The Director's Method in Contemporary Visual Effects Film: The Influence of Digital Effects on Film Directing

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Abstract

The director' s method – meant as the organisation of the filmmaking process – is usually characterised by common procedures such as work on the script, shot design and the actors' performance. For films involving a large-scale use of digital effects, directors consistently approach such procedures with a particular attitude dictated by the digital pipeline, the step-by-step technical procedure through which computer-generated images are created. In light of this, the use of digital effects might influence the director's method.

This thesis aims to define what is considered to be a consensual methodological approach to direct films with no or few digital effects and then compares this approach to when such effects are conspicuously involved. This analysis is conducted through interviews with working directors, visual effects companies and practitioners, and integrated with the current literature. The frame of the research is represented by a large spectrum of contemporary films produced in western countries and which involve digital effects at different scales and complexity but always in interaction with live-action. The research focuses on commercial films and excludes computer-animated and experimental films.

The research is intended to address an area in production studies which is overlooked. In fact, although the existent literature examines both digital effects and film directing as distinct elements, there is to date no detailed analysis on the influence that the former has on the latter. In light of this, this dissertation seeks to fill a gap in production studies. The research looks to argue that the director's method has been changed by the advent of digital effects; it describes a common workflow for digital effects film and notes the differences between this method and the method applied when digital effects are not involved. This is of significant importance for a film industry which is heavily dependent on such effects, as the analysis on contemporary filmmaking reveals.

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Preface

In this thesis, feminine pronouns are used throughout to enhance readability (e.g., “her”, “she” instead of “him/her”, “he/she”) making exceptions to quotes taken from literature and interviews. Quotes from interviews and published sources are indented and separated from the body of the text when they consist of more than one sentence or are four lines or more in length – shorter quotes are in-line within the textual body. Quotes from interviews conducted by the author are reported in their original language as footnotes when not in English. All the interviews are referenced in the Bibliography while information on the interviewees can be found in the Appendix – List of Interviewees. Quotes taken from the Internet are listed under Internet References. The Glossary reports and clarifies the terminology used throughout this dissertation. Films are cited in italics with the director and the year following in brackets. Books are cited in italics.

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I dedicate this work to Nonna Peppina who talked to me in my darkest moments. Wherever you are, I hope you are proud of me.

Author’s Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

Introduction

In *The Execution of Mary, Queen of Scots* (Clark A., 1895), which is considered the first known film to have used visual effects, the actress is replaced by a mannequin through the use of a substitution shot before the axe chops off her head. Many of the effects used on the silent screen were achieved in the same way: by stopping the camera in a static position, replacing objects on set and starting again allowing apparitions, disappearances and transformations on the screen. If in-camera editing can be considered the progenitor of visual effects, as Keil and Whissel hint at in *Editing and Special/Visual Effects* (2016: 20), editing and visual effects showed a substantial split when digital technology started to be involved in filmmaking. In fact, while editing 'has often strived to hide itself, functioning as a craft designed to foster continuity and reinforce the effect of seamlessness', digital effects have 'lent themselves to the realm of the extraordinary and the spectacular' (Keil and Whissel 2016: 1). An example of this is in the recent wave of superhero films which have invaded the Modern Entertainment Marketplace and imposed a new lucrative trend. The contemporary superhero film is designed as a rollercoaster ride where the spectacle is exalted over the narrative. Examining the rank of digital visual effects shots per film there are two American superhero films at the top: *Captain America: Civil War* (Russo A. And J., 2016) and *Avengers: Age of Ultron* (Whedon J., 2015) with around 3000 shots each. These enormous numbers show how much these film productions were pervaded by the use of digital effects and how inevitably such projects require the adoption of certain workflows and procedures to appropriately integrate digital effects with live-action footage. One of the divergent elements between using or not using digital effects is pre-visualisation – usually shortened to previs – which is a common practice for the "digital effects film", especially if important action scenes with CGI are involved. A digital effects film is a narrative feature film which consistently uses digital effects to convey the story. The difference between such a film and a computer-animated film is that in digital effects films live-action footage and computer-generated images are blended together while animated films are entirely made in CGI. For digital effects films, Keil and Whissel (2016: 20) assert that 'increased reliance on the work

done in computer-generated previsualization' has 'increasingly merged the separate craft of cinematography and editing with visual effects[1], thanks to new digital workflows'. They (ibid.: 21) add that 'Whereas throughout much of the twentieth century, editing and visual effects most often took place only after production had been completed, both practices are now a routine part of the previsualization process that precedes production.'[2] Squires (in Okun and Zwerman 2010: 17) confirms this when claiming that 'even though the majority of visual effects are done in post-production' all film production phases are important for their creation (ibid.: 17). An example of this is given by Lang (2013) who reports that, with regard to the making of *Gravity* (Cuarón A., 2013), 'because of the daunting number of digital enhancements required for each scene, Cuarón and cinematographer Emmanuel Lubezki had to do an enormous amount of pre-production work.'

The merging of practices such as editing and cinematography due to the use of digital effects has conceivably modified the director's method, a phenomenon which is surprisingly overlooked by the current literature. In fact, although the existent literature examines in depth both digital effects and film directing as distinct elements, there is to date no detailed analysis on the influence that the former has on the latter. Swartz (2005: 15) affirms that 'digital tools have helped to point the way to increasing numbers of new processes' which are changing the 'methods from which the cinema of the future will take shape' (ibid.: 15); arguably, the director's method is one of these. Buckland (2006: 32) notices that 'successful mainstream film directors internalize a series of highly ritualized skills, conventions, and habits' which are generally identified in visualisation, blocking and filming the action (ibid.: 31). In the same way, scholars and practitioners such as Proferes (see 2008: xviii), Richards (see 1992: 4), Belli and Rooney (see 2011: xvi) have described the director's method as a technical approach to filmmaking which derives from the necessity of developing a script into moving images; in other words, the method represents establishing a workflow to fulfil the director's creative vision and reach organic unity. The following analysis shows that digital effects influence this

[1] Meant as digital effects. The term visual effect is a synonym of digital effects when contemporary films are taken into account.
[2] Meant as principal photography (see Glossary).

workflow. The film director David Lynch (in Rodley 2005: 238) makes this clear, asserting that 'Morphing and Computer Generated Imaging' represent particular processes which make the director unsure about 'how much you can really see before you're locked into accepting the final product'; indeed, for Lynch, 'once you block out a digital effect, you're closing a door' (ibid.). It is for this reason that films such as *Avatar* (Cameron J., 2009) and *The Jungle Book* (Favreau J., 2016) started to involve new technologies that visualise effects in real time, a practice which aims to give more freedom to directors working with digital effects.

This dissertation aims to analyse how the use of digital effects in contemporary film influences the director's method. At a technical level, the use of digital effects imposes constraints on the production, but also offers significant flexibility to directors in designing the shots. This dualism has led directors to shape an efficient workflow which takes into account the processes required by the digital pipeline and the multitude of options at their disposal in composing the shot. This research looks to make an argument whereby the director's method has been changed by the advent of digital effects, describing a common workflow for digital effects films, and noting the differences between this method and the method applied when digital effects are not involved. The questions of this dissertation are specifically: What does the director's role entail? What elements identify the director's method for a film which does not involve a significant amount of digital effects? Does the incorporation of digital effects in a film influence the director's method? How do directors adapt their methods in directing digital effects films? And do these changes represent a fundamental change in the nature of the director's method? This research follows a specific pattern in investigating the subject. First of all, it seeks to substantiate the existence of a method for film directing when digital effects are not involved. It subsequently investigates digital effects creation in order to show what makes filmmaking involving these effects such a unique process. After this, for each phase of general film production (development, pre-production, principal photography and post-production), the research compares films with no or few digital effects with digital effects films in order to underline the differences between the two methods. The analysis is based on the current literature and practice manuals, enriched by interviews with directors and visual effects

practitioners. The frame of the research is represented by a large spectrum of commercial films produced in western countries – mainly American and Europe – which involve digital effects of different scales and complexity. In order to compare the director's method for digital effects films and films which do not rely on digital effects, this dissertation excludes computer-animated films because these have no live-action (see Bredow in Okun and Zwerman 2010: 740). Experimental films are also excluded because they do not present a consensual methodological approach that can be taken into account.

Chapter One sets out and justifies the methodological approach taken towards the research. This approach is related to the questions motivating the research and underpins the generation of data. In particular, the chapter addresses the choice of interviews as a technique, indicates why this is the most suitable choice for this research, discusses the identification of interviewees and clarifies the type of interviews used and broad topics covered. This chapter also provides a methodical account of the key areas of existing scholarship that this dissertation is informed by, draws upon, and in turn contributes to. Furthermore, it makes a distinction between academic and industry accounts, underlining the differences between the two in defining the director's role.

Chapter Two investigates the directing models for films not involving digital effects in order to demonstrate the existence of a director's method. This chapter specifically aims to demonstrate that the director's task implies constant responsibilities which compel directors to self-impose a structure of decisional steps. An example of this is represented by "visualisation" without which certain essential decisions such as location and equipment (Zettl 2012: 59) cannot be made. The chapter does not consider digital effects in its analysis.

Chapter Three describes the history of visual effects and then focuses on the creation process of digital effects. The purpose of this chapter lies in demonstrating that the use of digital effects involves unique processes. The chapter extensively investigates the digital pipeline and introduces the role of the visual effects supervisor, a department head who can be considered as the proxy director for digital effects films. The relationship between directors and supervisors is examined in the next chapters.

Chapter Four analyses the phases of development and pre-production on a technical level and underlines the impact that digital effects have on them. After this, the chapter analyses what their involvement implicates in terms of film directing. In these phases, the director is called to visually organise the storytelling in order to convey the central theme of the story. Visualisation – which is commonly achieved in pre-production – is one of the first director's responsibilities for any film (Zettl 2012: 59). This procedure is of particular significance in digital effects films because it establishes what the visual effects department has to achieve. Tools such as storyboards, previs, postvis, concept art and shot-lists are extensively used for such film productions. A paragraph of this chapter is dedicated to the relationship between directors and visual effects supervisors, which must be established early in the process.

Chapter Five analyses principal photography. In this phase, one of the director's responsibilities is to establish a communication with actors. The importance of directors adopting an understandable language is key in digital effects films where the actor interacts with computer-generated objects. The director communicates the image she has in mind and coordinates the performance in collaboration with the visual effects supervisor who can even replace her for sequences involving a substantial amount of CGI. This chapter also explores blocking and camera movement because both can be significantly affected by the inclusion of computer-generated imagery. In fact, while for films not relying on digital effects, blocking can be adjusted on set "on the fly", digital effects films necessitate strict pre-visualisation before shooting.

Chapter Six investigates post-production. At this stage, directors communicate with different figures, such as the film editor and the sound designer who have not generally attended the shooting. Virtually the same happens with the visual effects artists who, depending on the size of the crew, do not receive instructions personally from the director. For this reason, the visual effects supervisor has to be on set and coordinate all the needed procedures to gather information for the visual effects department. For digital effects films, post-production represents a stage where the shot design can be implemented and new CGI shots can be

inserted into the edit in order to convey a particular message or focus that highlight certain narrative details. Comparisons are made between coordinating the filmmaking process when computer-generated shots are integrated as narrative enhancements and when digital effects are merely involved as live-action footage corrections; this is because the two cases present substantial differences in terms of director's method.

After this chapter, the conclusion of the thesis ties together the elements analysed throughout the investigation and presents the answers to the questions motivating the research. A list of the interviewees involved in the research and a Glossary which clarifies the terminology adopted by this dissertation follow the Conclusion.

Chapter One

Methodological Approach to the Research

Questions Motivating the Research and the Method Adopted

The research adopts a qualitative method to provide insights into the problem; the adoption of such a method has emerged as appropriate to collect, analyse and interpret open–ended data. Before commencing data collection, available theory and knowledge have been accessed. An extensive literature search, which includes up to date information on the subject of the investigation, has been carried out. This pre-investigation has been key in shaping the data collection strategy and the way in which this data has been examined and interpreted. The methodological approach taken organises the whole research into five distinct steps: for the first step, the dissertation examines the topic by initially exploring the standard method of directing when digital effects are absent; the second step involves the examination of the phenomenon of digital effects in contemporary cinema; the research subsequently considers the similarities and differences of the director's method during three stages of the film production process – pre-production, principal photography and post-production – that is, the third, fourth and fifth steps of the research. This approach provides a consistent and clear structure to the dissertation, which aims to answer the following questions:

1. What does the director's role entail?
2. What elements identify the director's method for a film which does not involve a significant amount of digital effects?
3. Does the incorporation of digital effects in a film influence the director's method?
4. How do directors adapt their methods in directing digital effects films?
5. Do these changes represent a fundamental change in the nature of the director's method?

The research questions are organised in a consequential order so that the answer to each question provides elements that answer the following question. The establishment of the

director's role (first question) is a requisite step to determine the director's method for films not relying on digital effects (second question). In turn, the identification of the director's method for such films is a necessary step for a comparison with the method applied in digital effects films (third question). This analysis provides data on the changed the nature of the method which is crucial for answering the last two questions.

In order to answer the first question, the dissertation proceeds in analysing the director's task from an academic and an industrial point of view, using existing scholarship and interviews with various film professionals. This analysis, which aims to create a bridge between this research and the current literature, takes into account the ways in which the director's role has been constructed in both academic studies and industry accounts. In fact, while the former is dominated by the concept of "auteurism" and the idea of the director as a creative artist who offers a personal vision (see Cahir 2006: 88 on the influence of author theory on academia), the latter is more concerned with the industrial process which results in a particular type of product (see Guzy in Stone 2017: 345 about practitioners' perspectives on auteurism). This investigation sets the background for the following research question which involves the identification of a consensual methodological approach to film directing, specifically for films that do not involve a considerable number of digital effects. The identification of the director's method is achieved through research on directing manuals and academic literature, and is enriched by interviews with film directors. In particular, the training manuals allow us to compare the proposed methods at each phase of a film's production and provide information on the key creative relationships that occur between directors and other figures, for example, the producer, the screenwriter, the cinematographer, the production designer, the editor and the actors. This helps in establishing an idealised and general director's method which is necessary to answer the following questions. In order to investigate the influence of digital effects on the director's method, the dissertation firstly illustrates the digital effects creation process and its requirements on a technical level; the analysis aims to demonstrate that the filmmaking process involving digital effects is different from any other filmic practice. This preliminary investigation, which relies on a range of interviews with visual

effects professionals, in addition to visual effects practice manuals, purposely overlooks film directing to focus instead on the digital pipeline. Subsequently, for each phase of film production, the thesis compares directing films with and without digital effects in order to highlight how directors adapt their methods in directing digital effects films. This comparison, which involves case studies and relies on interviews with film practitioners from various departments, divulges elements that answer the fourth question; the last question is answered in the Conclusion of the dissertation, where all the analyses achieved throughout the research are tied together.

Defining Categories of Films to Frame the Research

The frame of the research is represented by a wide range of commercial films produced in western countries – mainly Europe and America – which involve digital effects at different levels of complexity and scale. In order to compare the director's method for digital effects films and films not driven by digital effects, this dissertation excludes experimental films, which do not involve a consensual methodological approach by the director, and computer-animated films, which lack live-action, making them incomparable to digital effects films. The dissertation makes a distinction between two main sets of films: those relying on what takes place in front of the camera and films which involve a manipulation of footage in order to tell a story. Indeed, film productions which are not digital effects-driven focus on what happens in front of the camera; the actor's performance and the practical/mechanical effects are key elements for such films. Digital effects films instead rely heavily on the juxtaposition of CGI onto live-action footage as a seamless merger of various layers. In *Aliens* (Cameron J., 1986) which is an effects-driven film relying both on practical effects and in-camera effects (but with no digital effects), models such as the full-sized and scale miniatures of the alien Queen, matte paintings, front and rear projections, and composites are brought together with live-action through the use of a beam-splitter. Cameron, talking about the differences between the use of digital effects in contemporary films and the use of practical effects in *Aliens*, states:

> [...] we developed a pretty good little palette of techniques that were relatively

> straightforward and inexpensive and required a lot of craftsmanship. Almost anything can be corrected or hidden or added to or enhanced with CG now. So there's much less emphasis on what's going in front of an actual camera lens [...] (Cameron in Brew, 2016)

Cameron's statement makes clear the difference between a film production without digital effects, where the director has in front of the camera all the necessary elements to tell the story, and a digital effects film, where the director cannot see the composite result prior to the post-production phase. At this point, the question as to how many digital effects a film must contain in order to be classified a digital effects film may become the subject of debate. Films which only include digital effects for some shots, as for set extensions, are not considered digital effects films by this dissertation because these projects are approached in a different way by the film's production. In fact, for such films, the digital effects department typically works on individual sequences rather than following the all-encompassing digital pipeline (see Chapter Three) which normally characterises digital effects films. An example of this is *Let the Right One In* (Alfredson T., 2008) where in one scene, Virginia, who has been bitten and infected by a vampire, is attacked by CGI cats sensing her transformation. This is the only significant (and evident) use of digital effects in the entire film which could have been completed with practical effects without invalidating the narrative. Conversely, films such as *Star Wars Episode VII – The Force Awakens* (Abrams J. J., 2015) or *Jurassic World* (Trevorrow C., 2015) are not conceivable without digital effects, as these represent the main attraction for the audience. Digital effects films produced and shot before the revolutionary *Jurassic Park* (Spielberg S., 1993) cannot be taken into account by this investigation. Indeed, as will be illustrated later in Chapter Three, digital effects were unripe then, so unable to bring about a substantial change in the filmmaking process – this is evident when contemporary digital effects films are compared to films involving mechanical and in-camera effects made in the 1980s. The creation of Industrial Light & Magic (ILM) started a phase of industrialisation of digital effects which influenced the filmmaking process and, in turn, the director's task. For films produced after 1993, this dissertation takes into account the complexity and scale of the digital effects involved in order to establish what films are considered digital effects films (see Glossary).

Impact of the Research on Academia and the Film Industry

Academic and industrial accounts analyse the director's role from two distinct perspectives. In academic scholarship, there is the tendency to identify the director as the creative genius behind the vision, the "auteur" who imposes a thematic and stylistic consistency over her films. Cahir (2006: 88) states that the "auteur" theory is important for having introduced and validated 'the worth of film studies in universities, since it legitimized cinema as discourse in a way the academic could understand'. Caughie (2001: 10) affirms that auterist critics agree on the fact that film is considered an art and that 'art is the expression of the emotions, experience and 'worldview' of an individual artist'. However, this theory is in contrast with other accounts where the director is considered a wheel in a complex machine, a "metteur en scène" rather than an "auteur". Guzy (in Stone 2017: 345) claims that practitioners, specifically directors, condemn the idea of the auteur because the outcome of the film represents the result of collaborative work. This concept is particularly emphasised in contemporary productions, as hinted at by Tashiro (in Fischer 2015: 98), who considers *Heaven's Gate* (Cimino M., 1980) the end of 'The Auteur Renaissance'. In his opinion, Cimino's 'profligate arrogance was blamed' for the financial failure of the film and, as a consequence, 'Alarms sounded across Hollywood about the need to "manage" directors' in a different way, more integrated within the production and with an awareness of its industrial needs (see also Cook 2000: 143). This highlights a division between academia, where the concept of auteurism remains predominant, and the industry, where the film is a product before being art; in the light of this, scholars such as Corrigan (2003: 98) argue that the concept of auteurism must be adapted and re-contextualised to take into account commercial and industrial trajectories. Assayas (in Maule 2008: 88-89) insists on the necessity of the director in terms of considering the economic and reception-based determinants of her practice in order not to be self-contained in filmic forms. Other determinants to consider might be the technical requisites of the production.

On an industrial level, the use of digital effects might undermine the view of an auteur as an individual artist who is uninfluenced by her collaborators. A CGI shot is the result of a collaborative work of various visual effects artists who specialise in different aspects of effects

creation such as modelling, texturing, animating, lighting, compositing etc. Digital effects films involve a significant number of such shots which are designed beforehand by layout artists, storyboards artists and concept artists, before being organised within a productive workflow. Academic studies have not paid sufficient attention to this process in relation to film directing, often ignoring the considerable influence that the creation of digital effects has exercised on the director's method. In light of this, the outcome of this research has noteworthy impact on two distinct areas, the academic and the industrial. At an academic level, the research fills a gap in current production studies and offers a significant original contribution to knowledge. It clarifies the nature of film directing in relation to the productive necessities, highlighting the transformation that the director's method has been subject to in the shift from analogue to digital and integrates this with existing scholarship. On an industrial level, the outcome of the research outlines the adjustment of the director's method to a typology of production which dominates contemporary filmmaking. As Scott (2005: 113) affirms, the digital effects sector 'is now an indispensable element of the audiovisual and media industries generally, and it is, above all, increasingly critical to contemporary motion picture production'. In this context, the dissertation provides not only a guideline for directors in terms of approaching such productions, but also valuable information to technology companies, whose mission is to ease the director's task on set. In fact, an understanding of how digital effects have modified the director's method might facilitate the development of new tools which can free directors from the constraints of the digital pipeline. Furthermore, an investigation into the director's method contributes to enriching production studies focusing on digital filmmaking and provides information to foresee what the director's role will be in future film productions.

Another significant contribution of this research is represented by the establishment of a structured organisation of terminology on the topic. Examining the current literature and professional manuals it is noticeable that the terms used are often inconsistent between various sources. For example, it has been found that not all the accounts agree on the differences between special, visual and digital effects, with some sources using two of them as synonyms and others using the three terms separately. This shows how there is no agreed terminology in

the field but rather are different schools of thought. The research provides a clear Glossary which serves both academia and the film industry and proposes a use of terminology which fits the subject of the research and eases its investigation.

Literature Review

The literature review aims to root the research in existing scholarship and identify how the study contributes to knowledge. The review serves as an academic background for the subject of the investigation. The pre-investigation, which aims to provide a digest of scholarly opinion on the subject, involves an analysis on how film directing and digital effects have been examined by academic literature, predominantly in books. This involves the study of up-to-date material on the topic. The investigation casts a light on how these elements are surprisingly kept separated; in fact, there is to date no significant study which has focused on their correlation. In order to answer the questions motivating the research, it has been deemed fitting to examine film directing and digital effects separately.

On film directing, the academic literature tends to rely on auteur theory which is used to situate the directing practice in relation to the production process. Bazin identifies the director as the auteur of the film, a concept which has profoundly influenced academia from the 1940s onwards. Caughie (2001) claims that auteur theory has been central in film theory and criticism for at least the past thirty years. The figure of the auteur continues to be significantly present in film studies, resisting both the histories of production which have described its pitfalls and the poststructuralist charges pointing to its absence. This is the analysis of Sayad (2013) who argues that although the auteur is not automatically at the work's origin, nor representative of the final product, it is still a term used by academia to define the director’s role. Kaufman and Simonton (2014) have conducted a sociological investigation on this topic. They report that the director is generally considered as a creative artist because the decisions she makes impact on the style of the film. However, this is in contrast with how film productions work with directors, especially when a production bible is in place and important stylistic decisions are made by producers. Levy (1999) documents the socio-economic, political and artistic forces that led to the rise of

the American independent film and compares this to the Hollywood studio system. Filmmakers such as David Lynch, Jim Jarmusch, Spike Lee, the Coen brothers, Quentin Tarantino and Billy Bob Thornton are examples of auteurs who established stylistic consistency in their films in contrast with the mass-produced Hollywood films. On an academic level, Cook (2000) analyses the interrelation occurring in 1970s American film around auteurism and industry reconsideration. His study underlined how studios have dealt with the idea of the director as "auteur" and how this approach has served the same studios for economic reasons. Corrigan (2003) believes that it is necessary to adapt the academic view of film directing to a more industrial view of the filmmaking process. The academic view on film directing in relation to industrial needs is central to an ongoing debate which has led to the formulation of an "industrial auteur theory" which considers a negotiated and collective authorship in contemporary productions (Caldwell 2008: 199); this does not reject auteurism but takes into account the constraints that the filmmaking process dictates to filmmakers, especially in television productions. In his anthropological and ethnographic study of film communities, Caldwell (2008) dedicates a chapter to the topic: he observes that there are industrial constraints on creativity which are dictated by 'the corporate inability to let a creative idea develop and mature over time' and 'the increasing scale of the new media conglomerates that have actively attempted to replace the producer with the studio' as the auteur behind the film (Caldwell 2008: 197). This is observable in contemporary superhero blockbuster productions. Buckland (2006) notices that although the blockbuster is the most popular and commercially successful category of filmmaking, it has yet to be studied seriously from a formalist angle. In his study, Buckland identifies in Steven Spielberg both an auteur and a professional who managed to adapt his method to the industrial necessities of Hollywood. Film critics and scholars commonly concur that Spielberg's blockbusters have a unique look and use visual storytelling techniques to their utmost efficiency; therefore he succeeds in presenting some stylistic consistency over his films. From the analysis of Spielberg's films, Buckland defines a director's method which is made of some significant steps: the visualisation of the scene via storyboards, the staging and blocking of the scene, the camera placement and movement, the progression or flow of the film from shot

to shot and the adoption of a technique to narrate the story to the audience. To achieve this methodological categorisation, Buckland combines film studies scholarship with the approach taken by filmmaking manuals. Dancyger (2006) formulates a similar compendium of processes which starts from the director's vision, in other words, the idea behind the film. Dancyger defines how to transform this idea into a workable series of procedures and presents it as a manual for directors. This is similar to what experts such as Belli and Rooney (2011), Frost (2009), Jones and Joliffe (2006), Marner (1972), Proferes (2008), Rea and Irving (2015), Katz (1991) and Richards (1992) provide through their professional training manuals. In the light of this, the director's method represents a conjunction between the idea of the director as the auteur who shapes the film in accordance with her vision and the necessities of an industrial process made up of procedures. An interesting analysis on the directing process is conducted by Beach (2015) who identifies in the relationship between directors and cinematographers a key factor for understanding the director's role. In his *Hidden History of Film Style*, Beach argues that an understanding of the complex director-cinematographer collaboration provides a significant model that challenges the conventional and pervasive concept of director as auteur.

Turnock (in Keil and Whissel 2016: 116) affirms that the significant changes in the visual effects productions of the 1970s grew out of the American auteur movement and not as its replacement, as some academics have conjectured. Film directors such as Steven Spielberg, George Lucas and Stanley Kubrick started to use special and visual effects to enhance their visions and create a new aesthetic for science fiction films which adapted to the new technologies at their disposal. For instance, *2001: A Space Odyssey* (Kubrick S., 1968) became the main reference for a significant number of science fiction films which followed – *Interstellar* (Nolan C., 2014) and *Gravity* (Cuarón A., 2013) both contemporary prominent exemplars of this new aesthetic. Lucas' *Star Wars* and its sequels became a model for visual effects films which aimed to create photorealistic looks with stylized animation effects (Turnock in Keil and Whissel 2016: 120). Turnock (ibid.: 128) claims that such films not only set the bar for a new style of visual effects films but they made them repeatable, influencing the following decades, especially the film productions of the digital era. Allison (in Keil and Whissel 2016:

182) affirms that digital effects introduced a new method for imagining and conceiving films and this influenced the way the filmmaking process was developed. Venkatasawmy (2013) claims that Hollywood movies have established techno-visual trends and industrial standards for this filmmaking practice, which grew in sophistication due to the innovative techniques developed in this field. Gerosa (2011) observes that digital applications have merged different industries together and, as a consequence of this interaction, audience engagement has also been subject to change. Wood (2007) conducted a study on how viewers engage with the diverse interfaces of digital effects cinema, digital games and time-based installations, finding that technologies alter human engagement, distributing the attention span across a network of images and objects (see also Purse 2013). On this topic Rombes (2009) analyses the technologies that are reshaping film and their cultural impact on audiences. In examining films such as *Festen* (Vinterberg T., 1998), *The Blair Witch Project* (Myrick D. and Sánchez E., 1999), *Timecode* (Figgis M., 2000), *Russian Ark* (Sokurov A., 2002) and *The Ring* (Verbinski G., 2002), Rombes reports that these films are haunted by their analogue past and suggests that their signature component is their intentional imperfections, whether in the form of wobbly camera work, or pixilated or blurry images and other elements reminding audiences of the human hand operating the camera. The digitalism experienced in the film industry has attracted some criticism, specifically on digital effects which, for some detractors, have denaturalised the director's task on set, making the result impersonal. This has been reported in a study conducted by Prince (2012) who analyses the fears of some critics about how digital effects might have marked a radical break with cinematic tradition. McClean (2007) compares the negative changes that colour and sound brought to filmmaking to the same charges brought against digital effects. Bulky cameras, restrictions on their movement in addition to the difficulty of using wide shots when dialogue was involved, persuaded critics that sound shattered the telling aspect of the story, ruining motion pictures. However, as McClean (2007) observes, the filmmakers soon found ways to compensate for the addition of sound and profit from it in a way that a silent film could not. The same kind of criticism was leveled at colour which later expanded the storytelling aspects and creative process of motion pictures far beyond what it

could have assumed during the era of black and white films. Digital effects have experienced a similar course, even if recent film productions are showing a new tendency to re-adopt practical effects in combination with digital effects, a practice which aims to give more realism to the film.

Special and visual effects are as old as film itself. Gaudreault (2008), Gunning (1989, 1990, 1995), Ezra (2000) and Strauven (2006) examine how the first films focused on generating spectacle to astonish the audience through the use of effects in the shape of stage magic tricks. Indeed, these effects were taken directly from stage magic and applied to cinematography. Film productions involving such tricks rapidly evolved and elaborated new mechanical and in-camera effects, increasingly detaching from theatre. In the course of a century, visual effects became digital and started to require a new professional figure on set: the visual effects supervisor. The visual effects supervisor represents one of the key elements of divergence between digital effects films and films which do not involve digital effects at all. Surprisingly, the relationship between directors and visual effects supervisors is marginally examined in academic accounts while industrial accounts have explored the visual effects supervisor's task more considerably. An example of how academia has overlooked this relationship is in *Editing and Special/Visual Effects* (Keil and Whissel 2016) which is an academic study on the history of editing and special/visual effects, from the silent screen to the Modern Entertainment Marketplace. In this, thirteen academics examine the practice of assembling and modifying shots through different techniques and tools with no mention of the visual effects supervisor's role in contemporary film. Neither is there any significant research on the relationship director-supervisor in the studies conducted by scholars such as Prince (2012), Radke (2013) or McClean (2007). Conversely, the visual effects supervisor's role is thoroughly described by industrial accounts such as *The VES Handbook of Visual Effects* (Okun and Zwerman 2010), which provides methodical guidelines for these practitioners and hints on how to approach the film production. This professional figure, who might resemble the production designer for certain aspects of her work, has a particular relationship with film directors which is different from the director-production designer bond. On an academic level, Barnwell (2004)

identifies five categories which define the methodology for production designers: space, interiors and exteriors, light, colour, and set decorating. Such categories refer to a real set thus they require to be put in relationship with virtual spaces in digital effects films where locations are created from scraps through CGI. On production design, the research also examines the studies of Fischer (2015), Halligan (2013), Heisner (1997), McLean (2016), Tashiro (1998) comparing them with industrial accounts which have analysed production design and digital effects (see Rizzo 2015).

The professional accounts examined in this dissertation are divided into industrial compendiums, "making of" books, journals and training manuals. On film directing, the research examines a varied set of professional manuals produced by Casinghino (2011), Rabiger and Hurbis-Cherrier (2013), Karg and Van Over (2007), Irving (2010), Wilkinson (2005), Weston (1996 and 2003), Travis (2002) and Ohanian and Phillips (2013), who specifically focus on filmmaking in a digital environment. About digital filmmaking, an interesting study has also been conducted by Wales (2012), who discusses the entire production process for film and digital media, and provides a complete view of film production in this context (see also Swartz 2005 for a similar analysis). This dissertation examines a collection of interviews with directors who worked with and without visual effects – specifically, Alfred Hitchcock (Truffaut 1983), David Cronenberg (Rodley 1993), Terry Gilliam (1999 Christie), Ridley Scott (Sammon 1999), David Lynch (Rodley 2005), Martin Scorsese (Grierson 2015) – and essays about directors on film directing (see Lumet 1995). Regarding effects, the pre-investigation involves the examination of digital effects methods and guides to digital practices produced by Byrne (2009), Mitchell (2013), Gress (2015), Kerlow (2004), Birn (2006), Brinkmann (2008), Dobbert (2013), Fielding (1985), Finance and Zwerman (2010), Ganbar (2011), Hornung (2013) and Villar (2015). These are professional "how-to" manuals which illustrate in detail the processes involved in the digital pipeline. For instance, Brinkmann's manual describes the digital compositing practice for visual effects while Hornung's handbook focuses on the match-moving techniques. For the purpose of this research, the making of *Avatar* by Duncan and Fitzpatrick (2010) and *Jurassic Park* by Shay and Duncan (1993) have been examined and compared: the

former deals with the description of the filmmaking process for what is considered to be the most advanced film production to date, in terms of digital effects, while the latter investigates the filmmaking process of what represents the starting point for CGI in a narrative context. The comparison between these two accounts provides information on the evolution of digital effects in the film industry, from 1993 to 2009 – an evolution which is still ongoing as demonstrated by the most recent developments in the field, such as the innovative use of motion capture on location for *Rise of the Planet of the Apes* (Wyatt R., 2011). About journals which specialise in digital effects, the research examines *Cinefex*, a bimonthly magazine on visual effects film productions, and the American Cinematographer, a monthly magazine published by the *American Society of Cinematographers*. The Internet references consulted by this research are listed at the end of the dissertation along with a Bibliography.

The literature review examined shows that there is a lack of knowledge on film directing when digital effects are involved. The hypothesis of the influence of digital effects on the director's method has not been appropriately investigated at an academic level, even if there is a significant number of sources hinting at the impact of digital effects on the filmmaking process (see for example, Ohanian and Phillips 2013, Wales 2012 and Swartz 2005). Although a possible rupture in the director's method between using or not using digital effects has not so far been documented by the scholarship, this has been reported by various practitioners in the film industry, specifically those involved in the visualisation (and pre-visualisation) of the film. Indeed, it is reported that shots containing a significant amount of digital manipulation or complex interactions of CGI with live-action, mandatorily require a study on frame composition, therefore forcing film directors to establish a communication with previs and animatics supervisors before principal photography. The way directors adjust their approach to digital effects film productions indicates that digital effect, or more generally "digital filmmaking", has forced the modification of certain procedures and workflows which were consolidated in the past. The analysis of the history of special and visual effects (see Chapter Three for more details) gives information on how this practice has changed in the course of the years and how the digital era has impacted on film productions, in particular, transforming the

filmmaking process in relationship to the increasing use of digital effects.

Acquisition and Interpretation of Data

The investigation uses an open-ended strategy for qualitative data collection and relies on a series of interviews conducted with professionals in the film industry. In order to validate the analysis, a triangulation method – which involves the comparison of the data collected through literature review and interviews – is applied. Categories are established to ease the comparison of the data collected through interviews with current scholarship and to use such data to articulate a debate. As an example, the category "script analysis" contains data collected from all sources about work on the script. The categories represent an overall organising structure for the data; when the data belongs to two different categories, it is inserted in both.

The interviewees are divided into two groups: film directors and film practitioners. The directors selected for the research have worked on various productions with and without digital effects and at different scales. Furthermore, they have worked in several countries (US, UK, Italy, Spain, China and Argentina) and on different typologies of audio-visual product (features, shorts, TV and documentaries). This heterogeneity provides information on cultural and geographical influences that the filmmaking process is subject to; as the research aims to identify an uncompromised method, such information is necessary to analyse how context affects the filmmaking process. Collecting data from distinct sources and backgrounds results is vital in investigating whether the digital effects' influence on film directing represents an all-encompassing phenomenon occurring independently from the scale of the film or if it is affected by other factors such as the country where the film is produced or the medium used. The research aims to compare the directing process with and without digital effects, therefore it is necessary to interview directors who interact with such effects at different levels, from working exclusively with them to completely avoiding their use. The interviews are conducted either via Skype or through a written questionnaire with open-ended questions following the same structure. Firstly, the interviewees are asked to describe the director's role in accordance with their experience. Subsequently, the interviewees are asked whether they feel they follow a

pattern in directing films and if they tend to plan in detail the filmmaking process or whether they improvise. This question aims to identify a repeatable model for film directing which characterises the director's approach to general film production. Then the participants are asked to describe the filmmaking process, underlining, when possible, how film productions can differ from one to another, explaining why potential discrepancies can occur between them. Interviewees are expressly asked if experience has modified their way of approaching the directing practice. The following stage of the interview focuses more specifically on the three phases of film production: pre-production, principal photography and post-production. For pre-production interviewees are asked how they proceed in transforming a script into images, if they pre-visualise shots and how they design them. For principal photography, directors are asked how they guide the actor's performance on set, prepare the actors before shooting and block the scene with the camera. For post-production, directors are asked what is the director's responsibility in this phase and how editing can modify the narrative of a film. The last question is about describing the perceived differences in working with and without digital effects. If the interviewee consistently works with such effects, she is asked how she approaches the digital pipeline and how she develops a relationship with the visual effects supervisor; if the interviewee has never used digital effects, she is asked the reason why and what would be the challenge of using them. This typology of interview is designed to collect data on different aspects of film directing in order to identify a common method, analysing whether there are analogies or differences between the way directors work on a film. It appears to emerge that directors tend to position their practice on a scale which goes from meticulously planning the whole process before shooting to improvising everything on set, that is, making decisions "on the fly". The former characterises directors working with digital effects while the latter characterises those who have never used them. This information is key to understanding the impact of digital effects on the director's method.

For the interviews with film professionals, the same principle of heterogeneity applied to directors is adopted. The interviewees are divided into two categories: visual effects

artists/supervisors[3] and film practitioners in various disciplines (such as production, editing and storyboarding). All interviewees have predominantly worked in feature films and interacted with digital effects at different levels and scales. As for the directors, the variable interaction with digital effects gives significant information on the discrepancies between using or not such effects. The interviews with visual effects practitioners aim to define how the digital pipeline is applied to the filmmaking process and how directors interact with the visual effects supervisor. Those conducted with professionals not in the visual effects department provide noteworthy data on the director's role in relation to the crew. The interviews are conducted through Skype calls, questionnaires and in person with open-ended questions and a defined structure. Visual effects artists and supervisor participants are asked to describe their role and the digital pipeline, from pre-production to post-production. This provides information on how the digital pipeline is adapted to film productions from case to case. Subsequently, interviewees are asked to describe how digital effects are integrated in the shot in relation to their role and what kind of instructions they receive from directors. This is crucial to understand how directors influence the process and define the typology of interaction between directors and visual effects practitioners, specifically supervisors. It is necessary to describe the typology of shot in which the practitioner is called to intervene and the interaction of digital effects with live-action footage. Subsequently, participants are asked about how much their choices can influence the final result and if, in their opinion, the use of digital effects influences film directing. For practitioners outside the visual effects department, the structure of the interview is similar. Firstly, they are asked to describe their role and their relationship with the director. It is explicitly enquired whether they notice similarities in the way various directors approach the process and if they observe the use of a specific method. This investigation is needed to identify a widespread model for film directing. The last question is about describing whether the interviewees observe substantial differences between using or not using digital effects in terms of film directing and production. If the practitioner has worked with such effects, she is asked

[3] Professionals working in the visual effects department are generally referred to as "visual effects practitioners", even if contemporary films predominantly involve digital rather than visual effects.

how she approaches the digital pipeline and how directors tend to work in such a contest; if the interviewee has never used digital effects, she is asked what aspects of film directing might change when such effects are involved.

All the interviews follow the structure described above but in some cases participants are asked about specific aspects of their task in relation to their experience and the films they have worked on. Flexibility is key for qualitative research. When carried out in person or through Skype calls, the interviews are recorded with the participants' consent and the transcription is back for revision. The complete list of interviewees, with information about the participants, is in the Appendix – List of Interviewees after the Conclusion. Interviews are referenced in the Bibliography as well, with the name of the participant and the year to indicate when these were conducted and the modality.

Terminology

Current scholarship does not agree on the terminology; one example of this is in the way the terms "special", "visual" and "digital effects" are used in different accounts. For example, for some scholars "special effects" is a term which refers to all effects achieved without the involvement of digital technologies (see Keil and Whissel 2016: 12, Fielding 1985: 1, Okun and Zwerman 2010: 1048, Rizzardi in Okun and Zwerman 2010: 83); these include the in-camera optical effects. Conversely, academics such as North, Rehak and Duffy (2015: 2-3) and Cullen and Westpheling (2010: 182) differentiate the effects created in front of the camera (special effects) from the effects involving a manipulation of the image through a recording device (visual effects) or computer (digital effects), with the last two usually achieved in post-production (see also North 2008: 5). Some academics use "visual effects" as a synonym for "special effects" (e.g. Scott 2005: 96 when he mentions the mechanical effects for the film *Jaws*) or "digital effects" (e.g. Gregory 2015: 247-248, Keil and Whissel 2016: 12, Fielding 1985: 1, Okun and Zwerman 2010: 1048). Digital effects are commonly referred to as "visual effects" which is an oversimplification (e.g. Gregory 2015: 247-248 and Casinghino 2011: 325), however, this dissertation specifically uses the two terms separately in accordance to some

academic studies on the subject (see McClean 2007) and other professional accounts (see Perisic 2000 on visual camera effects). Furthermore, this dissertation separates special and visual effects, in accordance to the definition given by North, Rehak and Duffy. The research aims to analyse how the director's method changes for effects which are not physically achieved on set because the director does not see them immediately and gets only an approximation of the final result.

Other studies which are examined in order to establish a suitable terminology for this dissertation have been conducted by Souriau (1953), Beaver (2007), Pramaggiore and Wallis (2005), Scott (2005), Kroon (2010) and Goulekas (2001). A Glossary at the end of the dissertation clarifies the use of terminology and roots it in existing scholarship.

Chapter Two

The Director's Task: Method and its Adaptation

> [...] the more I produce, the more I realize that the most important person on a movie, once you've started the process, is the director. Because without that concept you've got no order. To use an orchestral analogy, the director is the conductor, and a conductor is there to get the best out of each section of the orchestra, ranging from the timpani to the strings to the brass. He must orchestrate all that, put the different instruments together so that the music comes out sounding great. (Ridey Scott in Sammon 1999: 131-132)

Construction of the Director's Role in Academia and the Film Industry

The role of the director and her task have been much debated in both academic and industrial accounts. Dancyger (2006: 3) writes that 'directing remains a vocation that has used its mystique to its advantage' and therefore 'less is understood about the means of directing than about the other key roles in production'. Similarly, Irving (2010: 5) asserts that a director's duties are particularly challenging to identify because film directing represents 'an all-encompassing, sometime amorphous, often cryptic, complicated and relatively new vocation' (ibid.: 5). Furthermore, the director is often subject to cultural differences between countries which makes it harder to describe the role. Lodovichetti (2014) notices for example that 'American and European productions are different in terms of how they consider the director's role' with Europe tending to consider the director more as an auteur, while 'in the Hollywood mainstream cinema there is the tendency of considering the director as a simple tile of the whole production'.[4] Marnes (1972: 36) observes that in 'examining the work of some directors it is possible to discern a thematical relationship between one film and another'. He adds that 'Although each film is complete in itself a strongly felt idea can find its expression in a number of successive films of one director' (ibid.). This trait is often referred to as the director's style which is strictly connected to the director's "vision". Some academic and non-academic texts refer to the director's vision as the ability to depict a story in a unique and personal way, a talent

[4] Italian: 'Per esempio le produzioni Americane ed Europee sono diverse nella concezione della figura del regista. L'Europa è più registo-centrica con il regista che tira su il progetto e lo gestisce. Nel cinema mainstream hollywoodiano ad alto budget la concezione del regista è totalmente diversa nella maggioranza dei casi: egli infatti viene considerato come un semplice tassello della produzione.' (Lodovichetti, 2014)

which is appealing to the audience and often exploited by distributors in order to sell the product. For instance, Quentin Tarantino's films frequently portray a grotesque exaggeration of violence which attracts certain kinds of audience. Travis (2002: 5) affirms that the director's role consists of formulating a film's vision and communicating that vision to members of the creative team 'in such a way that each artist will be inspired to make her best contribution to that vision'. Neri (2015) claims that the director has the whole film in mind before shooting and knows exactly what the audience will see projected on screen, hence the director only needs to communicate to the crew the result she has imagined for a clear direction for the production to be established.[5] Similarly Tarantino in 2012, recalling a meeting with Terry Gilliam, whom he asked how to get the director's vision on screen, reports:

> As a director, you don't have to do that. Your job is to hire talented people who can do that. You hire a cinematographer who can get the kind of quality you want; you don't have to be able to know how to take the lights and move them around to create an effect. You hire a talented costume designer who can give the colors that you need and the flamboyance or not that you want. You hire a production designer who can do that. Your job is explaining your vision. Your job is articulating to them what you want on the screen. (DrSotosOctopus, 2013)

The vision is often identified in academic scholarship as evidence of the auteurial nature of the film director, the artistic idea behind the film which motivates the artist-director. Terry Gilliam notices:

> Directors or producers hire good people who do their stuff and, in a lot of cases, you could make quite a respectable film without a director. So what's the difference? Certain directors do have vision, ideas of what they're trying to achieve. These are the real directors […] and some get called auteurs […]. (Gilliam in Christie 1999: 179-180)

Santas (2002: 18) states that 'Though film calls for the collaboration of various agents', it 'can be seen as the product of a single creator' who is the director. Although Hollywood, where 'film is firmly established as a collaborative art' (ibid.: 19), has rejected this theory in the past (see ibid.: 18-19), the 'idea of the film director as *auteur* remains widespread among film scholars, students of film, and even in the motion picture production industry itself' (Monaco 2010: 1). There are distinctions in the ways the director's role has been constructed in academic studies

[5] Italian: 'Il regista […] ha in testa il film ed è l'unica persona che ha veramente in sé quello che il pubblico vedrà proiettato. […] Deve comunicare a tutte le persone che collaborano con lui una direzione che porta quel risultato, esattamente come lui lo ha immaginato quando leggeva o scriveva il copione.' (Neri, 2015)

and in industrial accounts. The former is generally dominated by the auteur theory while the second is more focused on the industrial process that results in a product. For instance, being in charge of the filmmaking process is often described in the academic literature as a mandatory condition for the director to exercise her creativity; conversely, in industrial accounts it is identified as a necessity dictated by the industrial process. Scholars such as Perkins (1972: 179 in Buckland 2006: 29) reckon that 'Directors are needed precisely because film-making involves so many and such varied kinds of creative decisions' and 'If a movie is to have even the most elementary form of unity' it is essential that everyone involved works 'coherently towards an agreed end'. Perkins also observes that 'The most obvious method of achieving this result is' to put the director 'in charge of the entire operation' (ibid.). Reisz (1957: 58-60 in Buckland 2006: 29) notices that the director 'should be normally in charge': she 'is responsible for planning the visual continuity during shooting' and therefore she 'is in the best position to exercise a unifying control over the whole production'. Dancyger (2006: 3) claims that 'The director is responsible for translating a script (words) into visuals (shots)' and for 'the creative supervision of the film from early in its conception to its completion' (ibid.: 4). For scholars, directors are generally responsible for all the artistic matters of the filmmaking process (see Ebbers, Wijnberg and Bhansing in Kaufman and Simonton 2014: 162) and this is deemed true in some industrial accounts as well. For instance, Marner (1972: 25) states that 'One important aspect of the director's responsibility to the "design" of the film is his decision about its "style"', and indeed 'in a very practical way the director has to make decisions concerning location, lighting, cutting, acting, etc., that will somehow reflect his own sensibilities and therefore be a summation of the director as creative artist'. However, Marner's statement represents an overgeneralisation when contemporary filmmaking is taken into account; as an example, the director does not have the final cut in most of the film (see Brook 2014) nor does she choose the locations, which are generally defined on a financial basis. The convergence of various practices and professionals in the filmmaking process, plus the industrial logic behind the process, limit the director's authorship, justifying why industrial accounts tend to overlook the auteur theory. Directors are often kept out of certain processes which have a significant

impact on the final result – editing is probably the most evident example of this but it is the case also for shot design or the choice of location. Sayad (2013: 33) affirms that 'the term 'author' presupposes control of production' hence 'when collaboration comes into play, authorship becomes something to be earned' (ibid.: xiii). Sayad suggests that the artistic inputs of other creative talents involved in the process can undermine authorship. Director Terry Gilliam reports:

> I may be an *auteur* according to how the word's used now, but I'm more collaborative than anyone could ever imagine. If you have all this talent available, whether it's actors or designers, then you want to use it to go beyond your own finite vision. […] On *Jabberwocky* [Gilliam T., 1977], I would be on my own in a corner, focused on trying to solve some problem, and the props guy would come over and say, 'Have you thought about doing this, Terry?' My first reaction was to tell him to get lost, then I realized he was right and that he'd just told me how to get out of the corner I'd painted myself into. (Gilliam in Christie 1999: 69-70)

At this point it is significant to take into account the film franchise phenomenon which is emblematic of the Modern Entertainment Marketplace – the *Marvel Cinematic Universe* (MCU), *Star Trek*, *Star Wars* are only some of the most known film franchises which have been subject to numerous sequels and prequels. For film franchises, there is generally a bible to follow which details the plot, the setting and the characters in such a thorough manner that the director's vision is compromised or denied. A production bible is in place to guarantee that the film franchise is in line with the media franchise (comics, videogames, films, books etc.) making the worlds and the characters depicted consistent with all mediums. Esser, Smith and Bernal-Merino (2016: Glossary) define a bible as 'a compilation of instructions and information, including technical requirements, lessons learned, shooting schedules, crew lists, a budget sample, and anything else that could be of value to the production team'. Furthermore 'the bible includes information about the original pitch, audience ratings, and sometimes market research findings, and marketing tips' (ibid.: Glossary). The bible gives directors precise information about how to develop the film; where a bible is in place, the director's task consists more of assuring that the film is in the direction established by the production, which challenges the academic auteurial approach to film directing. For this reason, Bently and Biron (in Bowrey and Handler 2014: 29) have introduced new forms of auteurism influenced by the entertainment

franchise, which move beyond the ‘director-as-auteur’ model and focus instead on executive production: the ‘commercial-auteur’, the ‘franchise-auteur’ and the ‘brand-auteur’ (ibid.: 16). It is not a case that for a film franchise, the single films of the franchise are generally directed by different directors (especially for contemporary digital effects films); the continuity between the various films is supervised by an executive producer, who is usually the same for all the films of the same franchise. For instance, the *Harry Potter* series (2001-2011) consists of eight films produced by David Hayman and directed by four different film directors: Chris Columbus (*Harry Potter and the Philosopher's Stone* and *Harry Potter and the Chamber of Secrets*), Alfonso Cuarón (*Harry Potter and the Prisoner of Azkaban*), Mike Newell (*Harry Potter and the Goblet of Fire*) and David Yates (*Harry Potter and the Order of the Phoenix*, *Harry Potter and the Half-Blood Prince*, *Harry Potter and the Deathly Hallows – Part 1 and 2*). *Pirates of the Caribbean* is a Disney media franchise encompassing videogames, park attractions and a series of films (2003-2017). The films are all produced by Jerry Bruckheimer and directed by four different film directors: Gore Verbinski (*The Curse of the Black Pearl*, *Dead Man's Chest* and *At World's End*), Rob Marshall (*On Stranger Tides*), Joachim Rønning and Espen Sandberg (*Dead Men Tell No Tales*). For the *Marvel Cinematic Universe* franchise, sixteen feature films have been made from 2008 to 2017. All the films have been produced by the president of *Marvel Studios*, Kevin Feige and directed by thirteen different film directors. It emerges that film franchises require working directors who are able to achieve a specific product commissioned by the motion picture studio; this is particularly true for digital effects films.

