DIGITAL DISRUPTION:

REDEFINING CINEMATOGRAPHY IN THE VIRTUAL AGE

A. D. Boutellier

PhD Film by Practice

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Digital Disruption:

Redefining Cinematography in the Virtual Age

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ABSTRACT

At no other point in film history has the cinematographer's status and authority been challenged more than today. Since the 1990s, an unprecedented number of disruptive digital technologies and workflow tools have impacted all levels of production: pre-production, principal photography, and post-production. This research addresses the following key questions: who is the 'author' of a film's visuals when most shots have been created, composed, and lit in a virtual environment with the help of previz, green screen, and/or CGI? How do cinematographers protect their work against unapproved image manipulation in post-production? How is the democratisation of filmmaking technology affecting aesthetic standards and, therefore, the cinematographer's relevance?

Current literature on the subject is still relatively sparse, as these debates are mostly confined to trade publications (which often sugar-coat the issues due to the publishers' affiliations with the film industry) and practical textbooks (which primarily tackle these questions from a technical angle). On the other hand, academic publications that focus exclusively on cinematography are equally rare; more importantly, the information they offer is seldom gathered from first-hand industry sources. In order to help close the gap between theoretical literature and practical textbooks, this research includes new interviews with leading international cinematographers along with colourists, whose contributions have become increasingly important in modern filmmaking.

Furthermore, this research examines the production of the feature film *Grave Men* (2019) as a case study, illustrating how accelerated schedules, shrinking budgets, and declining aesthetic standards are devaluating the

cinematographer's contribution. As a result, it also demonstrates how disruptive technologies can help redefine the cinematographer's role in radical new ways. This PhD argues that in order for the profession to stay relevant, cinematographers must not only expand their traditional skillset but also re-examine the classic definition of their role as key visual engineers.

TABLE OF CONTENTS

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I   LIST OF FIGURES

_____

II   LIST OF ACCOMPANYING MATERIAL

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Title: *Grave Men*

Media: DVD Video & Online Streaming

Year: 2019

Duration: 91 minutes

Language: English

Aspect Ratio: 1.85:1

Audio: Dolby Digital 2.0

An auto-play DVD (PAL) of the film is included with this thesis.

The film is also available online in full 2K resolution:

Link: https://vimeo.com/359293880

Password: GM_2019

Please note:

1   INTRODUCTION

1.1   Overview

In a time when award-winning independent films such as Sean Baker's *Tangerine* (2015) are shot on iPhones and Hollywood blockbusters merely serve as showcases for computer-generated imagery (CGI), the role of the cinematographer faces unprecedented challenges. Digital capture and post-production technologies not only introduced a different aesthetic to modern cinema, they also changed the standard working practices in the film industry. These developments have gradually led to clashes over the cinematographer's credit as the sole 'author' of a film's visuals—particularly if the film in question was conceptualised and finalised in a virtual environment by multiple artists such as VFX supervisors, compositors, and colourists. The growing number of specialised collaborators are slowly eroding the cinematographer's authority as well as challenging traditional hierarchies on set and in post-production. At the same time, affordable digital cameras and post-production software now offer unparalleled access to high-grade tools, essentially levelling the playing field between professionals and amateurs—similar to developments in photography and publishing. More so than at any other time in film history, DOPs[1] today face a perfect storm of disruptive technologies, elusive workflows, and artistic depreciation, which will—as this thesis argues—require them to redefine their traditional skillset if they are to stay relevant.

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[1] DOP is short for 'director for photography', an alternative term for cinematographer. For technical terms see glossary in Appendix I.

But these issues do not exclusively affect cinematographers: the film industry as a whole is on the cusp of massive changes. In the Subscription Video-On-Demand (SVOD) age, films created by algorithms are increasingly becoming industrial products. At the same time, the Internet is awash with websites, blogs, forums, chat-rooms, and vlogs, which analyse movies, discuss filmmaking techniques, and share trade secrets. According to Caldwell (2009, p.215), the "cultural borders between the [film] industry and the 'outside' have become more permeable, extensive, and traversable", making the once impenetrable process of film production accessible to an ever greater number of people. This particularly applies to the field of cinematography, which has traditionally been cloaked in mystery—equal parts science and wizardry—but is now becoming more transparent due to the facility of digital capture. This PhD, therefore, is a production study on aspects of the cinematographer's role in the face of increasingly complex issues in pre-production, production, and post-production. Moreover, it examines the impact of new technologies (digital and virtual) on work practices and established hierarchies in the camera department. Beyond that, this research illustrates how post-production is increasingly shaping the filmmaking process, forcing cinematographers to either redefine the collaborative process or relinquish control over the image.

If we imagine the production scale as a pyramid—with a small number of expensive tent-pole films at the top and a broad range of low-budget releases at the bottom—we find that the issues mentioned above chiefly affect productions at the extreme ends of the scale but less so in the middle range. This is not really surprising, however, as medium-budget films have generally been disappearing over the last two decades (Thompson 2008), with budgets

nowadays being either incredibly low or extremely high.[2] As this thesis will prove, certain issues, like image manipulation, can affect all budget levels, while others, such as the democratisation of technology or the difficult question of 'authorship', mainly concern films in specific budget ranges (see Chapter 3.3). Furthermore, this research does not exclusively examine the UK film industry but aims to include global industries as well, with particular emphasis on mainstream Hollywood and American independent cinema (due to their cultural dominance and highly publicised politics). In addition, a practice-based case study of my film *Grave Men* (2019), which is an integral part of this research, covers aspects of the German film industry, too (see Chapter 7 for more details).

This thesis is divided into four major sections: a literature review (Chapter 2); an analysis of the current debates and issues concerning the profession (Chapters 3 to 5); an approach to a new definition of the cinematographer's role (Chapter 6); and, finally, a case study of the feature-length film *Grave Men* (Chapter 7). Examining the major concerns that are currently affecting the industry and, in particular, cinematographers, Chapters 3 to 5 will focus on the following key questions:

Artistic Ownership (Chapter 3)

Who is the 'author' of a film's visuals when most shots were created, composed and lit in a virtual environment with the help of previsualization tools, green

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[2] According to film data researcher Stephen Follows, a micro-budget film in the UK will have a budget cap of approx. £250,000, based on figures provided by the Creative England and Film London funding schemes. These figures, however, vary across the globe. For instance, a low-budget film ranges in the £1.4m region in the UK but could be as much as $5m in North America. [Source: stephenfollows.com]

screen, and CGI? Ang Lee's *Life of Pi* (2012) and James Cameron's *Avatar* (2009), for instance, were created almost entirely in front of green/blue screens, yet they went on to win major awards for their cinematography. A debate whether 'traditional' cinematography is becoming a lost art has been raging in industry circles ever since, prompting Christopher Doyle HKSC to brand Claudio Miranda's work on *Life of Pi* "a fuckin' insult" to the craft (qtd. in Jagernauth 2013, n.p.).

Digital Workflows (Chapter 4)

How do cinematographers protect their work against image manipulation without their consent? New digital tools have affected the image-making process and the working environment of the DOP, particularly as images can now easily be manipulated by anyone in post-production. I can attest to this from my own experience: unbeknown to me, the producer of a short film that I shot in 2016 (Branko Tomovic's *Red*) assigned the colour grading to the editor rather than a professional colourist—with expectedly poor results. The experience shook my trust in producers and sensitised me to the issue of unapproved image manipulation. It was, in fact, this regrettable incident that inspired my research.[3]

Aesthetics (Chapter 5)

How have digital image capture and processing affected the way films look and the way stories are told? Ever since the 'switch' to digital, there has been a trend towards a homogenisation of the image. In other words: movies look

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[3] Rather ironically, a similar thing happened—with a different producer—on the feature film used as a case study in Chapter 7. If anything, this underlines the urgency of the matter.

increasingly alike. At the same time, the ubiquity and affordability of digital cameras has finally democratised filmmaking, resulting in an endless stream of images; even established filmmakers like Steven Soderbergh are now experimenting with iPhone cameras (*Unsane*, 2018). Will this spell the end of cinematography as a profession?

After the discussion of these three key topics, Chapter 6 will then outline ideas and approaches towards a definition of the 'new cinematographer', a possible outlook at what I believe to be the skills and tools required to meet the future demands of the industry. Subsequently, Chapter 7 will examine in depth the production and post-production of the feature-length film *Grave Men*, a project that inspired my research but, conversely, also allowed me to apply my findings into practice. As I not only shot but also wrote and directed this film, it offered a unique opportunity to analyse the complex—and often divergent—interests of cinematographers, directors, and producers. With an entire generation of highly influential cinematographers retiring now or, sadly, passing on (e.g. Robby Müller, Vilmos Zsigmond, László Kovács, Haskell Wexler), it is of vital importance that the next generation of image-makers (who, in the future, might not be called cinematographers any longer) be made aware of the legacy of their craft in order to guarantee its continued appreciation. The aim of this research, therefore, is to close the pronounced gap in the current literature on the subject (which will be reviewed in Chapter 2), as well as to outline new ideas that will, hopefully, not only spark further debate but also contribute to the evolution of the cinematographer's role.

1.2   Methodology

1.2.1 Introduction

In this section I am going to discuss my research methods. The issues currently affecting the cinematographer's status are so recent and unprecedented that literature on the subject is still relatively sparse. More importantly, first-hand accounts of below-the-line industry malpractice and creative friction (as outlined in the first part of the introduction) are rarely reported by the media and, consequently, underrepresented in both trade and academic publications.[4] In response to this lack of first-hand information in the current literature, I conducted a number of interviews with professional cinematographers and colourists from around the world. My questions explicitly addressed the issue of image manipulation without consent—but also the effects of constant technological change on the cinematographer's work practice and status. These one-on-one conversations took place over the last two years. All interviewees decided to waive their right to anonymity.

The practical aspect of my research is a case study of the feature-length film *Grave Men*, a project that exemplifies many of the issues examined in this study. The research follows the film's trajectory from principal photography to post-production and examines the issues encountered in relation to the cinematography and, in particular, to the working relationship with the producer(s). Of specific interest for this PhD is the examination of a film's post-production process, during which the captured images can potentially be

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[4] I will go into more detail about this in the Literature Review in Chapter 2.

manipulated without the cinematographer's consent. This was indeed the case with *Grave Men*, where the German producers unexpectedly decided to forego my involvement with the colour grading, forcing me to take drastic action in order to retain control over the images. As I am also the film's director, additional emphasis is placed on multi-hyphenate filmmakers and how they challenge established set practice and traditional crew hierarchies.

1.2.2 Interviews

All of my interviewees are established names working in many different countries and genres. During my research I learned that while the issues and debates discussed in this thesis do not affect all cinematographers equally, their impact is doubtlessly felt in various industries around the globe.[5] In order to focus the aim of my research, I had to establish boundaries regarding the selection of the interview partners. My goal was to find a balance between seasoned veterans, some of whom are now approaching retirement age (Daniel Pearl ASC, Oliver Stapleton BSC, Phil Méheux BSC), and young upstarts eager to make their mark in today's industry (Markus Förderer BVK, Christopher Probst ASC). Furthermore, I selected cinematographers of different nationalities with a range of experience in various international industries (Christopher Doyle HKSC, Roberto Schaefer AIC ASC). Another criterion was the cinematographer's willingness to embrace and explore new technologies: while some still adhere to fairly traditional, even outdated workflows, others—such as

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[5] The emphasis of this study is on the local industries of Western Europe, the United States, and the United Kingdom.

Claudio Miranda ASC—are quite adept at mastering the latest technological innovations. As this research will prove (see Chapter 6), the division between the two groups is of great significance—particularly in relation to Miranda's controversial cinematography on *Life of Pi*, for which he won an Oscar despite the film's high percentage of computer-generated imagery. As such, Miranda's work is at the heart of the current debate regarding the shifting nature of the cinematographer's contribution to the final image. The main body of respondents therefore consists of established cinematographers with experience in diverse working conditions. Rounding off the interviews are conversations with two colourists, Gwyn Evans and Laura Pavone. Evans is a veteran colourist who was part of the first generation of telecine operators to become so-called 'digital colour graders';[6] Pavone, on the other hand, is an early-career dailies colourist with both big-budget features and small independent films under her belt. The generation gap provides two very distinct perspectives from which to analyse the collaboration between cinematographer and colourist.

My initial aim was to secure roughly 15 to 20 respondents; the final number of interviews eventually came down to ten: eight cinematographers and two colourists. As was to be expected, some of the candidates I would have liked to interview declined my request, mainly because my insistence on face-to-face interviews made scheduling very difficult. It was, however, of great importance to me to conduct these conversations in person rather than by phone or via email, as I needed to gain the interviewees' trust in order to elicit truthful answers. Even the ones that did agree to be interviewed—see above—

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[6] He also graded the case study film, *Grave Men*.

were often hard to track down; in some cases, it took several months to secure an appointment. As the time frame for the interviews was generally quite brief (30–60 minutes on average), my catalogue of questions had to be highly structured. Although I had a framework of established questions, I nevertheless allowed the interviews to evolve freely (the basic set of questions is included in Appendix III). Respondents could stop the interview at any time if they felt uncomfortable. At the respondents' requests—and, on occasion, at my own discretion—I anonymised certain data, such as names of collaborators and production titles if the material was sensitive. Lastly, I made available a written consent form to all interviewees that outlined the intended use of these recorded conversations within the context of my doctoral research and, potentially, the wider academic and commercial framework of publication (see Appendix IV for a sample). This form was approved by the College of Humanities' Ethics Officer.

1.2.3 Case Study

Grave Men (2019) is a micro-/low-budget film representative of that budget level. As such, it exemplifies issues and debates that concern cinematographers working at that scale of production. This 91-minute film is ideal as a case study for a number of reasons, which I will explain below. Foremost, however, it is a transnational project that illustrates how it is becoming more difficult to define a film industry on a purely national level: the writer/director (myself) is Swiss, the producers and financiers are German, and most of the actors are British; the film was shot on location in London and post-

produced in Germany, although the final colour grading was done in London at my request. Furthermore, the film is interesting as a case study because of the extreme constraints of its 16-day shooting schedule, which illustrates how the advent of affordable digital technology has led to producers putting more pressure on cinematographers to deliver outstanding quality in less time. The tight schedule necessitated an incredibly efficient and unconventional way of filming that resulted in the elimination of crew positions (such as the Second Camera Assistant) and the 'collapsing' of several roles into one (i.e. the director-cinematographer-operator hyphenate).

This unorthodox shooting method, however, created opportunities for cinematographic experimentation that allowed me to push the digital technology to its limits—in an effort to create a fresh look based on the groundbreaking celluloid aesthetics of cinematographers Gordon Willis ASC (*Klute*, Alan J. Pakula, 1971) and Harris Savides ASC (*The Yards*, James Gray, 2000). With the aid of visual examples and comparisons, the case study will explore, among other things, how increased image texture—such as digital grain and colour filtration—intensifies the impact of a story. Consequently, the case study documents my attempts to create an aesthetic that will hopefully set the film apart from similar genre efforts in today's increasingly homogenised and over-saturated media landscape. At the same time, it will outline my struggle—as cinematographer—to retain control over the final image. As *Grave Men* was an independently financed production, the producer did not want to incur the expense of a professional colour grade before the film was sold; instead she asked the editor to 'tweak' the film's look without my approval—a practice that

is, unfortunately, becoming increasingly common not just in low-budget production.

The case study will also examine my experience as the director, cinematographer, and camera operator on the film. Although my status as a multi-hyphenate on the production was, to some degree, an economic necessity, it also provided a unique opportunity to assess and potentially re-evaluate traditional set hierarchies and crew roles in the camera department. During the filming and throughout post-production I therefore kept a journal that helped me reflect on my own practice. As I was evaluating my own reflections in preparation for this study, I realised that most of the entries in the journal revolve around the debate concerning the colour grade. Moreover, I found that my experiences with this issue were mirrored by statements made by my interview partners, which strongly suggests that unapproved image manipulation—particularly in post-production—is a pressing and challenging problem that cinematographers face today (independent of budget level or geographical boundaries). Therefore, my contribution to knowledge is the first-hand insight provided by these interviews, supplemented by the findings gathered from my own practice.

2   LITERATURE REVIEW

The current climate of perpetual change and uncertainty is unprecedented in the history of cinema. In the past, technological disruptions lasted for a few years, not decades. It is, therefore, not surprising to see growing interest in the role of the cinematographer during this time of turmoil—a role that has rarely been examined in great detail outside of practical textbooks. Although still far from plentiful, a growing number of publications (both from working practitioners and academic researchers) investigate the key issues facing the modern cinematographer. There is, however, still a pronounced gap between the academic literature on the subject and the practical work-texts aimed at aspiring filmmakers such as those produced by Brown (2008), Stump (2014), and Wheeler (2009/2013), for example. The main focus of these texts is on teaching the art and craft of cinematography, particularly in relation to camera technology, exposure, composition, and lighting. For practitioners, these resources are of vital importance; for academics, however, they offer little in way of serious reflection on the cinematographer's practice from either historical or cultural perspectives. Academic texts, on the other hand, tend to be primarily written from a scholarly and theoretical viewpoint, rarely taking into account the importance of first-hand experience that practice-based research provides. Such theoretical findings, however, are often deemed too abstract by practitioners and, consequently, ignored. Written from the perspective of a working cinematographer, this PhD, therefore, focuses on bridging the gap between these two worlds. The following is an analysis of the available literature on cinematography that addresses issues related to the key questions of this research, as well as a summary of the wide-ranging opinions expressed by

scholars and industry members in regard to the changing role of the cinematographer.

It is important to make the above-mentioned distinction between academic studies and practical work-texts because large numbers of scholars have heretofore been investigating digital disruption from a rather broad angle that neither focuses on cinematography itself nor provides a detailed analysis of its practice. Hadjioannou (2012), for instance, uses the terms 'digital cinema' and 'digital images' very loosely, sometimes in relation to CGI elements in a film, other times to denote digital technology in general but rarely with explicit reference to cinematography or its tools and techniques. He is chiefly concerned with the ontological questions raised by attempts to differentiate celluloid and digital "from the point of view of the representational treatment of reality as truthfulness" (p.212). Some of Hadjioannou's concerns do, however, feed into this research, particularly in relation to the perceived "immateriality" of the digital image (ibid., p.72) and the "entropic" qualities of film stock in relation to its grain (ibid, p.106). Both of these aspects of digital capture will be examined in more detail within the context of the practical case study in Chapter 7. For a more focused analysis of the cinematographer's role and its current challenges we need to turn to Ellis (2015), who interviews an impressive group of international cinematographers about the craft but then only asks two of them (Phil Méheux BSC and Oliver Stapleton BSC) about the current state and the uncertain future of the profession—a regrettable neglect, considering the rather interesting answers provided by the cinematographers in question. Méheux argues that the pace at which the development of digital filmmaking tools moves forward is a big threat to the profession because said tools might make the role

of the cinematographer superfluous in the near future. What used to take years to master in the analogue world (exposure, film stocks, processing) can now be achieved with a push of a button on a consumer device. In other words, the accumulated knowledge and expertise of the cinematographer is becoming less essential to the digital production process. More importantly, it is increasingly met with a lack of respect from producers and other collaborators. While excited about its possibilities, Oliver Stapleton sees digital technology as a double-edged sword. It opens up the production process to manipulation, inviting everybody from the producer to the colourist to the visual effects artist to make changes to the footage originally captured by the cinematographer. Stapleton fears that the original intent of the director of photography is thereby lost in the process.

Many scholars express similar views to these industry veterans, agreeing that the cinematographer's role is likely to change in the future. Some, however, see a more dramatic change than others. For Prince (2004), the introduction of digital post-production—particularly colour grading—was a watershed moment in film history that would forever alter the collaborative relationships between filmmakers. According to Prince, cinematography is becoming in itself a more post-production-orientated process: once the footage has been captured, it is open for manipulation in the digital realm. Beach (2015) takes this notion one step further by arguing that the cinematographer will eventually lose his/her status as the sole author of a film's visuals. As the 'look' will be the result of many individual elements—or layers—being added on top of the original cinematography (including VFX, 3D animation, and CGI), the DOP will be integrated into a team of digital compositors, colourists, and VFX artists, all of

whom will dilute his/her control over the final aesthetic of the film. Beach even predicts a collapse of traditional hierarchies and roles in filmmaking, particularly in relation to cinematography. Julie Turnock (Coleman et al 2016) echoes the findings of both Prince and Beach but adds that cinematographers are likely to be bundled together with other post-production staff in the future, and thus destined to join the ranks of faceless visual artists on a production company's below-the-line payroll. In her essay, '*Gravity* and the Lighting Designer Controversy', cinematographer Roberto Schaefer is quoted as saying that *Gravity* (Alfonso Cuarón, 2013), lensed by Emmanuel Lubezki, did not deserve its Oscar for 'Best Cinematography'. Instead, the trophy should have gone to the numerous VFX artists involved in the creation of virtual shots and CGI-based lighting. Schaefer sees Lubezki's participation as taking on the role of a "consultant" (Coleman et al, p. 198) rather than that of a cinematographer, as most of the captured images are subsequently re-framed and re-lit in post-production by a team of VFX wizards. One of the most interesting arguments to come out of this controversy, however, is the notion of a new, expanded skillset for the cinematographer, encompassing elements from neighbouring fields such as animation, VFX, and previz. Like Prince and Beach, Turnock hints at the necessity for such an expanded skillset but does not actually go into any detail about what exactly this would entail. In Chapter 6, I will therefore define the elements that, based on my research, should make up this new toolset for cinematographers in the coming decades.

The artistic assimilation predicted by all three authors is, of course, in stark contrast to cinematographer Vittorio Storaro's idea of the cinematographer as a "painter with light" (1995, p.96), a belief that is seemingly shared by

practitioners of the craft around the globe. In his much-quoted manifesto, *The Right to Sign Ourselves as "Authors of Cinematography"*,[8] Storaro defines the director of photography as the co-author of a film, giving him/her essentially the same—or at least comparable—status as the director. This is a radical departure from the established concept of the cinematographer as a mere 'craftsman', which can be traced back to the early days of the Hollywood studio system when the entire technical crew was regarded as below-the-line talent (Ettedgui, 1998). Historically speaking, Storaro therefore made an important intervention with his argument (which will be discussed in greater detail in 3.3). Picking up on this debate, Salt (2009) makes the point that, in the late 1960s and early 1970s, cinematographers were beginning to become more aware of their work and its impact on audiences. While he argues that this was mainly due to the fact that serialised publications and books focusing on cinematographic technology and technique became more popular and more widely distributed in the period between 1970 and 1980, he does not mention any specific titles (such as *Cinemagic*, *American Cinematographer,* and *Cinefex*). It is, however, important to note that the US publication *Cinemagic*, which ran from 1972 until 1986, was particularly instrumental in lifting the shroud of secrecy around cinematography, thereby educating budding filmmakers about the foundations of motion picture camerawork and trick photography. Similarly, books such as Joseph V. Mascelli's *The Five C's of Cinematography* (1965) and Kris Malkiewicz's *Cinematography* (1973) became standard work-texts for the early generations of film students. Critics and journalists, too, began to single out the talents of specific cinematographers (such as James Stevenson's profile of Gordon Willis in the October 1978 issue

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[8] Originally published in the programme book for the 1994 CamerImage festival in Poland. Re-published in *American Cinematographer* magazine in 1995.

of *The New Yorker*). As a result, audiences began to notice the work of specific cinematographers, recognising their individual style. It is not surprising, then, that DOPs like Owen Roizman (*The French Connection*, William Friedkin, 1971) and the aforementioned Willis (*The Godfather*, Francis Ford Coppola, 1972) quickly rose to stardom: their work was fundamental in establishing the notion of the cinematographer as an artist rather than a mere technician.

Caldwell (2008) points out that cinematographers like to think of themselves as descendants of the great painters such as Rembrandt or Caravaggio. In his view, the idea of cultivating cinematography as an art form deserving of serious study can be traced back to the beginnings of the industry (or, more precisely, to the 1920s), when the American Society of Cinematographers and its corresponding trade magazine, *American Cinematographer*, were established. But just like Price and Beach, Keating (2014) argues that, in the future, cinematographers will probably have to abandon the notion of being auteurs, with computer-aided previz[10] being one of many factors that are increasingly undermining the idea of the DOP as the primary visual engineer of a film. Furthermore, the increasing complexity of digital cinema cameras and the constant evolution of proprietary software required to process their output have created the need for a specialist job position on set: the Digital Imaging Technician (DIT). With cameras being able to capture massive data in a multitude of formats/codecs (RAW, uncompressed, compressed) and resolutions (from HD to 8K), data management has become a major issue on set and in post-production. While Keating acknowledges the importance of the DIT's role on modern film sets, he does not examine the

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[10] Previz uses virtual cameras to create animated storyboard sequences ('animatics').

relationship between the cinematographer and this particular technician in detail. This is not just a minor oversight, however, as the DIT wields considerable power and authority on set (more on this subject in Chapter 4).[11] Once again it becomes evident that, in the virtual age, an entire team of co-authors are supporting the director of photography during the making of a movie—most of them with equal claims to 'authorship' of the image. This research, then, will analyse these new dynamics in greater detail, particularly in relation to the different production stages of a film. Generally speaking, cinematographers need to extend their technical expertise beyond the contents of the frame. If they do not adopt such skills, the image-making process will continue to fragment into specialised departments with potentially conflicting interests.

At the lower end of the budget scale, on the other hand, cinematographers are facing the consequences of a 'digital democratisation' brought on by newly affordable production technology and the concurrent proliferation of social media channels. In particular, thanks to reality television and YouTube, today's audiences have become accustomed to what Holly Willis calls "desktop aesthetics" (2005, p.4): footage shot in a non-classical aesthetic, often on prosumer or even consumer gear. Catching on to this phenomenon, producers quickly began to compress schedules, budgets, and crew sizes to the point where semi-skilled labourers replaced classically trained crew people. At this rate, Keating (2014) argues, the discerning eye of the cinematographer

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[11] Flaxton (2015, p.79) singles out the introduction of relatively affordable 4K capture technology with the Red One camera in 2007 as a crucial catalyst for a hidden "change in employment functions" whose considerable impact on labour hierarchies is still being felt in the industry. He does not, however, go into detail as to what exactly these consequences are, or, more precisely, which "employment functions" have been reshuffled.

might soon become a luxury on low-budget shoots (as will be discussed in more detail in Chapter 5). Nevertheless, none of the authors discussed so far offer solutions to the modern cinematographer's quandary. Moreover, few scholars actually conduct first-hand interviews with working practitioners; their conclusions are entirely reference-based. The downside to this approach is the reliance on published materials that are more often than not part of a movie's extended marketing campaign (particularly articles in *American Cinematographer* magazine). Undoubtedly, any personal opinions and commentaries voiced in such trade magazines will have been thoroughly sanitised by the corporate filter before publication. This PhD, therefore, tries to remedy the situation by conducting interviews with leading international cinematographers and colourists, posing key questions about the changing role of the cinematographer and the future of artistic collaboration.

Furthermore, this research investigates one of the most important and exciting phenomena in modern cinematography (but largely ignored by researchers): the hyphenate director-cinematographer. Filmmakers like Steven Soderbergh, Mike Figgis, Cary Joji Fukunaga, Robert Rodriguez, Alfonso Cuarón, and P.T. Anderson have all functioned as their own cinematographers, signalling a new understanding of crew roles and hierarchies on set. This is the sort of heretical concept that would probably infuriate (and, potentially, scare) the members of the ASC or BSC; in my opinion, however, it deserves closer attention because it might re-invigorate cinematography in completely new ways. Caldwell (2008) discusses aspects of this development in regard to the 'collapsed' set hierarchies on TV series that work within extremely tight shooting schedules. Consequently, his arguments serve as a starting point for the

broader investigation of this subject in Chapter 6, which also illustrates potential ramifications for the profession of the cinematographer. Further to that, the case study of the feature film *Grave Men* will analyse my set practice as both the cinematographer and director on the project, and examine the benefits and drawbacks of Caldwell's collapsed hierarchies within the context of the key research questions.

3 ARTISTIC OWNERSHIP

3.1 Introduction

This chapter is going to discuss the growing difficulty of separating the cinematographer's contribution from that of an increasing number of collaborators and co-creators that crowd the production process: previz artists, picture editors, visual effects artists, animators, and digital colourists. As this chapter will argue, the issue affects predominantly cinematographers working at the top end of the budget scale—an area dominated by highly expensive tent-pole films that rely heavily on visual effects and are often based on popular IP franchises. These blockbusters generally feature a large amount of virtual (i.e. computer-generated) environments and characters that are either created entirely in post-production or—in the case of the latter—with the help of motion capture (MoCap) technology on set. These virtual elements are then composited into the actual image shot in front of green/blue screens by the cinematographer. This combination of traditional and virtual cinematography[12] results in what I call 'hybrid films', a mixed-breed of film, video game, and, to a growing degree, digital animation.[13] Due to the disproportionately large number of post-production elements added to the original camera footage, the cinematographer's contribution to the final image is often difficult, if not impossible, to identify, particularly as computer-generated sequences are maturing in complexity and photorealism—such as in Disney's *The Jungle Book*

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[12] Virtual cinematography, in this context, describes computer-generated sequences captured without actual physical cameras and lenses. Please see Chapter 6.3.4 for a more detailed discussion.

[13] A variation of the hybrid film is a production that mixes live-action footage with 'traditional' animation that is not necessarily meant to be photo-realistic, such as *The SpongeBob Movie: Sponge out of Water* (Paul Tibbitt, 2015).

(Jon Favreau, 2016). As current tent-pole releases such as *Godzilla: King of Monsters* (Michael Dougherty, 2019) and *Spiderman: Far from Home* (Jon Watts, 2019) prove, the trend is for the ratio between live-action footage and computer-animated imagery to shift even more towards the latter.[14] Hybrid films, therefore, will continue to challenge our established notion of cinematography—and, potentially, transform it entirely.

3.2   Hybrid Films: The Convergence of CGI, Animation, and Cinematography

In May 2016, the online edition of UK trade paper *Definition Magazine* published a video with a 'VFX breakdown' of the film *Deadpool* (Tim Miller, 2016)*,* musing whether the sheer amount of computer-generated work done on the film was potentially "a wake up call for cinematography" (Definition Magazine 2016, n.p.). Keating (2014) argues that this development will result in the cinematographer slowly losing his/her status as 'co-author' of the image and as one of the director's key collaborators. Moreover, the traditional triumvirate of director, cinematographer, and production designer has been expanded to include a fourth collaborator: the visual effects supervisor. As this chapter will illustrate, the extent of a cinematographer's involvement with the pre- and post-production process on big-budget films tends to vary greatly from project to project. Digital artists will generally take the helm in post-production, 'lighting' the environments created in the computer, while the cinematographer might take on a supervisory

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[14] Disney's insistence on labelling *The Lion King* (2019) as a live-action movie due to its photorealistic animation confused even the film's director, Jon Favreau (qtd. in Pearson 2019, n.p.): "Well, it's difficult because it's neither, really. It depends what standard you're using." This again illustrates how seamlessly the two worlds blend into each other—and how this further complicates matters for cinematographers.

role as a 'lighting designer' during this process (depending on creative and contractual factors). This trend can be traced back to the success of *The Matrix* (The Wachowski Brothers, 1999), which caused a surge in computer-generated images that saw complete environments, lighting concepts, and colour schemes being designed in the computer—along with a host of effects that had heretofore been created 'in camera', such as image shake, lens flares, and motion blur (Keating 2014). Inspired by the physically impossible, zero-gravity tracking and 'flying' shots used in video games, the virtual camera became commonplace in films like *Panic Room* (David Fincher, 2002) and *Avatar*, the latter of which also won the Best Cinematography Oscar for Maurio Fiore in 2010. Although credited to the DOP, the look of these films was influenced to a great degree by entire teams of VFX designers working in post-production.

