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SLOW FADE TO BLACK?

**THE FUTURE
OF CELLULOID
ACQUISITION IN
FILM SCHOOLS**

A SURVEY OF WORLD FILM SCHOOLS
NICHOLAS OUGHTON 2013

'The report of my death was an exaggeration'

Mark Twain, New York Journal, 2 June 1897

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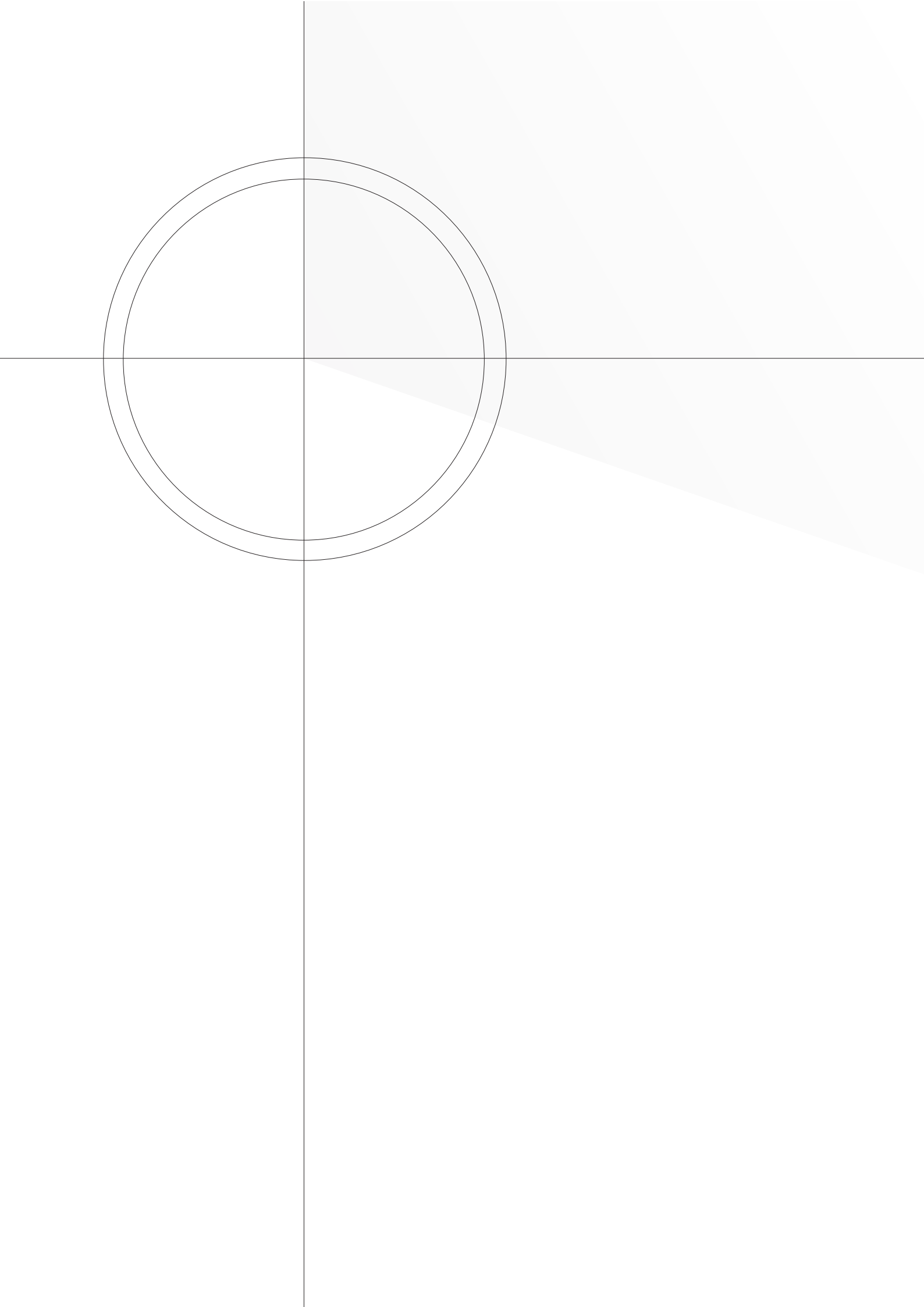
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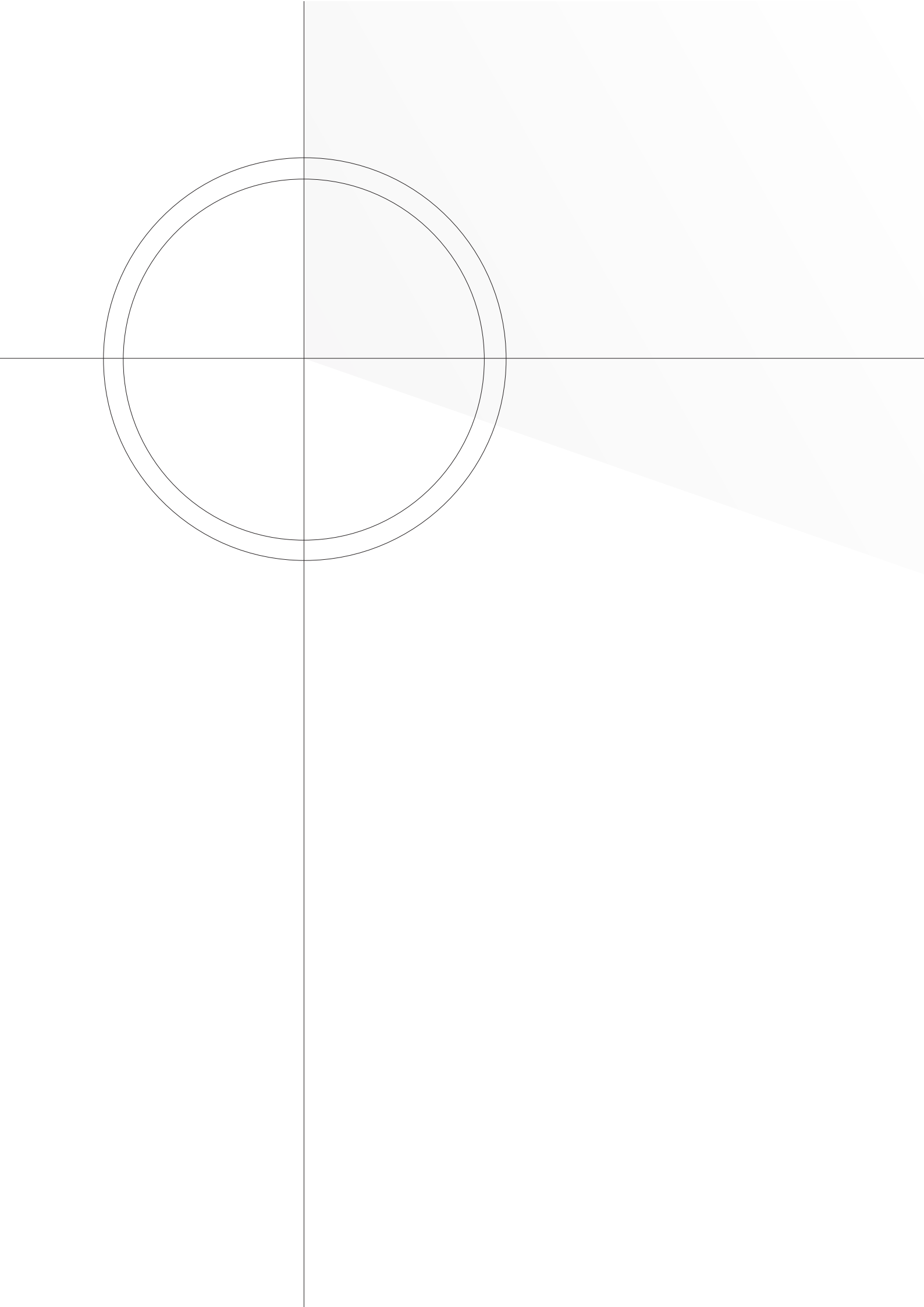
This report was prepared with the assistance of Griffith Film School, Griffith University and The Centre International de Liaison des Ecoles de Cinéma et de Télévision (CILECT)