At an industrial level, Katz (1991: 97) claims that ‘In general, the director is responsible for the visual decisions that determine staging and camera setup’; he (ibid.: 104) affirms that ‘Continuity design includes the composition of individual shots, the staging of action, the choice of lenses and the order of the shots in the finished film’ and that ‘these decisions are the responsibility of the director’. In the same way, Frost (2009: 4) argues that ‘the director is ultimately responsible for the storytelling aspects of the film, through the actor’s performances to the selection of the shots and composition’. The director’s approach to her task can vary from case to case. Marner (1972: 36) observes that there are directors ‘who, like Hitchcock, make a

very thorough and detailed preparation so that each frame and camera angle is worked out beforehand' and those who 'rely for their effect on improvisation while on set'. Clair (in Talbot 1975: 229) claims that, even if the director 'in principle directs the realization of the film as a whole', the task 'varies according to his personality, according to the film, and according to the method employed'. Edgar (2010: 12) adds that 'The role of the director varies according to the genre of film, the type of script and the requirements of the funder or studio' and this is why 'A short film director is different from a feature director and a director for hire will work differently from a writer/director' (ibid.: 12). On this subject, Monaco (2010: 13), who conducted a study on auteurism in the Neo-noir genre, observes that 'in any actual production, how the director functions, pursues his vision, and enlists others in doing so varies'. For instance, 'variations in personal visual cultures' modifies 'the message taken by the viewer' (Clifton 1983: 182) so the director has to adjust her approach depending on the audience who will experience the film. Clifton specifically refers to the way in which the film's concept is communicated, a directorial responsibility which casts a light on the relationship director-audience. Perkins states:

> In the cinema style reflects a way of seeing; it embodies the filmmaker's relationship to objects and actions. But, as a way of *showing*, it also involves his relationship with the spectator. The film's point of view is contained within each of these relationships. Attitudes toward the audience contribute as much to a movie's effect, and therefore its significance, as attitudes towards its more immediate subject-matter. (Perkins 1972: 134 in Bernardoni 1991: 219)

Nelson (2000: 7), summarising the thought of Pudovkin (1933), affirms that the director aims at guiding the audience towards the idea of a film and at producing prearranged feeling. To obtain this she looks after every stage of the filmmaking process and makes decisions empathising with the viewer. From an academic perspective, Dancyger (2006: 15) claims that 'It is critical for the viewer that the film be experienced whole' meaning that 'the text interpretation, the performances of the actors, and the shot selection act together to build the viewer's experience'. Establishing a relationship with the audience means identifying a perspective on the story, a process in which the director takes the place of the spectator and conducts an analysis on herself. Wilkinson (2005: 98), in his professional manual *The Working Director: How to Arrive,*

Thrive & Survive in the Director's Chair, claims that 'The director is the proxy audience' and 'the audience's lawyer', referring to the fact that she is the one who can detect beforehand whether the film's concept reaches the spectator or not. Mollo (2015) states that 'the director is the person who holds the vision' and 'conducts the story towards a precise direction by which the audience gets involved'.[6] Audience involvement is achieved through an intensification of the viewer's emotions. Belli and Rooney (2011: 6), both working directors for television, argue that 'Everything you do as a director is intended to duplicate for the audience what you first felt when you read the script'. It emerges that there is a common point between how academia and industry have constructed the director's role and it is in the significance that the audience has in the directing practice. The relationship director-audience for commercial films is at the very core of the director's role and this is mentioned by a considerable amount of academic and industrial accounts.

Industrial Directing Models

Monaco (2010: 13) states that the director has at the top of her list, among many other responsibilities, the coordination of 'the work of others in the major creative positions' and in the same way Beaver (2007: 73) observes that an important function of the director is 'the coordination of the various technicians who must support the film's concept'. In order to fully tell the story, directors have to manage all the creative figures involved so that the narrative flows in a clear and organised way. The establishment of communication with the film's collaborators is broadly considered a key responsibility for directors. David Lynch (in Rodley 2005: 46) argues that directing is 'to get people on the same track and just keep going and going so that everything that comes through is fitting into' the world of the story. Analysing the relationship between the director and her collaborators makes it possible to compare film directors with other professional figures outside the industry, a procedure which helps to illuminate the director's role in the film industry. Irving (2010: 5) observes that film directors

[6] Italian: 'Il regista è la persona che in un certo senso ha la visione della storia. Conduce la storia in una direzione ben precisa attraverso la quale il pubblico entra nel film.' (Mollo, 2015)

have been frequently likened to ‘a musical conductor, military general, circus ringmaster, auteur and ship’s captain’ and each of these ‘embraces separate attributes important to film directing’. Irving, looking at the director’s role from both an academic and a professional perspective, hints at the existence of different directing models for directors. These models have certain traits in common and one of these is leadership. Belli and Rooney (2011: xv) affirm that ‘a director is first and foremost a leader—a Moses’ who ‘leads a motley group toward the promised land of a successful project: one that creatively expresses the ideas of the script in the fullest way possible’. In some film productions, pre-arranged models are given to directors by the producers for organisational purposes; this underlines a fracture between how academia and the film industry have constructed the director’s role because admits that for some films, directors need to follow an imposed pattern. Marner (1972: 2) states that ‘Some directors always, and other directors sometimes, are confined to the role of director as captain of the ship or conductor of the orchestra’ and ‘the vast majority of Hollywood directors for many years were so confined’. He (ibid.: 2) explains that ‘At the scripting stage, the producers controlled writers and, in the post-production stages, it was again the producer who controlled the editor, leaving the director as a specialised technician who worked mainly on the actual shooting of the film.’ Tarkovsky (2003: 125) describes that, particularly in highly commercialised productions, ‘the director is beset by the danger of becoming a mere witness, observing the scriptwriter writing, the designer making sets, the actor playing and the editor cutting’. This is in line with the previous analysis on film franchise in the Modern Entertainment Marketplace, contesting the concept of the director as an auteur. Nonetheless, in the collective consciousness, the director remains the sculptor who sculpts the film from a ‘lump of time’ (Tsymbal in Everett and Goodbody 2005: 347-348 quoting Tarkovskii 1986: 64), the creative genius behind the film. Dancyger (2006: 3) claims that ‘the director is given much of the credit for a film’s success’, while Kydd (2011: 157-158) notices that because directors are generally accepted as being ‘in charge of the production’, the film is generally perceived to be ‘their creative vision’.

In the film *Youth* (Sorrentino P., 2015) the director’s choice of placing the friendship between a film director and an orchestra conductor at the centre of the whole story is

stimulatingly deliberate: it points to a parallelism between two professions which, in terms of role, have more in common than just one aspect. Indeed, a significant number of industrial accounts use this comparison to describe the director's role.

Figure 1: The very last two shots of *Youth*: the orchestra conductor (above) and the film director (below).

Mollo (2015), who is a working director, claims that the director is 'like an orchestra conductor who coordinates the different voices on set, tunes them in to a single symphony which is the film's symphony'[7]. Grisi (2015), from the point of view of a visual effects supervisor, states that 'the orchestra conductor is the professional role that better than others relate to the director's role', this is because the director 'is the one who has clear in mind the entire work and must coordinate different figures in order to achieve a unique result'[8]. Similarly, Coglitore, as a film director, claims:

[7] Italian: ' [Il regista] È anche un po' un direttore di orchestra, colui che unisce le diverse voci sul set, intona tutti in un'unica sinfonia che è quella del film.' (Mollo, 2015)
[8] Italian: 'Secondo me il direttore di orchestra è la figura professionale che più si avvicina al regista. È quello che ha perfettamente chiara tutta l'opera in testa e deve dirigere varie figure e coordinarle per tirar fuori una sola immagine, ovvero il contenuto di quell'opera.' (Grisi, 2015)

> The director is the orchestra conductor [...] He is the one who knows the film better than others. It is necessary to surround yourself with good collaborators in order to obtain the best result. Everything must be under a severe control, because it is very easy to lose certain balances.[9] (Coglitore, 2015)

The adjective 'severe' that Coglitore uses in his claim as a sign of the importance given by the filmmaker to controlling the directorial process, is notable. Supervising different figures who collaborate in developing creative content explains the similarity between film directors and orchestra conductors – the latter's task involving the coordination of different instruments to achieve a specific result. Rabiger and Hurbis-Cherrier (2013: 3) state that 'Learning to direct film is like learning to conduct an orchestra': directors need to have a general understanding of all the crafts involved like conductors need to understand 'the musical range and expressive capabilities of each instrument in their orchestra' (ibid.: 3). However, learning is not the only comparable aspect between the two roles. For example, in debating a director's preparation prior to shooting, Badham notices:

> We are well served to remember Alfred Hitchcock's analogy about preparation. He told Truffaut that the unprepared director was like an orchestra conductor who wanders out to the podium, picks up the baton, and asks his players, "How about a B flat?" That's different from the conductor who knows every note of his score, who has studied the dynamics of the music, the themes and subthemes, and yes, the soul of the composition. He has a clear audio vision of what he thinks the piece should sound like. (Badham 2013: 244)

Badham, as a working director, notices further comparisons between the two roles when he observes how Hitchcock uses suspense and surprise elements in his films; indeed, he reports that Hitchcock 'uses these techniques like a composer uses instruments in the orchestra' (ibid.: 177-178). The model adopted by the director, when not imposed by the production, depends on her relationship with the crew and the size of the production she is working on. Traina, examining his experience in the industry, affirms:

> The director's role depends on the production size. I have been a one-man-band for a long time and that means writing, shooting, directing and editing everything on your own […] I felt as a real artisan [...] When I started to direct seventy people, I have become more an orchestra conductor who should give instructions to all departments in order to work in a controlled autonomy. In any case, apart from the production size, the

[9] Italian: 'Il regista è il direttore d'orchestra, il capitano della nave. È la persona che meglio di tutti conosce il film. Bisogna circondarsi di collaboratori bravi per poter ottenere il massimo risultato. Il regista deve far quadrare tutto e ogni cosa deve funzionare sotto un attento controllo, perché basta poco per far crollare certi equilibri.' (Coglitore, 2015)

> director is somehow the soul of the film, and the film itself is his vision, his imaginary world that must be brought on screen.[10] (Traina, 2015)

Traina explicitly asserts that the essence of the film and the director's vision are strongly correlated. Furthermore, Traina describes the relationship between the director and other departments as 'controlled autonomy' which hints at the necessity of preserving the autonomy of the creative individuals involved. This is confirmed by Perez (2015) who reports from an editing point of view, that a 'key element for good directing is leaving freedom to collaborators' and that 'The more a director is talented, the more it seems that he is doing nothing' – this is obviously dependent on the selection of her collaborators.[11] It is relevant to include in this study an observation of Nixon, visual effects production manager for important visual effects company such as Weta Digital, on the influence that the production's scale has on the adoption of certain models by the director. In analysing the director's method for the films that he has been involved in, Nixon (2014) notices that the scale of the film changes its dynamics: for example, when small crews are involved, directors establish a more intimate relationship with the collaborators and adopt a specific model which is less authoritarian.

Dancyger (2006: 3) claims that 'Filmmaking, more than most popular or elite art forms, is collaborative', thus comparing directors to conductors of an orchestra or sports team coaches is appropriate: the director marshals a varied group of creative individuals into a single voice and to do so she 'must be a politician, technician, storyteller, and artist' (ibid.: 3). A substantial number of practitioners have defined filmmaking as a collaborative art par excellence. For instance, Buckland (2006: 29) affirms that 'mainstream filmmaking is a collaborative medium'.

[10] Italian: 'Il ruolo del regista varia in funzione della grandezza della produzione. Sono stato a lungo un one-man-band, nel senso che scrivevo, giravo, dirigevo e montavo tutte le mie cose. Fatta eccezione per eventuali collaborazioni in scrittura o nella realizzazione della colonna sonora, mi sentivo un vero artigiano, che curava direttamente ogni aspetto della realizzazione del suo "pezzo". Quando sono passato ad avere una troupe di settanta persone, il mio ruolo è diventato più quello di un direttore d'orchestra, che doveva impartire a ciascun reparto le necessarie indicazioni per lavorare in una controllata autonomia. In ogni caso, a prescindere dal tipo di produzione, il regista è in qualche modo l'anima dell'opera, ed è la sua visione, il suo immaginario, a dover essere tradotto sullo schermo.' (Traina, 2015)

[11] Italian: 'Il buon regista ha una visione profondamente originale. Spesso ci dicono di fare una cosa e noi scetticamente accettiamo consapevoli che la cosa proposta non funzionerebbe mai. Poi però veniamo smentiti e scopriamo che quella proposta del regista non solo funziona, ma è anche migliore di tutte le cose pensate in precedenza. L'altra cosa che contraddistingue una buona regia è quella di lasciare molta libertà ai collaboratori. Più un regista ha talento più sembra che faccia poco. In questo è importante la scelta dei collaboratori.' (Perez, 2015)

Travis (2002: 5) argues that 'Throughout the course of the making a film the director enters into numerous creative relationships' with different creative figures without whom she cannot make the film (ibid.: 5). In the same way, Barclay (in Badham 2013: 37) states that directors need other people such as actors and, more generally, collaborators who actively participate and contribute to the process. To describe the director's task, industry accounts rely on comparisons with roles that engender similar relationships with the crew: one of the most used, apart from the orchestra conductor, is the ship's captain – in a military sense. Directors are deemed responsible for making decisions which are imposed on the crew so that the ship (production) can reach the harbour (result) with no hitches. Basso (2015) states that 'The director is the one who proposes ideas, the ship's captain' who leads the whole crew[12] and organises the set.[13] Herman, examining his experience as a film director, notices:

> For a film to work, you need collaboration. For a shoot to work, you need hierarchy. I hate the concept of hierarchy, but it is hard to shoot a film without it. The ultimate decision on each and every aspect, large, small, tiny, has to be made by one person, the director. […] Fundamentally directing is all about decisions, ones that often have to be made very quickly. It doesn't seem to matter too much if you make the wrong decision, as long as you make it. The director is the boss. The director gets the plaudits, but the director also takes the flak. (Herman, 2015)

Herman asserts the necessity of establishing a hierarchy throughout the filmmaking process, an aspect shared with other fields. Regarding this argument, Nixon (2014) asserts that in film there is a 'military analogy' by which 'everybody follows the general', in this case the director. There is a chain of command in place between directors and their collaborators (the director of photography, the editor, the production designer and all those creative figures involved in the process) and this is due to the fact that every creative talent gives input which may not be in line with the film's concept. The director has to coordinate all the contributors in relation to what the

[12] Basso refers to establishing a form of communication with the crew as a whole, underlining the awareness that in it there are different practitioners like carpenters, costume designers, makeup artists etc. with whom directors might never talk in person.

[13] Italian: 'Il regista è un iniziatore di idee, il capitano della nave. Mette insieme l'equipaggio e scatena i talenti degli altri […] Lo spettatore ha in mente lo stereotipo della relazione fra il regista e l'attore ma non è solo con quest'ultimo che il regista lavora. […] Fare un film comporta discutere con tutti gli elementi della troupe. L'attore è uno di essi e ci devi dedicare tempo. Ma anche scegliere una inquadratura è fondamentale, quindi non tutta la giornata viene spesa per la recitazione. C'è anche l'organizzazione [del set], la verifica della scenografia, un dettaglio del costume eccetera. Tutte cose alle quali non si dedicano gli ultimi secondi prima del "ciack".' (Basso, 2015)

film needs. Lodovichetti asserts:

> The director is the one who has to mediate between all the figures involved. It is a very complex role […] because every professional involved in an audiovisual project wants to contribute. Thus, the director must always mediate between the overbearing desires of any head of departments to improve the result and the result that he will sign as his own. […] When the director approaches the stage in which he has to speak with the others, he already knows more or less what kind of film, product, emotion must spring out of the film.[14] (Lodovichetti, 2014)

Barclay (in Badham 2013: 34) goes back to the (previously explored) auteurial image of the director, affirming that in our culture there is an idea of a tyrannical director, a god who cannot be wrong because she holds the vision; this is the antithesis of the collaborative nature of filmmaking. It is proved by a substantial amount of the industrial accounts that collaboration is at the very core of filmmaking, and indeed Herman (2015), as a working director, reiterates that directors 'must recognize and embrace the fact that film is a collaboration' in order to be successful.

Directing Practice and Key Creative Relationships with Other Roles

The director covers an extensive range of tasks and her job involves coordinating numerous creative activities throughout the course of the filmmaking process. During development and pre-production, directors generally collaborate with writers in developing the script. When the director is also the writer, she assumes the role of the actual author of the film and tends to gain significant control over the production. Normally, directors assist casting directors in choosing the fitting actors, cooperating with producers in developing the shooting schedule and pre-visualising the shots in collaboration with concept artists, storyboard artists, production designers and directors of photography. Tashiro (in Fischer 2015: 101) claims that in the collaboration between director, director of photography and production designer, there is a

[14] Italian: 'quando ti trovi a dover sviluppare un qualsiasi prodotto audiovisivo il regista deve tirare le fila di una banda di artisti che cercano di dare il valore aggiunto a un copione. Il regista è quello che deve mediare tra tutte queste figure. È un ruolo molto complesso, sia sotto il punto di vista professionale, sia sotto il punto di vista umano perché ogni professionista coinvolto in un progetto audiovisivo vuole mettere del suo quindi il regista, secondo me ovviamente, deve sempre cercare di mediare tra le prepotenti velleità di ogni caporeparto rispetto al prodotto che lui firmerà. […] Quando il regista arriva nella fase in cui deve parlare con gli altri, lui già sa più o meno che tipo di film, di prodotto, di emotività debba scaturire dalla pellicola.' (Lodovichetti, 2014)

significant degree of confusion and misunderstanding due to the different nature of their tasks: in fact, while the production designer 'must first and foremost convince viewers that the world photographed exists physically', the cinematographer 'is largely dealing with the ineffable qualities of light'. A director can accurately pre-plan a film before principal photography takes place or allow the film to develop spontaneously during shooting. Hitchcock is probably the most known example of a film director who sticks to the storyboard as much as possible. In the famous film, *Psycho* (Hitchcock A., 1960), the scene of the murder in the shower was accurately depicted with all its fast cuts by the artist Saul Bass before shooting. Clint Eastwood instead 'only uses storyboards when special effects are involved, such as on Firefox [1982] and Space Cowboys [2000] and doesn't prepare shot lists either' (Elrick 2003). Frequently, external conditions influence how the director works on the process. Basso reports:

> In *Amori Elementari* we had to shoot in a hokey pitch that we had at our disposal only for one day. In order to spare time, we made the storyboards for those sequences and we ordered all the shots where the camera was in the same position. Storyboards are essential to understand what the set needs on those occasions.[15] (Basso, 2015)

During principal photography, the director ensures that all activities are executed efficiently and solves any unexpected problems which might arise. The director and the director of photography supervise the lighting of the set along with grips and electricians and adjust camera movements. All the camerawork such as the composition, framing and lens choice are revised and prepared with the focus puller and camera operator, generally following what has been discussed in pre-production. In *What to Expect When You're Expecting* (Jones K., 2012) the cinematographer Xavier Grobet discusses with the director the whole shoot beforehand to anticipate the variables of principal photography; in *Sleepwalk with Me* (Birbiglia M., 2012), the director of photography Adam Beckman spent a significant amount of time on location with a DSLR camera, walking through coverage and photographing the setups in order to gain pre-visualisation for the film. The director and the assistant director stage the extras appearing in the scene and consult the set dresser and the head carpenter in order to guarantee that there are no

[15] Italian: 'Il mio approccio dipende dal film e dalla scena. In *Amori Elementari* avevamo disponibile per un solo giorno uno stadio da hockey per fare alcune riprese. Per risparmiare tempo abbiamo fatto lo storyboard e messi in fila solo gli shot nei quali la macchina era sempre nella stessa posizione. Lo storyboard è fondamentale per far capire i bisogni.' (Basso, 2015)

logistical complications with the blocking. The director discusses with the sound crew the appropriate placement of microphones – and any supplementary sound gear – and then provides the actors with suggestions and instructions to guide them through the scene. To ensure that the actors are in frame during all camera movements, the director gives practical directions about where the camera will stand during the shot and how it will move, often using marks on set to give them visual references (this is especially so for digital effects films). In *Atonement* (Wright J., 2007) there is a sequence filmed as a five-and-a-half minute continuous Steadicam shot. Dunkirk was a beach resort in France where the English army massed for an evacuation during World War II. The director wanted to portray the desperation of the soldiers in such a difficult situation, walking the camera through the wounded troops without any cut. About one thousand extras were recruited and dressed as soldiers to populate the beach while the whole location was prepared with a gazebo platform, a Ferris wheel, tents, cars, motorcycles, buildings and a tin barge beached on the sand. Everything was carefully staged so that wherever the camera points to, an iconic action showing the brutality of war is framed (see Prince in Fischer 2015: 142).

Once the actual filming is finished, the director is called to supervise the post-production phase. The degree of a director's participation in such a stage differs from case to case. In classical Hollywood, directors usually had no input in cutting the film, however, contemporary digital effects have increased the director's involvement in the editing room because digital manipulation has blurred the distinction between making the film and modifying it. Post-production consists of four main stages which are editing, sound, music and digital effects. Editing develops the film's pace, trims the superfluous, reinforces continuity between shots and ensures that the montage supports the story. The director works with the sound designer and the composer in underpinning key sequences and accentuating actions. Relationships between directors and film practitioners can endure for a long time. For example, Justin Hurwitz, composer of *La La Land* (Chazelle D., 2016), met the director Damien Chazelle at Harvard University and later collaborated on Chazelle's most important films. For *La La Land*, the two worked hand-in-hand in order to develop a strong link between the script and the score. In some rare cases, a director personally composes the film's music – Charlie Chaplin

represents an example of this. The digital effects incorporate the manipulation of the raw footage by various digital artists such as animators and compositors. Such post-filmic treatments can range from Robert Rodriguez's development of the wholly digital cityscape of *Sin City* (Rodriguez R., 2005) to Robert Altman's choice of pre-flashing the negative of *The Long Goodbye* (Altman R., 1973) to intensify the washed-out colours of Los Angeles.

The Method as a Procedure to Avoid Inefficiency

Collaborative forms of art such as theatre and film are broadly known as mutable practices because of the different aspects involved in processes which vary from case to case. Indeed, every film is a different experience for the practitioners involved. In the light of this, filmmakers have always interrogated themselves – not always consciously – on how to deal with the filmmaking process. Gaudreault (2008: 73) asserts that in early films directing 'fell to the agent that, in the beginning, had been responsible above all for organizing and arranging the profilmic'. Jackson (1995: 146) describes the term "profilmic" 'as anything that appears on screen' whereas Souriau (1953: 8) defines it as 'anything that has been placed before a camera and captured on film'; for early cinematographers, directing meant coordinating the mise-en-scène. At that time, the recurrent term for a film director was "operator"; however, when film became more complex and more people began to get involved, it became necessary to split the role. In France, the term 'metteur en scène' appeared, inherited from the theatre, and the idiom "directeur de films" (film director) started to be used in 1918 (Gaudreault 2008: 71-74). A method to allow directors to guide the organisational process was established by the first cinematographers who, looking back for something similar to take their cue from, found in the long-standing theatrical tradition, a suitable solution. In fact, the theatre presents similarities in terms of creating a visual communication through an actor's performance, starting from a written script and its analysis, and passing through the design of the play and the actor's

staging[16]. Méliès, in *Les Vues cinématographiques* (Cinematographic Views), published in the Annuaire Général et International de la Photographie, affirms the organisation of a filmed sequence:

> The mise en scène is also prepared in advance, as are the movements of extras and the positions of the workers. It is exactly like preparing a play for the theater, with the exception that the author must know how to work out everything on paper by himself. (Méliès 1907: 362-392 in Gaudreault 2008: 143)

Marner (1972: 51) claims that 'All craftsmen, including film directors, have individual ways of working' but 'They have developed certain simple drills or procedures to avoid general inefficiency and, in what are often difficult circumstances, create the optimum conditions for creative work.' Dancyger (2006: 4) affirms that when contemplating the directorial task, it is possible to notice that 'There are certain definite steps that need to be taken in the process' and that in this 'There is a logic — a sequence — an order.' Proferes (2008: xviii) observes that all directors follow a method whether or not they are aware of it, and this derives from an innate dramatic instinct, their past experience or a combination of both. The structure that allows the director to coordinate the process is composed of constant identifiable elements which derive from the necessity of developing a written idea, a script, into a visual form of communication. The organisation of this task represents the director's method. Katz (1991: 98) states that there are five phases which are essential for film directing: scriptwriting, production design, script analysis, cinematography and rehearsal. From a professional point of view, Richards imagines the director's method as organising 'the process of directing the narrative film' (Richards 1992: 4) which is achieved through script analysis, shot design, movement (referred to as characters and camera), and directing actors. Making further comparisons between Richards' method and the one suggested by Proferes, it is possible to notice some substantial similarities. Indeed, Proferes (see 2008: xvii-xviii) proposes a methodology based on script analysis, staging, camera, actors' performance and post-production which diverges from Richard's methods more in terms of nomenclature rather than content. Belli and Rooney (2011: xvi) identify the method

[16] Staging (or blocking) is the positioning of camera and actor which is usually accomplished by directors, prior to shooting, through blocking plans. For certain productions, this can be improvised on set (see Glossary).

as a procedure by which the film director 'Interprets the script', 'Chooses every element within the frame', 'Shapes the actors' performances' and 'Tells the story with the camera'. The director's task is thus divided into key processes which are universally accepted as "work on the script", "shot design" – which are intended as a combination of visualisation and organisation of the shot – along with the "actor's performance". Perez (2015), analysing the director's approach from the point of view of an editor, affirms that even if 'every director is a special case […] it is possible to identify a pattern of how a film director achieves an artistic creation'.[17] Perez identifies in the director's work, a prototype, an aptitude in developing the process through specific steps which have been designed to avoid glitches. In the adaptation of such pattern to a specific project, the order of the methodical steps can change: for example, staging can be accomplished in pre-production rather than directly on set. The need of having established and communicated to cast and crew both camera and actors' movements is constant for every production, although the time at which this is achieved might vary, depending on the type of production. When asked about whether the director should follow a precise sequence, Bardani (2014) – it is significant to know that he never worked with digital effects – replied that the director 'doesn't need to follow any order'[18].

Experience is a key factor in shaping the director's method: having experienced the consequences of certain choices helps in defining more suitable ways of working (see Proferes 2008: xviii). Traina (2015) affirms that 'with enough experience you can avoid the same mistakes' and instead find the best solution to problems which arise during the filmmaking

[17] Italian: 'Ogni regista è un caso speciale. Si riconosce però un pattern di come un regista solidifichi una creazione artistica. Alcuni sono istintivi e provano meno, altri hanno bisogno di un processo prima di giungere alla soluzione.' (Perez, 2015)

[18] Italian: 'Non bisogna rispettare un ordine, ci sono registi che prima fanno una cosa e poi un'altra, chiaramente alcuni spiccano su una di queste. [Un regista] deve avere un approccio molto forte e quindi una preparazione tecnica. Vedendo solo alcune scene di un film devi capire chi è il regista di quel film e questo rappresenta una vittoria, a prescindere che il film piaccia o no. Quindi avere una riconoscibilità tecnica e stilistica è fondamentale. Bisogna avere poi un approccio particolare con la sceneggiatura e apportare un "imprinting" stilistico che lo contraddistingua, ovviamente insieme alla tecnica registica. Infine bisogna essere molto bravi con gli attori, e qui subentra la parte più emotiva, quella dove devi essere anche un po' psicologo per tirare fuori dall'attore quello che ha da dare al personaggio. Tutto questo viene coadiuvato dal carisma del regista che deve trascinare il set: è il punto di unione tra produzione, cast tecnico e cast artistico. E magari anche pubblico.' (Bardani, 2014)

process[19]. Experience is a subjective element, hence the question as to whether it is possible to identify a unique method based on experience, becoming a subject of debate. Processes such as script analysis and staging are constantly dealt with by directors because of the nature of filmmaking but the way in which these are specifically addressed can vary from project to project; this is influenced by the director's past experiences. Therefore, experience works on two levels: it pushes the director to apply an overall structure to the filmmaking process – which conventionally tends to be the same for all films – and provides the expertise to adjust it to the production's needs. A hint at the significant role experience has in forging the method comes from Hitchcock's observations on approaching the filmmaking process. He states:

> You've got to use an approach you're completely sure of. I mean literally, that whenever there is confusion or doubt in your mind, the first thing to do is to recover your bearings. Any guide or explorer will tell you that. When they realize they're lost, or they've taken the wrong road, they won't take a short cut through the forest, nor do they rely on their instincts to set them back in the right direction. What they do is to carefully go back over the whole road until they've found their starting point, or the point at which they took the wrong turn. (Hitchcock in Truffaut 1983: 186)

Hitchcock suggests an approach which involves the evocation of a procedural pattern like a set of self-imposed rules. Lodovichetti (2014) asserts that, as a director, he has developed a system of rules out of his experience, which he then self-imposed on his practice.[20] A similar statement is given by David Cronenberg who, looking at his personal way of working, claims:

> What now feels to me like the normal way of directing – I wouldn't say the only one – is something that I've invented myself. […] Through feedback and other crew members I get a mirror image of myself as a director. […] I invented my version of making cinema. (Cronenberg in Rodley 1993: 70-72)

There is a metaphorical shaping of the approach which occurs through the elaboration of feedback given by the crew and the revision of the mistakes committed in the previous film

[19] Italian: 'Il cinema è, secondo me, l'arte del "prototipo". Intendo dire che ogni film è un caso a sé e che se è vero che l'ispessirsi della propria esperienza aiuta a non ripetere gli stessi errori, è certo che ogni produzione presenta caratteristiche del tutto peculiari e occorre trovare sempre nuove, specifiche soluzioni. Ma d'altra parte è proprio in questo che consiste l'atto creativo, in questo continuo e forzato "problem solving", nel superamento di tutti gli inevitabili ostacoli che si frappongono tra l'ideazione di un film e la sua realizzazione.' (Traina, 2015)

[20] Italian: 'Fin da piccolo mi sono sempre informato, ho sempre letto, e ora mi trovo con questa griglia di regole che io mi sono autoimposto che molto probabilmente è il frutto di anni di studi. Però non riesco a focalizzarti con certezza da dove deriva questa metodologia. Studiando e continuando a fare film la cosa si rafforza. L'esperienza di aver lavorato con Sorrentino ha contribuito all'affermazione di regole che avevo già o alla creazione di nuove regole. Ogni esperienza arricchisce il tuo percorso'. (Lodovichetti, 2014)

productions. Basso (2015) affirms that 'along the way' a director builds 'a personal approach' thanks to the experience shared by the collaborators who contribute to the filmmaking process.[21]

Style and Method: The Decision-Making Process Described in Industrial Accounts

If the director's method represents the organisation of the process, style is the language that constructs all the creative decisions that directors make. As an example, the blocking of actors is considered a methodological procedure which is needed to organise the shooting, but the way in which the actors will be positioned in front of the camera is a matter of style that influences the look of the film. Lodovichetti (2014) uses Raymond Queneau's *Exercises de Style*, a collection of ninety-nine retellings of the same story, as an example that explains the concept of "style".[22] For Lodovichetti, a story can be told in many ways and directors can change the style of the film through parameters such as the choice of the camera, the make-up or the costume design. Bardani (2014) observes that a film must be recognisable both 'on a technical and a stylistic level',[23] and while the method is not perceivable by the audience, style definitely is and therefore needs a special commitment by the director. Neri states:

> Surely to take a script's page and transform it in images needs to have a methodology which is common for all the directors. But if you let different directors direct the same film, you will have different results. The work of codifying the script in images is the same but the style is different.[24] (Neri, 2015)

A confirmation of the immutable nature of the director's method, at least for films not involving digital effects, is given by Coglitore (2015) who identifies – with few exceptions – a constant

[21] Italian: 'Il mio atteggiamento non è assolutamente obbligatorio per tutti. Ho costruito un'attitudine personale di lavoro con cui mi trovo bene, mi trovo a mio agio con i miei collaboratori. [...] I collaboratori migliorano quello che tu fai grazie alla loro esperienza.' (Basso, 2015)

[22] Italian: 'Hai presente *Exercices de style* di Queneau? C' è una stessa storia che viene raccontata in molteplici diversi modi. La storia è sempre quella ma cambia la modalità di racconto. Lo stesso avviene nel cinema, ad esempio, se usi la camera a mano e non la fissa. A me non piace la camera a mano perché mi sembra di scrivere un libro senza punteggiatura. Questa però è una questione di stile.' (Lodovichetti, 2014)

[23] Italian: 'Vedendo solo alcune scene di un film devi capire chi è il regista di quel film e questo rappresenta una vittoria, a prescindere che il film piaccia o no. Quindi una riconoscibilità tecnica e stilistica. Bisogna avere poi un approccio con la sceneggiatura e un imprinting stilistico che lo contraddistingua insieme alla sua tecnica registica.' (Bardani, 2014)

[24] Italian: 'Sicuramente prendere una pagina di una sceneggiatura e farla diventare immagini comporta avere una metodologia che accomuna tutti i registi anche se poi lo stile diversifica i vari registi. Se fai dirigere lo stesso film a diversi registi, il compito di trasformare la sceneggiatura in immagini è lo stesso ma il risultato sarà diverso. Perché cambia non la metodologia ma lo stile dei registi'. (Neri, 2015)

methodology in his way of directing.[25] Similarly, Lodovichetti observes:

> There are mandatory steps such as script analysis which belong to the film's logistics and every director needs to follow. You cannot avoid parameters which are deeply connected with production and its necessities. […] In this context, you insert your creative parameters.[26] (Lodovichetti, 2014)

Figure 2: Titta Di Girolamo is sentenced to death by the Italian Mafia in *Le Conseguenze dell'Amore*.

Industrial accounts make similar statements on style and method. Style is deeply connected with the technical requirements of the shooting which may be subject to external factors such as location. Frequently, directors have to make creative decisions according to the technical requirements of the project as a subordination of their creativity to the production's needs. A practical example of this is given by Giuliano, who writing about the production of *Le Conseguenze dell'Amore* [Sorrentino P., 2004], states:

> Usually I do not interfere with director's decisions, but the production could be decisive in case of economical/practical issues. For example, the last scene of *Le Conseguenze dell'Amore*, where Titta Di Girolamo (played by Tony Servillo) is immersed in concrete, should have happened at night-time. Lighting up a quarry that big at night was very expensive though. Talking with the director Paolo Sorrentino we thought that shooting that specific scene in daylight could have given it an emotional impact because

[25] Italian: 'Ogni lavoro che affronto è una ricerca, un viaggio. Do tutto me stesso ad un film e ricevo tanto da esso. A fine lavoro, mi sento sempre più ricco come persona e come artista, quindi è una crescita continua che ti prepara al lavoro successivo. Si impara tanto e tutto serve […] Normalmente mi avvicino nello stesso modo ad ogni film che faccio. Possono esserci sfumature diverse da film a film, ma normalmente metodologia e approccio sono uguali da parte mia. Alcuni lavori richiedono una preparazione più attenta, più particolare altri un po' meno.' (Coglitore, 2015)

[26] Italian: 'Ci sono passaggi obbligati come l'analisi del testo che fanno parte della logistica del film e ogni regista segue. Non puoi prescindere da parametri che sono legati alla produzione e alle sue necessità. […] In questo contesto te inserisci i tuoi parametri creativi.' (Lodovichetti, 2014)

> the rest of the film was mainly shot at night, indoors. And we found it true.[27] (Giuliano, 2015)

The solution tried by Sorrentino and Giuliano showed to be particularly effective because the audience perceives it as a stylistic choice: the protagonist who always lived in "darkness" finally finds the courage to rebel against a system that kept him a slave for many years, heroically accepting a death sentence instead of going back to his grim existence. The bright sun in this context represents this revolt and strengthens the protagonist's decision. It is conceivable that other options were analysed by Sorrentino and the production team, however, this specific one became a stylistic alternative which proved to be far more effective than the writer/director's first idea. The decision, in this case dictated by a technical issue, enhances the message of the story and gives to the film a strong photographic impact. Decision making is reported in industrial accounts as the key feature of film directing because through it the film is shaped. Mollo states:

> […] in teaching someone how to direct a film, you always ask yourself if there is a unique method to teach to your students in order to do the job. […] there is a common element to all directors which is the decision making; I refer to all those decisions that you have to make about how to tell the story, from what point of view and what kind of image and style you want to use. In these choices though everyone has a personal approach.[28] (Mollo, 2015)

Gilliam notices the nature of this process:

> What's interesting about these choices we deliberately make is that they provide an excuse for doing what we do. We can say we did it for intellectual or academic reasons, but whether or not it works is something totally different. You walk into some scenes not knowing how to deal with them, and you take a pattern off the wall that works somewhere in your memory of films; you use it, and sometimes it's correct and other times it's not. I like it especially when we're really wrong and yet it works – those are the moments when you learn something. In fact, it's often difficult to remember why you were doing something in the way that you did it at the time, even though you usually have a reason for it. (Gilliam in Christie 1999: 211)

[27] Italian: 'Solitamente non intervengo nelle scelte registiche, ma (come dicevo prima) la produzione può essere decisiva in caso di problemi economici e/o pratici. Ad esempio la scena finale de Le conseguenze dell'amore, in cui Titta (il personaggio di Toni Servillo) veniva immerso nel cemento, doveva avvenire di notte. Illuminare una cava di quelle dimensioni di notte però era molto costoso. Discutendo con Paolo Sorrentino abbiamo considerato che girando la scena di giorno le avremmo dato ancora più risalto all'interno di un film ambientato prevalentemente di notte, in interni. Era vero.' (Giuliano, 2015)

[28] Italian: 'Io insegno regia e mi sono confrontato spesso con questa domanda perché nell'insegnare a qualcuno a fare il regista ti poni il quesito se esiste una metodologia unica da insegnare per poter fare questo lavoro. […] In modo universale, il lavoro di tutti i registi è accomunato da questo comune fattore che è quello di dover fare delle scelte, di dover scegliere come dover raccontare la storia, da che punto di vista e che tipo di immagine e narrazione si vogliono usare. Però poi nelle scelte ognuno dà il proprio apporto personale.' (Mollo, 2015)

Conclusion

Information on the director's role is gathered throughout the analysis of industrial directing models which gives key details on how this figure is perceived by other film practitioners. Many directors have been repeatedly likened to musical conductors, military generals and ship's captains: each of these embracing attributes, such as leadership or crew management, which are considered significant for the role. From this analysis, it can be deduced that directors are generally accepted as the figure in charge of the whole production and, as a consequence, the film is perceived to be their creative vision – an acknowledgement which gives them the credit of a film's success. As evidence shows, a director's duties are particularly challenging to identify because film directing represents an all-encompassing and complicated process which involves different elements. However, the director is widely perceived as the figure who holds the vision and conducts the story with a precise direction through which the audience gets involved. In the light of academic scholarship, this has associated the director with the role of a creative genius, or auteur, who marks the film with her style, while industrial accounts are more in favour of a collaborative figure who supervises the process and makes sure that the production's needs are achieved. For industrial accounts, the director has the responsibility of coordinating the team and insuring that the film is presented as a unique product. In order to have a form of unity it is essential that everyone involved in the process works coherently towards an agreed end and this is the reason why directors are hired. This is confirmed by the fact that a missing communication between all the parts leads to loss of control and the consequent inclusion of irrelevant ideas in the process.

Excluding exceptions such as digital effects films, throughout film history directors has adopted a common methodology to face the filmmaking process. Although film directors, like other craftsmen, have individual ways of working, they have developed certain common procedures in order to create the optimum conditions for creative work and to avoid general inefficiency. These procedures represent the director's method which is the organisation of the process through a set of rules aimed at efficiently transforming the script into moving images. As the analysis on industrial resources showed, the director's method is characterised by

constant elements which are represented by work on the script, shot design and actors' performances. However, evidence also shows that although the method is considered an unvarying pattern, the variables of film production influence the way directors approach the single steps in this workflow. Experience represents a core element because directing is founded on decision making and having experienced the consequences of certain choices shapes how the method is adapted to a specific film production.

The identification of a method for films not involving digital effects raises the question as to whether this can be applied to other typologies of film productions such as the digital effects film. In order to answer this, it is significant to analyse the process of the digital effects creation and establish whether the involvement of different procedures can influence the director's method.

Chapter Three

Filmmaking Involving Digital Effects: A Unique Process

An Introduction to Digital Effects Creation

The current literature is characterised by the oversimplification of special effects, defining the term as all the effects not involving digital manipulation. This means having on the same level practical/mechanical effects and optical/in-camera effects; this is rather simplistic because it does not consider the way in which these are achieved and their impact on the filmmaking process. Shooting an explosion is certainly very dissimilar from blending two shots with an optical printer; for the former, the effects can be achieved on set (with all its implication for principal photography) while for the latter there is the need to work on manipulating the footage in post-production. Therefore, it is necessary to introduce a further differentiation for effects achieved in the lab without digital manipulation which is visual effect. Fink and Morie (ibid.: 2) state that 'Visual effects is the term used to describe any imagery created, altered, or enhanced for a film or other moving media that cannot be accomplished during live-action shooting' and that 'much of the art of visual effects takes place in post-production, after primary image capture is complete' using techniques 'such as matte painting; rear- and front-screen projection; miniature or forced perspective sets; computer graphic objects, characters, and environments; and compositing of disparate images recorded in any numbers of ways'. The term emerged as an evolution of the term "special effects", as reported by McClean (2007: 6) and Prince (2012: 3); however, the two are achieved in different ways (Gregory 2015: 248). IMDb defines visual effects as 'Alterations to a film's images during post-production'[29] and a special effect as the 'artificial effect used to create an illusion' which is 'produced on the set'.[30] These definitions make clear that the visual effects creation is a process which involves a manipulation of the device or the footage, generally in post-production, while special effects are physically

[29] IMDb, Movie Terminology Glossary: V. File available at: http://www.imdb.com/glossary/V, accessed 11 November 2015.
[30] IMDb, Movie Terminology Glossary: S. File available at: http://www.imdb.com/glossary/S#sfx, accessed 11 November 2015.

performed in front of the camera and filmed. Visual and special effects 'go hand in hand' in 'the current methodology, such that it is often difficult to determine what was a special effect and what was a visual effect' (Finance and Zwerman 2010: 2). Swartz (2005: 24) observes that 'visual effects have increasingly become computer generated' and 'even films that are not primarily visual effects films'[31] have taken advantage of digital manipulation (ibid.: 24). Similarly, Radke (2013: 1) states that in contemporary film 'almost all visual effects involve the manipulation of digital and computer-generated images' and these effects are 'so common that they're incorporated into virtually all TV series and movies'. This is the reason why visual effects and digital effects are often used as synonyms in the Modern Entertainment Marketplace.[32]

Caldwell (2008: 97) states that 'the digital visual effects industry at the present time covers an extremely wide range of activities, from unobtrusive touch-up services to massive visual engineering'. In a digital effects film, some effects are meant to be overt, others are meant to be invisible, but whatever the use, they aim to create and maintain the suspension of disbelief in an audience. Indeed, when digital effects are consistent within the story, the spectator manifests a sense of acceptance, meaning the digital enhancements are not questioned nor intellectualised. Loss of believability, which happens when digital effects are unrelated to the story, disconnects the audience from the narrative and encourages it to scrutinise the effect rather than being absorbed by the film. From early cinema to the digital era, visual effects have experienced notable developments in order for them to seamlessly blend reality with unreality and convince the audience of the believability of what it sees. In the beginning, visual effects were restricted to what could be accomplished in-camera and therefore they were considered an intrinsic component of cinematography. Then digital effects gradually became a standard solution to the many challenges of the visual effects film. Thanks to digital technology it is

[31] Fink (2001) notes that 'the division between what is and is not a visual effects movie has narrowed as new technology has made it possible to integrate shots more seamlessly'. He, giving his definition of the visual effects film, focuses on those films that 'have enough such shots that the production has chosen to involve a visual effects supervisor from pre-production' (ibid.). See "digital effects film" in the Glossary.
[32] In this dissertation, the quotes on contemporary films frequently use the term "visual effects" referring to "digital effects".

nowadays possible to support the naturalness of camera capturing reality, up to the point of confusing the audience about what is digitally manipulated and what is actually shot in front of the camera. Although digital effects, when compared to practical effects, are extremely flexible because they can be revised infinite times after shooting, their creation needs a structured workflow known as the "digital pipeline". This might be different for each case because it must be adapted to the necessity of the production, although generally, it is composed of defined steps. For example, in pre-production, sequences are usually pre-visualised through particular tools – such as previs – in order to prepare the material required for the following phases. The pre-visualisation outcome is used by the visual effects department to start procedures such as modelling and texturing, which are continuously refined throughout the whole film production process; these are essential to create computer-graphic objects that are added to the live-action footage. The production team organises the shots involving digital effects beforehand because these may require a specific set or separate shootings to be achieved. Once shooting begins, the visual effects team gathers information such as camera aperture, lenses etc. to feed into the pipeline; information from the set is used to create virtual cameras that emulate the real ones but operate within a virtual set. It is usually in post-production that the digital effects are merged with the live-action footage; shots are then completed and corrected through the involvement of digital operations.

This chapter will demonstrate that the involvement of a digital pipeline has an impact on the director's method. This is observable in how digital effects creation changes the filmmaking process. Furthermore, digital effects films always involve a collaborator known as the visual effects supervisor who is on-set to advise about the set-up and help the director in controlling the actors' performance. This professional figure is head of the visual effects department and participates in all the production stages, representing a significant divergence between using or not using digital effects.

A Brief History of Visual Effects and the Digital Era

Special and visual effects are as old as film. Initially, effects were achieved by manipulating the cinematograph, reversing the film and editing in-camera, stopping the device and changing the set and starting to shoot again so that objects appeared and disappeared on screen. Conjurations were thoroughly used in combination with in-camera effects to amaze the audience, who were as startled as if the film was a stage magic show. The first acknowledged visual effects were used in *The Execution of Mary, Queen of Scots* (Clark A., 1895) shot at Thomas Edison's studio in New Jersey in the United States. Through a substitution shot, a dummy replaced the actress playing Mary moments before the executioner chopped off her head. A seamless match between the shot with the actress and the one with the dummy makes the action appear continuous when projected. Few months later, George Méliès accidentally discovered the same technique while filming in Paris: his camera jammed during a shoot and transformed a bus into a hearse (Fink and Morie in Okun and Zwerman 2010: 4). From then on, productions in America and Europe started to influence each other, competing to amaze the audience with new spectacular effects and starting de facto what is academically known as the "cinema of attractions" (Gunning 1990). North (in Keil and Whissel 2016: 39) affirms that early effects 'were often explosive, disruptive, and ostentatious, and they did not immediately accord with the move toward integration of spectacle and narrative or invisible editing techniques' which instead happened gradually. North (in Keil and Whissel 2016: 40) further claims that already by 1909 it was common to find films involving a vast range of special/visual effects which were integrated with the narrative – whereas years later these were only used as attractions by unrelated films. The era of the "cinema of attraction" was a time of experimentation for special/visual effects which led to the standardisation of techniques and production practices. A significant number of the first photographic tricks arose from the affordances of the rudimentary device (North in Keil and Whissel 2016: 40). For instance, in *Demolishing and Building Up the Star Theatre* (1901) Frederik S. Armitage shot one frame every four minutes showing the demolition of the Star Theatre to show the process at fast speed. During exhibitions, he used to reverse the film to show the building restoring itself. Visual effects became increasingly more complex and began

to require specialised technicians on set to achieve, combine and integrate them with the actors. In 1903, influenced by the fairy-tales films of Méliès, Edwin S. Porter made *Jack and the Beanstalk* where combined substitution shots, multiple exposures and dissolves give life to fairies and giants. In the same year, he realised *The Great Train Robbery* which became a break-through work for the "trick film" genre. In one interior shot in this film, a train is seen passing outside a station window. This was shot on set using black matte to hold out the previously exposed region and then filming a moving train in the unexposed area. Such techniques would be heavily used in the years to come.

The decade of the 1920s was characterised by more elaborate in-camera effects and the development of sophisticated matte paintings for backgrounds. Percy Day in England and Norman Dawn in California refined the latter technique which became standard for all visual effects films (a modernisation of the term "trick films") later made. Other important matte painters who later experimented with this technique have been Emil Kosa – who won the Best Visual Effects Oscar with *Cleopatra* (Mankiewicz J. L., 1963) after the Academy Awards changed the title from "Best Special Effects" – Albert Whitlock and Jan Domela. To extend sets and create the illusion of imaginary spaces, glass shots and miniatures started to be used more consistently, until they were completely replaced by matte shots (Rogers in Keil and Whissel 2016: 71). In *Robin Hood* (Dwan A., 1922) towers were painted onto glass panes between the scene and the camera to embellish the shot. Fritz Lang's *Metropolis* (1922) consecrated the Schüfftan process – named after its inventor, Eugen Schüfftan – which involved using glass at a forty-five degree angle between the camera and the miniature building and the removal of the reflective surface where the actors had to appear. The actors were placed behind the glass pane so that the result showed the miniature (reflected in the pane) and the actors in scale with the building. In the same year, for the first time, Sam Wood used the Williams process for *Beyond the Rocks*: the technique, invented by Frank D. Williams in 1916, 'involved photographing foreground action against a black background using a Bi-Pack that gave a transparent negative' and then creating a travelling matte with the negative to add the background – this technique produced no transparencies, as was the case for multiple exposures (North in Keil and Whissel

2016: 47). The Dunning process, invented by C. Dodge Dunning in 1925, is similar to the Williams process but uses yellow light to illuminate the actor so that the separation from the blue screen is improved. Such techniques were used in *King Kong* (Cooper M. C. and Schoedsack E. B., 1933) to composite live-action over miniature backgrounds. Travelling mattes played an important role in the following decade before being replaced by rear projections and then front projections. Through the use of projections, it was possible to combine foreground performance with pre-filmed backgrounds projected on a screen. In rear projections, the footage was projected onto a screen from behind the performers; such a technique was often used to show actors in moving vehicles (which in reality were shot in the studio). In front projections, the pre-filmed material was projected over the performers and onto a highly reflective background surface. Simultaneous with the development of projections, 'an increased reliance on optical printing facilitated the creation of composite shots in postproduction' (Rogers in Keil and Whissel 2016: 73). The optical printers took over the effects previously achieved in-camera and enabled the deep focus aesthetic of *Citizen Kane* (Welles O., 1941). However, between 1950s and 1960s, the increased use of colour and shooting on location 'threw this previously stable technique into turmoil among practitioners' (Turnock in Keil and Whissel 2016: 92). As a consequence, optical printing technology gradually became more integrated with post-production effect techniques, leading to a shift in production timelines (ibid.: 120). The post-war years that followed stirred the focal point of film to outer space. The development of the Motion Control Rig by Paramount led to more sophisticated shots. In the same years, the SAGE Machine (Semi-Automatic Ground Environment) was created to track enemy fighter planes during the Cold War; this provided the film industry with the first interactive computer graphics.