Emmanuel Lubezki, who won a Best Cinematography Academy Award for *Gravity* (2013), explains that he worked with a dozen post-production lighting designers—which he calls "digital gaffers" (qtd. in B [sic], 2013, n.p.)—to create the film's seamless blend of real and virtual environments. All the shots in *Gravity* were based on previz. Furthermore, a "CG lighting supervisor" from the VFX company Framestore was in charge of the virtual lighting department during post-production (ibid.). What is interesting about Lubezki's assignation of the term 'digital gaffers' to the lighting designers is the way it diminishes the status of the traditional gaffer, whose role it is to head the lighting department and supervise all the lighting technicians. By re-assigning this term to all members of a virtual lighting team, Lubezki essentially destroys the long-established hierarchy within the lighting department, transferring the singular authority and responsibility of the gaffer to each member of the post-production

team and thereby elevating their status. Consequently, in the virtual world of production, the 'CG lighting supervisor' replaces the role of the traditional gaffer as the department head. Lubezki claims that he was able to create the lighting for the entire film this way—and his lighting supervisor claims that he worked directly with the cinematographer (B, 2013). If this is indeed true, then Lubezki inadvertently created a successful transition from traditional cinematography to the virtual world of lighting.

Not every cinematographer, however, experiences this process in a similar fashion. When I interviewed Phil Méheux BSC[15] (2017, n.p.), I learned that the DOP's role changes dramatically during the process of working on a hybrid film that, for instance, mixes live-action with animation, such as *The Smurfs* (Raja Gosnell, 2011). Despite the high percentage of animated elements in the film, the filmmakers initially used small model characters to rehearse the scenes as live-action. Méheux then had to light the models and decide on the camera moves but, in the end, he was shooting empty frames so that the animators could later add the eponymous characters in post-production. Méheux argues that it definitely takes "a different expertise" to work in such a fashion. When he subsequently filmed *The SpongeBob Movie: Sponge Out Of Water*—a hybrid film that mixes cartoon animation and live-action footage—the producers sent him an animated previz film that already came with key camera information such as focal length and lens height:

> I had nothing to do with that. I was not the 'author' of that frame at all. What I had to do was put it on film. I spent six weeks on *SpongeBob,* planning which unit was going to do what, which camera was going

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[15] Phil Méheux's credits include *The Long Good Friday* (John Mackenzie, 1980) and *Casino Royale* (Martin Campbell, 2006). He also served as president of the British Society of Cinematographers (BSC) from 2002–2006.

> to do what, with this previsualization storyboard ... So, my job is managerial, mostly. It's not really artistic in any way. (Méheux 2017, n.p.)

Méheux's account not only reveals how much of the cinematographer's work is, in fact, created in the virtual realm during post-production but also how much of it is pre-produced at the previsualization stage. Previz has become such an integral part of high-end production that it has almost entirely replaced traditional storyboarding. The downside to this, however, is that—unlike with storyboarding—the cinematographer is often excluded from the previz stage of production (as Méheux's example shows). Previz is generally created with the help of 3D animation software like Autodesk's Maya and is hence a rather costly affair; often only directors and producers are invited to contribute their input (see 6.3.2 for a more detailed examination of this process). Most striking, however, is Méheux's view of his role as "managerial" rather than artistic in nature. This strongly suggests that the cinematographer on such a film is valued for his/her craftsmanship but not necessarily for any sort of artistic contribution. Instead, the DOP is expected to capture scenes based on pre-defined templates that have been rendered as animated clips by the previz department. With the process described above, the cinematographer's essential artistic decisions—such as his/her choice of focal length, camera movement, and lighting design—are pre-decided from the start by collaborators of similar, if not greater authority. In hierarchical terms this means that, throughout the production process, the cinematographer becomes assimilated into a team of visual artists that ultimately share artistic control over the final image (Keating 2014). This development, however, is only one aspect of a much broader discussion that asks whether the cinematographer's claim to 'ownership' of the final image can still be sustained within the framework of a hybrid film.

At the heart of this debate is Claudio Miranda's Oscar-winning cinematography on *Life of Pi*, which famously prompted fellow craftsman Christopher Doyle HKSC to denounce the film as "a fucking insult to cinematography" (qtd. in Jagernauth 2013). Doyle carries on: "If somebody manipulated my image that much, I wouldn't even turn up. Because, sorry, cinematography? Really?" (ibid.). Doyle's reaction, while rather impulsive, nevertheless illustrates how emotionally charged the debate around hybrid films has become. The Canadian cinematographer Yves Bélanger (*Dallas Buyers Club*, Jean-Marc Vallée, 2013) voiced similar but more level-headed criticism against the film:

> A lot of the movies at the Academy Awards, the guys[16] who have won in the last few years are big CGI films like *Life of Pi* ... I saw the set—they shot in Montreal—and it was fucking green-screen. You kind of light flat so they can recreate the contrast [in post-production]. You basically drink coffee with the director and make jokes: "Go ahead, make my day." (Albrecht 2016, n.p.)

It is rare for mainstream media—or any media, for that matter—to report such scathing peer reviews of a cinematographer's work, particularly as below-the-line crew members are generally guarded about disclosing issues relating to work practice. Nevertheless, the majority of the criticism levelled at *Life of Pi's* cinematography came from Miranda's peers rather than from film critics. It appears that neither professional secrecy nor marketing politics could keep this debate from the trades, which makes it somewhat unprecedented. There is, however, another important—and rather compelling—reason why the controversy rages mainly within professional circles: audiences might not even be aware of any issues to begin with. As Beach (2015, p.176) points out in regard to cinematographer Mauro Fiore winning the Oscar for Best Cinematography for *Avatar* in 2010:

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[16] This gender bias, unfortunately, figures rather prominently in many interviews presented in this study. For the sake of authenticity, however, quotes have only been edited for clarity.

> How could members of the Academy be expected to evaluate the quality of the film's cinematography if they could not tell whether a particular image or scene was photographed, digitally created, or some combination of the two?

According to director James Cameron's rough estimate, *Avatar* consists of 60% computer-generated images and 40% live-action photography (Beach 2015). The near seamless integration of the CGI into the film makes it very difficult to distinguish the traditional photography from the computer graphics. Therefore, critics, Academy members, and audiences alike could be forgiven for thinking that Fiore's work was indeed the best cinematography of the year. But as with *Life of Pi*, the criticism levelled at the film predominantly came from the cinematographer's own ranks. Consequently, the American Society of Cinematographers introduced a 'Virtual Cinematography' category at the 2011 ASC Awards in order to acknowledge the growing number of hybrid films being released—and, possibly, to appease any voices of dissent (Keating 2014). In a widely read article by Carolyn Giardina (2016c, n.p.), award-winning cinematographers Ed Lachman ASC and Robert Richardson ASC equally argued for a new Oscar category to be introduced at the Academy Awards: one that solely caters to hybrid films featuring extensive use of computer-generated images—in order to separate them from what Richardson terms "'classically' photographed" films. Lachman points out that, on hybrid films, the VFX artists are in control of the lighting, not the cinematographers. As an example, Richardson compares *The Hateful Eight* (Quentin Tarantino, 2015)—which he shot on film negative and finished photo-chemically—to *Life of Pi*, which was shot almost entirely in front of green screens with digital cameras,[17] Richardson (qtd. in Giardina 2016b, p.62) sums up the issue as follows:

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[17] As mentioned in 1.1, these issues mainly affect films at the top of the budget scale, in particular hybrid films. Medium- and low-budget films, on the other hand, rarely rely on VFX, hence such issues are less pronounced.

> A great deal of what viewers are looking at is not in fact 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.

Stephen Lighthill, the chairman of the American Film Institute's cinematography programme and the former president of the ASC, recalls meeting with other established cinematographers to discuss the idea of two Oscar categories—one for traditional cinematography and one for visual effects cinematography—and coming to the conclusion that it was "a dead end for cinematographers". He fears that the segregation of labour will lead to a "ghettoization" of traditional cinematography (qtd. in Curtin and Sanson 2017, p.90). Although Lighthill uses less incendiary language than some of his more flamboyant peers, the use of the highly charged word 'ghetto' within this context reveals an equally impassioned but, at the same time, more disturbing viewpoint that hints at nothing less than the eradication of traditional cinematography. Part of his fear derives from the notion of a loss of status, of becoming a second-class cinematographer compared to the 'elite' DOPs working on VFX blockbusters. Furthermore, there is concern that traditional photographic work might no longer be aesthetically valued—or valued less—because cinematographers will have to compete more frequently with the pixel-perfect appeal of virtual environments. A great deal of a cinematographer's work traditionally involved controlling the sun and the weather on exterior shoots; the virtual gaffers and lighting designers, however, can literally play god with their 3D animation tools: like painters they can create every imaginable weather pattern or lighting situation with the stroke of a pen on a PC tablet.

The painting analogy opens up another debate, because cinematographers have commonly referred to themselves as 'painters with light'

throughout film history (see p.23). The current trend towards virtually created environments in lieu of photographic elements strongly suggests that the cinematographers' coveted painter analogy might not hold much water anymore in the future—because the 'real' painters working in film are now the virtual gaffers and lighting designers. Fussfeld Cohen (2014, p.50) discusses the far-reaching implications of these new technologies and job roles:

> In comparison with traditional means, digital cinema's more flexible, agile, and accessible practices provide the filmmaker with greater controllability over cinematic manifestations, which embody the potentially unlimited implementations of the digital filmmaker's aesthetic aspirations.

There are indeed no limits to what can be created in a computer these days. The gist of Fussfeld Cohen's argument is the question of control over the image: in the virtual environment, it is total and complete; in the world of the cinematographer, it is fleeting and cause for constant struggle. Controlling the elements of nature on a film shoot has traditionally been one of the most time-consuming—and often frustrating—experiences for cinematographers. Claudio Miranda explains why *Life of Pi* was ultimately shot in front of blue screens rather than in a real environment:

> I've always been someone who said yes to new technology, and look at it and learn from it. [On *Life of Pi*] we went out to sea, did a little experiment, and it was like a yard sale. It was a little bit of a disaster; it was not practical ... In truth, for me, it would have been much easier to shoot in a real ocean ... It is much more work to try to create [in a studio]. So we built an exterior tank, because I wanted to use real sky and daytime. (Miranda 2017, n.p.)

Moreover, Miranda is adamant that the film would have only required three weeks of finishing work [18] in the Digital Intermediate suite had it been traditionally photographed in a real environment (ibid.). But as the environments were almost entirely created in the computer, the post-production process

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[18] This generally entails integrating the VFX shots into the edited sequences for the subsequent colour grade.

became more elaborate and time-consuming than expected:

> Usually DOPs are only paid for a couple of weeks maximum at the end of a movie. I stayed on *Life of Pi* for three months; so, you kind of work for free for two and a half months. [After the shoot] they say you can go if you want to, but that's terrible—you lose all control once you leave. You gotta stay, even if they are not paying you. Everyone does. (Miranda 2017, n.p.)

Miranda's rather revealing comment—made during my interview—strongly suggests that the producers of the film regarded his presence during the 'staging' and 'lighting' of the computer-generated sequences as optional. It could even be argued that—at least in this case—the cinematographer was seen as expendable. And while he does not state it explicitly, Miranda nevertheless implies that he was not paid for the majority of his supervision during the post-production process, choosing to soften the impact of the statement with the phrase "kind of". The underlying message, however, is very clear: cinematographers working at this level of production (i.e. hybrid films) cannot expect to get paid for their supervisory function during post-production. They will either have to relinquish control of the image or work unsalaried. Unsurprisingly, Miranda was quite guarded when talking about these aspects of the production during our conversation. Furthermore, one can pick up a sense of paranoia in his words: a fear of handing over image control to the post-production departments, who in his view pose a threat to the artistic integrity of his work. Although Chapter 4.2 of this thesis will examine the issue of image manipulation in greater detail, the topic—owing to the way it intersects with questions of artistic ownership—nevertheless deserves some attention at this point as well.

Most problems concerning image manipulation without the cinematographer's consent—in particular the wanton re-framing/re-colouring of

frames by editors, colourists, and directors—arise in post-production. As such, these issues actually affect films at every budget level. In regard to hybrid films, however, the problem is more complex, as the camera rarely captures 'complete' images per se. Instead, a significant amount of visual content will be added to the shots and sequences in post-production: animated characters, CG landscapes, digital lighting, and virtual camera moves. The cinematographer, therefore, merely captures a template rather than a finished shot. These template shots often lack crucial pictorial information—such as computer-generated characters and backgrounds—that is required in telling the story. The missing information is substantial enough to necessitate significant augmentation in post-production, thereby requiring the craft and artistry of other creative authorities such as visual effects artists and 3D animators. In terms of sheer visual impact, their contributions often overshadow the 'template photography' of the cinematographer, which might consist exclusively of live-action fragments recorded in front of chroma-key backgrounds. Beach (2015) argues that this trend will eventually diminish the importance of capturing precise images during the shoot, because so many aspects of the footage can be altered with relative ease in post-production—either in the DI or with CGI. If this work practice were indeed to become commonplace, it would severely downgrade the cinematographer's importance on a film shoot and relegate him/her to the status of a 'shooter' rather than an artist. The term 'shooter' traditionally applies to camera operators who shoot news for television, which is a special skill that requires extreme efficiency and speed—but not necessarily precision or artistry. The main goal is to acquire as much footage as possible in a short period of time so that a story can quickly be edited and delivered for broadcast. This skillset, however, is diametrically opposed to that of the

classically trained cinematographer, who often spends hours composing and lighting a single shot. The question, therefore, is whether this trend can still be reversed—or whether the post-production cluster will eventually usurp the traditional position of the cinematographer.

During my interview with Roberto Schaefer ASC AIC, [19] the cinematographer argued that the only way forward in the current climate is to acknowledge the multi-departmental aspects of the craft:

> I think awards should be given for a collaborative award to recognise that certain films—they will remain nameless at this point—have been highly awarded were really the work of the cinematographer and the final DI colourist and the VFX supervisor and the production designer ... The [VES Awards[20]] have an award where they actually mention the DOP also. Because they realise it's a collaborative effort and it's not any one department creating this final image now. (Schaefer 2017, n.p.)

Indeed, the cinematographer is now nestled within a whole team of collaborators and co-creators working towards the final image. And while the emphasis in Schaefer's statement is on awards ceremonies, we can nevertheless deduce that the issue is much more important and far-reaching than that: it is about acknowledging and valuing the cinematographer's contribution to the finished film. Coming back to Fussfeld Cohen (2014, p.52), we can, in fact, expand the argument to include the audience and ask how relevant traditional imagery still is:

> With the assimilation of digital technology into cinema, reality has lost its status as a central source of reference for cinematic imagery. Rather than affirming reality as a concrete origin, the iconic, computer-based image expresses an excessive distancing from its traditional status.

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[19] Schaefer's credits include *Monster's Ball* (Marc Forster, 2001) and *Miles Ahead* (Don Cheadle, 2015). More recently, he co-edited *Transnational Cinematography Studies* (Lexington Books, 2017), one of the few academic books entirely devoted to cinematography.
[20] Visual Effects Society (VES)

With the advent of *Avatar*, audiences became more accepting of the 'augmented reality' offered by virtually created environments and CG characters. The overall frame of reference mentioned by Fussfeld Cohen, however, has shifted dramatically over the last ten years, with films becoming more like video games—and vice versa (see Chapter 6.3.4 for a more thorough discussion of this topic). Today's cinematographers, therefore, sit rather uncomfortably between the two worlds of traditional, reality-based photography and the rapidly evolving art of computer graphics. The latter merely depicts a likeness of reality (what Fussfeld Cohen refers to as "iconic"), while the former provides an actual record of it (which can, of course, still be manipulated). Cinematographers, however, do not create reality—they merely capture it. Digital artists, on the other hand, create their own frame of reference for reality when they design environments and characters from scratch; their skills and tools not only eclipse those of traditional cinematographers, they also seem more apt to fulfil what Fussfeld Cohen calls "the filmmaker's expressive ambitions" (2014, p.52): quite literally, anything is possible in the gravity-defying world of virtual cinematography. If cinema is indeed turning into a "a subgenre of painting", as Manovic (2002, p.295) argues, DOPs will soon find themselves ill-equipped and without a canvas to create on, as virtual cinematography needs neither film stock nor sensors—in fact, it does not even need lenses (see Chapter 6.3.4). The consequences for the craft will, undoubtedly, be highly transformative.

Furthermore, Julie Turnock (Coleman et al 2017) argues that the increasing use of computer-generated imagery in hybrid films has led to an aesthetic homogenisation that makes it fundamentally difficult to identify any

sort of individual style in the cinematography. This is in part due to the process previously described by Phil Méheux (see p.31), which resembles template photography more than actual cinematography: the industry's dependence on previz has led to a much more homogeneous aesthetic, particularly—but not exclusively—in the arena of hybrid films. Camera moves, for example, are often designed with previz software and, subsequently, executed with the help of motion-controlled cranes or dollies; this way, frame-accurate virtual characters and environments can be added with greater precision. For exactly this reason, however, many sequences in hybrid films—or blockbusters in general—feel automated and repetitive; one need only compare the key action scenes of the Marvel Studios films to each other—or to similar big-budget fare such as *Godzilla: King of Monsters* or *Spiderman: Far from Home*—to notice the similarities in the way the camera moves. Presumably, the cinematographers were filming empty frames—or, alternatively, physical 'stand-ins'—for the VFX department to complete. The demonstration of an individual style is, however, very important for cinematographers, as Turnock rightly recognises. I argue that it is, in fact, as crucial as the quality of their work in securing future job offers. In Europe and America (and indeed in most western countries), cinematographers tend to work as self-employed contractors or free-lancers. For the majority of film technicians and cast members, the film industry is essentially a gig economy that only offers short-term contracts. Since the demise of the Hollywood studio system in the 1950s and 1960s, full-time employment (i.e. contractual work) in any western film industry has been almost impossible to attain. By and large, cinematographers have to rely on the quality of their past work and a network of professional contacts to find new employment opportunities—which will inevitably only ever be of a temporary nature. 'Gigging'

for a living, therefore, requires them to continually advertise their expertise to potential employers; consequently, having a 'unique selling point' is crucial to professional success. For cinematographers, this equates to having a particular style or individual skill that can set them apart from the competition. Examples include the 'faux documentary' style of cinematographers like Barry Ackroyd BSC and Sean Bobbitt BSC; the strong top-light effect used by the late Gordon Willis ASC on *The Godfather*; or the blooming highlights frequently deployed by Robert Richardson (*JFK*, Oliver Stone, 1991). Apart from being expressions of personal taste and artistic vision, these visual trademarks also make a cinematographer's work instantly recognisable—an important feature if he/she wants to survive in the gig economy of the film industry. But the demotion in rank brought on by the increasing use of digital artists makes it difficult, if not impossible, for cinematographers to retain any kind of individuality or personal expression in their work. The continuous blending of the factual and the virtual world creates an overlap of images whose origin—camera or computer—is nearly impossible to define. Consequently, all footage essentially becomes anonymous 'data', rendering the cinematographer's contribution entirely indistinctive. The elephant in the room, then, is the question whether today's cinematographers will soon become superfluous. When Lighthill mentions the "ghettoization" of the trade (see p.35), he may in fact be referring to an accelerated demise of the traditional cinematographer due to a class system that favours the high-end computer graphics of hybrid films over reality-based, physical photography.

In this section, I have argued that the creative authority of the cinematographer is being challenged by a growing number of specialists and

collaborators who each stake their claim to artistic ownership of the final image. Keating (2014) argues that the trade we call 'cinematography' might fragment into a number of highly specialised positions in the future—of which the DOP could just be one. To prevent this from happening, cinematographers must retain a key role in post-production as well as in previsualization. In my own practice-based research, however, I find that the current industry developments, troubling as they may be, also offer opportunities to push past the established boundaries of the profession. Such an approach, however, will require a re-thinking of the traditional hierarchies and practices that have been with us for a century of filmmaking. In Chapter 6, I will outline a number of possible solutions and approaches that could help redefine the role of the cinematographer in the future. First, however, I am going to explore current industry debates and examine the cinematographer's changing practice in the face of new digital workflows and technological democratisation.

3.3 Artist or Technician: Quo Vadis, Cinematographer?

In this part of the chapter, I am going to examine the issue of the cinematographer's historical duality as both craftsman and artist, and how this conflict exacerbates the current debate around artistic ownership (or, as some cinematographers label it, 'authorship'). After a brief discussion of the cinematographer's progression from technician to artist in the mid-twentieth century, I will turn to current examples of authorship claims and their implications for the future of the profession. Furthermore, I will discuss a recent, highly publicised authorship dispute in Europe, although it must be noted that the main focus of this chapter is on the Hollywood studio system and, more importantly, on the American Society of Cinematographers (ASC) due to its long history and prominent position in this debate.

Since its incorporation in January 1919, the American Society of Cinematographers has not only been promoting and protecting the work of its members, it has also been building a theoretical foundation for the serious study of cinematography as an art form, mainly via its own trade magazine, *American Cinematographer* (first published in 1921). Moreover, the guild has been instrumental in raising the profile of cinematographers in general—both within the industry as well as in the eye of the public. Cinematographers have always craved recognition as more than just technicians or craftsmen.[21] What makes them quite unique among film technicians is that their role requires both technical expertise and artistic vision to elevate an industrial product to the level

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[21] According to Regev (2018, p.144), craftsmen are defined as "skilled workers whose labor required technical knowledge that was acquired in formal apprenticeship or by assisting other experienced craftsmen".

of a work of art (Ettedgui 1998). Cinematographers managed to establish their status as artists within the industry system in the early 1940s, when the ASC guild merged with the Local 659 union. Regev (2018, p.162) quotes from selected contractual agreements that acknowledge the "unique abilities" of the cinematographer: they were "of a special, unique, unusual, extraordinary and intellectual character, and of great and peculiar value to the producer". This essentially granted cinematographers the artistic status normally reserved for actors, directors, writers, and composers. However, cinematographers ultimately have to sign over any rights to the image to the producer or the production company. In essence, this means that—unlike writers, directors, and composers—cinematographers are not entitled to any residuals or royalties during the film's commercial exploitation cycle. In film industry accounting terms, this also means that cinematographers are below-the-line employees, whereas actors, directors, and writers are regarded as above-the-line 'talent' (Ettedgui 1998). I asked Phil Méheux to explain what the line in question refers to:

> [Cinematographers] are 'below the line' because we are salaried. Everyone above the line works for a fee. I don't work for a fee. And I don't know if I would want to work for a fee. If they book me for six weeks at £20 a week, and then we shoot for 14 weeks, I want another £20 for those other weeks. That's what below-the-line means. Above-the-line means that the director will get £2million to direct the film: they get a million the day they start shooting, and a million the day they deliver the final cut. That's his deal. What happens in between is up to him. (Méheux 2017, n.p.)

The line, therefore, serves to separate the so-called 'talent' (actors, director, writers) from the technicians—both literally (as an accounting measure) and figuratively (as a hierarchical demarcation line). On a film shoot, cinematographers might well enjoy the appreciation and respect reserved for artists, but in the eyes of the industry bookkeepers they are nevertheless

regarded as technicians rather than 'talent'.

Embedded in this conflict, however, lies another issue: the idea of 'authorship' in cinematography. This is a historical debate that predates the advent of CGI and virtual cinematography but has been refuelled by the introduction of these technologies. In this thesis, however, I make a distinction between so-called 'authorship' and what I call 'artistic ownership'—mainly because the former term, in the context of film theory, is more appropriately used in relation to a film's director (i.e. the 'auteur theory'). 'Authorship', as used by many cinematographers, refers to the DOP as author of the image. This terminology, however, has never been clearly defined; the closest we find in the way of a definition is cinematographer Vittorio Storaro's manifesto:

> If one holds to the interpretation which sees the director (defined by law as the principal author of a cinematographic work) as the sole controlling and creative force behind the camera, one must therefore acknowledge that the 'director of photography' ... ought to be considered a co-author of the cinematographic work and consequently an author in his particular field of cinematography. By 'writing with light', the cinematographer leaves his personal and original mark on a film, so much so that every director, producer, critic and moviegoer does not hesitate in defining his contribution to that same Film as 'creative'. (Storaro 1995, p.96)

In his proclamation, the DOP of *Apocalypse Now* (Francis Ford Coppola, 1979), whose revered status in the cinematography community borders on the religious, elevates the cinematographer to the status of "co-author" of the film, based on the assumption that he/she imprints "a personal and original mark" on the work. Although a detailed dissection of the nature of the director/cinematographer relationship is beyond the scope of this study, we must nevertheless examine this traditional pairing a bit more closely concerning the 'authorship' issue. According to Mateer (2014, p.4), the cinematographer's collaboration with the director is defined as follows:

Cinematographers work with a director to develop a visual means of interpreting the story. In narrative film, this process typically includes the breaking down of scripts first by acts, then by scenes, and finally by dramatic beats. At each stage, primary and secondary themes are interpreted in terms of tone and desired audience response. From this, details of setting   and basic production design begin to emerge, leading to a definition of a visual style.

Ettedgui (1998) seconds the notion of cinematography as an act of interpretation rather than origination. According to both scholars, directors and screenwriters are commonly associated with originating ideas, whereas the cinematographer—working in close collaboration with the director—merely takes on the role of interpreter. This strongly suggests that Storaro's definition of the cinematographer as "co-author" of the film might be too presumptuous. After all, the title of 'author' implies a strong involvement with the film's origination—which, as per Ettedgui's and Mateer's definition, is generally not part of the cinematographer's process. But although it questions the claim of 'authorship', Ettedgui's argument in no way slights the importance of the cinematographer's contribution to a film:

> Film is primarily a visual language, and the defining moments in its evolution—such as the example of *Citizen Kane* [1941]—have almost always come about as the result of the creative chemistry between director and cinematographer. (Ettedgui 1998, p.9)

Orson Welles' strikingly visual debut feature is, in fact, an important milestone in the recognition of the cinematographer's artistry and influence. Lieberman and Hegarty (2010, p.34) illustrate how closely Welles worked with his DOP, Gregg Toland, and how the director expressed his appreciation and respect for him:

> The last credit on *Citizen Kane* reads "Director Orson Welles, Photography Gregg Toland," and although Welles's name is on top, and both names are the same size on the screen, the font for the word "Photography" is bigger than that for "Directing"—a final acknowledgment from Welles of Toland's central importance to the landmark film.

This clearly suggests that Welles considered Toland more than just a collaborator; in this instance, it could indeed be argued that the director regarded the cinematographer as the "co-author of the cinematographic work", according to Vittorio Storaro's definition. While Lieberman and Hegarty make a striking case for Storaro's 'co-author theory', we must nevertheless look at *Citizen Kane* as something of an anomaly in the history of film—certainly in regard to the cinematographer/director relationship—because a similar case of shared credit is nearly impossible to find.

Storaro's manifesto, however, proved very influential and received further support from trade organisations like the ASC and IMAGO (the so-called 'European Federation of Cinematographers', which advertises itself as an umbrella organisation for Europe's most prominent cinematographer societies). Pushing forward the issue of 'author's rights' for cinematographers, IMAGO published its 'Guide on Contractual Agreements for Authors of Cinematography' in 2008;[23] it proposes, among other things, how royalty-based compensation for cinematographers should ideally be handled. These guidelines, however, are in no way binding for producers—they merely serve as recommendations and templates for cinematographers upon which they can base their negotiations with prospective employers. The importance and potential benefits of these guidelines, however, cannot be overstated: in 2016, the ASC organised the International Cinematography Summit (ICS), a global gathering of cinematographers, to discuss the very question of 'authorship'. At the heart of the conference was the case of German cinematographer (and IMAGO board

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[23] IMAGO also publishes an incomplete but continually expanding list of country-specific information regarding the global state of affairs of author's rights for cinematographers ('Authorship for Cinematographers around the World'). [Source: Imago.org]

member) Jost Vacano ASC BVK, who had just won a landmark court settlement in his home country: after an eight-year legal battle, a Munich court awarded him financial compensation and future royalties for his artistic contribution to Wolfgang Petersen's hugely successful *Das Boot*, which he had shot in 1981 (Carissimo 2016). In September 2018, a court in Stuttgart awarded him an additional compensation of EUR 315,000 based on television airings of the film on the German channel ARD and its subsidiary broadcasting outlets. According to German magazine *Der Spiegel* (2018, n.p.), both courts cited a "striking disparity" between the sum Vacano was originally paid for his work (EUR 100,000) and the massive amounts of money the film made over several decades (estimated to be more than $100m). ARD announced they might appeal the court ruling, stating that this was an unprecedented case that might have negative repercussions for the entire broadcast industry. Vacano—whose work on the film was nominated for a Best Cinematography Oscar in 1983—had to prove in court that his creative contribution was substantial enough to help the film become such a global success. The cinematographer argued his case by explaining how he had German equipment manufacturer ARRI modify a handheld camera for him, so that he could run through the extremely narrow walkways of the submarine set, thereby creating many of the film's signature 'tracking' shots (Beier 2016). But the same news article also asks an important question about the case's implications for the future of the German film industry: what if suddenly all major below-the-line workers (such as costume designers or editors) demanded financial compensation based on a film's success? Phil Méheux acknowledges that the court ruling is indeed a double-edged sword for cinematographers:

> My contract now in America is 19 pages long; I virtually have no rights, whatsoever. I have no authorship, and I have no rights in the

material whatsoever. It's purely a European thing, this [i.e. the Jost Vacano case]. But my argument with Jost Vacano—good luck to him ... What it means, though, is that every producer now will make sure that that will never happen again ... So, in the contract now there will be a paragraph that will say: 'the signee agrees that he gives up all rights to any further claims for profit.' All that will be in the new contract. (Méheux 2017, n.p.)

While the German court ruling might not affect Vacano's career anymore (he is retired now), it could possibly have negative repercussions for cinematographers still working in the industry today. Clearly, the German cinematographer's intention was quite the opposite: to stand up for the moral rights of the artist and to represent not just himself but the trade as a whole. As Méheux concludes, however, producers could see the outcome of the court case in a different light: they might perceive their carefully preserved profit system threatened by armies of below-the-line workers demanding royalties. Naturally, this would topple the entire film industry—not just in Germany but around the world, too.