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Nicholas Oughton
Griffith University
April, 2013



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INTRODUCTION

A number of film schools around the world have ceased teaching celluloid (film) capture, while others have reduced the emphasis on film in their programs. Among the numerous reasons are the high cost of film capture; the unavailability of processing laboratory and telecine facilities; the vast improvements in the quality of digital capture; the availability of cinematography-friendly digital cameras; substantial advances in the scope and subtlety of digital post-production; the cessation of film cameras manufacture; the decreasing availability of motion-picture stocks; and the current popularity of 3D cinema.

Other events that have accelerated the transition to digital acquisition include the collapse and restructuring of film manufacturer Kodak, Fuji's decision to cease the production of negative film, and the budget pressures caused by the Global Financial Crisis (GFC)—with digital acquisition seen by some to be cheaper. Nevertheless, many film schools continue to value teaching celluloid acquisition, and the industry continues to employ celluloid for image acquisition in certain circumstances. Why is this so?

At a 2012 colloquium entitled “How to Teach Cinematography, Nowadays?” held in Munich, Germany, participants—all teachers and practitioners of cinematography—asserted that “film training must be carried on as long as possible”, but added the qualification that “different situations have to be considered according to country and region”. The group further commented that:

For most of the students today, however ironic it may sound, film is a ‘new world’. It gives a conceptual obligation and constitutes a great discipline for their reflections about the frame’s creation. They learn how to shoot an image correctly in manual mode without any monitoring support and most of all the specifications of working in a unit, from director of photography to assistant camera. It is a process that demands discipline in handling and using.¹

ROMANTICS, RATIONALISTS, AND REALISTS

The film-versus-digital debate has evolved over a number of years, with many industry practitioners taking one side or the other. The *romantics* argue for film's ability to capture nuances and lyrical dimensions that cannot be replicated through digital capture. Meanwhile, the *rationalists* pronounce that digital capture can indeed reproduce all that film can achieve, and more. They also argue that digital capture is cheaper and more efficient, and that film as a medium of acquisition is dead. The *realists* sit somewhere in the middle, recognising that both systems have merit and that freedom of choice to employ either approach according to the task at hand is essential.

Speaking of his film *Blue Valentine*, starring Ryan Gosling and Michelle Williams, director Derek Cianfrance explains: "I shot half in Super 16, for all the falling in love stuff, and half in digital for all the falling out of love stuff that took place in real time."² Cianfrance argues that the two systems are complementary, not rivals, and that they offer two distinctive and idiosyncratic forms of visual storytelling. Meanwhile, American Society of Cinematographers (ASC) president Stephen Lighthill suggests that:

The model we've worked with for 100 years ... making pictures with a very simple camera, with no fussing on set, I really think holds for us. The digital cameras that will succeed in the long run are going to work a lot like film cameras.³

Lighthill argues that imitation is a sincere form of flattery, and hints that digital cameras will eventually replace film camera.