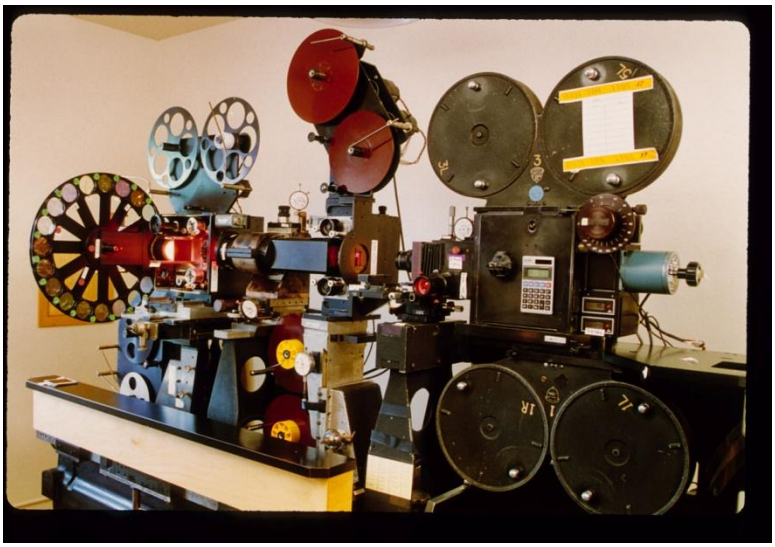

Figure 3: The Anderson optical printer which was used on Alfred Hitchcock's *North By Northwest*.

Between 1968 and 1977, three major films started the visual effects heavy blockbuster trend: *2001: A Space Odyssey* (Kubrick S., 1968), *Star Wars* (Lucas G., 1977) and *Close Encounters of the Third Kind* (Spielberg S., 1977). The success of these films led visual effects production to experience significant changes. *2001: A Space Odyssey* marked a groundbreaking point for camera control which allowed for the achievement of iconic "slit-scan" images. By the mid-1970s, the basic digital control of electronic motors had been introduced for controlling the motion of cameras and miniatures in multiple axes (Fink and Morie in Okun and Zwerman 2010: 9). *Star Wars* was the first film to deploy a motion-controlled camera hooked to a computer which provided Lucas with the ability to show camera movements unlike anything hitherto seen in theatres. The rather informally assembled crew for *Star Wars*, previously known as *Lucasfilm*, incorporated into an independent effects house renamed Industrial Light and Magic (ILM) and began to pioneer a streamlined approach in making effects for feature films (see Turnock in Keil and Whissel 2016: 126-127). This convinced other small effects houses to specialise in effects for feature films, some focusing on practical effects – such as the animatronics for *Jaws* (Spielberg S., 1975) – and others on visual effects – such as the optical effects used for *Close Encounters of the Third Kind* (Spielberg S., 1977). The foundation for the new generation of images appearing in *Jurassic Park* (Spielberg S., 1993) or *Forrest Gump*

(Zemeckis R., 1994), can be traced back to the 1960s when academics and industry professionals from different fields started to test the computer's capabilities in drawing, painting and modelling (see Prince 2012: 12). In the late 1950s, John Whitney, Sr. began to create images using surplus analogue military equipment: he photographed moving patterns of light moved by analogue computers which later inspired the stargate sequence for *2001: A Space Odyssey* and Hitchcock's *Vertigo* (1961) opening sequence (Fink and Morie in Okun and Zwerman 2010: 10). In 1962, a scholar named Ivan Sutherland introduced the concept of the interactive computer graphic and created "Sketchpad", a program with associated hardware which made possible to draw on a cathodic ray tube with a light pen (Prince 2012: 15). In 1967, environmental reflection and 2D morphing techniques were developed; Ed Catmull developed texture mapping in 1974, which was later refined by James Blinn in 1976. Research on the subject generated numerous academic papers and attracted the opinion of various experts; SIGGRAPH (Special Interest Group on Computer Graphics) was founded in those years and in 1974 held its first conference (ibid. 13). In the early 1970s, John Whitney, Jr. and Gary Demos, who were already collaborating on the Triple-I to produce image processing equipment and high-resolution scanning, founded the Motion Picture Products Group and started to create CGI for films and commercials (Fink and Morie in Okun and Zwerman 2010: 10-11). In the same period, Sutherland formed the E&S company to build computer simulators for military ships and airplanes. Such widespread interest in computer graphic generated the first computer paint system which allowed artists to work on pixels. However, filmmakers in the late 1970s and early 1980s struggled to see the technology's full potential because processing power requirements and render times for CGI were enormous (Purse in Keil and Whissel 2016: 150). The first filmmakers who understood the capabilities of such technologies and the benefits that these could have if produced in the industry, were Francis Ford Coppola and George Lucas. In particular, Lucas' company contributed to a program of pure research, focusing on digital applications in film production, and later founded ILM using the crew involved in *Star Wars* (1977) – renowned artists such as Dennis Muren, John Dykstra and Richard Edlund were among those who joined. Triple-I conducted tests on *Close Encounters of the Third Kind* (Spielberg S.,

1977) and created the 2D graphics for *Westworld* (Crichton M.,1973) but Hollywood did not notice the use of such technology in film. Indeed, while digital effects continued to be used in various film productions with small applications these did not meet with the commercial success which could have changed the industry. Examples include the shaded 3D hand and Peter Fonda's head in *Futureworld* (Heffron R. T., 1976), the digital imagery of *Tron* (Lisberger S., 1982), the first CGI animated character in the film *Young Sherlock Holmes* (Levinson B., 1985) and the use of digital morphing in *Willow* (Howard R., 1988) – it is significant to report that in this period, special effects and digital effects industries started to merge. Stop-motion was replaced by Go-motion, created by Phil Tippet for *Dragonslayer* (Robbins, M. 1991); Pixar developed RenderMan, a photorealistic 3D rendering software which has been used for a significant number of both computer-animated films, such as *Beauty and the Beast* (Trousdale G. and Wise K., 1991), and digital effects films, such as *Terminator 2: Judgment Day* (Cameron J., 1991). The first commercial success for a film involving digital effects arrived precisely with Cameron's film, with a fully CGI villain who had been created by ILM. However, it was Spielberg's *Jurassic Park* which made it clear that digital effects were ready to be used in film. Prince (2012: 25) claims that 'a carefully orchestrated marketing campaign promoted the film's use of digital images and promised viewers they would see dinosaurs that were more vivid and lifelike than any they had seen before in the movies'. *Jurassic Park* succeeded in meeting these expectations, creating interest around digital effects as a cultural phenomenon. From that moment on, digital effects began to be regularly used in films and technologies developed at a fast pace. Fink and Morie (in Okun and Zwerman 2010: 13) state that since *Jurassic Park*, visual effects have evolved more than during the previous one hundred years of cinema. The optical printing, which had dominated the film industry for decades, faded away in favour of faster techniques, while the progress in digital effects became a direct consequence of the power and complexity of computers. The transition from visual effects to digital effects exacerbated the thinning of the pack which had already been triggered by the bid system (see Turnock in Keil and Whissel 2016: 127) transforming the whole of effects production: effects creation, which was an internal process for the studios, gradually shifted to an operation managed by

effects houses working under a bid system. Caldwell (2008: 160) claims that the 'highly specialized skills of CGI and digital post-production demanded a different kind of commitment and infrastructure than the major studios or networks were willing to provide'. The success of effects boutiques also occurred because these did not have to deal with the constraints of limited workaday hours, overtime and benefits that a union worker would expect by contract (ibid.: 161). Audience awareness of digital manipulation in film grew with the years. Viewers have been gradually provided with the tools and instructions to understand and even create the effects seen on screen, shifting from the spectacle of stage magic, where the audience had to guess how things were done, and the studio system, which did its best to withhold from the public any information about effects creation, to a comprehensive understanding of contemporary filmmaking (see Caldwell 2008: 283-284 and Keil and Whissel 2016: 15). Rombes claims (2009: 77) that in the digital era 'There are no secrets for movies to confess, so they confess to having no secrets: this is what supplements and bonus features on DVDs amount to'. The increasing amount of material available online and the development of software able to manipulate images with minor effort has amplified the use of digital effects in contemporary productions for all budgets. A confirmation of this tendency comes from hosts for user-generated video websites, such as Youtube, where it is possible to watch a substantial number of videos made with no budget but involving some complex digital effects. Blogs and tutorials on how to make digital effects at home have grown considerably in the last decade participating in making digital effects a popular phenomenon.

Digital Effects Creation in Contemporary Film: The Digital Pipeline

Although digital effects have the same aim of their predecessors, when digital technologies were beginning to become involved, the effects creation process did experience a substantial change which influenced film production. McClean (2007: 9) claims that 'the use of digital images in film is quite advanced and, while production pathways are eased by growing use of digital-camera image capture through to the very-well established use of digital sound and digital editing', digital image creation 'remains an area of particular interest and should be understood

as a specific aspect of the overall production path'. Fink and Morie (in Okun and Zwerman 2010: 13) state that the improvements in digital effects have had the major impact of opening 'creative options well into the post-production process, virtually until the last possible moment'. Every aspect of the film can be digitally manipulated and because of this 'filmmakers are no longer disciplined to make critical creative decisions up front' (Fink and Morie in Okun and Zwerman 2010: 13). Nixon (2014) asserts that in digital effects films 'there are always refinements that can take place along the process', a tendency which can blur the edges of all the production stages. This is well documented for *World War Z* (Forster M., 2013) where the production shut down during post-production and went back to writing in order to get a more fluid act of the film (ibid.). Williams claims:

> The truth is that, like any creative process, you need the freedom to continue to be creative which means that there might be a time to modify something along the way, not planned before, because it makes the movie better. And that is a very common occurrence [in digital effects film]. […] We [digital effects practitioners] try to be as careful and efficient as we can in the planning but the truth of the matter is that you don't want to ever tell the director that he has to stop being creative […] It's all about empowering the creative force of the movie to be creative. (Williams, 2013)

Seymour (2014) observes that 'Digital visual effects, compared to traditional special effects' are seen as 'being nearly infinitely flexible and thus able to be revised over and over again'. In fact, 'If there are only two miniature models built for a practical explosion then to do a third take is clearly more cost and time' while 'If the second revision of a digital explosion simulation is not right, it is almost always assumed it will be re-rendered or re-simulated until the correct creative output is agreed upon' (ibid.). Seymour (ibid.) adds that 'The hard costs of equipment electricity, staff costs, air-conditioning on vast render farms, rent, and even depreciation are not seen in the same way as a crumbled miniature model on the sound stage floor.' Gutierrez (2014) claims that 'The most important thing that has changed with digital effects is the fact that directors can think about their films without boundaries' because CGI can be modified late in the process. However, a digital effects film is not entirely made of digital characters and environments. CGI sequences can be added in post-production and digital effects can substantially modify the live-action footage, but digital effects film constantly needs real actors to perform in front of the camera. In order to seamlessly blend the two layers, the process

requires planning so that the digital technology around the actors can be shaped and the performance organised. It emerges that digital effects provide the director with a certain autonomy in post-production while demanding strict planning before principal photography.

In *Avatar* (Cameron J., 2009) the actors worked in a particular area called "Volume" appositely conceived to achieve motion capture: with particular cameras hung on the ceiling and markers on the actors it was possible to analyse the actors' movements and apply the same ones on the CGI characters they were playing, as described by Duncan and Fitzpatrick (2010: 15-16). In *Transformers 2: Revenge of the Fallen* (Bay M., 2007) there is a scene where the protagonist is immobilised by the villain, the robot Megatron. Shia LaBeouf, the main actor, not only speaks with the CGI character, but also struggles in his hold in order to avoid the menace of another robot who is trying to open his mouth. The camera moves around the protagonist and shows Megatron and the other robot as they were genuinely captured; this implies that the real actor is been filmed in an empty space and the robots added later in a seamless combination of live-action footage and CGI. In both examples, the actors had to imagine themselves immersed in the colourful world of Pandora or the gritty industrial landscape populated by evil robots, while they were instead performing a mocap suit or using a green screen. This approach to acting is different from films where the actor's performance relies on tangible elements and the actor reacts to realistic situations.

Figure 4: Sam Witwicky (Shia LaBeouf) struggles in Megatron's hold in *Transformers 2: Revenge of the Fallen*.

On occasions like these, productions have to coordinate real and unreal elements as if they were moving on the same plane, an occurrence which requires the use of several techniques with a subsequent impact on the filmmaking process. Giuliano states:

> In the case of *Il Ragazzo Invisibile* [Salvatores G., 2014], a film with a huge amount of digital effects, it has been necessary to have the visual effects team on set. Obviously, filming techniques change and all the departments have to adapt to this. The director of photography needs to change his approach, the costume designer too. As an example, he has to avoid certain colours or modify some clothes depending on necessity. Even the environment can be built with a computer, subjecting actors to a great effort in order to imagine the set while in reality they are moving on a green screen. There is no doubt that all of these influence the way the director works.[33] (Giuliano, 2015)

The decision of using one technique rather than another is part of an analysis which is undertaken ahead of the shooting. In this, several parameters are considered. Kerlow (2004: 45) claims that 'Choosing one technical implementation—or a specific combination of techniques—over all the others usually requires finding a balance between the best way to achieve the desired result and the least expensive way to do so'. This operation is known as the production workflow, a procedure which is particular significant in digital effects films. Bugaj (in Okun and Zwerman 2010: 784) defines a workflow as 'a specific set of procedures and deliverables that defines a goal' where 'the task is the goal-oriented view of the work, and the deliverable is the resulting definition'. Kerlow (2004: 46) asserts that building a production workflow is achieved by 'looking at the specifics of the production' and 'sharing the proposed flow with the core members of the team, seeking their feedback' then incorporating it 'into the production plans'. The risk for digital productions is to 'miss their goals because of a poorly structured production flow' or the lack of communication between departments (ibid.: 46). Perrotta (2013) affirms that 'The most common issues of digital effects production are lack of accurate shot planning, an insufficient dialogue with the client which decreases the quality of the work, plus useless iterations which can waste a lot of time.' For Kerlow (2004: 46) the key element of this

[33] Italian: 'Nel caso de "Il ragazzo invisibile", un film con un intervento massiccio di effetti, è stato necessario avere sul set i responsabili degli effetti digitali. Le tecniche di ripresa naturalmente cambiano, e tutti i reparti si devono adattare di conseguenza. A cominciare dal direttore della fotografia, che deve modificare la propria impostazione del lavoro, come pure il costumista che magari deve evitare certi colori o apporre modifiche ai capi per esigenze di scena. Anche la scenografia può essere ricostruita al computer, obbligando gli attori ad uno sforzo maggiore per immaginare il set mentre in realtà si stanno muovendo in un teatro di posa circondati da teli verdi (il famoso "greenscreen"). È indubbio che tutto questo influisca sul modo di lavorare del regista.' (Giuliano, 2015)

process is the optimisation of the procedures involved in order to ease execution, an operation which passes through the collaboration of several figures with different goals to achieve. Bugaj (in Okun and Zwerman 2010: 785) explains that in digital effects the workflow 'defines what the artists need to do to receive the input deliverables', perform each step and 'hand off the output deliverables'. The workflow can be implemented into a pipeline which represents a series of processes 'with the output of one process being the input of the subsequent process' (Bugaj in Okun and Zwerman 2010: 786). Birn (2006) states that 'A visual effects pipeline is focused on integrating computer graphics with live-action film' through various technical processes. Williams (2007b: 27 in Julier and Moor 2009) asserts that with a digital pipeline, cinematographers and production designers are able to establish parallel workflows because the exchange of working copy can begin earlier, thus a film can be in pre-production, production and post-production at the same time, that is, while digital effects, script and shooting are still being worked on. Film productions involving digital effects on a large-scale are constantly characterised by a digital pipeline through which the necessary procedures of effects creation are methodically organised. Perrotta, illustrating a general pipeline for CGI integration, describes it as follows:

> Based on the budget and the necessary work to achieve the results, the production team arranges a number of hours for each artist who will work on a specific scene. From then on, there is a continuous and mutual exchange between all the agents involved. The 3D department starts to prepare the virtual space while the compositing department prepares the plate in order to work on the integration of the 3D space and live-action footage. It is often in the compositing process that there is substantial work on the "look development" with a continuous "ping pong" with the client, frequently the director, who sends his feedback. This involves a collaborative process between the director and the visual effects supervisor throughout the whole film production. (Perrotta, 2013)

Scott (2005: 100) claims that 'The production activities of digital effects firms revolve primarily around computer graphics operations carried out within project-oriented work groups'; where 'each group usually consists of a tightly knit team of creative and technical workers' led by a supervisor who is responsible for day-to-day production activities (ibid.). In the analysis Scott has conducted, it emerges that the production processes in the digital effects industry collapse into four main factors: graphic work (compositing and matte painting), film processing (scanning and printing), advanced graphics capabilities (three-dimensional animation) and

technical backup operations (software programming and motion capture), all of which are highly skilled tasks (Scott 2005: 101). This demonstrates that the internal structures of production for digital effects are divided into distinctive classes of activities which must be coordinated throughout the film's production.

The pipeline depends on the project and visual effects companies have developed their own pipeline to adapt to it, depending on the case. Goulekas (2001: 136) affirms that 'There is no industrial standard for the setup of a digital pipeline, as not only does each facility have its own unique standards, but the requirements of each project can also dictate the need for slightly differing pipelines within the same facility.' However, it is possible to describe a common pipeline for a digital effects film because digital effects involve specific processes which are universally known as being essential to their creation. In fact, Whitehurst (n.d.), as a visual effects supervisor, states that 'Whatever the size of the show, the basic flow and order in which things get done is pretty much the same' and 'Whilst there will be differences in organisation from facility to facility' there is a common pipeline which 'represents a good general guide to all the places' he has worked and know 'of second hand' (ibid.). Dulull (in Escape Studios, 2014) observes that, 'before any visual effects starts', the filmmaking process begins with pre-production where 'a script breakdown' is involved; this is because visual effects companies are asked to bid on the work. With this process it is possible, for example, to see which part of the film will require digital effects or special effects (ibid.) and how much it will cost. Bouchard similarly affirms:

> To make a bid for a movie like *Avatar* [Cameron J., 2009] you have to pass through the script to establish what environments do you need: for instance, you need a spaceship, and you need these creatures, this kind of weapons to build, this kind of effects like fire, there's going to be explosions etc. […]. When they budget a movie, they have to estimate for digital effects that will represent a significant part. (Bouchard, 2014)

Williams observes on the argument:

> We are all working in a capitalist market, at the end of the day the dollar dictates what we're going to be able to do, so when you plan the movie you figure out how much money want to spend on the movie and figure out how much of that goes to the visual effects department. Part of the job of the visual effects department is to figure out how to do everything that is on the plan and inside the budget. Before even starting the shooting, you can know what's going to be possible. You don't shoot the movie hoping to find a way later on to cut the cost, that's not just the case. Truly, it is almost kind of

> the opposite: early on in the planning stage, when you are figuring out how much money goes to the digital effects, you always scrawl away some of it. (Williams, 2013)

Pre-production represents the phase where digital effects are visualised (Dulull in Escape Studios, 2014), a procedure that is often achieved through previs, depending on the project and the techniques involved.[34] The ASC-ADG-VES Joint Technology Subcommittee on Previsualization[35] defines previs as 'a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment' and which 'enables filmmakers to visually explore creative ideas, plan technical solutions, and communicate a shared vision for efficient production' (Beck in Okun and Zwerman 2010: 54). In previs, 3D low-resolution models are animated in order to bid or as a guide during the shooting; this process is frequently referred as a key phase of the digital pipeline. Beck (ibid.: 53) claims that, for digital effects films, this technique 'often represents not only the best way to develop a sequence but the best way to collaboratively link the variety of departments, technologies, and points of view that have to come together in a modern production to bring the sequence to life'. Squires (in Okun and Zwerman 2010: 39) observes that 'By editing the previs together, it's possible to create a sense of the design for the whole sequence', therefore it helps maintain 'the design and consistency of the shots'. Beck (in Okun and Zwerman 2010: 55) asserts that 'By developing and then expressing the intention of a sequence in an accessible visual format, successful previs increases the likelihood that intention will eventually be realized.'

[34] Previs is described in this chapter as a procedure of the digital pipeline. It is put in relation to the director's method in Chapter Four which is dedicated to preproduction.

[35] Cohen states:

> A nonprofit interdisciplinary group, the society was formed through an unprecedented collaboration among the American Society of Cinematographers, the Art Directors Guild and the Visual Effects Society. All three orgs have a stake in the future of previs. Storyboards and animatics, the main precursors of previs, were the domain of the ADG. Computer-generated imagery tended to be lumped under visual effects. Cinematographers, for their part, have complained about previs sequences created without their input. The ASC-ADG-VES Joint Technology Subcommittee on Previsualization, co-chaired by consultant/CG expert David Morin and Proof founder/prexy Ron Frankel, had to hammer out everything from a definition of previs to the proper spelling of the word. (Cohen, 2009)

Figure 5: Previs (above) and final frame (below) of a shot for *The Avengers*.

Previs represents a common tool for visualising digital effects, one that is regularly used in a substantial number of digital effects films. Nixon states:

> Every film I have worked on has had previs. Previs, as a technology and as a creative option, has changed dramatically the way the industry works. There is a refinement, there is a true indicator of what the final frames could potentially look like. It is cheaper to problem solve in previs than in a pipeline of 50, 100, 2000 people. In digital effects film, because you are creating environments, landscapes and characters that don't exist anywhere else, previs is fundamental. It is a technical exercise: you are able to specify focal lengths, the distance from camera to objects, the motion of objects that will exist in 3D and how those things are blocked and interact with each other. You are preparing something that digital effects will have to refine. (Nixon, 2014)

Pre-visualisation is considered as a rehearsal of the entire digital effects film production, an element which physically "exists" and previews the final result. Nixon adds:

> It is all about the visual language. With previs you get to see, edit and refine it, and you get the time that you need to put on an editing system. And it exists. So, you can build up the template for a whole film. […] In *Avatar* [Cameron J., 2009], a form of pre-visualization occurred when James Cameron took the actors off to Hawaii. They basically lived the process, they had workshops in the rain forest which was great

> because it gave James Cameron something to work on: the actors got to know each other and the dynamics obviously improved. They got to know their characters in a real environment. And then it gave us [the visual effects department] some clue as we were ingesting material for the film and getting set up at the start of this process. It gave us something to bank on in terms of depth in the jungle, colours and shadows, and how these effects could interact with the skin tone of the actors. Comparisons between a real skin tone versus a blue skin tone in the jungle have been made. [...] That was used to create the previs, the animation and then the animation was used to create the final shot. (Nixon, 2014)

To realise previs, a considerable amount of information is required. On this matter, and from a storyboard artist's perspective, Forrest-Smith (2013) states that 'For previs, in order to try to generate one sequence, it needs a lot more information in comparison with storyboards': for example, 'Previs needs information about what the actors look like, what the set is and it is more expensive than storyboarding' (ibid.). Gherardi (2014), who is a storyboard artist as well, similarly affirms that storyboards are more immediate, but that technology has enhanced various means, in addition to previs, which help in visualising the film.[36] The effort of gathering information and realising previs is necessary for digital effects films where there is large-scale use of complex effects. This need is due to the fact that the client wants to have a clear idea of how the visual effects company (or companies) will achieve the final result and previs can give her a clear idea. Whitehurst (n.d.) claims that 'Part of the process of convincing clients to place work with a facility is through the production of tests demonstrating either a potential look, style or piece of technology that they may want to use in the production of actual sequences on the film.' Previs can also be used to assess the time and cost of the production, particularly when live-action is mixed with CGI.

Hudson (in Okun and Zwerman 2010: 591) asserts that 'The pipeline for digital asset creation begins with digital modelling.' Bredow (ibid.: 742) states that 'The building of all of the assets is a substantial part of the creation' and that the 'pre-production step includes designing, modeling, texturing, materials, and lighting as well as building the animation rigs for the characters and setting the style of animation for the film'. Whitehurst (n.d.) reports that these

[36] Italian: 'Il previs è uno strumento buono ma lo storyboard lo batte in termini di velocità di realizzazione. In questi ultimi anni la tecnologia ha fatto sì che tramite uno storyboard, in pochi minuti, si possano pre-visualizzare anche effetti dinamici con piccole animazioni. È uno strumento tecnologicamente avanzato ora.' (Gherardi, 2014)

processes continue to be developed throughout the film production process, even if a significant amount of films 'will aim to have built everything they need by the time they start actually producing finished shots'. An example of this is postvis (post-visualisation) which represents another form of pre-visualisation achieved through live-action shooting, a technique which is widely integrated in the digital pipeline. Goulekas (in Okun and Zwerman 2010: 62) asserts that 'although previs is most often a full-CG approach to planning scenes before filming begins, postvis visualizes scenes after the film is shot using any combination of live-action plates, miniatures, and CG'. Gress (2015: 6) describes this technique 'as the process of doing pre-viz [previs], but with footage that has already been shot', in other words an 'extra optimization step' which 'helps fine-tune the VFX [visual effects] process by ensuring all approvals are done using the footage that was actually shot and not the footage that was hoped for'. This particular process represents a practice unique to digital effects films. Goulekas affirms:

> The use of postvis has become an essential part of films, both small and large, that require visual effects to create the final shots. When dealing with CG character or effect that is critical to the storytelling, it can be difficult for the director and editor to cut together a sequence of live-action plates without the ability to visualize the cut with its CG components. (in Okun and Zwerman 2010: 57)

Figure 6: An example of postvis for *The Avengers*.

Whitehurst (n.d.) asserts that 'Once the actual shoot begins it is usually the case that a representative of the VFX [visual effects] company will be on-set when any sequence they will eventually be working on is shot.' He states that 'As well as offering advice on VFX set-up

when it is asked for, the on-set representative' takes 'much visual information about the shoot so that anything can be reconstructed later in CG if needed'. Squires (in Okun and Zwerman 2010: 80-81) describes that 'visual effects references may be shot at the start or end of the sequence of takes', a procedure which does not slow down the setup for that shot. On-set acquisition is generally achieved through camera reports – which contain data such as camera set up, stop, focus etc. – with tracking markers being positioned in the scene in order to ease the matching of live-action footage with CGI environments. For the same purpose, it is common to use several techniques such as laser scanning, digital photography, HDRI and chrome balls. Goulekas (ibid.: 127) claims that 'A poorly planned visual effects plate shoot can result in wasting precious post-production time and money solving technical issues, rather than using the time on aesthetic and creative issues'; therefore, the visual effects department needs to know where digital effects are required and what effect has to be achieved. The visual effects supervisor, who is the visual effects department head, is involved in blocking and discussions with the director of photography (see Squires in Okun and Zwerman 2010: 80-81). This is because, depending on the techniques, the shooting must be organised in a definite manner and cast and crew need to work in synergy. For instance, actors 'may be given an eye-line reference for anything that will be added later' in order to help them look 'at the correct place even if the object' will be completed in post-production (ibid.: 82). These eye-line references are usually marks or objects of any dimension which resemble the final effect and make actors familiar with what will be in the final frame. Examples of these are monster sticks which are adjustable poles used to indicate where creature's eyes are in order to keep the actor's eye line correct (see ibid.: 163-164). Gutierrez (2014) observes that 'The actors and the crew should have a very clear vision of the environment that will be inserted' with digital effects, hence a lot of proxies and marks must be used in order 'to help them to figure out how to move and interact with objects and space'. Wilkinson (2005: 103) notices that 'Some shows are so full of computer generated imagery (CGI) that the actors are shot against a screen and everything else is done in post'. A backing called a green screen is used to wholly or partially replace a background; this surface is 'an unambiguous means by which software can distinguish between the color hues and values in

the foreground and the monochromatic backing' (Taylor in Okun and Zwerman 2010: 97). The backing can be seamlessly replaced with other images. Green is frequently used for these backings because it is less prominent against the human skin and therefore results in being easier to isolate in post-production, however, the colour choice depends on the shot which is another reason why planning is mandatory. The involvement of these means requires a series of procedures such as appropriate lighting in order to create uniformity across the backing – thus eliminating shadows being cast from props and actors – or the use of special screen correction software which applies to the uneven surface the colour of a well-lit reference pointed by the artist (see Taylor in Okun and Zwerman 2010: 98-99). Although minimal colour correction is achieved in order to make the live-action footage more appealing (Dulull in Escape Studios, 2014), this does not represent the film's final result in terms of colour.

Figure 7: *The Avengers*, before and after green screen composite.

As evidence shows, a common digital effects pipeline encompasses all of a film's production

phases and therefore makes filmmaking with digital effects a unique process where certain procedures have to be planned and coordinated in advance. Planning digital effects must be proportionate to their complexity; the film production has to organise the set with the awareness that digital effects creation represents a process. Both pre-production and principal photography phases are preparatory for digital effects creation which is achieved in post-production where the blending of live-action footage and digital effects occurs through the use of digital compositing. Squires (in Okun and Zwerman 2010: 17) claims that 'Even though the majority of visual effects are done in post-production to augment the shots that were filmed' all phases of production 'are important to visual effects'. Grisi, summarising the process, affirms:

> Some digital effects are planned in advance. Usually we [visual effects supervisors] receive a script, we examine it, we analyse all the things that should involve the use of any effect. […] This means researching, pre-visualising with the director, letting him play as he would have normally done on set, inserting a camera and making framing tests. For this part, there is significant collaboration between directors and visual effects supervisors, both in script writing and pre-production. Then you have all the effects that you occasionally need. While shooting, you realise that some shot cannot be achieved "live" because it is too complex, or too dangerous, or even too expensive. Usually these are the three reasons that make you use digital effects. You shoot what you can, knowing that everything will be completed with effects in post-production. You end up in that instinctive part of the job, trying to bring home all you can from the set and completing it in post, the famous "fix it in post". These situations are very frequent. I have noted that even in films without digital effects, about sixty shots arrive to us [the visual effects department] to be "fixed" with effects.[37] (Grisi, 2015)

Villar (2015: 54), examining differences in the filmmaking process with and without digital effects, affirms that in digital effects films 'During preproduction, the production team would need to think about what visual effects to use, how they're going to be filmed, and what will be required to create them.' For such films 'the visual effects team may need to film some shots in special ways, using green screens or using markers or puppets the actors can interact with so

[37] Italian: 'Una parte dei digital effects viene prevista prima. Solitamente ci viene sottoposta una sceneggiatura, noi facciamo lo spoglio, vediamo tutte le cose che andrebbero gestite con gli effetti. […] Questo significa fare tutto un lavoro di ricerca, casomai fare una pre-visualizzazione con il regista in modo che possa giocare un po' come si gioca sul set, inserendo la macchina da presa e facendo qualche inquadratura (anche per roba fatta interamente al computer). Per cui quella parte là può essere un lavoro di palleggio tra regia e visual effects supervisor, sia in fase di scrittura che di preparazione del film. Poi c'è tutta un'altra serie di effetti che escono per necessità. Girando ci si rende conto che alcune cose non sono fattibili, oppure sono troppo complicate, oppure sono troppo pericolose, oppure costano troppo. Di solito i motivi per i quali si fanno gli effetti sono questi tre. Allora a quel punto si gira quello che si riesce a girare sapendo che poi si andrà ad integrare con gli effetti. Si finisce un po' nella parte istintiva, cercando di portare a casa il risultato che poi verrà modellato in post, il famoso "fix it in post". Queste situazioni sono molto frequenti. Ho notato che nei film dove non ci sono assolutamente effetti arrivano comunque quelle sessanta inquadrature che vengono sistemate in postproduzione.' (Grisi, 2015)

that later the team can add an animated character to that scene' (ibid.: 54). Villar (ibid.: 54) adds that 'Some effects like explosions may need to be filmed separately so they can later be integrated with the footage of the actors'. The line between principal photography and post-production tends to blur, and sometimes these phases actually overlap, due to the all-encompassing nature of the digital pipeline. Caldwell (2008: 182) states that 'because the DI process has made production itself a digital procedure, specializations normally reserved for postproduction, like visual effects, now regularly make appearances during shooting' hence 'the traditional walls between production and post-production have been broken down'.

One of the most used techniques for digital effect film is matte painting which has been consistently involved throughout cinematic history, long before the digital era. It involves a three-dimensional component of a composited environment aimed at digitally augmenting the setting. Real and virtual environments (CGI and 2D paintings) are blended together through two standard procedures of the digital pipeline known as match-moving and compositing respectively. Prince (in Fischer 2015: 147) states that matte paintings are 'subsets of digital environment creation' and, in this context, production design 'is understood as a form of digital environment creation since even pictures shot on real locations will undergo digital image processing in their final stage of production'. Indeed, an art director generally collaborates with a virtual art director, handling sets and their virtual counterparts (ibid.). A digital matte painter works with programs such as Adobe Photoshop and Autodesk Maya using an electronic brush and paints. The first step of the process is sketching the environment and importing it in a 3D program to build a simple geometry of primitive cubes and cylinders onto which the painting will be projected. This is shaped according to a camera preset which has information on camera movement, aspect ratio, camera position, depth of field and focal length. A 3D program allows the establishment of light and shadow, and for the obtaining of compositing passes such as an occlusion pass, a specular pass, a Z-depth pass and alpha channel-passes (Prince in Fischer 2015: 148). The matte painter then imports the renders from the 3D program to Photoshop where she will create the actual digital painting, lifting textures from high resolution photography. Matte painting, which incorporates a combination of images, animation and live-

action perspectives, represents a significant part of the digital environmental design which is a constant step of the digital pipeline for film involving large-scale CGI.

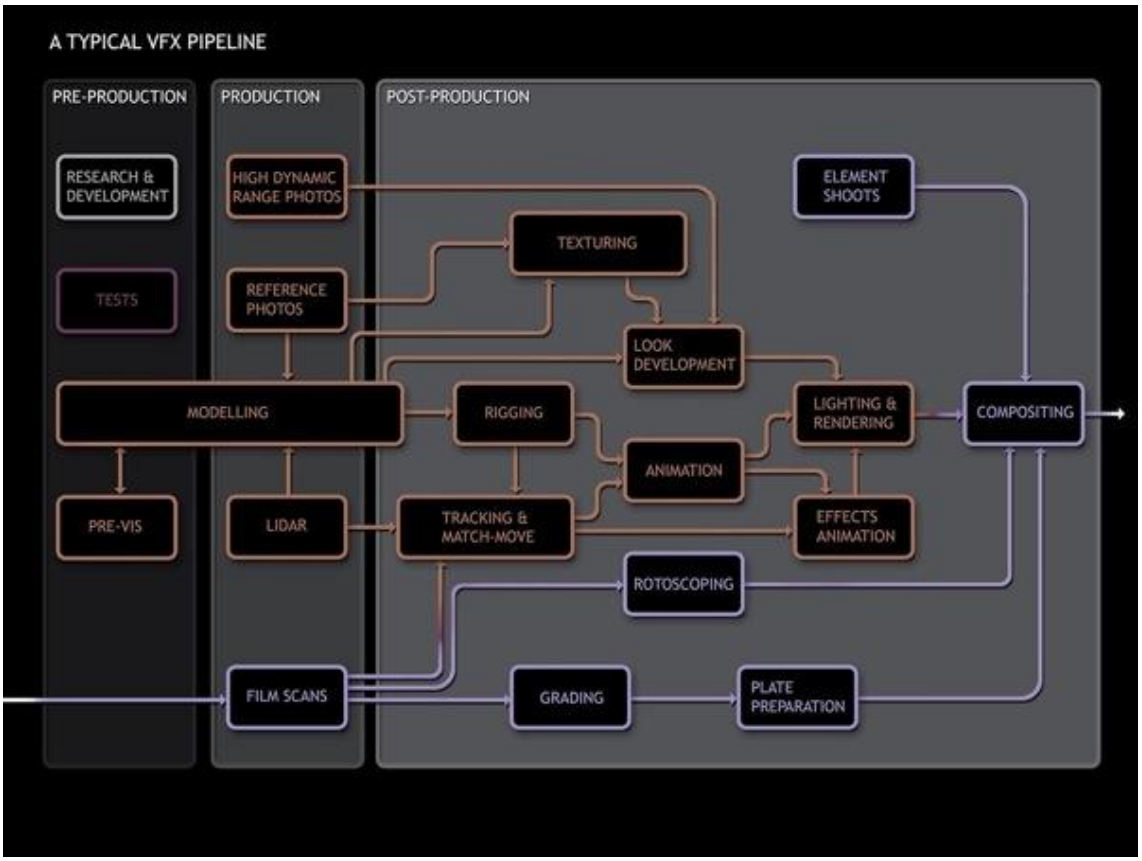

Figure 8: An example of a digital pipeline.

The Visual Effects Supervisor

Finance and Zwerman (2010: 38) state that, because 'the number of visual effects in features has increased dramatically', the visual effects supervisor's role has become significantly more important in contemporary film. The visual effects supervisor is the creative head of the visual effects department (Finance and Zwerman 2010: 38), a role which gained importance due to the 'separation between the traditional optically based craft practices of special photography, and the increasingly industrialized practice of creating visual effects' (Skilton in Hernáez and Campos 2011: 176); in fact the separation represents the starting point from when this figure began to be perceived as a peer by other department heads (ibid.: 176). Schreibman (2001: 128) claims that 'Many projects today require a visual effects supervisor, someone who is creatively

responsible for creating and achieving specific visual effects that might be required in the project.' Visual effects supervisors 'work closely with the director and the producer in designing the effects, and then with many different people, such as the art director, the cinematographer, production designer, mechanical and makeup specialists and the editor in achieving the final result onscreen' (Schreibman 2001: 128). Williams (2013) claims that 'part of the job description of the visual effects supervisor is being able to be on set and benefit the set, the director and the production'. Squires (in Okun and Zwerman 2010: 27) states that 'The supervisor needs to support the director with creative suggestions on shot design, creature design, and other visual effects creative issues.' This is because the visual effects supervisor 'is first and foremost a visual storyteller and the director's creative partner' (Finance and Zwerman 2010: 38). Finance and Zwerman (2010: 38-39) have compiled a list of responsibilities for the role which include bringing 'creative and visual coherence to the visual effects', collaborating with directors 'in generating storyboards and previs', helping to design the shots, deciding 'on the techniques to be used and how each shot has to be accomplished', organising the visual effects unit, designing 'additional shots that may be needed' and supporting 'the editor and his staff in making sure that the visual effects are properly integrated into the film in a timely manner'. Squires (in Okun and Zwerman 2010: 27) summarises the responsibilities of the role, stating that supervisors 'work with the director and producer to determine the best approach needed for the visual effects' which includes 'how to dovetail the visual effects into the design and execution of the film to achieve the best result within the budget'. Skilton (in Hernáez and Campos 2011: 176) observes that 'One of the important tasks for all of the visual effects supervisors working on a project is to pay close attention to the ways visual effects will be incorporated into the final result.' In the light of this, visual effects supervisors facilitate a dialogue between the production and the visual effects department which can be densely packed with various professional figures from different disciplines.

Digital effects are frequently relegated to an isolated process which takes place after principal photography. Scott (2005: 107) affirms that 'digital visual effects are widely but imprecisely referred to as a postproduction activity'. As a consequence, digital effects have

assigned in popular culture the misrepresented role of an invisible form of "magic" which falls outside production's awareness. With regards to this argument, Coleman states:

> For a long time, digital effects have been seen as a "post process", something that you do after you have shot your movie. Because of that mind set, there have been many filmmakers who have gotten themselves into a lot of trouble. […] The lack of pre-planning can really increase the cost. It is critical to have the visual effects supervisor involved in the pre-production, consulting, advising, and giving input to director. Planning digital effects is extremely important. (Coleman, 2013)

McClean (see 2007: 65) asserts that digital effects are not only the last part of a film workflow but part of the initial storyboarding practice, this is because of the necessity of accurately planning them in detail. Shot design requires detailed planning because various processes are needed to create the digital effects and appropriate planning leads to a more cohesive interaction of effects which enhances narrative eloquence. Furthermore, planning gives time for supplementary testing and the finding of creative alternatives. The absence of planning instead causes a feeling of uncertainty in the crew which is considered negative in a process where so many factors are involved. Williams (2013) affirms that 'The ideal time to start the effects creation process is pre-production because that is when you bring the most benefits to the process'. Gutierrez (2014) affirms that digital effects should be involved even before pre-production, more specifically in the development phase. Coleman's (2013) take on the argument is that 'Over the past ten years, studios in Hollywood as well as producers and filmmakers have started to understand the importance of having a visual effects supervisor working with them from development' because 'The visual effects supervisors help with breaking down the script, coming up with creative ideas and working on an informed budget'. For Coleman, the earlier the digital effects are involved in the process the better the outcome will be; this is because the creative roles that include working with digital effects can suggest different solutions which can, in turn, stimulate directors to take other directions to achieve a better result before wrapping up the shooting. The necessity of planning digital effects in pre-production is not only a matter of budget and organisation however; the visual effects supervisor's presence is required early in the process to also gain a form of acceptance from the rest of the crew. Coleman claims:

> If you are a visual effects supervisor coming in after the principal shoot, the director doesn't have a relationship with you. You are at a disadvantage immediately because

> you tend to be someone who has to tell the director the things that can or can't be done with the footage that was shot. This can lead quickly to an awkward situation. The director doesn't understand why he can't have what he wants and yet you were never consulted early on. Conversely, if you get into the production early enough and you are working with the director, you can develop a strong bond and work collaboratively. I have found that the best relationships have been built up from conversations about films and shared experiences. From there, you are able to work on the problems together because, like any creative work, filmmaking is about problem solving. (Coleman, 2013)

Schreibman (2001: 128) clarifies that the visual effects supervisor's task 'begins in the pre-production phase and continues through production and post-production'. The digital pipeline is organised through the whole of the film's production and therefore the visual effects supervisor is normally involved in all the filmmaking stages. Squires (in Okun and Zwerman 2010: 17) notes that 'During production a visual effects supervisor or plate supervisor is on the set to make sure the live action is shot in a way that visual effects can be added correctly in post-production.' The possibility that visual effects supervisors might suggest to the production team technical procedures to undertake represents a noteworthy element of influence on the director's method. Williams asserts:

> The earlier the digital effects can get involved with the planning process the more we [visual effects supervisors] can help the production to save money. The truth of the matter is that there could be a situation where you can say: "do this as a practical effect or do this practical effect as a digital effect because it is cheaper". (Williams, 2013)

Williams reports that visual effects supervisors can suggest the effect to use for a particular shot, influencing the director's choices. For instance, the suggestion of using a cheaper effect represents a money-saving solution that directors may be forced, although perhaps not willingly, to take. Indeed, visual effects supervisors, who have already experienced the same situation in their career, often have the authority to put forward a mandatory resolution for a shot and overrule the director in certain instances. Furthermore, digital effects, because of their ability to change the whole image, display the intrinsic risk of steering directors away from the story and confusing them with too many solutions. Williams (2013) reports that visual effects supervisors 'can help in steering away from expensive things that are not necessarily required by the film' because for digital effects films 'it is very easy to lose the sense of the story'. Script analysis becomes a necessary step in identifying the key point in the story for visual effects supervisors; this lays the foundations for the consistency of digital effects within the story and the balance

between creative possibilities and plot requirements. The visual effects supervisor is the only other person on set, apart from the director, who can veto a shot if it is deemed unable to work (more details about the differences between the visual effects supervisor and other roles, such as the production designer, are given in the next chapters). Furthermore, the visual effects supervisor is often in charge of directing CGI sequences produced in the effects house; some of these are used as mere "fillers" between shots but others are key to the story of the film. In case of complex sequences where actors have significant interaction with CGI, visual effects supervisors might be asked to direct the process under the supervision of the director. These factors make the visual effects supervisor a unique figure who can influence the film production and even replace the director in several tasks. The ability to make decisions about various aspects of a film can generate negative reactions in the director who might consider the visual effects supervisor's contribution intrusive. Coleman observes:

> A lot of directors need to be the person in control, but when it comes to digital effects they don't have the answers. Some will force their way through and screw up, and it may cost a lot of money. In the worst cases, when a director feels that he has to be right all of the time, there can be a combative relationship between the visual effects supervisor and the director. Situations like that can be very difficult. (Coleman, 2013)

In certain film productions, the director leaves a huge amount of autonomy to the supervisor with regards to managing digital effects creation. Perrotta observes:

> With some directors, visual effects supervisors have "carte blanche" in terms of proposing new ideas and experimenting while with others there are precise instructions. The worst case is when the client [in this case the director] does not know what result he wants because this forces visual effects artists to look for possible solutions without any clue. Some directors are technology oriented and know exactly how digital effects work. Others are more art oriented and delegate to visual effects supervisors the control of the image quality. (Perrotta, 2013)

In his observation, Perrotta implicitly affirms that visualisation is particularly important in digital effects films. While relegating the image manipulation to visual effects supervisors is a tolerated practice, the fact of not having envisaged the final result is seen as a flaw which forces the visual effects department to look for solutions without clues. It is a matter of reliability and the integrity for the director, the top figure in the chain of command, from whom is expected specific direction.

How the Viewer Perceives Digital Effects

Pirenne (1970: 183 quoted in Prince 2012: 49) affirms that 'The alleged possibility of producing a complete, perfect, imitation of visible reality is a myth' and that the perception of an image mimicking reality 'is a complex process because it evokes in the spectator a special kind of awareness of the painted surface itself.' In film, the audience has become accustomed to the use of editing and effects; these are not intellectualised because they are instead accepted as part of filmic language. From early cinema to the digital era, visual effects have experienced a significant development in order to seamlessly blend reality and unreality and convince the audience of the believability of what it sees. At first, effects were restricted to what was possible to accomplish in-camera (Fink and Morie in Okun and Zwerman 2010: 4) and therefore were perceived 'as an intrinsic, rather than as a separate, component of cinematography or filmmaking' (Venkatasawmy 2013: 59). Venkatasawmy (2013: 59-60) affirms that 'long before the availability of optical printers, all visual tricks were executed entirely inside the camera, before the filmstrip was chemically processed'. Optical printers and other means such as rear and front projections allowed for combining live-action with other images and, in the same way, digital compositing has allowed images from different sources to be blended together, resulting in an improved sense of reality. Computer generated imagery has become a new source from which images can be obtained to merge with live-action, which has given filmmakers the opportunity to change and move digital models and thus achieve a desired scene (Byrne 2009: 4). The replacement of optical printers with computers made it possible to merge subjects captured in different media and show the combination as if it was naturally captured by a camera (see Finance and Zwerman 2010: 4). Purse (2013: 2) defines digital effects as 'a solution to a number of practical challenges in order to help maintain the sense of cameras capturing events 'as they happen' in a naturalistic, realistic-looking environment'. She (ibid.: 6) notices that 'What is clear from the films being made in the digital era is that digital effects and compositing most often work to generate verisimilitude in strictly photographic terms'. The blending of reality and unreality has a unit of measure called "complexity" which refers to the level of interaction between different layers.

Allison (in Keil and Whissel 2016: 85) affirms that 'since digital technology revolutionized filmmaking', digital effects 'are at the very heart of contemporary visuality' rather than being 'an extraneous or inessential piece of the puzzle'. Film franchises such as *Pirates of the Caribbean* (2003-2011) or *Harry Potter* (2001-2011) could not be conceived without the digital effects which enhance the narrative and create amazement. Technological advancements in the film industry have contributed to an alteration of the collective unconscious and perception of visual information in terms of the discernment of truth and deception. In fact, contemporary digital effects are so seamlessly blended with live-action footage that it is almost impossible to sense where one ends and the other starts. The audience might understand that it is unlikely to have giant robots fighting in New York, however, in terms of visuals, it will find difficult to spot the difference between the digital effects and the live-action layer. Creating digital effects that support the narrative develops an emotional state in the audience where the viewer does not question the credibility of the image but rather accepts it within the consistency of the story. Mollo (2015) asserts that 'digital effects represent a tool which allows us to investigate creativity' when this is 'at the service of the story' and is not intended 'as a mere form of entertainment'.[38] The audience accepts digital effects when they blend in with the narrative but rejects them when they have no connection to the story. Believability is part of this process and its loss disconnects the spectator, who starts to scrutinise the effects. This represents an outcome of disenchantment for the audience who realises that it is watching something fake. Traina (2015) affirms that 'there are no digital effects or elaborated camera movements that can be considered perfect if they are not linked to the story'.[39] The audience's response to digital effects is particularly challenged when they try to emulate complex characters such as human beings, even if they serve the narrative. Coleman observes:

It is incredibly challenging to create a believable digital human being, especially if the

[38] Italian: 'I digital effects rappresentano, secondo me, uno strumento in più per indagare la propria creatività. Dovrebbero essere al servizio della storia e non (solo) dell'intrattenimento.' (Mollo, 2015)

[39] Italian: 'C'è ovviamente una maggiore padronanza del mezzo e del linguaggio, che soprattutto si traduce in un più lucido controllo dei mezzi espressivi in funzione del racconto. Crescendo, maturando, facendo esperienza, acquisti la consapevolezza che non può esistere effetto digitale o elaborato movimento di macchina che possa considerarsi ben fatto o efficace se non in rapporto alla storia che stai raccontando.' (Traina, 2015)

> digital character is sharing the screen with a real human. Our audiences have a critical eye and are continually making subconscious decisions regarding the digital humans. They will believe until the instant when something does not look quite real – it can be an expression or the way the character moves. The same can be experienced with figures in a wax museum. If you take photographs of a real person and the most amazing wax figure, even a child of five years will be able to tell them apart. They will be able to point to the one that is alive. It seems that, whether you believe it or not, there is a life force around us. A person can remain perfectly motionless and yet we can "feel" that they are alive. (Coleman, 2013)

Later, in the same interview, Coleman clarifies the difficulties in creating believable CGI, especially if it needs to be animated:

> We, the movie audience, have grown up watching human faces. We are very sophisticated when we are reading human faces and human emotions. We watch actors, as we watch members of our own family. We react to certain triggers – facial expressions and movements that tell us that a character is feeling a certain way. Some of those facial movements can be very subtle. We call them micro movements. To create a successful digital character, we must replicate those micro movements. A real person, an actor being filmed, naturally emotes with their facial movements. In animation, we must create facial movements that mimic what we see in real life. We have more latitude with facial movements when we are creating characters that are non-human because our audience does not have an exact frame of reference. For example, we have more latitude when we animate Yoda but would not have any if we were to create a digitally animated Marilyn Monroe. The audience knows Ms Monroe from her films, so they know how she moved and what her face looked like exactly. I know that if I am creating an animation of a T-Rex, no one has seen one running around so I have a huge amount of latitude to invent its movement. I have to remain true to the physics of the world (for example, how heavy was the T-Rex?). I have to make sure that the skin and the muscles are moving in a realistic way and the audience will happily go along for the ride and believe that they are watching a real living T-Rex. (Coleman, 2013)

Prince (see 2012: 121-126) refers to the 'uncanny valley'[40] that is the negative reaction that the spectator instinctively has when something extremely real suddenly fails to be perceived as real. Audience has to be guided in understanding that what they are seeing is unreal in order to feel not cheated and accept the illusion. In this, the director has an important task because she has to make a decision on the way digital effects look, while also considering the audience response to the visuals. As discussed in Chapter Two, the director has a special relationship with the audience; for digital effects films the director has to consider one additional aspect which is the audience's perception of what is real and what is unreal.