Given the increasingly virtual nature of big-budget film production, however, it is debatable whether future cinematographers will even be able to make such claims to 'authorship' anymore. If it were made today, *Das Boot* would likely be created with the help of computer-generated images and digital set extensions rather than miniature models and practical builds; the cinematographer's contribution to the final film would arguably be less identifiable than in the original film. As such, the debate around 'authorship' seems increasingly superfluous in today's production climate. At the same time, however, the cinematographer's waning influence on hybrid films might actually account for the renewed interest in the discussion around so-called authorship; finding their artistic control under threat from other collaborators,

cinematographers fall back on the historical debate, hoping that it will inflame the current situation. But as Méheux predicts in regard to Vacano's court case, this development might actually exacerbate the problem and lead to even more stringent contractual agreements between producers and cinematographers in the future. But as I will illustrate in the case study (see Chapter 7), the issue of 'authorship' often distracts from the real problem that cinematographers—myself included—have been facing for a while: the validation of our work. As Chapter 4 will examine, producers and directors generally do not have an excellent track record of appreciating the cinematographer's work (apart from financial remuneration). Orson Welles' example is, therefore, all the more exceptional because it demonstrates a rare awareness of—and mutual respect for—the cinematographer's contribution, which is rare in this industry.

In this chapter, I have argued that the historical debate concerning the definition of the cinematographer as artist or technician fuels the current issue surrounding so-called authorship of the images. There is a difference in perception, however, between the term 'authorship' (as used by some cinematographers) and my own definition of the same, which I call artistic ownership (mainly to distinguish it from the 'auteur theory'). The debate whether the cinematographer should be seen as an artist rather than a technician is likely to lose importance in the future, given the growing amount of digitally augmented images in modern cinema and television. If anything, this trend strongly suggests that cinematographers might be predominantly classed as technicians in the future, thereby losing certain creative privileges to digital artists working in post-production (and whose computer-aided palettes far exceed the tools of the traditional cinematographer). As argued in the previous

section of this chapter, the cinematographer in the arena of big-budget films is likely to become more of a 'shooter' than a co-creator, tasked with delivering post-production templates rather than 'complete' images. The next chapter will focus more closely on the new technologies that are currently impacting the profession, particularly in regard to image manipulation without the cinematographer's consent.

4　　DIGITAL WORKFLOWS

4.1　　Introduction

This chapter examines the impact of new digital technologies and workflows on the role of the cinematographer. Ever since the introduction of the Digital Intermediate (DI) in the 1990s, many processes and technologies that affect cinematographers have been updated, refined, and redefined almost yearly, propelled by the seemingly infinite possibilities of new digital and virtual post-production tools, such as frame-based colour grading, computer-generated imagery, and high-resolution workflows. According to Belton (2002, p.100), advancements in digital technology have, in essence, "transformed the photographic image into a truly 'plastic' object that can be moulded and remoulded into whatever shape is desired." Similarly, Lev Manovich (2002, p.303) argues that "in digital filmmaking, shot footage is no longer the final point, it is merely raw material to be manipulated on a computer, where the real construction of a scene will take place." Manovich concludes that, in the digital/virtual age, "production becomes just the first stage of postproduction" (ibid.). Consequently, post-production requirements now drive the filmmaking process to such a degree that directors and producers increasingly expect cinematographers to 'shoot flat',[24] so that the actual look of the film can be created in post-production (Caldwell 2008). Moreover, the introduction of the DIT (Digital Imaging Technician) position on set has led to cinematographers losing some of their authority to a computer wizard who is taking over tasks

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[24] 'Shooting flat' implies that the cinematographer will refrain from using strong lighting contrasts on set, such as 'chiaroscuro'.

traditionally assigned to the DOP, such as exposure control.[25] This research, then, identifies concrete evidence of changing practice within the film industry. More importantly, it reveals a gradual but perceptible loss of respect for the work of the cinematographer as evidenced by the industry's cavalier attitude towards unapproved image manipulation. Chapter 7 of this thesis will analyse the politics and machinations of such third-party interference in detail, using my film *Grave Men* as a case study. The present chapter, however, assesses the issue from a more omniscient perspective, arguing that the cinematographer's authority is slowly crumbling under the pressure of technological advancements and the increasing leverage of the post-production industry.

4.2   Losing Control: Image Manipulation in Post-Production

Beach (2015) identifies the introduction of Digital Intermediate (DI) technology in the 1990s as a watershed moment in the history of cinematography. Originally used in conjunction with 35mm and 16mm film, the DI process allowed filmmakers to scan the negative into the computer and make unprecedented frame-by-frame changes to the image (particularly in relation to colour and shot size), thereby essentially replacing traditional photochemical post-production. Early adopters of this ground-breaking digital technology were Martin Scorsese's *The Aviator* (2004), which used the new tools to re-create a two-strip Technicolor look for parts of the film; Gary Ross' *Pleasantville* (1998), which used partial colouration of the frame for its black-and-white sequences;

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[25] At a presentation by the ACS four years ago, Oscar-winning cinematographer John Seale relayed how, on *Mad Max: Fury Road* (George Miller, 2015), he basically surrendered exposure control to his DIT in order to meet the demands of the VFX department (Seale 2015, n.p.).

and the Coen Brothers' *O Brother, Where Art Thou?* (2000), which was arguably the first celluloid film graded entirely in the digital domain. While this technology was at first liberating for cinematographers—offering them a completely new toolset and unprecedented control over the image—it eventually turned into a quick-fix solution for other collaborators (particularly directors, editors, and post-production specialists) who sought similar control over the visual parameters of a film. [26] As this section will demonstrate, excluding cinematographers from this part of the process essentially puts the collaborative nature of film production into question.

At the 2016 International Cinematography Summit, hosted by the ASC, cinematographer Guillermo Navarro ASC cautioned his peers that "technology has enabled ignorance; everyone's an 'expert'" (qtd. in Giardina 2016d, n.p.). The summit was a representative gathering of cinematographers from around the globe who were collectively struggling with issues related to image manipulation in post-production. These issues directly reflect the seismic changes introduced by the adoption—and subsequent maturation—of digital technology, most prominently the Digital Intermediate. Industry veteran Oliver Stapleton BSC sums up the status quo as follows:

> It is an interesting time [today] because the possibility of making images that look different has never been bigger because the tools in digital [sic] make it possible to achieve different looks ... The problem really is the control. The control of the image is in the hands of the many and not the few. What tends to happen is that producers, colourists, and all kinds of people in the chain, including special effects people, get their hands on the material. (Ellis 2015, p.18)

Janusz Kaminski ASC, who, since *Schindler's List* (1993), has been working

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[26] Although most film industries have by now largely moved away from shooting on film, cinematographers still apply the anachronistic term 'Digital Intermediate' to post-production, even if the footage was originated digitally.

predominantly with director Steven Spielberg, points out the irony of the issue: "the image can be controlled to such a degree—but I don't have control of the image" (Frazer 2018, n.p.). Essentially, despite a whole range of new tools, cinematographers now have less control over the image than ever before, precisely because of these new tools. Taking the argument a step further, Phil Méheux contends that "the cinematography of a film is no longer the sole proclivity of the cinematographer" (Ellis 2015, p.40), while Seamus McGarvey ASC BSC fears that this development will eventually lead to "cinematography by committee" and, ultimately, to the erosion of the last bit of magic from the filmmaking process (Goodridge and Grierson 2012, p.159).

   With my own research I wanted to dig deeper and extract more detailed information about the aspects of production that are presently—in the eyes of many established DOPs—spinning out of control. Sitting down with Roberto Schaefer, I learned that the matter is fairly complex, involving a chain of issues that run through the entire post-production process:

> [Cinematographers] are not in the editing room, and, you know, the editing tools now—I mean, the AVID [edit system] has gone beyond: it's a complete colour grading system now: it's like a DaVinci Resolve [grading suite] and an editing machine put together. [Editors] do re-framing, they do colour-shifting. I've heard stories where the Assistant Editor gets the dailies in the morning and changes the colours cause they don't feel that it's the way it should be—and these are with LUTs [Look-Up Tables][27] and everything put on them from dailies. The visual FX people, they're doing their job, for sure, but they can also take your stuff and move it into a different direction. And then they get into the DI and if you're not there—or even sometimes when you are there—things get changed from the way you would like it to be. (Schaefer 2017, n.p.)

Schaefer essentially identifies three different areas of conflict for cinematographers: editing, VFX, and colour grading. Over the last ten years, the

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[27] LUTs can be displayed on the set monitor(s) to provide an approximate view of the finished image. See glossary in Appendix I for more information.

major professional editing systems (AVID, Final Cut Pro, and Adobe Premiere) have grown into full-fledged colour grading and compositing solutions, thereby expanding the traditional toolset of the 'edit suite' to include a much more comprehensive range of applications. Editors now often find themselves tasked with manipulating images in various ways: re-framing shots (i.e. changing the cinematographer's original composition); re-sizing shots (i.e. zooming into a wide shot to generate a medium shot or close-up); stabilising shots or, alternatively, adding image shake; or adding a rudimentary colour grade to the film.[28] Visual effects artists, on the other hand, are by definition required to make changes to shots and compositions in order to add additional, often computer-generated content—such as digital characters and environments—or to remove picture elements like wires and green screens. While Schaefer acknowledges this fact, his elucidations nevertheless imply territorial disputes between cinematographers and visual effects artists. It is not enough to simply put this down to communication failures or, potentially, ego clashes: I argue that the intense acceleration of technological invention and innovation is at the core of this issue. More specifically, the rampant propagation of new digital tools and workflows has created confusion and conflict around work division: in the absence of best-practice guides, regulations, and control mechanisms, the production world has regressed into a Wild West of departmental stand-offs. In my interview with Markus Förderer BVK,[29] the German cinematographer warned of a creeping "danger of democratising the image":

> In the early days, it was just the cinematographer; then it was the cinematographer and the cameraman; then the producer as well, and

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[28] The case study of *Grave Men* in Chapter 7 will analyse how producers and editors can interfere with the colour grading and, therefore, with the cinematographer's original intention.

[29] Born in 1983, Förderer is part of the next generation of image-makers. His credits include *I Origins* (Mike Cahill, 2014) and *Independence Day: Resurgence* (Roland Emmerich, 2016).

so on. And now you are dealing with the visual FX supervisor, visual FX companies, and the visual FX department on the studio side of things. And, of course, they all work with the images, so I notice over and over again that they want to influence the conversation, so to speak, about which camera, which format, and which lenses to use. (Förderer 2017, n.p.)

Förderer concludes that key artistic choices such as camera format and lens selection need to be made by the cinematographer, in collaboration with the director. Failing that, visual post-production will inevitably turn into a free-for-all (ibid.). The choice of lens, for example, is a common bone of contention between the cinematographer and the visual FX supervisor, as the latter will generally prefer pristine glass that is free of aberrations, distortions, and imperfections. Cinematographers, on the other hand, are generally looking for 'character' in a lens, something that will shape the image in a very specific, hopefully unique way. Creating a new 'look' is key to a cinematographer's success and, therefore, sourcing lenses that exhibit strong characteristics—such as lens flares, muted colours, or hazy contrast—is one way of achieving this.[30] But VFX supervisors require relatively 'neutral' glass in order to match background elements—such as CG environments—to live-action foreground elements shot by the cinematographer. Any unique characteristic displayed by the original lens, such as heavy distortion, would have to be reproduced for the VFX elements, potentially at considerable expense. For this reason, VFX supervisors might try to talk cinematographers out of using certain lenses. The discussion, therefore, is rather complex as it involves both aesthetic and budgetary concerns. With the current dominance of the post-production industry, it is clear why Schaefer and Förderer would be worried about losing control over their images: the tail end of the production chain is driving the budgeting, shifting the decision-making from the set to the post-house.

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[30] See Chapter 5.3 for a more detailed discussion of this topic.

Arguably, the creation of visual effects has always involved many different parties, even before digital post-production. The process of colour-grading the finished film, however, has traditionally been the cinematographer's domain. But seasoned London-based colourist Gwyn Evans,[31] who also graded *Grave Men*, worries about a trend that now sees cinematographers increasingly left out of this process, with third parties making the crucial aesthetic decisions for them:

> In the days when it had to be done photo-chemically, [executives] had to have the cameraman there—they don't need to now ... On top of that you have people wanting to make a name for themselves by doing something that looks snazzy and exciting but it may be totally wrong for the story. The human emotion that you need to pull out of the story is often not there; you have a grade that detracts from the story. (Evans 2018, n.p.)

Evans' comments about the transition from film negative to digital capture are echoed by Schaefer (2017, n.p.), who recalls an earlier period when pioneering cinematographers like Gordon Willis would "set the look" of a film during the shoot, exposing the negative in such a way that any further image manipulation became impossible. Regaining this creative liberty in the digital age is, however, altogether impossible, as the image has simply become too malleable. At the same time, it is not enough to see the current dilemma merely as an example of technological determinism; I argue that the industry's attitude towards cinematographers per se is shifting, resulting in an intrinsic devaluation of their work. Simply put, when image capture and post-production went digital, the DOP's job came to be perceived as less demanding; the computerisation of cinematography, for example, made the once obscure art of exposure more transparent with the help of high-definition monitoring tools. Going back to Evans' argument: it empowered collaborators floating in the cinematographer's

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[31] Starting out as a telecine operator in the late 1970s, Evans eventually became part of the first generation of so-called 'colourists' or 'digital colour graders'.

orbit (most prominently, producers and executives) to take the reins during post-production. Talking to Claudio Miranda, I learned that, for instance, some Hollywood studios now have a reputation for shutting the cinematographers out of the post-production process altogether. Miranda (2017, n.p.) singled out Marvel Studios who "actually go to DI houses and ask: 'do you want the DOP involved in here'? They don't want the DOP really involved in most of their shows." It is, therefore, no surprise that Marvel's superhero films are visually homogeneous and nondescript, save for their colourful CG effects. The dominant aesthetic of the Marvel Universe is decreed at corporate level rather than designed by directors and cinematographers; aptly described as 'conglomerate chic', it is entirely devoid of a cinematographer's or, for that matter, a director's discernible signature, primarily serving as an expression of corporate identity. [32] But despite disruptive technologies and corporate interference, not everyone in the industry agrees that images can be easily manipulated in post-production. Laura Pavone, an experienced dailies colourist in London, whose credits include *James Bond: Spectre* (Sam Mendes, 2015), feels that radical changes in the colour grade are hard to pull off, as they would potentially ruin a film. Nevertheless, she sees a certain amount of leeway with a cinematographer's footage:

> I think if the film is shot with a certain style ... then grading can be very easy even without the cinematographer, because you understand what the cinematographer wanted to do on the shot. (Pavone 2018)

As a dailies colourist, Pavone has worked with a number of high-profile cinematographers, DITs, and clients. But due to the complexity of high-end digital workflows, her work is limited to dailies grading during the actual shoot,

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[32] Doug Delaney, colourist of *Captain Marvel* (Anna Boden/Ryan Fleck, 2019), confirms that cinematographer Ben Davis BSC did not develop the 'look' of the film (qtd. in Mulcahey 2019): "Marvel actually handles a lot of that internally and develop show LUTs specifically for each of their films."

while a senior colourist handles the final grade in the DI suite. As Pavone (2018) explains, the cinematographer might get to supervise the dailies grade, but there is no guarantee he/she will also be present in the final DI grade. Based on my own experience, however, I tend to disagree with her on the issue of image manipulation: I argue that plenty of visual parameters can be manipulated in the final grade, no matter how well shot or precisely composed the original footage is. As my case study in Chapter 7 will demonstrate, the extent to which digitally captured images can be manipulated—particularly if they are well shot and well exposed—is both impressive and distressing.

All of the cinematographers I interviewed for this study agreed that the relationship between the director and the cinematographer is crucial for a successful collaboration: if it is not based on mutual respect, it will not last and, more importantly, it might lead to all kinds of creative friction, including image manipulation. As Oliver Stapleton (2017, n.p.) explained during our conversation, the relationship with the director is akin to a "serial marriage":

> My career has been entirely about relationships: I've had the [Stephen] Frears relationship, the Lasse Hallström relationship, and the Michael Hoffman relationship ... I'm not gun for hire; I'm in a relationship. I'm in a relationship with the producer, with the director, and so all that business about manipulating the RAW [footage] and they screw you up in the DI and they throw you out—I don't have that in my life, because I don't work for those kind of people. (ibid.)

For Australian-Hong Kong cinematographer Christopher Doyle (2017, n.p.), on the other hand, the issue of trust relates more to the idea of filmmaking as a "communal process": an open marriage rather than a monogamous bond. The outspoken DOP, who frequently collaborates with director Wong Kar-Wai (*Chungking Express*, 1994), feels that issues surrounding image manipulation arise predominantly from the director's ego and his/her unwillingness to regard

the cinematographer as a co-creator:

> There are some directors, [James] Cameron kind of people, [David] Fincher kind of people—they don't give a shit about the camera, actually. They're just megalomaniacs. They want to control the whole process. Even [George] Lucas, you know. That's why I don't go into this kind of stuff. Cause they think they are god—all the other people are just the 'angels' running around. They're just using people. It's like serfdom; it's like they're fuckin' tyrants, they're dictators. (Doyle 2017, n.p.)

Intrigued by these rather candid revelations from my interview, I strove to gain more insight into the director's process and the extent to which he/she is able to manipulate footage in post-production. My point of reference was David Fincher (*Seven*, 1995), who—as Doyle already pointed out—has a reputation for manipulating footage heavily in post-production, with or without the cinematographer's approval. As one of the most influential directors of our time, Fincher clearly enjoys certain privileges and a great deal of power within the film industry, much more so than most of his peers. Moreover, he pioneered and championed the use of digital cinema cameras from the outset, making the switch from celluloid to High-Definition video with *Zodiac* (2007). His cinematographers, however, rarely speak up about the issue of image manipulation (at least not publicly), so when I got a chance to talk to Christopher Probst ASC, who shot the first two episodes of Fincher's Netflix series *Mindhunter* (2018), it felt like a unique opportunity to examine a particularly high-profile working relationship. To begin with, I asked Probst to outline the director's rather idiosyncratic process:

> [David] Fincher is definitely very singular in his anal-retentive control of [the] frame and composition: every single table on set is bubble-levelled, every chair is bubble-levelled, the camera's bubble-levelled, and then he shoots 5K [resolution] for 6K [resolution][33] ... This time

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[33] The camera records in 6K resolution (6,144 x 3,160 pixels) but the reference for framing is only 5K (5,120 x 2,560 pixels). This leaves a margin around the 5K frame that allows Fincher to manipulate the image in post-production: re-framing, scaling, stabilising, visual effects, etc.

> he went even further, because [*Mindhunter*] is set in the late 1970s. So he gave it the attributes of a 1970s, poorly tuned anamorphic lens ... He, in post-production, created chromatic aberration and barrel distortion on the Leica Summilux [spherical lenses], much to the shrieking chagrin of Leica, I'm sure ... [Fincher] needed the spherical, flat field, perfect, aberration-free Summiluxes to be able to slice and dice, re-compose, do all that sort of stuff, and then fuck it up at the end and make it look like it was shot on old anamorphics. (Probst 2017, n.p.)

In essence, Probst explains that Fincher degraded a rather immaculate image (captured with the latest optics from German manufacturer Leica) with lots of post-production wizardry in order to re-create the look of vintage lenses. Although the series was shot with spherical lenses, Fincher decided to add a 'faux' anamorphic look to the footage, using the latest software tools to mimic the spatial warp ("barrel distortion"), colour defects ("chromatic aberration"), and flaring of imperfect lenses. The interesting question is how involved Probst was in all this? How much did he contribute to the final look of the image? And, more importantly, did he know that Fincher would do such intense post-production work on the footage?

> I expected it. I knew about [the] re-framing for sure, 100%, because that's how [David Fincher] always works. And I knew about the anamorphic flares. Then he did a little bit of distortion—I actually thought it was interesting. I didn't know about that actually, 'cause I didn't see that until the very end [in post-production], when they were doing that. It's David Fincher, you know—he's an exception. He's a master craftsman at what he's doing. It looked good, so I can't complain. It looked good cause I was working with him, you know. With another director it wouldn't look like that. I hope I had a little bit of a contribution in that look, in influencing him. But he definitely controls every aspect of it. (Probst 2017, n.p.)

Talking to the cinematographer, I felt that he was hesitant to say anything even remotely negative about Fincher; I had a sense, though, that he was uncomfortable with some of these changes.[34] Deferring to the director simply on

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[34] Not long after the interview, it was revealed in the press that Probst had been replaced by another cinematographer, Erik Messerschmidt, after the first two episodes. Says Messerschmidt (qtd. in Chitwood 2018, n.p.): "There were some creative differences, and I ended up reshooting some of the first and second episodes."

the basis that he's a "master craftsman", implies that Probst put a great amount of trust in Fincher. Nevertheless, it is clear from his comment that he neither expected so many changes, nor was he informed about them prior to viewing the results in post-production. It is, therefore, evident that a director of Fincher's status expects cinematographers to quietly accept substantial image manipulation in post-production.

While the megalomaniacal urges that Doyle attested to all-powerful directors might account for part of the problem, they do not explain the full extent of it. From my own work (which I will detail more closely in Chapter 7), I have learned that this domineering attitude is not exclusive to those who wield extraordinary power; it is evident in editors and colourists, as well as in directors and producers. The mere fact that images can so easily be manipulated with the current digital tools is an invitation to tinker with the footage—no matter what level of budget a production is on.[35] Today, Fincher's example might sound extreme but tomorrow those same tools will be available to many more filmmakers, as the pace of technological innovation and democratisation keeps increasing. Therefore, I argue that image control will become increasingly difficult for cinematographers. Moreover, given the commodification of films in the subscription-based VOD landscape, the speed of production is unlikely to slow down any time soon. For meaningful artistic relationships between directors and cinematographers to develop and grow, the industry needs a certain amount of stability and predictability. But when cut loose from these trust-based, long-term relationships with directors, cinematographers quickly find themselves floating in open and, metaphorically speaking, shark-infested

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[35] The case study, *Grave Men*, is an independently funded, micro-budget film (see Chapter 7).

water. At one point during our conversation, Schaefer (2017, n.p.) referred to the cinematographer as the "guardian of the image", a turn of phrase frequently used by members of the ASC. It is a noble claim which implies a cinematographer's duty to protect not only the artistic work but the craft itself. Clearly, this is very important to Schaefer, who makes no effort to hide his disappointment with his peers and what he perceives to be their ignorance (ibid.): "I really believe that the cinematographers' societies and the cinematographers are burying their heads in the sand a little bit when they say that we still control the final image, because 90% of the time we don't." As I have argued above, the cinematographer community is still reeling from the dawn of a new digital age in the 1990s. The rapid evolution of digital technology is threatening to out-pace human adaptability by disrupting time-proven workflows and traditional labour divisions. The fact that we are on the brink of the virtual age does not bode well either for cinematographers, as the emerging virtual and augmented reality technologies will inevitably lead to new workflows and, potentially, an unorthodox set of aesthetic rules that bear little resemblance to traditional filmmaking. Unless cinematographers adopt new skills that will help them master the technological pitfalls of not only the current but also the coming age, the job is unlikely to survive in its present definition. But before defining the exact nature of these new skills, we must examine more closely the cultural implications of the current crisis, particularly the shift of power within the production chain—or, in other words, the gradual demotion of the cinematographer.

4.3   Losing Respect: A Magician No More

In this part I am going to examine the impact of the new digital workflows on the status and authority of the cinematographer. Many of the issues outlined so far are, in essence, a continuation—but also an intensification—of the historical artist-versus-technician debate discussed in Chapter 3.3. While section 4.1 examined the effects of digital technologies on industry practice, this part of the thesis will focus on how shifting power structures affect the cinematographer's standing within production culture. From my own research and experience I know that the production of almost any film is a microcosm of social interaction between people of different economic strata and societal ranks—a cross-section of human enterprise that defies the simplistic division into below-the-line and above-the-line labour. Part of the reason why so many labour unions, technicians' guilds, and craft societies were created around the globe was to protect the rights and artistic integrity of film workers. Most western countries, for instance, have established unionised production structures or, at the very least, a number of professional organisations such as cinematographers' societies. But as I will argue in this part, neither unionisation nor artistic repute can ultimately protect the cinematographer's craft from the gradual erosion of respect.

In one of the most highly publicised labour disputes of recent years, cinematographer Robert Richardson quit halfway through the filming of Marc Forster's film *World War Z* (2013), subsequently taking his name off the

project.[36] Although the troubled production made headlines for a number of reasons (mainly budget overruns and substantial re-shoots), Richardson's departure and subsequent disavowal of the film was one of the more surprising ones. According to the cinematographer (qtd. in Giardina 2016a, n.p.), he and director Marc Forster had designed a number of "radical" looks for the digitally originated film and stored them as Look-Up Tables (LUTs). But in the middle of production, Paramount—the studio behind the film—decided to drop these looks and develop their own instead. By taking his name off the film, Richardson intended to send a clear signal to the studios, as well as to his peers, that a tipping point had been reached:

> No one's protecting [cinematographers]. The Look-Up Table [LUT] can be changed by anybody. And your look, no matter how hard you struggle at something, can become something completely different. The studio has a right to change your things ... There's no legal position we can take. (ibid.)

For someone of Richardson's status to suffer at the hands of studio executives is unusual, yet his indignation is entirely understandable: with the new LUTs, the studio essentially decided to steer the film's look into a different direction, thereby completely negating the cinematographer's efforts. This shift in status is more than just a demotion: the cinematographer, in essence, is becoming expendable. Watching *World War Z*, for instance, it is evident that some parts of the film, particularly the scenes set on a military base in South Korea, exhibit Richardson's trademark lighting style, i.e. a very strong, heavily diffused top-light that creates aureoles around actors' heads and shoulders. The majority of the narrative, however, is shot in a bland, *Jason Bourne*-esque 'action vérité'-style that exhibits none of these striking lighting elements (presumably, this footage was shot by Ben Seresin, the cinematographer who succeeded

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[36] He was eventually replaced by Ben Seresin ASC BSC, who shot the majority of the film.

Richardson). In the case of *World War Z*, cinematographic style is interchangeable—as, unfortunately, are the cinematographers.

When I interviewed Phil Méheux, the former president of the BSC, he too lamented the palpable loss of respect for the cinematographer's work, blaming the instantaneous nature of today's digital gadgetry for this development. Cameras that recorded to hard drives appeared in tandem with high-resolution, WYSIWYG monitors,[37] which led to the establishment of today's set culture where too many people, operating under the dubious banner of artistic democracy, feel entitled to chime in, offer advice, or, in Richardson's case, have their say about the film's final look (Méheux 2017). Thinking back to the days before digital, Méheux argues that the cinematographer's skillset used to be focused almost entirely on production rather than post-production:

> In those days you had to have it in the camera. Nothing much could happen at the lab, except bright or dark ... So, it was important that you learnt ways of changing the image in front of you: with filters or lighting or the way you use the camera. (Méheux 2017, n.p.)

Consequently, cinematographers enjoyed a high level of prestige and professional respect—or, as Méheux prefers to word it, "the cameraman was a magician in those days" (ibid.). He is, however, not alone in likening the craft to a 'dark art': Daniel Pearl (2017, n.p.),[38] too, compared his practice to wizardry during our conversation, stating that "cinematographers were magicians when it was film ... There were not many of us, because it was very hard to get an opportunity." Similarly, Vittoria Storaro (qtd. in Fauer 2016, p.10) compares the craft to a hat trick, expounding that, in the days of film, the DOP was "almost

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[37] Short for 'what-you-see-is-what-you-get': industry-standard HD monitors display colour-critical images that allow viewers to judge the final image.

[38] Pearl, whose career spans 45 years, is one of the longest-running members of the ASC. He lensed Tobe Hooper's *The Texas Chainsaw Massacre* (1974) as well as music videos for artists like Bob Dylan, Van Halen, and The Police.

like a magician, pulling, from something mechanical, an image out of the screen". Though heralding the DOP as some kind of conjurer of kinetic spectacle might sound a bit like a conceit, the epithet does give us an impression of the level of admiration and exclusivity cinematographers used to enjoy and probably expect. Practitioners of the craft were seemingly part of a small circle of adepts who formed exclusive societies and guilds allowing them to exchange magic tricks (or, more likely, exposure tips). But, eventually, video monitors and digital cameras came along and dispelled the myth and the magic of the DOP, much like the abrupt opening of the curtain, which robbed the Great Oz of his mystery and power. Moreover, these technologies, having at least partially lifted the shroud of professional secrecy, opened the floodgates for a greater number of people trying their hand at cinematography. According to Méheux (2017, n.p.), the cinematographer is "losing some of his respect and also some of his magic" because the once awe-inspiring process—the cinematic bag of tricks—has become too accessible and commonplace in the digital age. To use the magician analogy again: the fall from grace must be particularly painful for those cinematographers who consider themselves part of a 'mystical' elite.

Focusing on the reality of the current situation again, I wanted to know of my interviewees what specific aspects of industry practice have changed the most over the years. Markus Förderer argues that the fairly recent introduction of previz, for instance, complicates the pre-production process:

> The people who do the previz are usually from the world of computers, or they're video game kids who will design a wide shot on an 80mm [telephoto lens] ... So, you'll have to tell them these things: what focal length do I want to use? Where does the camera go? Where would the sun be in the shot? (Förderer 2017, n.p.)

Förderer sees a need for closer scrutiny and control during this important phase of production. If unsupervised, directors, producers, and the previz team will design shots that are either impossible to create with a physical camera or, alternatively, are finalised in such a way that the cinematographer's artistic contribution will be minimal, much like shooting a pre-defined template (ibid.). The extent of the DOP's involvement in the previz stage of production is part of a continuing debate as well. According to Phil Méheux, this decision is usually made either by the director or the producer, and entirely dependent on contractual agreements:

> If the producer says 'well, I'm not paying him until four weeks before we shoot', you might not wanna spend four or five days sitting in a theatre, advising everybody for no money at all. (Méheux 2017, n.p.)

Similar power shifts can be observed during the principal photography phase of production. In regard to set practice, for instance, Daniel Pearl has experienced drastic changes in his working relationships with directors:

> In 1973, when I shot the original *Texas Chainsaw*, even video assist[39] didn't exist at that time. No link from the camera—only the cameraman saw the actual framing, the actual shot contained within the rectangle [of the viewfinder]. (Pearl 2017, n.p.)

Pearl refers to the time when directors had to stand close to the camera to approximate the perspective of the lens during the take. The absence of a video feed inevitably brought them closer to the actors and, obviously, to the DOP and the camera operator. According to Pearl, there is a "proximity" or a special kind of energy between the cinematographer and the director when they are both physically close to the camera and there are no monitors involved (ibid.). With the introduction of video assist, however, this intimate connection between DOP and director was gradually eroded, until it disappeared entirely with the advent

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[39] Video assist (or 'video tap') is a small CCD camera that is built into a film camera, allowing for the image to be monitored during shooting.

of digital cameras and WYSIWYG monitoring. Today, Pearl calls the process "isolated", comparing cinematographers to astronauts on the Space Shuttle who communicate with ground control (i.e. the directors) via walkie-talkies: "[the directors] may look at the monitor from the back of the set ... They don't know why things are going wrong" (ibid.).