Those who aspire to the *Remodernist Film Manifesto* proffer a counter argument. This movement, with its romantic undertones, pursues the beauty of imperfection that embracing the occasional uncertainty that celluloid offers; flaws (celluloid serendipities) should be accepted and even encouraged. Remodernist filmmakers urge the use of Super-8mm and 16mm film as these mediums provoke more risk, and a requirement to leave things up to chance. Digital/video, they claim, is for people who are afraid of and unwilling to make mistakes.⁴ Remodernists argue that mistakes and failures make your work honest

and human, and that digital/video leads to a boring and sterile cinema. This viewpoint does not detract from the fact that film is equally, a precise, scientific, and systematic medium for recording (and storing) moving images. For those immersed in film and screen education—the majority of whom have contemporary and historical backgrounds in professional practice as well as educational experience—taking a position on the film-versus-digital case is complex, particularly when the interlaced, subtle, and multifaceted notion of learning and teaching a visual language is taken into consideration. In addition, some believe that the adversarial nature of the debate is counterproductive, detracting from a more perceptive and nuanced assessment of technological change and its implication for education and industry. What is undeniable is that the context of screen production is changing, some would say, dramatically. A further question that must be asked is, how do we respond to this change?

PURPOSE

With these (and a host of other) thoughts in mind—and in response to reports that many film schools continue to teach film—I decided to gather information on the current thinking about celluloid acquisition and its place in the teaching of cinematography. I also collected basic, relevant information about film school programs.

This study set out to find answers to the following questions:

- How many film schools around the world currently teach celluloid acquisition?
- What are the reasons that these schools continue to teach celluloid acquisition?
- How long into the future do these schools anticipate teaching celluloid acquisition?
- What future occurrences may prevent film schools from teaching celluloid acquisition?
- What explanations do those schools who no longer teach celluloid acquisition provide regarding their decision?

The study also sought to reveal traditional (film) practices and transferable skills that may add value to teaching contemporary (digital) image acquisition.

I believe that the data captured by this study will assist film schools make informed pedagogical decisions regarding curriculum design and content, and assist them to deliver appropriate teaching and learning in cinematography courses and their broader programs.

The study acknowledges that most industry practitioners receive their education and training at a 'film school' or in a similar setting, and that the knowledge, craft skills, and creative principles learned in these places are critical to the screen industry's well-being and progress. Further, the study recognises that those persons responding to the questionnaire are practitioner/teachers with contemporary professional experience and wide educational knowledge. Their views on this topic therefore have cogency and validity in both an academic and an industry sense.

METHODOLOGY

The strategy adopted in this investigation incorporated:

- a review of relevant film-education history and debate concerning the future of celluloid acquisition; and
- a survey of 146 film schools from fifty-eight countries across the world by means of a self-completing questionnaire.

The survey requested 'tick the box' and one-word responses to a number of demographic and historical questions followed by questions regarding the respondents' approach to teaching celluloid acquisition that required brief responses. Responses to these questions were subjected to content analysis that revealed common themes and classification with weighting according to popularity and importance.

The peak international association of film schools, Centre International de Liaison des Ecoles de Cinéma et de Télévision (CILECT), kindly supported this project, and the film schools selected for this survey are all full members of this organisation. CILECT was founded in Cannes in 1955 with the intention of stimulating a dialogue among film schools and helping them to understand the future of education for creative personnel in film, television, and related media industries. In the interest of transparency, it should be recognised that many respondents to this survey are likely to be celluloid natives and digital immigrants

rather than digital natives. This context will, no doubt, shape the data arising from this study and should be considered when drawing conclusions.

HISTORICAL BACKGROUND

The literature informing this study is not extensive—perhaps because, in an historical sense, film school academics in general and teachers of cinematography in particular are inclined towards action and practice rather than academic reflection. There are other reasons too. Historically, many emerging film schools were embedded in the scholarly realms of humanities departments and 'cultural studies' programs. While these entities did engage in debates regarding the nature of film and its place in a post-modern world, their considerations almost exclusively focused on critical histories, visual aesthetics, and film as language or cultural object. The technical aspects of process and technique were rarely considered.