[40] Squires (in Okun and Zwerman 2010: 46) defines the phenomenon as 'the result that occurs when an attempt is made to mimic humans in look and action', in fact 'the closer it gets to matching a human, the more creepy it can be for the audience if it does not succeed exactly'.

Conclusion

The discussion has shown that creating digital effects represents a unique process and therefore filmmaking involving such effects is different from other forms of filmmaking. In fact, digital effects films involve technical workflows which are implemented into digital pipelines encompassing all the film production stages. These impose precise procedures such as previs and postvis. The creation of CG objects and their interaction with live-action footage has to be planned and coordinated in advance in proportion to the complexity of the effects. The pre-production and principal photography phases are preparatory for digital effects creation, which is generally achieved in post-production, where the blending of live-action footage and digital effects actually occurs through digital compositing. However, the line between production and post-production tends to blur. As a consequence, the director's method needs to adapt to such extraordinary film productions, with directions required to produce a strict visualisation which gives precise information to the visual effects department ahead of post-production. This information is needed to start procedures such as CGI modelling which develop in parallel to principal photography. The presence of a visual effects supervisor on set represents an element of divergence in the way directors approach the filmmaking process with and without digital effects. The visual effects supervisor is the visual effects department head who is responsible for creating and achieving the digital effects that the film requires. For this reason, the supervisor has to work closely with the director and the producer in designing the effects, coordinating the ways digital effects will be incorporated into the final result and bringing creative and visual coherence through the generation of storyboards, previs and postvis. The visual effects supervisor is the only one, except the director, who can veto a shot if it does not meet the requirements, therefore her intervention represents a major influence on the director's method. The supervisor makes a decision on the techniques to be used and how each shot has to be accomplished on set; furthermore, during principal photography, she is on set to make sure the live-action is shot in such a way that the digital effects can be added appropriately during the post-production process.

Chapter Four

Pre-production with and without Digital Effects

The Development Phase

Before pre-production there is a phase known as "development" which represents the organisation of the film's concept and the writing of the first drafts of the script. Cones (2008: 195) affirms that 'The term *development* in the broadest sense refers to the initial stage in the preparation of a film' and 'in its more narrow sense comprises those activities relating specifically to taking a concept or idea and turning it into a finished screenplay'. Further, Cones (ibid.: 195) claims that 'The development phase involves formulating and organizing the concept or idea for the movie; acquiring rights to the underlying literary work or screenplay; preparing an outline, synopsis or treatment; and writing, polishing and revising the various drafts of the script.' Finney (2015: 28-29) identifies the idea of the film as the conceptual starting point of development: this idea, which is shaped throughout the whole process, can derive from different sources and the stage where it is initially conceived is represented as a 'loosely structured area with a considerable number of possibilities' (ibid.: 28). On this, Gates (2013: 5) affirms that 'The development of an idea consists of two elements' which are 'the raising of the finance' and 'the actual developing of the project'; development is essentially 'the stage where the idea begins to be turned into a reality' taking form as 'a script synopsis or outline proposal' (ibid.: 5). Finney (2015: 30) observes that 'Once the finance structure has been at least part-raised, the idea will normally move into a fully fledged development stage' which generally includes 'a first and second draft'. The outcome of the development phase is a commissioned script (see ibid.: 29) however it is in pre-production that the script is ready to be examined and modified by the directors. From a digital effects' perspective, Goulekas (2001: 128) confirms:

> [Development is] for computer graphics (CG), one of the most crucial stages in the production pipelines [because at this stage] the methods that will be used to create the required visual effects are discovered and defined [hence if] the development stage of a show has been properly managed, the execution of the shots themselves can become

what is known as plug and play.

Goulekas identifies development as a key phase for digital effects, however, it is unclear whether this refers to the actual development or the pre-production. In fact, for effects-driven film, the digital pipeline generally starts to work after development, specifically in pre-production (see Whitehurst, n.d.) because, in order to function, it needs information which has to be extrapolated from the script. Squires (in Okun and Zwerman 2010: 17) expressly defines pre-production as the stage 'where all the design, construction and preparation occurs before filming is done'; in this stage, visual effects supervisors are able 'to determine trade-offs for different approaches' investigating 'what steps are required during shooting and what can be done to shoot as efficiently as possible' (ibid.: 18). This is possible in pre-production because visual effects supervisors have a script to work on. During this stage, scripts are subject to a dissection which is necessary for budgeting and bidding; furthermore, this operation permits supervisors to organise the necessary material for shooting and post-production, starting the technical procedures, which require time in advance (for example, the creation of CGI models). Digital effects may be involved in scriptwriting as a way to enhance and fuel the film's narrative with imaginative ideas; however, this dissertation cannot consider these at this stage. Rather the research questions focus on the influence of digital effects on the director's method; thus pre-production rather than development is taken into account because it is only at this point that the script is ready to be subjected to the director's analysis.

Working on the Script as the First Task for Film Directors

Kooperman (2009: 62) defines pre-production as the period which 'covers all activities between having a written script and the first day of shooting the film (including storyboarding)'. He (ibid.: 62) continues, asserting that 'The difficulty in defining the pre-production process is that every film, no matter the length, locations, budget or story, has its own set of challenges, so no pre-production period is ever the same as another.' Honthaner (2010: 95) states that pre-production 'is the period of time used to plan and prepare for the shooting and completion' of a film. In light of these definitions, pre-production universally represents the preparation period

for shooting which is achieved via a specific work on the script. From an academic point of view, Proferes (2008: 69) states that 'Every film begins with a screenplay', independent of the use of digital effects. It is widely known that the script is the starting point for almost all types of commercial film; indeed, the script is considered introductory to the artistic process, with Marner (1972: 29) claiming that 'The script is the master plan of the film and forms the first part of the creative process'. Nash (see 2011: Chapter 3) defines a script as 'a story, an emotional experience or perhaps even a message or lesson in life written down on paper' which, 'as regards the mechanics of screenwriting and the process of filmmaking', can be seen as 'a very particular type of blueprint'. Kukoff (2005: 1) uses the same terms, asserting that 'a screenplay is a blueprint for a movie' and that 'just like an architectural blueprint, it can be quite technical'. Richards (1992: 22), from a professional point of view, claims that 'A screenplay is a series of events told in an organized manner; it tells a story with a beginning, a middle, and an end.' The script has its own language and form, it is considered a technical document (see Richards 1992: 22), however, it generally tells a story with a precise "consequentiality". Bardani, as a working director, states:

> A script has precise rules. I mean, there are mandatory rules which are common to all the scripts. It is like writing a song, there is usually a certain structure and it lasts four minutes in order to be appreciated by a wide audience. We don't talk about experimental cinema but a cinema who does want to have a market. The script is the film: you can tell a story in so many ways but if the script does not stand on its own, the film will be bad. Summarising, the director needs to have a certain approach to the script, both in case it is his own or another writer's.[41] (Bardani, 2014)

The presence of the director during the scriptwriting phase is not unusual because scriptwriting is the first step in a creative process where all consecutive stages are subject to directorial control. For Boorman (in Tirard 2002: 5) 'all serious directors shape their scripts, meaning that they sit down with the writers and put the ideas into shape and give them structure'. However, Travis (2002: 43) separates the role of the director and the writer, asserting that 'As in a good

[41] Italian: 'Una sceneggiatura ha delle regole precise che sono quelle del cinema. Ci sono dei passaggi obbligati, regole che sono comuni a tutte le storie cinematografiche. Come per una canzone, ha una certa struttura e di media dura 4 minuti per poter essere apprezzata da un vasto pubblico. Non parliamo di sperimentazione ma di un cinema che vuole avere un mercato. La sceneggiatura è il film: puoi raccontare una storia in tanti modi ma se la sceneggiatura non regge, il film non verrà un granché. Ricapitolando: il regista deve avere un certo approccio con la sceneggiatura, che sia stata scritta da lui oppure no.' (Bardani, 2014)

marriage or any healthy relationship, the two parties have their distinctive roles to play, separate but supportive.' 'It is not the director's role to take over the process, or to supersede or replace the writer' but rather 'to guide the writer (and the script) through the rest of the process to the completion of the film' (ibid.: 43). Dancyger (2006: 4) notices that 'In the pre-production phase, the director may either play a secondary role to the scriptwriter or partner with the writer' and that 'The exact nature of the role depends on the director's track record, influence, and interest.' In any case, the development of a script 'is the key to the preparation of a subject for shooting' (Marner 1972: 16). Examining the script and suggesting new ideas to the writer during the pre-production stage is also perceived as a means to show interest and establish collaboration with writers and producers. Wilkinson (2005: 131) observes that 'If the director has been cavalier toward script change in prep or if you came in with poorly thought out ideas, the writer/producer knows the director has little respect for their script'. Marner (1972: 29) reports that the script 'is never in itself a finished work of art like a short story or a novel' but rather an evolving document. A script is subject to changes throughout the filmmaking process, therefore it is necessary to have an element which unifies 'the several metamorphoses that it will have to endure' (ibid.: 35). Marner (ibid.: 35) identifies this element in terms of what he calls the 'central theme'; similarly, Badham (2013: 187) claims that 'Any film that has any quality at all will have an overarching theme that is the backbone of the film and from which everything in the film develops' as 'Without a strong theme the film becomes unfocussed and runs off the rails'. Richards (1992: 4) states that 'Each film has a unifying idea, or central theme, that makes it intrinsically different.' It is important to note that the concept of a central theme is not unique to film but is a key aspect of storytelling in general (including theatre directing). The need of an element which unifies and gives meaning to the story is significant because it represents the glue which connects events, characters and environments. In terms of methodology, directors are called to identify the theme since it represents the narrative backbone of the film, whether the production involves digital effects or not. Richards (1992: 4) claims that the 'understanding of the central theme is the basis of all the creative work the director is going to do, and it makes the difference between art and chaos'. On this argument Lumet (1995 in Weston 1996: 44)

states that ‘what the movie is about – some people call this the movie’s theme – is the central thing a director needs to feel and understand; *every* decision she makes about the film must be based on what the movie is about’. Belli and Rooney (2011: 5) confirm the existence of a central theme, even in television shows, asserting that ‘What the show is about, or its central theme, is important to keep in mind while you’re directing, so every scene helps illuminate that concept.’ Hitchcock, making a parallelism with architecture, states:

> It’s as if you were about to put up a building. You have to see the steel structure first. I’m not talking about the story structure, but about the concept of the film as a whole. If the basic concept is solid, things will work out. What happens to the film, of course, becomes a matter of degree, but there should be no question that the concept is a sound one. (Hitchcock in Truffaut 1983: 85)

This aspect of the work on the script is true for both film not involving digital effects and film that does include digital effects. Regarding *Star Trek* (Abrams J.J., 2009) Abrams reports:

> As a writer myself working on *Star Trek* was a wonderful thing because I wasn’t technically a writer on those films. I got to collaborate with people who had wonderful great big ideas but also get to, on the fly, [...] adjust things and make changes that fit right [...] (BAFTA Guru, 2013)

Directors modify a script in order to ease the communication of the story to the audience; this is broadly considered an intrinsic component of the director’s method. Massimo Coglitore, who has directed films with and without digital effects, states that when he works on a script that he has not written, he makes changes in order to line it up with his vision; this is achieved through deep revisions of the script because everything must work in terms of storytelling[42] (Coglitore, 2015). Adjusting the script is one of the director’s responsibilities in pre-production. Wilkinson (2005: 55), from the perspective of a working director, claims that ‘The director’s duty to the screenplay during prep is to make every reasonable effort to ensure that the final shooting script you take before the camera will allow the writer’s ideas to flow smoothly from page to stage such that best possible film is made.’ From these claims, it can be deduced that there is a perceivable necessity of adapting the script, a written document, into something that can be represented “as visual” through filmic means; it is the responsibility of directors to arrange the

[42] Italian: ‘Se lavoro su una sceneggiatura non scritta da me, apporto delle modifiche per rendere il tutto più consono alla mia visione. Faccio delle revisioni approfondite, per vedere se tutto è credibile e funzionale alla storia. Credo che la capacità di codificare per immagini sia un dono naturale, che poi trova una sua linea con gli studi che uno fa.’ (Coglitore, 2015)

script in order to guarantee its "transposition" into another form. As an example, Nelson (2000: 61) affirms about the writing of *Lolita* (Kubrick, 1962) that 'For Nabokov[43], adapting *Lolita* to the "speaking screen", as he calls it, involved the staging of a complex network of verbal revelations punctuated by an occasionally obtrusive camera'. Nelson (2000: 61) continues, observing that 'Kubrick created several visual and verbal translations of effects suggested in the Nabokov script, which is more theatrical and poetic than cinematic'. Although the script already contains technical information which is used by the crew for the following phases of the film's production, it is the director's duty to verify that it is complete; other information can be attached in the pre-production stage as "director's notes". Gherardi, as a storyboard artist, notices this:

> I have worked in many different situations. You, as the storyboard artist, can receive different documents such as the script, the script with the framing and, sometimes, the script with the director's note about the camera movements. This last document is the most comprehensive and with it you can work without talking to the director because the document has already all the information you need. There are different notes that could be attached to a script but often the director writes on it only information about the framing, without any shooting angle. In that case a meeting with the director is necessary.[44] (Gherardi, 2014)

The reason why directors need to work on a script and make comments or modifications is because the story has to make sense and be consistent with their vision; any confusion by the spectator has to be avoided, so everything must be told in a logical way. The director's responsibility to intervene on a script is generally supported by film productions for any type of film. In this. the writer represents the figure who collaborates with the director to build consistency between what is on paper and what is shot. Belli and Rooney, drawing a parallel with television productions, claim:

> As the director, you have to be the logic police. You have to make sure that everything makes sense. If you are confused, it's probable that the audience will also be confused.

[43] Vladimir Vladimirovich Nabokov was a Russian-American novelist who wrote the novel *Lolita* (1955) and contributed to adapting it for Kubrick's film.

[44] Italian: 'Ci sono differenti situazioni nelle quali ho lavorato. Ci sono anche diversi documenti che arrivano allo storyboarder, come ad esempio la sceneggiatura, la sceneggiatura con le inquadrature o addirittura la sceneggiatura con le note del regista sui movimenti di camera. Quest' ultima è le più completa perché con essa non ho bisogno di parlare con il regista, contiene già tutte le informazioni. Ci sono varie possibili note di regia allegate alla sceneggiatura ma spesso il regista mette solo le inquadrature e non l'angolo di ripresa. In quel caso è necessario l'incontro con il regista.' (Gherardi, 2014)

> You need to make sure that each scene has new information, and that what is revealed leads logically to the next scene. When that is not the case, there is an expert to whom you can turn: the writer. (Belli and Rooney 2011: 9)

Dancyger and Rush (2013: 371) state that 'if we are to consider features that seek to develop a style or point of view based on digital imagery, we need to ask how best to construct stories for them'. The construction of the story has been subject to the influence of visual effects for a certain kind of cinema – Méliès is an example of this (see Méliès 1907: 362-392 in Gaudreault 2008: 143) – however, for commercial films, scriptwriting tends not to consider digital effects and focuses on the narrative context of the story rather than the techniques used. This does not exclude the fact that certain narrative elements might mandatorily require digital effects in order to be brought on screen. Coleman, observing the filmmaking process from the digital effects' perspective, claims:

> All films start with the writer: it is the writer who comes up with the story or adapts a screenplay from a book or another source. Even from the earliest story outlines, one can identify sequences or characters that are going to require digital effects. The requirements, and the techniques, have changed over time. Sets, which might have been built full scale in the past, are now created entirely with digital effects. They might be built with miniatures or computer graphics or a combination. (Coleman, 2013)

Coleman asserts that digital effects are part of the script because for some characters and environments these are necessary in order to give them life. The embedding of digital effects in the screenplay may be so solid that even before a specific script analysis it is possible to spot whether a film will need them or not. However, the actual involvement occurs when the producer decides to use digital effects because of creative, technical and cost-related reasons. There is a recent tendency to use practical effects combined with digital effects for the purpose of realism, a highly requested element by the contemporary audience who is tired of the unreality of CGI. *Mad Max: Fury Roads* (Miller G., 2015) adopted this approach and received positive acclaim for it. Andy Williams, special effects supervisor for the film, states:

> We were always given the brief that if it's possible do it for real then it should be. By pushing the boundaries of what could be done practically we ended up with effects that almost looked unreal, but then because the audience could tell it was real it kept their attention – as opposed to another animation. With this type of movie i.e. vehicles on the move almost constantly, it's by far the better approach to do it for real and tidy it up in post if necessary. (Failes, 2016)

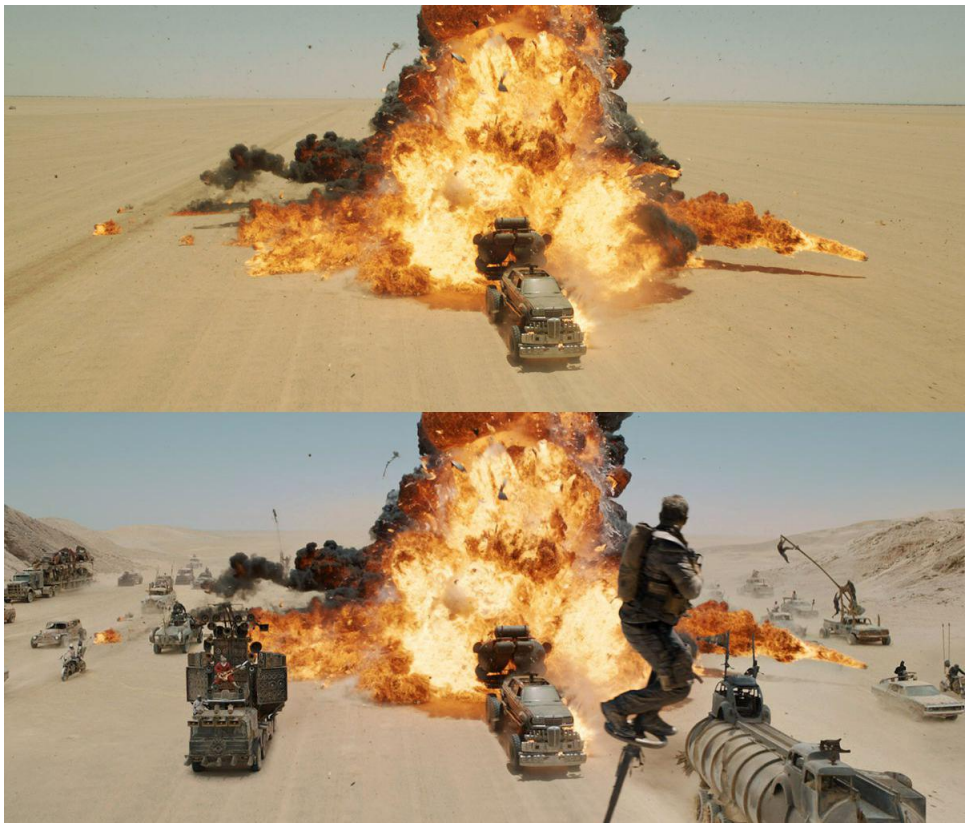

Figure 9: *Mad Max: Fury Roads*, before (above) and after (below) using digital effects. In the original plate above, it is evident the explosion of the refinery which was achieved on set as a practical effect.

The choice of using or not using digital effects does not change the story in terms of characters' conflicts and needs. In fact, scriptwriting and script analysis are independent of the use of digital effects: the overall central theme, characters' background and behaviour, "needs and wants" are all required for any kind of commercial film production because they show the groundwork needed for the story to proceed.

Script Analysis: A Common Approach

Script analysis is widely considered a consolidated element of the director's method because it allows directors to gather information on the story. This stage is commonly achieved in pre-production because it establishes elements that will guide the shooting. Richards (1992: 21), analysing a general methodology for directors, notes that the 'director's first challenge is the screenplay', alluding not only to scriptwriting but also to script analysis, which represents the stage where the director accomplishes visualisation of the story (see also Proferes 2008: 69).

Belli and Rooney (2011: 3) affirm that 'The director's first task is to interpret the script, so it is critical that' the director develops 'the ability to read and understand the material'. They (ibid.: 4) further observe that as 'An architect cannot design a beautiful building without first having the knowledge of how to build that structure [...] a director similarly needs to know how a story is structured in order to tell it beautifully.' Weston (2003: 75-76) observes that 'Script analysis is an imagining of the story and its subtext, its life outside the four corners of the page and four corners of the movie screen.' Weston defines script analysis as the visual preparation of the film before shooting (see also Proferes 2008: 69); it is usually configured as the space where the director imposes her first choices. Weston (2003: 76) affirms that 'Every directorial choice (casting, location, camera, lens) changes the script slightly (or a lot) and the story needs to be re-imagined accordingly.' This is in line with the concept of the script as an "incomplete" document which is subject to change throughout the whole film production.

Script analysis can be considered a key component of the director's method for a large number of film production because it represents the process by which the story begins to take shape in a dimension beyond the paper. Specifically, script analysis is the procedure of extracting information from the paper, a process where the director begins her adaptation of the screenplay. Weston states:

> Directing is an adaptation of the script. You must do this work of adaptation even if you wrote the script yourself. You need to take off your writing hat, put on your directing hat, and treat the script as if it was written by someone else. (Weston 1996: 166)

The work of directors on scripts is not only a form of visualisation but also a formulation of stage directions for the actors. This occurs because the continuous surfacing of elements enhances the investigation of the subtle subtexts of the characters. Weston adds:

> Many directors are primarily visual in their orientation, and their story imaginations are less well developed than their visual imaginations. But even directors who are also writers often have trouble bringing their story imaginations off the page. The words on the page, the dialogue, and (to some extent) the stage directions are clues to a vast subworld of behavior and feeling which it is the duty and privilege of the director and actors to supply. (Weston 1996: 163)

The interpretation of the script is subjective and thus the script analysis can vary from director to director as every director has a unique vision. However, it is possible to identify a recurring

attitude in approaching script analysis because investigation of the script consistently seeks certain elements which are considered substantial for the film. In fact, elements such as the story's point of view, the spine, conflicts and wishes etc., which are identified through script analysis, are mandatory in order to obtain a clear framework of the story, a necessity for any type of film. The identification of the protagonist and the characters in the story represents what is commonly described as "character analysis", also called characterisation, which consists of investigating diverse agents presented in the script, and 'their emotional reality, psychology, physicality, and, most important, behavior' (Weston 2003: 76). This identification highlights not only the status or the social position of the characters but also the relationships which link one character to the others (Richards 1992: 34). The definition of these parameters is also significant for characters who are not represented by actors, that is the case of CGI characters which are incredibly common in digital effects films. The identification of a protagonist as the agent in whom the audience places an emotional investment (see Proferes 2008: 75) usually represents the first step of the director's work in this area: through the protagonist's experience, the audience follows the events affecting him or her and understands the story. In *Avatar* (Cameron, 2009), the director guides the audience through the eyes of the protagonist, Jake, who lives in two separate bodies, the human body and the Na'vi alien body. Cameron describes a dual reality using digital effects as a means of constructing Jake, and as a result, the audience discover the world of Pandora through his own individual experience.

Figure 10: Jake Sully (Sam Worthington) experiences his new Na'vi body for the first time.

After having identified the protagonist and subsequently the characters of the story, the director proceeds in analysing the circumstances and situations in which the characters find themselves. Indeed, the circumstances intensify their wishes, their objectives and their imperatives, proposing the obstacles which will produce conflict. Belli and Rooney (2011: 19) state that 'When you know what each other character needs, then you will understand the conflict in the scene' because 'the basic truth of storytelling is this: more conflict, better scene'. Ultimately, conflict is the reason behind the main action which is considered the spine of the character. Richards (1992: 35) asserts that every character, even the incidental one, has an objective or rather a spine. Weston (2003: 134) notes that the spine 'is what the character wants out of life, his overwhelming preoccupation, his driving need'. In this sense, a character's spine is defined as a combination of their wishes, necessities, objectives and intentions throughout the overall script. It is widely known that the director is particularly careful with characterisation because 'everything to do with storytelling is finally about the characters – their problems, mistakes, passions, victories, and losses' (Weston 2003: 134). However, questions arise when the character is not human or not real because, in that case, the director is called upon to find the human centre in the "unreality" in order to make it understandable by the audience (ibid.: 77-

78). This is often the case of digital effects films where non-human characters are called to interact with the diegetic world of the story which is frequently a fictional space. In this context, directors should have defined the logic of both the characters and the world in order to create a sense of reliability around the interaction. The credibility of characters' actions should not be given by their mere attitude because they would then seem "unjustified" if not inserted in the context of the story. For this reason, story analysis is mandatory – as it is for film not involving such effects. Weston (2003: 76) states that 'Story analysis means finding a shape to the individual scenes – and the whole story – by locating the story subtext.' The location of the subtext is considered as a part of identifying the central theme because this focal idea, which represents the pivot and the recognisable element of the film, is the reason for the existence of the story, offering unity and credibility to the audience before whom the scene takes place (see Richards 1992: 12). As observed by Proferes (2008: 3), the director assumes the role of making the audience feel comfortable in the film world or rather 'to be spatially (and temporally) oriented – so that story can take place unimpeded' (ibid.: 3). The establishment of a connection between director and audience is possible if they experience the same visual space and communicate in the same language. Using this perspective, the "space" thus represents the setting of the central theme which is a physical and emotional location for the idea behind the film, while the language represents the visual code used by the director to communicate that idea to the audience. Weston (2003: 208) states that the essence of this theme is the 'truth behind the script', which can be understood by directors from the inception of the project or it can be more of a process. Character and story analysis contextualise the film and establish the basis of identifying the actions which describe the drama. The characters identified in this investigation perform actions to get what they want or to manifest their inner nature (Proferes 2008: 17). These actions, suggested by verbs, coincide with a division of the script into beats which offer a rhythm to the story. Regarding this, Proferes (ibid.: 3) claims that every edited shot can be considered as a complete sentence with at least one clear subject and one verb. Indeed, in every single shot of an edited film, the presence of an implicit or explicit action performed by the character, the camera, the editing and even the digital effects is evident; this

represents a sentence or rather an independent statement, one which aims to communicate a message to the audience. Richards (1992: 14) states that 'The director, being the pragmatist, knows the beat, or dialogue linkage, to mean a group of lines, or a unit of action, which are linked together by a common subject or objective.' Therefore, the director's task consists of analysing these sentences as units of action which propel the narrative, codifying them into the performed actions or camera frames which link them. Regarding the narrative importance of the camera action, it is reasonable to observe that films employ staging, camera or editing choices as means for indicating to the audience 'that something significant has happened' (Proferes 2008: 19). This is particularly true in digital effects films, with Squires (in Okun and Zwerman 2010: 37-38) stating that for directors 'One of the key elements to a successful visual effects shot is the design' and that 'The main objective of any shot is to help communicate the story the filmmaker is trying to tell.'

Figure 11: Imperial Rome in *Gladiator*.

Script analysis is also a phase of the director's method which allows the director to develop the preliminary organisation of the film. Specifically, story analysis, as a means to investigate the space of a film, is significant when the story is set in a reality distant from the one experienced by the audience, which is a common occurrence for digital effects films. In fact, in this context, where the director needs to find an understandable language for the

spectator, story analysis gives the necessary tools for creating a believable unreality, setting the framework for the consistency of design and narrative. This is particularly true for genres such as science-fiction, where the director's organisation of space and language typically passes through the use of digital effects. This is also the case of historical reproductions such as *Gladiator* (Scott R., 2000) in which CGI environments simulate places that existed centuries ago. Digital effects are, by definition, used when an image cannot otherwise be achieved (Fink and Morie in Okun and Zwerman 2010: 2), hence they tend to create something that is not ordinary. Completing character and story analysis is mandatory in digital effects films because the meaning of any directorial choices, the language used by directors and the reason behind the effects must be (consciously or unconsciously) clear to the audience in order to maintain a story's coherence. Weston (2003: 78-79) notices that 'Finding the human center becomes even more important when the storytelling is non-narrative, stylized, experimental, or fragmented – or when the characters are aliens, superheroes, or animated characters', referring to the importance of directors investigating characters that are not played by actors. Gutierrez (2014) claims that 'when you read in the script something like an "exploding planet", you obviously think about digital effects to do it'. Gutierrez (ibid.) also acknowledges the existence of digital effects 'which are not directly in the script but come out from the imagination of the director who reads the script'. The director is the figure who analyses the script and extrapolates the narrative sequences, breaks up the screenplay and develops a visual consistency between the design of the effects and the context of the story. Bouchard affirms:

> When you read a script, there are no images. Let's say for example that you read "an unbelievable creature rises up from the earth" and no one knows what that means. What does it look like? What is it supposed to mean? Depending on the style, if it is supposed to be funny or real, the cost and the implementation could be completely different. Even on *Avatar*, the script just says "there are a lot of new people" but what do they look like, how tall are they, how do they talk, how do they move? (Bouchard, 2014)

The necessity of debating digital effects as if they were real – or pseudo-real – elements in the logic of a story is due to another necessity; this is the connection that the audience makes to something they have visually experienced. For example, if a CGI character has gills, the audience would expect the character to have some connection with the sea. A script analysis

gives answers as to how digital effects may look and why they look that way, guaranteeing consistency with the audience's expectations. In the light of this, digital effects do not influence the way a director approaches script analysis. Character and story analysis for those films not relying on digital effects and those digital effects films that do, are in fact very similar. Whether the characters are real or CGI, directors need to know their spines; what they want and need, and what their obstacles are. The substantial difference in the director's method occurs when the outcome of the analysis is used to organise the shooting; this is because, for digital effects films, it has to be prepared in a specific way.

Visualisation: Where Digital Effects Start to Influence the Director's Method

Visualisation is a procedure which is commonly completed after a script's analysis. It is the visual preparation needed for shooting and it represents a mandatory step for digital effects films. In fact, while for films without digital effects – in absence of complicated camera manoeuvres or special effects – visualisation techniques such as storyboards and previs can be avoided, digital effects creation requires the knowledge of specific visual information in advance. Mark Herman (2015), who has directed non-effects films, claims that in pre-production he draws very rough thumbnail sketches that usually only him and the director of photography can make sense of; to him that is enough because in his films there have not been any 'car chases so far' (ibid.). Herman does not feel it is important for his sketches to be understood by the crew (apart from the director of photography); however, in the case of particular action sequences (e.g. a car chase), he specifies that clear communication with the crew would be compulsory. Indeed, action, special or digital effects sequences – and in general those involving complex camera movements – generally require a complete visualisation before shooting, as reported by various industrial accounts. Digital effects films constantly rely on composite effects, therefore the understating of the nature of visualisation to such productions is essential. Furthermore, the techniques involved in the visualisation allow the visual effects supervisor to evaluate what approach to adopt for effects creation (see Squires in Okun and Zwerman 2010: 33). The same is not true for films without digital effects where visual effects

supervisors are not involved. For such projects, the process is characterised by continued work on the script until principal photography is completed and scenes are definitively nailed down. Live-action footage represents the core of the film and from it the editor articulates the storytelling. Through editing, shots can be assembled and altered in terms of pacing and rhythm but neither actor's blocking or camera movements can be modified without reverting to digital techniques. Instead, in digital effects films, CGI sequences – especially those without live-action – can be enhanced, deconstructed and rebuilt in post-production so that narrative details can be added. In terms of method, for films not involving digital manipulation, directors can organise the shot design up to the end of principal photography, while for digital effects films the process does not end until post-production. In the latter case, live-action footage must be accurately visualised in advance in order to allow the CGI to be seamlessly blended with real elements. In light of this, it can be reasonably argued that visualisation represents the first stage in which the director's method is influenced by the use of digital effects. In order to support this supposition, it is necessary to define the term "visualisation" and then compare, through practitioners' quotes, how directors approach it in digital effects films and those productions without digital effects.

Belli and Rooney (2011: 18) refer to the ability to direct films as the ability of "thinking in pictures", in other words the capacity of designing the visual "look" of a film. Script analysis allows key elements to be identified and prepared for shooting. This analysis is generally followed by a further operation which is broadly referred to as "visualisation" or "pre-visualisation".[45] In this phase, the information identified through script analysis is arranged in visual terms by the director, using techniques such as sketches, concept art, storyboarding, previs, shot-lists, production illustrations, blocking plans etc. This procedure aims to prepare the shooting and communicate the look of the scenes to cast and crew; it is considered part of the "shot design" which specifically refers to the director's responsibility to design sequences and

[45] "Pre-visualisation" is generally used in digital effects films to refer to the visualisation achieved through digital technologies, especially previs.

achieve them through staging and camera work.[46] The director's method of visualisation has two major schools of thought (with variables between them) which are essentially the "planning" approach and the "instinctive" approach. Their main difference is at what point the visualisation – and the staging – is accomplished: for planning directors (e.g. Hitchcock) this is achieved in pre-production because they prefer to organise everything before shooting, while for intuitive directors (e.g. Cronenberg) it is achieved during principal photography because they do not want to be bound by pre-imposed rules, preferring to be guided by inspiration on set. Cronenberg states:

> I'm anti-Hitchcockian when it comes to filming. I can't think of anything more hideous than planning everything on paper before you shoot, and then enduring the process. Hitchcock himself liked to say it was just 'grinding it through the machine'. He did that in an attempt to exalt himself – I mean that affectionately – and to de-emphasize the creative input of others. To say he only had to shout 'Action' and 'Cut' on set, and nothing else, meant he had total control – the complete puppet-master. What a hell. By the time we get to 'take two' I usually know just what it is I want. (Cronenberg in Rodley 1993: 153)

Fabio Mollo, who has never directed a digital effects film, similarly confirms his method:

> Sadly, I am an instinctive director. I said "sadly" because the director's role needs a lot of studying, planning, preparation. I tend to be guided a lot by what happens on set instead. […] It has never happened to me so far that I build a shot completely, to arrange everything in a precise way.[47] (Mollo, 2015)

Conversely, Lodovichetti observes:

> […] In my case I organise an accurate pre-production. I do my own storyboards therefore I know exactly where the camera should be and how it moves. When I arrive on set I already know these things. I have a lot of pages with all the information already agreed with the director of photography. There are directors who arrive on set and improvise everything, the instinctive ones. I worked with Sorrentino who is a planning director and I am a bit like him. I prefer to arrive prepared on set so I can dedicate myself to the actors. However, there is a price to pay if you work like this and it is represented by the loss of flexibility. You need to maintain a certain lucidity and elasticity to say "Ok, I planned to do a master shot but for different reasons I cannot have it and so I decide, with my director of photography, to find a B plan in order to convey the same idea". You cannot remain stubborn on the same idea. You need to be

[46] For "shot design" the meaning is the specific organisation of a shot which is achieved through visualisation, actor blocking and camera work, both real and virtual.

[47] Italian: 'Io sono purtroppo un regista istintivo. "Purtroppo" perché il lavoro del regista è un tipo di lavoro che ha bisogno di tantissimo studio prima, di pianificazione, di preparazione. Io invece tendo molto a farmi guidare da quello che succede sul set. Talvolta saper improvvisare però risulta molto utile quando accadono problemi sul set e sei costretto a cambiare cose. Essendo istintivo, io seguo molto l'emozione. […] Non mi è mai capitato fino ad ora di costruire uno shot completamente, di sistemare tutto in un certo modo. Parto dalla realtà e compongo lo shot come serve a me. Nei sopralluoghi faccio sempre prove di design per lo shot e poi lo rifinisco sul set.' (Mollo, 2015)

> prepared to change things, especially when you shoot outdoors. An instinctive director could blame a planning director to be much too rigid. The best option is planning with the awareness that on set you will have to change something for many different reasons.[48] (Lodovichetti, 2014)

The director's approach toward visualisation is different from case to case; however, because the director's paramount task is to transpose written words into moving images, there is a phase in any film production where the director has to transform the script analysis outcome into visual directions. This can be in the form of a nailed down plan or adjustments on set. If there is a substantial propensity for improvisation, the director feels she has more flexibility in guiding actors because these can participate in establishing movements and actions; when the performance is organised before shooting instead, actors may feel constrained because their positions in front of the camera have been already decided without their participation. The process of visualising a film is generally acknowledged as one of the director's main tasks, a consequence of the fact that directors are perceived, by the definition of their role, as vision holders. Katz affirms this:

> From the moment a script exists and work commences, the director should strive to make every shot and every sequence count. Relinquishing this task to others is not what is meant by collaboration. Cinematographers and editors do their best work when the director is contributing and setting high standards for design. (Katz 1991: 6)

Katz, who implies the proactive role of directors in designing shots, supports the idea of the director as the figure who nails down the sequence. However, directors may be asked to direct a film where visualisation has been already achieved by the studios, as frequently happens for film franchise productions and TV series. Lodovichetti (2014) notes that 'There are situations in which the director receives an already completed storyboard and he only has to direct actors in a

[48] Italian: 'Nel mio caso faccio una meticolosissima pre-produzione. Mi faccio da solo gli storyboard quindi so esattamente dove deve essere messa la camera e come deve muoversi. Io quando arrivo sul set già so queste cose. Ho pagine e pagine di informazioni, concordate ovviamente con il direttore della fotografia, al riguardo. Ci sono registi che arrivano sul set e improvvisano tutto, quelli istintivi. Sorrentino, lo so perché ci ho lavorato insieme, non è impulsivo e io sono come lui. Preferisco arrivare sul set preparato per poi potermi dedicare al lavoro con gli attori. C'è però un prezzo da pagare per i registi che preparano tutto in anticipo: la perdita di elasticità nel cambiare totalmente qualcosa sul set per mille motivi. Bisogna mantenere la lucidità, la freddezza e l'elasticità di dire "Ho pensato a un piano sequenza cosi ma per mille ragioni non si può fare e al volo, con il direttore della fotografia, occorre trovare un piano B per riuscire a rendere più o meno il taglio che si voleva rendere". Non puoi fissarti su una cosa che va girata assolutamente in quel modo. Bisogna avere l'elasticità di raddrizzare le cose, soprattutto quando si gira in esterni. Un regista istintivo potrebbe accusare di rigidità un regista che prepara a casa le scene, per questo la cosa migliore è pianificare accettando però il fatto che sul set si possa cambiare per qualsivoglia motivo e concedersi all'istinto del momento.' (Lodovichetti, 2014)

way that would fit the instructions given by the production.'[49]

In general terms, visual interpretation involves the establishment of a form of communication between directors and other figures such as the cinematographer or the production designer (see Frost 2009: 32). The use of visualising techniques is a common means for establishing this communication because these 'allow a filmmaker to previsualize his ideas and refine them in the way a writer develops ideas through successive drafts' (Katz 1991: 24). As an example, storyboards, which are largely considered the visualising tool par excellence, 'serve as the clearest language to communicate ideas to the entire production team' (ibid.: 24); they can also be refined and adapted throughout the film production process (storyboards will be illustrated in detail later in this chapter). Katz (1991: 145) affirms that 'Since structure in films can be presented in a storyboard in ways that a screenplay cannot convey, the visualization process can be considered part of the writing and, ultimately, the editing process.' Therefore, visualisation is a process which is not only relegated to the pre-production phase but encompasses the whole production process, especially for digital effects films. For instance, for such projects it is common to involve concept artists after principal photography in order to transform the director's input into the visuals. Pallant and Price (2015: 11) claim that whatever the techniques used, concept art's main purpose 'is to indicate the mood and feeling of a set, location, costume or makeup' (Katz 1991: 10). Walker (in Bartholomew and Rutherford 2014: 170) considers the concept artist as 'responsible for generating design visuals for sets, props, vehicles and costumes', thus 'a combination of art director and production illustrator' (ibid.: 170). As is widely known, concept art is often involved early on in film productions where there is large-scale use of digital effects. This is because through its use it is possible to design characters and environments that can be entirely created in CGI. However, due to the capability of digital effects to be refined up to the very last moment, concepts artists are frequently hired for the whole of the film production and not only pre-production. Nixon (2014) claims that

[49] Italian: 'Ci sono situazioni nelle quali al regista viene fornito già uno storyboard, quindi non contribuisce necessariamente al design dello shot. Non è affatto difficile trovare casi di registi che hanno già lo storyboard pronto sul quale devono lavorare e devono solo dirigere gli attori al fine di rispettare quanto imposto dalla produzione.' (Lodovichetti, 2014)

‘concept art is linked to every stage of the film production for various different problems’ because ‘Directors are always trying to drive ideas forward and therefore there are always refinements that can take place’. This underlines a particular difference between films avoiding the use of digital effects, where concept art use is infrequently involved, and digital effects filmmaking, which considers concept art as a current practice. This process of graphic refinement is essential, not only to directors who are searching for different ideas, but also digital effects practitioners who need to be informed about the aesthetic of a film. Furthermore, this approach represents a valuable and practical problem-solving tool, one which is essential for film productions where shots are worked on by a significant number of artists. Nixon explains:

> There are films where the concept art is a problem-solving device. Normally if you try problem solve in CGI and in 3D it can be a very lengthy process and it takes an artist’s time to generate, iterate or change something without any idea of the final result. It takes technical time of rendering where instead problem solving with concept art is a solid way of addressing something from an aesthetic point of view with cheaper tools. (Nixon, 2014)

While Bouchard asserts:

> Using a concept artist may help and this is definitively true when you are dealing with a movie like *Avatar* or *Star Wars* which takes place in a different universe. On *Avatar*, we had over 300 pages of concept art before we even began. The look of the spaceships was very detailed as the look of the Na’vi [the alien tribe portrayed in the film]. It is a lot cheaper to have somebody to paint a really quick sketch than to model, render shades, texture it etc. Digital effects are really powerful because they can make things appear completely real but it takes a lot of work to get to that point so you don’t want to change it along the way, you want to change it as soon as possible. […] The concept artist is really important in creating confidence for such projects. (Bouchard, 2014)

As has been analysed in Chapter Three, the digital pipeline is made of various steps with each one connected to the one which follows. Testing the design in CGI when the process has been initialised would represent a loss of time and money because it would force the artists to go back to previous iterations and make adjustments until they find the most desirable look. Concept art, instead, allows the director to refine the look of CGI on paper in a detailed way so that the artists know what the required design is and the digital pipeline flows without any substantial interruptions. On the nature of concept art, Nixon states:

> At a number of projects that I worked on at Weta Digital, I have found that concept art was a key artistic contribution to that dialogue that was generated between a director,

> his key creative team, and the visual effects facility. Obviously, it is all generated from the script but then there is testing and refining, a research development before you get into this whole process of pre-production in which digital effects are involved. One of the things that I found as key, especially at the time when I worked at concept and matte painting department, was the use of concept art to establish the aesthetic [...] I was very privileged to work with Michael Pangrazio[50]. On a project, *The Lovely Bones* [Jackson P., 2009], which had many visually challenges to accomplish on screen, I observed the relationship of Peter Jackson with Michael through the turnaround of concept art and painting. Michael photographed things and very quickly bashed them together in a Photoshop design, applying his artist eye to paint something, digitally. Then he submitted 10-15 versions of it to Peter while he was directing the film on set. This stimulated the dialogue and, in the case of *The Lovely Bones*, the final product of the film was driven by this process of the director and the art director/concept artist. (Nixon, 2014)

Storyboards represent an immediate and cheap way of achieving the visualisation of the story. Katz (1991: 20) states that 'the storyboard is the most useful tool the filmmaker has for visualizing his ideas and the one most directly related to his responsibilities'. Weston (2003: 293) claims that the preparation of the storyboard in conjunction with other visualisation tools, such as the blocking plan,[51] is always a useful practice. The importance of the collaboration between different systems of representation is due to the fact that they relate to the preparation of the camera setup list (see Proferes 2008: 45) and therefore anticipate how the shooting will be organised. Katz (1991: 44) observes that 'Storyboards basically convey two kinds of information: a description of the physical environment of the sequence (set design/location) and a description of the spatial quality of a sequence (staging, camera angle, lens and the movement of any elements in the shot).' In light of this, directors can run tests and see whether a sequence conveys their vision in a more suitable way. Relating to this argument, Forrest-Smith (2013) affirms that 'The storyboard artist needs to understand camera moves, camera angles [and] the flow of a sequence' because 'The storyboards represent a test to see whether the sequence is working'. Proferes (2008: 46) claims that the storyboard represents the end of script analysis, a statement which underlines the importance of completing character and story analyses before the illustration of actions. Indeed, storyboards, which are considered by some practitioners as

[50] Michael Pangrazio is an award-winning art director known for matte painting work on *Raiders of the Lost Ark* (Spielberg S., 1981) and *The Empire Strikes Back* (Kershner I., 1974).

[51] The blocking plan, which represents the movement and activities of a scene, refers to a three-dimensional vision sketched from an aerial view (see Weston 2003: 293) while storyboards are generally 2D sketches of each individual shot (see Proferes 2008: 45) portrayed from a particular camera perspective.

part of the staging process because of their goal of relating actors, cameras and environments, are the result of a form of motivational analysis that happens behind the action. The characters' actions and the camera movements correspond to specific messages that the director wishes to convey. Furthermore, storyboards allow the director to establish a relationship with the crew because they represent a universal language which can be understood by all practitioners in the filmic field. Badham states:

> Words can only take us so far and can be wildly misinterpreted by crew and director alike. An invaluable assist to filmmaking, storyboards express the idea of a particular shot in a very precise way, allowing for an easy understanding of the shots that will be needed to tell the story excitingly. They reduce the confusion that results when we try to translate from the verbal world to the visual world. (Badham 2013: 145)

Ratner (in Badham 2013: 148) observes that 'One of the greatest values of storyboarding is to familiarize the whole cast and crew with the overall plan of a sequence' because 'It helps them visualize what the director is planning and how they can contribute to making it work.' Traina similarly affirms:

> Sometimes it is necessary to use storyboards and not only for action scenes or special effects, but also because the crew needs to know what is going on. I am not accustomed to repeat a scene from different points of view in order to decide how to organise the material in editing. I shoot only the necessary, with the idea of how the shots will be edited later. Therefore, it is important to see on a paper how the sequence will appear because it puts your collaborators in the condition of having a clear vision of how the single shots dialogue between them.[52] (Traina, 2015)

[52] Italian: 'A volte è necessario utilizzare storyboards, per eventuali scene d'azione che richiedono particolari effetti speciali, ma anche soltanto perché tutta la troupe sia perfettamente consapevole del "senso" di ciò che si sta facendo. Io non sono solito girare, come si dice, "a copertura", cioè ripetendo la scena da vari punti di vista per poi rimandare alla fase del montaggio tutte le decisioni su come organizzare il materiale. Io giro lo stretto indispensabile e con piena consapevolezza di come quelle riprese saranno in seguito montate. Per cui, vedere su carta la scansione della sequenza è fondamentale per mettere i tuoi collaboratori nella condizione di avere una chiara visione d'insieme e di come le singole inquadrature siano destinate a parlare tra di loro. È in questo che risiede l'essenza del cinema in cui credo: assemblare pezzi di film che assumono un senso proprio in rapporto al modo in cui sono ordinati o giustapposti.' (Traina, 2015)

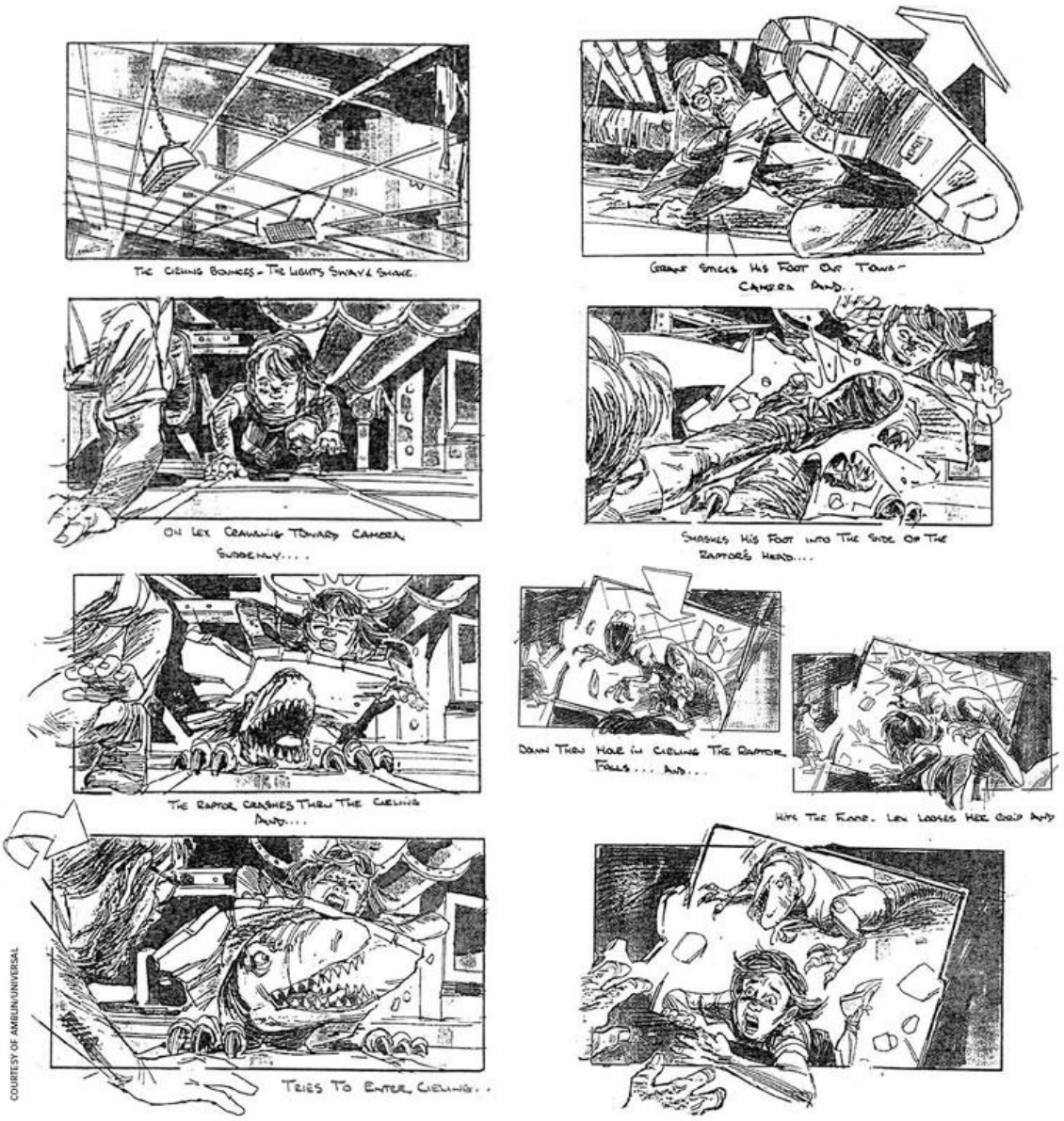

Figure 12: Storyboards for *Jurassic Park*.