The advent of HD monitoring, then, dispelled the cinematographer's exclusivity of vision and changed the way DOPs communicate with directors. As Phil Méheux pointed out, the process also invites other collaborators, such as producers and executives, to have their say at every turn. It would, therefore, be naive to assume that this technology did not have an influence on the cinematographer's authority on set; indeed, I argue that, not only does it dismantle the mystique of the craft, it also destroys the creative risk of filmmaking, negating the need for a trust-based relationship between the DOP, the director, and the producer, since the results of the day's work are instantly reviewable. As Schaefer (2017) points out, department heads nowadays rarely show up for dailies, since most of them will already have seen the day's work on the set monitors. Watching the day's rushes together with the team is, however, a long-established, ritualistic tradition for cinematographers: not only does it help gauge the quality and consistency of everyone's work, it also reinforces the spirit of collaboration. The abandonment of this seemingly casual but highly important set ritual helps explain why the bonds of trust between creative heads are slowly dissolving. If you add compressed schedules and increased speed of production into the mix, it comes as no surprise that artistic collaboration is giving way to departmental friction. Storaro (qtd. in Fauer 2016, p.11) puts it bluntly: "Since everybody can see the image, there is no more mystery. Many

people now think of the camera as an automatic tool to record an event. What then is the strength of cinematography now?"

The situation is, unfortunately, no less treacherous in post-production. When recalling a recent episode of disrespectful treatment, Daniel Pearl became quite emotional during our interview. Although he refused to name the production in question, the experience clearly left its mark on the cinematographer:

> I went in to do my Digital Intermediate, and [the producers] went 'oh well, we had a [test screening], and the guy graded it a little bit for that, and we kinda liked it, so...' It's, like, what the fuck?! I mean, I'm supposed to have five days in here, now you got it down to five hours 'cause you don't wanna spend the money? ... I'm pretty strong about my thing and people don't fuck with me on that level. I'll just chop 'em right down. (Pearl 2017, n.p.)

As with previous examples cited in this thesis, the emotionality of the debate comes across very vividly in the cinematographer's words, revealing just how personal this argument is. Apparent in Pearl's report is the producers' obvious lack of respect not just for his work but also for the established hierarchies normally upheld on film sets. Moreover, by assuming that he would approve of such a rushed colour grade, the producers exhibited a level of ignorance that could potentially harm the cinematographer's career. After all, DOPs are not exclusively dependent on producers to secure future projects; their work will also be scrutinised and reviewed—often to an even higher degree—by talent agencies, directors, and, potentially, actors. It is, therefore, not up to the producers to set the standards for the cinematographer's work (as they did in Pearl's case).[40] Thus, Phil Méheux (2017, n.p.) compares cinematographers to "bus drivers" who are expected to drop off their precious cargo (i.e. the footage)

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[40] The case study in Chapter 7 is my personal account of a similar experience.

only to be dismissed afterwards. This applies not just to the colour grading process but also to the restoration of films from the cinematographer's back catalogue: for instance, Méheux recounts how he was not even informed when Kino Lorber decided to restore and re-issue the British screen classic *Scum* (Alan Clarke, 1979), which he originally shot (ibid.). Méheux likens his treatment to that of Owen Roizman ASC, who was shut out of the restoration process of William Friedkin's *The French Connection* (1971) in one of the few publicised cases of retroactive image manipulation. Director Friedkin completely re-graded the film for its 2009 re-release on Blu-ray, changing the colour balance and contrast range of most scenes. Speaking in 2010, Roizman (qtd. in Aradillas 2010, n.p.) voiced his bewilderment and frustration about the director's choices in the colour grade:

> I wasn't consulted. I was appalled by it. I don't know what Billy [Friedkin] was thinking. It's not the film that I shot, and I certainly want to wash my hands of having had anything to do with this transfer, which I feel is atrocious.

After much controversy, the supposed 'director's approved version' of the 2009 Blu-ray was eventually superseded by a new transfer in 2012, overseen by Roizman himself (ibid.).

As these examples prove, the integrity of the cinematographer's vision is threatened by the wilful and, at times, wanton meddling with his/her work at almost every stage of production—even retroactively. It is, however, not enough to blame this development on the accessibility and facility in the use of new digital imaging tools, since the underlying issue is, in effect, not determined by technological progress: the devaluation of the cinematographer's contribution, coupled with the disrespect for his/her craft, is, first and foremost, an attitude, a mind-set. As colourist Gwyn Evans (2018, n.p.) sums up, the film industry "is

made out of loads of different crafts that work collectively together—and only by working collectively together do we do fantastic work." Therefore, the notion of the expendable cinematographer goes entirely against the idea of filmmaking as a collaborative art. Moreover, it demonstrates a new understanding of production culture that is not in keeping with its traditional values of team effort and artistic integrity. As I will outline in greater detail in Chapter 7, the consequences of unapproved image manipulation are potentially career threatening for cinematographers. At the same time, it must be admitted that not every production necessarily ends in a war of words between directors, producers, and cinematographers; there are still plenty of examples of good practice out there. Méheux (2017), for example, praises the producers of *The Long Good Friday*, who invited him into the grading suite before the film's re-release on Blu-ray in 2018, booking two days for him to finalise the restored images. As I have argued above, however, there is a clear trend towards demoting the cinematographer to an expendable 'shooter', stripped of any kind of unique vision, authorial voice, or signature style. This chapter, then, illustrates how new technologies and workflows not only create significant issues in relation to industry practice but also to established hierarchies within production culture. With the magic and mystery of celluloid slowly disappearing, the cinematographer's craft no longer commands the same respect as in the days of film. Increasingly, the DOP's long-standing authority over the image is being challenged by a number of collaborators who feel empowered by the instantaneous, WYSIWYG technology that is shaping today's production culture. In the next chapter, I will move away from the industrial (high-)end of production to examine the low-fi world of indie filmmaking; more precisely, how the dropping cost and increasing democratisation of professional technology

influences the aesthetics of storytelling and, consequently, the current and future role of the cinematographer.

5 AESTHETICS

5.1 Introduction

This chapter analyses the disruptive influence of new digital technologies on the aesthetics of cinema and, consequently, on the craft of the cinematographer. It will examine the democratising effect of affordable film equipment, the consequences of adopting such revolutionary new technology, and the implications for the future of cinematography. Furthermore, this chapter will investigate the increasing challenge of creating a 'fresh look' in a time of unequalled media saturation. After all, the ability to set his/her work apart from another person's is what lends the cinematographer a competitive edge in an increasingly crowded job market (see also 3.2). But thanks to affordable, professional-grade equipment and web-based distribution platforms, more people than ever are 'dabbling' in visual media, with many of them aspiring to become full-time filmmakers and cinematographers. Mateer (2014, p.4) draws parallels to the field of still photography where "the availability of professional-caliber equipment at a greatly reduced cost has meant that barriers to entry have been lifted." A similar development can indeed be observed in cinematography: over the last ten to fifteen years, the plunging cost of digital cinema cameras, non-linear editing systems, and post-production tools has made filmmaking affordable to the masses. As a result, the traditional 'elitism' of the craft—long upheld by the prohibitive cost of film stock—has slowly begun to erode, giving way to an unprecedented level of democratic access to high-grade production gear (High Definition cameras and DSLRs), post-production software (Final Cut Pro X, Adobe Premiere, and DaVinci Resolve), and even distribution

services (YouTube, Vimeo, and Facebook). But with so much visual content being created, distributed, and/or uploaded to the social media channels and video-on-demand services, is it still possible to create something that looks new and original? Or have we finally reached a saturation point? As this chapter will illustrate, these questions are no less important for the future of cinematography than the debates around artistic ownership and image manipulation discussed in Chapters 3 and 4, respectively.

According to Mateer (2014, p.12), "digital cinema technologies simply represent the latest development, and there are bound to be others." While this is certainly true, we must, however, take into consideration the extreme pace at which these new technologies continue to develop and the cumulative effect this has on the global film industries. The nearly simultaneous introduction of digital capture technology and computerised post-production has had a tremendous impact not only on industry practice—as outlined in Chapters 3 and 4—but also on the aesthetics of cinema. Cinematographer Roberto Schaefer (2017, n.p.), for example, decries the "facility of digital capture" as it allows people to use everything from video-enabled stills cameras to mobile phones to shoot a film—with often very poor results in terms of picture quality. But according to Ganz and Khatib (2006, p.24), the benefits of adopting such cheap tools clearly outweigh the negatives, mainly because of the democratising effect they have on filmmaking as a profession:

> It is not just that digital filmmaking means generally speaking fewer crew, lightweight equipment, less money, tapes cheaper than film stock (or no tapes at all); freeing film from the physical effect of light on silver has meant that digital technology is potentially available to all.

Citing countries like Iran and Palestine as examples, Ganz and Khatib (2006,

p.28) argue that digital technology "allowed the creation of all kinds of cinema at once in places that did not have cinema before or where cinema practice was limited". These "emerging film industries" (ibid.) began to blossom because low-cost digital gear allowed artists to circumnavigate the government-controlled access to film equipment. While it is impossible to overstate the cultural and political importance of such a development, we must nevertheless ask ourselves what consequences such unorthodox filmmaking technologies will have for the professionalism of the cinematographer's trade. Rodowick (2007, p.150–152) speaks of "a new promiscuity in the creation of images" in relation to digital photography; like still photographers, cinematographers therefore face the dilemma of the "near-universality of consumer digital capture devices", which essentially enables anybody to use the same tools as the professionals. In the future, how will professionals distinguish themselves from the growing number of talented amateurs?

5.2   The Commoditisation of Cinematography, or: Democracy, at Last!

According to Keating (2014), the audience's broader acceptance of images with a semi-professional aesthetic opened the floodgates for films such as *Festen* (Thomas Vinterberg, 1998) and *The Blair Witch Project* (Daniel Myrick/Eduardo Sánchez, 1999). Shot on consumer-grade cameras, with shoddy lighting and shaky framing, these landmark films were directly influenced by the aesthetics of the reality television trend that dominated the 1990s;[43] their narratives

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[43] Starting with the Dutch show *Nummer 28* (KRO, 1991)—later duplicated by MTV as *The Real World* (1992–2017)—'reality television' gained popularity throughout the 1990s with the international formats *Expedition Robinson* (SVT, TV3, TV4, 1997–2018)

adopted the storytelling mechanics of documentary filmmaking, as evident in *Blair Witch's* 'found footage' conceit and *Festen's* 'home movie' approach. In both cases, however, the 'low-fi' aesthetics are intrinsic to the story, deliberately creating a sense of realism, or even naturalism, traditionally absent in either of the films' genres (i.e. horror in *Blair Witch Project* and melodrama in *Festen*). Largely due to the critical and commercial success of these two films, the scruffy aesthetic of standard-definition digital video (DV) eventually became acceptable as a production and exhibition format.

Holly Willis (2005, p.4) coined the term "desktop aesthetics" for this phenomenon, likening it to the DIY revolution in the publishing industry. In her view, the new digital tools should be viewed as "amazing and transformative technologies" like telephony or electricity, whose democratising effects introduced a better quality of life to the masses. While I would argue that the digital gadgetry available to filmmakers today is, from a purely scientific viewpoint, indeed amazing, its effects on cinematography as a profession have so far proven to be disruptive rather than transformative. In terms of image quality, for example, the shrinking size and price tag of cameras used for independent productions has turned into a race to the bottom, with recent international releases like Sean Baker's award-winning *Tangerine* (2015) and Steven Soderbergh's *Unsane* (2018) having been shot on nothing more than iPhones. Clearly, this is not, per se, an argument against using consumer technology for filmmaking—both directors have, after all, articulated valid reasons for using these tools on their respective projects. Seen from the

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and *Big Brother* (Channel 5, Channel 4, 2000–2018). The live airing of the O.J. Simpson trial in the US (Various Networks, 1994–95) was another watershed moment in reality television history (Hill 2005).

cinematographer's perspective, however, this development is troubling, because the democratising effects of affordable production tools, although predominantly felt in the world of independent films, have sent ripples through the mainstream industry as well—even Hollywood.

Dante Spinotti ASC AIC (*L.A. Confidential*, Curtis Hanson, 1997), for instance, readily admits that the new digital cameras have dramatically affected the way cinematographers shoot:

> The first time I got a sense of this was when [director] Curtis Hanson wanted to shoot *Wonder Boys* [2000]. He invited me to see the famous Danish 'Dogma' film, *Festen* … It was sort of an eye-opener for quite a number of people; the fact that these small cameras could move around so quickly and that the actors could remain on the set and not have to go back to their trailers. (Verstraten 2012, p.131)

While Spinotti clearly sees the potential benefits of the new technology (i.e. smaller cameras equal more shooting time), cinematographer Vittorio Storaro (qtd. in Giardina 2016e, n.p.) does not share his enthusiasm, complaining that "people want to work faster or show that they can use less light, but they don't look for the proper light the scene needs. That isn't cinematography, that's recording an image." In an interview with Jon Fauer of *Film & Digital Times* (2016, p.4), he elaborates:

> I'm a member of the Italian Film Academy, European Film Academy, and American Film Academy. I receive many screeners. Most of the time I am just watching ridiculous images. They don't have anything to do with the story, the period, or the magical world of visual art. With cameras being so sensitive [to light] today, you can record in almost any location, with any kind of light. But artful cinema is not about recording the image as reality. Cinema is interpretation. The great [light] sensitivity of digital cameras can be helpful in specific cases, but it can destroy the majority of films ... [As a result] every movie looks alike. And usually the look is very mediocre.

Echoing Storaro's concerns, David Mullen ASC (qtd. in Kaufman 2016, n.p.) frets that because digital cameras "allow us to shoot in more available light,

we're often asked to shoot in available light even when it isn't appropriate."

Apart from changing professional workflows and aspects of industry practice, high-definition camera technology has evidently transformed—or disrupted—the way cinematographers capture images as well. The extreme sensitivity to light that modern camera sensors exhibit has allowed filmmakers to shoot with smaller, and also fewer movie lights than ever before. At the same time, however, this potential freedom from costly equipment and extraordinary amounts of manpower is changing the aesthetics of cinema, leading to what many established cinematographers deem compromised imagery. Guillermo Navarro ASC (qtd. in Kaufman 2016, n.p.) even goes so far as to warn his peers not to confuse the notion of democratisation with a "vulgarization of the process run by ignorance."

In my case study (see Chapter 7) I will delve further into the groundbreaking low-light capabilities of the new digital sensors and explain how they will indeed change cinematography forever—and, more importantly, how they can be used to advance rather than cripple the craft. For instance, *Grave Men*, the film used for the case study, can make a serious claim to be the first feature-length movie to be shot entirely at a speed rating of 5,000 ISO,[44] for both day and night scenes. On the other hand, director Krzysztof Kieslowski's frequent collaborator, Slawomir Idziak (*The Double Life of Véronique*, 1991), proclaims this technology to be "the end of the profession" because it "gives you the feeling that everybody can do our job" (qtd. in Verstraten et al 2012,

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[44] See glossary in Appendix I for an explanation of ISO values. The 'fastest' Kodak film stock is rated at 500 ISO, which can be 'pushed' to 1,000 ISO in chemical processing. In comparison, a digital cinema camera like the Alexa has a basic ISO rating of 800 but the signal can easily be pushed to 1,600 ISO. At 5,000 ISO, the camera used for *Grave Men* therefore requires less than a quarter of light compared to film stock pushed to its maximum speed.

p.142). At first, his rather bleak outlook seems understandable, given the extent to which these light-sensitive new cameras influence how cinematographers light or, consequently, choose not to light. I argue, however, that the creative opportunities offered by these 'see-in-the-dark' digital cameras outweigh their perceived threat to the profession. As the case study will illustrate, these tools open up entirely new avenues of the craft that, while indeed challenging and fearsome at first, need to be explored further if cinematographers are to stay relevant as so-called 'guardians of the image'.

At the core of the debate around digital cameras is the notion that their affordability, ease of use, and extreme light sensitivity pose a threat to the cinematographer's skillset and, as a result, his/her future employability. Considering the dramatic impact this camera technology has had on the industry[45], these concerns are justified—at least to a certain degree—but there are actually other, more pressing issues that need attention as they could prove even more disruptive in the long run. In her examination of the visual effects industry, Kaufman (2014) observed the rapid growth of a phenomenon she calls 'commoditisation',[46] which is caused by automated tools replacing human labour in post-production, resulting in 'product' that is increasingly interchangeable and homogeneous. According to Kaufman's case study, the commoditisation of the visual effects industry has seen highly trained specialists being replaced by powerful software tools that perform complicated tasks at the push of a button and at a fraction of the cost of human labour. As a result, most

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[45] For example, Australian company Blackmagic Design sell a DSLR-sized camera, the so-called Pocket Cinema Camera 4K, for a mere £1,000. The price also includes a full license of the company's industry-standard DaVinci Resolve colour grading software.

[46] Used here according to the American English definition of the word, i.e. "to render (a good or service) widely available and interchangeable with one provided by another company" [Source: Merriam-Wester.com].

major VFX companies across the globe now rely on the same set of automated tools, thereby not only rendering the individual craft and creative ingenuity of trained experts obsolete but also making entire skillsets interchangeable. In the field of cinematography this effect can now increasingly be felt as well: it is caused by the proliferation of budget software plug-ins that offer automated colour-grading tools. These programmes provide so-called 'look libraries' consisting of pre-defined LUTs that emulate the colour and contrast response of Kodak or Fuji film stocks or allow cinematographers and/or colourists to apply popular looks—such as 'teal and orange' or 'bleach-bypass'—to their digital footage at the push of a button. Hugely popular among independent filmmakers, these plug-ins—which include Red Giant's 'Magic Bullet Colorista', Color Grading Central's 'LUT Utility', and Film Convert's 'Nitrate'—generally work inside affordable editing suites like Adobe Premiere or Final Cut Pro X; few of them are actually stand-alone programmes. Their ease of use and low cost make them appealing to a broad range of filmmakers, from students to professionals. In fact, even director-cinematographer Steven Soderbergh admits to having used automated colour-grading plug-ins to create a more 'filmic' look for his iPhone 7-lensed thriller, *Unsane*:

> When we got into the digital finishing suite, I started playing around with these various plug-ins to recreate film texture and colours. I spent a couple of weeks experimenting with different looks, recreating certain film stocks, and what we ended up using was a combination of different plug-ins for different sections of the film. (qtd. in Woodward 2018, n.p.)

As most of the creative processes that go into the creation of a 'look' are automated inside the plug-in, very little—if any—actual insight into cinematography or colour theory is required to work with them. They are, essentially, an instant solution to arrive at a finished image: a push of a button can render the trained eye of the cinematographer (or colourist) obsolete.

Although the technology behind these tools is admittedly amazing, I argue that it will—certainly in the world of low-budget films—turn cinematographers (and colourists) into expensive 'options'. Moreover, these tools bring an alarming level of visual homogeneity to a category of small-scale, grassroots filmmaking that was once synonymous with uncompromising artistry, innovation, and originality of vision.

Without a doubt, low-cost cameras and 'instant LUTs' are not only changing cinematography practice but also the aesthetics of cinema as a whole. According to Roberto Schaefer (2017, n.p.), "it's becoming too easy to make bad movies" with these new, affordable tools. Furthermore, there is now a perception that the cinematographer's profession no longer requires years of training and experience—anyone can do it, really:

> You have a lot of—to be delicate about it—a lot of 'cinematographers' who are just kids out of school, or not even out of school, because you can do it digitally and they can call themselves 'cinematographers'. (Schaefer 2017, n.p.)

John Bailey ASC (Schaefer, D. and Salvato, L. 2013, p.9) agrees with Schaefer, stressing that the bar has never been lower for budding filmmakers: "All you need is two thousand dollars to buy a Canon 5D [DSLR camera] and another fifteen dollars to print up 'Director of Photography' business cards." But will this really spell the "end of the profession" as veteran cinematographer Slawomir Idziak prophesied? Markus Förderer, for instance, does not paint the same gloomy picture:

> [The democratisation of technology] will lead to a lot of people experimenting with images at a young age—and talents getting discovered that probably would not have had access to technology in previous times. And many more people will try to work in our field—and, as always, only the really good ones will succeed. The times when only a few people had access to a film camera are over. (Förderer 2017, n.p.)

Indeed, the levelling effect of democracy cannot be undone. As I have argued in this section, the future of the profession is as much threatened by disruptive technologies as by the growing accessibility to low-cost professional tools. These trends have created a different perception of both the craft and the profession, quashing the elitism traditionally associated with it. The second part of this chapter will examine more closely how the wide acceptance and almost universal affordability of digital capture technology and post-production gadgetry is changing the media landscape, creating a seemingly endless, around-the-clock stream of narrative content. In many ways, this development has created a paradox for cinematographers: never have there been more creative image-making tools available than in the present age—but, at the same time, it has never been harder to produce a work of genuine originality.

5.3   The Challenge of the 'Fresh Look'

In this section I am going to examine how it is becoming increasingly difficult for cinematographers to create unique work in a global entertainment market that is saturated with 24-7 visual content. The ubiquity of high-resolution digital video cameras coupled with the introduction of online streaming platforms has resulted in a torrent of visual media being created and uploaded—both by amateurs and professionals—all over the world, at any hour of the day. Gaudreault (2015, p.63) speaks of a "revolution in access to an exponentially growing mass of images" that is shaping today's viewing habits: on the one hand, online platforms allow users to upload media and/or stream content (the most popular being YouTube, Vimeo, Dailymotion, Facebook, and Instagram), bombarding us perpetually with images; on the other, subscription VOD models such as Netflix, Amazon Prime, Mubi, and Hulu have replaced traditional film rentals and are intensifying appetites for instantly accessible, easily digestible filmed entertainment. Regarding media consumption, we have finally arrived in Jeremy Rifkin's 'age of access' (2000), where users are no longer inclined to pay for individual goods and the mere notion of 'owning' a specific item—such as a film on DVD or Blu-ray—is starting to sound increasingly absurd. [47] Subscription VOD services, therefore, represent the ultimate commodification of film art: cinema as mere 'content'. But where does cinematography stand in all this? Has the constant onslaught of images reached saturation level at last? If so, how is it affecting the way films look today?

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[47] Subscription-based streaming services now make up more than 75% of the overall UK entertainment market. Plummeting DVD and Blu-ray sales, for instance, forced retailer HMV into administration in 2018 (Sweney 2019).

Markus Förderer BVK (2017, n.p.) believes that a certain degree of media saturation has indeed been reached: "Instagram does give you the feeling that you've seen every type of image before, no matter what: every composition, every sunset atmosphere." At the same time, though, he feels that film's unique ability to combine images with emotions will always lead to new ideas and fresh visual approaches. For the late Vilmos Zsigmond ASC, however, this saturation is a result of what he perceives to be a "homogenization of the cinematographic image in look and texture":

> It is common to shoot for an evenly distributed rich digital negative with plenty of sharpness to endure the color correction suite and create the look in post. Everybody shoots the sensor the same way. (Zsigmond 2013, p.4)

In the past, Zsigmond (qtd. in Goodridge and Grierson 2012, p.14) went to great lengths in order to create a unique look for a film, even risking his career for Robert Altman's *McCabe & Mrs. Miller* (1971), for which he "destroyed the film [stock] by making it grainy and old like the Old West." He push-processed and flashed the film negative and even added fog filters to the lens to create a hazy, faded look that perfectly replicated time-worn pictorial artefacts of frontier-era America. As a result, Altman's film still stands as one of the most impressive achievements in cinematography. Today, however, it would be very difficult—if not impossible—to create a similar look in post-production, despite the latest digital tools available to cinematographers. Zsigmond's words indicate that something important was lost in the transition to digital, namely the daringness of discovery. Due to the unpredictability of the analogue medium (i.e. chemical film), cinematographers were much more likely to run into 'happy accidents'— such as exposure mistakes or processing blunders—that would sometimes give birth to interesting new looks or techniques (but could just as well result in

unemployment). As Christopher Doyle HKSC (2017, n.p.) explained to me, the "danger of digital film" is that it "pushes you towards precision." In his view, the digital capture devices are too exact, tempting cinematographers to create pristine images that do not reflect the messiness or imprecisions of life (or art). In some ways, then, *Festen* and *The Blair Witch Project* could both be seen as early attempts to counteract this 'precision' inherent in the digital medium by mimicking the documentary aesthetic—the irony being, however, that these films were made and released well before the advent of high-resolution video. *Miami Vice* (Michael Mann, 2006), lensed by Dion Beebe ASC, is perhaps the better example to illustrate a cinematographer's attempts to create a deliberately 'coarse' look in the hi-def age, thereby treating digital "not as a convenient substitute for film but as a medium with its own aesthetic properties and visual possibilities" (Scott 2006, n.p.). In my case study (see Chapter 7), I will examine how both Beebe's and Zsigmond's work influenced my decision to expose all scenes in *Grave Men* at the extreme speed rating of 5,000 ISO in order to create a more textured digital image, which I felt was appropriate for the story.

Bruno Delbonnel AFC ASC (qtd. in Fauer 2019, p.18) warns of yet another important reason why, in his view, "every scene in every movie looks alike" these days: the Digital Intermediate. According to Keating (2014), the late 1990s were the last period when major-release films looked noticeably different from each other. Naming such diverse examples as David Fincher's *Seven* (1995), Jean-Pierre Jeunet's *Alien: Resurrection* (1997), and Steven Spielberg's *Saving Private Ryan* (1998), Keating notes that although all three films were shot on 35mm stock and went through a similar silver-retention lab process

('bleach bypass'), they nevertheless look completely different from each other. Keating argues that it was the introduction of the DI process that contributed to what he, too, perceives to be a growing visual homogeneity—even before the large-scale digitisation of capture and exhibition technology. It is, therefore, important, to stress that this is not a film-versus-digital debate; the issue pertains to digital post-production rather than to the choice of capture technology. Indeed, Delbonnel (qtd. in Fauer 2019, p.18) confirms this argument, stressing that it is very easy to get "seduced" by the endless possibilities of digital colour grading and to "lose yourself in the process and forget about the story." It is interesting to note, however, that despite the incredible range of tools available in today's digital colour-grading suites, most cinematographers appear to be 'seduced' by the same ones over and over again. As colourist Laura Pavone (2018, n.p.) explained in my interview with her, there is now a tendency to copy popular 'looks' rather than create new ones, which inevitably contributes to the current dilemma that "everything looks pretty much the same". Referring to this predicament, Daniel Pearl ASC (2017, n.p.) argues that cinematography "used to be about pioneering, doing things that had never been done before. And now it's become more about copying things that are cool." As previously discussed in chapter 4.1, the increasing conglomeration of the Hollywood industry (as well as other international film industries) plays a major role in shaping the aesthetics of mainstream entertainment. In a recent article, Doug Delaney, senior colourist at Technicolor Los Angeles, outlined his process working on the Marvel Studios film *Captain Marvel*, explaining how hundreds of people in various globally dispersed VFX departments will have made key creative decisions before the film even reaches his hands:

> I have to adhere to the same color pipeline as everybody else has, because that's how everyone's been looking at the footage, giving notes on it and ultimately approving all of these [VFX] shots. By the time it comes to me there's not a lot of wiggle room to say: 'Let's crack our knuckles and try something totally different'. (Mulcahy 2019, n.p.)

Colourists, therefore, have limited, if any, creative freedom to put a personal stamp on Marvel's decreed look; their contribution is every bit as interchangeable as that of the cinematographers. With most major Hollywood releases today being based on either 'branded content' or pre-existing IP, it is no surprise, then, that the cinematography would mirror the generic and repetitive nature of the content.

With the mainstream arena being no longer a playground for fresh ideas, cinematographers are forced to look farther afield, towards the world of low- and micro-budget productions. But according to director Quentin Tarantino, whose film debut *Reservoir Dogs* (1992) sparked the global rise of American independent cinema in the nineties, the once fertile ground of grassroots filmmaking has also run dry of compelling visual ideas. Tarantino (qtd. in Lewnes 2016, n.p.) speaks of a perceptible "craftlessness" in current independent cinema, noting that the contributions of cinematographers appear to be less important to today's directors:

> A lot of the movies I see, they lack a visual quality, which I can't truly understand because in the 1990s, when we were trying to make our movies—whether it was 60,000 dollars or 160,000 dollars or a million dollars—we were trying to make them look as good as we possibly can. We wanted them to look like a real movie. The saddest part of [it] is, I don't even know how important that is to young filmmakers.

Tarantino's words echo Vittorio Storaro's concerns regarding the lacklustre aesthetics of modern films, particularly in the independent category. Moreover, they imply not only an erosion of craft but a complete disinterest in it too. The

timeframe that Tarantino references—the 1990s—was the most fruitful period for American independent cinema, seeing the production of future cult classics like *El Mariachi* (Robert Rodriguez, 1992), *Clerks* (Kevin Smith, 1994), and *The Usual Suspects* (Bryan Singer, 1995), each sporting a highly distinct visual style. The same decade also saw the release of Darren Aronofsky's debut feature, *Pi* (1998), a film whose visual daringness also launched the career of cinematographer Matthew Libatique ASC. By today's standards, *Pi* would be considered a micro-budget film,[48] yet it exhibits a unique cinematic language that not only tells the story in a compelling fashion but also turns the financial constraints of the production into an advantage. If anything, the film proves that the budget—or the lack of it—is not the main driving force behind a film's 'look'; it is, rather, the combined ingenuity and craft of the director/cinematographer collaboration that informs the visual aspects of a movie. Yet it is not enough to blame the facility of digital post-production for this tendency towards a homogenisation of the image; these are, after all, just tools. I argue that the core of the issue is, in fact, the vanishing craft of visual storytelling; the mastery of shot composition, lighting, and camera movement—intrinsic elements of a film's mise-en-scène—is simply not deemed desirable or even necessary anymore by many filmmakers.

This attitude is, however, not exclusive to young, up-and-coming directors; it can also be observed with established names in the business: Steven Soderbergh, for example, filmed *Unsane* on his iPhone 7 in just 14 days, calling the shoot "potentially one of the most liberating experiences" he has ever had as a filmmaker (qtd. in Churchill 2019, n.p.). Acting as his own

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[48] According to the film's producer, Eric Watson, the film was shot in 28 days for $134,815 on black-and-white 16mm reversal film stock (Macaulay 1998).

cinematographer,[49] the director highlights the fact that the iPhone speeded up the production process because of its miniature size. Nevertheless, the film has a very murky, frequently under-lit aesthetic that rarely acts in the story's favour, despite the 'dark' subject matter; if anything, the low light levels and fuzzy resolution diminish the impact of the performances. Moreover, due to the iPhone's tiny sensor, every shot has nearly infinite depth-of-field, giving entirely new meaning to the term 'deep focus' (and making it impossible to distinguish what is important in a frame). By relying on the extended 'deep focus' aesthetic of mobile phone cameras, the director essentially forfeits one of the most crucial tools of cinematography: selective focus. As much as Soderbergh could be condemned for instigating a dangerous trend for cinematographers, he must, at the same time, be commended for his willingness to explore different visual avenues in a time when cinema rarely offers anything other than 'more of the same'. As the following interview excerpt illustrates, the pursuit of the 'fresh look' is, in fact, a very serious undertaking for the director (qtd. in Woodward 2018, n.p.):

> The desire to push the limits of what the phone could do was based entirely on the fact that I'd spent the previous couple of years experimenting, shooting material that was all over the spectrum in terms of tonality and composition.