During this period, however, there were some studies and analyses of the film process and technique. David Bordwell and Kristin Thomson⁵ provided film students with a seminal reader that explained the analytical skills that would help them understand films and film technique. Meanwhile, Jay Kaufman and Laurence Goldstein—both filmmakers and academics—reflected on film 'process' by revealing the "meanings embedded in film images and the techniques used to elicit those meanings".⁶ But these analyses were conducted from the perspective of audience-as-observer/visual interpreter of filmed stories, rather than from the viewpoint of the practitioners constructing the stories.

In his book *Grammar of the Film Language*,⁷ Daniel Arijon considers the camera as a tool of expression by examining the film frame in terms of 'cinematic' language and screen geography as well as its role in planning coverage for a dialogue sequence. Further, cinematic historian Brian Coe traced the development of film capture and projection from the optical toys and photochemistry of the late-eighteenth century to the mid-1950s adventures with 3D and flirtations with Panavision-70 and IMAX systems.⁸ But any discourse regarding the 'soul' of celluloid, or nuance of film capture, was absent—mainly because there were no other systems for comparison and no compelling need to justify film's relevance.

However, two books that do approach the cinematic medium in terms of film cameras, celluloid capture, and the alchemical nature of the process are Kris Malkiewicz's *Cinematography*, first published in 1973 with a further six editions, and Joseph V. Mascelli's *The Five C's of Cinematography* of 1965. In his books, Malkiewicz intimately explains how celluloid works by recording light reflected from an object by means of a motion picture camera.⁹ Mascelli, for his part, draws attention to the intuitive nature of the medium at a time when pixels were barely contemplated, commenting that

defining, explaining, clarifying and graphically illustrating motion picture filming techniques in an easy-to-understand way is impossible—but not quite. Most professionals instinctively know the right way to film the subject—but seem unable to explain just how they do it.¹⁰

However, Mascelli provides valuable insights, and a raft of explanations to help unpack the mystery.

CHANGES IN FILM SCHOOLS

Frank Manchel suggests that, in the 1980s, humanities-based film programs came under pressure to “become more career oriented and less humanistic in character as money, material possessions and status continue to become important to the professionally minded ... [and hence] departments offered more bread and butter courses”.¹¹ This movement in some cases reflected a film curriculum being developed in technical colleges and institutes (for example, in the UK, Australia, and New Zealand), where ‘competency based training’ and ‘skills development’ answering industry needs (with some liberal studies thrown in) were the primary focus. These changes gained momentum as the industry itself vacated a role in training its own workforce.

During the 1990s, many public film schools and technical institutes merged with or became universities, with academic practitioners being encouraged or compelled to participate in the higher-education tradition of scholarly research and publication. This stimulated increased contemplation of the nature of practice, production and the impact of new technology. For students attending these transformed institutions,

the practical nature of the ‘new’ courses was highly valued. As cinematography lecturer Jean-Paul Jarry points out, “It is what they look for when coming to these schools. They expect it with great impatience, especially for shooting.”¹²

In addition, the tertiary environment spawned the formation of professional academic bodies, such as the Australian Screen Production, Education and Research Association (ASPERA). Formed in 2004, ASPERA is the peak discipline body of tertiary institutions teaching and researching film, television and new media production, and aspires to “play an active role in shaping [and discussing] quality education for those working in production or research for the screen”.¹³ Nahemi (UK) and UFVA (USA) are similar nationally based associations, while CILECT provides a global perspective and forum.

DISCUSSION

Interesting discussions swirl around the future and nature of celluloid acquisition. On his *Screen Rant* blog, Mike Eisenberg states that:

With around 25 movies releasing theatrically in 3D in 2011, the money is clearly in the digital realm (yes, the industry is currently testing out more viable techniques for shooting 3D on film, but right now, as far as 3D goes, digital rules the day). But that doesn't mean a filmmaker has to make a total switch and give up on film entirely.