Storyboards organise blocking and camera movements on paper to emulate what the audience will see. The panel proportions replicate the film's aspect ratio as an imitation of the screen. Shot by shot this technique gives an idea of how the characters will move and occupy the space of the frame and how the camera will move to depict the sequence. In this way, it is clear how much the objects presented in the storyboards will fill the frame. This approach to visualisation also gives the narrative pace and provides information on the sequence length. Katz observes:

> Theoretically, a fully developed storyboard can show a director all the shots he needs for a scene. If the director and cinematographer shoot the boards exactly as they appear

> on paper even the lengths of shots can be estimated. Later, the editor only has to trim shots here and there to make them all fit neatly together. (Katz 1991: 152)

While for films not relying on digital effects storyboards may or may not be used, for digital effects films these are more frequently involved and more detailed in comparison. Finance and Zwerman (2010: 169) affirm that 'while storyboards are somewhat optional for live-action filming, they are *essential* in visual effects'. Squires states that storyboards 'are critical for determining the visual effects techniques and assets required' because they show it possible to 'make budgets and to plan the multiple elements that need to be shot or created' (in Okun and Zwerman 2010: 38-39). Basso provides an example of this:

> In *Amori Elementari* there is a digital effect which shows a child entering a plane in an airport and coming out of it in another one. With the storyboards of the sequence I contacted visual effects companies in order to see how much it could cost and who was able to do it, so I could make some comparison. The sequence has been divided in different shots, each one with a specific set of problems. The visual effects supervisor was always on set. It is like dealing with the director of photography: you need to know what to ask and you need to know the language to use in order to describe what you need.[53] (Basso, 2015)

The need of storyboards, or other forms of visualisation, depends on the complexity of the effects used; this means that, for instance, when the effects are simple corrections, storyboards can be avoided. Gherardi supports this hypothesis, affirming:

> It depends on the projects but generally the storyboard artist works only on particular scenes, like action sequences or those which involve digital effects, rather than on an entire film. In some scenes, the director can improvise on set and there is no need for a storyboard artist. Storyboards represent a tool which aims to optimise the organisation and the cost of particular scenes. If you have a car chase, you cannot arrive on set if you haven't a clear vision of the sequence; therefore, you need the storyboards in order to, as an example, know how many cameras you need, how many times a car or an explosion is on frame, how the characters move inside the frame etc. Often the costs establish how many takes you have per shot: if you have to destroy a car for real and you have just one car, then you have just one take. Producers see the storyboards as a means to save money because it is a tool which can pre-visualise, in a direct way, how

[53] Italian: 'Uso storyboard per chiarire l'idea che ho, soprattutto nelle scene dove ho un movimento di macchina più raro del solito e quindi è bene che tutti i capi reparto sappiano che cosa voglio. Non deve accadere che qualcuno non capisca la sequenza. Lo storyboard è la maniera più economica per evitare una tragedia umana. Permette anche una ottimizzazione. Faccio un esempio: in *Amori Elementari* c'è un effetto visivo per il quale in una sola scena, con movimenti di macchina molto complessi, una bambina entra in un aereo in un aeroporto e ne riesce in un altro. Tramite lo storyboard ho contattato diversi studi di visual effects per vedere chi era in grado di realizzare quella scena e a quale costo, per poi fare un paragone. La sequenza è stata scomposta in una serie di shots, ciascuno con una sua problematica. Il responsabile degli effetti speciali era sul set. È un po' come con il direttore della fotografia, devi sapere che cosa chiedergli e devi conoscere il lessico con il quale innescare e descrivere ciò di cui ha bisogno.' (Basso, 2015)

> the set will be organised. […] The storyboard artist is also the concept artist in small productions. In big budget movies, there are departments dedicated to environment or creature design.[54] (Gherardi, 2014)

Shooting days are agreed with the production[55] and they have a cost which means that there are generally few possibilities for experimenting with things on set. Visualisation techniques such as storyboards can give a precise idea of what the scene will look like – and how it can be achieved – with a relatively low cost. Gherardi claims:

> If you are an instinctive director, or a daredevil, you could avoid rigid script pre-visualisation. There are film directors who can visualise everything with a few notes while others need visual inputs and therefore they prefer to work with a storyboard artist. In the latter case, the cost and the time spent considerably decrease; there are no tests on set because you already know what to shoot. Storyboards are a useful tool in this regard, it makes you save money and gives you a clear idea of what the film will look like. Furthermore, storyboards speak a universal language, the drawing language. You go abroad shooting with a crew that does not speak your language, nonetheless it can understand the film that you are going to shoot because of the storyboards.[56] (Gherardi, 2014)

The use of visualisation tools such as storyboards is distinctive of a planner director rather than an instinctive one and suggests that digital effects films are generally approached less instinctively than other films. Gilliam, talking about *The Fisher King* (Gilliam T., 1991) – which is not an effects-driven film – reports something analogous to what was affirmed by Gherardi. He states:

> So here was a chance to throw away all the special effects and just concentrate on four

[54] Italian: 'Generalmente lo storyboard non viene usato per tutto il film ma solo per scene particolari come quelle di azione o quelle con digital effects. Su alcune scene il regista può improvvisare sul set e non ha bisogno dello storyboarder. Lo storyboard nasce come strumento per ottimizzare le organizzazioni e i costi. Con un inseguimento di automobili non posso arrivare sul set se non ho perfettamente visualizzato come quella scena sarà, quindi ho bisogno di uno storyboard per calcolare in anticipo di quante camere ho bisogno, quante volte l'automobile e l'esplosione sono inquadrate, come si muovono i personaggi all'interno della scena. Spesso i costi decidono quanti take avere per una scena: se devi far saltare in aria un'automobile per davvero, e puoi farlo una sola volta, hai un solo take. La produzione vede lo storyboard come un modo per risparmiare perché è uno strumento che è in grado, visivamente e in maniera diretta, di far capire a tutti quanti sul set come muoversi. […] Lo storyboarder fa anche concept art nelle piccole produzioni mentre in produzioni grandi ci sono dipartimenti dedicati che si occupano dello studio di "environment" o creature.' (Gherardi, 2014)

[55] The producer ultimately approves the budget and thus the number of shooting days. The amount of flexibility in the schedule rests with her – and basically the budget also.

[56] Italian: 'Se sei un regista istintivo, o uno scriteriato impreparato, puoi non passare per la visualizzazione rigida dello script. Ci sono registi che riescono a visualizzare tutto con pochi commenti che fanno allo script mentre altri hanno bisogno di input visivi e quindi si affidano a uno storyboard artist. In questo caso però costi e tempi si abbassano notevolmente perché non ci sono le prove sul set, già si sa cosa fare. Lo storyboard è uno strumento utile, fa risparmiare soldi e dà una chiara idea del film che si andrà a girare. Inoltre parla un linguaggio universale che è quello del disegno. Se vai a girare all'estero, anche non sapendo la lingua, tutti possono capire il tuo film dallo storyboard.' (Gherardi, 2014)

> performances, which was easy compared with what I'd been doing in the past. […] for the first time, I didn't use storyboards. In the past I'd always worked out everything in advance […]. (Gilliam in Christie 1999: 202-203)

Gilliam hints at the fact that the use of storyboards coincided with a way of filmmaking where effects were involved and planning in advance was preferred. The idea that digital effects need detailed storyboards and preparation in pre-production is confirmed by Coglitore (2015) who claims that 'Detailed storyboards are used for a lot of digital effects films': for such films 'everything is planned, designed with photographic references and videos'. This 'represents another way of working because the relationship between actors and digital effects requires a particular attention'[57] (ibid.). In certain situations, storyboards are also used to write part of the script, as reported by Pallant and Price (2015: 11), who affirm that 'for *Jurassic Park* (1993), the storyboards for key scenes preceded the writing of the screenplay altogether'.

Another visualisation technique which is frequently used in pre-production for digital effects films is previs (see Chapter Three). An example of this is in the production of the digital effects film *The Martian* (Scott R., 2015) where the set was precisely organised as a large clock, with parts of it programmed and synchronised based on previs (Variety, 2016). Previs assumes the form of a template that directors elaborate upon in pre-production, along with the visual effects supervisor. Nixon affirms:

> Bearing in mind that in every stage the director will approve the final version of the shot, previs will need to be approved by the director. James Cameron on *Avatar* always went back to previs and previs was the bible. (Nixon, 2014)

The director working on a digital effects film aims to find the strong visual impulses that need to be extrapolated from the script and then converted into digital images. There is an exaggeration in portraying the diegetic space of the film which necessarily forces the method to be open to creative interventions from the visual effects supervisor. It is not unusual to have entire sequences shot in CGI without any real cameras or actors and, in those situations, previs becomes the only possible simulation for what will appear on screen. Previs represents a

[57] Italia: 'Per molti film con digital effetcs vengono fatti degli storyboard dettagliati, tutto è preparato, disegnato con delle reference fotografiche e video. Si lavora in maniera diversa perché il tipo di relazione tra attori e digital effects richiede una attenzione particolare. Nel mio ultimo film ho usato dei digital, che non si vedono ma completano i dettagli di una scena o ne creano altri. Non abbiamo avuto necessità di ricorrere a metodi complicati ma solo a una preparazione più attenta fra i vari reparti.' (Coglitore, 2015)

suitable tool for informing the visual effects department about what the director wants in the frame and maintaining consistency between the director's vision and its actual transposition.

The Visual Effects Supervisor as Proxy Director: Differences with the Production Designer

Katz (1991: 7) affirms that 'Whether or not the director is the main visualizer for a film, the development and implementation of the visual plan is the responsibility of the production designer and his staff.' The production designer 'heads the art department' (Halligan 2013: 8) and supervises 'the overall "look" of a film, working in close collaboration with directors, cinematographers, and their own staff' (Tashiro 1998: 1). Heisner (1997: 10) observes that the production designer's work 'underscores the visual nature of film and the necessity to fill the screen with more than actors to tell the whole story'. The production designer, under the director's supervision, guides the depiction of the story through visualisation which involves the design, not only of the shot "per se" but of all the things contained within it. This operation, which involves the use of production illustrations and storyboards, helps the director in translating her vision (see Quinn in Jones and Joliffe 2006: 314). The production designer essentially bridges concept art and film production, in other words, she evolves the concept art in actual parts of the film. Katz (1991: 10), describing the production design and work of the art department, asserts that 'Concept and Final Design Illustrations' are used 'to describe individual elements for a production, including sets, props, costumes, makeup and special effects'. This is particularly important for digital effects films where this information is used to build CGI models for environments and characters. In fact, Katz (ibid.: 10) observes that 'In the case of *Star Wars,* production illustrator Ralph McQuarrie initially made detailed paintings of eight major scenes, which established the pictorial tone for the entire movie and helped sell the project to a studio.' In general terms, the production designer is 'responsible for the overall design of a film' (Barnwell 2004: 13) which includes CGI shots and the design of CGI objects. In consideration of this, questions as to how the visual effects supervisor would be different from a production designer and why her involvement would represent an influential element of

the director's method, might arise. Rizzo (2015: 3) affirms that the production designer's task is to deliver 'the visual concept of a film through the design and the construction of physical scenery' underlining the physical character of her work. Tashiro (1998: 1) claims that 'What remains true for all designers is their focus on the visual, physical realm of the movie'. Instead, the visual effects supervisor's task focuses on the virtual scenery; this is due to her responsibility to help incorporate digital effects into the final result (see Skilton in Hernáez and Campos 2011: 176). Although CGI sequences have to follow the design that the directors and production designers have arranged, decisions about actor and camera blocking can be left to the visual effects supervisor, a peculiarity which makes the two roles significantly different. Finance and Zwerman (2010: 38) affirm that the visual effects supervisor 'is to the visual effects what the director is to the film' because, apart from being the creative head of the visual effects department, she is a visual storyteller and the director's creative partner (see ibid.: 38). For this reason, the supervisor can substitute the director for sequences involving large-scale use of complex digital effects. Williams asserts that, for some shows, the director leaves the staging of the action to the visual effects supervisor because she is accustomed to dealing with visual kinetic images (Williams, 2013). Nixon (2014) states that 'Visual effects supervisors, who are key creative contributors alongside the director, have the ability to give their input into the final visual effects, to be the proxy of the director and to keep the order of everything both technically and artistically.' McLean (2008) states that the visual effects supervisor's role 'is one of the few that touches on the making of a movie at almost every step in the process of making it'. He continues, affirming that 'On effects-heavy pics, the vfx [visual effects] department gets going in the pre-production stage, supervisors are now fixtures on set and often direct a second unit team, and they often are the ones putting the final touches on a film before it's released', a peculiarity which 'makes them technically qualified to step into the director's chair'. In the same way, Finance and Zwerman (2010: 39) affirm that the supervisor 'Often acts as a 2nd Unit director when no principal actors are involved in the shoot'. Digital effects creation represents an all-encompassing process, therefore, the visual effects supervisor, who manages the exchange of information between the visual effects department and the rest of the

production, must be consulted at every step of the process. This also counts for guiding the actor's performance using green screens, a process which is out of the production designer's orbit. This aspect makes her very much like the film director and in fact, for a significant number of digital effects films, supervisors are chosen to perform as second unit directors. An example of this can be seen in *The Jungle Book* (Favreau J., 2016), where visual effects supervisor Rob Legato was also the second unit director-cinematographer. The question as to what the second unit director's task actually is may become a subject for debate. Grierson (2015: 115) reports that the second unit director 'is the person who oversees secondary shots on a film, often working with actors who aren't the main stars.' However, second unit directors can also work with principal actors if they are also the visual effects supervisor for the project and if the sequences involve a certain amount of digital effects. Schreibman affirms:

> Many times this [the second unit] involves stunts, special effects, establishing shots or images that do not involve speaking or identifiable cast members. It can also involve shooting performers or main actors on a green- or bluescreen stage for photographic or digital effects as in the case of *X-Men* [Singer B., 2000], *The Cell* [Singh T., 2000] or *The Matrix* [Wachowskis L. and L., 1999]. The logistics of the production defined by the production board, or by the needs of the director, often dictates the necessity for a second production unit, that is headed up by a second unit director or in some cases, the visual effects supervisor. (Schreibman 2001: 72)

Schreibman specifies that the visual effects supervisor can be the second unit director for certain projects if the logistics of the production or the director require it. Kroon (2010: 591) claims that the second unit's task 'will dictate the skills required in the second-unit director' so, 'For instance, a particular shot may call for a second unit director' with 'expertise in shooting visual effects background plates'. Similarly, Karg and Over (2007: 145) report that the 'job of the second unit director and his team is to shoot a film's minor or secondary scenes that contain special effects, action sequences or *establishing shots*'. Karg and Over specify that in digital effects films, the second unit shoots "inserts" – particular shots that will be inserted in the edit – made entirely in CGI (see Chapter Six). They claim:

> Second units also film what are called *inserts*, which are either shot simultaneously during a production schedule or during postproduction in the editing phase. Inserts are typically shots showing some type of detail, like a hand turning a doorknob or a candle being lit by someone who is presumed to be the actor, but could in fact be anyone. (Karg and Over 2007: 145)

Kawin (1992: 383) states that 'The second unit director is not an assistant but a fully-fledged director' which confirms the idea of the visual effects supervisor as a proxy director, when the supervisor is also the second unit director. The director's role involves a substantial number of responsibilities which do not permit her to entirely dedicate herself to effect creation. In light of this, the visual effects supervisor becomes the figure in charge of developing the procedures necessary in order to achieve the director's vision through effects creation. In the case that the producers and directors decide the visual effects supervisor should also be the second unit director, the director must establish a particular relationship with the supervisor as soon as possible. This collaboration starts when the script is ready to be deconstructed; this is because the supervisor, as the second unit director, has to adopt the same visual language as the "first" director. The first unit director has to clearly state to her how she imagines the final result so that the footage shot by the second unit will be consistent with the footage shot by the first. The relationship with the visual effects supervisor is one of the longest because it starts in pre-production and ends in post-production, where the actual effects will be achieved. Nowadays, digital effects creation is highly specialised and therefore needs professional figures dedicated to the task, a practice which excludes the director from the actual realisation of effects. In terms of method, directors need to clarify what the effect should represent and how it should be framed by the camera. This is similar to the use of particular camera movements or practical effects: needing to be discussed with the cast and crew, planned and achieved on set. However, directors do not have to know what specific technique to use because this is up to the visual effects supervisor to decide. Involving digital effects is a complex process and the cost varies depending on the techniques used, therefore, it requires a dedicated figure with specific responsibilities that neither the director nor the production designer can replace.

Pre-production for *Spy Kids 2, Life of Pi, The Hobbit* and *The Dark Knight Rises*: Four Case Studies

A significant number of digital effects film productions involve similar procedures, an occurrence which is evident when the filmmaking process for such projects is analysed in detail.

In this subchapter, the dissertation investigates the design of significant digital effects sequences, in terms of the director's method, for four effects-driven films: *Spy Kids 2: The Island of Lost Dreams* (Rodriguez R., 2002), *Life of Pi* (Lee A., 2012), *The Hobbit: An Unexpected Journey* (Jackson P., 2012) and *The Dark Knight Rises* (Nolan C., 2012). The following case studies present comparable director's methods in regard to pre-production and visualisation, despite the fact that these film productions worked with different budgets (around $40 for *Spy Kids 2: The Island of Lost Dreams*, $120 for *Life of Pi* and above $200 million for *The Hobbit: An Unexpected Journey* and *The Dark Knight Rises* respectively) and dealt with a diverse complexity of effects. This demonstrates that digital effects push directors to use patterns which have become common methodological procedures for such projects.

Spy Kids 2: The Island of Lost Dreams (2002) is a digital effects film directed by Robert Rodriguez. The film, which is the second installment of the *Spy Kids* film series, deals with two young spies, Carmen and Juni Cortez (Alexa Vega and Daryl Sabara), who are on a mission in an uncharted island; there they will team up with other two young spies in order to defeat an evil scientist called Romero (Steve Buscemi). The film features a slate of over 1000 effects shots and has been approached by the film director using a method which is common for such film productions. This method differentiates from the method used for other film productions due to the consistent use of animatics in pre-production; the primary purpose of this technique is to speed up the shooting when digital effects are involved. Duncan (2003: 19) also reports that in the previous film of the series, *Spy Kids* (2001), 'Rodriguez produced animatics for every major effects sequence', preferring them to static storyboards. The reason for this is explained by the same Rodriguez, who affirms:

> I'd edit those storyboards together, and put sound effects and music to them […] but I found that people still responded better when they saw an animatic. They could suddenly tell what was going on – even though it was exactly the same as the storyboard, only moving. (Rodriguez in Duncan 2003: 19)

In *Spy Kids*, the director used this approach for the scene of a chase on the lake. In this sequence, Carmen and Juni are on a bizarre boat, escaping from robots on motorboats. The shooting benefitted from accurate preplanning, with Rodriguez organising all the shots that he

needed to depict the scene. He made an animatic for the scene and edited it, emulating the final result. From the animatic, the crew had a sense of what had to be shot and what had to be made in CGI. The animatic also established the pace of the scene. The preplanning thus allowed Rodriguez to come up with new ideas on set, as he affirms:

> What's good about being well prepared, […] is that if you come up with something extra because you're inspired by the set or the location, you know right away if the idea will fit. And if you don't have any new ideas, you still have the safety net of a very well thought-out plan. I think you come up with your best ideas when you are writing – when you are really into it and you have your head in the story and you're not distracted. (Rodriguez in Duncan 2003: 20).

For *Spy Kids 2*, Rodriguez used animatics for sequences which were green screen-heavy. One of these scenes was the climactic battle between the giant Spider-Ape and the Slizzard – mutant beasts created by the evil scientist. Characters were created in CGI and animated while the protagonists where shot against a green screen, using a rig simulating the creatures' backs, and then inserting these on top of the beasts as if they were being ridden. Duncan (2003: 20) claims that the 'Animatics clarified precisely what elements were needed, which sped the greenscreen shoot along.' In fact, the preparation in advance and the animatics allowed the shooting days with a green screen to be halved.

An analogous case for the use of this method is the digital effects film *Life of Pi* (Lee A., 2012). *Life of Pi* is an adaptation of a Canadian fantasy novel written by Yann Martel: the story deals with an Indian man named "Pi" Patel (Suraj Sharma) who survives a shipwreck on a life boat with a Bengal tiger. Pre-production for this film presents similarities to *Spy Kids 2*, particularly in the way the director approached the visualisation phase. Duncan (2013: 55) reports that, before this film, director Ang Lee had significant experience with previs from the film *Hulk* (2003). At that time, pre-visualising was particularly slow for the technology involved, a factor which convinced the director to rely more heavily on storyboards rather than previs. However, ten years later, the more developed technology allowed Ang Lee to pre-visualise an hour and a half of *Life of Pi*, shot by shot, selectively in stereo (ibid.). Duncan (2013: 54-55) claims that previs 'would not only help Lee to envision his movie, it would prove invaluable as a guide when the director had in front of his camera only Pi actor Suraj Sharma in

a tiny lifeboat, in a water tank against bluescreen'. David Conley (in Duncan 2013: 55), visual effects consultant for *Life of Pi*, asserts that previs told the crew exactly where the camera and the light needed to be, and where the boat would be in relation to the camera and the water. Duncan (ibid.) reports that 'The first sequence tackled by the previs team was the sinking of the *Tsimtsum*, the ill-fated Japanese freighter on which Pi and his family make their voyage to Canada.' The previs artists designed detailed shots with the director, coordinating with the director of photography, Claudio Miranda. Brad Alexander (in Duncan 2013: 55), previs supervisor for the film, explains that 'Production crews used previs to determine how to rig the cameras on set ensuring they would get shots that matched the previs exactly.'

The Hobbit is a film series consisting of three fantasy films, *An Unexpected Journey* (2012), *The Desolation of Smaug* (2013) and *The Battle of the Five Armies* (2014), all directed by Peter Jackson. These films are based on the novel *The Hobbit* by J. R. R. Tolkien and take place in the Middle Earth, a fictional world that Jackson initially managed to recreate in New Zealand ten years earlier for his famous *The Lord of The Rings*. *The Hobbit* tells the quest of a group of adventurers who wants to take back the Lonely Mountain, once owned by the Dwarves, from an evil dragon called Smaug. The films involve heavy use of digital effects which forced Jackson to adopt a specific method throughout the filming process. An example of this is in the scene where the protagonist, Bilbo, and the dwarves are caught in a storm while climbing the Misty Mountains. For this sequence, the production built a mountainside set for the actors while the special effects team supplied interactive lightning rain and flashes – which Weta Digital later enhanced digitally in wide shots. As the group seeks refuge from the tempest, the characters find themselves in the middle of a rock-throwing battle between three stone giants at first camouflaged as part of the mountainside. Duncan (2013: 109) reports that the director, along with the animation supervisor David Clayton, designed this scene in previs and this guided the live-action shoot precisely, with wide shots featuring digital double dwarves being pelted by rocks (ibid.). Clayton (in Duncan 2013: 109) states that 'They turned it over with plenty of previs cut in, which formed the basis of the all-CG shots'; this allowed the director to choreograph the whole sequence in previs and be in full control of the pace and framing.

One last example which clarifies how the director's method in pre-production is influenced by the use of digital effects, is the use of previs in *The Dark Knight Rises* (Nolan C., 2012). This film is the last chapter of *The Dark Knight Trilogy* and features the DC comics character, Batman. In the prologue, CIA agents transport a nuclear physicist along with a group of hooded men onto a plane. One of these man is Bane (Tom Hardy), a mercenary bent on the destruction of Gotham City. While in flight, the plane is shadowed by another plane controlled by Bane's men who jump down and free their leader with a fearless and calculated manoeuvre. The CIA plane is hooked by the tail and overturned while it loses its wings for friction with the air. The tail is cut out with explosives so that the team can grab Bane and the physicist with a rope and fly away, leaving the CIA agents to their demise. Duncan (2012: 42) reports that 'To accommodate the quick turnaround required by the planned December teaser – and, more importantly, to help Nolan plan the extraordinary complex sequence – the visual effects team worked out the prologue's action in previsualization, a tool that the director rarely employs.' Nolan explains:

> We had to use previz for the aerial sequence […] It presented an overwhelmingly challenging set of physical parameters, and so it was important that we shoot *only* what we needed while we were up there. Rather than build up a library of footage that we would cut together later, I wanted to know exactly what we needed and shoot only that. Using previz, I could be very specific about that, and very specific with Paul [Paul Franklin, visual effects supervisor for the film] about what he would have to take over with visual effects. We were able to really pin it down to the essentials: 'What can we achieve in camera? Where are visual effects going to pick up? What elements do we need to shoot while we're up in the air to help Paul and his guys finish the sequence?' (Nolan in Duncan 2012: 42)

Previs was also used to investigate the in-flight behaviour of the "Bat", a military aircraft designed to manoeuvre through urban environments. Julian Foddy, 3D supervisor for the film who was involved in the rigging of the digital Bat from the earliest stages of the project, claims:

> The Bat had been thoroughly designed […] but no one had any idea how it would look when it was flying. So we worked that out in the previz, referencing a lot of attack helicopters in flight. Paul was really keen that this thing should feel like it's a menacing, super-secret, stealth-style helicopter. (Foddy in Duncan 2012: 54)

The special effects team referenced the previs as it built the practical craft in an attempt to replicate all control surface movement in the rig. When Bane announces the weaponization of the fusion reactor and detonates explosives that ripple and make a football field collapse, the

production used previs to work out the timing and action for the sequence. Nicola Hoyle, CG supervisor for the film and a key contributor to the development of the stadium shots, affirms:

> Chris Nolan worked with us on the previz […] getting the timings right, and getting the feel of the shots. And the previz was done before they shot it on the day, so what came out was very similar – where the players were falling and the holes that they'd dug into the pitch were in keeping with what we'd worked out in the previz. […] The tricky thing was that we had to fit all of this around the players that were in the plates […] We had to have the ground collapsing behind Hines Ward as he was running towards camera, with the players falling behind him; but at the same time, the destruction couldn't overtake him. So, following the previz timings, we broke up the pitch into large chunks, collapsing them around the players that fell into the holes in the live-action plates. (Hoyle in Duncan 2012: 61)

Conclusion

The script is a type of blueprint containing the technical elements essential for the filmmaking process. This is true for both digital effects films and films not relying on digital effects. As has been observed, the director's method involves the codification of the script into visual sequences which starts with the script analysis. The interpretation of the script is subjective and varies from director to director, however, evidence shows that it is possible to identify a recurring director's method in approaching the script because its analysis aims to regularly identify the same elements. These are the point of view in the story, the spine or the conflict which are identified through a character and story analysis. The identification of these elements is significant for all real and CGI characters: in fact, for both cases, the director's method aims to systematically establish bindings between characters and environments, intertwining them through the modification of the script. The importance of the director identifying such elements is broadly recognised as mandatory for the depiction of a scene because it represents a common language to use in dialogue with the crew and the audience.

The first key difference in the method between using or not using digital effects occurs at the visualisation stage. It has been described that information gathered through script analysis is arranged in visual terms by the director, including techniques such as concept art, storyboarding, previs and blocking plans which are mandatory for digital effects films. Storyboarding for digital effects films is more detailed than for film without digital effects – and indeed storyboard are rarely used in the absence of complex scenes involving special effects.

Previs, which evidence shows to be largely used in digital effects films, has the same function as storyboards, with the addition of portraying the timing of movement. The advantage is in presenting a sequence as an exact simulation of what will appear on screen. Previs for digital effects assumes the form of an approved template that directors elaborate on in order to prepare the shots for principal photography. Shaping characters and environments in pre-production means giving valuable information to the digital pipeline that can be transformed into CGI models. A common way to achieve this is represented by concept art which has the function of sketching ideas, not only in pre-production but throughout the whole film production as a continuous process of refinement. The workflow generally involves the use of concept art as a starting point: this is prepared by directors in collaboration with the production designer and represents a valuable tool for pitching. After this, the storyboards, which are snapshots of the story, are prepared in detail. Previs concludes the process with information on camera movements. The chapter has demonstrated that the three are essential for productions involving digital effects because they prepare a pattern to be used by visual effects artists. The existence of a digital pipeline presents an obstacle for directors regarding improvising and experimenting on set and that is the reason why pre-visualisation is a constant part of the director's method in pre-production for digital effects films. Furthermore, without planning, digital effects would tend to be basic in order to remain within budget.

The visual effects supervisor, like the director, is an actual storyteller who can substitute the director in certain tasks; indeed, analysis of the visual effects supervisor's responsibilities in pre-production shows that this figure is not a production designer dealing with digital objects but a proxy director. The discussion has shown that the visual effects supervisor can emulate directors in directing a second unit, especially when this involves actors in front of a green screen, and can give them cues to improve their performance, whereas the production designer's task focuses more on the design of sets and costumes. In order to build a relationship with the supervisor, the director needs to make her vision clear before the onset of principal photography so that a common visual language can be established. The evidence confirms that script analysis and pre-visualisation are the two key phases necessary to develop this language. In collaboration

with the visual effects supervisor, the director has to break up the script and develop a visual consistency between the design of the effects and the story, an operation which is problematic to improvise on set.

Due to the differences in how pre-visualisation is achieved and how directors relate to the visual effects supervisor, it can be deduced that the use of digital effects has an impact on the director's method in pre-production, specifically in the way the shot is designed and prepared before principal photography takes place.

Chapter Five

Principal Photography with and without Digital Effects

A major difference in using digital effects is in the way the set is organised. As has been observed in Chapter Four, films without digital effects have a substantial degree of freedom in terms of visualisation, while for digital effects films this is much less flexible. In fact, in digital effects films a rigid schematisation of actor and camera positioning, which is decided before the shooting, is consolidated. Storyboards, concept art, production illustrations, previs, postvis and animatics are only some of the pre-shooting techniques required to design the look of the film; these give information to the visual effects department about how the camera moves and what it frames. Digital effects films compulsorily need this to plan the set, that is, in terms of techniques to use and therefore, in terms of method. This means organising a blocking plan which significantly limits actors' freedom. The set is organised with actor and the camera movement decided through the use of pre-visualisation, even if techniques such as motion capture, which are increasingly used in contemporary productions, contribute towards liberating actors from these constrictions.

Films without digital effects do not deal with the combination of real set and CGI; for this reason, the director can often improvise on set with both cameras and actors. Conversely, in digital effects films the method is subject to careful planning: camera movements are organised in order to be matched to those of a virtual camera which simulates the real camera within a CGI environment. The interaction between real actors and virtual characters must be prepared in advance with markers and special props because the visual effects department needs references about where to place the virtual character in each shot. This is the reason why blocking in digital effects films is organised with previs. Furthermore, as this chapter will show, one of the most evident differences in the director's method when digital effects are involved is the way in which an actor's performance is guided. The actor, in digital effects films, interacts with CGI characters and objects; this can be extremely frustrating if she fails to imagine them in her head.

For this reason, directors need to work in tandem with the visual effects supervisor in illustrating what the final result will look like.

Cinematography for Digital Effects Films

Squires (in Okun and Zwerman 2010: 17) defines "production" as 'the actual filming of the live action that occurs on a set or location'. Rea and Irving (2015: 239) state that 'Production is also called principal photography', an industry term which identifies 'the period during which the first, or principal, unit completes photography'. Production is commonly known as the stage which follows pre-production and indeed Clevé (2006: 12) observes that 'Once all the preproduction tasks are complete, the film enters the production phase, during which the film is actually shot.' Cartwright (1996: 19) claims that principal photography 'usually consists of focusing' on 'the equipment operation and working with crew and talent'. He (ibid.: 19) asserts that 'Good pre-production planning will free' the director 'of the burdensome details of production' and let her 'concentrate on talent performance'. The work on the script finds its materialisation in this stage where the information gathered is transformed into camera and actor movements. The director's method in principal photography interacts with two key elements which are in fact the performance and the camera; from the relationship between the two is possible to unfold a story and convey a message to the audience. This interaction establishes a relation which influences the narrative: for example, the wide shot of a solitary character, without camera movements, may communicate the idea of a lonely figure immersed in a bigger world while a hand-held camera following a running actor could instead communicate a sense of anxiety, depending on the context. More generally, the movement of a frame and what is in it establishes distance between the audience and the subject of the story, emphasising certain narrative aspects and enhancing the storytelling.

Figure 13: A wide shot from *North by Northwest*. Roger Thornhill (Cary Grant) is sent to an isolated bus stop in order to meet George Kaplan, the man he has been mistaken for. This shot conveys the idea of a character who has to face a dangerous situation alone.

Proferes (2008: 36) states that 'Film is a language used to tell stories, and the narrator of those stories is the camera.' In this context, if the outcome of the script analysis represents the message, the camera can be considered the means of communication through which the director conveys the message. Proferes (2008: 36) continues identifying six variables that the director can control with the camera: angle, image size, motion, depth of field, focus and speed. In substance, these parameters enable the director to forge the constituent parts of a language which serve the storytelling. In the matter of camera serving as raconteur of the story, Richards (1992: 72) claims that 'The camera is the tool by which the director's vision is expressed', underlining that camera work is a significant component of the director's method. Indeed, the camera introduces the characters and reveals the significant elements of the film from different positions which can be objective or subjective (see Proferes 2008: 36) based on where the director wants to direct the perception of the audience. Earlier procedures, such as script analysis or visualisation, are interpreted as out-and-out preparation for the camera work which, in fact, frame and move according to the motivation explored by directors in investigating the screenplay. Frost (2009: 155) observes that 'Camera movement should always be incorporated

into the visual interpretation of the script for the screen', indirectly elevating the camera work to a more narrative rather than merely technical role. Hitchcock refers to camera work by stating:

> One doesn't set the camera at a certain angle just because the cameraman happens to be enthusiastic about that spot. The only thing that matters is whether the installation of the camera at a given angle is going to give the scene its maximum impact. The beauty of image and movement, the rhythm and the effects-everything must be subordinated to the purpose. (Hitchcock in Truffaut 1983: 103)

On the same subject, Badham (2013: 137) asserts that 'Camera tricks are totally useless and intrusive if they don't add to the story or the characters' and 'Many new, in fact many old, directors think they can put their stamp on a film using fancy camera work' but 'this is never effective if it's not organic to the story or the characters'. He continues claiming that 'Camera moves should support and elucidate what's going on dramatically' and 'should be organic to the scene, and not arbitrary' (ibid.: 211).

What the camera makes possible, in addition to its narrative aptitude, is the ability to create a mood, in other words a style which can be reasonably identified as one of the most symbolic characteristics of the film. Proferes (2008: 41) asserts that 'Style is primarily dependent on the needs of the story being told (tone is a large component) wedded to the director's vision of the world or his or her personal relationship to it.' Hence the research of visual references is assumed as a substantial step in the director's workflow because it establishes elements of the style. Frost (2009: 70) observes that 'It is important for a director to have an idea of what kind of light or mood the script calls for and what kind of feeling she or he hopes to convey to the audience through the visuals.' An example of a style communicated through the camera is colour palette choice, which represents 'a subtle way to visually enhance the emotional aspects of a film and guide the viewer to respond to it viscerally' (Frost 2009: 93). Another "style parameter" is lighting which in fact is generally associated with the genre of the film. Indeed, Frost (ibid.: 145) notices that 'There are lighting styles that are generally associated with specific genres, such as the romantic comedy being "high key" or "up key" or the film noir or thriller being "low key".' The influence of the director on a film's style is particularly perceptible in the choice of lens. Frost (ibid.: 39) confirms that 'Selecting the lens is the area of cinematography where the director can be the most influential.' The cause of this

influence can be explained by Proferes (2008: 43), who asserts that 'The use of various lenses can modulate the narrator's voice and help tell the story more powerfully'. Due to this control over the narrator, the lens represents a significant tool in the director's method.

The position of the camera implies specific framing of the scene and subsequently a precise message for the audience. The choice of the composition and the camera height corresponds with the identification of a point of view and therefore the attempt to immerse the observer in a situation seen from a defined perspective. This choice is accomplished by the director who, metaphorically, is seen as a painter. Proferes (2008: 44) states that 'Choosing the frame comes under the director's job description, and it goes to the heart of what a film director is'. In establishing the frame, the director should decide which format will represent the film, just as the painter selects a frame size (see Richards 1992: 72). In the matter of choosing the look of the film, especially in organising the placement of the camera, Katz observes:

> Part of learning your craft as a visualizer is having a good sense of what will work before the camera rolls. All directors leave a margin for error and cover themselves, but knowing what works in advance translates into a high *average* of suitable shots. The payoff is not the money saved by shooting fewer setups, but the extra time that can be used to take greater artistic chances with more ambitious staging, shots and performances. (Katz 1991: 153)

This observation is of substantial importance in relation to effect-driven films where the director has to foresee what the shot will look like. It is common for digital effects films to add a shot in post-production if it is the case that there is no possibility of returning to principal photography and shooting what was missed. This means recreating a shot completely in CGI with a virtual camera. In a production diary that chronicles the making of *The Hobbit* (Jackson P., 2012-2014), Rivers (in Jackson, 2012), who worked as a previs supervisor for the film, refers to this occurrence, stating that editors and directors often request the creation of full CGI shots to be inserted in the editing for narrative purposes. CGI shots are designed as individual pieces of film, from pre-visualisation to their completion. The purpose of their insertion is to achieve a smoother narration of the story.

Figure 14: A full CGI shot of *The Hobbit*: Gandalf, Bilbo, and the Dwarves make their way to Rivendell.

The impact of digital effects on filmmaking is particularly evident in cinematography. Indeed, in CGI environments, the actual camera is replaced by a virtual one which emulates the real camera in every aspect (lenses, focal length, aperture etc.) but moves in a virtual space which will be later matched to the live-action footage. In terms of set organisation, principal photography represents the phase which is more influenced by the use of digital effects: blue and green screens, monster sticks and special props, motion capture suits and tracking markers all change a set's aspect. Additionally, the actor works in an unusual environment where she has to trust the director – along with the visual effects supervisor – whose task it is to guide the performance. The visual effects supervisor is on set in order 'to make sure visual effects shots are correct creatively and technically' (Squires in Okun and Zwerman 2010: 79), following the plan prepared in pre-production. For this reason, there is constant dialogue between directors and supervisors who will have to coordinate with the other departments in order to shoot smoothly. Principal photography with digital effects is characterised by the collection of data on set, which is required by the visual effects department in order to integrate the effects creation process. This data is of particular importance to the camera because, in order to match live-action footage and CGI, the visual effects department has to create a virtual camera to emulate the real one; it is possible in this way to combine the two sets, real and digital, and then work on bringing them seamlessly together as one. When digital effects are not involved, directors have

more room for experimenting on set, for example, deciding where to put the camera and how to move actors; actors also have more freedom to move and improvise on set without having to pay attention to hitting markers.

In principal photography, the director mainly works on shooting the film. Digital effects for this operation generate substantial differences in comparison to when these are not used; this can be identified specifically in the cinematography and camera use. The work with the camera relies mostly on the use of previs with camera movements tested before shooting and then converted into data which can be transferred to the real-time motion control camera operating on the green screen sets. There are also cases where a previs sequence, shot with a virtual camera, is placed side by side with a sequence shot by an operator with a real camera; the two are then assembled in a way so that it appears as one continuous shot. In this case, previs contributes only partially to the final shot, while the rest of the sequence is left to the work on set. To seamlessly match real and unreal environments, digital effects use a technique known as match-moving by which information on the real set is gathered in order to create a virtual camera which is then used in the CGI environments. Digital effects films impose the use of virtual cameras on cinematography because substantial parts of contemporary effects-driven films are made in CGI. Match-moving is the process by which CGI elements are matched with live-action footage, an operation which is crucial for digital effects shots (see Dobbert 2013: 1). Hornung (2013: xiii-xvi) defines the match-mover as the figure who 'takes information from a real-life set, where the actors, director, and all the other crew members who make movies shoot a film, and recreates that camera, including the focal length of the lens, the height, the tilt, and the position and motion relative to the subject'. In this transition from live-action footage to CGI, the observance of continuity in terms of lighting, mood and perspective is considered key for the director of photography, a role that works in close contact with the visual effects department. Furthermore, as any shoot can be completely altered when digital effects are involved, this means that the method used to depict and design a shot must be reconsidered for effects-driven films. In fact, converse to other filmmaking processes, the director of photography has to work closely with the visual effects supervisor and the film director in order

to shape a visual language that can be transferred from real set to CGI environment, maintaining consistency between the two. Steven Poster, the director of photography in *Someone to Watch Over Me* (Scott R., 1987) and *Rocky V* (Avildsen J. G., 1990), states:

> We are all learning to deal with a new vocabulary to prepare film on set for use in special effects [referring to digital effects] that will be accomplished later in digital. Even after the film has been shot, I am sometimes called in to consult on how to light computer-generated images that will be used in context with film that I've already shot—as a result, there is more work in the postproduction area and more work for cinematographers. (in Ohanian and Phillips 2013: 207)

The need for a visual language explicates why previs is considered standard practice in digital effects films. Previs can precisely simulate camera movement and give the visual effects department information on how the camera will depict a scene. With this tool, the director shapes her visual language, testing where to position the camera, what lens to use and where to focus. Nixon claims:

> Whether the camera is real and it is on set, or virtual and it is in a 3D space, you [the director] have to have a knowledge of the visual language even before you work with it. The frame that is captured through a camera, whether virtual or real, is the window into the world that you're creating, where the story that you are telling exists. So obviously you have another key creative relationship with the director of photography with whom you, as the director, can talk, dream, interrogate ideas and formulate opinions on the best way of shooting using the best medium. (Nixon, 2014)

Finance and Zwerman (2010: 175) state that, for instance, 'Data from a well-designed previs' can 'be transferred directly to a real-time motion control dolly on a live-action set or a motion control camera on a greenscreen or bluescreen stage'. In this way, there is absolute control over the shoot; the costs are lower because the crew knows exactly what the shot is about and what it has to look like. Badham (2013: 148) asserts that 'The only value to a very elaborate storyboard is for presentation to producers, financiers, or actors when showing them what the film will look like' however 'If the final product is to be some form of animation or CGI then of course it will be best to be as specific as possible as the drawings themselves may become part of the final product.'

In terms of method, the establishment of a visual language is considered vital because it guarantees coherence between what real and what virtual cameras shoot. For instance, a virtual camera should use the same lenses as used for live-action footage because the visual languages,

whatever the tool, must be the same. In pre-production, the visual language begins to be shaped using script analysis, pre-visualisation and shot design through concept art. During principal photography, this language can be further developed through staging and the choice of where to put the camera. Traina (2015), a director who has worked with digital effects, observes that he always starts from the camera position because 'every aspect in the framing composition has to be conceived in relation to the camera'.[58] Marner (1972: 115) affirms that 'The viewpoint selected by the director is an important dramatic tool': 'The angle at which we look at the characters in a motion picture is itself a significant part of the narrative since it is capable of describing the importance of a character; his relationship with others in the same scene; his state of mind; or his immediate intention.' Therefore 'knowledge of the significance of camera angles is an essential part of the director's vocabulary even though he will have an operator to place the camera' (ibid.: 115).

To confirm the influence of digital filmmaking on principal photography, there is a debate about the establishment of a new Oscar category for cinematography in digital effects-driven film. The debate is a consequence of the fact that a significant number of practitioners perceive cinematography in different terms of method if digital effects are involved. This discussion has been reported by a considerable number of articles from journalistic sources such as *The Guardian* (see Child, 2016) and *The Hollywood Reporter* (see Giardina, 2016) to other sources such as *No Film School* (see Hardy, 2014) and *HitFix* (see Lodge, 2013). In an article by *The Hollywood Reporter* (2016), Lachman (in Giardina, 2016) notices that 'It's becoming harder and harder to make that distinction between what is original photography and what [are] postdigital effects and photography'. In the same article Richardson (ibid.) states that he wishes for the two categories option because there are 'films that are shot relatively 'normal,' and then

[58] Italian: 'Io parto sempre dalla posizione della macchina da presa. C'è chi pone al centro l'azione e il movimento degli attori, ma questo mi pare un controsenso. Ogni aspetto nella composizione dell'inquadratura non può non essere concepito in funzione della macchina da presa, di ciò che è ricompreso all'interno del fotogramma. Molto spesso, magari, come dicevo prima, occorre porre particolare attenzione a ciò che deve restare "fuori" dall'inquadratura. Ciò che scegli di escludere è altrettanto importante, se non di più, di ciò che decidi di includere. Sono convinto che suggerire sia sempre più efficace che mostrare. Voglio che l'emozione, qualunque essa sia, cresca direttamente nella mente dello spettatore, non m'interessa semplicemente metterla sullo schermo.'

there are films that are shot with all visual effects and very minimal live action'. He (ibid.) continues, asserting that 'A great deal of what viewers are looking at' in contemporary cinema is not 'shot by the cinematographer but is created by artists on a computer and by the director directing them and the cinematographer that's working hand in hand with them'. Hardy, in an article of *No Film School*, claims:

> In one sense, it's an entirely technical matter. Films like *Gravity* [Cuáron A., 2013] and *Inside Llewyn Davis* [Cohen J. and E., 2013] (both nominated for an Academy Award for Best Cinematography) were created in two vastly different ways, and therefore it isn't prudent to judge their images by the same standards. On the other hand, however, it can be argued that the method and technology don't particularly matter as long as the images have the same effect on an audience. (Hardy, 2014)

Hardy separates the result from its technical achievement, observing that the method and technology involved for films not involving digital effects and digital effects films are different, even if the effect on the audience is the same. Hardy is aware of the influence of digital effects on method in terms of how the filmmaking process is handled. In fact, he specifies:

> In modern filmmaking, there are two basic methodologies which pervade the cinematographic landscape. The first, and more common (especially in independent film), is one in which the images are created in a physical environment such as a set or on location. This method is […] all about composition, physical camera movement, and lighting with physical fixtures. Being able to competently create meaningful images in this way is not only the traditional definition and method of cinematography, but it's a unique technical (and artistic) skill that requires of the DP [director of photography] an in-depth knowledge of many different technological facets and processes. […] The other methodology of modern cinematography is one in which the images are created digitally through compositing various elements and pieces of footage together in order to create the final image [digital effects film]. This method often uses green and blue screen keying (which is a tremendous technical skill of its own) as the basis of the image. While the characters are lit and framed by the cinematographer on the set, these decisions are often unrecognizable after the digital effects team has finished with the footage. In these cases, much of the lighting and composition actually happens in a computer. (Hardy, 2014)

Ohanian and Phillips (2013: 4) claim more generally that 'It is important to understand how films have traditionally been made—the procedures followed, and the personnel required'. This is because 'The tools and techniques used, and the decisions that are made in bringing a film to the screen, are all affected by emerging digital filmmaking technologies'. The most evident element of the influence of digital effects on cinematography is the presence of a visual effects director of photography for digital effects films. Goulekas (2001: 546) asserts that this role is 'responsible for photographing any elements required for the visual effects work that were not

shot by the Director of Photography (DP) during principal photography' which include 'motion control photography (MOCO photography), stage shoots, and reference elements shot on location'. Zwerman and Okun (2015: 1057) define the visual effects director of photography as 'The individual responsible for photographing any elements that will be used in visual effects production.' This confirms Hardy's claims for the existence of two types of cinematography, one with and one without digital effects.

Three Case Studies: *Love Streams, Festen* and *Apocalypse Now*

The dissertation analyses two case studies where digital effects are not involved. These cases present similarities in terms of the director's method and therefore give significant information on how directors approach a film without digital effects. Even if they are on a blurred line between the commercial and the avant-garde, two of the films are within the frame of research because in these the directors follow the classic workflow pre-production-production-post-production. Furthermore, the films take a traditional narrative form and use cinematic conventions. One is *Love Streams* (Cassavetes J., 1984) which deals with the love of two siblings who have been abandoned by their families in their respective lives. The other is *Festen* (Vinterberg T., 1998) – also known as *The Celebration* – which is considered the first film shot under Dogme 95 rules: the film tells the story of a family gathered to celebrate the birthday of the father, whose terrible skeletons in the closet will be disclosed during the party. In these two films, the directors refused to complete certain processes such as blocking before principal photography because of considering them obstacles to the honesty of the performance. *Love Streams* has been chosen as a case study because it presents a particular method, that is, in the way the director guides the performance and moves the camera. Indeed, in this film, the concept of freedom on set, which is undermined by digital effects creation, is exalted by specific shot design which is achieved through on set improvisation. Cassavetes forged a personal method by which shot can be achieved through a combination of visualisation work in pre-production and adjustments made on set. *Festen* instead presents a director's method which has been significantly influenced by an artistic manifesto. The "vow of chastity" from Dogme 95 (Trier

and Vinterberg, 1995)[59] prohibits the use of any artificial means such as digital effects. The way the director approaches the production underlines a methodology which presents analogies with aspects of Cassavetes' method, for instance, in the way the camera and actors are blocked. The two examples represent a way to make film that is impossible to practise when digital effects of a certain complexity are involved. The particular approach taken by directors in these cases is not considered a consensus method but can be effectively adopted for films which do not rely on digital effects; however, for a general digital effects film (excluding films such as *Avatar* and *The Jungle Book* which are exceptions), it would be problematic.

Cassavetes, who pioneered an American "cinéma vérité" front between the 1960s and 1980s (see Levy 1999: 103), developed a personal method based on improvisation. In fact, talking about his method in *Love Streams*, he identifies the use of intuition on set as the successful factor for "real films", in other words, those films which mirror the vagueness of life and reproduce a sense of reality. Cassavetes states:

> In the form of the way we are working, we just don't know what's going to happen the next day. So, everyone has to be creative otherwise the whole thing goes down. [...] if our films are supposed to be something like life is, some vague thing that life has and maybe films can contain, then how can you determine what's going to happen tomorrow. [...] I can't tell you what's going to happen tomorrow, even if you can read it. (Criterioncollection, 2014)

For Cassavetes, authenticity can only be conveyed when the director is willing to improvise on set in an emulation of reality which is inherently unpredictable. The script contains information about what is going to be depicted in the shot, however interpretation opens it to different scenarios which can be discovered only when the director is on set. Improvisation has been identified as a core element of Cassavetes' career (see Palmer, 2011); as an example, at the end

[59] The vow of chastity states: 'Shooting must be done on location. Props and sets must not be brought in (if a particular prop is necessary for the story, a location must be chosen where this prop is to be found). The sound must never be produced apart from the images or vice versa. (Music must not be used unless it occurs where the scene is being shot.) The camera must be hand-held. Any movement or immobility attainable in the hand is permitted. The film must be in color. Special lighting is not acceptable. (If there is too little light for exposure the scene must be cut or a single lamp be attached to the camera.) Optical work and filters are forbidden. The film must not contain superficial action. (Murders, weapons, etc. must not occur.) Temporal and geographical alienation are forbidden. (That is to say that the film takes place here and now.) Genre movies are not acceptable. The film format must be Academy 35 mm. The director must not be credited. Furthermore I swear as a director to refrain from personal taste! I am no longer an artist. I swear to refrain from creating a "work", as I regard the instant as more important than the whole. My supreme goal is to force the truth out of my characters and settings. I swear to do so by all the means available and at the cost of any good taste and any aesthetic considerations.'

of his first film *Shadows* (Cassavetes J., 1959) a title card appears stating that "the film you have just seen was an improvisation", apparently informing the viewer that the actor's performance was improvised on set. The importance of improvisation is evident in *Love Streams* when, in a "behind the scene" video about the filmmaking process (see VintageEuroTV, 2008), Cassavetes shows his method. In the scene, Sarah Lawson (Gena Rowlands) is accompanied home by a man she met at bowling; the encounter between the two has been a happy event in her life, as she has been struggling to forget the painful relationships she had with her daughter and former husband. As the video shows, for this scene, there is no precise blocking: the director suggests movements to the actors, including gestures and even lines which are presumably not in the script. These are general suggestions, but this means the actors have room to experiment. Cassavetes limits himself to indicating the main movement, the subtext and at what point he calls "cut". The actors test the scene in rehearsal and when the performance is nailed, the director decides how to move the camera and how to depict the scene. Cassavetes' method does not imply that the director has not visualised the scene, however, it is on set that the shot is reinvented and refined. The director shapes the actor's performance through use of shot design; mimicking the camera frame with her own hands and following the rehearsal trying to foresee what the audience will be watching on screen. It is implied in the absence of strict visualisation before shooting that the actor on set is the main source of ideas and the "technical apparatus" moves around her, defining spaces between characters and environments. This is something that can easily be achieved when digital effects are not involved.