The fact that Soderbergh already completed another film on an Apple iPhone—the Netflix production *High Flying Bird* (2019)—underscores the director's commitment to this new technology, strongly suggesting that mobile phones are bound to become an increasingly important element in professional cinematography, particularly as their video capabilities continue to mature[50].

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[49] More on the director-cinematographer hyphenate in Chapter 6.
[50] This is evident in Apple's release of the iPhone 11 Pro on September 10, 2019, which features three individual focal length lenses and expanded video functions.

As I outlined in the previous part of this chapter, the audience's growing acceptance of imagery that is not based on (or bound by) traditional or established aesthetic norms has opened the floodgates for films captured with non-professional technology. Although the consequences of this development for vocational cinematographers are difficult to predict, I argue that new technologies such as automated colour-grading tools and high-grade consumer-level cameras will take a big chunk out of the present job market. More importantly, professional cinematographers will find it increasingly hard to compete with the flood of images produced by 'talented amateurs' around the world, as more and more people will produce visual content in the future due to the affordability and facility of digital production technologies. The increasingly homogeneous nature of cinematography today is both a result of unprecedented levels of media saturation (how many different 'looks' can there possibly be?) as well as a shifting perception of the DOP's craft (in Storaro's words, "recording an image" is not the same as cinematography). While digital cameras have certainly accelerated and, to some degree, exacerbated these issues, the seeds for the current dilemma were already sown in the days of film, with the introduction of the Digital Intermediate process. The consequences of all this, however, are difficult to gauge, particularly at the lower end of the budget scale. For all we know, director-cinematographer Steven Soderbergh's experiments with consumer technology might prove more successful in capturing that elusive 'fresh look' than the efforts of his more professionally minded peers with their large film crews and expensive equipment. This chapter essentially concludes the discussion of the major debates in cinematography; Chapter 6 of this thesis will focus on the prospects of the profession, devising ideas and approaches on how to expand the skillset of the cinematographer to

better suit the needs of today's and, hopefully, tomorrow's industry. This is followed by a case study of the feature-length film *Grave Men*, which informed my research and, conversely, allowed me to put my findings into practice.

6   THE NEW CINEMATOGRAPHER: A DEFINITION

6.1   Introduction

Informed by my reading, by the interviews I conducted, and by my own practice as a cinematographer, this part of the thesis outlines approaches to resolving the issues discussed in the previous chapters. While my research does not claim to provide any definitive solutions to the current debates, it nevertheless aims to present ideas and arguments—inspired by both theoretical and practical investigations—that will, hopefully, spark further debate in academic as well as professional circles. The key goal of this chapter, therefore, is to answer the overarching question of how to define the cinematographer's role in the film industry—or industries—of the future. As Beach (2015) argues, the position of the cinematographer—wedged between competing departments and fractured into new labour divisions—might indeed change into something entirely different in the digital era. But like many other authors, he is not specific about what these changes involve. Mark Weingartner ASC, who specialises in photographing visual effects scenes such as those in *Dunkirk* (Christopher Nolan, 2017), offers a more concrete idea, arguing that cinematographers need to develop "another set of skills, another set of muscles" in order to regain control of the image. In his opinion, communication is at the heart of these new skills: producers need to be made aware of the fact that cinematography now involves, in Weingartner's words, an "entire ring of image-makers", from visual effects artists to colourists (Weingartner 2017, n.p.). It is, therefore, the cinematographer's task to lead this collective of creatives and, consequently, to communicate its needs to producers. Hence Weingartner concludes that— certainly on big-budget productions—the cinematographer's job description will

inevitably have to include more managerial responsibilities in the future. Similarly, Andrew Shulkind, the comparatively young cinematographer of *The Ritual* (David Bruckner, 2017), recognises a need for "new forms of communication and workarounds" to ensure that the cinematographer's skillset transitions seamlessly into the next decade, rather than becoming "frayed into several different processes" (Antunes 2018, n.p.). While these arguments certainly hint at the extent to which this topic has been—and continues to be—discussed within the industry (and, to a lesser degree, in academia), they nevertheless have failed so far to produce any applicable solutions or detailed advice on how these 'communication problems' can be resolved. We must, therefore, dig deeper and uncover the roots of these issues in order to understand how to resolve them.

6.2   Traditionalists vs. Digital Adepts

In both my interviews and my reading, I discovered that contemporary cinematographers essentially break down into two dominant groups: those who take a conventional, almost retrogressive approach to their work; and those who are fairly comfortable with new technologies and are eager to explore their future potential. I have termed the former group 'traditionalists' and the latter 'digital adepts'. The first group subscribes to the long established notion that the cinematographer is chiefly—and exclusively—responsible for whatever is in frame, i.e. any elements that can be controlled with lighting, shot composition, and camera movement; whatever happens inside the camera is of little or no interest to these cinematographers—it is merely an apparatus that generates images, either on a sensor or on a cellulose base. Digital adepts, on the other

hand, understand the processes that happen inside the camera and are able to apply that knowledge, for example, to the creation of new looks (about which I will go into more detail further down). This group thus takes a fairly holistic approach to digital cinematography; the traditionalists, however, possess only functional knowledge of these new tools and are, consequently, more likely to rely on the support from assistants (such as Digital Imaging Technicians) to either fill in the technical gaps and/or shape the final image. The reason why a distinction between these two groups—or 'philosophies'—is important, is because it illustrates the level of resistance put forth by traditionally trained DOPs, many of whom railed against the new technology until the changing job market forced them to adapt. When I interviewed Daniel Pearl, one of the ASC's longest standing members, he gave me a rather telling account of how this development influenced and, in some way, forever altered not only his work methods but also his career:

> At first, I refused to shoot anything digital for two years when it started with the RED cameras. And then, eventually, I wasn't working at all. But now I have a DIT and I still do my job exactly as I did it: I don't set up LUTs; I light, I set, I use Rec 709[51] (which is the equivalent of one-light dailies) and I change my [lighting] ratios, contrast—I do it the same way as with film. (Pearl 2017, n.p.)

Pearl is, therefore, the very definition of a traditionalist, steadfastly clinging to workflows established over a century of celluloid moviemaking. He even uses somewhat outdated terminology, referring to shooting with a Rec 709 LUT as "the equivalent of one-light dailies". This tendency to find analogies to film-related processes when describing today's digital workflows is quite common among traditionalist cinematographers; it demonstrates a certain reluctance to

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[51] BT.709 (also called Rec 709) is a set of parameters that define the colour space and contrast range of HDTVs. When applied to a camera's RAW file or Log image, a Rec 709 LUT (Look Up Table) will display a normalised image on a monitor (rather than a 'digital negative' which might look desaturated and washed out). [Source: International Telecommunication Union]

wholly embrace the new tools available to them. Celluloid as a continued frame of reference is proving to be a hindrance to the adoption of altogether new technologies. In the eyes of the traditionalists, the 'magic' is gone and fear has taken its place: fear of the new and the unknown; of having to re-learn basic skills; of having to re-train on the job. During our conversation, Oliver Stapleton confessed how this fear kept him from gaining experience with digital cameras—to the point where he essentially became an imposter on set, afraid of letting anyone know he had not worked with the new technology yet:

> There was a period from about 2004/2005 through to 2010/2011, where my agents would tell me incoming potential employers would ask the question: 'oh, has he shot digital?' It was a question to people like me. And then, around 2011/2012, that dropped away because there was just an assumption: if you were still working, you had shot digital. So, when I turned up in New Orleans for my first digital shoot, I just didn't tell anybody. I didn't even tell the DIT that I had never shot digital. (Stapleton 2017, n.p.)

This admission from a highly respected industry veteran, whose cinematography career spans more than 35 years, illustrates the magnitude of the dilemma created by the shift from film to digital. Most importantly, it reveals the humiliating aspects that such fundamental technological leaps inevitably bring with them: the 'maestro' finds himself/herself suddenly demoted to apprentice again. I argue, therefore, that the future cinematographer is fundamentally defined by his/her willingness to navigate—or conquer—the divide created by disruptive new technology (be it digital, virtual, or whatever-may-come), even if it entails becoming a student of the craft again.

The digital adepts among DOPs exhibit exactly such a disposition, either because they have a natural curiosity about new technology or are willing to immerse themselves in the intense study and research required to understand it. Some cinematographers, however, do benefit from a generational advantage,

having entered the industry at a time when digital cinema technology had already matured (Förderer and Shulkind come to mind). But, as the example of Claudio Miranda ASC proves, age is not necessarily a qualifier for digital adepts: well into his fifties, the cinematographer has been at the forefront of digital cinematography for a number of years, producing groundbreaking work such as David Fincher's *The Curious Case of Benjamin Button* (2008). Talking to Miranda (2017, n.p.), I learned that he takes the cameras home in order to test and evaluate them. "As a DOP I feel like you have to know everything about your camera," says Miranda, who likens his approach to that of the "the old film stock DOPs" who had to know everything about the negative material they used: how to expose it correctly or how to over- and underexpose it safely. Similarly, Christopher Probst ASC, who was an early adopter of the RED cameras, argues that modern cinematographers need to embrace a broader definition of their skillset:

> The cinematographer, traditionally, was the mad scientist. We had to be the Jekyll and Hyde: the scientist and the artist—there's two aspects. So, I'm saying: let's bring back the science as part of the job description, and understand how the camera functions, so we can control our job, deliver the artistic intent. (Probst 2017, n.p.)

In Daniel Pearl's view, however, adopting the skills required to understand these scientific aspects of digital cinematography would be akin to becoming a "nerd", which, apparently, is not something he is comfortable with:

> When it was film, I didn't have to learn how to make emulsion; I didn't have to learn how to develop the film. I just simply composed, designed shots, and lit. And that's what I do still today. (Pearl 2017, n.p.)

Rather than acquiring the knowledge himself and thereby gaining more control over the process, Pearl prefers to enlist the services of a DIT who deals with what he calls the "digital mumbo-jumbo" (ibid.). In essence, his approach to digital cinematography is diametrically opposed to that of someone like Markus

Förderer, who—as a digital adept—sees unprecedented opportunities for cinematographers in the new technology. In my interview, Förderer expressed the view that digital cinema cameras open up possibilities to "not only select the optics and the camera but also to create your own 'film stock'."

> Kodak or Fuji [film stocks] gave you an inherent 'look'—free of charge, if you will. You didn't have to understand anything about the chemistry behind it ... Nowadays, with digital cameras, you can't use the images 'out of the box'; they will look terrible at first. If you don't understand the factors, the optics, the colour spaces that give you the look you like, you're probably going to feel pretty lost. (Förderer 2017, n.p.)

Unlike Pearl, Förderer actually enjoys 'making his own emulsion', which he does by creating Look-Up Tables together with a colourist and then importing them into the camera for on-set monitoring; if anything, he sees this as one of the most exciting aspects of digital cinematography (ibid.). Moreover, the German cinematographer reveals that he rarely relies on a DIT unless the filming requires multiple cameras that need to be colour-matched. Instead, he conducts his own tests and researches the colour science and image processing of whatever camera he is using: "I don't do on-set [colour] grading and I don't do dailies grading; the images are 95% there already in camera." For Förderer, therefore, "the look is created during the testing phase", which allows him to have more control over the image on set and, subsequently, throughout the post-production process. His in-depth knowledge of current camera technology therefore allows him to make informed decisions that help protect his work from image manipulation down the line (ibid.).

If there is, in the end, any consensus among cinematographers on how to move forward in the digital/virtual age, it is the notion that one must know, as Storaro (qtd. in Fauer 2016, p.10) calls it, "the system": whether you rely on a

DIT (as he does) or choose to do the research yourself, you have to know the nuts and bolts of whatever camera and workflow you choose to use. Before his death, Vilmos Zsigmond encouraged fellow craftsmen to accept the changing landscape of cinematography and embrace the new tools as well as the creative possibilities they offer:

> We must re-educate and retrain ourselves creatively, to learn how to evaluate what we are doing from the technical POV while at the same time working to raise the standards of visual storytelling to ever-higher levels. (Zsigmond 2013, p.4)

In the next part of this chapter I will focus more closely on the steps cinematographers can take to "re-educate and retrain" themselves, as Zsigmond urged them to do. I argue that deep knowledge of the new systems is, essentially, only the starting point: cinematographers must also expand their skillset to encompass a greater range of tools and techniques than traditionally required.

6.3   The Expanded Skillset

6.3.1 Introduction

Yuri Neyman ASC, who founded the Global Cinematography Institute together with the late Vilmos Zsigmond, teaches his trademarked 'Expanded Cinematography Curriculum' to students from around the world.[52] In the words of its remaining founder, the Curriculum is a combination of traditional cinematography classes with aspects of virtual production, aimed at training the next generation of image-makers to become a new kind of 'director of

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[52] The GCI is a cinematography school founded in Los Angeles in 2011.

photography'—christened by Neyman alternatively as 'Director of Imagery', 'Director of Imaging' or 'Director of Images' (rather confusingly, all three titles are used on GCI's website).[53] It is important to note, however, that these terms were coined by Neyman and, despite support from a number of practitioners, have so far not been officially endorsed by the ASC or by any other cinematographer societies and guilds. Neither, incidentally, has the term "lighting designer", which Turnock applied to Emmanuel Lubezki's work on *Gravity* (Coleman et al 2016, p.187). According to Turnock's definition (ibid.), the lighting designer would "lead the technical look of the film from start to finish", thereby incorporating the following responsibilities: collaboration with VFX supervisors; supervision of the virtual lighting; matching of the CGI to the live-action elements; and quality control of all final deliverables such as 3-D conversions and IMAX copies. Most of this would, of course, necessitate the cinematographer's adoption of "some new tools that are part of what cinematography is becoming", as Lubezki himself readily admits (B 2013, p.37). DOP Dean Cundey (*Jurassic Park*, Steven Spielberg, 1993) has a similar take on the subject, suggesting that cinematographers in the future must see themselves more as "visual technology artists" (Coleman et al 2016, p.198) whose supervisory function might entail leading a team of digital lighting designers on animation projects—a role he himself played on Pixar's *The Good Dinosaur* (Peter Sohn, 2015).

While these notions have been floating around the industry for a number of years, none of them appear to be actively supported or developed by the

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[53] Adding to the confusion, Neyman also suggested the term 'Director of Visuals' at the Future of Cinematography panel held during the 2018 Cine Gear Expo in Los Angeles (Heuring 2018).

guilds at present. There is, clearly, a lack of institutional leadership and unity in this regard; producers are, therefore, unlikely to acknowledge these scattered attempts at drawing a roadmap for the profession. It is, however, crucial that they understand the need to bridge the disconnect between production and post-production in regard to the cinematographer's artistic contribution. But rather than focusing on the latest iteration of the cinematographer's title, this research—drawing inspiration from Neyman's concept of the Expanded Curriculum—aims to contribute a specific and practical re-evaluation of the traditional skillset to current knowledge. If cinematographers are to preserve their authority and artistic status on set and throughout post-production, they need to expand their skills into three key areas that are not traditionally part of their toolset: previz, colour grading, and animation. While I do not argue that cinematographers need to become experts in any of the three fields, core knowledge of these disciplines will nevertheless benefit them exponentially. Previz—just like colour grading—has in some ways always been closely linked to cinematography, as it essentially complements the storyboarding process (as well as replacing it on occasion). Animation, however, is uncharted territory for cinematographers and its inclusion here might therefore come as a surprise. But, as part 6.2.4 will illustrate, the world of video games—coupled with virtual production—is beginning to converge with the filmmaking industry to such a degree that it will eventually lead to the creation of entirely new media strands and, potentially, new workplaces for cinematographers. The findings in this section are chiefly informed by my own practice, as well as by the interviews I conducted over the last two years. As previously stated, I do not claim to have any definitive answers to the current debates; the ideas and approaches presented in this part of the study are merely a distillation of the most important

conclusions drawn from the research that went into my work—and vice versa, of course.

6.3.2 Previz

Previz is an evolution of the storyboarding process and has become an important part of pre-production on big-budget movies, particularly ones that involve action or visual effects scenes. As such, it helps previsualize scenes in the shape of rough, computer-animated sketches. Unlike traditional storyboard artists, however, previz specialists are trained in 3D animation software like Autodesk's Maya and MotionBuilder. According to Phil Méheux (2017, n.p.), one of the biggest problems for cinematographers during pre-production is that producers "always try and shut down the amount of preparation time you have now." This often leads to cinematographers being left out of the previz process altogether; instead, the director will work directly with the previz artist. Talking to Méheux, who worked very closely with storyboard artists on the Bond film *Casino Royale,* I learned that the cinematographer's involvement with previz is now entirely dependent on the deal with the producer or director; often, this time—which can amount to several weeks—is not paid (ibid.). More often than not, cinematographers are left to shoot a visual 'template' created by the previz artist in collaboration with the director. I argue that this could be avoided to some degree if cinematographers became proficient in using previz software, thereby contributing to the process more actively.

While I do not expect all cinematographers to suddenly become experts at 3D animation—which is an altogether different skillset, as part 6.2.4 of this

chapter will illustrate—there are nevertheless powerful previsualization tools on the market that are specifically aimed at directors and cinematographers. In my own practice, for instance, I have been using a software called FrameForge 3D[54] that allows me to create precise digital 'storyboards' and simple animated sequences with stock characters and stock locations (see *Fig. 1*). As this is essentially a simplified version of the 3D animation software used for regular previz, the learning curve is much less steep; if anything, FrameForge is actually easier to master than perspective drawing (required for traditional storyboarding). *Fig. 2* depicts a previz shot from the case study film, *Grave Men*, which I used in order to convey my intentions to the producer.[55] As a previsualization tool, FrameForge is more precise than traditional storyboarding, allowing cinematographers to enter the dimensions of a set or location into the software, as well as the exact focal length, depth of field, and field of view of any lens. While the programme certainly does not sport the same functionality as full-featured 3D animation software like Maya, it does offer cinematographers an efficient, almost universally applicable toolset to create previz elements for a film. More importantly, it allows them to expand their skillset without the need for extensive re-training, as the software is relatively easy to understand and master—unlike dedicated 3D animation applications.

Whether or not cinematographers should add this particular application to their toolbox is, naturally, up for debate. For example, when I interviewed Markus Förderer (2017, n.p.) about this topic, he told me that it was a waste of time for cinematographers to get involved with previz, particularly if there is "a

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[54] Used here for illustration purposes. Undoubtedly, there are other programmes with similar, if not better, functionality on the market. It is, however, beyond the scope of this PhD to present an overview of the currently available tools.

[55] The use of previz on *Grave Men* will be discussed in more detail in Chapter 7.

good team in place where everybody knows everybody and everyone knows the parameters." This is, however, an ideal scenario that is rarely encountered in reality, especially given the increasingly transnational nature of film production these days. As the case study will illustrate, even low-budget films are now often international co-productions that might hire crew from different countries, making it increasingly difficult to maintain consistent working relationships with team members—or even directors—over the course of a career. This strongly suggests that cinematographers are well advised to acquire—among other things—a certain level of proficiency with previz, as it will undoubtedly help them navigate the globally dispersed film industry. Skills do travel, after all.

Fig. 1

Fig. 2

6.3.3 Colour Grading

As Chapter 4 illustrated, it has become increasingly difficult for cinematographers to retain image control throughout the different stages of production and post-production. I therefore argue that one of the key skills any modern cinematographer should acquire is a working knowledge of an industry-standard colour grading software. Naturally, I do not wish to imply that every cinematographer should now also become a seasoned colourist; they should, however, be able to perform, at the very least, simple grading sessions themselves. On smaller productions, where the budget is often too tight for an extensive colour grade, the cinematographer might be able to do a rough grade himself/herself before handing it over to a professional colourist; in some cases, he/she might even be able to do all of the work. The unprecedented access to affordable professional applications like Blackmagic Design's DaVinci Resolve potentially enables an entire generation of budding filmmakers to become proficient in colour grading. Why should cinematographers not make use of these tools as well?

Blazing the trail in this regard is digital adept Claudio Miranda, who has his own DaVinci Resolve colour grading setup at home and uses it to evaluate test footage from new cameras:

> I have three monitors set up at my house. So, I can ingest footage—like, I ingested the [Sony] Venice[56] footage when I looked at it. I take it in, and I examine it, and I look for errors, and I try to push it ... It's good to know the tools that there are and, kind of, deal with that a bit. (Miranda 2017, n.p.)

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[56] Sony's Venice CineAlta is a digital cinema camera released in 2017. Miranda shot the promotional film *The Dig* (Joseph Kosinski, 2017) with it.

In fact, Miranda, who considers himself a "pretty good" colourist, wouldn't mind doing an entire DI himself (ibid.). His stance, however, is quite unique among the DOPs I interviewed. Roberto Schaefer (2017), for instance, feels that the effort it takes to prepare a film—including scouting locations and checking equipment—takes up so much time already, that he couldn't see himself working on the colour grading as well. Similarly, Markus Förderer (2017, n.p.) feels that the time between projects would be too short for him to deliver an entire colour grade. Conversely, he points out that working with a colourist does actually give you "a totally different perspective of your images, the details in your images." He compares this to having a camera operator on set rather than operating himself; by removing himself from the process he is, essentially, able to take a step back and look at the 'bigger picture'. Förderer does, however, agree that cinematographers should acquire a basic level of colour-grading skills in order "to understand what's possible, what the limitations are, which tools are available." Phil Méheux (2017, n.p.) seconds the argument that working with a colourist allows the cinematographer to "bounce ideas off" another person, which can provide valuable creative input. As for colour-grading an entire project, Méheux feels he could only imagine himself doing it for a short project; a two-hour theatrical feature would be too much to tackle, time-wise. During the interview I noticed that Méheux too had a copy of DaVinci Resolve on his laptop; he admitted to spending quite some time with the software.

Overall, Claudio Miranda was the only cinematographer I interviewed who felt fairly confident about colour grading a project himself. His example illustrates just how rare it is for cinematographers to experiment with alternative workflows or challenge established hierarchies. In my view, achieving a level of

proficiency with colour grading tools would be of particular value for cinematographers who work on low-budget productions, where budget-conscious producers might want to involve the editor instead of the colourist in the process (Chapter 7 will examine just such a case). Moreover, producers might severely restrict the amount of time available for a professional grade; in such a case, the cinematographer might be able to perform some—or even all—of the work himself/herself. While I agree that working with an experienced colourist is almost always the best solution—filmmaking is, after all, a collaborative process—there are nevertheless instances when alternative workflows are worth considering. In the case of *Grave Men*, for example, I ended up in a bitter dispute with the producer over the colour grading; although this was ultimately resolved, there were definitely times when I would have welcomed the skillset to do the work myself (a detailed account of this dispute and its aftermath is laid out in Chapter 7). Speaking to colourist Gwyn Evans (2018, n.p.), I learned that DI rooms used to be called "hero suites" in the early days of digital post-production because the colourists would often 'save the day' by working their magic on the footage. I argue, however, that—in today's production climate—cinematographers need to be able to come to their own rescue too, if all else fails. The tools are, after all, freely available.

6.3.4 Animation: Video Games and Virtual Production

Ever since TIME magazine (Protin 2014, n.p.) identified the video game industry as a potential "new job path" for cinematographers, the two industries—gaming and film—have been converging to an ever greater degree, cross-pollinating each other with innovations and ideas. Polish cinematographer Slawomir Idziak (Verstraten 2012, p.142) argues that today's movie-going audiences, tired of being "passive consumers", crave more immersive participation in the screen action, similar to the kind offered by video games. At the same time, game developers have been creating increasingly sophisticated environments—so-called 'cinematics'—that play like live-action movie scenes. In order to add realism to a game, the virtual cameras and software tools used to capture and code these sequences are able to mimic the characteristics of cinema lenses, the propensities of light, and the kinetics of camera movement. To create these filmic moments, game developers are increasingly hiring classically trained cinematographers who know how to compose shots and light environments.[57] Although these traditional aspects of the craft are essential to the job, they merely provide the foundation for an entirely new range of skills and tools that DOPs need to acquire in order to work in the virtual world of video game cinematography. With the two industries moving closer together, it is certainly apposite to examine this new skillset more closely.

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[57] The following excerpt from an ad posted on ProductionBase, one of the UK's biggest job portals for the entertainment industry, exemplifies this trend; it advertises the position of 'Game Engine Cinematographer/Capture Artist' with a video game marketing agency (dated September 2018): "We are looking to bring on some aspiring and talented cinematographer to expand our in-game capture team. The role would primarily involve working in-game to capture exciting, hi-res footage which can be use throughout our clients' marketing trailers on projects from [company name] to independent developer projects." [Source: productionbase.co.uk]

Dori Arazi (2017, n.p.), the 'cinematic director' and cinematographer of the PlayStation 4 video game *God of War* (Santa Monica Studio, 2018), explains that the process of working on a video game is essentially defined as 'virtual cinematography': the camera used for the production of the 'cinematics' only shoots motion—it does not shoot an image or footage; the 'actors' work on a green screen stage wearing performance-capture suits, a process that is, for example, quite similar to the production of James Cameron's *Avatar*. The key to understanding virtual cinematography, therefore, is that the finished image is not created until the project is handed over to the animation artists; in order to retain image control throughout the animation pipeline, cinematographers need to master the same tools as the animators—which, in this case, include software like Maya and MotionBuilder. In Arazi 's words, "if you don't understand your data and the type of data you're creating, you won't be able to control your image" (2017, n.p.). Video game cinematography is, therefore, an entirely new playing field for DOPs: it not only breaks the boundaries of traditional photography but also transcends the visual possibilities of digital cinema production. At the same time, though, video game cinematographers still need to be knowledgeable about the traditional aspects of the craft, such as lighting and optics. It is the cinematographer's task, for instance, to 'design' a lens for the virtual camera, as it does not actually have a physical one. In Arazi's case, this involved the creation of completely new optics that defy the laws of physics:

> In *God of War* I wanted something that felt like a cine prime [single focal length lens] but I needed to zoom. So, we ended up with a 24–85mm T1.4 cine lens—which worked great, but it doesn't exist. (Arazi 2017, n.p.)

For Arazi, the nearly endless possibilities of virtual production thus push the craft of the cinematographer into a completely new arena: "It's like being a

painter—but instead of using paint, you're using Photoshop, for instance" (ibid.). It is, however, interesting to note that despite all these new possibilities, the video game creators largely adhere to cinematic conventions; in some way, then, this underscores the continued blending of the two media. At the same time, it allows cinematographers to find common ground with video game developers. While this might sound enticing to some DOPs, many will be disheartened by the steep learning curve required to master the new skillset. 3D animation is a dedicated craft that takes years, if not decades, to learn; unlike the shortcut offered by previz software such as FrameForge 3D (see 6.3.2), there is no easy or quick way to become a competent animator. Moreover, Arazi (2017, n.p.) admits that the video game industry's recruitment process is still "a little bit of a Wild West game right now", as each studio assigns different titles and functions to its department heads. There are, however, a number of key roles closely related to traditional cinematography that are slowly becoming standardised in the industry, namely: Cinematic Director, Cinematic Lead, Director of Imagery, and Director of Photography.

While video games might offer highly immersive and explicitly visual experiences that could indeed prove fertile ground for the imaginative faculties of cinematographers, they nevertheless lack, for the most part, the traditional aspects of storytelling—or what Slawomir Idziak calls the "linear dramaturgy" of cinema (Verstraten 2012, p.142). In other words, games generally have less interest in character development or narrative ambiguity than cinema, emphasising maximum immersion and visceral pleasure instead. The same, however, could possibly be said about many modern Hollywood movies; it is not surprising, therefore, that academics and critics alike are talking of a

convergence between the two industries. I argue that the video game industry is undoubtedly a viable workplace for cinematographers—with massive future potential—but, like Virtual Reality, the medium needs to mature further in regard to its narrative potential. Unlike previz and colour grading, the 3D animation toolset is much more difficult and time-consuming to acquire for cinematographers. Of the three elements that, in my view, make up the expanded skillset, animation is by far the most demanding to master—but, potentially, the most rewarding, particularly given the direction the film industry is headed.

6.4   Collapsed Hierarchies: The Director-Cinematographer Hyphenate

When looking to the future and discussing aspects of the 'new cinematographer', one cannot ignore the notable phenomenon of the director–cinematographer hyphenate or, in other words, the growing group of directors who shoot their own films. According to Keating (2014), digital technology has enabled—or certainly facilitated—a new kind of 'auteurism' that sees directors picking up the camera themselves, choosing to become, if not their own cinematographers, then at least their own operators. While Keating credits Steven Soderbergh's *Full Frontal* (2002) as one of the earliest examples of this development (it was shot on a prosumer MiniDV camera), the phenomenon is actually not exclusive to the digital era: well before the advent of affordable digital technology, directors such as Peter Hyams (*2010: The Year We Make Contact*, 1984), Doug Liman (*Swingers*, 1996), Christopher Nolan (*Following*, 1998), and Steven Soderbergh (*Traffic*, 2000) decided to man the camera

themselves. But it was not until the introduction of high-definition cameras that 'digital auteurism', as I call it, went into overdrive. Most recently, directors as different as Alfonso Cuarón, P. T. Anderson, and Robert Rodriguez lensed their own films to great acclaim, breathing new life into Astruc's fabled 'caméra-stylo' theory. By using the camera as writers use the pen, these directors channel thoughts directly and as close to linguistic expression as the medium possibly allows. But what does this mean for cinematographers? Are new technologies going to topple the classical hierarchy between director and cinematographer? Will increasing numbers of directors shoot their own films in the future? This part of the chapter will examine the potential of the hyphenate director as well as the creative opportunities offered by non-traditional set hierarchies. The hyphenate phenomenon is of particular interest to this PhD, as I was both the cinematographer and director of *Grave Men*; I will therefore be using the case study to further examine the role of the hyphenate director and how it both threatens but also inspires established practice.

In order to complete *Grave Men* within the constraints of an extremely tight budget and a 16-day shooting schedule, I was forced to think outside the box and challenge the traditional crew hierarchies. My research eventually led me to Caldwell (2008, p.177), who argues that the compressed schedules of TV series like *24* (Robert Cochran, 2001–2008) and *The Shield* (Shawn Ryan, 2002–2008) necessitated a different shooting method, which led to the inception of what he terms, alternatively, "speed shooting" or "hyper-production". This approach entails using multiple cameras on Steadicam rigs, equipped with zoom lenses, to cover scenes efficiently in long takes ('plan-séquence'); shot design is, therefore, entrusted to the camera operator(s) rather

than the director. Moreover, some of the tasks traditionally assigned to the cinematographer are delegated to the operators as well, particularly in regard to lighting—which, for a multi-cam shoot, has to be kept simple and efficient. The math is obvious: fewer lighting setups equal more shooting time and more coverage. Caldwell argues that structuring the crew this way not only collapses vertical set hierarchies, it also empowers the camera operators and creates a highly efficient chain of command. This concept of 'collapsed hierarchies' directly inspired my approach to *Grave Men* and prompted the decision to act as my own cinematographer and operator. While the notion of the director taking over the cinematographer's duties might understandably sound threatening from the latter's perspective, the aim of this study is not simply to examine future avenues for cinematographers but also to re-examine the traditional definition of the role and whether or not it still holds relevance in this digital and, increasingly, virtual age. I maintain, therefore, that DOPs must inevitably face the growing challenge of directors stepping into their role, particularly as digital production tools become more accessible and user-friendly.