Eisenberg continues:

Film will always be a part of the industry. When you listen to a majority of the film community speak, the passion for film is still alive and well. Every industry has seen new technology push old technology out the door, but rarely does the old equipment become obsolete.¹⁴

Renowned cinematographer Roger Deakins—a digital migrant—suggests that:

Whether I'll shoot on film again, I don't know. [Shooting on digital] gives me a lot more options. It's got more latitude, it's got better colour rendition. It's faster. I can immediately see what

I'm recording. I can time that image on set with a colour-calibrated monitor. That coloring goes through the whole system, so it's tied with the meta-data of the image.

While Deakins admits that he will keep his options open—stating, “I would certainly consider shooting film again”—he concludes that, “frankly, it's not the technology that makes the great movies”.¹⁵

Surprised to hear that six of the 2013 Best Picture Oscar nominees were shot on Kodak film, renowned film critic and writer Leonard Maltin wrote on his *Movie Crazy* blog: “Wait a minute. Kodak is still in the film business? And digital technology hasn't replaced motion picture film after all?” Confused, Maltin turned to prominent cinematographer John Bailey to seek clarification, whose response was that: “Film is NOT dead and many of us continue to prefer it when we are allowed to and when smart directors support us. Also, you can talk to anyone at Panavision to know that 35mm film cameras with anamorphic lenses are the hottest rental going.”¹⁶ In another blog entry, Maltin notes director Cianfrance's opinion on the subject, who states that:

On 35mm 2 perf, you have about nine minutes and twenty seconds and then the mag [film magazine] runs out. And the actors pretty quickly start to recognize that time. The actors are like athletes. It's like a quarter of football. They have nine minutes and twenty seconds to get some points on the board, to make things happen.¹⁷

Here, Cianfrance implies that actors work with more precision and greater efficacy when performing for a film camera.

A BAFTA-sponsored event titled “Film Versus Digital: Debate”, held in November 2012, brought together a cross-section of the film community to compare the merits of film and digital capture. The loudest message emanating from this exchange was that film should remain an option, thus providing freedom of choice and expression. According to director Kevin Macdonald, this would allow filmmakers to pick their capture option on a “case by case basis”.¹⁸

All speakers agreed that both digital and film capture are useful tools and that, when correctly applied, each contributes in its own idiosyncratic way to the look, feel, and economics of a project. Directors Macdonald, Ian Softly, and Director of Photography (DP) John Matheson felt that film renders certain aspects of the image—for example, skin tones and highlights—in a superior manner to digital. Softly talked of the “organic and painterly aesthetic” of film, while Matheson maintained that film exhibits an “integrity of color that has been lost in digital capture”. Macdonald, who uses both mediums, stated that digital was the superior technology for capturing “a sense of life as it happens”, but added that the beauty of the moving image can “transcend medium and format”. Macdonald also notes that there are some projects that he would only consider shooting on film.¹⁹

A number of speakers at the BAFTA seminar stated that any discussion regarding ‘the look’ was irrelevant, as audiences do not readily perceive the difference between a film and digitally derived image. Tech-savvy, ‘romantic’, and digitally experienced cinematographer Jozo Zovko (who confesses a love of art cinema) disagrees. He believes there is a discernible difference in the ‘look’. In his interview with John Bailey, Zovko explains:

I just think of it as different colours and textures. I really do wish we [could] just keep the old tools, as well as the new ones and live happily ever after. I would have hated to have taken away the egg tempera from Andrew Wyeth and been the one to tell him that, “folks round here ain't using dat paint no mo, now take this copy of Adobe Photoshop and this Wacom tablet and git”.²⁰

Fred Goodich, Secretary of the ASC, clarifies the perceived differences further, commenting:

Film seems expensive when we're shooting, so let's do action specific takes that run to specific lengths. Digital seems cheaper when we're shooting, so let's let the camera run, let the action be more improvisational, let the actor repeat the actions and not cut the camera. Let's shoot everything that happens and sort it out in post! These shooting styles produce wholly different aesthetics.²¹

Goodich believes that this liberated digital shooting approach has a negative cost impact on post-production.