Festen presents similarities in the directorial approach adopted for *Love Streams*. The film was made under the "vow of chastity" (Trier and Vinterberg 1995) which specifically claims that shooting must be on location, props cannot be brought, music cannot be used if it is not part of the scene, with the same applied to sound. Furthermore, no optical work or filters are allowed; digital effects are to be excluded. The director, Thomas Vinterberg, asserts that 'When a film director makes a film, it quite automatically gets done in a particular way' because there are technical elements which have 'to be planned ages in advance' (Jensen, 1998). Vinterberg

refers to standard production as ‘a large, ponderous machine’ which results in ‘a particular kind of film’ which ‘imposes limits’ (ibid.). The prohibitions he imposed upon himself in the form of a strict series of rules are instead perceived by the director as a liberation of the filmmaking process, disentangling it from strict planning. Indeed, in another interview, Vinterberg reveals that the absence of both specific actor blocking and visualisation in the method used for *Festen* gave the performances a substantial degree of freedom. He (in SBS on Demand, 1999) asserts that he ‘had all the rules to work with’ the actors ‘but they [the actors] had suddenly total freedom: they can run around the room as far as they want and they can improvise, they can do everything and, of course, [this] scared them a bit’ (ibid.). For this reason, ‘in the beginning of the process of shooting’ the director had ‘to frame a bit to make them feel secure, to make this process precise’ (ibid.). There is an evident lack of visualisation and actor staging in the first sequence of the film: Christian walks through the Danish countryside in order to reach the hotel where his father’s birthday party is being held when he encounters his younger brother, Michael, who is driving to the party. Michael offers Christian a lift after having rudely pushed his own family out of the car. In about two minutes there are 23 editing cuts rashly assembled from an amount of footage apparently shot without any specific visual organisation. Indeed, the rhythm is entirely given by the editing while the camera follows the characters as if it was shooting a documentary. Vinterberg works on set as Cassevetes did in *Love Streams*, shaping the performance on set without organising any precise staging beforehand. There is no technical necessity for blocking in pre-production because the film does not require any digital effects or complex camera movements. The camera witnesses a piece of reality and moves around the actors in the way they allow it to. In spite of the rules imposed on the production, the film still has a narrative linearity and does not involve any abstract techniques.

Figure 15: Michael (Thomas Bo Larsen) and Christian (Ulrich Thomsen) meet in the first scene of *Festen*.

To support the hypothesis that films not involving digital effects allow directors to approach the production process with more liberty, it is significant to analyse the making of *Apocalypse Now* (Coppola F. F., 1979). This epic war film revolves around Captain Benjamin L. Willard's (Martin Sheen) secret mission to assassinate Colonel Kurtz (Marlon Brando), a defector who is presumed insane. In *The Independent*, Robert Sellers reveals a key detail about the relationship between Coppola and Marlon Brando. Indeed Sellers (2009) reports that Brando arrived on set overweight and without having learnt his lines. Sellers writes:

> One day, suddenly, Brando shaved all his hair off and arrived at the idea of improvising his scenes and letting Coppola's camera capture whatever came out of his mouth. Self-conscious about his killer-whale appearance, Brando also stipulated that he dress in black and for the most part be filmed in shadow. Coppola agreed to steer his camera away from his enormous belly. (Sellers, 2009)

Figure 16: Marlon Brando emerges from the shadows in *Apocalypse Now*.

This confirms the malleability of staging and moving cameras around actors when digital effects are not involved. Such films can be characterised by the absence of mandatory visualisation and by a significant amount of freedom arising during shooting in terms of performance. Blocking can be achieved later in front of the camera and the actor's movements can be implemented and modified on set. The director's method for these film productions involves work on the script which can be modified during the shooting and which situates the performance at its centre. However, it is not possible to state that the absence of digital effects means the film is totally free from visualisation and staging, this is because directors like Hitchcock used to so precisely organise the entire shoot before going on set even if the latter never worked on digital effects films. Similarly, Cassavetes defines "improvisation" as a form of spontaneity rather than an absence of rules. He observes:

> Improvisation to me means that there is a characteristic spontaneity in the work which makes it appear not to have been planned. I write a very tight script, and from there on in I allow the actors to interpret it the way they wish. But once they choose their way, then I'm extremely disciplined – and they must also be extremely disciplined about their own interpretations. […] [I believe in] improvising on the basis of the written work, and not on undisciplined creativity. (Carney, 2003)

Here Cassavetes refers to the pliability of the filmmaking process. The script helps in shaping

the character; the character analysis is achieved in collaboration with actors who give their interpretation to the director. This pliability is absent in a process where there is a pipeline structured by steps which work throughout the whole film production, requiring requires specific information from the script. In fact, evidence shows that digital effects films often require that directors abandon the instinctive approach for a more organised method, structuring a precise workflow. Francesco Grisi, who has worked as a visual effects supervisor and executive producer for films such as *Fight Club* (Fincher D., 1999), comments on contemporary effects-driven blockbusters:

> […] in the blockbuster the director has a more marginal role. What you want to see is planned at the beginning, sometimes managed by the producer. The studio producer is the one who establishes the way to follow and the director coordinates everything in order to walk that established path. It is not any longer a one-man-band job. In these cases a literal "bible" is established: *The Avengers* [Whedon J., 2012], *Star Trek* [Abrams J.J., 2009] and similar films have bibles to follow. […] In the blockbuster there is no instinctive directing. The percentage of the digital effects used is so high that things must be planned.[60] (Grisi, 2015)

Grisi specifies that in these films, a significant number of elements such as character design, shot design and even sound, are established before principal photography; this is due not only to the existence of a production bible, but also because the 'percentage of the effects used' is extremely high and therefore a pipeline needs to be imposed on the film production process. Grisi refers to contemporary blockbusters with high budgets which represent an extreme case where CGI is so widely involved that the film resembles an "animation movie". These films, which contain less live-action footage in comparison to other digital effects films, include a narrative that cannot be developed without the use of digital doubles, matte paintings, 3D characters and environments. However, live-action remains the core of such film productions and these make a substantial effort in integrating CGI and real actors. Grant (2006: 66) affirms

[60] Italian: 'Nei blockbuster il regista ha un ruolo un po' più marginale. Quel che si vuole vedere viene gestito all'inizio, anche dalla produzione. Il "producer" dello studio è quello che stabilisce la strada da seguire, il regista fa in modo di tenere tutto insieme e di assicurare che si segua quella strada per cui non è più un lavoro di una persona, è il lavoro di un team che deve realizzare un prodotto specifico che è stato studiato a tavolino. In questi casi viene stabilita una vera e propria bibbia: in *The Avengers*, *Star Trek* e film simili, ci sono delle bibbie da seguire. Tutti già sanno che quella cosa deve essere fatta in un certo modo e quell'altra in un altro. Tutto è già più o meno prestabilito. […] Nel blockbuster non esiste una regia istintiva. La percentuale di effetti usati è così alta che effettivamente le cose vanno pianificate. La tecnologia ora come ora ancora non ci permette di essere istintivi.' (Grisi, 2015)

that ‘Many, many modern live-action movies incorporate significant elements of special-effects animation, yet in no way can this sensibly be described as live-action/animated movies.’ Grant (ibid.: 66) explains that ‘special-effects animation intends to persuade the audience into accepting what is seen as real, while the animation in a live-action animated movie is foregrounded’. In light of this, blockbusters using digital effects represent a hybrid where the digital effects do not so much overwhelm the live-action footage but seamlessly merge with it. In terms of method, these digital effects films are different from films such as *Love Streams* and *Festen* where the director’s method has been founded on instinct.

Staging before Shooting as a Methodological Phase of the Digital Effects Film

Kindem and Musburger (2009: 35) state that ‘Production begins with setup and rehearsal’ which means mapping movement: ‘Charting the movement of talent on the set is known as *performer blocking*, while charting the movements of the cameras is called *camera blocking*.’ Blocking, also known as “staging”, represents a key procedure for principal photography and it is through this that the visualisation achieved in pre-production is transposed on set by the director. In this, the functional and obligatory physical demands of a scene are accomplished as a rendered action (see Proferes 2008: 28). Staging acts as a guide for the audience through the expression of the psychology and nature of the characters, showing the relation between different elements of the story. For this reason staging represents a form of communication, a visual language which directs the audience’s attention toward the message that the director wants to convey. Furthermore, staging assumes a significant role in orienting the viewer in space and explaining the physical and spatial dimensions in which the story is set. This orientation can be accomplished by linking all the dramatic elements and consequently the arrangement of a spatial asset for the scene, that is, in order to ‘satisfy the audience’s need for spatial clarification’ (Proferes 2008: 29). Katz uses the term “cinematic geography” to describe the capacity of directors to establish relations between characters and lines of actions in order to orient the viewer through a scene. On this matter he affirms:

> When actually filming, it usually turns out that it is rarely necessary to go through

> elaborate staging and logistical analysis to find a way of establishing a new line of action. My basic belief is that if the filmmaker has a solid understanding of cinematic geography, has a good overview of the scene, has kept thorough notes on what he is going to shoot and has already shot, then he will probably not encounter any major difficulties with continuity. (Katz 1991: 141)

Katz refers to staging as a spatial issue and underlines how tricky is for directors to predict what will appear on a two-dimensional screen based on how cameras and characters are positioned in a three-dimensional space. Directorial decisions about this impact on how a scene is framed, therefore, directors need to develop the ability of foreseeing the result of a composition. Katz (1991: 173) states that 'The visual challenge of staging is essentially a spatial problem - the ability to predict in three-dimensional space what will work on a two-dimensional screen.' Staging is movement simplified to its essence as a representation of an emotional situation in a virtual space. For example, the gesture of a character representing the stylization of a real-life movement (see Weston 2003: 295) researched by the director and the actor in order to define a concentration of expressive actions. This research is methodological for directors and of vital importance for the realisation of the pre-visualisation. Belli and Rooney provide an example of how staging for television works in terms of method:

> The other method of condensing your shot list so that you can make the day is to block the scene more efficiently. The way to do that is to try to make sure all of the movement by the actors in a scene is on the same axis, which allows you to shoot in two directions instead of four. And that means less lighting and fewer setups. […]. Playing all the action on the same axis will not dumb down the energy of the scene because it will still register with the audience as movement. The audience is not counting how many directions or shots it takes to tell the story. The audience is just caught up in performance, going along with the story. (Belli and Rooney 2011: 104)

Blocking is reported as a procedure able to condense a shot-list and tell the story in a more economic and efficient way. Directors are necessarily involved in the staging phase at some point during the film production, whatever the technique used for moving actors and cameras. It is part of a method which directors use to establish narrative correlation between space and objects. On this matter, Belli and Rooney continue:

> It requires a fair amount of effort to stay focused and creative while deciding how to block and shot list every scene in a script. Some people might refer to it as the drudgery of the job, compared to the excitement of being on set, saying "action" and "cut," being the boss, and making movies. But by blocking and shot listing ahead of time, during your prep period, you free yourself to live in the moment on set and allow the magic to happen. If you haven't done this work, you'll be all knotted up in anxiety, wondering

> how to shoot a scene, unsure whether you've really told the story. It's hard to be a leader when you're not sure where you're going. (Belli and Rooney 2011: 112)

Belli and Rooney recommend directors prepare a blocking plan before principal photography because, once the production enters that stage, it is difficult to organise effective staging – especially if particular camera movements, special or digital effects are required. This limits the actors' participation in the organisation of the shot and is why film directors such as Cassavetes tend to stage actors and cameras on set. Katz observes:

> Unless a director spends a great deal of time training himself to see all the possibilities of setup and actor placement, he usually relies on a few all-purpose strategies for any scene. If he allows his actors greater freedom, interesting new options may arise, but unless he has a solid command of staging for the camera, the production process will ultimately undermine his experimentation. The director will find himself at odds with the cinematographer and producer, who won't understand why he keeps restaging a scene, with the consequent loss of time and, frequently, the spontaneity of his cast. (Katz 1991: 176)

As Katz observes, the logistics of principal photography undermine experimentation on set. Leaving actors free to move in staging means having more room for experimentation but less freedom in terms of where to place the camera and how it can be moved. Particularly in digital effects films where shots are meticulously designed in advance, the actors' actions are locked and their movements marked. The markers used for this are needed by the visual effects department to link the wanted effects to the live-action footage and match-move the virtual camera with the real one. As a consequence, directors for digital effects films need to prepare an effective blocking plan at the cost of limiting the actor's movements on set. This clashes with some film productions where actors can be heavily involved in the process. Weston (1996: 126) claims 'When directors define the physical staging of scenes, they become significantly involved in the actors' physical life' so generally 'It is very helpful to involve the actors organically in the creating of blocking and stage business.' Usually, for digital effects films, blocking is achieved through previs and storyboarding, therefore, the actor's involvement is marginal.

Proferes (2008: 29) claims that in film no characters accomplish actions 'unless they are fulfilling the dictates of the story's overt action or are making physical that which is internal'. The same applies for camera movements. Every character, object and camera movement

conveys a specific message to the viewer, who is observing the scene from a specific point of view. Belli and Rooney (2011: 280) refer to the organisation of the actors' movements through blocking as a key element in controlling performance. They claim that 'The more important skill' for directors 'is blocking because you can have a magnificent shot, but if the intention of the scene is unrealized because of the poor performance, your film suffers' (ibid.: 79). This affirmation highlights the blocking process as an operation of controlling the actor's performance and a means of coordinating the performance in relation to the set, the camera and the space of the story. On this subject, Hitchcock observes:

> When a film has been properly staged, it isn't necessary to rely upon the player's virtuosity or personality for tension and dramatic effects. In my opinion, the chief requisite for an actor is the ability to do nothing well, which is by no means as easy as it sounds. He should be willing to be utilized and wholly integrated into the picture by the director and the camera. He must allow the camera to determine the proper emphasis and the most effective dramatic highlights. (Hitchcock in Truffaut 1983: 111)

In this statement, Hitchcock provocatively overemphasises the role of staging over the actor's performance. For Hitchcock, the camera is the means by which the scene is given meaning; it represents the audience's point of view which emphasises the actor's presence in the frame. In film, the camera positions the spectator in a very definite spot from where she watches the scene. While in the theatre the audience have only one perspective from where they sit and it is the actors who move on stage, in film the actors are bound within the frame and the camera controls from where the audience will witness the scene. Staging is defined as the representation of both the pattern of the dramatic movements of the characters and the rendering of the action, a research of a visual language made of the spatial positioning of actors and the elements surrounding them. This definition is true for both theatre and film, however, as observed by Proferes (see 2008: 28), in film the audiences' position is not influential in terms of blocking because the camera/spectator can be positioned to wherever the director wants, while in theatre, the staging can be subject to wherever the viewer is.

Figure 17: The Millennium Falcon manoeuvre.

In the digital effects film *Star Wars Episode VII – The Force Awakens* (Abrams J. J., 2015), there is a scene where Finn, Rey, and BB-8 steal the Millennium Falcon in order to escape the First Order which has located their positions and are now pursuing them. The spaceship flies up, then glides toward the ground while the camera follows its movements in the air, rotating on its principal axis. The result seems to show the spaceship flying upside-down, rotating on its axis and then gliding to the ground only to discover, when the ground is in frame, that actually it was the camera that was upside-down; with another rotation on its principal axis the camera frames the Falcon in the correct way while the First Order's spaceships intersect its course and fire at it (see Merritt Joujon-Roche, 2014). A physical camera would have had issues in following an

aircraft and accomplishing the exact manoeuvre, without mentioning that the Millennium Falcon is in fact a CGI model. The virtual camera instead positions the audience in an unreal space, making it rotate and glide when chasing the spaceship. Squires (in Okun and Zwerman 2010: 44) observes that 'Visual effects allows a camera to perform unlimited moves between scenes or within a virtual scene.' This 'can cause problems if the intent is to be as photoreal as possible', therefore 'The balance is trying to create a visceral experience that maintains the story points' (ibid.: 44-45).

Rohrer (2005: 114) claims that 'Every piece of equipment, props, set pieces, crew and talent are involved in blocking' and 'Each and every scene is planned out from beginning to end to allow for whatever needs to be seen, as well as things that are to be hidden from the camera, as the scene is played out.' In light of this consideration, a particular mention goes to the case when CGI characters are being used. These characters do not exist on set because they will be completed in post-production; further, they cannot be moved on set – except for those props that help actors visualise them – so they must therefore must be blocked in advance so that the cast and crew can coordinate working with the "missing" characters. In the making of *Avatar* (Cameron J., 2009), Duncan and Fitzpatrick state:

> Typically, one of the biggest challenges of shooting a live-action scene that will feature a CG character is compensating for the fact that the character isn't there at the moment of shooting. Directors and camera operators try to envision where the computer-animated character will be and frame shots accordingly. They count out timings to determine how long it will take a CG character to get from this side of the room to that side of the room so that the camera can track with the character. They set up C-stands or cardboard cutouts at the right height to help actors maintain correct eyelines. Despite all of these efforts, however, shooting a scene with a character that isn't there-and won't be there for months-is an exercise in guessing. Inevitably, the camera work, the actor performances, the interactions, and the sheer dynamics of the scene are compromised by the fact that a central character is missing. (Duncan and Fitzpatrick 2010: 224)

Duncan and Fitzpatrick highlight the key difference between using or not using digital effects in terms of production procedures, reporting that directors and camera operators must envision what the CGI character will do in order to frame accordingly. It is not possible, however, to achieve this on set without preparation: for example, directors have to know what the CGI character looks like, how tall it is or the way it walks. This information is important in order to frame the character correctly and guide the actor's performance accordingly. Achieving the

correct staging on set with a CGI character means improvising camera movements that could be risky for the success of the film. This is the reason why staging when CGI characters are involved necessarily passes through previs in pre-production. The visual effects supervisor's input is essential because the supervisor has the responsibility of completing the shot with the required procedures. The need for the visual effects supervisor's control impacts the director's authority and thus also the director's method.

The Actor's Performance with Digital Effects: A Different Approach

Directing the performance is a key stage of filmmaking because actors portray characters through whom the story is told. It is the director's responsibility to explain to the actor what the scene is about and how it will appear on screen; the director guides the performance by pointing the actor in the right direction and choosing whether to repeat a shot or include additional coverage, working until she finds the result satisfactory. Herman (2015) states that this is due to the fact that the director is 'the only one who has got the entire film inside his head' and therefore she can 'recognize more ably when things are too strong or too weak in a particular performance in that moment of the film'. This is a key aspect for any typology of film because directors are frequently in charge of conducting the film's performance in a way which fulfils her own vision. The codification of directions from a script is commonly considered as the starting point for directing performances. Indeed, it is the script where actions are described as triggers of events which unfold the story. Weston affirms:

> The director's main responsibility – and prerogative – is telling the story. This means finding a structure to the script and setting up the events so that they are at once surprising and inevitable. You give the actor direction in order that the actor's actions and interactions illuminate and create those events. The actor has a responsibility – and prerogative – to create truthful behaviours while following direction and fulfilling the requirements of the script. (Weston 1996: 9)

Weston (1996: 10) continues, asserting that the director and the actor accomplish an operation that leads to 'Unlocking the subworld of the script'; in other words, directing the actor's performance is a process of discovering and understanding the story at a more accurate level, which means a deep investigation of the psychology of the characters and the events that

underpin it. The director codifies her imagination in 'clear, brief, playable' (ibid.: 11) instructions for the actor, which should be inserted in a comprehensible context. The character is often prepared ahead of shooting because her behaviour and attitude determine how she will move on set. This preparation is part of the script analysis, but more specifically, the character analysis. Novellino (2015) affirms that generally 'There are some tests before the shooting, these are better if on location, and the characters are prepared with the actors so when the actor is on set he already knows what to do'.[61] Based on character analysis, directors and actors work on set to enrich the character. Mollo explains:

> We create the characters before the shooting in order to be prepared for when we'll be on set; in this way we understand how that character may move in certain situations and how he acts and reacts. Sometimes on set we modify the character because of an emotion that has sprung out in that moment and in rehearsal wasn't there. Therefore, you have a basis for your character before shooting but this is evaluated and calibrated on set.[62] (Mollo, 2015)

It is in rehearsal where information can be sought on both characters and events. Weston (1996: 281) affirms that 'Shooting should be seen as an extension of rehearsal' if the same nature of liberty and exploration is maintained on set. In this case, the performance assumes the shape of a free reproduction of the truthful behaviour which was created in rehearsal but has its basis in the director's work on the script. She further states:

> If there is a bit of business and blocking in the stage directions that looks interesting to you [as the film director], that brings to life an emotional event or justifies a character's line, you might highlight it with a question mark, to try in rehearsal. But if, in rehearsal, the actor's connection to the emotional event leads them to some other physicalization (activity), you can consider that as well, and make a choice. (Weston 1996: 168)

The process of directing films involves making adjustments. In light of this, rehearsing with actors is considered a key phase where directors can conduct tests on the actor's performance and adjust it to her vision. Badham (2013: 20) affirms that rehearsals also allow for the saving of money 'because most of the script problems, actor questions, and staging concerns get

[61] Italian: 'Si fanno varie prove prima, meglio se in location. Vengono ricostruiti i personaggi con gli attori prima di girare così quando l'attore è sul set già sa cosa deve fare.' (Novellino, 2015)

[62] Italian: 'Facciamo un lavoro di costruzione dei personaggi in anticipo, in modo da essere pronti quando saremo sul set. Questo per capire come quel personaggio si muove in determinate circostanze e come agisce e reagisce. Magari poi lo modifichiamo in base a quella emozione o sentimento che si percepisce sul set e che in prova non c'era. Quindi si ha una base del personaggio prima di girare che poi viene tarata e misurata sul set. Sono uno di quelle persone alle quali piace scoprire cosa succede durante le riprese.' (Mollo, 2015)

explored in even brief periods of rehearsal'. However, rehearsals cannot be an accurate representation of the entire actor's performance on set because filmmaking, conversely to theatre, is a disjointed process where shots are not achieved in a chronological order. Basso (2015) states that 'The actor's concentration is not in the rehearsal, like in theatre, but in the performance' – achieved through various shots filmed in a non-narrative order – so a director 'can change the lens, go to a close-up and ask the actor to give that emotion not with a hand gesture, but with a wrinkle of his face'.[63] Actors' film performances do not represent a continuous stream because they include pauses and narrative jumps. Therefore, actors have to rely on the guidance of the director who can see the film as a whole, "from above". The actors need to trust directors who balance the performance and make sure that it fits the film. Creating a safe space for actors generates trust in the relationship that exists between them and the directors, a factor which is vital for any successful film production. Arkush expresses it thus:

> That whole sense of protecting the actor just really makes them be so much better. They end up trusting you so much that they feel they can't make a mistake, and that if they do make a mistake, you've got their back. (Arkush in Badham 2013: 9)

On this subject, Badham (2013: 3) asserts that in his experience, in the conversation between actors and directors, 'The word that kept coming up was "trust"' because actors 'want to feel confident that their director not only knows his craft as a filmmaker but also has respect for the actor and understands the character he is playing' (ibid.: 5). Soderbergh claims that:

> […] sometimes the dynamic of the relationship makes it difficult for them [actors] to understand why you're making a certain request. Your job is to have the whole movie in your head. That's not their job. Their job is very, very specific and by design pretty myopic. And after you've exhausted all the rational explanations, at the end of the day it really comes down to whether they trust you or not. (Soderbergh in Badham 2013: 95)

Regarding this argument Weston (2003: 229) affirms that 'Actors want a director who is strong, knowledgeable, smart and confident' because they need a figure to count on and trust when they are in front of a camera. The creation of a relationship founded on trust and commitment represents the fulcrum of the actor's performance, especially for digital effects films where the actor may feel insecure because she cannot see the end result as she acts. In fact, due to the use

[63] Italian: 'La massima attenzione dell'attore non è nelle prove, come in teatro, ma nell'esecuzione. Posso cambiare lente, concentrarmi su un primo piano e dirti di non darmi quell'emozione con un gesto della mano ma con una ruga del viso.' (Basso, 2015)

of green and blue screens, these actors move in a complete different reality where they are forced to hit markers and interact with props emulating the effects that will appear on the final image.

An evident difference in method between using or not using digital effects is in the way actors' performance is guided. In digital effects films, actors work imagining what will be completed in post-production, interacting with CGI characters rather than real actors. This occurs in an environment where actors have to hit markers and interact with special props in order to make the effects achievable. An example of how substantially different this approach is for actors is voiced by the actor Ian McKellen in relation to shooting the digital effects film *The Hobbit* (Jackson P., 2012-2014). Blay reports the actor affirming:

> In order to shoot the dwarves and a large Gandalf, we couldn't be in the same set. All I had for company was 13 photographs of the dwarves on top of stands with little lights - whoever's talking flashes up. Pretending you're with 13 other people when you're on your own, it stretches your technical ability to the absolute limits. (Blay, 2012)

Figure 18: Gandalf takes tea from Dori in *The Hobbit*. The table with the glass is used by the visual effects department to match the actors' gestures because these are shot separately.

Digital effects have changed the way actors approach the filmmaking process and, as a consequence, the techniques used by directors to guide the performance have been perfected. For instance, more than in other productions, "digital effects directors" have to stimulate the "sense memory" of actors in order to create links between them and the virtual characters. Weston states:

> Sense memory has very practical uses for actors. When a character in a scene burns himself on a hot stove, the actor playing the role does not touch a stove that is hot; he touches a cold stove as if it were hot. Sophisticated special effects require actors to perform in front of the blue screen as if they were on a precipice or airplane wing. (Weston 1996: 151).

Mark Westbrook (2008), who is a professional acting coach and director, refers to sense memory as the 'ability to create a 'sense of truth' around the make-believe circumstances' obtained by connecting 'the imagination to the memory of the real sense'. Gordon (2009: 80-81) asserts that 'sense memory permits the actor's imagination to function with the precision necessary to create a convincing fictional world in performance' like 'a preparation for imaginative expression'. Sense memory is particularly used in theatre when actors interact with props; it belongs to the Strasberg technique known as "method acting" (see Messina 2012: 21). Method acting develops from an internal source – such as sense memory – to make the actor connect to an emotional state applicable to the scene, even if there is nothing relevant surrounding the actor. In other words, the actor connects to a memory in order to perform the emotional state that the scene requires. This method is in contrast with Meisner's technique, which instead develops externally and makes the actor instinctively react to a situation, particularly to the presence of other actors. Barton (2014: 141) states that Meisner focused his work on 'a sense of profound connection between actors'. For Barton (ibid.: 141) Meisner's work 'is primarily aimed at creating a truthful exchange between actors' and indeed 'Meisner did not dwell on actions, objectives, beats, obstacles, and strategies which he considered overly intellectual', nor 'did he deal with emotion memory work, which tended to be so private as to potentially block communion'. If sense memory and Strasberg's method acting can be easily applied to digital effects films, Meisner's technique is more difficult to adapt. This is because in these productions the actor interacts with virtual characters who will be completed only after principal photography – which means acting with props and imagining them as real characters. This does not mean that Meisner's technique is not applied at all to digital effects films but that Strasberg's method acting is arguably more suitable when actors perform against a green screen with CGI characters, especially as it does not require real characters around the actors to be achieved. The type of acting technique that a director of a digital effects film can use is more

limited than for other film productions because of the requirements of the technology. This is a further example of how the director's method is altered when digital effects are used.

In digital effects films actors frequently find themselves playing a situation in which one or more elements of an interaction are missing. The director communicates the final image in the clearest way possible and thus coordinates the performance accordingly. Depending on the show, both the director and the visual effects supervisor help the actor to orient herself in this space. In the process, the director is commonly more oriented to connect actor to story, giving her the motivation of the action. The visual effects supervisor tends to orient the actor in a more technical way, giving her references, such as markers or poles, to help her imagine the new reality that digital effects will add after the performance. These are tasks that the director normally accomplishes alone for films not involving digital effects. Gutierrez (2014) agrees that when working with actors on digital effects films 'the most important thing is talking with them, explain what you imagined, show them the concept art, the CGI models, some references, and let them build their own world'. It is for this reason that the visual effects supervisor is key in making an actor understand the shot; she is in charge of creating the final effects for the film. On this argument Williams states:

> The stage has green floor, green walls and green ceiling and the actor knows that in the script he is supposed to have a confrontation with a bad guy. But there is nothing there, there is no bad guy. It depends on the show, but the director and the visual effects supervisor, both of them, go out there and help brief the actor. The director will brief the actor on story, the intent and what he is trying to get across with the scene at this point because he is the person in charge of all the storytelling. You know, what is your motivation, why you are here, what kind of character you are trying to portray. The visual effects supervisor can help out just saying: "Hey look, over there that wall, the green wall actually is going to be a building on fire. When you look in this direction you will notice some tape on the floor so you know where the street is but across the street is going to be a spaceship with an alien walking out – who is the guy in a green suit." You give the actor a sort of visual clues and you support him as much as you can so he can build that imagery in his head and execute what the director wants him to do. (Williams, 2013)

What actors accomplish in front of the camera must be considered only a small portion of their role. Instead, the majority of their job consists of giving shape to a believable and consistent character around whom the film can organise the story. Whether the character is wearing just a

coat on set, significant makeup or whether that character is a mocap[64] character, she is witness to the events in the story and will react to them. Digital effects are there to allow actors to portray roles that reality would not allow them to. It is the director's responsibility to link the performance and the digital effects in a consistent way so that for the audience they happen in the same reality. Nixon reports:

> In the fake world of digital effects, in this weird theatrical performance, directors really want to create an environment where you still get a connection with the real person and the real performance. [...] I found that in digital effects film, directors are quite invested in [...] making sure that there is a link between the actors and the story. (Nixon, 2014)

On this subject Williams states:

> Right now one actor may go on set and put on a coat and he plays his role. Another actor may go on set, spend 6 hours in a makeup chair and have the prosthetics applied to him, then he plays the role. He is still acting, even if he is wearing the prosthetics. When we did *Avatar*, every actor in that movie was acting. It was done not by animators but a true actor. It is not a physical presence in front of the camera, that's a small portion of their job. The biggest portion of the actor's job is to create a believable consistent character that the movie can orchestrate the story over. All the digital effects, in this regard, represent a way to let actors portray roles that their physical forms would not allow them to portray. (Williams, 2013)

In light of this, digital effects do not influence the actor's task per se but rather the way in which that performance is guided. In fact, it is in the director's approach that digital effects impose ways to find connections between the diegetic world and the actor's memory so that the actor can provide the required emotion. Converse to films not relying on digital effects, where actors instead interact with what actually surrounds them, digital effects films are where the director and the visual effects supervisor create hints that allow the actor to build up her performance; this will be later blended with the CGI as if actors and virtual objects were interacting in front of the camera.

The Jungle Book as a Case Study: Can Digital Effects Films be Directed like Other Films?

In comparison to films without digital effects, significant differences appear in preparing the shot when the production involves a large-scale use of digital effects. However, the director's

[64] Mocap is the abbreviation for motion capture, also known as "performance capture". It is 'A technique whereby an individual being's performance is captured and translated for use in driving a CG being's performance' (Okun and Zwerman 2010: 868)

method for digital effects films is evolving as technologies evolve, and it appears to be reverting back to some of the original techniques used for other film productions. This is confirmed by the fact that digital effects films are increasingly trying to make the director work as if these productions were non-effects driven, eliminating the diversities that exist between the two filmmaking typologies. In fact, innovative technologies are heading in the direction of making directors avoid strict staging before principal photography – which is necessary for digital effects film – in favour of a greater degree of improvisation. In this sense *The Jungle Book* (Favreau J., 2016) represents an interesting new way forward. Indeed, it can be argued that this film represents an innovative method in terms of using traditional blocking: here, the director uses the virtual space as she would use a physical one, a possibility which has not been achievable for other digital effects films. Valdez (in Fordham 2016: 72), MPC visual effects supervisor, asserts that the process for this production 'was inverse to the challenge' normally faced in digital effects films. He (ibid.: 72) affirms that 'more and more these days' visual effects supervisors are asked 'to shoot elements that will later fit a background, rather than fitting elements into existing plates'. *Avatar* (Cameron J., 2009) and *The Jungle Book*, which represent exceptions in the frame of contemporary digital films, adopt this way of working in order to generate a more genuine approach for their directors, that is, in terms of improvising with actors and looking directly at the plausible result sooner than post-production.

The Jungle Book mainly involves one real actor, Neel Sethi as Mowgli, and a series of virtual characters such as Baloo, Bagheera and Shere Khan who interact with him in a virtual space. Goldman (2016: 32) claims that 'Only those pieces of the sets that Sethi directly interacted with are real: beyond them, all environments, and the entire cast of supporting animal characters, are CG constructs.' Regarding the film's production, he (ibid.: 32) reports that the director 'opted for an essentially unproven virtual-production methodology, and the result is an almost entirely digitally rendered and animated film that is intended to look completely photo-real'. Jon Favreau (in ibid.: 35) affirms that one key way to work with such a method lies in treating the cinematographer as a partner 'in the same way he would be in a live action film'. Indeed, Bill Pope (in ibid.: 33), cinematographer of the film, states that 'the methodology

allowed him to make traditional cinematography decisions for each shot, but "in the digital space"'. Goldman describes the process as follow:

> The SimulCam[65] process [by which real and virtual worlds are simultaneously blended during shooting] utilizes multiple movable OptiTrack motion-capture towers [...] to track a live-action camera's position. The system then uses that data to drive a virtual camera in the CG world. On the back end, the SimulCam system receives a live camera feed, tracks the camera position in 3D space, and, in real time, keys out bluescreen and composites live actors with CG characters and environments. [...] this system was directly linked to a larger, newer virtual-cinematography system built around a rendering engine called Photon. (Goldman 2016: 35-36)

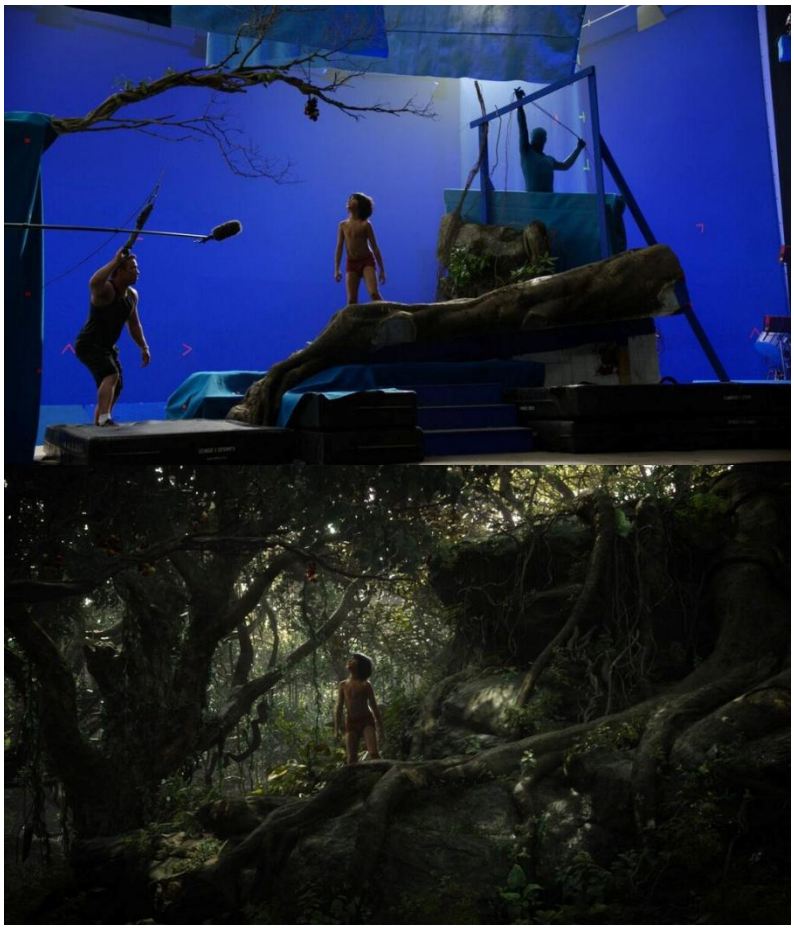

Figure 19: Before and after digital effects. The whole film is set entirely in a digital environment.

Goldman (2016: 36) observes that this innovation allowed the director and cinematographer 'to

[65] Gaunt (2011: 87 quoted in Hayward 2013: 106) describes the Simulcam as a 'virtual camera's real-time playback system' which makes it 'possible to see the actors in performance-capture clothing (Mocap suits), projected by the virtual camera as the imaginary computer-generated characters they are playing'. Hayward (ibid.) adds that 'The entire (pre-recorded) CGI environment can be seen through the SimulCam's viewfinder and on live monitors on the set.' This allows 'the human actors to interact directly with the CGI creations and for the director to frame the image exactly as s/he wants' (Hayward 2013: 106).

make detailed cinematography choices – including camera movement, lens choice, depth of field, framing and lighting – in every step from rough layout through final post'. Legato (in ibid.: 35), the visual effects supervisor for the film, states that 'The goal was to make the audience forget what was done on a computer and what was not – to remove the separation between visual effects and cinematography.' Goldman (2016: 38) affirms that the cinematographer 'could lay out virtual dolly tracks, drive a virtual crane, and operate a virtual camera in the capture volume, and then have all of those choices replicated in the virtual-camera layout' as if he was operating a real camera.

In terms of pre-visualisation, the film does not entail as many divergences as other digital effects films and this supports the argument that digital effects films require more detailed visualisation than other film productions. Indeed, Fordham (2016: 72) states that, for this film, the director 'elected to build the film in layers, first in storyboards, and then in a previsualization 'preshoot', which laid the foundation for visual effects layouts, prior to a live action elements shoot with Mowgli and proxies for animal performers in partial sets shot against bluescreen'. This is what usually occurs in a digital effects film production. In terms of blocking, the film was treated differently from a general digital effects film. Indeed, Legato claims:

> We used Simulcam as a portal to frame anything in the virtual world. The innovation we developed was to use virtual reality goggles. Wearing a VR headset, the viewer could step into the 3D world, pick up a virtual camera and frame shots as in real life, gauging compositions with peripheral vision of the surroundings. That allowed Jon [the director] to walk around his virtual sets, looking past the actor, to choose where he wanted to put the camera. (Legato in Fordham 2016: 72)

Correspondingly, Goldman reports:

> Favreau could also employ an Oculus rift virtual-reality headset and Xbox controller on the stage, placing him within the volume — the space in which the digital imagery is "shot" — alongside the virtual characters and allowing him to maneuver 360 degrees as he made decisions about blocking and the placement of environmental elements. Tracking markers on the VR headset also enabled Favreau to walk through the virtual environment as he moved about the stage. (Goldman 2016: 37)

Pope, as the cinematographer of the film, describes it as follows:

> We would move through that space, and the art department and animators and I would all watch it, discussing if we could move this way, or work over here on this part of [the virtual set]. So basically, we carved out a space to set the scene, and then, after the

> volumes were built, we would go back to the mo-cap stage and block out the scene, picking which angles we liked and so on. (Pope in Goldman 2016: 37)

As a summarisation, *The Jungle Book*'s staging was achieved differently from other digital effects films, in a way that is more similar to a film not involving digital effects. Legato, Goldman and Pope describe how it was possible to work on the staging on set, moving cameras and actors on the fly so that the most appropriate angle and actor's position could be chosen. Improvisation became part of the process, with Valdez reporting:

> We laid down a grid on the soundstage floor. That gave the art department guidelines as to where to build portions of sets that would insert into the digital environment. And that gave the camera department ideas for where to place cameras and provided information for the gaffer to light sets according to how we pre-lit the digital environment. Jon [Favreau], Rob [Legato] and Bill Pope could then get in the zone of the shots they were designing very quickly, and improvise from there. (Valdez in Fordham 2016: 76-77)

Arguably, this represents an anomaly for digital effects films, which generally do not involve such technologies; in fact, this way of working with digital effects is considered 'a largely untested production method' (Goldman 2016: 35). Legato (in ibid.: 45) suggests that '*The Jungle Book*'s biggest innovation was the creation of a methodology for filmmakers "who are fluent in analog storytelling to be able to tell their stories with the same fidelity [using] digital tools'. He continues:

> So here, we let traditional filmmakers look through a camera — look up, down and sideways — and make the thousands of little decisions in real time about what inspires them about a shot or a scene. (Legato in Goldman 2016: 45)

The director's method used for *The Jungle Book*, while innovative, is still more constrictive than for other film productions, a fact which clarifies that current technologies do not yet allow the director to approach digital effects films with maximum liberty.

Conclusion

It has been shown that, in terms of director's method, films without digital effects and those with digital effects have one key difference; this is represented by the moment when blocking has occurred. Indeed, evidence shows that for digital effects films strict staging has to be achieved in pre-production, whilst the same is not necessary for films without digital effects.

Blocking for digital effects film productions is generally completed before principal photography. *The Jungle Book* represents a case where a digital effects film is treated by the director as a film without digital effects, conversely showing how these productions are generally approached. The case study confirms a dissimilarity between the two kinds of filmmaking which technologies are increasingly trying to eliminate. Non-digital effects films can adopt strict visualisation or not, they can block the scene previous to or during principal photography but cannot modify shots without reshooting; this is because of their reliance on live-action footage. Camera movements can be arranged on set and the shot can be designed around the actors, however, the style is solely dependent on the work done on set. Instead, digital effects films represent a process that can be refined up to post-production because the enhancement of a scene ends when the CGI shots are inserted. For these productions, pre-visualisation assumes the shape of a template which has to be followed. The influence of digital effects on the director's method lies in how directors approach shot design and how they stage a scene.

As has been reported by the interviewees, when digital effects are not involved, the director can improvise on set and find new narrative solutions. Conversely, in digital effects film camera movements are meticulously organised in order to match those from a virtual camera which simulates the real camera but moves in a CGI environment. The interaction between real actors and CGI characters has to be prepared for using markers and special props. This is of significance to the director's method because it imposes the use of a frame of rules which leaves no space for creative improvisation. Achieving blocking on set means improvising interactions between real and virtual objects that can undermine the final result. This is the reason why staging in digital effects films is typically developed using previs, while for other types of film production this technique is less common.

Furthermore, evidence shows that set organisation is significantly influenced by the use of digital effects. Digital effects film requires a specific schematisation which substantially reduces an actor's freedom. In these projects, constraints are imposed onto those actors who cannot improvise and must instead follow the physical and visual hints (marks, props etc.)

placed on set, usually prepared by the visual effects supervisor. Techniques such as mocap are a way of liberating actors from these constrictions however, as has been noticed, technology is far from guaranteeing a set where actors can move freely. The analysis has shown that one of the most influenced elements of the director's method when digital effects are involved, is the actors' performance. Indeed, actors interact with virtual characters that have to be imagined; this is exceptionally testing in terms of performance and needs particular guidance. Directors have to work in sync with the visual effects supervisor who, converse to the production designer, is allowed to advise the actor in situations where digital effects represent a significant part of the shooting. As has been reported, the visual effects supervisor illustrates to the actor what the final result will look like and guides her performance. In terms of method, this means sharing the authority that guides an actor's performance, a fact not generally considered viable in other film productions.

Lastly, in terms of guiding the performance, it has been observed that Strasberg's method acting approach produces effective results for digital effects films while Meisner's technique is difficult to use, especially when actors interact with virtual characters. As a conclusion, it can be reasonably stated that when digital effects are not involved, there is a considerable degree of freedom in terms of nailing down a shot, while for digital effects films specific preparation is required which influences guidance of the actor's performance. In terms of method, this means organising a staging plan earlier than principal photography, which significantly limits the possibility of being creative on set and forces the director to use specific acting techniques. Directors can be liberated from some constraints in post-production where CGI shots are inserted and live-action footage is digitally corrected.

Chapter Six

Post-production with and without Digital Effects

Post-production as a Variable Process

This chapter presents examples of post-production in films with and without digital effects in order to analyse whether there is a difference between the two approaches when related to video editing, sound editing and method. Post-production is the concluding stage of a film's production where the actual film takes shape. At this stage, different elements such as editing, sound design and colour correction collaborate to assemble the final result. Furthermore, post-production is broadly known as the phase of the filmmaking process where digital effects materialise and are actually combined with live-action footage. In terms of director's method, post-production has no consistent definition as it changes based on the director's contract and the typology of film production, therefore it is complicated to establish a common approach. A small number of educational texts which focus on the director's method have included sections on the director's role in post-production. For example, Proferes, Katz, Badham and Richards – who have thoroughly examined the director's method for general film production – have not dedicated many words to this phase. This is clear in *Film Directing Fundamentals* by Proferes (2008) and *A Director's Method for Film and Television* by Richards (1992) where it can be noted that there is a lack of breadth and detail on the subject; resources such as *On Directing* by Badham (2013) do not consider this phase. Indeed, post-production remains one the most unknown territories for the director's method. Squires (in Okun and Zwerman 2010: 17) defines post-production in a general way as 'all the work to complete the project after the filming' which 'includes editing, sound, music, and visual effects'. Goulekas (2001: 394) states that post-production refers 'to work done after principal photography' such as 'the creation of digital visual effects (VFX), miniature photographing and editing'. Belli and Rooney (2011: 197) describe the post-production phase as 'the time following production when a film is assembled and realised for delivery'. They affirm that 'It is the director's final chance to reinterpret the

script' (ibid.: 197). In terms of method, it is within post-production that the director will shape the material previously shot in order to tell the story contained in the script. Belli and Rooney, in their definition of post-production, illustrate the director's task in this way:

> The director works closely with the editor to make sure that the film is cut together so that it clearly and artfully tells the story. Together, they add temporary music and sound effects so that the director's cut clearly shows the director's vision. The director may continue to oversee his vision during the other postproduction processes such as color correcting, working with the composer, and dubbing, or simply hand over his cut to the producers, having delivered everything within his power to fulfil. (Belli and Rooney 2011: 197)

Wilkinson (2005: 155), writing about the director's role in post-production, affirms that 'The problem of the director in post is in knowing what you want, what you're likely to get, knowing how and when to ask for it' because even if 'The process is flexible', it is also 'inherently linear'. Wilkinson (ibid.: 155) continues, claiming that 'the director's key to post becomes understanding the process' in order 'to direct it as effectively as the shooting.' Belli and Rooney (2011: 222), investigating the director's method agree on this, stating that 'Postproduction is not an afterthought, just because it comes at the end' and instead 'It is the part of the process that polishes the jewel.' However, it is significant to report that in some projects, directors do not have full control over post-production and are not allowed to supervise it at all; in this case, post-production is handled by the producer. For example, in some productions the director has the "cut" on the film while in others she is not even involved in the editing. For TV series, executive producers may decide to re-edit an episode which was already cut under the director's supervision; in this case, the director and the editor 'cut for story, cut for time, and then add temp music and sound effect' while the executive producers then 'do another pass at editing down', sometimes 'removing entire scenes' (Belli and Rooney 2011: 225). In 1968, as a protest against the producers' cut, directors started to use the pseudonym of Alan Smithee in credits when they were unsatisfied with the editing, an occurrence permitted by the Directors Guild of America (DGA) if officially appealed by the director.[66] This shows that there is no general rule in terms of a director's involvement in post-production because their responsibilities might

[66] IMDb, Alan Smithee Biography. File available at: http://www.imdb.com/name/nm0000647/bio?ref_=nm_ov_bio_sm, accessed 25 May 2016.

change from production to production. There are also cases where directors are allowed to supervise post-production but where they exclude themselves from the process.

Music and sound significantly contribute to building an atmosphere and conveying emotions to the audience; therefore they can be reasonably considered key to the director's task in post-production, in cases where the film's production allows it. It is in this phase that the score and sounds are added to the film, possibly created "ad hoc" for the story. This element must be considered in advance and designed around other elements of the film in order to have a strong impact on the audience. Proferes (2008: 136) states that 'As with lighting and the DP [director of photography], the sound editor[67] has technical knowledge and experience that the director most likely does not have' and, because music and sound 'can help enormously to create atmosphere and tension', it is strongly recommended that a sound editor is involved in the process as soon as possible. Audio is not detached from video and directors should consider this early on in the visualisation; storyboards can contain onomatopoeia and animatics can have sound. In post-production, audio elements are combined with visual elements in order to create a seamless amalgamation which better conveys the story to the audience. In the digital effects film *Tron: Legacy* (Kosinski J., 2010), the sound designer, Steve Boeddeker, along with the director, had to design the sound of a whole computer-generated world created with digital effects. Boeddeker (in Coleman, 2011) reports that 'The director wanted to experiment as much as possible: he knew kind of what he wanted but he also wanted to try as many things as he could'. In light of this, sound design becomes a process where directors experiment with, and shape, the sound so it can be combined consistently with the visual design of the whole film. Digital effects allow for the creation of characters and environments which do not have any contact point with the real world, hence sound design, in these cases, has to create sounds which

[67] Barnwell (2008: 22) asserts that the sound editor 'is responsible for assembling and editing all the sound effects in the soundtrack'. Wales states:

> The description of the sound editor varies greatly on projects because of budget. In low budget your sound editor may be the person who performs the duties of the sound designer, dialogue editor, sound effects editor, automated dialogue replacement (ADR) editor, and music editor. In medium to higher budget projects the sound editor may work on putting together the tracks that other editors have built and supervise the other sound editors (in this case, he or she would be called the supervising sound editor). (Wales 2012: 210)

may not exist in nature. The input that directors give to the sound department is crucial to determine what the digital effects will sound like. This involves tests and research with the sound department. Conversely, films which rely more on what happens in front of the camera, focus on the sound captured on set – even if sound can be added later in post-production – and generally contain sounds which can be captured in nature.

