-comic presentation forms using the image stream. The other two – ‘the page’ and ‘panel delivery’ – were already defined by others before my research started. The term ‘cinematic panels’ is based on the structural form of the phenomenon, which is the same as one finds in a traditional film. Cinematic panels make it possible to see an image move and change within a fixed window. They can show a simple form of animation, yet in the reader’s acquisition of them, the mental closure still takes place between images, just as is the case in traditional comics published on paper. I have concluded that cinematic panels and panel delivery are well-suited presentation forms for communicating to large groups of people, due to their ability to control viewers’ focus. This stands in contrast to the individual reading experience a traditional comic is designed to give. Cinematic panels can be presented in two ways: with either instant or dissolving transitions. I identify ‘broken motion’ as a potential problem that occurs in cinematic panels, but conclude that it can be accepted by the reader if it is used consistently.

I have also explored the concept that Daniel M. Goodbrey has chosen to call ‘panel delivery’. I have, through my investigations, suggested four models of panel delivery that relate in different ways to how the panels represent time. The first model could be compared to the mobile-frame concept ‘guided view’: all panels of the hyperframe are visible, but the present time is highlighted. The second model feeds panels onto a screen, presenting them in a format that causes them to represent the present and the past. The third model only shows the future and the present in the panels on screen at a given time. In the fourth model, all the on-screen panels need to represent the present time, just as in a split-screen segment in a film.

I have also found that panel delivery and cinematic panels overrule ‘reading direction’. This is an important concept in traditional comic reading, and it relies on a culture’s established pattern of reading. The image-stream feed, however, controls the focus of the reader/viewer, which also makes it possible to create compositions and sequences that do not need to rely on reading direction.

The focus of the reader/viewer has been an important subject for reflection in my research. When viewing a traditional automated film that runs at a specific frame-rate per second, the viewer becomes a spectator with no control over his or her acquisition. A traditional comic, by contrast, has a type of content that requires the viewer to be a reader who interacts with the content during the acquisition process. This interactive acquisition I call ‘reader control’, and I will say more about it shortly. But here are my findings regarding reader/viewer focus: when viewers of a digital comic are given some control over the acquisition process, they don an interactive role similar to that of readers of traditional comics, deciding for themselves what to focus on and the duration of their attention. This is similar to how an interactive segment in film (e.g., a text that must be read) turns a relatively passive spectator into a reader. A film, meanwhile, can present a comic sequence in automated form, thus turning the formerly interactive reader into a relatively passive spectator.

Sound of the Aurora

Through my work with *Sound of the Aurora* (2014), I explored *the mobile window* and *spatial motion*. In researching spatial motion for digital comics, I divided the topic into the two categories: 'motion graphics' and 'mobile framing'. Motion graphics are graphics that move in fictional space and negative space. In fictional space, the elements that move can be figures, objects and the environment. In negative space, one finds panels and even objects 'breaking the fourth wall' (that is, the barriers between the levels of the digital comic, the imaginary and invisible walls through which the reader observes the fiction). When breaking the fourth wall, a fictional character or object breaks out of the world of the fiction and into the negative space, or even into our space, the space of the reader.

Moving or 'flying panels' in negative space are the spatial equivalent of panel delivery. This means that panel delivery can be made through an image stream and motion graphics. With respect to motion graphics in fictional space; I find a difference between moving yet visually static objects (e.g., a ship) and dynamic cut-out figures (e.g., a running person) in moving graphics, inasmuch as the static objects remain realistic representations, while the dynamic cut-out figures have a more stylized representation of realistic motion. Through the reader's mental closure, all motion in a comic sequence gives the impression of realistic full motion. I therefore conclude that classic animation and realistic motion graphics are more closely related to traditional comic sequences than is stylized cut-out animation, at least when it comes to the realistic representation of movement. This would be the case despite motion graphics sharing a static expression with traditional comics.

Turning now to mobile framing: I found the mobile frame able to expose panels in the negative space, and it could also expose figures, objects and environments in the fictional space. I found three ways of working with a mobile frame in a digital comic: with a 'fixed track', with a 'dynamic track' and with 'free mobility'. The mobile frame can expose content made of 2D images, 2.5D images and 3D images. It makes it possible to create the visual effects of the hand-held motion-picture camera and parallaxing. I found that a mobile frame can easily create sequences in fictional

space. This is done simply by moving the frame to a new space within a sequentially-organized fictional space. What is more, when I used a virtual camera inside a 3D-illustration, I discovered that what I saw could be associated with a *tableau vivant.* 3D-illustrations are a more sculptural approach to creating digital comics, given that the fictional space can be observed from several points of view. 3D-illustrations incite the reader or performer to move in order to observe phenomena. In the 3D-section of *Sound of the Aurora*, I combined a 3D fictional space and mobile framing with an image stream presentation. The combination is a presentation form I have never seen before in digital comics.

Spatial motion in a digital comic can also be physical and take place in real time. I projected *Sound of the Aurora* onto a dynamic textile screen that functioned as a filter for the projected images. When I turned on a fan, the wind from it blew across the textile and created waves that merged with the digital content. Real-time motion is motion that is not recorded/programmed and automated, but happens there and then and can be implemented in reading experiences as well as performance experiences. *Sound of the Aurora* is a performance comic – a screen-based art form that is still not well established, but which has roots in the *laterna magica* (magic lantern) tradition that emerged in the late 17th century. Magic lantern performers also combined motion with sequential static images. The performance-comic art form can also share similarities with other contemporary expressions such as VJing and live cinema.