Budget issues were again raised during the BAFTA debate when Softly stated that using Super16mm film during the production of *Trap for Cinderella* (2012) "Paid dividends all the way through post production", while editor Lisa Gunning stated that on certain productions, film capture was no more expensive than digital capture. Hugh Whittaker of Panavision pointed out that two projects currently in production were employing between them "twenty film cameras and saving money by shooting film". Wearing a rationalist hat and raining on the romantic's parade, Arri's Bill Lovell concluded his contribution by stating: "For 35 years I have been hearing that film will be dead in five years. This is the first time I can believe this."²²

AN EDUCATIONAL PERSPECTIVE

In his paper "Cinematography in Productions", Jarry draws attention to assisting students link past to present through a short film, shot on a Paillard Bolex with 16mm film stock and editing (in story order) "in camera". This exercise is carried out at the Ecole Supérieure d'AudioVisuel (ESAV) where head of cinematography Hubert Guipouy argues that students completing this task discover "the power of the direct cut" together with "a basic principle: the fusion of shooting and editing".²³

In a further paper, "Teaching Cinematography in Film and Audiovisual Schools", Jarry reports that "Teachers want to keep film around for as long as possible", asserting that it is the ideal medium for teaching lighting, exposure, and the implications of focal length. On a related topic, Jarry reports that film directing lecturer Paul Holmes "believes that understanding the method of working with film is a better way to train actors".²⁴

Deluxe, the last negative film-processing laboratory remaining in Australia, recently closed for business, citing an economic rationale to justify its decision. This action caused heated debate among the Australian film community. Ron Johanson, the national president of the Australian Cinematographers Society, commented: "This is a disaster for the film and television industry here in Australia, jeopardising future training and employment."²⁵

Contemplating the demise of film processing in Australia, cinematographer and teacher at the Australian Film Television and Radio School (AFTRS) Erika Addis commented:

The availability of high-end digital cameras has certainly unshackled directors and crews from the constraint of a low shooting ratio arising from the hard costs of shooting on film raw stock, processing and telecine ... Shooting ratios have [as a consequence] expanded.

Addis continues:

But the question is, has this liberation brought about a corresponding increase in experimentation, better storytelling, and depth of learning and more powerful works? My experience is a definite no. There is no discernible increase in experimentation or better-told stories arising in [projects] shot on digital systems.²⁶

Further debate lies in a dispute involving the roles and responsibilities of the DP, many of whom see their jurisdiction and authorship of the image declining as their work increasingly is transformed and re-authored in post-production. Salty and irascible cinematographer Christopher Doyle, commenting on the Academy of Motion Picture Arts and Sciences's choice of *The Life of Pi* for the 2013 Oscar for cinematography, fumed:

Of course, they have no fucking idea what cinematography is. The lunatics have taken over the asylum ... The award is given to the technicians, to the producers, it's not to the cinematographer ... if it were me, I would've said fuck off if somebody manipulated my image that much, I wouldn't even turn up. Because sorry, cinematography? Really?²⁷

Perhaps an Oscar for virtual cinematography should be inaugurated?

THE SURVEY: SOME BASIC STATISTICS

During this study, a self-completing survey was sent to 146 members of CILECT, requesting basic information regarding their school's location, its history, enrolments and curriculum structure, with a focus on cinematography. Sixty-one, or 42 per cent, of CILECT members replied to this survey, thus providing a statistically significant sample.