But in order to grasp why this slightly competitive pursuit might, in the long run, prove beneficial to the craft of cinematography, we must understand why directors wish to wield the 'camera-pen' in the first place. In his book *RoadRacers: The Making of a Degenerate Hot Rod Flick,* Robert Rodriguez chronicles his transition from solely directing the film to also operating the camera, which apparently became a necessity while he was trying to fit the

made-for-TV feature, *RoadRacers* (1994), into a 13-day shooting schedule.[58]

The following entry from the director's shooting diary gives insight into his

frustration with the traditional production process:

> I saw yesterday's footage. A lot of the shots are tame. I'm so pissed.
> Self-advice: You should *always* operate your own camera, Rob.
> (Rodriguez 1998, p.54)

Rodriguez, who eventually graduated from camera operator to cinematographer

with *Once Upon a Time in Mexico* (2003), singles out the proximity to the actors

as one of the most attractive and fulfilling aspects of operating the camera

himself: "It's just me and the actors, no one else to get in your way or break

your concentration" (ibid. p.50). Director-cinematographer Steven Soderbergh

(Hemphill 2018, n.p.) echoes this argument, stressing that this way of working

allows him "to have no barrier between what [the actors] are doing and the

capture device". Acting as his own cinematographer, therefore, gives him the

comfort of "a more intimate relationship with the movie and with the actors"

(Vishnevetsky 2013, p.195). For Soderbergh, the journey to becoming his own

DOP was a reductive process that initially began with 35mm (*Traffic*),

transitioned into digital (*Che, 2008*), and eventually culminated in his current

use of mobile phone technology (*Unsane*). Soderbergh (Kaufman 2000, p.113)

calls the process of being a hyphenate director "relentless" but ultimately

satisfying, "because you're getting what you want all day." Similarly, Doug

Liman, who both shot and directed his first feature film, *Swingers*, argues that

this method of working creates a unique sense of immediacy on set:

> That's as close as you're going to get to what people see in the
> theater, much more so than [the perspective offered by] a video
> monitor. And if you're just standing next to the camera, you're
> notseeing the frame. (Williams 2018, n.p.)

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[58] Incidentally, the Director of Photography on the film was Roberto Schaefer. Many of
Rodriguez's diary entries revolve around his frustration with Schaefer's seemingly
pedantic approach to cinematography.

For hyphenate directors, therefore, the appeal of operating the camera lies in the absolute control over the frame as well as in the intimacy created by the close proximity to the actors. From my own experience—which I will discuss in more detail in Chapter7—I can only second these arguments. While the demands of being both the director and the cinematographer are admittedly intense, the pace of the filming—aptly described by Soderbergh as "relentless"—creates a heightened sense of awareness in the director-operator, who essentially enters the actors' 'zone' by anticipating their every move. This is, of course, facilitated by a thorough knowledge of cinematographic practice, since technical aspects of the filming could potentially disturb the immediacy of the moment. Some directors venture even further into the unknown by adopting entirely different practices on set: Paul Thomas Anderson, for instance, directed *Phantom Thread* (2017) without the help of a cinematographer, choosing to work with his camera crew as a "collective" instead (Directors UK 2017, n.p.). The director calls it a "natural evolution" (ibid.) of a work method that originated with smaller projects such as Radiohead's *Daydreaming* (2016) music video that he shot with his regular camera operator and gaffer—but without a dedicated cinematographer. Anderson, who gave the 'Lighting Cameraman' credit to his gaffer, explains the process thus:

> I get to say the last word on camera placement and movement. The lens choice is usually my initial choice with a lot of patter between first [camera] assistant Eric Brown and [camera operator] Colin [Anderson] who chime in once we've done three or four takes my way, who start suggesting 'what about...?' (Directors UK 2017, n.p.)

In the same interview, Anderson calls this unique approach to cinematography "an itch" he has wanted to scratch for a while. It will be very interesting to see if his experiment will inspire other directors to find new ways of working—either by adopting multiple roles or by dropping some of them altogether. In the history of

cinematography, *Phantom Thread* is, clearly, something of a watershed moment: a film captured by collective. It therefore raises the question what purpose cinematographers actually serve if a dedicated team of technicians, under the guidance of the director, can obtain the same—or at least similar—results. Cinematographers should certainly be troubled by the critical success of Anderson's film.

Another turning point in the hyphenate debate came at the 2019 Academy Awards, when director Alfonso Cuarón took home the Oscar for Best Cinematography for the Netflix production *Roma* (2018). Cuarón had originally planned to make the film with his regular cinematographer, Emmanuel Lubezki, but due to scheduling conflicts the director ended up shooting *Roma* himself (Chitwood 2018). His pioneering use of a large-format, digital black-and-white look demonstrates that the boundaries of electronic cinematography can still be pushed into new and unexpected directions, particularly in the hands of a technically and technologically competent 'auteur' director. For cinematographers, however, this development could be disastrous. Quentin Tarantino, Robert Rodriguez's close collaborator and co-director on the double-feature *Grindhouse* (2007),[59] even goes so far as to proclaim that the digital medium will eventually make the cinematographer's role "as obsolete as a dodo bird":

> Why would you hire a cinematographer? If you're doing a digital movie it doesn't make any sense whatsoever. All you need to do is look to the screen to see if you like it. Gaffer do this, do that... you could be your own cinematographer. No cinematographer should be promoting digital. (James 2008, n.p.).

While Tarantino's argument, not surprisingly, borders on the polemical, he

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[59] Tarantino is credited as the DOP of his segment of the film, *Death Proof.*

nevertheless makes a valuable point about WYSIWYG monitoring ("all you need to do is look to the screen") and its massive impact on how the cinematographer's role is perceived today (see 4.3 for a more detailed discussion). If one were to believe Tarantino, however, the cinematographer's significance is entirely tied to the 'mystery' of the cinematographic process which seemingly disappeared with the emergence of digital cinema technology. This is certainly not the case; digital, as I see it, is merely a new 'canvas' for cinematographers to use. But it is up to them to discover and explore its inherent qualities—and, ultimately, to prove people like Tarantino wrong.

As I have argued in this chapter, cinematographers can acquire valuable tools and skills that will help them navigate today's changing production landscape. Some of them are of a technical nature, such as previz and colour grading, and relate to the nuts-and-bolts aspects of the job; for the most part, they can be acquired through training and experience. Others, like animation, are more demanding to master and are indicative of a changing career path altogether. Most importantly, these new skills are about attitude: the attitude to learn, continually, in order to become a digital adept and to embrace the scientific part of the profession. And while the director–cinematographer phenomenon might provide creative impulses for the craft, it simultaneously unsettles the status quo by putting into question the very usefulness of cinematographers—the 'new cinematographer' might, after all, turn out to be the director himself/herself. In the next chapter, I will examine how aspects of my research informed the production and post-production of the feature film *Grave Men* and, conversely, how some of the more troubled aspects of the filming experience directly sparked the ideas and arguments discussed in this chapter.

7   CASE STUDY: *GRAVE MEN*

7.1   Introduction

In this chapter I will outline the process of making the micro-budget feature film, *Grave Men* and, in particular, the issues encountered during production that relate to Chapters 3, 4, and 5 (specifically to the latter two). The case study is structured according to the three key stages of a film's development from script to screen: pre-production, production, and post-production. Many of the findings presented in Chapter 6 of this thesis resulted directly from my experiences working on this project.

In summer 2016, German producer Vesna Jovanoska (ena Film, Cologne) approached me to write a London-based story that could be shot relatively quickly and inexpensively. The result was *Grave Men*, a psychological crime thriller filmed over 16 days in West London in May/June 2017.[60] Apart from writing and directing *Grave Men*, I also served as the film's cinematographer. This was actually suggested by the producer herself, who knew that I had been working as a DOP for some years.[61] Although the thought of manning all three key positions was rather daunting at first, I quickly realised that having unlimited access to the entire production process—from pre-production to finishing—would give me an unprecedented opportunity to examine the role of the cinematographer within the wider context of a film shoot. Generally speaking, when you serve as the cinematographer on a film, you

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[60] See Appendix II for a plot outline of *Grave Men*.
[61] Although I generally work as a freelance cinematographer, I have also written and directed television shows and short narrative subjects. As a director, I have worked with cinematographers as well, so I know both sides of the coin.

rarely get a grasp of the 'bigger picture'; you tend to only observe the aspects of production that relate to your specific department. Adopting the role of director, however, allowed me to examine almost every aspect of the production environment—including the producer's decision-making process, particularly in regard to the film's cinematography. Furthermore, I was able to analyse the role of the cinematographer from the slightly removed perspective of the director, which arguably lent a more objective view to my observations—but also resulted in a rather schizophrenic interior dialogue throughout the filming process.

7.2   Pre-Production

Most of the key decisions regarding the 'look' of a film are decided well before the actual shoot, during the pre-production phase. One of the key issues I address with my research is the growing problem of visual homogenisation in the digital age. A cinematographer's unique selling point is the imagery he/she creates; Flaxton (2015, p.70) calls this the "un-definable advantage" that "adds value" to a DOP's reputation. In order to be recognised and to make a living in the film industry, cinematographers therefore have to create outstanding images—at every level of production. Faced with *Grave Men's* low budget and an unusually short shooting time, I was concerned that the film would be visually poor and generally lacking in craft—like countless other low-budget pictures that impose a drab, documentary-style look (i.e. shaky handheld camera work and available-light photography) onto a story often for budgetary rather than narrative reasons. As Storaro warned, "recording an image" is not

the same as cinematography (see p.81): all too often the low budget is used as an excuse for lacklustre imagery. Great emphasis is placed on the actors' performances but not on framing, composition, and lighting. While the actors' performances are indeed one of the most important aspects of any film, one should not forget that the way those performances are captured by the camera is what ultimately constitutes the performance as perceived by the audience. And that is where the cinematographer's (and, to some degree, the director's) expertise in lens selection, camera placement, and lighting comes into play.[62] The cinematography should always serve the story; before and during production I often had to remind myself of that. 'Just tell the story' became my mantra whenever I was pressed for time and resources. But what does that actually mean? Is it a way of telling the cameraman's ego to forget about the perfect shot and let cinematography take a back seat to performance? Or does it actually mean the opposite, i.e. to strive further, to push harder in order to get the shot?

At the end of the day, the success of a cinematographer's work is mainly dependent on how involved the director (or, in this case, the producer) is with the visual aspects of a film. I distinctly remember a conversation I had with the producer before we began filming: she noted that due to the extremely tight shooting schedule (16 days), we would basically have to make a 'Dogma' film (referring to the Danish 'Dogme 95' movement that intended to strip down the filmmaking process to its bare essentials, i.e. story and performance). This comment gave me a few sleepless nights. After all, the story was quite clearly a

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[62] One need only look at *Touch of Evil* (1958) to see how actor/director Orson Welles helped his own performance (as Chief Quinlan) with carefully selected camera angles, thereby creating what is easily the film's most memorable character.

genre piece (i.e. a psychological crime-thriller) and therefore needed a certain amount of stylisation. Despite the rather realistic set-up, the characters were quite extreme in their depiction (more so in the film's first act than in the second). The film's tone therefore had to strike a delicate balance between 'kitchen sink' realism and the genre trappings of a thriller. Visually, this meant crafting a blend of naturalistic settings and expressionist lighting. Most importantly, the film needed an atmosphere, a sense of place; scenes would have to be shot at a certain time of day to make sure that the sun would come in at an interesting angle. Or sometimes it meant fogging up an interior to create a mood that would emphasise a character's state of mind. At the same time, I wanted camera movement to be well controlled: there had to be a clear narrative reason behind every type of movement, i.e. dolly shot, tripod, handheld. In other words, the 'Dogma' approach was inappropriate for this particular story, as I needed full control over the cinematographic process in order to create the appropriate visual language. Furthermore, I faced the present-day challenge of every cinematographer: trying to find a fresh angle, an original style, or a new approach. As I argued in Chapter 5, today's audiences get bombarded with images from social media sites, SVOD libraries, traditional television, pay-per-view, and cinemas. As a cinematographer, I have to ask myself where do I go from here? What is left to discover or explore? It is important for the future of the profession that we continue to explore radical new ways of telling stories visually. But this can only happen when we are given the freedom to experiment and, occasionally, the permission to fail. With this in mind, I felt that I needed a radical approach to the look of *Grave Men*.

Part of a cinematographer's research in preparation for a project is the accumulation of visual references that could inspire the look; these can be paintings, photographs, or films. In the case of *Grave Men*, I mainly studied two films before embarking on the project: *Klute* and *The Yards*. Shot by Gordon Willis and Harris Savides, respectively, these films are excellent examples of low-key photography pushed to its very limits. Although a generation apart in age, Willis and Savides (both now, sadly, deceased) shared a reputation for occasionally going too far in their explorations of under-exposure. Salt (2009, p.309) mentions Willis deliberately "deforming the natural response of the negative" by underexposing the film stock and then printing it normally to achieve a "slightly reduced definition". Willis shaped an entire career out of decreasing the quality of the on-screen image: in *Klute*, for instance, his minimalist lighting and daring underexposure consistently draped the scenery in an inky, funereal darkness (see *Fig. 3*).

Fig. 3

Fig. 4

Moreover, in the case of *The Yards* (see *Fig. 4*), scenes even had to be re-shot at considerable cost because of Savides' experiments with exposure.[63] Such risk-taking, however, has become rare in modern cinema; the last time an artist explored the boundaries in this respect was in the early days of High Definition cameras, when director Michael Mann and cinematographer Dion Beebe pushed the new technology to its (then) limits with the night photography of films like *Collateral* (2004) and *Miami Vice* (see Chapter 5). My practice-based research, therefore, was guided by a desire to combine the daring approach of Willis/Savides with the experimental nature of Beebe's 'night-vision' cinematography in order to create a unique aesthetic within the digital medium.

I felt that I could make *Grave Men*'s low budget work in my favour by creating a radical aesthetic that would fit the story but also make the film stand out visually. Flaxton (2015, p.72) concludes that in order to get an interesting look from a "clinically clean medium" such as digital video, cinematographers

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[63] Explains Savides (qtd. in Ballinger 2004, p.166): "On *The Yards*, the underexposure levels were insane ... I can't believe how crazy I was ... I think sometimes it is only when you go further than what you know or what you expect that you get something that's new, exciting and great."

need to "distress the image". Consequently, some of the crucial aesthetic decisions I made in pre-production were to a) shoot the film entirely at 5,000 ISO[64] and b) to use colour-correction filters in front of the lens rather than in post-production. The latter is sometimes referred to as 'baking in' the look of the film, which is a way of protecting the image from unapproved manipulation later on in the process. As outlined in Chapter 1.1, I had previously encountered such issues on another project—which sparked the idea for this research—and therefore started investigating ways of avoiding the same problem with *Grave Men*. Moreover, I chose to shoot this film at the extreme speed rating of 5,000 ISO, usually reserved for 'night vision' shots in documentaries; at this ISO value, a camera will literally 'see' into the night, comparable—and, at times, superior— to human vision.[65] It will, however, also pick up a lot of 'noise', the digital equivalent of film grain, which is simply a side effect of pushing the sensor to its technical limit. The upside, though, is that it adds a coarse but interesting texture to the image, which—although irreversible—felt appropriate for the story: combined with the low-key lighting, the grain made London's 'underworld' come alive in the film. In *Colour and the Moving Image* (Brown et al 2013, p.114), Philipp Schmerheim talks of the "haptic" effect of cinema in relation to colour and monochromatic imagery; but we can extend his argument to include grain texture as a similarly palpable element that adds dimension and depth to an image. With the gradual disappearance of film as a capture medium, this important aspect of cinematography has, sadly, faded into the background. According to Hadjioannou (2012, p.72), digital images are, by default,

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[64] The camera I used—and specifically requested—for this film (Panasonic's Varicam) produces good images up to 5,000 ISO. I therefore only needed a third of the lighting power required for similar digital cameras such as the Alexa or the RED—another benefit of choosing this approach.

[65] At the time of writing, I do not know of any other feature-length film that was shot entirely at 5,000 ISO.

"immaterial" in comparison to film stock: they exist solely as arrangements of numbers rather than as physical objects. Aesthetically speaking, the medium's defining characteristics appear to reflect this inherent immateriality: digital images are often described as flat and sterile, lacking depth and dimensionality. It therefore requires effort on the cinematographer's part to imbue these images with a tangible quality, to give them an 'organic' texture that resembles film stock—which, incidentally, exhibits none of this sterility due to its stacked colour dyes and the random, "entropic" nature of its grain (ibid. p.106). By pushing the camera's exposure level to 5,000 ISO, I was, however, walking on thin ice, much like Willis and Savides; if I miscalculated the exposure, I would have no way of correcting it in post-production, as there simply was no leeway at such a high sensitivity (for this reason, most cinematographers try to avoid working at such extremes of exposure). *Fig. 5* and *Fig. 6* depict screenshots from *Grave Men*, illustrating my approach to the film's lighting and image texture, as well as how they compare to Willis' and Savides' work in particular.

Fig. 5

Fig. 6

Knowing that these decisions would be irreversible, I had a few sleepless nights during the filming. In hindsight, I realise that I unwittingly transposed the film-based workflow of Willis and Savides into the digital age by introducing an element of risk and uncertainty back into cinematography, despite the WYSIWYG monitoring options available now. Working with film stock, neither cinematographer knew the outcome of those extreme exposures until the next day, when the lab would process the footage; similarly, I did not know the exact results of my work until I saw *Grave Men* on the big screen for the first time (during the colour grading session, which is discussed in section 7.4), where the effect of the grain was most apparent.[66]

Before the advent of sophisticated digital tools, filmmakers had no other option than to make crucial aesthetic decisions during pre-production or on set, as film stocks simply did not allow for such excessive image manipulation in the laboratory. For instance, cinematographers used glass filters in front of the lens

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[66] Also evident in the high-resolution Vimeo file that accompanies this document (see link on p.8).

to introduce colour casts or colour effects to a film's look: Gordon Willis famously used 'chocolate' filters—combined with appropriate lighting—to create the brassy, often imitated tint of *The Godfather*; Slawomir Idziak based almost his entire career on a case of custom-made glass filters that he would bring to every set; Vittorio Storaro used coloured filters as a visual leitmotif to trace the characters' state of mind in Bernardo Bertolucci's *The Sheltering Sky* (1990). With the introduction of digital post-production, however, the use of filters in front of the lens became less common; the general belief is that most colour casts can now be reproduced by powerful grading software. Unsurprisingly, this exacerbates the perceptible trend towards visual homogeneity, as cinematographers increasingly rely on the same few software tools offered by the post-production suites. For *Grave Men*, I decided to use glass filters rather than post-production plug-ins to render a brownish tint to the first act of the film. Symbolically, the earthy colour of the filter helped embellish the grave-digging motif (the protagonist, Jimmy, works as a 'bin man', or occasional grave digger, for a Polish crime syndicate called the 'Firma'). In order to capture the look as much as possible 'in camera', I also covered the lights on set with dirt-coloured gels to augment my filter strategy. In the second act, the tint is less pronounced (achieved by using a lighter grade of the filter/gel), because Jimmy tries to put the criminal life behind him. In the last act, when his past eventually catches up with him, the strength of the colour cast increases again. Apart from being anchored in the narrative, this 'baked in' look was meant to protect my images from potential manipulation in post-production. Clearly, this entire approach goes against the current wisdom to 'fix it in post' (as illustrated in Chapters 3 and 4); my explicit goal as the cinematographer on this film, however, was to create the look inside the camera, not in post-production. But as I will illustrate

in section 7.4, things ultimately did not go to plan with *Grave Men*.

One of the inherent difficulties of working as a cinematographer is the necessity to convey abstract ideas in a comprehensible manner to collaborators who sometimes lack the imaginative faculties to visualise them (chiefly producers, occasionally directors). This is by no means a slight; it is the simple reality of a business that relies on different skillsets, from the artistic to the managerial. By expanding my skillset into the arena of (simplified) previz, I was able to convey lens choice, composition, and lighting to the producer in an explicitly visual manner, thereby creating fewer grounds for misconception before the shoot. As outlined in 6.3.2, previz is an important communication tool to convey the DOP's ideas not only to technical collaborators but also to producers. While *Grave Men* did not warrant extensive use of previz, I nevertheless designed certain shots in FrameForge 3D (see *Figs. 7–9*) to better illustrate my ideas for the producer and, at the same time, achieve proficiency in this specialist software:

Fig. 7

Fig. 8

Fig. 9

In *Figs. 7* and *8*, the lighting is deliberately overexposed on the character in the leather jacket for the purpose of demonstrating the software's ability to mimic realistic lighting setups. Moreover, as seen in *Figs. 8* and *9*, it is capable of replicating the depth-of-field characteristics of professional lenses at specific focal lengths. In *Fig. 9* (compared to *Fig. 2* on p.106), I placed the lighting stand in the shot to illustrate how the software works and, more importantly, to demonstrate how it can serve as an excellent introduction to virtual lighting tools for cinematographers, particularly as it features the same toolset as the more intricate applications used by professional animators and previz artists. Apart from bridging the gap between key artistic departments, this simplified form of

previz can provide producers with vital data for budgeting and scheduling purposes.

7.3   Production / Principal Photography

I realised early on that filming *Grave Men* in a conventional manner would make us fall behind schedule from day one. Not only did the producer want to shoot a 90-page script in a mere 16 days (14 days non-stop, followed by two additional days with a reduced crew), she also insisted on 8-hour workdays for the crew. The only way I could deliver the cinematic quality I was after in such a short time was to operate the camera myself—in addition to being the film's cinematographer.[67] Inspired by Caldwell's theory regarding "hyper-production" (see Chapter 6.4), I therefore decided to 'collapse' the hierarchies within the camera department to suit the unorthodox requirements of our schedule. Operating the camera also allowed me to be very close to the actors and make split-second decisions about the performances: I felt as if I was stepping into the actors' 'zone', engaging in a kind of dance with them. Because of this proximity, I was able to react instantly to what was happening in the scene—which would not have been possible had I been sitting in front of a video monitor in another room. This is, essentially, the very point that Daniel Pearl made (see p.72) about the growing disconnect between the director, the cinematographer, and the performers due to the introduction of WYSIWYG monitoring; by collapsing the hierarchy, I was, therefore, recreating a sense of immediacy—as well as intimacy—on a 'digital' set. As such, my experiences on this film mirrored the

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[67] Cinematographers generally have the option of operating the camera themselves or, alternatively, employing a dedicated camera operator.

findings of other hyphenate directors like Steven Soderbergh and Doug Liman (see Chapter 6.4), who concluded that the re-shuffling of the traditional hierarchy allows them to be closer to the action and monitor the actors' performances on the spot—literally through the viewfinder. Moreover, this method of working proved beneficial to *Grave Men*'s cinematography as well, creating a more efficient chain of command than with the traditional hierarchy (which dictates that the director relay camera-specific adjustments to the DOP, who will then pass them on to the operator). As a hyphenate director, I was able to make split-second decisions about the lighting and framing without needing to consult the operator or DOP first.

A benefit of low-budget projects, therefore, is that they invariably force you to think 'outside the box', thus questioning established industry practice. Caldwell's writings about productions that challenge accepted hierarchies also informed other key decisions in relation to my set practice. For instance, we had to limit the number of crew people because we were filming in quite a few cramped interiors (a smaller crew would allow us to work more efficiently). Consequently, I decided to drop the Second Camera Assistant (2nd AC) position.[68] To facilitate this, I chose to use a single zoom lens rather than my usual set of prime lenses (i.e. fixed focal length lenses), which allowed me to collapse the position of the 2nd AC into the 1st AC (focus puller), as there were no lens changes required anymore. The restructuring of crew roles triggered a snowball effect that ended up affecting the film's look, too: the decision to use a zoom lens, for example, added tremendous speed and efficiency to my work; but, at the same time, it also changed certain aesthetic parameters of the story.

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[68] The 2nd AC is generally in charge of assisting the focus puller with lens changes, monitor setup, and slating.

Strictly speaking, some shots you simply cannot get with a zoom lens, because—unlike prime lenses—zooms have a minimum focus distance of two to three feet, making it almost impossible, for example, to 'push' the lens into an actor's face for an exaggerated distortion effect. There were, however, moments in the story where a more distorted perspective of the protagonist would have been appropriate in order to convey his slipping sanity, particularly during the first act. This, then, was the flipside of the coin: I had to forfeit the close focus abilities of a prime lens for the increased flexibility and speed of a zoom lens. Looking at the bigger picture, however, this was a price worth paying.

Furthermore, I made the decision to work without a DIT (Digital Imaging Technician), and instead simplify the workflow to a degree that would allow me to handle those aspects of the job myself. As I argued in Chapter 6.2, there is now a definitive need for cinematographers to shed outdated notions of the profession in order to become 'digital adepts'. On low-budget projects, for example, relying on a DIT is no longer a sustainable work method for a cinematographer, as financial constraints often prohibit the filling of such a crew position in the first place. In preparation for *Grave Men*, I therefore studied the most cost-efficient workflow that would allow me to monitor the consistency of my footage throughout the shoot and, at the same time, give me enough leeway to colour-grade the images in post-production. An uncompressed RAW workflow, for example, adds considerable strain to a film's budget, as it requires—among other things—the services of a DIT to generate 'dailies' from the unprocessed footage. Consequently, *Grave Men* was recorded in V-Log instead (Panasonic's proprietary logarithmic format), to an edit-friendly

compressed codec.[69] With a simple monitoring LUT on set, I was able to show to the producer and the team what the final image would potentially look like. Admittedly, none of these considerations are particularly novel, scientific, or in any way difficult for cinematographers to grasp; the "digital mumbo-jumbo", as Daniel Pearl called it, simply requires some serious study in order to gauge the options available today, as well as their implications for post-production. As a digital adept, I was therefore able to advise the producer on the most efficient and inexpensive workflow options in regard to the entire production chain, from pre-production to post-production. For this, however, I had to adopt a holistic view of the filmmaking process that went beyond the boundaries of the camera department. In some ways, then, I was a 'workflow consultant' as much as a cinematographer for the producer, which reflects aspects of both Phil Méheux's and Mark Weingartner's arguments regarding the DOP's expanding managerial function (see Chapters 4 and 6, respectively).

Combining a small crew with a tight budget and a compressed shooting schedule is generally a recipe for disaster. It certainly makes it difficult, if not impossible, to keep up professional standards while trying to create an interesting looking film, as well as to tell a story in the most intriguing manner. Clearly, those are a lot of contradictory elements to bring into balance. One might, therefore, argue that with such a heavy workload both the cinematography and the directing will probably suffer—but that is not necessarily the case. As director-cinematographer-camera operator, I knew that I could rely on key crew members—particularly the gaffer (chief lighting

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[69] Logarithmic encoding is a cost-efficient alternative to RAW, as it generally results in smaller file sizes, yet still preserves the camera's exposure latitude and colour depth. Please refer to the glossary in Appendix I for more information about Log recording.

technician), 1st AC (focus puller), and AD (assistant director)—to help me stay focused on my core duties. Rather than being micro-managed by the director, these specific crew members instead became more involved in the creative process, as they were given greater authority and responsibility overall. The gaffer, for instance, was allowed to make changes to the lighting without my explicit instructions, as I was often too busy directing the actors before a take; this essentially gave him more artistic input and control over a shot (we had, of course, discussed each lighting setup before the shoot). As such, the *Grave Men* project constantly challenged my entrenched notions of set practice, particularly in relation to the inveterate nature of specific roles (such as the cinematographer's) within the production structure. In fact, I am convinced we would not have finished this film in 16 days, had I not collapsed several crew roles into one 'super-role', or multi-hyphenate position. As I stated in 6.4, I could indeed imagine more directors following this route in the future, emboldened by the greater facility of digital capture technology. Based on my experience with *Grave Men*, I argue there is vast creative potential in re-ordering, re-structuring, and, potentially, re-defining the industry's established roles and hierarchies.

7.4   Post-Production

In spring 2018, roughly one year after we had wrapped principal photography, *Grave Men* was ready to be colour-graded. As previously indicated, my initial and, supposedly, foolproof plan to protect my images against unapproved manipulation by 'baking in' the look of the film, did not work out. Instead, the film languished in post-production for an additional year until it was finished in

September 2019.[70] As this section will illustrate, the delay was an indirect result of a dispute over the colour grade between the producer and myself. The irony of this disagreement—given the topic of this thesis—is, of course, not lost on me. If anything, it should reinforce the magnitude of the problem, no matter what budget level cinematographers work at.

As *Grave Men* progressed through the various stages of post-production (i.e. editing, sound editing, scoring) between September 2017 and May 2018, I gradually began to comprehend the true complexity of the issues I outlined in this thesis (particularly in Chapter 4). In an email dated 18 April 2018, producer Vesna Jovanoska rather unexpectedly claimed that she did not have the budget to have the film professionally graded;[71] she felt that the images already looked very good and hence required little additional work anyway—which could, in her opinion, easily be done by the film's editor. In other words, my idea of creating a close-to-finalised look inside the camera had just backfired; by baking in the look I had inadvertently created a catch-22 situation, for no matter how final these images might have appeared to the producer, they still required the finishing touches of a colourist. But I knew that if an editor, rather than a trained colourist, undertook this final job, the film would not look as intended. In fact, it might even end up ruined. While this worry might, understandably, sound a bit precious or exaggerated from a layperson's perspective, the full extent of the problem should become clear further down, as I will draw comparisons between the different graded versions of the film. First, however, I want to carry on documenting my correspondence with the producer.

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[70] The final release version accompanies this thesis.

[71] At the time of signing my contract, I was not yet aware of IMAGO's contractual guidelines for cinematographers (see p.48). We therefore only had an oral agreement about the colour grading; no specific budget or timeframe were decided on.