The Relationship between Comics and Film

Drawing on screen theories by Lev Manovic, I define four visual research fields based on the four visual properties of the digital comic: static visuals, dynamic visuals, interactive visuals and real-time visuals. I categorize my own research within the field of dynamic visuals.

'Dynamic visuals' means the visual material appears to move. Not surprisingly, then, traditional motion picture films are also in the dynamic visual category. But how are traditional films different from dynamic comic visuals? I conclude that in the full-

motion film, the viewer's mental closure takes place in-between cuts, whereas in a dynamic motion comic, closure takes place in-between the frames. Film approaches the traditional comic through techniques such as limited animation and the split screen. But with dynamic visuals in comics, the boundary between the two can blur and ultimately be lost. This often occurs when hybrids are created from established art forms. I follow Aaron Meskin, who, in his article 'Defining Comics?' (2007), concludes that the artist's intention should be considered when defining a piece. In my case, this is relevant in the discussion of whether some of my works are comics or films.

The Digital Comic

In my research on what a digital comic is, I conclude that it has four parameters: *the comic*, *the screen*, *the computer and interaction.* These parameters are indispensable and constitute the fundamental framework of the digital comic. I found the screen to be of such importance that even if the computer did not exist, we could still have screen-based comics. I have therefore suggested that 'screen-based comics' can be an overall term that encompasses both analogue and digital comics.

I have used Scott McCloud's theories on how comics present and organize information on screen as a basis for my definition of the digital comic. I have adjusted some of his metaphors so that they become more inclusive, also for properties such as motion. His terms for presenting a comic on screen – 'the page' and 'the window' – I suggest could instead be called 'the fixed window' and 'the mobile window'. I have taken recourse in his technical concepts 'hyperlinks' and 'spatial models' and made a parallel theory using the concepts 'image stream' and 'spatial motion' to account for the two ways in which to present visual information on screen.

As mentioned in the previous section, I have found the screen theory of Lev Manovich to describe the properties of the digital comic. His theorization of the modern screen, the classic screen, the dynamic screen, the real-time screen and the interactive screen create a perspective that makes it easier to see the potential of digital comics. It also shows that motion, which is represented through the dynamic

screen, is one of four properties which I think confirms motion's rightful position in digital comics. I have also used Manovich's five principles of new media to explain the nature of digital comics. Numerical representation and modulation help account for why the boundaries of old media are erased, and why motion can be a module of a digital comic. Variability goes far to account for why digital comics are so diverse in form and never fixed: they can always be updated, changed or made in unlimited variations/editions.

Ann Friedman's presentations of sub-screens inspired me to create a sub-screen perspective on digital comics which helped me define its levels of screens and virtual space (Figure 8). This perspective or model has become an important tool for me when I write and talk about digital comics. When conceiving of the structure of a comic in terms of levels, I realized there was a need for a neutral term to describe the level or space in which panels are arranged, because 'the page' is only one of several presentation forms in a digital comic. I therefore named the space or level in which panels are arranged 'negative space', based on the graphic-design term 'white space' in page layouts. A traditional set of levels would therefore be as follows: 'our space', the 'negative space' and the 'fictional space'. By defining these three levels, it becomes possible to map the techniques that are used to create digital comics.

A final aspect that must be mentioned with respect to my research on digital comics is 'reader control'. I have created a schema for understanding reader control in light of *Lev Manovich's* fourth principle of new media, namely automation. I suggest three forms of reading control in digital comics: full reader control, partial reader control, and no reader control. This scheme's purpose is to make artists aware of automation and the reader's role in the acquisition of a digital comic.

Future Research

My artistic research has involved creating two new digital comics and using them as vehicles for developing a theoretical perspective and conceptual apparatus for the discourse on digital comics. My research builds on the research of others, and with its contributions, provides starting points for yet others to do more research in future.

I look forward to seeing how the perspective develops and eventually changes through time. The perspective I created in chapter 4 was necessity for me to understand how to make a digital comic and how to find the position of motion within its structure. This was not my main mission, however, so I would like to see future research projects address this fundamental topic and focus on the fundamental parameters of the digital comic.

Using the perspective I have developed, my artistic research has addressed the field of dynamic visuals in digital comics. The researcher Daniel M. Goodberey, from the University of Hertfordshire in the UK, has addressed the interactive field in his research. I hope in future to see more research on real-time content in digital comics, as this is a property and a field I became aware of during this research project.

There is also a need for more research on the dynamic visuals of the digital comic, in order to discover the aspects I have left out, but also to narrow the focus on specific topics. More research is also needed on panel delivery and spatial motion such as motion graphics. My choice to explore the full-screen panel resulted in me paying less attention to panel layouts and negative space. Mobile framing is also a topic that I would like to see more research on. For example, I found few digital comics that experimented with a dynamic track on the mobile frame, an approach I look forward to doing more with myself in future webcomics.

I have only scratched the surface of 3D comics in my artistic research, but developments in VR-technology have accelerated during my research period, so it is natural to expect that digital comics in 3D will become a more common subject for future research, just as Scott McCloud concludes in *Reinventing Comics* (2000: 212). I also hope to see research on performance comics. I would like to see projects that develop new performative works, but also academic research, in order to find out more about the history of this alternative direction. The history of digital comics in general is a topic that must be prioritized in the future. The lack of alternative perspectives on the historical development has made my research period especially

challenging. Historical documentation and analyses are fundamental necessities to support future research in the field of digital comics.

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