The use of digital technologies, in any kind of production, has noticeably facilitated the involvement of digital effects which have been easily incorporated into the filmmaking process. However, post-production in contemporary film involves digital processes even when digital effects are not used at all. One example is in the colour correction process which is achieved using digital software; this is regularly used for any kind of film production, with and without digital effects. Another example is the use of digital editing software, which is a common practice within the industry. This is due to the fact that the use of film format has mostly gone and been replaced by digital. Digital editing has allowed contemporary films to be cut in a fast way, faster than at any point in the history of cinema (see Dhir in Keil and Whissel 2016: 163). The average shot length of an action film such as *The Bourne Ultimatum* (Greengrass P., 2007) is only 1.9 seconds compared to 4-6 seconds for 1920s films and 6-8 seconds for the films made between the 1930s and the 1960s (ibid.: 163-164). Dhir (ibid.: 163) affirms that 'editors repeatedly work with the same directors, as can be seen from the frequent Andrew Weisblum/Wes Anderson, Michael Khan/Steven Spielberg, Angus Wall/David Fincher, Thelma Schoonmaker/Martin Scorsese, Leslie Jones/Paul Thomas Anderson, Lee Smith/Christopher Nolan collaborations'. Analyisng such collaborations, it emerges that 'While generic norms clearly affect editing pace, directorial or authorial control seems to override generic requirements' (Dhir in Keil and Whissel 2016: 163). For instance, all of Steven Spielberg's films over the last decade, from *Minority Report* (2002) to *War Horse* (2011), hover around six seconds, while Steven Soderbergh's average shot length of six seconds remains consistent in all his films, regardless of genre (ibid.: 163).

A Link Between Editing and Blocking

The process of editing, through which the story takes its final visual form, represents a significant part of a film's production. At this stage, the shots are combined so that the director's vision, which guided the previous stages of the filmmaking process, becomes tangible. Okun and Zwerman (2010: 854) describe editing as the process 'of assembling shots and scenes into a final product, making decisions about their length and ordering'. Orpen (2003: 1) defines it as primarily 'a connective process' in which shots are joined 'to form a whole'. She (ibid.: 1) divides editing into three stages which are: 'the selection of takes and their length; the arrangement and timing of shots, scenes and sequences; and their combination with the soundtrack'. The figure in charge of the process is the editor. Wilkinson (2005: 158) affirms that the editor 'creates a living, breathing story out of the elements he's given', a process which can be achieved with or without a director. Like the writer and the director, 'The editor is a story teller' (ibid.: 158), who has a certain degree of freedom in shaping the narrative of a film. Belli and Rooney (2011: 210) state that if it is 'the director's responsibility to deliver the film that tells the story', the editor is the director's partner in turning 'raw footage into the polished jewel that is its full potential'. The editor's task 'is to collaboratively strengthen, enhance, and hone the director's vision in order to bring the most effective version of the story on screen' (ibid.: 211). Editing entails the reinterpretation of the script which allows for the telling of the story in a new way. This process has the ability to shape the narrative and manage the footage so that new solutions can be created out of the screenplay. Editing can also locate key ingredients within the live-action footage that can be used to give different meanings to a story or to cast a light on particular actions that are needed to convey a message. Belli and Rooney (2011: 199) affirm that editing 'is an opportunity' to tell a story 'in a new, fresh, and possibly better way' than originally conceived. From a producer's perspective, Giuliano (2015) observes that editing

'is the third re-writing of the script' – in his opinion, the second occurs during shooting.[68] Traina asserts:

> It doesn't mind how much precision you used to organise your story: in that raw material you brought with you, there will be some hidden pearl, some unexpected surprise which suddenly becomes essential to add a particular shade. That's why I always watch the whole material, not only the selected shots. You can find a imperceptible stare, a slight head movement and other things that in the shooting you did not notice and now are necessary for your story.[69] (Traina, 2015)

Using the script, the director's input and the footage at her disposal, the editor has to make decision on shots; this means assembling, trimming and excluding shots if they are deemed unnecessary to the story. Although the editor usually does not attend the set, she is called to interpret the director's vision and make sense of the material that she receives, hence her work has a noteworthy influence on the final result. For this reason, the director establishes parameters during the shot design and the shooting, which she communicates to the editor. Such parameters are based on the significance of the shot in terms of storytelling, and the fact that they guide the editor through the editing process. Lodovichetti states:

> Post-production can call into question a lot of the things that you [the film director] have already shot. In editing you can add new value to a film but you have to follow parameters which have been defined and shared. Here the flexibility is in understanding the editor's questions and critiques. Someone used to teach us that the editor, who never saw the set and never assisted you with the storyboards or the pre-production, doesn't mind if you spent one entire day just on one shot. If that shot doesn't work in the whole film, he will tell you that because he is more clear-headed than you in that moment. The

[68] Italian: 'Il montaggio è la terza riscrittura del film (la seconda avviene con le riprese) dunque anche in questa delicatissima fase mantengo un dialogo costante con il regista. Un tempo lo facevo unicamente per quanto riguardava le scelte artistiche ed eventualmente per il costo di alcuni brani musicali, oggi anche per quanto riguarda le necessità relative agli effetti digitali, a causa della crescente importanza che questi hanno assunto negli ultimi anni. Il rapporto con il montaggio dipende dai registi: alcuni non vedono l'ora di cucire insieme il film, altri vivono questo momento privi di energie, letteralmente prosciugati dal set oppure ancora scontenti del girato.' (Giuliano, 2015)

[69] Italian: 'Il montaggio è la fase che preferisco. Potrei dire perfino che ogni altra fase, compresa quella delle riprese, è semplicemente propedeutica a questa. Si tratta ora, finalmente, di unire i tasselli. Io ho sempre montato personalmente le mie cose e, in quei rari casi in cui sedevo accanto a un montatore, seguivo comunque il montaggio con maniacale e pedante attenzione. È solo a questo punto che il film comincia a prendere vita sul serio. È questo il momento in cui tutti quei "pezzi", molto spesso privi di significato intrinseco, cominciano a generare un senso, a produrre un racconto, a costruire un'emozione. La vera partita la si gioca in sala montaggio. E ciò che trovo sempre entusiasmante è che non importa con quanta precisione tu abbia progettato il tuo racconto: in quel materiale grezzo che ti sei portato a casa dopo giorni o settimane di riprese troverai sempre qualche perla nascosta, qualche inattesa sorpresa, magari celata in una ripresa che avevi indicato come scarto ma che improvvisamente diviene fondamentale per aggiungere una sfumatura essenziale. Ecco perché non manco mai di passarmi e ripassarmi sempre tutti i giornalieri, non solo le "buone". Magari c'è uno sguardo quasi impercettibile, un accennato movimento della testa, o non so che altro, che in fase di ripresa non avevi notato e che ora invece mi pare indispensabile per il mio racconto.' (Traina, 2015)

> last word is always yours but you have to trust others and never underestimate your collaborators.[70] (Lodovichetti, 2014)

The editor looks at the footage with a fresh eye and assembles the shots in order to make the narrative flow. This is due to the fact that the editor, converse to film directors, looks at the footage without any knowledge of how it was achieved. Directors risk growing fond of shots which were difficult or costly to achieve but have no significance for the audience. Perez (2015) affirms that, as a professional editor, he prefers not to go on set in order not to compromise his eyes.[71] In this way, he can look at the material for the first time, as the audience would do, and better understand how to use it. Mollo, as a film director, claims:

> The editor sees the images without knowing how we shot them. He has a different eye, more oriented toward the audience who will watch the film for the first time. This freshness, or virginity, gives you the possibility of modifying things and creating new sequences that were not in the script. […] in editing you don't have the stress of the set, you can try one thing, sleep on it and change it the very next day and therefore you have great power over your film.[72] (Mollo, 2015)

Belli and Rooney (2011: 202) state that the editor 'brings a "fresh eye" to the footage and may discover things' that the director 'never anticipated'; nonetheless 'the editor is assembling the film according' to the director's vision. The footage has been shot under the supervision of the director who designed the sequences with a precise idea in mind. The editor can modify this material to enhance the storyline but is the director's vision which gives the direction to follow.

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[70] Italian: 'La fase della postproduzione è la fase che può mettere in discussione molte cose che hai già girato. Grazie al feeling umano che sia ha con il montatore, il quale mette del suo su parametri già predefiniti e condivisi, si riesce assolutamente a dare un valore aggiunto. E anche qui l'elasticità sta nel capire le istanze e le critiche del montatore. A noi insegnavano che al montatore, che non era a fare lo storyboard e non era nella pre-produzione, e nemmeno sul set, non gliene frega nulla se ci hai messo un giorno per fare una inquadratura. Se nell'economia del film non funziona, lui te lo dice ed è certamente più lucido di te in quel momento. Il montatore rappresenta qualcosa che a te in quel momento manca. L'ultima parola è sempre la tua ma bisogna fidarsi e non sottovalutare il potenziale creativo dei tuoi collaboratori.' (Lodovichetti, 2014)

[71] Italian: 'Personalmente preferisco leggere la sceneggiatura prima che si giri, voglio conoscere il regista e parlare del film per vedere se si è in sintonia sul film da fare. Questo vale almeno per i film narrativi. Spesso mi chiedono consigli anche se poi l'ultima parola è la loro. In genere preferisco non stare sul set perché vedere le riprese può viziare il tuo sguardo, anche se in alcuni casi sono stato sul set per l'intere riprese e ho montato nella stanza accanto.' (Perez, 2015)

[72] Italian: 'Io collaboro da sempre con lo stesso montatore. C'è un rapporto di totale fiducia. Siccome lui non viene sul set, vede le immagini non sapendo come l'abbiamo girate e ha uno sguardo diverso, orientato più verso il pubblico che vedrà il film per la prima volta. Questa freschezza, questa verginità, ti dà anche la possibilità di modificare le cose e addirittura di creare sequenze di montaggio che non sono in copione. È una libertà che assecondo completamente. Cercare collaboratori fidati, soprattutto nel montaggio, è fondamentale per me. Questo soprattutto perché in montaggio non c'è lo stress del set, tu puoi provare una cosa, dormirci su e cambiarla il giorno dopo. La sala di montaggio ti dà anche più un senso di rilassatezza e libertà che sul set non hai.' (Mollo, 2015)

The director is not always allowed to participate in the editing but when the director can sit in an editing room, the relationship between her and the editor becomes an influential component of the final result. There are different approaches to editing in terms of film directing. Perez reports on this matter:

> It is difficult to establish rules. There are directors who don't want absolutely to see the editing process. They want to see just the final result. On it, they give their opinion [...] Another way of working – which is my favourite – is the one in which directors and editors examine together the material they have. Examining is for an editor the most important phase of the process. For everyone who works on a film it is fundamental to listen to everything that the director suggests, even things out of discussion of a shot. Indeed, these are elements we will hang on in order to take our decisions. The decisions that we take are influenced by what the director says. When we prepare and then we work on a film, the director becomes our compass. From the most precise and practical things to the vague comments like, 'I hate the colour of those walls' or, 'upbeat music always moves me'. The best directors tend not to contradict themselves when they talk about something and probably that is what they really want in the film. Back to the compass metaphor, a good director, with all his comments, can always show you where is North, the direction where to go.[73] (Perez, 2015)

As an example of how directors work with editing, Herman observes how in *The Boy in the Striped Pyjamas* (Herman M., 2008) he built the final sequence with the editor. In this film the protagonist, Bruno, whose father works for the Nazis in managing a concentration camp, befriends Schmuel, a boy detained in the same camp. To help find Schmuel's father, Bruno enters the camp disguised as a prisoner but the guards, mistaking him, capture and pack the boy with other prisoners into a gas chamber. Bruno's family, unaware of his fate, mount a frantic search for the boy. The last sequence of the film shows in parallel the desperation of the family who little by little realise where Bruno is and the tragedy of the boy who did not know that he was going to die with the others. The editing is particularly effective in showing the two situations and intertwining the desperate search for the boy and the execution of the prisoners.

[73] Italian: 'Difficile stabilire regole. Ci sono registi che non vogliono assolutamente vedere il processo di montaggio. Vogliono solo il risultato finale. Lì possono dare la loro opinione ma non vogliono darla prima, vogliono il tuo parere perché hai un "clean eye". Un altro modo di lavorare, che poi è il mio preferito, è quello per il quale si vede insieme il materiale, lo si esamina. Perché guardare il materiale è per un montatore la cosa più importante del processo. Per tutti coloro che lavorano ad un film è importantissimo ascoltare ogni cosa suggerita dal regista anche fuori del mero shot. Questi sono infatti spunti ai quali ci aggrapperemo per prendere le nostre decisioni. Le decisioni che tutti noi prendiamo, sono influenzate da quello che il regista ci dice. Quando prepariamo e poi lavoriamo su un film quello che ci dice un regista diventa la nostra bussola. Dalle cose più precise e pratiche ai commenti più vaghi come, 'detesto il tono di verde di quelle pareti' o, 'una musica in levare mi emoziona sempre'. I bravi registi tendono a non contraddirsi quindi se si esprimono su qualcosa probabilmente quello è ciò che vogliono per il film. Tornando alla metafora della bussola, un regista bravo, con tutti i suoi commenti, riesce sempre a mostrarti qual e' il Nord per lui, la direzione in cui muoverti.' (Perez, 2015)

Figure 20: The final sequence of *The Boy in the Striped Pyjamas*.

Herman claims:

> This ending, at least this frantic search, chase, didn't exist in the book. It was an opportunity for me to play with an audience's emotions more than in any other screenplay. […] The editing, specifically the timing, we worked very hard on so that there is a specific point where an audience suddenly realizes, after a minute or so of relative confidence, that no, Mum, Dad, no-one is going to get there in time. I was also very keen, in both the writing, the direction and the cut, that an audience should be deeply confused. Hearing audiences' reaction at this point in the film is actually greatly rewarding. They catch themselves rooting for the Nazis, they catch themselves caring about the kids but not the hundreds of others about to die. People cry, but often they are shocked when they think about why. Did they really feel sorry for that Dad? Etc. It was all planned in the screenplay and therefore to me seems nothing more than a simple implementation. The intention was always there, but the key thing is to ensure you get the coverage so that, in the editing room, you are able to have the required options to slow down, speed up, whatever, to achieve that required result. (Herman, 2015)

Herman claims that the sequence was in the script, confirming a substantial link between script analysis and editing. The sequence was planned in advance, meaning that editor had hints about how it had to be visually arranged. In light of this, it is reasonable to state that editing is connected to the processes which lead to post-production, particularly the staging of camera, actors and objects. Katz (1991: 154) states that 'edit points are "placed" in the shot or at least anticipated by the director in the staging of action', affirming editing's dependency on blocking. This is true for digital effects films as for films not involving digital effects. Mark Sanger for example, editor of the digital effects production *Gravity* (Cuarón A., 2013), reports on his work on the film:

> Creatively [...] the tiniest lighting or blocking change to a shot would often dictate hours—sometimes days—of re-editing the rest of the scene to ensure it had been appropriately balanced to match. [...] typically, the physical blocking of the scene would drive the edit [...] (Sanger in Baughan, 2013)

Joe Walker, editor for films such as *12 Years a Slave* (McQueen S., 2013), *Hunger* (McQueen S., 2008) and *Shame* (McQueen S., 2011), supports the idea of editing's dependence on the way live-action footage is shot. Indeed, he (Walker in Conrath, 2014) claims that 'editing style is mostly dictated by the dailies' because 'If it's been shot a particular way, it inevitably calls for a particular way to cut it'. Therefore, in terms of method, directors can guide the editing process in terms of the way actors are staged and shots are accomplished. Hitchcock, for instance, established a personal method to shoot his films so that editing could not be completed without his "code" to assemble the shots. In an interview with Truffaut, he affirmed this:

> I used to shoot the one piece of film in such a way that no one else could put the pieces together properly; the only way they could be edited was to follow exactly what I had in mind in the shooting stages [...] Working as I do, you're sure that no one in the studio is going to take over and ruin your film. (Hitchcock in Truffaut 1983: 194-195)

Hitchcock established rules in order to control the editing process before post-production: he elaborated a system of camera and actor blocking to maintain the authenticity of his work and keep the narrative flow exactly as it was in his mind. This method confirms the idea of editing as a process strongly connected to the phases of film production forestalling post-production. Katz claims:

> One of the values of knowing conventional editing practices is that it gives the filmmaker a point of departure when he is visualizing. Staging, in particular, is made easier by an awareness of the types of movement that provide opportunities for cutting. In any given scene, the filmmaker will visualize how long certain actions should be viewed before moving to another shot. He will try then to plan action at that point that editing is motivated visually. (Katz 1991: 156)

In this context it is significant to analyse the position of the actor because she is supposed to interpret continuous action in the diegetic world of the film; the editor receives various shots of the actor repeating bits of the same action so the question as to how the editor can determine the actor's intention in a performance can be raised. In a symposium on editing and acting that the American Cinema Editors (ACE) sponsored in 1965, actor Guy Stockwell – *The War Lord* (Shaffner F. J., 1965), *The Plainsman* (Rich D. L., 1966), *Beau Geste* (Heyes D., 1966), *Santa Sangre* (Jodorowsky A., 1989) etc. – argued the continuity of acting in relation to the editor's task, a factor which raises some conflict between these two roles. For this reason, Polan (in Keil and Whissel 2016: 82) observes that method acting and fast editing are inimical because the actor does not have time to build up a performance.

There are cases where pre-visualisation dictates the editing in order to achieve a specific result. It is impractical to apply digital effects to everything that has been filmed because not all the shots will be used in the final edit. To cut down expenses and work time, the editor operates on specific sequences which have been established beforehand through previs; at the end of the editing (or even at the same time), the visual effects department applies the effects only to the trimmed sequences. Previs thus becomes the template for digital effects-driven blockbusters. It is a reasonable method to adopt because, in such film productions, excluding shots where the

visual effects department has already started to work means losing a consistent amount of time and money. Bouchard states:

> I remember working on a movie, *A.I.* (Spielberg S., 2001). One shot I was working on cost 100000 dollars. That's not true anymore, it is much cheaper now but imagine it was 2001. If you are editing the movie and you edit out that shot that costs 100000 dollars, you are maybe fired. So the temptation is to keep all the effects even if they don't work for the edit because you get scared to cut out expensive shots and that's probably why the previz is so important because that is put into the edit before the shooting [...] Previz are almost required for digital effects films. Very expensive movies require a lot of planning. (Bouchard, 2014)

Previs is particularly important for digital effects films because it helps editors to understand how the director pictured the scene. The director, through the use of previs, informs editors about what should appear in the shot so that she can make sense of blocking and camera movements, even if she does not see the actual effect in the footage. Perez affirms:

> Usually I edit the shot with a green screen in it. It is too expensive to apply digital effects to every take. The pre-visualisation is a key stage, particularly for digital effects films. If you don't work a lot in pre-production and pre-visualisation with the visual effects supervisor, the art director, the director of photography, and in my opinion the editor, the final result will be inappropriate. A great part of these films is made by pre-visualising in advance. At this point it is clear that a pre-imagining process is mandatory for directors. The director's vision must be strong because he should see beyond what we all see.[74] (Perez, 2015)

For films relying on live-action footage, editors combine and cut shots, looking at the actual characters performing in a real environment; in digital effects films, actors frequently act using a green screen that will later be replaced with digital effects. This is why previs represents an essential tool in interpreting the live-action footage. Fink states:

> Animatics, or pre-visualizations, are roughly animated and composited shots created either entirely in the computer or assembled from previously shot material. In recent years, they have become essential in helping everyone understand certain visual effects sequences. When edited into the work print, they can help you define the pace of your cut and give you a good idea of how the final shot will look. They also provide a wonderful opportunity to ensure that the effect will really contribute to the story the way you want it to. (Fink, 2001)

Digital effects films most iconic feature is the merging of live-action footage with CGI. CGI

[74] Italian: 'Solitamente io monto lo shot con il green screen. È troppo costoso applicare i digital effects a ogni take. La fase di pre-visualizzazione è una fase chiave in particolare per i film con molti digital effects. Se non si lavora moltissimo in pre-produzione e pre-visualizzazione con il visual effects supervisor, l'art director, il direttore della fotografia, e secondo me anche il montatore, il risultato finale non sarà al massimo livello. Maggior parte di questi film viene pre-visualizzato in anticipo. È chiaro che un lavoro di "pre-immaginazione" è fondamentale. Questa forza visionaria del regista è fondamentale perché deve vedere più in là di dove vediamo noi.' (Perez, 2015)

objects can be added after shooting, implicating the possibility of totally changing sequences. Fred Raskin, editor for the film *Django Unchained* (Tarantino Q., 2012) – which does not rely on digital effects – and *Guardians of the Galaxy* (Gunn J., 2014) – where some characters are entirely constructed in CGI – highlights some difference between the two, claiming:

> Working with "Guardians of the Galaxy" was a little different from working with other movies like "Django Unchained." While directors like Tarantino liked to work with footage as it exists during post-production, Raskin discovered that Marvel was willing to go through great lengths to make the movie the best it could be. "If we need to shoot an entirely new action sequence, everything is on the table," Raskin explained. (Raskin in Do, 2014)

It is essential to note how Raskin compares 'Marvel' to the film directors. It emerges that editing mirrors the difference between using or not using digital effects, which is the reliance on what happens in front of the camera rather than what can be implemented and added digitally. For films without digital effects, only live-action footage can be manipulated in post-production while, for digital effects films, post-production becomes a stage where the narrative can be reshaped. Mark Livolsi is a film editor who worked with and without complex digital effects – *The Devil Wears Prada* (Frankel D., 2003) and *The Jungle Book* (Favreau J., 2016). Talking about this last film where a real actor had to interact with virtual animal characters, he states:

> It was pretty much in the ballpark. There was always trimming to be done. That was always a consistent note throughout the entire process from everyone. We needed to trim it here and there but you start with things a little loose because you're allowing for material that doesn't exist yet, performances that visually don't exist, knowing full well that as a last minute thing you can trim back but you can't add at a certain point. I was always confident that the pacing issue was to some degree due to the early roughness of the material, and as it refined, it became more interesting and pacing issues disappeared. (Livolsi in Hullfish, 2016)

Livolsi's observation shows that, in digital effects films, the editor works on dynamic material which is subject to modifications right up to the very last moment. The only guarantee is the director's vision which keeps all the pieces of the jigsaw together.

Compositing, CGI Inserts and Live-Action Digital Corrections

In digital effects films, the different layers which overlap each shot need to be calibrated in post-production with the assistance of a visual effects editor, a specialised figure who is frequently involved in such projects. The visual effects editor incorporates digital effects into

cuts of a live-action sequence, creating multiple versions of every shot. Such scenes are evaluated by the creative director and the visual effects supervisor for technical and aesthetic direction, and then by the producer, who reviews and sends them for the final editing. Hyman and Tanaka (in Okun and Zwerman 2010: 533) state that the visual effects editor deals with numbers 'such as shot lengths, handle lengths, cut lengths, key numbers, timecode, scene numbers, take numbers, lab roll numbers' etc. which are translated 'into other numbers so that the producer, VFX [visual effects] Supervisors, scanners, animators, lighting technical directors, and compositors can understand and work with them'. These numbers are then communicated to the companies hired to create the digital effects. Hyman and Tanaka (ibid.: 533) report that the numbers tracked by the visual effects editors 'are vital to the creation of visual effects shots because they define what elements are to be used in a shot, the order in which these elements are to be composited, how long the shot is, and how the shot has changed over time'. These numbers also give information on how much the shots will cost. For certain film productions involving large-scale use of digital effects, there could be more than one visual effects editor. There is also a substantial difference between the "standard" editor – defined as the '*picture editor*' by Hyman and Tanaka (in Okun and Zwerman 2010: 533) – and the visual effects editor. While the former edits scenes by assembling and cutting shots, the latter works only 'within an individual shot by compositing together different elements and assembling them one on top of the other' (ibid.: 534) – this aims to test, for example, the pace of the effects. The visual effects editor's task 'is to help determine what elements are needed for a shot and how they interact with each other' (ibid.: 534). The involvement of a visual effects editor is a peculiarity of digital effects films and represents a necessity for shots which contain overlapping layers. In light of this, it is evident how digital effects emphasis work on a single shot, organising it with meticulous attention so that costs are minimised. This imposes rigid shot design on the director, one based on the superimposition of live-action and digital imagery.

Life of Pi (Lee A., 2012) is a digital effects film about an Indian young man who survives a shipwreck on a lifeboat and sails the Pacific Ocean for sixteen years with a tiger as his travelling companion. For certain scenes, in order to construct a believable interaction

between the protagonist and the CGI tiger, a prop resembling a tiger's snout was used. The actor had to interact with it as if it was a real tiger in order to give visual references to the effects department for CGI creation.

Figure 21: The prop used by the actor (left) and the virtual tiger (right) in *Life of Pi*.

When digital effects are not involved, characters and environments can be physically arranged in front of the camera. For digital effects films, these may not exist in reality so they have to be emulated with props and monster sticks, imposing on actors further imaginative efforts and modifying the standard post-production process. Hyman and Tanaka (in Okun and Zwerman 2010: 534) claim that for such projects, 'Pacing and composition within a shot need to be experimented with and locked down before they can blend seamlessly into the larger context of an edited sequence' – a process known as '*pre-compositing*' (ibid.: 534). This process leads to a final composite shot which is then 'considered complete' and 'approved' (Okun and Zwerman 2010: 857). Compositing is defined by Okun and Zwerman (2010: 848) as the 'manipulated combination of at last two source images to produce an integrated result' and is a key process for digital effects filmmaking. Brinkmann (2008: 2) asserts that the most difficult part of this process 'is producing the *integrated* result—an image that doesn't betray that its creation was owed to multiple source elements'. Digital compositing aims to re-produce sequences of images

'that could have been believably photographed without the use of any postprocessing' (ibid.). Wyatt (2016), illustrating the task of Ricardo Musch who worked as digital compositor on the Oscar winning, *The Revenant* (Iñárritu A.G., 2015), affirms that the compositor 'is responsible for making computer-generated images look natural in the scenes in which they appear'; with the compositor degrading parts of the CGI image in order to make the object or character look as if it was actually being filmed (ibid.). The digital compositor 'will also change the lighting, colour or weather to ensure the scene looks realistic' (ibid.). Compositing is considered the conclusive process in the digital pipeline; with it, live-action footage and digital effects are effectively merged in producing a unique visual block. Compositing is also used for CGI shots where different elements such as animated CGI objects, matte paintings and digital environments are blended together. With such practice, directors can finally see the materialised visualisation of a shot.

The most significant difference between using or not using digital effects, in terms of filmmaking process, is in the possibility of digital effects creating entire CGI shots to add to the edit as "inserts".[75] In fact, for digital effects films, the director can request the creation of fully CGI shots to alternate with live-action shots in order to make a sequence look more believable or even reshape its pace. This is a common practice which allows for the development of specific parts of the narrative that are not clear to the audience or which were impossible to shoot on set. Creating CGI shots means working on a small fraction of a sequence in order to expand it. As an example, in a breakdown[76] of the visual effects company MPC for the digital effects film *Prometheus* (Scott R., 2012), the landing of the spaceship "Prometheus" on the barren landscape of the moon LV-223 is shown (mpcvfx, 2012). The sequence is made of more than one CGI shot combined, as the breakdown explains. In the final sequence of the film, these shots are intertwined with live-action footage of the crew in the cockpit preparing for the operation. The combination of the two is performed seamlessly so that the audience does not

[75] Inserts for digital effects films can be managed by a visual effects supervisor independent from the director. This is the case of the visual effects supervisor also being the second unit director for CGI sequences.

[76] 'For visual effects work, [a breakdown is] a detailed description and methodology on the approaches to be used for the creation of the shots' (Goulekas 2001: 56).

separate the CGI shots from the ones containing live-action; both work together to show the scientific expedition arriving for the first time on the inhospitable moon LV-223. It is significant to point out that *Prometheus* cannot be considered a computer-animated film because, even if some shots were completely achieved with CGI, live-action footage remained necessary for the narration of the film. In *Cloud Atlas* (The Wachowskis, 2012) there is a sequence where a sinister Buick crashes into journalist Luisa Rey's Volkswagen Beetle, forcing it off a bridge. In order to make the sequence believable, CGI and live-action shots were interchanged more than once. Robertson (2013: 36) reports that the car's actual descent into the water was an in-camera gag, with the actress (Halle Berry) at the wheel: 'a mechanical rig turned the car 180 degrees and upside down' while the camera inside the car was able to capture the actress in a three-quarter shot, turn to focus on the water below by looking through the windshield and finish with the actress upside down in the vehicle (ibid.). In order to create room in the car for the camera to turn, the passenger seat was removed and later added in CGI. The Beetle falls into digital water; the trunk opens releasing papers floating out while the car sinks and disappears in the darkness with a fully CGI shot. Then it cuts back to the live-action shot of the car partially filled with water and the actress trapped in it. The windshield breaks and water gushes inside; the action moves back to a fully CGI shot of the Beetle receding into the depths and a large bubble of digital water rising towards the camera (ibid.). In a breakdown video on the digital effects used by ILM for the film *The Avengers* (Whedon J., 2012), the superhero Iron Man is shown flying between the skyscrapers of an American metropolis at night (ILMVisualFX, 2013). As the breakdown reveals, nothing in this shot is real: Iron Man, the skyscrapers, the traffic below have all been made in CGI. The sequence is made of more than one shot which, when combined, show the superhero flying above the city streets, while the "Stark Tower" (made in CGI as well) gradually lights up in the background. This CGI insert serves to better describe the hero and contextualise his activity. While the director has to carefully plan the shots involving live-action, the use of CGI allows her to shape the narrative of the film and add elements of design which were overlooked in pre-production.

Figure 22: The breakdown of *The Avengers* reveals that nothing in this shot is real.

As a consequence of this use of digital effects in post-production, directors are able to gain substantial control over the visual depiction of a story – an occurrence which is impractical for any other film production. Entire CGI sequences can be added in order to steer the narrative toward a precise point or to highlight certain aspects of the story which are important for the director. However, creating new shots from nothing is not the only benefit that post-production with digital effects can give to a film director. In fact, digital effects are also able to completely alter the look of a live-action shot. In *Star Wars Episode VII – The Force Awakens* (Abrams J. J., 2015), for most of the time, the villain, Kylo Ren, wears a mask which is part of his costume. The crew realised in post-production that, in one of the shots, the actor had no helmet but he should, for narrative reasons. The visual effects department, without going back to re-shoot, added a helmet in CGI and removed the real helmet from underneath the actor's arm. Roger Guyett, visual effects supervisor and second unit director, extrapolates on this:

> Now there was a certain point in the movie where he took his helmet off. And now you're taking a scene that was after that and you're putting it before that. And you're going oh shit, he doesn't have his helmet on. And so in a couple of those scenes, the guys in London actually did an incredible job. […] About digital technology. You can do that. And that did change the movie for the better, because it changed the focus […] But that's just taking advantage of something that is a modern filmmaking tool […]. (Guyett in Sciretta, 2016)

Figure 23: A digital mask added to the original actor's performance for a shot of *Star Wars Episode VII – The Force Awakens*.

The director has significant control over live-action footage up to the point of adding and removing single objects, inserting actors into another environment and changing their appearances. Digital correction does not involve redesigning the shot, which is why such a technique can also be used for films which are not effects-driven. Beach (2015: 164) claims that in contemporary filmmaking, 'all feature films undergo some form of digital manipulation—digital capture, digital effects, or digital correction of the film in postproduction'. Conversely, with planned digital effects, directors do not have to adjust their method for making digital corrections because such interventions can take place without preparation, as in the example of Kylo Ren in *Star Wars Episode VII – The Force Awakens*. The creation of CGI inserts involves framing, the staging of virtual cameras and CGI characters which compel directors to go back to the visualisation stage, even if this happens in post-production.

Conclusion

Post-production is a variable process where the film is assembled and finalised. For films not involving digital effects, the shot is assembled through a physical operation focusing on the repositioning of objects in front of the camera, therefore, live-action footage is key for editors in

shaping a story. Conversely, in digital effects films, the shot is the result of the superimposition of different layers, one above the other, which can be created in post-production. Organising the layers requires time, therefore, prior to assembling them, the director needs to complete certain procedures which will help the visual effects department to create the effects. As has been observed, the shaping of shot design for a digital effects film occurs through two main operations: the creation of CGI sequences to insert into the film and the modification of shots containing live-action footage. The influence of digital effects on the director's method principally occurs when directors use CGI inserts for a narrative reason. In that case, directors need to approach shot creation in post-production as if they were in pre-production, working back to the design of individual shots with previs and concept art – sometimes even modifying the script. The director's method for a digital effects film represents a continuous process of shaping the shot, a procedure which occurs throughout the whole of film production.

Conclusion

The conclusions answer the research questions posed in the Introduction. To facilitate reading, this section has been divided into subchapters, one for each question motivating the research.

Research Question One: What Does the Director's Role Entail?

The investigation has shown that the director is an all-encompassing figure whose tasks vary from case to case. Academic scholarship tends to describe the director differently from industrial accounts: while for the former the director is more an auteur, for the latter this role represents a single component of an organised structure. Through the analysis of directorial models established by the film industry, it is possible to define the director's role and the task of film directing. In fact, directing models show that the director is generally considered responsible for translating a script into images through creative supervision of a film, that is, from early in its conception to its conclusion. In order to do this, the director works with a creative team composed of different roles: the cinematographer, the production designer, the editor, the sound designer etc. Filmmaking is a collaborative process, hence, over the course of a film's production, the director has to establish relationships with various professional figures whose task is different but interconnected with the others. The director's task consists of formulating a vision and communicating that vision to members of the creative team in such a way that each artist will be inspired to give her best contribution. As has been shown in Chapter Two, the director has the responsibility of harmonising the team and guaranteeing that the film has visual unity. In order for a film to have a form of unity, it is indispensable that everyone involved in the process works cohesively to achieve the director's vision. The film is the result of the aggregation of narrative bits (shots) which are organised by the director who has an overall idea on the final result. Without unity and vision, such bits cannot be connected together and a message to the audience cannot be conveyed.

Research Question Two: What Elements Identify the Director's Method for a Film which does not Involve a Significant Amount of Digital Effects?

The director's approach to the filmmaking process changes from case to case, however, the responsibilities of this role are commonly the same for any film production. As a consequence, it is possible to identify a director's method based on the tasks organised around such responsibilities. Although film directors, like other craftsmen, have individual ways of working, there are some common procedures which allow them to create the optimum conditions for creative work and thus avoid general inefficiency. As the analysis on academic and non-academic resources showed in Chapter Two, the director's method is consistently characterised by work on the script, shot design and actors' performance. In pre-production, the director's method usually involves the codification of the script into visual sequences which start with a script analysis; through this analysis the director identifies connections between characters and environments and the motivation behind the characters' actions. Visualisation is the subsequent phase through which shots are visually planned; with visualisation, the director forges a "language" through which she can communicate her vision to the other roles involved in the production. During principal photography, the director works with the camera and guides the actor's performance. Here the camera is the virtual point of view exemplifying where the audience will watch the film, while the actor portrays a character through whom the story will be told. The director stages the movements of the two, creating relationships between them so that specific messages are conveyed to the audience. The footage is then processed in post-production where the film is assembled and completed through the process of editing, with the addition of sound, colour correction etc. For directors, this represents the moment in which their vision actually materialises. Different professional roles collaborate in the post-production phase and the director, when involved, has to guide them in making the result as close as possible to her vision. This general method is almost identical for any conventional filmmaking production, but it is subject to changes when digital effects are involved.

Research Question Three: Does the Incorporation of Digital Effects in a Film Influence the Director's Method?

Chapter Three illustrated that the need to incorporate digital effects involves changes in a general director's method because digital effects films have different processes when compared with other film productions. The substantial difference is in the presence of a digital pipeline throughout the process and a visual effects supervisor whose responsibilities are similar to those of the director. A general digital effects pipeline encompasses all of the film's production stages and this makes the filmmaking process a unique course where certain procedures have to be planned in advance by the director. Indeed, digital effects do not allow directors to improvise – as they may do in other film productions – because CGI object creation is complex and requires preparation. As a consequence, the director's method needs to adapt and work in a different way: for example, a visualisation with previs is compulsorily required in pre-production because it allows the shot to be suitably organised, while post-production might require the re-designing of new CGI shots in order to enhance the narrative. Using digital effects requires paying particular attention to establishing a specific dialogue with concept artists, organising an individual shot and communicating instructions to the rest of the crew. The development of a visual language between the director and the visual effects department is necessary so that the CGI can be effectively shaped around the production's necessities. A key figure in formulating this language is the visual effects supervisor who is the visual effects department head. The building of a strong relationship between the supervisor and the director is constantly addressed by practitioners as an essential part of the director's method for such projects. The visual effects supervisors can emulate directors in several tasks such as directing the second unit – particularly when this involves actors in green screen – and giving cues to actors to make their performance fit the shot. Furthermore, they are the only one, except the director, who can veto a shot if it does not meet the requirements of digital effects creation. For this reason, the supervisor's role is different from other roles, such as the production designer, and represents a major influence on the director's method. One of the supervisor's tasks is to coordinate the ways digital effects will be included into the final result; to achieve this, the supervisor imposes some adjustments

on the director's method regarding the approach. The visual effects supervisor brings creative and visual coherence in terms of generating storyboards, previs and postvis and, more generally, in helping to design shots. In collaboration with the visual effects supervisor, the director breaks up the script and develops visual consistency between the design of the effects and the context of the story. The visual effects supervisor decides on the techniques to be used and how each shot has to be accomplished on set; furthermore, during principal photography, she is on set to make sure the live-action is shot in such a way that the digital effects can be appropriately added in post-production. Digital effects require the director-supervisor relationship to be established in pre-production, even if the actual effects will be completed in post-production.

Research Question Four: How Do Directors Adapt Their Methods in Directing Digital Effects Films?

The pre-production and principal photography phases are considered preparatory for the digital effects creation which is usually finished in post-production – that is, where live-action footage and digital effects are actually combined through digital compositing. In terms of the director's method, script analysis does not represent an element of divergence in using or not using digital effects. In fact, script analysis has the same aim for both types of film productions and is usually accomplished before deciding whether or not to use digital effects. As has been observed in Chapter Four, the first key difference between using such effects or not occurs in the visualisation stage. Indeed, for digital effects films, directors need to visually arrange sequences in detail during pre-production, using particular tools such as previs. Detailed visualisation is a requirement for digital effects films, as the examples of *Jurassic Park* (Spielberg S., 1993), *Avatar* (Cameron J., 2009) and *The Jungle Book* (Favreau J., 2016) have demonstrated. It is impossible to direct digital effects films without appropriate visualisation; the existence of a digital pipeline, which constantly requires inputs to be sustained, represents an obstacle for directors improvising and experimenting on set. This is the reason why pre-visualisation is a constant part of the director's method for these kinds of production. Storyboards, previs and concept art are constantly involved in digital effects films while for other film productions these

are not, in general, mandatory and, when used, are less complex. Another key difference between using or not using digital effects in terms of method is observable when blocking is achieved, as examined in Chapter Five. For digital effects films, blocking needs to be carefully considered before principal photography takes place because the visual effects department must coordinate the effects according to where the camera and actors will be located. This does not mean that it must be rigidly planned; however, the scene cannot be entirely improvised on set. For other types of film productions, directors have much more freedom in moving the camera and actors on set but must rely only on the footage shot during principal photography to shape the narrative of the film. Instead, in digital effects films, directors can create entire CGI sequences from nothing and insert them into the edit. The visual effects department, under the supervision of the director, can add CGI shots to steer the narrative toward a particular point or focus on certain aspects of the story. In terms of the director's method, this practice strengthens the idea of a sequence design which runs continuously throughout the whole film production. In digital effects films, directors build a shot from nothing, which involves the ability to see it in their head and to shape it with intangible elements that can only be added later in the process. For films not relying on digital effects, the shot is assembled through a physical operation involving the repositioning of objects in front of the camera, while in digital effects films the shot is the result of superimposing virtual layers one above the other. One last evident difference in the director's method when digital effects are involved is in the way an actor's performance is guided. As has been illustrated in Chapter Five, in digital effects films the actor interacts with missing elements; this can be extremely frustrating, especially if she fails to connect to the director's vision and visualise the whole picture. For this reason, directors need to use techniques which can connect the actor to her own memories rather than rely on techniques which require interaction between actors. The visual effects supervisor is fundamental in this regard because, knowing what the shot will look like, she can help directors in guiding the performance and make the actor imagine what surrounds her.

Research Question Five: Do These Changes Represent a Fundamental Change in the Nature of the Director's Method?

From the analyses conducted in Chapter Four, Five and Six, it is evident that the changes in approach caused by the use of digital effects, do not represent a fundamental change in the nature of the director's method. Whilst a director could direct a film with no digital effects, applying the same method required for a digital effects film, the contrary is not always true. For example, a director can use detailed storyboards and previs for a film not relying on digital effects – which are rarely used for such film productions – whereas directing a digital effects film without them would cause problems to the digital pipeline. In light of this, it can be reasonably stated that the use of digital effects does not change the entire director's method but instead does force directors to change some significant aspects of it. The director's method for films without digital effects represents a superset of technical procedures including those procedures that need to be adopted when digital effects are involved.

A Final Thought

Investigating the filmmaking process has led to a form of rationalisation of film production and its procedures. Throughout this dissertation, the steps for a film's completion have been organised in a specific chronological order: for instance, script analysis and visualisation have been defined as pre-production processes – with the former categorically achieved before the latter – while the compositing of digital effects onto live-action footage has been defined as a post-production process which follows principal photography. Although a significant number of films use this structure – as the analysis of industrial accounts has proved – rationalising a film's production with all its variations can be tricky because a film production tends to differ from case to case; practitioners adapt their way of working to the situation and this means that certain processes can work in different ways. However, the research has highlighted that the way directors approach the filmmaking process is usually made of consistent elements which give the director's method a precise order for achieving a task – in spite of the changeable nature of film production. It has been observed that this order is particularly influenced by the

use of digital effects (see Chapter Five; staging cameras and actors) and therefore a digital effects film is considered different to any other type of film production in terms of directing. It has also been observed that there are no other particular elements that significantly influence the director's method to the extent that digital effects do. What has been analysed and proved by this research is valid in the frame of contemporary films; however, as has been observed with *Avatar* (Cameron J., 2009) and *The Jungle Book* (Favreau J., 2016), the situation is going to change in the future. In fact, technologies and methodologies are constantly evolving: it has been observed that in recent film productions directors are being given an increasing degree of freedom on set in terms of guiding the performance and improvising, which makes a digital effects film production similar to other types of film production. It is my assumption that the director's method for digital effects films will progressively be less influenced by the use of digital effects. This would require further analyses of the forthcoming digital effects film productions because, at the time that this dissertation is being written and with the information at the author's disposal, it can be reasonably argued that this evolution is yet to come.

Appendix – List of Interviewees (in alphabetical order)

Alessandro Bardani

Interview conducted on 28 November 2014, Skype. Alessandro Bardani is a director and actor who works both in television and theatre. He worked in the successful Italian TV series *Romanzo Criminale*[77] (2008) and directed the short film *Ce l'hai un minuto?* (2012).

IMDb: http://www.imdb.com/name/nm3051044/?ref_=fn_al_nm_1, accessed 8 July 2016.

Sergio Basso

Interview conducted on 14 January 2015, Skype. Sergio Basso is a film and documentary director and a lecturer in historical documentary. He is a member of the European Documentary Network and one of the winners of the 2009 Solinas Prize- Documentary for the Large Screen. His feature film *Amori Elementari*[78] (2014) has been released in Italy, Russia, Switzerland, Canada and selected for the Moscow Film Festival and the Giffoni Film Festival. He has directed several children's cartoon and held workshops in Universities such as the University of Auckland, New Zealand.

IMDb: http://www.imdb.com/name/nm2772598/?ref_=fn_al_nm_1, accessed 8 July 2016.

Matt Bouchard

Interview conducted on 15 September 2014, Skype. Matt Bouchard was at the time of the interview a global head of the pipeline for Prime Focus World. He worked in visual effects for films such as *Star Wars: Episode I - The Phantom Menace*[79] (Lucas G., 1999), *Transformers: Dark of the Moon*[80] (Bay M., 2011) and *Avatar*[81] (Cameron J., 2009). He has also worked as a technical director for visual effects companies such as Framestore, Industrial Light & Magic

[77] Produced by Sky Italia. Broadcast from 10 November 2008 to 16 December 2010 on Sky Cinema 1.
[78] Distributed by Academy Two.
[79] Distributed by 20th Century Fox.
[80] Distributed by Paramount Pictures.
[81] Distributed by 20th Century Fox.

(ILM) and Weta Digital.

IMDb: http://www.imdb.com/name/nm0098915/?ref_=fn_al_nm_1, accessed 8 July 2016.

Massimo Coglitore

Interview conducted on 26 February 2015, questionnaire. Massimo Coglitore is a film, documentary and commercial director who directed the feature film *The Elevator: Three Minutes Can Change Your Life*[82] (2013) with James Parks and Caroline Goodall. His short film *Deadline* (2002) was screened at 145 Italian and International Film Festivals and won over 60 awards.

IMDb: http://www.imdb.com/name/nm1318602/?ref_=fn_al_nm_1, accessed 8 July 2016.

Rob Coleman

Interview conducted on 15 November 2013, Skype. At the time of the interview, Rob Coleman was Head of Animation at the visual effects company, Animal Logic. He has been nominated for two Oscars for his work on *The Phantom Menace*[83] (Lucas G., 1999) and *Attack of the Clones*[84] (Lucas G., 2002).

IMDb: http://www.imdb.com/name/nm0171197/?ref_=fn_al_nm_1, accessed 8 July 2016.

Stephen Forrest-Smith

Interview conducted on 11 May 2013, Skype. Stephen Forrest-Smith is a freelance storyboard artist who has worked on digital effects films such as *The Mummy*[85] (Sommers S., 1999) and *Harry Potter and the Deadly Hallows*, Part 1 and 2[86] (Yates D., 2010-2011).

IMDb: http://www.imdb.com/name/nm0286706/?ref_=fn_al_nm_1, accessed 8 July 2016.

[82] Distributed by Tombstone Distribution.
[83] Distributed by 20th Century Fox.
[84] Distributed by 20th Century Fox.
[85] Distributed by Universal Pictures.
[86] Distributed by Warner Bros. Pictures.

Matteo Gherardi

Interview conducted on 14 November 2014, Skype. Matteo Gherardi is a freelance storyboard artist who worked on *La prima linea*[87] (De Maria R., 2009) and the short, *The Lost Soul* (Mistretta J. Y., 2014). In 2009 he won the *Watchmen* Storyboard Contest held by Warner Brothers for the film release.

IMDb: http://www.imdb.com/name/nm4306444/?ref_=fn_al_nm_1, accessed 8 July 2016.

Nicola Giuliano

Interview conducted on 18 February 2015, questionnaire. Nicola Giuliano is an Italian film producer and production manager known for *This Must Be the Place*[88] (Sorrentino P., 2011) and *La Grande Bellezza*[89] (Sorrentino P., 2013) which won an Academy Award in 2014 as "Best Foreign Language Film".

IMDb: http://www.imdb.com/name/nm0321333/?ref_=fn_al_nm_1, accessed 8 July 2016.

Francesco Grisi

Interview conducted on 19 January 2015, Skype. Francesco Grisi is a visual effects supervisor and producer for EDI (Effetti Digitali Italiani), and has worked on films such as *Batman & Robin*[90] (Schumacher J., 1997), *Fight Club*[91] (Fincher D., 1999) and *The Cell*[92] (Singh T., 2000).

IMDb: http://www.imdb.com/name/nm0342596/?ref_=fn_al_nm_1, accessed 8 July 2016.

Gonzalo G. Gutierrez

Interview conducted on 6 March 2014, questionnaire. Gonzalo G. Gutierrez is a freelance film director and a visual effects supervisor who has worked on films such as *Pacifico* (2016) – at

[87] Distributed by Lucky Red Distribution.
[88] Distributed by Medusa Film.
[89] Distributed by Medusa Film.
[90] Distributed by Warner Bros.
[91] Distributed by 20th Century Fox.
[92] Distributed by New Line Cinema.

the time of the interview in post-production – and *There Be Dragons*[93] (Joffé R., 2011).

IMDb: http://www.imdb.com/name/nm1928631/?ref_=fn_al_nm_2, accessed 8 July 2016.

Mark Herman

Interview conducted on 13 January 2015, questionnaire. Mark Herman is a British film director and screenwriter who has directed films such as *The Boy in the Striped Pyjamas*[94] (2008), *Purely Belter*[95] (2000) and *Blame It on the Bellboy*[96] (1992).

IMDb: http://www.imdb.com/name/nm0379179/?ref_=fn_al_nm_1, accessed 8 July 2016.

Andrea Lodovichetti

Interview conducted on 24 November 2014, Skype. Andrea Lodovichetti is a film director who in 2009 won the Italian Golden Globe for Best Short Movie with the film *Sotto il Mio Giardino* (2007). His work has received over 80 prizes and awards worldwide.

IMDb: http://www.imdb.com/name/nm1956080/?ref_=fn_al_nm_1, accessed 8 July 2016.

Fabio Mollo

Interview conducted on 18 March 2015, Skype. Fabio Mollo is a film and documentary director and a lecturer in film directing. He directed *Il Sud è Niente*[97] (2013) and *Il Padre d'Italia*[98] (2017). His works has been selected by several International Film Festivals such as the Toronto International Film Festival, the Berlinale and the Venice Film Festival. In 2011 he won the Young Italian Filmmaker Prize in New York.

IMDb: http://www.imdb.com/name/nm3092172/?ref_=fn_al_nm_1, accessed 8 July 2016.

[93] Distributed by Samuel Goldwyn Films.
[94] Distributed by Walt Disney Studios Motion Pictures.
[95] Distributed by Amuse Pictures, Cine Qua Non Films, Cinédia Films (France), FilmFour, Kinowelt Home Entertainment (Germany), RCV Film Distribution (Belgium), RCV Film Distribution (Luxembourg), RCV Film Distribution (Netherlands), SubTV (Finland), Vértigo Films (Spain).
[96] Distributed by Buena Vista Pictures.
[97] Distributed by Istituto Luce Cinecittà.
[98] Distributed by Good Films.

Riccardo Neri

Interview conducted on 15 January 2015, Skype. Riccardo Neri is a film producer and a production manager who worked on *Gangs of New York*[99] (Scorsese M., 2002), *The Bourne Supremacy*[100] (Greengrass P., 2004) and the acclaimed TV series, *The Sopranos*[101] (1999-2007).

IMDb: http://www.imdb.com/name/nm0626218/?ref_=fn_al_nm_1, accessed 8 July 2016.

Stephen Nixon

Interview conducted on 26 March 2014, University of York. Stephen Nixon has been visual effects production manager for both Weta Digital and MPC in London. Films on which he worked include *Wrath of the Titans*[102] (Liebesman J., 2012), *Prometheus*[103] (Scott R., 2012), *Dark Shadows*[104] (Burton T., 2012), *Skyfall*[105] (Mendes S., 2012) and *Man of Steel*[106] (Snyder Z., 2013).

IMDb: http://www.imdb.com/name/nm1452982/?ref_=fn_al_nm_1, accessed 8 July 2016.

Antonello Novellino

Interview conducted on 15 January 2015, Skype. Antonello Novellino lives in Madrid and is a producer and director of independent films, shorts and commercial for international television broadcasts. His work has been screened in different countries such as the USA, Chile, Peru, Australia, India, China. His films have received about 300 awards and acknowledgments.

IMDb: http://www.imdb.com/name/nm4083675/?ref_=fn_al_nm_1, accessed 8 July 2016.