Replying to the producer's initial message, I informed her that it was out of the question for the editor to do the grading. I also explained—in some detail—why my career as a cinematographer depended on the artistic integrity of my work. Moreover, I suggested Gwyn Evans, a London-based colourist, for the job, who I had worked with before and who was willing to make us a generous offer. I did not, however, receive a reply to this email. The next time I heard from the producer regarding this matter was in an email on 7 May 2018, in which she asked me to comment on the editor's first colour-grading pass of the film (provided as a Vimeo link). One look at the video file revealed that my worries were justified: intentionally or not, the editor had shifted the film's look in a completely different direction (see p.143). It goes without saying, that this was bound to be the outcome, simply for the reason that—without any instructions— he obviously had no idea what my intentions were in the first place. I emailed the producer the same day, asking to talk this through on the phone; I also reminded her of my last email—which she had so far ignored—to make sure she had actually received it. I had, after all, clearly stated that the film needed a professional colour grade, which I was willing to arrange in London. Subsequent to my email, however, the producer's communication became—in my view— entirely unprofessional: she essentially refused to talk on the phone, citing the "tone" of my email as a reason (V Jovanoska 2018, personal communication, 8 May). This, then, escalated the situation, as she had not only overridden my authority as the film's cinematographer but had also shut down any direct line of communication. Clearly, this was no longer in the spirit of creative collaboration. As a freelance cinematographer I had been in a dispute over a project's colour grade before (see 1.1) but there was not nearly as much at stake as with *Grave Men,* which I had also written and directed. Further tension arose when, in an

email on 9 May 2018, I threatened to take my name off the film as a cinematographer, unless it was graded professionally. This prompted her sarcastic question (in an email on 10 May 2018): "is there an Alan Smithie [sic] for cinematographers, then?" Clearly, my threat had struck a nerve with her, as the tone of her emails subsequently became more sardonic. At the time I was beginning to feel physically unwell whenever I received an email from the producer: bouts of nausea would wash over me in anticipation of the latest (bad) news. I began to consider my options but quickly realised I did not have any: as the film had been edited in Germany, I did not have access to the footage. Most worryingly, the producer had final cut; in essence, she could finish the project without my participation. Faced with these rather unfavourable odds, I decided to take some time off to visit family abroad. For two weeks I did not contact the producer again. My silence must have unsettled her, as she eventually wrote an email to me (on 23 May 2018), agreeing to pay half the cost of the colour grade. I ended up covering the other half and, in June 2018, spent five days—the bare minimum for a feature-length film—in Gwyn Evans' grading suite, finalising the film's look. The argument between the producer and myself did, however, create a rift between us. The film spent another year in post-production, mainly as a result of issues between Vesna and a number of composers. In my view, the producer could—and should—have resolved these much more quickly; communication from Germany, however, remained poor. Over the course of a year, the producer kept stalling the project, which I can only interpret—rightly or wrongly—as fallout from our conflict regarding the film's colour grading. The last time we talked on the phone (in September 2018), she revealed that an unfinished version of *Grave Men*—graded but still without music—had attracted interest from three major sales/distribution

companies: Wild Bunch, Tobis Film, and ARRI Sales. While it remains to be seen if any of these parties will actually come through with a deal, I argue that the film would not have attracted this level of interest if I had not pushed hard for that last bit of image quality.

The outcome of this conflict, naturally, begs the question if the breakdown in communications could have been managed differently by either party. On first analysis, the lack of any explicit contractual agreements concerning the colour grade appears to be part of the problem: it was simply understood and verbally agreed upon—by both parties, i.e. the producer and I—that there was going to be a colour grading session. This understanding was, in turn, based on the general assumption of an established, internationally recognised 'protocol' regarding the production chain: a film is shot, edited, scored, then colour-graded. In other words, there was no reason for the producer or myself to assume that the production process of *Grave Men* would in any way deviate considerably from similarly budgeted films, or, alternatively, skip certain steps such as the colour grade. To some degree, then, this conflict highlights how, as industry members, we often—and rather naively—rely on unspoken agreements, which are based purely on the presumption that other professionals must share and respect similar values (such as fair collaboration and artistic integrity). I, for one, certainly took the producer by her word when she told me there would be a professional colour grade at the end of this production. But as Robert Richardson's experience on *World War Z* proves (see p.67), the mere fact that there are contractual agreements in place does not necessarily eliminate the possibility of conflict. At the end of the day, cinematographers do not own the rights to the images—producers do. As a

result, they have—at least contractually—total control over the process. I am certain that Robert Richardson's contract was at least 19 pages long (see p.50), yet that did not stop Paramount Pictures from manipulating the look of the film against the DOP's—and, potentially, the director's—wishes. I therefore argue that the communication breakdown with *Grave Men* is based on a fundamental shift in perception regarding the value of collaboration. As I already outlined in the previz section (and will elaborate in the grading comparison on the next pages), my goal is to always include collaborators in my approach by using visual aids to explain my vision of the film. As such, I feel that I laid the groundwork for a fair, mutually inclusive collaboration with the producer. In my view, her aggressive dismissal of the colour-grading process was unprovoked. Although the threat of taking my name off the film ultimately led to an escalation of events, it was a desperate but, ultimately, successful attempt at protecting the integrity of my work as a cinematographer. Producers need not only understand better the changing role of the DOP within the shifting power structures amongst post-production departments but also the continued value of a collaborative environment that acknowledges and respects individual artistic contributions.

As I mentioned earlier, this case study aims to illustrate—in detail—the extent to which images can be manipulated in digital post-production, potentially distorting the cinematographer's intention. As such, the following comparisons between the two existing versions of the colour grade of *Grave Men* relate directly to the issues discussed in Chapter 4.[72]

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[72] Please note that all images have been slightly brightened to reproduce correctly in this document.

Fig. 10

Fig. 11

Fig. 12

As the screenshots on the previous page very clearly demonstrate, variations of the same image can easily convey different moods. In tracking these changes throughout the colour-grading process of *Grave Men,* this research examines the complexities of the collaboration between the cinematographer and the colourist. *Fig. 10* shows the shot as captured by the camera (in Panasonic's compressed V-Log format): this Log image displays very little colour or contrast in order to preserve maximum highlight and shadow detail for the subsequent colour grade. *Fig. 11* depicts the editor's unsupervised and unapproved colour grade, while *Fig. 12* illustrates how Gwyn Evans eventually graded the film under my supervision. This section partially aims to demonstrate the narrative implications of such diverging colour grades: *Fig. 11*, for example, displays a noticeable green cast, which was introduced by the editor's grade. Clearly, this was the editor's—and, potentially, the producer's—interpretation of the image, as the shot was never meant to have such a pronounced tint (see *Fig. 12* for comparison). As is immediately evident, the extreme use of the colour green creates a rather outlandish look that clashes with the subtlety of the final grade—which, incidentally, includes quite a bit of green as well, except that it is pushed more towards a bluish hue (notice, too, how the actor's skin tone is not affected as much by this as in the editor's grade). Also apparent is how much brighter the editor's grade is compared to the final approved image. The reasons for these discrepancies are quite complex, particularly as they involve many different aesthetic decisions made before and during the shoot—none of which the editor, working unsupervised, was aware of. Firstly, I added a Steel Green gel to the lights on set in order to create a more sinister night atmosphere. Combined with the bluish light from the HMI fixtures (i.e. daylight-balanced lights), the resulting colour is a rather complex mix of pale green and

blue tones, which I felt were appropriate for this climactic moment in the film; without consulting me, the editor—acting as the colourist—obviously had no idea how much green I wanted in the shot. Secondly, I overexposed the image by a full stop during the filming in order to lift the 'noise floor', thereby making sure that the darker parts of the shot would not become too grainy (this was, after all, shot at 5,000 ISO). Again, the editor did not know that the image was exposed twice as brightly as required; this is particularly evident in the mid-tone areas, such as the garden fence in the background, which are too bright in his grade, thereby ruining the low-key atmosphere of the scene. Lastly, the editor probably did not use a colour-critical reference monitor, which might also explain why the image is both too green and too bright: if a monitor exhibits, for example, a magenta cast, the colourist will erroneously neutralise the tint by adding more of the complementary colour—which, in this case, is green. Moreover, the brightness values will not be properly reproduced on a non-critical monitor, resulting in the image being displayed either too bright or too dark. This is, for example, instantly recognisable in the raised black levels of the editor's grade: the shadow parts of *Fig. 11* are not entirely black but rather a very dark shade of grey. Again, this destroys the ambiance of the scene, which relies on the blacks being 'crushed' in the grade, i.e. reproduced without any detail.

Colour grading is generally done in a darkened environment and on a medium-size cinema screen, mimicking the theatre experience. The projection system must be precisely calibrated to display images in the correct colour space and at proper brightness and contrast levels for their intended use, i.e. cinema, television, and/or streaming. Films intended for distribution via

television or streaming—such as *Grave Men*—will generally be graded in the REC 709 colour space that corresponds to HDTV standards, as opposed to the DCI-3P standard which applies to digital cinema exhibition. There is a slight difference between the two standards in terms of the range of colours they can reproduce, with REC 709 being more limited in this regard. The following are further comparisons between the editor's grade and the supervised session, documenting the decision-making process behind my work with the colourist:

Fig. 13

Fig. 14

In *Fig. 13*, Gwyn Evans removed the rather pronounced warmish tint added by the editor in the initial grade (*Fig. 14*). Discussing the scene with him, I explained the importance of retaining an element of 'darkness' within the shot, to convey a sense of claustrophobia even in open spaces such as the restaurant. This emphasises the protagonist's unrelenting paranoia and complements the use of a restricted narration to force viewers into alignment with him. In the supervised grade, this was achieved by increasing the overall contrast and lowering the brightness in the upper corners of the shot, thereby constricting the frame.

Fig. 15

Fig. 16
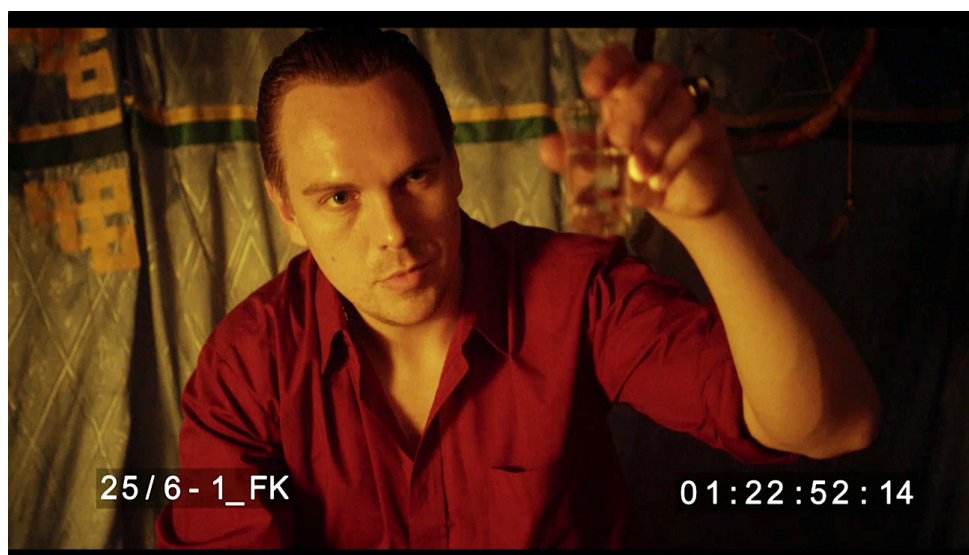
In *Fig. 16*, there is a strong yellow-golden tint in the editor's initial grade, which was subsequently adjusted in the supervised session (*Fig. 15*). My main concern with this particular shot was the actor's skin tone, which became heavily affected by the yellowish light I used to illuminate the scene (created by bouncing a tungsten fixture into a golden reflector). While the golden tone was intentional for the scene, the unsupervised grade resulted in a somewhat saturated look that made the actor appear jaundiced. The heavy colour cast is also noticeable on the green fabric in the background. Again, the lack of subtlety in the initial grade is staggering, lending the scene an ill-suited look that diminishes the feeling of sustained dread that is supposed to run throughout. While the conversation between Zarek and Jimmy is collegial, even jovial at first, it takes a darker turn halfway through the scene. Visually, this moment was inspired by Vittorio Storaro's golden-hued lighting of Colonel Kurtz's cavernous lair in *Apocalypse Now*. More importantly, the lighting was meant to act as a counterpoint to similar scenes in crime films, where the key villain, oozing menace, generally resides in a darkened, preferably top-lit environment dominated by cold colours such as blues and greys (the often imitated top-light effect that buries the actors' eyes in shadows was, of course, made popular by Gordon Willis' work on *The Godfather*). This particular shot from *Grave Men*, then, is a good example of how an image can convey entirely different emotions or, alternatively, defy genre conventions by using subtle adjustments in the lighting and by subsequently refining them in the colour grading process. The collaboration between cinematographer and colourist is, therefore, paramount in finessing and finalizing the cinematographer's vision.

Fig. 17

Fig. 18

106 / 2 - 2   02 : 18 : 19 : 17
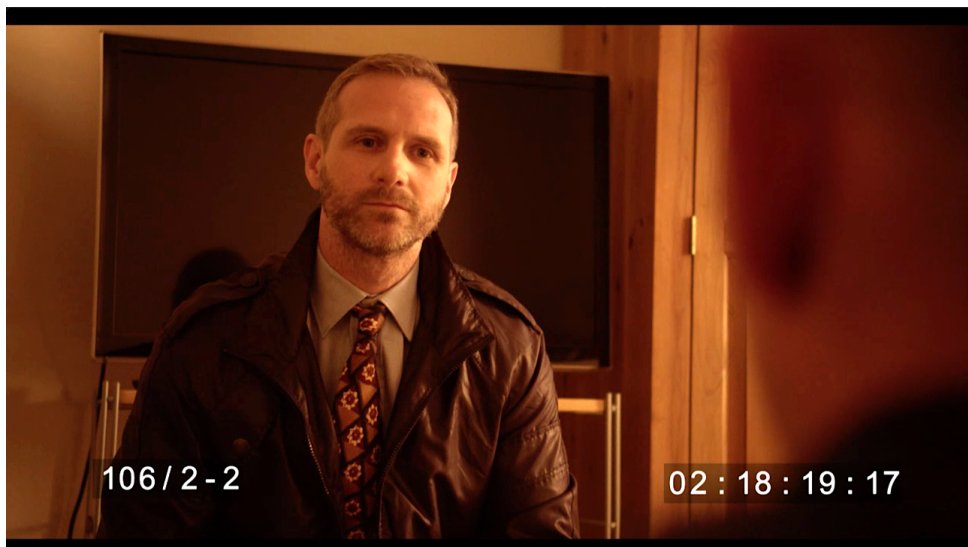
Furthermore, the confrontation between Venner and Frankie is an excellent example of how cinematographers and colourists inspire each other's work, as it is the only scene in the film where Gwyn and I made substantial changes to the way the footage was originally captured. My initial intention for the scene was to shoot it with the same brownish tint as the rest of the film (achieved with the use of glass filters in front of the lens). But when combined with the sunset atmosphere—created with coloured gels on the lights—the overall ambiance for this key moment in the film turned out too warm, lending the scene an

inappropriately cosy atmosphere (*Fig. 18*).[73] At Gwyn's suggestion, we radically de-saturated the colours in order to achieve a colder, more threatening look that seemed fitting at this point in the story (*Fig. 17*). The colourist had rightly flagged up a weakness in my cinematography and was subsequently able to improve on it in post-production. This, then, is why collaboration is so crucial in filmmaking: cinematographers and colourists bounce ideas off each other that will, ideally, result in a stronger film. At the same time, the colourist is often a film's first audience after it has been edited, and is therefore able to approach the story with a fresh and unbiased mindset, unlike the cinematographer (or, for that matter, the director). Most importantly, however, he/she might be able to improve on the cinematographer's work, which—due to tight schedules and low budgets—is often compromised during the shoot. On the set of *Grave Men*, for instance, I was regularly forced to make split-second decisions, some of which eventually turned out to have been rash once we were at the editing stage. Working in close collaboration with Gwyn, I was able to explain my intention for each scene, thereby authorising him to finesse the parameters of the image to more closely match my original vision.

With these comparisons I have argued that images can easily be manipulated in the digital realm—even if certain aspects of a 'look' have been baked into them during the shoot. This is facilitated by the flexibility of the logarithmic encoding process, which preserves a great range of highlight and shadow detail, as well as colour information. In comparison, RAW recording offers even more flexibility in post-production, therefore increasing the likelihood of unapproved image manipulation. Can this predicament be avoided at all?

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[73] Please note that *Fig. 18* depicts the editor's overly saturated grade, which further exaggerates the warm look.

Potentially, yes. You could theoretically bake in the Rec 709 LUT, which would restrict the camera's colour depth and contrast range according to the specifications of the HDTV colour space. This way, however, the cinematographer would forego the many benefits of both RAW and Log recording in order to protect the images from third-party manipulation. Moreover, as I argued in 6.3.3, it would serve cinematographers well to adopt at least a serviceable level of colour-grading skills. I understand that this might sound contradictory, given the successful collaboration with my colourist. It is important to note, though, that mastering the delicate art of collaboration must always be the ultimate goal for cinematographers. The need for the expanded skillset predominantly arises whenever these attempts at forming successful creative alliances with collaborators fail. On *Grave Men*, for instance, I used my basic previz skills to communicate ideas to the producer, which helped her with budgeting and scheduling during pre-production. But during the post-production phase I found myself at a loss when the conflict around the grading session arose: I did not possess the necessary skills or tools to demonstrate to the producer how much the film would benefit from a high-quality grade. As pointed out previously, cinematographers often need to communicate their intentions to collaborators who do not necessarily have the imaginative capacity to visualise a scene. As such, previz and colour grading can be regarded as essential survival tools for DOPs in a rapidly changing creative industry where the perceived value of collaboration is apparently diminishing. Similarly, animation will become increasingly important in the coming years, as cinematographers will find themselves confronted with the need to up-skill or even re-skill to remain competitive in the market.

Let me revert to my initial question: what does it mean for a cinematographer to 'just tell the story'? Brown (2013, p.213), like many other scholars, acknowledges the importance of colour to elicit an emotional response from the audience (subliminal as it may be), arguing that "in cinema warm colors arouse us and make us more alert (with reds more arousing than yellows or greens)". Similarly, he concedes that "cinema is as much a medium of spectacle (beholding color) as it is a medium of narrative (which has at its core in-frame movement)." If colour is so intrinsically connected to the viewer's emotional state, then how could cinematographers not want to spend a fair amount of time shaping a film's chromatic palette? How could they not want to light scenes in a number of different ways—from high-key to low-key—in order to create drama? If colour, composition, movement, and lighting do not tell the story, then what does? While cinematography does not always have to be spectacular to be effective (and I would argue that *Grave Men* was, by and large, shot in a rather restrained fashion), it nevertheless informs every single frame of a film. That is, unless the filmmakers are merely interested in "recording an image", as Storaro so aptly puts it (see p.81), in which case the very essence of cinematic language is lost.

As I argued in this case study, I believe that the 'impossible' parameters of *Grave Men*'s budget and shooting schedule forced me to re-examine my approach to cinematography, inspiring me to create new hierarchies on set, develop a different aesthetic, and, consequently, adopt new workflows. If anything, I wish I could have explored these aspects even further. The work-for-hire nature of the project, however, prevented me from pushing established boundaries too far; at the end of the day, the producer called the shots. In view

of the colour-grading dispute, however, I strongly believe that I would not have had the leverage to see through my 'vision' if I had solely occupied the role of DOP. Had I not been the writer and director of this project as well, the producer would have simply steamrolled me. Sadly, this is increasingly the situation cinematographers find themselves in today.

8   CONCLUSION

In this thesis I have argued that cinematographers must acknowledge and adapt to the needs of today's industry if they wish to retain any kind of artistic ownership over a film's visuals. Previous generations of DOPs were almost exclusively concerned with what happened in front of the lens: framing, lighting, and camera movement; whatever happened to the footage in post-production was of minor importance, as the capabilities of colour grading and visual effects tools were limited. But with the advent of the so-called Digital Intermediate process, post-production has become a Pandora's box: the possibilities are infinite—and so are the complications that arise with them. If we are to retain control over our images, we need to be more knowledgeable about the technicalities and possibilities of the new digital and virtual tools. In other words: we need to become digital adepts. It is, however, highly probable—certainly on VFX-heavy films—that the singular position of the DOP will be integrated into a greater team of visual engineers working towards the final image. At that end of the budget scale, the tail is clearly wagging the dog, as the increasing leverage of the post-production industry is not only dictating workflows but also transforming aesthetic parameters—evident in the growing percentage of CG imagery and photo-realistic animation in tent-pole films.

At the lower end of the budget-scale, however, the key stress factor is the continual democratisation of technology, which is producing ever more affordable cameras and post-production tools. At the same time, automation is becoming increasingly important in digital colour grading, with many sophisticated 'instant' tools finding broad acceptance within professional and

amateur circles alike. The greater facility and affordability offered by these technologies has made filmmaking—and, in particular, cinematography—more accessible to the masses. As a result, cinematographers increasingly find themselves surrounded by self-proclaimed experts and authoritative collaborators. In my case study of the micro-budget film *Grave Men*, I outlined how the level of respect for the DOP's work has decreased in the digital age, a trend most explicitly felt in the way collaborators (in this case, the producer and editor) manipulate images without approval—and without regard to the potentially career-threatening consequences for the cinematographer. But rather than just focus on the negative aspects of this particular project, the case study also highlights the emergence of the director-cinematographer hyphenate as an important and, potentially, defining aspect of cinematography—or even independent filmmaking as a whole. Given the current trend towards ever more affordable—and portable—professional cameras, digital auteurism might indeed become a new movement akin to the French New Wave or American independent cinema of the 1990s.

With my research I have also investigated viable tools and potential career trajectories for cinematographers present and future. It is undeniable, for instance, that the video game and cinema industries will continue merging, which will, certainly in aesthetic terms, have a profound effect on cinematography. Whether or not today's DOP's will manage to make the leap into new territories such as 3D animation or previz is difficult, if not impossible to predict. Nevertheless, my aim with this study was to go beyond a mere investigation of the current debates in order to find potential solutions to the issues discussed, as well as to define a possible job description for the

cinematographer of the future. Moreover, the case study of *Grave Men* informed my findings and speculations from a practice-based viewpoint—something entirely missing in current academic literature. In fact, a recent *American Cinematographer* article, which quizzed ASC members about the future of the profession, corroborates many of my findings, as the interviewed cinematographers agree—in clear words—that practitioners of the craft must "embrace" and "master" the new technologies in order to "stay relevant" (Witmer and Fish 2019, n.p.). At the same time there is a great deal of uncertainty—and, to some degree, fear—within the professional community about the impact of new technologies such as Artificial Intelligence and so-called 'computational imaging' that are already on the horizon. Both of these developments could make DOPs—or, at least, aspects of their work—redundant: AI could simplify or even automate processes like green screen keying, while computerised camera technology might be able to record scenes as mere data without any specific focal point or depth of field, as these could be added in post-production (ibid.). While it is impossible to speculate what the exact impact of these major new technologies will be, it is quite clear that continuous learning will become ever more crucial for cinematographers if they want to keep up with the latest tools and, more importantly, with the changing demands of the industry that employs them. On the whole, the above-mentioned article reveals that there is as much doom and gloom as there is optimism among professionals. Perhaps most tellingly, Natasha Braier ASC ADF argues that, compared to earlier times, "more people [now] have access to the resources to do great work", which will inevitably lead to more competition—but, potentially, also to more interesting cinematography (Witmer and Fish 2019, n.p.). The democratisation of filmmaking technology, therefore, might

impact the profession much more profoundly than the question whether traditional cinematography will lose out to CGI, animation, or Virtual Reality.

From a purely pragmatic perspective, the most relevant aspect of this research is probably its applicability in a time when many film schools debate whether to continue teaching on film (35mm/16mm) or switch exclusively to digital: a discussion driven not only by the cost of maintaining ageing equipment and processing film stock but also by the need to equip students with transferable skills that reflect the current job market. While there are undeniable benefits to working with film—such as becoming less reliant on monitors—I would argue that introducing elements from the expanded skillset will equip cinematography students with more industry-relevant skills than a traditional curriculum. From my own teaching at film school, I can attest that there is a need for a 'hybrid' learning environment that combines traditional cinematographic techniques with aspects of virtual (post-)production—such as previz, green/blue screen photography, and 3D animation—so far either ignored by many schools or relegated to separate study courses that do not reflect the need for a combined curriculum. Schools should ask themselves if their cinematography graduates could, for example, qualify for the position of 'Camera Artist' with a major UK video games designer, "creating/editing cameras for motion-captured game cinematics to effectively build a scene, tell a story, add visual flair and high production values."[74] Note that the emphasis here is on 'creating and editing' cameras, rather than operating them in a traditional way. If anything, the changing job market validates the concerns of this thesis.

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[74] Job ad placed by Supermassive Games in March 2020. [Source: https://www.supermassivegames.com/careers/camera-artist-ART1902002]

As for my own perspective on the future, I agree with Roger Deakins ASC BSC that technological progress is not the main determining factor in the debate; more fundamentally, cinema needs to reclaim its status as "an important conduit of ideas and expression" rather than just a form of "pure entertainment" (qtd. in Verstraten et al 2012, p.166). Amidst the razzle-dazzle of the latest digital wizardry and the promise of bargain-price production tools, it is easy to forget—or ignore—that the core of the issue is, in the end, entirely unrelated to technology: the question as to where cinematography is going can only ever be answered if it is put within a larger context, as it is intrinsically linked to the future direction of cinema itself and, more precisely, to the stories filmmakers choose to tell.

APPENDIX I: GLOSSARY

_____

ACS

Australian Cinematographers Society

AIC

Autori Italiani della Cinematografia (Italian Cinematographers Society)

Alexa

A digital cinema camera manufactured by ARRI in Germany.

ASC

American Society of Cinematographers

Baselight

A colour grading software manufactured by FilmLight (UK).

BSC

British Society of Cinematographers

BVK

Bundesverband Kamera (German Cinematographers Society)

CGI

Computer-generated imagery, i.e. images created with 3D computer graphics.

Chiaroscuro

Italian for 'light/dark': a dramatic, high-contrast style of lighting particularly inspired by the paintings of Rembrandt and Caravaggio.

Cinematographer

A term used alternatively with director of photography (or, formerly, lighting cameraman).

Dailies

Also: rushes. Raw footage from the day's shoot, usually prepared by the DIT, editor, or—if the production is shooting on film—the laboratory.

DaVinci Resolve

Blackmagic Design's post-production software that combines colour grading, editing, visual effects, and audio editing.

Digital Imaging Technician (DIT)

DITs advise and assist the director of photography in regard to the technical aspects of cameras and workflows. Apart from wrangling large amounts of data on set, DITs sometimes also grade dailies and help with exposure control. [Source: ScreenSkills.com]

Digital Intermediate (DI)

Originally, the process of scanning film negative at HD, 2K, 4K, or 8K resolution to data files for digital post-production (i.e. editing, VFX, and colour grading). Subsequently, the files would be 'recorded out' to film stock again for theatrical exhibition. Today, however, the term DI is frequently used to describe digital post-production in general, even if the capture medium is digital rather than film.

DOP

Short for 'director of photography', a term used alternatively with cinematographer (or, formerly, lighting cameraman).

Gaffer

On set, the chief lighting technician and head of the lighting department.

HKSC

Hong Kong Society of Cinematographers

IATSE

The International Alliance of Theatrical Stage Employees is an American labour union representing over 140,000 technicians in the entertainment industry. [Source: IATSE.net]

ISO

The ISO (International Standards Organisation) value denotes the speed of a photographic film stock or, in digital terms, the sensor's sensitivity to light; the higher the number, the more sensitive the sensor/film stock, i.e. less light is required to form an exposure. Every doubling of the value halves the amount of light required to form an exposure. [Source: Brown 2002]

Logarithmic (Log) Encoding

An alternative to RAW recording, Log encoding allows cinematographers to capture the camera's full dynamic range and colour depth in a compressed codec. Unlike with RAW, however, some image parameters—such as white balance—can no longer be changed in post-production. All major cinema camera manufacturers have developed their own proprietary Log encoding technology: RedLog (RED), Log C (ARRI), S-Log (Sony), V-Log (Panasonic), and C-Log (Canon).

LUT / Look-Up Table

On set, LUTs provide a reference for the final look that will be applied in colour grading. Once a film's look has been established during pre-production, the cinematographer can save a LUT file to the camera and display it on the set monitors. This allows directors, producers, and/or clients to approximate the final look of the film.

Neg

Film negative (raw stock).

Phantom

A high-speed digital cinema camera from Vision Research (USA).

Pogle

A colour grading software manufactured by Pandora International (UK).

Previz

Also: previs. A rough, animated template created in the computer during pre-production. Previz uses virtual cameras to create animated storyboard sequences ('animatics') with precise focal lengths and camera moves.

ProRes

An industry-standard compressed codec from Apple that offers different degrees of compression: from proxy to master quality. The master quality versions of the codec (ProRes 4444 and ProRes 4444 XQ) are generally used for image capture with Log encoding.

RAW

Pre-RGB (Red-Green-Blue) sensor data from a digital cinema camera, without any image processing applied; generally referred to as a 'digital negative'. As RAW is not video but just data, it needs to be processed via software before it becomes 'viewable' on a screen.

Rec 709

BT.709 (also called Rec 709) is a set of parameters that define the colour space and contrast range of HDTVs. When applied to a camera's RAW file or Log image, a Rec 709 LUT (Look Up Table) will display a normalised image on a monitor (rather than a 'digital negative' which might look desaturated and washed out). [Source: International Telecommunication Union]

RED

A digital cinema camera manufactured by US company Red Digital Cinema, owned by the founder of Oakley, Jim Jannard.

'Roto'/Rotoscope

In the VFX industry, rotoscoping describes the post-production process of altering footage frame by frame (such as chroma keys, i.e. blue/green screen). [Source: IntoFilm.org]

Steadicam

A device created in the 1970s that mounts a stabilized camera on a person to allow for free-reign movement of the operator to get clear, non-shaky shots. [Source: Tiffen.com]

Stop

Short for f-stop: the aperture of a lens that controls the amount of light reaching the sensor or film negative.

Telecine

The process of transferring film negative to analogue or digital video for subsequent editing or colour grading.

Varicam

Panasonic's flagship digital cinema camera, released in 2014.

Venice

Sony's flagship digital cinema camera, released in 2017.

Video Assist

Also: video tap. A small CCD camera that is built into a film camera, allowing the image to be monitored during shooting. Due to its poor quality, video tap mainly serves as a framing aid (unlike the WYSIWYG monitoring of digital cameras that provides a reference-quality image).

WYSIWYG Monitoring

Short for 'what-you-see-is-what-you-get': monitors connected to a digital camera display colour-critical, high definition images that allow viewers to judge the final image.

APPENDIX II: *GRAVE MEN* (2019) PLOT OUTLINE

_____

As a 'bin man' for a Polish crime syndicate in West London, Jimmy Trueman used to dig graves and dump bodies in the dead of night. As a member of the UK's witness protection service, he now leads an average, small-town life as 'Frank Wallace', a lowly employee at a reclamation yard.

But four years after Jimmy grassed on his former associates, the spectres of his blood-stained past are coming back to haunt him: a rogue cop, consumed by revenge and driven by a dark agenda, threatens to surrender Jimmy to the ones he betrayed.

Jimmy Trueman is desperate to protect his new life—but who can he trust if he can't even trust his own sanity?

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APPENDIX III: INTERVIEW QUESTIONS

_____

The following set of questions served as the starting point for the interviews:

– How would you define the role of the cinematographer?

– How (if at all) has the role of the cinematographer changed compared to when you started out in the industry?

– What are the greatest challenges facing cinematographers today?