[99] Distributed by Miramax Films, Entertainment Film Distributors (UK).
[100] Distributed by Universal Studios.
[101] Original network HBO.
[102] Distributed by Warner Bros. Pictures.
[103] Distributed by 20th Century Fox.
[104] Distributed by Warner Bros. Pictures, Roadshow Entertainment.
[105] Distributed by Metro-Goldwyn-Mayer, Columbia Pictures.
[106] Distributed by Warner Bros. Pictures.

Marco Perez

Interview conducted on 15 January 2015, Skype. Marco Perez is a freelance professional editor who has worked in Italy, France and the US on films, documentaries and commercials. At the time of interview he was working on the post-production of *Liv* (Eaton C., 2015) and *You Can't Win* (Devor R., 2016).

IMDb: http://www.imdb.com/name/nm2845220/?ref_=fn_al_nm_2, accessed 8 July 2016.

Angelo Perrotta

Interview conducted on 19 May 2013, questionnaire. Angelo Perrotta has been a senior compositor for visual effects companies such as Industrial Light & Magic (ILM) and Animal Logic. He has worked on films such as *The Hunger Games: Mockingjay - Part 2*[107] (Lawrence F., 2015), *Pacific Rim*[108] (Del Toro G., 2013) and *Pirates of the Caribbean: On Stranger Tides*[109] (Marshall R., 2011).

IMDb: http://www.imdb.com/name/nm2961906/?ref_=fn_al_nm_1, accessed 8 July 2016.

Andrea Traina

Interview conducted on 22 March 2015, questionnaire. Andrea Traina is a film director who has worked on several TV shows such as *Apnea*[110] (2009) and *Los Sentidos De La Muerte*[111] (2009). In these two series he also worked as a digital effects artist.

IMDb: http://www.imdb.com/name/nm0870690/?ref_=fn_al_nm_1, accessed 8 July 2016.

Guy Williams

Interview conducted on 20 June 2013, Skype. Guy Williams is a visual effects supervisor for Weta Digital who has worked on films such as *The Avengers*[112] (Whedon J., 2012) and *Avatar*[113]

[107] Distributed by Lionsgate Films.
[108] Distributed by Warner Bros. Pictures.
[109] Distributed by Walt Disney Studios Motion Pictures.
[110] Distributed by Fox Crime (Italy).
[111] Distributed by Televisió de Catalunya (TV3) (Spain).
[112] Distributed by Walt Disney Studios Motion Pictures.

(Cameron J., 2009). He was nominated for an Academy Award for both *The Avengers* and *Iron Man 3*[114] (Black S., 2013).

IMDb: http://www.imdb.com/name/nm1401413/?ref_=fn_al_nm_9, accessed 8 July 2016.

[113] Distributed by 20th Century Fox.
[114] Distributed by Walt Disney Studios Motion Pictures.

Glossary

Animatics: ‘Animatics are an extension of storyboards wherein the static storyboards are built into rudimentary animations to better demonstrate the motion of the camera and the action in the frame’ (Anderson, Mc Ree, Wilson and the EffectiveUI Team 2010: 70). This animated storyboard could be an integral part of the previs process (see Hart 2008: 175).

Auteurism: the theory according to which the director is the primary creator of a film. Its basic assumptions are:

- A film, though produced collectively, is valuable if it is the product of its director.
- In the presence of a director who is an artist, a film becomes an expression of her individual personality.
- This personality can be traced for thematic and stylistic consistency over most of the director’s films (Caughie 2001: 9).

Bible (or production bible): ‘a compilation of instructions and information, including technical requirements, lessons learned, shooting schedules, crew lists, a budget sample, and anything else that could be of value to the production team’ (Esser, Smith and Bernal-Merino 2016: Glossary). This ‘includes information about the original pitch, audience ratings, and sometimes market research findings, and marketing tips’ (ibid.).

Blocking (or staging): the charting of the object and camera movements achieved before or during principal photography (see Kindem and Musburger 2009: 35).

CG: computer graphics. The ‘process of producing a picture or image using the computer’ (McConnell 2006: 1). This includes a wide spectrum of applications, from those able to draw simple graphs to those involving complex mathematics and physics (see ibid.: 1). Foley, Dam, Feiner and Hughes (1997: 2) state that ‘Computer graphics concerns the pictorial synthesis of real or imaginary object’.

CGI: computer-generated imagery. In this thesis, CGI refers to images created on the computer and then composited with live-action footage for filmic purposes (Keil and Whissel 2016: 18).

CGI is commonly referred to as computer graphics (see **CG**).

Commercial film: a narrative feature film which has profit as its primary objective. Such films are entirely designed for this purpose and seek to appeal to a vast audience in order to maximise income (see Manchel 1990: 56).

Compositing: 'the manipulated combination of at least two source images to produce an integrated result' (Brinkmann 2008: 2). In contemporary films, compositing is achieved digitally.

Computer-animated film: a fully computer-generated film with no live-action footage. All characters are digitally created and animated – converse to digital effects films where digital effects are integrated into live-action footage (see Thalmann D. and Thalmann N. 1990: 1 and Bugaj in Okun and Zwerman 2010: 737).

Contemporary film: in this dissertation, a feature film produced after 1999 (see **Modern Entertainment Marketplace**).

Development: a phase of the film production involving the organisation of the film's concept and the writing of the first drafts of the script (see Cones 2008: 195). It precedes pre-production.

DI (digital intermediate): a filmmaking technique through which a film is scanned into a digital format for the film finishing process. The process consists of scanning the negative, conforming the negative digitally, importing and integrating visual effects, colour timing and recording the movie back to film. Such a technique is a result of the visual effects workflow and a significant development in the creation of visual effects (see Swartz 2005: 52).

Digital pipeline: the step-by-step technical process through which computer-generated images are created and then integrated into live action footage (see Goulekas 2001: 136 and Bugaj in Okun and Zwerman 2010: 739).

Digital visual effects (or digital effects): visual effects achieved through the digital manipulation of an image or the creation of computer-generated images (see Scott 2005: 95) and then blended with live-action through a compositing process (see Bugaj in Okun and Zwerman 2010: 737). Digital visual effects are commonly referred to "visual effects" as an oversimplification (e.g. Gregory 2015: 247-248 and Casinghino 2011: 325), however, this

dissertation specifically uses the two terms separately in accordance with some academic studies on digital effects (eg. McClean 2007).

Digital effects film: a narrative feature film which consistently uses digital effects to convey the story. Conversely to computer-animated film, digital effects film involves live-action (Bugaj in Okun and Zwerman 2010: 737-739). Although this term is largely used in the current literature (e.g. Stringer 2003: 111, Morse and Mitchell 2006: 142, Wood 2007: 63) the question as to how many digital effects shots a film must contain to be considered a "digital effects film" is rarely posed. A significant number of contemporary films uses digital effects, however, this dissertation defines a digital effects film as a narrative feature which significantly relies on digital effects to the extent that a visual effects supervisor is required from pre-production to post-production.

Director's method: in theatre, this represents the approach to analysing the script and formulating a concept (see Wolf 2012: 21). For the purposes of this thesis, this term is used to indicate the workflow applied to filmmaking that fulfils the director's creative vision (see Belli and Rooney 2011: xvi). This workflow involves procedures such as work on the script, shot design, blocking and actors' performance, all considered mandatory in reaching an organic unity (see Buckland 2006: 31-32, Proferes 2008: xviii and Richards 1992).

Dissolve: 'a specific transition effect in which one scene gradually fades out at the same time that a second scene fades in' so that 'Halfway through a linear dissolve the image will be a 50% mix of both scenes' (Okun and Zwerman 2010: 853). It is achieved by reversing the film and then re-filming. This dissertation considers dissolve as a visual effect because it requires a manipulation of the image through a recording device (see **visual effects**).

Experimental film (or avant-garde film): a film which re-evaluates cinematic principles and explores non-narrative forms and alternatives to conventional narrative filmmaking methods (see Pramaggiore and Wallis 2005: 247).

Film franchise (or film series): a series of related films which belong to the same fictional universe.

Film production: this term is used in this thesis to denote all phases of the filmmaking process,

from development to post-production.

Forced perspective: a technique which creates an illusion of the spatial relationship between objects, tricking the audience in believing that 'objects are closer to or farther away from the camera than they really are or that they look bigger or smaller in relation to one another' (Finance and Zwerman 2010: 15). It can be done in-camera or as a composite (ibid.: 15).

Go-motion: a type of stop motion animation which incorporates motion blur into each frame involving movement. It was developed by Industrial Light & Magic and Phil Tippett for the film, *Dragonslayer* (Robbins M., 1981). Stop-motion produces a disjointed effect because each pose of the arrested figure is rendered absolutely sharp. For this reason, filmmakers started to use a range of techniques to replicate motion blur such as using a petroleum smeared glass plate in front of the camera lens to blur the moving areas or moving the model during the exposure. For *Dragonslayer*, the animated puppet was connected to a computer-controlled motion device able to move the puppet's limbs during exposure, creating blur (see Sawicki 2007: 63).

Green Screen: a backing used to wholly or partially replace the background. This surface is 'an unambiguous means by which software can distinguish between the color hues and values in the foreground and the monochromatic backing' (Taylor in Okun and Zwerman 2010: 97). Green is frequently used for these backings because it is less prominent in the human skin and therefore results in being easier to isolate in post-production, however the colour choice depends on the shot. Blue screen is a variation which was consistently used before the digital era.

In-camera effects: the effects created through a recording device. In-camera effects include montage, projections and split screen (see Barsam and Monahan 2010: 550).

Match-moving: the process of creating a digital camera which matches the real camera so that CGI elements can be seamlessly composited onto live-action footage (see Dobbert 2013: 1).

Matte painting: an image intended to be photorealistic which is combined with live-action footage (see Okun and Zwerman 2010: 868).

Mechanical effects: see **Practical effects**.

Modern Entertainment Marketplace: some scholars (see Lucas in Keating 2014: 132, Grantham and Miller in Lewis 2016: 131, Castonguay in McLean 2016: 149, Kerins in Kalinak

2015: 133, Dhir in Keil and Whissel 2016: 156, Allison in Keil and Whissel 2016: 172, Baron in Springer and Levinson 2015: 143 and Charney in Horton and Hoxter 2014: 127) use this term to identify the sixth era (2000-present) in American film history – the previous are the silent screen (1895-1927), classical Hollywood (1928-1946), postwar Hollywood (1947-1967), the Auteur Renaissance (1968-1980) and New Hollywood (1981-1999). This dissertation, which focuses on contemporary American and European films, follows this partition and identifies with the term "contemporary film" a feature film produced in the Modern Entertainment Marketplace (see also **Contemporary film**).

Multiple exposure (or Superimposition): the effects accomplished re-filming over exposed stock. Gress (2015: 34) reports that multiple exposure is 'the forerunner of all combination and composite effects, including split screen, matte photography, miniature composites, and bluescreen photography'.

Optical effects: the effects achieved through optical attachments applied in front of the lens to modify the light path between subject and lens (Mitchell 2013: 67). They involve the use of the properties of light, film and lenses (Rickitt in Keil and Whissel 2016: 14). An example of an optical effect is multiple exposure (see **Multiple exposure**).

Optical printer: a device 'used to combine one or more different film elements and rephotograph them onto a new piece of film' (Okun and Zwerman 2010: 872). The optical printer 'has been used for numerous visual effects, including scene transitions such as fades and dissolves' (Pramaggiore and Wallis 2005: 146).

Physical effects: see **Practical effects**.

Post-production: the phase of a film production **'**when a film is assembled and realised for delivery' (Belli and Rooney 2011: 197). It follows principal photography.

Postvis: an abbreviation of "post-visualisation" – a form of pre-visualisation achieved through the compositing of CGI with live-action footage in order to pre-visualise scenes after a film is shot but before the final effects are applied (see Goulekas in Okun and Zwerman 2010: 62).

Postvisualisation: see **Postvis**.

Practical effects (or Mechanical/physical effects): effects which do not involve any image

manipulation but are achieved using props and gears in front of the camera. These include weather effects, water effects, pyrotechnics, stunts, bullet hits, explosions, collapsing buildings, breakaway furniture, walls or windows (Cullen and Westpheling 2010: 182). This dissertation uses the term "special effects" as a synonym for practical effects (see **Special effects**).

Pre-production: the phase of a film production which 'covers all activities between having a written script and the first day of shooting the film' (Kooperman 2009: 62). Honthaner (2010: 95) states that this 'is the period of time used to plan and prepare for the shooting and completion' of a film. It follows development and precedes principal photography.

Previs (also named previz): an abbreviation for "pre-visualisation" – the rendering of a film, shot by shot, in low-resolution animation prior to principal photography (see Keil and Whissel 2016: 20) which 'enables filmmakers to visually explore creative ideas, plan technical solutions, and communicate a shared vision for efficient production' (Beck in Okun and Zwerman 2010: 54).

Pre-visualisation: see **Previs**.

Principal photography: an industry term which identifies 'the period during which the first, or principal, unit completes photography' (Rea and Irving 2015: 239). Principal photography is also widely known along with the term "production". In order to avoid misunderstandings, "film production" is used here to indicate the whole filmmaking process, while "principal photography" refers to the shooting phase. It follows pre-production and precedes post-production.

Production: see **Principal photography.**

Projection (rear or front): an in-camera effect where foreground objects and a background of pre-filmed footage projected onto a screen are filmed together (see Okun and Zwerman 2010: 877 and Venkatasawmy 2013: 243). In rear projections, the screen is in between the camera and the projector while in front the projector sits in between the camera and the screen. The former produces a more blurred image and has been consistently used with actors portrayed in moving cars. Due to the better quality of image obtained with the latter, front projections have replaced rear projections.

Special effects: the on-set mechanical effects created in front of the camera (see **Mechanical effects**). They include stunt work, makeup effects, puppetry, animatronics and explosions (see Keil and Whissel 2016: 13). In popular culture, this term often refers to all effects achieved without the involvement of digital technologies (see Keil and Whissel 2016: 12, Fielding 1985: 1, Okun and Zwerman 2010: 1048); in fact, Rizzardi (in Okun and Zwerman 2010: 83) includes in his definition of "special effects" in-camera optical effects. However, this dissertation differentiates the effects created in front of the camera (special effects) from those effects involving a manipulation of the image through a recording device (visual effects) or computer (digital effects), in accordance with academics such as North, Rehak and Duffy (2015: 2-3), Cullen and Westpheling (2010: 182). As an example, the use of an optical printer is considered by this thesis as part of visual effects practice, while scholars such as Keil and Whissel (2016: 13) consider it a special effects practice.

Spine: the armature of dramaturgy, 'the driving force or concept that pervades every element of the story, thereby holding the story together' (Proferes 2008: 13). Proferes (ibid.: 13) identifies two typologies of spine: the film's spine and the characters' spine.

Staging: see **Blocking**.

Stop-motion: an animation technique 'defined as manipulating, between sequentially exposed frames of film or video, usually directly by hand, some tangible object, whether it be a complex puppet, a paper cut-out, sand, a discarded piece of junk or furniture'; 'When played back, the object gives the appearance of movement, performance and independent life' (Purves 2014: 8).

Superimposition: see M**ultiple exposure**.

Visual effects: the creation, alteration and enhancement of an image for a film or other moving medium that otherwise would be difficult or impossible to achieve practically (see Fink and Morie in Okun and Zwerman 2010: 2). This dissertation agrees with one of the long-standing distinctions between visual and special effects: visual effects involve a manipulation of the image through a recording device (for example, the camera – see Perisic 2000) or computer, while special effects are performed live in front of the camera (see North, Rehak and Duffy 2015: 2-3 and North 2008: 5). In light of this, effects such as multiple exposures and dissolves

are considered visual effects by this thesis (see **Multiple exposure** and **Dissolve**). Although some academics use "visual effects" as a synonym for "special effects" (e.g. Scott 2005: 96 when he mentions the mechanical effects for the film *Jaws*) or "digital effects" (e.g. Gregory 2015: 247-248, Keil and Whissel 2016: 12, Fielding 1985: 1, Okun and Zwerman 2010: 1048), this dissertation separates these terms in order to avoid confusion (see also **Special effects** and **Digital visual effects**).

Visual effects film: a narrative feature film which consistently uses visual effects to convey the story. This term is used by scholars such as Prince (2012: 77), Swartz (2005: 25), Rawnsley G. D. and Rawnsley M. T. (2010: 186) to address films involving digital effects. Some academics and practitioners explicitly use the term "digital effects film" to describe a contemporary visual effects film (e.g. Stringer 2003: 111 and Wood 2007: 63).

Visual effects supervisor: the creative head of the visual effects department (see Finance and Zwerman 2010: 38), who is artistically responsible for creating and achieving the digital visual effects that are required for a film (see Skilton in Hernáez and Campos 2011: 176). Although visual effects supervisors deal with digital effects, the current literature avoids referring to them as "digital effects supervisors" because this term identifies a different professional figure within the visual effects production pipeline (see Scott 2005: 100 and Goulekas 2001: 134).

Visualisation: visual preparation for the shoot which is usually achieved in pre-production through sketches, illustrations and storyboards (see Katz 1991: 4).

Internet References

BAFTA Guru (8 May 2013) ‘J.J. Abrams: On Filmmaking’ [Video file]. Available at: https://www.youtube.com/watch?v=bN-On2CusDM, accessed 3 May 2016.

BAFTA Guru (5 September 2013) ‘Joss Whedon On Filmmaking: Directing & Discipline 3/3’ [Video file]. Available at: https://www.youtube.com/watch?v=XfkU0ZX1Vj4, accessed 13 September 2016.

Baughan, N. (9 November 2013) ‘Behind the Scenes of Gravity With Editor Mark Sanger’, *MOVIESCOPE, Film & TV Drama From Development to Release*. Available at: http://www.moviescopemag.com/market-news/featured-editorial/behind-the-scenes-of-gravity-with-editor-mark-sanger/, accessed 28 July 2016.

Blay, Z. (19 November 2012) ‘Sir Ian McKellen: 'I broke down on The Hobbit set'’. Article from *DigitalSpy*. Available at http://www.digitalspy.com/movies/the-hobbit/news/a439066/sir-ian-mckellen-i-broke-down-on-the-hobbit-set/, accessed 24 May 2016.

Brew, S. (27 April 2016) ‘James Cameron on Aliens, 30 years later’, *Den of Geek!* Available at http://www.denofgeek.com/movies/aliens/40243/james-cameron-on-aliens-30-years-later, accessed 3 May 2016.

Brook, T. (3 June 2014) ‘Director v Studio: Who should have the final cut?’, BBC culture. Available at: http://www.bbc.com/culture/story/20140603-director-v-studio-whos-right, accessed 4 August 2017.

Carney, R. (2003) ‘Chapter on The Making of Husbands (1969-1970)’, *Cassavetes on Cassavetes*. Available at: http://people.bu.edu/rcarney/cassoncass/husbands.shtml, accessed 15 March 2016.

Child, B. (17 February 2016) ‘Hateful Eight cinematographer calls for new 'effects-free' Oscars category’, *The Guardian.* Available at: http://www.theguardian.com/film/2016/feb/17/oscars-cinematographers-category-invisible-digital-effects-hateful-eight, accessed on 05 April 2016.

Cohen, D. S. (29 September 2009) ‘Previsualization Society kicks off’, *Variety*. Available at: http://variety.com/2009/digital/news/previsualization-society-kicks-off-1118009317/, accessed 5 August 2016.

Coleman, M. (2011) ‘SoundWorks Collection: The Sound of Tron Legacy’ [Video file]. Available at: https://vimeo.com/channels/staffpicks/17426879, accessed 27 May 2016.

Conrath, R. (30 April 2014) ‘Interview: Editor Joe Walker on 12 Years a Slave, Hunger, Shame, and More’, *Bright Lights Film Journal*. Available at: http://brightlightsfilm.com/collaborators-editor-joe-walker-on-working-with-director-steve-mcqueen-hunger-shame-12-years-a-slave-and-more/, accessed 28 July 2016.

Criterioncollection (11 August 2014) ‘John Cassavetes Making Love Streams’ [Video file]. Available at: https://www.youtube.com/watch?v=REQByBHnAZA, accessed 14 March 2016.

Do, P. (16 November 2014) ‘Q&A with “Guardians of the Galaxy” Editor: Fred Raskin Shares Editing Experience with Marvel’, *Daily Nexus*. Available at: http://dailynexus.com/2014-11-16/q-a-with-guardians-of-the-galaxy-editor-fred-raskin-shares-editing-experience-with-marvel/, accessed 30 July 2016.

DrSotosOctopus (6 August 2013) ‘Quentin Tarantino On Making Movies’ [Video file]. *The Charlie Rose Show* dated 21 December 2012. Available at: http://www.youtube.com/watch?v=vXGUEjYCybA, accessed 17 July 2014.

Elrick, T. (September 2003) ‘Clint Eastwood: Conversations with a director and his team’. *Directors Guild of America*. Available at: https://www.dga.org/Craft/DGAQ/All-Articles/0309-Sept-2003/Clint-Eastwood.aspx, accessed 28 August 2017.

Escape Studios (11 July 2014) ‘The VFX Pipeline Explained with Hasraf Dulull’[115] [Video file]. Available at: https://www.youtube.com/watch?v=yM8PW5acrqs, accessed 18 November 2015.

Failes, I. (17 February 2016) ‘Mad Max: Fury Road special and visual effects roundtable’, *FX Guide*. Available at: https://www.fxguide.com/featured/mad-max-fury-road-special-and-visual-effects-roundtable/, accessed on 8 August 2016.

Fink, M.[116] (2001) ‘So You're Editing a Visual Effects Film?’, Reprinted from *The Motion Picture Editors Guild Magazine* Vol. 22, No. 4 - September/October 2001. Available at: http://www.editorsguild.com/v2/magazine/Newsletter/SepOct01/visual_effects.html, accessed 9 June 2016.

Giardina, C. (15 February 2016) ‘Oscars: Why Cinematographers Are Arguing for a Second Craft Category for VFX-Heavy Films’, *The Hollywood Reporter.* Available at: http://www.hollywoodreporter.com/behind-screen/oscars-why-cinematographers-are-arguing-863162, accessed on 05 April 2016.

Hardy, R. (1 January 2014) ‘Have Computer Generated Images Changed the Definition of Cinematography?’, *No Film School.* Available at: http://nofilmschool.com/2014/01/digital-technology-changed-definition-cinematography, accessed on 05 April 2016.

Hardy, R. (5 March 2014) ‘Should the Oscar for Best Cinematography Be Split into Two Separate Categories?’, *No Film School.* Available at: http://nofilmschool.com/2014/03/petition-split-academy-award-best-cinematography-live-action-cgi-based, accessed on 05 April 2016.

Hullfish, S. (30 April 2016) ‘Art of the Cut with the editor of “The Jungle Book,” Mark Livolsi, ACE’, *Provideocoalition, a moviola company*. Available at: https://www.provideocoalition.com/art-cut-editor-jungle-book-mark-livolsi-ace/, accessed 30 July 2016.

ILMVisualFX (10 January 2013) ‘Behind the Magic: The Visual Effects of "The Avengers"’ [Video file]. Available at: https://www.youtube.com/watch?v=MnQLjZSX7xM, accessed 30 May 2016.

IMDb, Alan Smithee Biography. File available at: http://www.imdb.com/name/nm0000647/bio?ref_=nm_ov_bio_sm, accessed 25 May 2016.

IMDb, Movie Terminology Glossary: S. File available at: http://www.imdb.com/glossary/S#sfx, accessed 11 November 2015.

[115] Hasraf Dulull is a visual effects supervisor and film director who has worked on TV series such as *Poldark* (2015) and *Jericho* (2016).

[116] Michael Fink has been creating effects for film since 1977, and is currently Senior Visual Effects Supervisor at Cinesite, Inc.

IMDb, Movie Terminology Glossary: V. File available at: http://www.imdb.com/glossary/V, accessed 11 November 2015.

Jackson, P. (23 November 2012) 'The Hobbit: An Unexpected Journey, Production Diary 9' [Video file]. Available at: https://www.youtube.com/watch?v=4vqyzHwnEiY, accessed on 07 April 2016.

Jensen, B. G. (April 1998, posted 15 March 2014) 'Festen (the Celebration) – Dogme #1, Interview'. Available at http://www.dogme95.dk/celebration/, accessed 14 March 2016.

Lang, B. (3 October 2013) 'How "Gravity" Revolutionized Visual Effects and Blasted Sandra Bullock Into Space', *TheWrap*. Available at: http://www.thewrap.com/gravity-sandra-bullock-george-clooney-alfonso-cuaron-space-visual-effects, accessed 5 March 2014.

Lodge, G. (10 October 2013) 'Roundup: Are the cinematography and visual effects Oscars getting too close?', *HitFix*. Available at: http://www.hitfix.com/in-contention/roundup-are-the-cinematography-and-visual-effects-oscars-getting-too-close, accessed on 07 April 2016.

McLean, T. J. (24 July 2008) 'Transitioning from VFX to Directing'. Available at http://www.awn.com/vfxworld/transitioning-vfx-directing, accessed 16 March 2016.

Merritt Joujon-Roche (30 November 2014) 'Star Wars: Episode VII - Confusing Shot of Millennium Falcon Stabilized' [Video file]. Available at: https://www.youtube.com/watch?v=w0TSTaKD-Ug, accessed on 18 April 2016.

mpcvfx (10 October 2012) 'MPC Prometheus VFX breakdown!' [Video file]. Available at: https://www.youtube.com/watch?v=NdJYlKfyjg8, accessed 30 May 2016.

Roberts, S. (21 May 2009) 'The VFX Pipeline of the Future', *Animation World Network*. Available at: http://www.awn.com/vfxworld/vfx-pipeline-future, accessed 3 September 2015.

SBS on Demand (9 November 1999) 'Festen: Thomas Vinterberg', *The Movie Show*, Episode 36 1999. Available at http://www.sbs.com.au/ondemand/video/11692611795/festen-thomas-vinterberg, accessed 14 March 2016.

Sciretta, P. (14 January 2016) ''Force Awakens' Had More CG Visual Effects Shots Than 'The Phantom Menace' [Interview]', *Film, blogging the reel world*. Available at: http://www.slashfilm.com/force-awakens-visual-effects/, accessed 3 June 2016.

Sellers, R. (23 July 2009) 'The strained making of 'Apocalypse Now'', *The Independent.* Available at http://www.independent.co.uk/arts-entertainment/films/features/the-strained-making-of-apocalypse-now-1758689.html, accessed 20 June 2016.

Seymour, M.[117] (1 December 2014) 'A way forward for the VFX industry', *FX Guide*. Available at: https://www.fxguide.com/featured/a-way-forward-for-the-vfx-industry/, accessed on 18 November 2015.

Squires, S. (7 October 2012) 'The Value of Visual Effects', *Effects Corner*. Available at: http://effectscorner.blogspot.co.uk/2012/07/value-of-visual-effects.html#.VhJiKit1UQo, accessed 5 October 2015.

[117] Mike Seymour is a producer and visual effects supervisor known for his work on the TV series *Farscape: The Peacekeeper Wars* (2004), *Spider* (Edgerton N., 2007) and *Miracle Fish* (Doolan L., 2009). He is the co-founder of FX Guide.

Trier L. V., Vinterberg T. (13 March 1995) ‘The vow of chastity’. Available at http://www.dogme95.dk/the-vow-of-chastity/, accessed 14 March 2016.

Upcoming VFX Movies. ‘S/VFX Shots Race’. Available at http://www.upcomingvfxmovies.com/svfx-shots-race/, accessed 19 June 2017.

Variety (2 February 2016) ‘'The Martian' Visual Effects -- Variety Artisans’ [Video fie]. Available at https://www.youtube.com/watch?v=FI0YfcUdNBw, accessed 27 April 2016.

VintageEuroTV (3 November 2008) ‘Cassavetes shooting "Love Streams" 1/2'’ [Video file]. Available at: https://www.youtube.com/watch?v=z7B02NWo5VM, accessed 14 March 2016.

Westbrook, M. (1 December 2008) ‘Acting! Sense Memory and Emotional Memory’, *PlayFighting*. Available at http://playfighting.ca/combat/stage-combat-2/acting-sense-memory-and-emotional-memory/, accessed 24 May 2016.

Whitehurst, A.[118] (n.d.) ‘The Visual Effects Pipeline’. Available at http://www.andrew-whitehurst.net/pipeline.html, accessed 18 November 2015.

Wyatt, D. (29 February 2016) ‘What's it like to work as a special effects compositor?’, *The Independent*. Available at: http://www.independent.co.uk/arts-entertainment/films/features/whats-it-like-to-work-as-a-special-effects-compositor-a6903301.html, accessed 30 May 2016.

[118] Andrew Whitehurst is a visual effects supervisor at Double Negative, London, who has worked on films such as *Troy* (Petersen W., 2004) and *Harry Potter and the Order of the Phoenix* (Yates D., 2007).

Bibliography

Anderson, J., Mc Ree, J., Wilson, R. And the EffectiveUI Team (2010) *Effective UI: The Art of Building Great User Experience in Software*. Sebastopol: O'Reilly Media, Inc.

Badham, J. (2013) *On Directing*. Studio City: Michael Weise Productions.

Bardani, A. (28 November 2014), interviewed by the Author, Skype.

Barnwell, J. (2004) *Production Design: Architects of the Screen*. London: Wallflower Press.

Barnwell, J. (2008) *The Fundamentals of Film-Making*. Lausanne: AVA Publishing SA.

Barsam, R. M. and Monahan, D. (2010) *Looking at Movies: An Introduction to Film*. New York: W. W. Norton & Co.

Bartholomew, J. and Rutherford, S. (2014) *The Design Student's Handbook: Your Essential Guide to Course, Context and Career*. Abingdon, Oxon: Routledge.

Barton, R. (2014) *Acting On stage and Off*. Boston: Cengage Learning.

Basso, S. (14 January 2015), interviewed by the Author, Skype.

Bazin, A. (2005) *What is Cinema? Essays Selected and Translated by Hugh Gray*. Volume 1. Los Angeles: University of California.

Bazin, A. (2005) *What is Cinema? Essays Selected and Translated by Hugh Gray*. Volume 2. Los Angeles: University of California.

Beach, C. (2015) *A Hidden History of Film Style: Cinematographers, Directors, and the Collaborative Process*. Oakland: University of California Press.

Beaver, F. E. (2007) *Dictionary of Film Terms: The Aesthetic Companion to Film Art*. New York: Peter Lang Publishing, Inc.

Belli, M. L. and Rooney, B. (2011) *Directors Tell the Story: Master the Craft of Television and Film Directing*. Waltham: Focal Press.

Bernardoni, J. (1991) *The New Hollywood: What the Movies Did with the New Freedoms of the Seventies*. Jefferson, North Carolina: McFarland & Company, Inc., Publishers.

Birn, J. (2006) *Digital Lighting and Rendering*. Berkeley: New Riders.

Bouchard, M. (15 September 2014), interviewed by the Author, Skype.

Bowrey, K. and Handler, M. (2014) *Law and Creativity in the Age of the Entertainment Franchise*. Cambridge: Cambridge University Press.

Brinkmann, R. (2008) *The Art and Science of Digital Compositing: Techniques for Visual Effects, Animation and Motion Graphics.* Burlington: Morgan Kaufmann Publishers.

Buckland, W. (2006) *Directed by Steven Spielberg: Poetics of the Contemporary Hollywood Blockbuster*. London: The Continuum International Publishing Group Ltd.

Byrne, B. (2009) *The Visual Effects Arsenal: VFX Solutions for the Independent Filmmaker*. Oxford: Focal Press.

Cahir, L. C. (2006) *Literature into Film: Theory and Practical Approaches*. Jefferson, North Carolina: McFarland & Company, Inc., Publishers.

Caldwell, J. T. (2008) *Production Culture: Industrial Reflexivity and Critical Practice in Film and Television*. Duke University Press.

Cartwright, S. R. (1996) *Pre-Production Planning for Video, Film, and Multimedia*. Oxford: Focal Press.

Casinghino, C. (2011) *Moving Images: Making Movies, Understanding Media*. New York: Delmar.

Caughie, J. (2001) *Theories of Authorship*. London: Routeledge.

Christie, I. (1999) *Gilliam on Gilliam*. London: Faber and Faber Limited.

Clevé, B. (2006) *Film Production Management*. Oxford: Focal Press.

Clifton, N. R. (1983) *The Figure in Film*. London: Associated University Presses.

Coglitore, M. (26 February 2015), interviewed by the Author, questionnaire.

Coleman, R. (15 November 2013), interviewed by the Author, Skype.

Cones, J. W. (2008) *43 Ways to Finance Your Feature Film: A Comprehensive Analysis of Film Finance*. Carbondale: Southern Illinois University Press.

Cook, D. A. (2000) *Lost Illusions: American Cinema in the Shadow of Watergate and Vietnam, 1970-1979*. Berkley and Los Angeles: University of California Press.

Corrigan, T. (2003) *'The Commerce of Auteurism' in Wexman, V.W (ed) Film and Authorship. London*. Routledge University Press.

Dancyger, K. (2006) *The Director's Idea: The Path to Great Directing*. Burlington: Focal Press.

Dancyger, K. and Rush, J. (2013) *Alternative Scriptwriting: Beyond the Hollywood Formula*. Burlington: Focal Press.

Dobbert, T. (2013) *Matchmoving: The Invisible Art of Camera Tracking*. Indianapolis: John Wiley & Sons, Inc.

Douglas, P. (2011) *TV Drama Series: How to Succeed as a Professional Writer in TV*. Studio City: Michael Wiese Productions.

Duncan, J. (2003) 'Working at the Speed of Thought', *Cinefex*, 92: 15-41.

Duncan, J. (2005) 'Cool Cars, Hot Women and Hard Bastard Men', *Cinefex*, 102: 15-30.

Duncan, J. (2010) 'The Seduction of Reality', *Cinefex*, 120: 68-146.

Duncan, J. (2012) 'A Farewell to Arms', *Cinefex*, 131: 40-68.

Duncan, J. (2013) 'The Calculus of Pi', *Cinefex*, 132: 52-81.

Duncan, J. (2013) 'There and Back Again', *Cinefex*, 132: 84-116.

Duncan, J. and Fitzpatrick, L. (2010) *The Making of Avatar*. New York: Abrams.

Edgar, R. (2010) *Basics Film-Making 03: Directing Fiction*. Lausanne: AVA Publishing SA.

Elsaesser, T. (2000) *Metropolis*. London: British Film Institute.

Esser, A., Smith, I. R. and Bernal-Merino, M. À. (2016) *Media Across Borders: Localizing TV, Film, and Video Games*. New York: Routledge.

Everett, W. E. and Goodbody, A. (2005) *Revisiting Space: Space and Place in European Cinema*. Oxford: Peter Lang.

Ezra, E. (2000) *Georges Méliès*. Manchester: Manchester University Press.

Fielding, R. (1985) *Techniques of Special Effects of Cinematography*. Focal Press.

Finance, C. and Zwerman, S. (2010) *The Visual Effects Producer: Understanding the Art and Business of VFX*. Burlington: Focal Press.

Finney, A. (2015) *The International Film Business: A Market Guide Beyond Hollywood*. Abingdon, Oxon: Routledge.

Fischer, L. (2015) *Art Direction & Production Design*. New Brunswick: Rutgers University Press.

Foley, J. D., van Dam, A., Feiner, S. K. and Hughes, J. F. (1997) *Computer Graphics: Principles and Practice*. Addison-Wesley Publishing Company, Inc.

Fordham, J. (2016) 'Law of the Jungle', *Cinefex*, 147: 71-97.

Forrest-Smith S. (11 May 2013), interviewed by the Author, Skype.

Frost, J. B. (2009) *Cinematography for Directors: A Guide for Creative Collaboration*. Studio City: Michael Wiese Productions.

Ganbar, R. (2011) *Nuke 101: Professional Compositing and Visual Effects*. Berkeley: Peachpit Press.

Gates, R. (2013) *Production Management for Film and Video*. Burlington: Focal Press.

Gaudreault, A. (2008) *Film and Attraction: From Kinematography to Cinema*. Urbana, Chicago and Springfield: University of Illinois Press.

Gerosa, M. (2011) *Cinema e Tecnologia, La Rivoluzione Digitale: Dagli Attori alla Nuova Stagione del 3D*. Recco, Genova: Le Mani.

Gherardi, M. (14 November 2014), interviewed by the Author, Skype.

Giuliano, N. (18 February 2015), interviewed by the Author, questionnaire.

Goldman, M. (2016) ‘Welcome to the Jungle’, *American Cinematographer*, May 2016: 32-45.

Gordon, R. (2009) *The Purpose of Playing: Modern Acting Theories in Perspective*. The University of Michigan Press.

Goulekas, K. E. (2001) *Visual Effects in A Digital World*. San Diego: Academic Press.

Grant, J. (2006) *Animated Movies*. Wisley, Surrey: Facts, Figures & Fun.

Gregory, M. (2015) *Stuntwomen: The Untold Hollywood Story*. Lexington: University Press of Kentucky.

Gress, J. (2015) *[digital] Visual Effects & Compositing*. Berkeley: New Riders.

Grierson, T. (2015) *Martin Scorsese in Ten Scenes*. London: Octopus Publishing Group Ltd.

Grisi, F. (19 January 2015), interviewed by the Author, Skype.

Gunning, T. (1989) ‘”Primitive” Cinema: A Frame-up? Or the Trick’s on Us?’, *Cinema Journal*, 28 (2): 3-12.

Gunning, T. (1990) ‘The Cinema of Attractions: Early Film, Its Spectator and the Avant-Garde’ in T. Elsaesser (ed.), *Early Cinema: Space Frame Narrative.* London: British Film Institute, 5-6.

Gunning, T. (1995) ‘An Aesthetic of Astonishment: Early Film and the (In)credulous Spectator’, in L. Williams (ed.) *Viewing Positions: Ways of Seeing Film.* New Brunswick, NJ: Rutgers University Press, 114-133.

Gutierrez, G. G. (6 March 2014), interviewed by the Author, questionnaire.

Halligan, F. (2013) *Filmcraft: Production Design*. Burlington: Focal Press.

Hart, J. (2008) *The Art of the Storyboard: A Filmmaker's Introduction*. Burlington: Focal Press.

Hayward, S. (2013) *Cinema Studies: The Key Concepts*. Abingdon, Oxon: Routledge.

Heisner, B. (1997) *Production Design in the Contemporary American Film: A Critical Study of 23Movies and Their Designers*. Jefferson, North Carolina: McFarland & Company, Inc., Publishers.

Henderson, R. M. (1972) *D.W. Griffith: His Life and Work*. New York: Oxford University Press.

Herman, M. (13 January 2015), interviewed by the Author, questionnaire.

Hernáez, O. R. and Campos, E. B. (2011) *Handbook of Research on Communities of Practice for Organizational Management and Networking: Methodologies for Competitive Advantage*. Hershey: Information Science Reference.

Herrmann, A. (1892) ‘Light on the Black Art’, *The Cosmopolitan*, December: 208-214.

Honthaner, E. L. (2010) *The Complete Film Production Handbook*. Burlington: Focal Press.

Hornung, E. (2013) *The Art and Technique of Matchmoving: Solutions for the VFX Artist*.

Burlington: Focal Press.

Horton, A. and Hoxter, J. (2014) *Screenwriting*. New Brunswick: Rutgers University Press.

Howard, D. and Mabley, E. (2011) *The Tools of Screenwriting: A Writer's Guide to the Craft and Elements of a Screenplay*. London: Souvenir Press Ltd.

Irving, D. K. (2010) *Fundamentals of Film Directing*. Jefferson, North Carolina: McFarland & Company, Inc., Publishers.

Jackson, E. Jr. (1995) *Strategies of Deviance: Studies in Gay Male Representation*. Blooming and Indianapolis: Indiana University Press.

Jones, C. and Joliffe, G. (2006) *The Guerilla Film Makers Handbook*. London: Continuum.

Julier, G. and Moor, L. (2009) *Design and Creativity: Policy, Management and Practice*. New York: Berg.

Kalinak, K. (2015) *Sound, Dialogue, Music and Effects*. New Brunswick: Rutgers University Press.

Karg, B. and Van Over, J. (2007) *The Everything Filmmaking Book: From Script to Premiere—a Complete Guide to Putting Your Vision on the Screen*. Avon: Adams Media.

Katz, S. D. (1991) *Film Directing Shot by Shot: Visualizing from Concept to Screen*. Studio City: Michael Wiese Productions.

Kaufman, J. C. and Simonton, D. K. (2014) *The Social Science of Cinema*. Oxford: Oxford University Press.

Kawin, B. F. (1992) *How Movies Work*. Los Angeles: University of California Press.

Keil, C. and Whissel, K. (2016) *Editing and Special/Visual Effects*. New Brunswick: Rutgers University Press.

Kerlow, I. V. (2004) *The Art of 3D: Computer Animation and Effects*. Hoboken, New Jersey: John Wiley & Sons, Inc.

Kindem, G. and Musburger, R. B. (2009) *Introduction to Media Production: The Path to Digital Media Production*. Oxford: Focal Press.

Kooperman, P. (2009) *Writing Short Film Scripts: A Student Guide to Film-Making*. Elsternwick Victoria: Insight Publications Pty Ltd.

Kroon, R. W. (2010) *A/V A to Z: An Encyclopedic Dictionary of Media, Entertainment and Other Audiovisual Terms*. Jefferson, North Carolina: McFarland & Company, Inc., Publishers.

Kukoff, D. (2005) *Vault Guide to Screenwriting Careers*. Vault.

Kydd, E. (2011) *The Critical Practice of Film: An Introduction*. Basingstoke, Hampshire: Palgrave Macmillan.

Levy, E. (1999) *Cinema of Outsiders: The Rise of American Independent Film*. New York: New York University Press.

Lewis, J. (2016) *Producing*. New Brunswick: Rutgers University Press.

Lodovichetti, A. (24 November 2014), interviewed by the Author, Skype.

Lumet, S. (1995) *Making Movies*. New York: Alfred A. Knopf Inc.

Manchel, F. (1990) *Film Study: An Analytical Bibliography, Volume 1*. London: Associated University Press.

Marner, T. St. J. (1972) *Directing Motion Pictures*. London: The Tantivy Press.

Maule, R. (2008) *Beyond Auteurism: New Directions in Authorial Film Practices in France. Practices in France, Italy and Spain since 1980s*. Bristol: Intellect Books.

McAlister, M. J. (1993) *The Language of Visual Effects*. Los Angeles: Lone Eagle Publishing Company.

McClean, S. T. (2007) *Digital Storytelling: the Narrative Power of Visual Effects in Film*. Cambridge, Massachusetts: The MIT Press.

McLean, A. L. (2016) *Costume, Makeup and Hair*. New Brunswick: Rutgers University Press.

McConnell, J. J. (2006) *Computer Graphics: Theory Into Practice*. London: Jones and Bartlett Publishers International.

Méliès, G. (1907) 'Les Vues cinématographiques', *Annuaire Général et International de la Photographie*, 16th year: 362-392.

Messina, E. (2012) *What's His Name? John Fiedler: The Man, the Face, the Voice*. Bloomington: AuthorHouse.

Mitchell, M. (2013) *Visual Effects for Film and Television*. Burlington: Focal Press.

Mollo, F. (18 March 2015), interviewed by the Author, Skype.

Monaco, P. (2010) *John Dahl and Neo-Noir: Examining Auteurism and Genre*. Plymouth: Lexington Books.

Morse, E. and Mitchell, R. K. (2006) *Cases in Entrepreneurship: The Venture Creation Process*. London: Sage Publications.

Nannicelli, T. (2013) *A Philosophy of the Screenplay*. London: Routledge.

Nash, P. (2011) *Short Films: Writing the Screenplay*. Oldcastle Books.

Nelson, T. A. (2000) *Kubrick, Inside a Film Artist's Maze*. Bloomington: Indiana University Press.

Neri, R. (15 January 2015), interviewed by the Author, Skype.

Nixon, S. (26 March 2014), interviewed by the Author, University of York.

North, D. (2008) *Performing Illusions: Cinema, Visual Effects and the Virtual Actor*. London: Wallflower Press.

North, D., Rehak, B. and Duffy, M. S. (2015) *Special Effects: New Histories, Theories, Contexts*. London: Palgrave.

Novellino, A. (15 January 2015), interviewed by the Author, Skype.

Ohanian, T. A. and Phillips, M. E. (2013) *Digital Filmmaking: The Changing Art and Craft of Making Motion Pictures*. Burlington: Focal Press.

Okun, J.A. and Zwerman, S. (2010) *The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures*. Burlington: Focal Press.

Orpen, V. (2003) *Film Editing: The Art of the Expressive*. London: Wallflower Press.

Pallant, C. and Price, S. (2015) *Storyboarding: A Critical History*. Palgrave Macmillan.

Perez, M. (15 January 2015), interviewed by the Author, Skype.

Perisic, Z. (2000) *Visual Effects Cinematography*. Focal Press.

Perkins, V. F. (1972) *Film as Film: Understanding and Judging Movies*. Perseus Books Group.

Perrotta, A. (19 May 2013), interviewed by the Author, questionnaire.

Pirenne, M. H. (1970) *Optics, Paintings and Photography*. Cambridge: Cambridge University Press.

Pramaggiore, M. and Wallis, T. (2005) *Film: A Critical Introduction*. London: Laurence King Publishing Ltd.

Prince, S. (2012) *Digital Visual Effects in Cinema: The Seduction of Reality*. London: Rutgers University Press.

Proferes, N. T. (2008) *Film Directing Fundamentals: See Your Film Before Shooting*. Burlington: Focal Press.

Pudovkin, V. I. (1933) *Film Technique*. London: George Newness.

Purse, L. (2013) *Digital Imaging in Popular Cinema*. Edinburgh: Edinburgh University Press Ltd.

Purves, B. JC (2014) *Stop-motion Animation: Frame by Frame Film-making with Puppets and Models*. London: Bloomsbury.

Rabiger, M. and Hurbis-Cherrier, M. (2013) *Directing: Film Techniques and Aesthetics*. Burlington: Focal Press.

Radke, R. J. (2013) *Computer Vision for Visual Effects*. Cambridge: Cambridge University Press.

Rawnsley, G. D. and Rawnsley, M. T. (2010) *Global Chinese Cinema: The Culture and Politics of 'Hero'*. Oxon: Routledge.

Rea, P. and Irving, D. K. (2015) *Producing and Directing the Short Film and Video*. Burlington: Focal Press.

Richards, R. (1992) *A Director's Method for Film and Television*. Stoneham: Focal Press.

Rickitt, R. (2007) *Special Effects: The History and Technique*. New York: Billboard Books.

Rizzo, M. (2015) *The Art Direction Handbook for Film & Television*. Burlington: Focal Press.

Robertson, B. (2013) 'Causes and Consequences', *Cinefex*, 132: 28-49.

Rodley, C. (1993) *Cronenberg on Cronenberg*. London: Faber and Faber Limited.

Rodley, C. (2005) *Lynch on Lynch*. London: Faber and Faber Limited.

Rodriguez, D. (2012) *Animation Methods*. David Rodriguez.

Rohrer, P. N. (2005) *Listen, Feel, Respond: A Workbook and Guide to Acting on Camera*. Lincoln: iUniverse.

Rombes, N. (2009) *Cinema in the Digital Age*. London: Wallflower Press.

Sammon, P. M. (1999) *Ridley Scott: the Making of his Movies*. London: Orion.

Santas, C. (2002) *Responding to Film: A Text Guide for Students of Cinema Art*. Chicago: Burnham Inc., Publishers.

Sawicki, M. (2007) *Filming the Fantastic: A Guide to Visual Effects Cinematography*. Burlington: Focal Press.

Sayad, C. (2013) *Performing Authorship: Self-inscription and Corporeality in the Cinema*. London: I. B. Tauris & Co. Ltd.

Schreibman, M. A. (2001) *The Indie Producers Handbook: Creative Producing from A to Z*. New York: Lone Eagle Watson-Guptill Publications.

Scott, A. J. (2005) *On Hollywood: The Place, The Industry*. Princeton: Princeton University Press.

Shay, D. and Duncan, J. (1993) *The Making of Jurassic Park: An Adventure 60 Million Years in the Making*. London: Boxtree Limited.

Simmon, S. (1993) *The Films of D.W. Griffith*. Cambridge: Cambridge University Press.

Souriau, É. (1953) *L'Univers filmique*. Paris: Flammarion.

Springer, C. and Levinson, J. (2015) *Acting*. New Brunswick: Rutgers University Press.

Stone, D. (2017) *Hollywood Sound Design and Moviesound Newsletter: A Case Study of the End of the Analog Age.* New York: Routledge.

Strauven, A. (2006) *The Cinema of Attraction Reloaded*. Amsterdam: Amsterdam University Press.

Stringer, J. (2003) *Movie Blockbusters*. New York: Routledge.

Swartz, C. S. (2005) *Understanding Digital Cinema: A Professional Handbook*. Burlington: Focal Press.

Talbot, D. (1975) *Film: An Anthology*. Los Angeles: University of California Press.

Tarkovsky, A. (2003) *Sculpting in Time: Reflections on the Cinema*. Austin: University of Texas Press.

Tashiro, C. S. (1998) *Pretty Pictures: Production Design and the History Film*. Austin: University of Texas Press.

Thalmann, D. and Thalmann, N. (1990) *Synthetic Actors: in Computer-Generated 3D Films*. Berlin: Springer-Verlag.

Tirard, L. (2002) *Moviemakers' Master Class: Private Lessons from the World's Foremost Directors*. London: Faber and Faber Ltd.

Traina, A. (22 March 2015), interviewed by the Author, questionnaire.

Travis, M. (2002) *Directing Feature Films: The Creative Collaboration Between Directors, Writers and Actors*. Studio City: Michael Weise Productions.

Truffaut, F. (1983) *Hitchcock/Truffaut*. New York: Simon & Schuster Paperbacks.

Van Hurkman, A. (2011) *Color Correction Handbook: Professional Techniques for Video and Cinema*. Berkeley: Peachpit Press.

Venkatasawmy, R. (2013) *The Digitization of Cinematic Visual Effects: Hollywood's Coming of Age*. Lanham, Maryland: Lexington Books.

Villar, O. (2015) *Learning Blender: A Hands-On Guide to Creating 3D Animated Characters*. London: Addison-Wesley Publishing Company, Inc.

Wales, L. M. (2012) *The Complete Guide to Film and Digital Production: The People and The Process*. Abingdon, Oxon: Routledge.

Weston, J. (1996) *Directing Actors: Creating Memorable Performances for Film and Television*. Studio City: Michael Weise Productions.

Weston, J. (2003) *The Film Director's Intuition: Script Analysis and Rehearsal Techniques*. Studio City: Michael Weise Productions.

Wilkinson, C. (2005) *The Working Director: How to Arrive, Thrive & Survive in the Director's Chair*. Saline: McNaughton & Gunn, Inc.

Williams, G. (20 June 2013), interviewed by the Author, Skype.

Wolf, L. J. (2012) *Introduction to Theater: A Direct Approach*. USA: Xlibris.

Wood, A. (2007) *Digital Encounters*. New York: Routledge.

Zettl, H. (2012) *Television Production Handbook*. Boston: Cengage Learning.