– How has digital capture affected shooting schedules?

– How important is the recognition of a cinematographer's co-authorship, particularly in view of Jost Vacano's court case re: *Das Boot*?

– In what way do new tools and technologies influence the cinematographer's job? Do they change the way we tell stories visually?

– What do the new affordability of (semi-)professional production gear and the advent of 'desktop broadcasting' (e.g. YouTube, Vimeo) mean for cinematography as a profession?

– Will cinematographers need to adopt new skills in the future? If yes, what skills would be deemed most desirable by employers?

– In what ways do digital capture and digital post-production invite unapproved image manipulation in post-production?

– Do RAW data workflows increase the risk of unapproved image manipulation in post-production? What steps can cinematographers take to retain artistic control?

– How do increasing numbers of co-authors in the post-production pipeline (VFX supervisors, editors, CGI artists, colourists) affect the cinematographer's authority over the finished image?

– In what ways do films captured predominantly on virtual sets and with virtual cameras (e.g. *Gravity*, *Life of Pi, Avatar*) challenge the role of the cinematographer?

– Audiences are now watching movies on tablet screens and mobile phones—what influence do these new viewing habits have on the aesthetics of storytelling? Are cinematographers adapting? Should they adapt?

– What do you make of directors who shoot their own films (e.g. Steven Soderbergh, Robert Rodriguez, Mike Figgis)? Do you believe that increasingly affordable, simplified production tools will encourage more filmmakers to become 'digital auteurs' in the future?

APPENDIX IV: CONSENT LETTER (SAMPLE)
_____

Thank you for your participation. I am a researcher from the University of Exeter and the London Film School. I am keen to work with you to discuss the challenges facing the profession of the cinematographer in today's film industry as well as the implications for the future of the trade.

I will voice-record your responses. They will inform my research, and I will use them to develop my thesis and prepare articles for publication in academic/professional journals. I will also use them to provide evidence of what I have done to the organisations that employ me (the University of Exeter and the London Film School).

You can choose below whether I am allowed to share your contributions with either a general public audience or with a professional audience of academics and researchers, or both.

You can remain anonymous, meaning I won't use your real name.

If you don't want me to use your responses after the interview is over, you can get in touch with me via email (please see below). You can do that at any time and for whatever reasons. If you contact me after your responses have been published, I will not be able to withdraw that publication, but I will make sure not to use your contributions again in the future.

To be filled out by the respondent:

I voluntarily agree to participate, and agree to the use of my responses for the purposes specified below. I can withdraw consent at any time up until the point of publication by contacting: Alex Boutellier, PhD candidate, College of Humanities, University of Exeter. Email: ab927@exeter.ac.uk.

By signing this form, I assign the copyright in my contribution to Alex Boutellier.

I want to remain anonymous   YES   NO

I am happy for my contributions to be used in academic/professional publications print/online (e.g. books, journal articles, reports)

                                                                 YES   NO

I am happy for my contributions to be used in media and other publications that will be available to the general public (e.g. blogs, radio, newspaper, television)

                                                                 YES   NO

I am happy for my contributions to be used in teaching (e.g. lectures, seminars, workshops)

                                                                 YES   NO

I am happy for my contributions to be used in public lectures, presentations, talks and activities

YES   NO

I wish to limit public access to my testimony for a period of years (up to 30 years maximum)

YES   NO

If yes: how many years: _____

Consent:

I voluntarily agree to participate, and agree to the use of my data for the purposes specified above. I can withdraw consent at any time by contacting the interviewer. *Note: Your contact details are kept separately from your interview data.*

Printed name of participant: ....

Signature of participant: ....

Preferred contact - email or telephone: ....

Signature of researcher: ....

One signed copy to be retained by the researcher, and one by the participant.

REFERENCE LIST

Ackroyd, B. (2016) Not Making the Grade. *British Cinematographer Magazine*, 74(2), p.7.

Albrecht, J. (2016) *"This Camera Thinks Exactly Like Me:" Cinematographer Yves Bélanger at the Peak of His Career* [Online]. Available at: https://www.moviemaker.com/archives/interviews/camera-thinks-exactly-like-cinematographer-yves-belanger-peak-career/ [Accessed: 24 October 2018].

Almendros, N. (1984) *A Man with a Camera*. New York: Farrar, Straus and Giroux.

Antunes, J. (2018) *Andrew Shulkind: Human Stories are Our Job and Our Lifeblood* [Online]. Available at: https://www.provideocoalition.com/andrew-shulkind-human-stories-are-our-job-and-our-lifeblood/ [Accessed: 23 September 2018].

B, B. (2013) Facing the Void. *American Cinematographer Magazine,* 94(11), p.38–49.

Ballinger, A. (2004*) New Cinematographers*. London: Laurence King Publishing.

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

Beier, L. (2016) *Wem gehört der Film?* [Online]. Available at: http://www.spiegel.de/spiegel/print/d-146155594.html [Accessed: 13 December 2018].

Belton, J. (1992) *Widescreen Cinema.* Cambridge, MA: Harvard University Press.

Belton, J. (2002) Digital Cinema: A False Revolution. *October*, 100 (Spring), p.98–114. *Jstor* [Online]. Available at: www.jstor.org. [Accessed: 22 October 2016].

Bordwell, D. (2006) *The Way Hollywood Tells It: Story and Style in Modern Movies*. Berkeley: Universiy of California Press.

Boxer, S. (2013) *How Video Games Are Transforming The Film Industry* [Online]. Available at: https://www.theguardian.com/technology/shortcuts/2013/nov/17/video-games-transforming-film-industry [Accessed: 8 July 2019].

Brown, B. (2008) *Motion Picture And Video Lighting*. 2nd ed. Oxford: Elsevier/Focal Press.

Brown, W. (2013) 'Those Men Are Not White!' Neuroscience, Digital Imagery and Color in O Brother, Where Art Thou? In: P. Brown, S., Street, S. and Watkins, L. (eds.) *Color And The Moving Image: History, Theory, Aesthetics, Archive*. New York: Routledge, p.209–218.

Buder, E. (2018) *'I Think We're Alone Now': Reed Morano On Learning To Direct From Being A DP* [Online]. Available at: https://nofilmschool.com/2018/09/i-think-were-alone-now [Accessed: 24 October 2018].

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

Caldwell, J., Banks, M. and Mayer, V. (2009) *Production Studies: Cultural Studies of Media Industries*. New York: Routledge.

Caldwell, J., Banks, M., Conor, B. and Mayer, V. (2016) *Production Studies, The Sequel! Cultural Studies of Global Media Industries*. New York: Routledge.

Chitwood, A. (2018) *Alfonso Cuarón Explains Why Emmanuel Lubezki Didn't Shoot ROMA* [Online]. Available at: http://collider.com/roma-cinematography-alfonso-cuaron-emmanuel-lubezki/#images [Accessed: 15 December 2018].

Chitwood, A. (2018) *'Mindhunter' DP Erik Messerschmidt On Working With Fincher, The Show's Aesthetic, And Season 2* [Online]. Available at: http://collider.com/mindhunter-interview-erik-messerschmidt/ [Accessed: 9 May 2019].

Churchill, T. (2019) *Are Smartphones the Future of Filmmaking?* [Online]. Available at: https://www.bbc.co.uk/programmes/articles/3NKb2XqFBKG7FRT2MjBKtxb/are-smartphones-the-future-of-filmmaking [Accessed: 30 May 2019].

Coleman, L., Miyao, D., Schaefer, R., and Turnock, J. (2016) *Transnational Cinematography Studies*. Lanham: Lexington Books.

Curtin, M. and Sanson, K. (2017) *Voices of Labor: Creativity, Craft, and Conflict in Global Hollywood*. Berkeley: University of California Press.

Definition Magazine (2016) *'Deadpool' VFX Breakdown - A Wake Up Call For Cinematography?* [Online]. Available at: http://www.definitionmagazine.com/journal/2016/3/17/dea [Accessed: 27 November 2018].

Der Spiegel (2018) *Kameramann Von "Das Boot" Stehen Weitere 315'000 Euro Zu* [Online]. Available at: http://www.spiegel.de/kultur/kino/das-boot-kameramann-jost-vacano-stehen-weitere-315-000-euro-zu-a-1230273.html [Accessed: 13 December 2018].

Ellis, D. (2015) *In Conversation with Cinematographers*. Lanham MY: Rowman & Littlefield.

Ettedgui, P. (1998) *Cinematography Screencraft*. Crans-Près-Céligny CH: RotoVision SA.

Everett, A. (2003) Digitextuality and Click Theory. Theses on Convergence Media in the Digital Age. In: A. Everett and J.T. Caldwell (eds.) *New Media: Theories and Practices of Digitextuality*, New York: Routledge, p.3–28.

Fauer, J. (2016) Passage from Film to Digital: Vittorio Storaro, ASC, AIC. *Film & Digital Times*, 75(2), p.4–11.

Fauer, J. (2018) DaVinci Resolve and Claudio Miranda, ASC. *Film & Digital Times*, 6(88), p.73

Fauer, J. (2019) Bruno Delbonnel, AFC, ASC and the Angénieux Excellens Award at Cannes. *Film & Digital Times*, 95(6), p.15–23.

Figgis, M. (2014) *Digital Film-Making*. Revised ed. London: Faber & Faber Ltd.

Flaxton, T. (2015) HD Aesthetics and Digital Cinematography. In: Cubitt, S., Palmer, D. and Tkacz, N. (eds.) *Digital Light*. London: Open Humanities Press, p.61–83.

Frazer, B. (2018) *NAB 2018: Janusz Kaminski on Losing Control of Digital Images* [Online]. Available at: http://www.studiodaily.com/2018/04/nab-2018-janusz-kaminski-losing-control-digital-images/ [Accessed: 17 April 2019].

Fussfeld Cohen, O. (2014) The New Language of the Digital Film. *Journal of Popular Film & Television*, 42(1), p.47–58.

Ganz, A. and Khatib, L. (2006) Digital Cinema: The Transformation of Film Practice and Aesthetics. *New Cinemas: Journal of Contemporary Film*, 4(1), p.21–36.

Gaudreault, A. (2015) *The End of Cinema? A Medium in Crisis in the Digital Age*. New York: Columbia University Press.

Giardina, C. (2016a) *Cinematographer Roundtable: Cons of CG, Betraying Oliver Stone and When to Quit a Film* [Online]. Available at: https://www.hollywoodreporter.com/features/cinematographer-roundtable-cons-cg-betraying-851551 [Accessed: 12 May 2019].

Giardina, C. (2016b) Cinematography's Brewing Debate. *Hollywood Reporter*, 422(6), p.62–63.

Giardina, C. (2016c) *Oscars: Why Cinematographers Are Arguing for a Second Craft Category for VFX-Heavy Films* [Online]. Available at: http://www.hollywoodreporter.com/behind-screen/oscars-why-cinematographers-are-arguing-863162 [Accessed: 14 December 2016]

Giardina, C. (2016d) *Cinematographers Worry New Digital Tools Will Allow Others to Alter Their Images* [Online]. Available at: https://www.hollywoodreporter.com/behind-screen/cinematographers-worry-new-digital-tools-899964 [Accessed: 17 April 2019].

Giardina, C. (2016e) *Cinematographer Vittoria Storaro Warns Of "Major Problem" In The Field* [Online]. Available at: https://www.hollywoodreporter.com/behind-screen/cinematographer-vittorio-storaro-warns-major-899691 [Accessed: 29 May 2019].

Gibbs, J. (2002) *Mise-en-Scène: Film Style and Interpretation*. London: Wallflower Press.

Goodridge, M. and Grierson, T. (2012) *FilmCraft: Cinematography*. London: Ilex Press.

Grouchnikov, K. (2013) *The Fine Art of Cinematography: Interview with Seamus McGarvey ASC, BSC* [Online]. Available at: https://www.pushing-pixels.org/2013/10/03/the-fine-art-of-cinematography-interview-with-seamus-mcgarvey.html [Accessed: 8 July 2019].

Gunning, T. (1997) The Cinema of Attractions: Early Film, its Spectator and the Avant-Garde. In: Elsaesser, T. (ed.) *Early Cinema: Space, Frame Narrative.* 3rd ed. London: British Film Institute, p. 56–67.

Hadjioannou, M. (2012) *From Light to Byte: Toward an Ethics of Digital Cinema*. Minneapolis: University of Minnesota Press.

Hemphill, J. (2018) *"I Don't Care If It Never Shows in a Theater": Steven Soderbergh on sex, lies, and videotape, 4K HDR and the Studio System* [Online]. Available at: https://filmmakermagazine.com/105670-i-dont-care-if-it-never-shows-in-a-theater-steven-soderbergh-on-sex-lies-and-videotape-4k-hdr-and-the-studio-system/#.W1MKGy3MyAw [Accessed: 21 July 2018].

Heuring, D. (2018) The Future of Cinematography (Part 1 of 2) [Online]. Available at: https://ascmag.com/blog/parallax-view/the-future-of-cinematography-part-1-of-2 [Accessed: 9 March 2020].

Hill, A. (2005) *Reality TV: Audiences and Popular Factual Television*. New York: Routledge.

Jagernauth, K. (2013) *Christopher Doyle Calls 'Life Of Pi' A "Fucking Insult To Cinematography," Hates On 'Lincoln' & More* [Online]. Available at: https://www.indiewire.com/2013/03/christopher-doyle-calls-life-of-pi-a-fucking-insult-to-cinematography-hates-on-lincoln-more-100756/ [Accessed: 15 November 2018].

James, N. (2008) *Tarantino Bites Back* [Online]. Available at: http://old.bfi.org.uk/sightandsound/feature/49432 [Accessed: 29 September 2018].

Johnston, C. (2018) *John Lewis Pulls The Plug On DVD Players* [Online]. Available at: https://www.bbc.co.uk/news/business-45950477 [Accessed: 23 October 2018].

Kaufman, A. (2000) Man of the Year: Steven Soderbergh Traffics in Success. In: Kaufman, A. (2015) *Conversations with Filmmakers: Steven Soderbergh*. Jackson: University of Mississippi Press, p.112–120.

Kaufman, D. (2016) *International Cinematography Summit 2016: The Future of the Cinematographer* [Online]. Available at: http://www.theasc.com/site/news/ics2016-part-i-future-of-the-cinematographer [Accessed: 15 December 2016].

Lieberman, E. and Hegarty, K. (2010) Authors of the Image: Cinematographers Gabriel Figueroa and Gregg Toland. *Journal of Film and Video*, 62(1-2), p.31-51.

Lim, Dennis (2000) Having Your Way with Hollywood, or the Further Adventures of Steven Soderbergh. In: Kaufman, A. (2015) *Conversations with Filmmakers: Steven Soderbergh*. Jackson: University of Mississippi Press, p.103–111.

Macaulay, S. (1998) *The Numbers Game* [Online]. Available at: https://filmmakermagazine.com/archives/issues/summer1998/numbers_game.php [Accessed: 4 July 2019].

Manovich, L. (2002) *The Language of New Media*. Cambridge, Mass.: MIT Press.

Mateer, J. (2014) Digital Cinematography: Evolution of Craft or Revolution in Production? *Journal of Film and Video*, 66(2), p.3–14.

McKernan, B. (2005) *Digital Cinema: The Revolution in Cinematography, Postproduction, and Distributio*n. New York: McGraw-Hill.

Mulcahey, M. (2019) *"The Weather Doesn't Care What Your Budget Is": Captain Marvel Colorist Doug Delaney on the Marvel Cinematic Universe* [Online]. Available at: https://filmmakermagazine.com/107326-the-weather-doesnt-care-what-your-budget-is-captain-marvel-colorist-doug-delaney-on-the-marvel-cinematic-universe/#.XKhncC_MyAw [Accessed: 6 April 2019].

Newton, C. (2015) *How One Of The Best Films At Sundance Was Shot Using An iPhone 5S* [Online]. Available at: http://www.theverge.com/2015/1/28/7925023/sundance-film-festival-2015-tangerine-iphone-5s [Accessed: 7 June 2015].

Okun, J.A., and Zwerman, S. (2010) *The VES Handbook of Visual Effects*. Amsterdam: Focal Press.

Pearson, B. (2019) *Should 'The Lion King' Remake Be Called an Animated Movie? Jon Favreau Says No* [Online]. Available at: https://www.slashfilm.com/the-lion-king-remake-animated/ [Accessed: 13 August 2019].

Prince, S. (1996) True Lies: Perceptual Realism, Digital Images and Film Theory. *Film Quarterly,* 49 (2), p.27–37.

Prince, S. (2004) The Emergence of Filmic Artifacts: Cinema and Cinematography in the Digital Era. *Film Quarterly*, 57(3), p.24–33.

Protin, C. (2014) *The Hollywood Cinematographer Has A New Job Path: Video Games* [Online]. Available at: https://time.com/2896528/cinematography-the-order-1886/ [Accessed: 8 July 2019].

Regev, R. (2018) *Working in Hollywood: How the Studio System turned Creativity into Labour*. Chapel Hill: University of North Carolina Press.

Ressner, J. (2013) *Fantastic Voyage* [Online]. Available at: http://www.dga.org/Craft/DGAQ/All-Articles/1303-Summer-2013/DGA-Interview-Peter-Jackson.aspx [Accessed: 8 March 2017].

Rodowick, D. N. (2007) *The Virtual Life of Film.* Cambridge, Mass.: Harvard University Press.

Rodriguez, R. (1998) *RoadRacers: The Making of a Degenerate Hot Rod Flick*. London: Faber & Faber.

Salt, B. (2009) *Film Style and Technology: History and Analysis*. 3rd ed. London: Starword.

Schaefer, D. and Salvato, L. (2013) *Masters of Light*. 2nd ed. Berkeley: University of California Press.

Schmerheim, P. (2013) From Psycho To Pleasantville: The Role Of Color And Black-And-White Imagery For Film Experience. In: P. Brown, S., Street, S. and Watkins, L. (eds.) *Color And The Moving Image: History, Theory, Aesthetics, Archive*. New York: Routledge, p.114–123.

Scott, A. O. (2006) *'Miami Vice': Operatic Passions, Yet Cool In The Heat* [Online]. Available at: https://www.nytimes.com/2006/07/28/movies/miami-vice-operatic-passions-yet-cool-in-the-heat.html [Accessed: 13 August 2019].

Stevenson, J. (1978) Profiles: Cinematographer Gordon Willis. *The New Yorker*, 16 October, p.46–47.

Storaro, V. (1995) The Right to Sign Ourselves as Authors of Cinematography. *American Cinematographer*, 76(2), p.96.

Sweney, Mark (2019) *'Christmas From Hell' Caps Bad Year For High-Street DVD Sellers* [Online]. Available at: https://www.theguardian.com/business/2019/jan/03/christmas-from-hell-caps-bad-year-for-high-street-dvd-sellers [Accessed: 12 August 2019].

Thompson, A. (2008) *Movies' Mid-Range Meltdown* [Online]. Available at: https://variety.com/2008/film/columns/movies-mid-range-meltdown-1117982412/ [Accessed: 1 August 2019].

Turnock, J. (2012) The ILM Version: Recent Digital Effects and the Aesthetics of 1970s Cinematography. *Film History Journal*, 24(2), p.158–168.

Verstraten, P., Van Oosterhout, M. and Van Rossem, M. (2012) *Shooting Time: Cinematographers on Cinematography*. Rotterdam: Post Editions.

Vishnevetsky, I. (2013) Trojan Horses and Immaculate Math: An Interview with Steven Soderbergh. In: Kaufman, A. (2015) *Conversations with Filmmakers: Steven Soderbergh*. Jackson: University of Mississippi Press, p.192–200.

Williams, D. (2018) *Beyond the Frame: Swingers* [Online]. Available at: https://ascmag.com/articles/beyond-the-frame-swingers [Accessed: 9 November 2018].

Willis, H. (2005) *New Digital Cinema: Reinventing the Moving Image.* London: Wallflower Press.

Witmer, J.D. and Fish, A. (2019) *ASC Members Offer Their Perspectives On What the Next Century Has In Store For The Art And Craft Of Cinematography* [Online]. Available at: https://ascmag.com/articles/the-next-100-years [Accessed: 2 August 2019].

Woodward, D. (2018) *How To Shoot A Movie On Your Phone, According To Steven Soderbergh* [Online]. Available at: https://www.dazeddigital.com/film-tv/article/39355/1/how-to-shoot-a-movie-on-an-iphone-steven-soderbergh-unsane [Accessed: 31 May 2019].

Zsigmond, V. (2013) Cinematography is Changing. *Shoot*, 54(9), p.4–4.

Bibliography

Apkon, S. (2013) *The Age of the Image: Redefining Literacy in a World of Screens*. New York: Farrar, Straus and Giroux.

Astruc, A. (1992) *Du Stylo à la Caméra et de la Caméra au Stylo. Ecrits 1942–1984*. Paris: L'Archipel.

Biskind, P. (1998) *Easy Riders, Raging Bulls: How the Sex and Drugs and Rock'n'Roll Generation saved Hollywood*. New York: Simon & Schuster.

Bresson, R. (1986) *Notes on the Cinematographer*. London: Quartet Books.

Clarke, J. (2017) Elegies to Cinematography: The Digital Workflow, Digital Naturalism and Recent Best Cinematography Oscars. In: Graham, J. and

Gandini A (eds.) *Collaborative Production in the Creative Industries.* London: University of Westminster Press, p.105-123.

Malkiewicz, K. (1973) *Cinematography*. New York: Touchstone.

Mascelli, J. (1965) *The Five C's of Cinematography*. Los Angeles: Silman-James Press.

Prince, S. (1996) True Lies, Perceptual Realism, Digital Images, and Film Theory. *Film Quarterly*, 49(3), p.27–37.

Prince, S. (2010) Through the Looking Glass: Philosophical Toys and Digital Visual Effects. *Projections*, 4(2), p.19–40.

Rifkin, J. (2000) *The Age of Access*. New York: TarcherPerigee.

Stump, D. (2014) *Digital Cinematography: Fundamentals, Tools, Techniques, and Workflows*. New York and London: Focal Press.

Wheeler, P. (2013) *Digital Cinematography*. Kindle ed. London: Routledge.

Wheeler, P. (2009) *High Definition Cinematography*. 3rd ed. London: Routledge.

Audio Visual

2010: The Year We Make Contact, dir. by Peter Hyams (MGM/UA, 1984).

24, dir. by Robert Cochran (Fox, 2001–2008).

Alien: Resurrection, dir. by Jean-Pierre Jeunet (20th Century Fox, 1997).

Apocalypse Now, dir. by Francis Ford Coppola (United Artists, 1979).

Avatar, dir. by James Cameron (20th Century Fox, 2009).

Big Brother, Channel 5, Channel 4, 2000–2018.

Captain Marvel, dir. by Anna Boden and Ryan Fleck (Walt Disney Studios, 2019).

Casino Royale, dir. by Martin Campbell (Sony Pictures Releasing, 2006).

Che, dir. by Steven Soderbergh (IFC Films, 2008).

Chungking Express, dir. by Wong Kar-Wai (Miramax Films, 1994).

Citizen Kane, dir. by Orson Welles (RKO Radio Pictures, 1941).

Clerks, dir. by Kevin Smith (Miramax Films, 1994).

Collateral, dir. by Michael Mann (Paramount Pictures, 2004).

Dallas Buyers Club, dir. by Jean-Marc Vallée (Focus Features, 2013).

Das Boot, dir. by Wolfgang Petersen (Neue Constantin Film, 1981).

Deadpool, dir. by Tim Miller (20th Century Fox, 2016).

Directors UK (2017) *Paul Thomas Anderson Interview with Sir Alan Parker*. [Stage Presentation].

Doyle, C. 2017. *Interview with Alex Boutellier*. 13 November, Bydgoszcz.

Dunkirk, dir. by Christopher Nolan (Warner Bros. Pictures, 2017).

El Mariachi, dir. by Robert Rodriguez (Columbia Pictures, 1992).

Evans, G. 2018. *Interview with Alex Boutellier*. 7 August, London.

Expedition Robinson, SVT, TV3, TV4, 1997–2018.

Ferriss, T. (2015) *Robert Rodriguez Interview* [Podcast]. Available at: https://tim.blog/podcast/ [Accessed: 1 October 2018].

Festen, dir. by Thomas Vinterberg (Scanbox Danmark, 1998).

Förderer, M. 2017. *Interview with Alex Boutellier*. 15 November, Bydgoszcz.

Following, dir. by Christopher Nolan (Momentum Pictures, 1998).

Full Frontal, dir. by Steven Soderbergh (Miramax Films, 2002).

Godzilla: King of Monsters, dir. by Michael Dougherty (Warner Bros. Pictures, 2019).

Grave Men, dir. by Alex Boutellier (tbc, 2019).

Gravity, dir. by Alfonso Cuarón (Warner Bros., 2013).

Grindhouse, dir. by Quentin Tarantino and Robert Rodriguez (Dimension Films, 2007).

High Flying Bird, dir. by Steven Soderbergh (Netflix, 2019).

I Origins, dir. by Mike Cahill (Fox Searchlight Pictures, 2014).

Independence Day: Resurgence, dir. by Roland Emmerich (20th Century Fox, 2016).

James Bond: Spectre, dir. by Sam Mendes (Sony Pictures Releasing, 2015).

JFK, dir. by Oliver Stone (Warner Bros., 1991).

Klute, dir. by Alan J. Pakula (Warner Bros., 1971).

L.A. Confidential, dir. by Curtis Hanson (Warner Bros., 1997).

Lewnes, A. (2016) Quentin Tarantino: Adobe MAX Keynote Speech [Online Interview]. Available at: http://max.adobe.com/sessions/max-online/#16789 [Accessed: 19 December 2016].

Life of Pi, dir. by Ang Lee (20th Century Fox, 2012).

Mad Max: Fury Road, dir. by George Miller (Warner Bros. Pictures, 2015).

McCabe & Mrs. Miller, dir. by Robert Altman (Warner Bros., 1971).

Meadowland, dir. by Reed Morano (Cinedigm, 2015).

Méheux, P. 2017. *Interview with Alex Boutellier*. 6 November, London.

Miami Vice, dir. by Michael Mann (Universal Pictures, 2006).

Miles Ahead, dir. by Don Cheadle (Sony Pictures Classic, 2015).

Mindhunter, dir. by David Fincher (Netflix, 2018).

Miranda, C. 2017. *Interview with Alex Boutellier*. 14 November, Bydgoszcz.

Monster's Ball, dir. by Marc Forster (Lions Gate Films, 2001).

Muren, Dennis (2016) *BFI London Film Festival: Creative Technologies*. [ILM VFX Panel/Presentation].

Nummer 28, KRO, 1991.

O Brother, Where Art Thou?, dir. by Joel Coen (Universal Pictures, 2000).

Panic Room, dir. by David Fincher (Columbia Pictures, 2002).

Pavone, L. 2018. *Interview with Alex Boutellier*. 10 August, London.

Pearl, D. 2017. *Interview with Alex Boutellier*. 15 November, Bydgoszcz.

Phantom Thread, dir. by Paul Thomas Anderson (Universal Pictures, 2017).

Pi, dir. by Darren Aronofsky (Artisan Entertainment, 1998).

Pleasantville, dir. by Gary Ross (New Line Cinema, 1998).

Radiohead: Daydreaming, dir. by Paul Thomas Anderson (Ghoulardi Film Company, 2016).

Red, dir. by Branko Tomovic (House Kino, 2016).

Reservoir Dogs, dir. by Quentin Tarantino (Miramax Films, 1992).

RoadRacers, dir. by Robert Rodriguez (Showtime Network, 1994).

Roma, dir. by Alfonso Cuarón (Netflix, 2018).

Santa Monica Studio*, God of War* (2018), PlayStation 4 (PS4).

Saving Private Ryan, dir. by Steven Spielberg (Paramount Pictures, 1998).

Schaefer, R. 2017. *Interview with Alex Boutellier*. 15 November, Bydgoszcz.

Schindler's List, dir. by Steven Spielberg (Universal Pictures, 1993).

Scum, dir. by Alan Clarke (World-Northal, 1979).

Seale, J. (2015) *ACS Victoria: Making of Mad Max Fury Road* [Presentation]. Available at: https://vimeo.com/127381179 [Accessed: 16 December 2016].

Seven, dir. by David Fincher (New Line Cinema, 1995).

Sin City, dir. by Robert Rodriguez (Miramax, 2005).

Spiderman: Far from Home, dir. by Jon Watts (Sony Pictures Releasing, 2019).

Stapleton, O. 2017. *Interview with Alex Boutellier*. 13 November, Bydgoszcz.

Swingers, dir. by Doug Liman (Miramax Films, 1996).

Tangerine, dir. by Sean Baker (Magnolia Pictures, 2015).

The Aviator, dir. by Martin Scorsese (Miramax Films, 2004).

The Blair Witch Project, dir. by Daniel Myrick and Eduardo Sánchez (Artisan Entertainment, 1999).

The Conformist, dir. by Bernardo Bertolucci (Paramount Pictures, 1970).

The Curious Case of Benjamin Button, dir. by David Fincher (Warner Bros. Pictures, 2008).

The Dig, dir. by Joseph Kosinski (Sony Pictures, 2017).

The Double Life of Véronique, dir. by Krzysztof Kieslowski (Sidéral Films, 1991).

The French Connection, dir. by William Friedkin (20th Century Fox, 1971).

The Godfather, dir. by Francis Ford Coppola (Paramount Pictures, 1972).

The Hateful Eight, dir. by Quentin Tarantino (The Weinstein Company, 2015).

The Jungle Book, dir. by Jon Favreau (Walt Disney Studios, 2016).

The Lion King, dir. by Jon Favreau (Walt Disney Pictures, 2019).

The Long Good Friday, dir. by John MacKenzie (Paramount British Pictures, 1980).

The Matrix, dir. by The Wachowski Brothers (Warner Bros., 1999).

The Real World, MTV, 1992–2017.

The Ritual, dir. by David Bruckner (eOne Films, 2017).

The Sheltering Sky, dir. by Bernardo Bertolucci (Warner Bros., 1990).

The Shield, dir. by Shawn Ryan (FX, 2002–2008).

The Smurfs, dir. by Raja Gosnell (Sony Pictures Releasing, 2011).

The SpongeBob Movie: Sponge out of Water, dir. by Paul Tibbitt (Paramount Pictures, 2015).

The Texas Chainsaw Massacre, dir. by Tobe Hooper (Bryanston Distribution Company, 1974).

The Usual Suspects, dir. by Bryan Singer (Spelling Films International, 1995).

The Yards, dir. by James Gray (Buena Vista Pictures, 2000).

Touch of Evil, dir. by Orson Welles (Universal-International, 1958).

Traffic, dir. by Steven Soderbergh (USA Films, 2000).

Unsane, dir. by Steven Soderbergh (20th Century Fox, 2018).

Weingartner, M. (2017) *The Future of Cinematography*. [Panel Presentation].

Wonder Boys, dir. by Curtis Hanson (Warner Bros., 2000).

World War Z, dir. by Marc Forster (Paramount Pictures, 2013).

Zodiac, dir. by David Fincher (Warner Bros. Pictures, 2007).