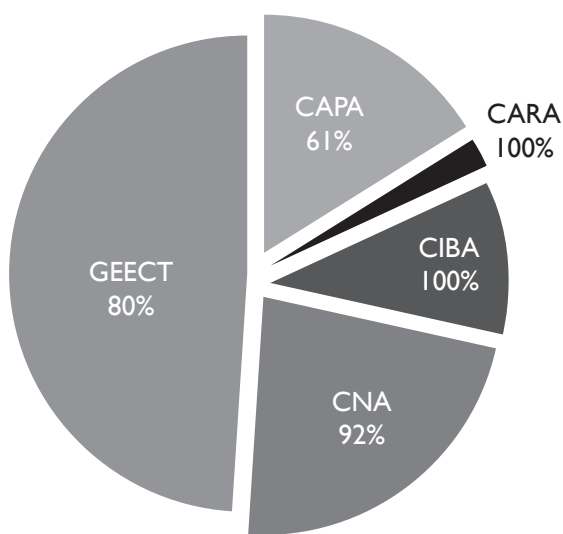


Figure 1: Schools by sample who reported using film acquisition in their courses

General Demographics

Of the sixty-one schools, three commenced film training/education prior to World War 2, fourteen started between 1947 and 1966, seventeen between 1967 and 1986, and twenty-two in the period between 1987 and 2006. Five schools did not provide information regarding the commencement of studies. In terms of respondents' location, 49.1 percent of surveys were received from the CILECT European region (GEECT), 21.3 percent from the Asia-Pacific region (CAPA), 19.6 percent from North America (CNA), 8.2 percent from South America (CIBA), and 1.8 percent from Africa (CARA).

Regarding student enrolments, 39 percent of institutions reported a total enrolment of one hundred students or fewer; while 36 percent reported between

one hundred and three hundred enrolments, 20 percent reported between three hundred and six hundred enrolments and 5 percent of institutions had a total enrolment of over six hundred students. The largest school, Beijing Film Academy, accommodates a population of 2570 students.

Respondents reported a breakdown of between 40 to 100 percent ratio of practical courses to theoretical studies, with the average ratio for all respondents being 65 percent practical courses to 35 percent theoretical studies. A number of schools questioned the demarcation of practical from theoretical learning, emphasising that these two aspects of study were integrated and indivisible.

Level of Study

While 24 percent of schools participating in the survey teach celluloid capture at both undergraduate (UG) and postgraduate (PG) level, the majority of schools (77 percent) offer courses at an UG level only. At this level, these courses are most commonly delivered in year two of the program, closely followed by year three, with year one being the least common location for a film course. Of those schools that discriminate between a 'major' or 'core' course, as opposed to an 'elective' course, 80 percent indicated that their 'film' courses (at both UG and PG level) were 'major' or 'core' studies, with 20 percent describing them as elective courses.

Celluloid Acquisition

Of the responding schools, 80 percent reported currently teaching celluloid acquisition and 83 percent of these schools anticipated that they would continue to do so beyond 2016. However, many schools making this forecast indicated that future offerings would depend on the availability of film stock, film processing, and telecine services. The remaining 17 percent of schools currently teaching celluloid acquisition believed that they would cease to do so within two years.

In terms of regional participation, 61 percent of CAPA (N 13), 100 percent of CARA (N 1), 100 percent of CIBA (N 5), 92 percent of CNA (N 12), and 80 percent of GEECT (N 30) schools participating in the survey currently employ celluloid acquisition (see

Figure 1). It should be noted that, in the case of CARA, the statistic is based on a very small sample.

The 15 percent of participating schools that had previously taught celluloid acquisition had ceased doing so since 1998, while 5 percent of participating schools stated that they had never taught celluloid capture.

Celluloid Employed in Post-Production

Interestingly, 43 percent of schools that continue to employ celluloid capture also employ film in some aspects of the post-production process. In many cases, this is confined to basic exercises. One school stated that: "The craft of 16mm acquisition and editing is still important for understanding the development of film language."

Camera Formats

While many schools indicated that they used a variety of camera formats, 64 percent reported using Super 16mm film cameras, while a slightly smaller number employed 35mm in various systems. Thirty-seven percent of schools employed 16mm standard (academy) format.

THE STATUS OF FILM ACQUISITION: A THEMATIC ANALYSIS

The survey asked two questions designed to elicit respondents' opinions regarding celluloid acquisition:

1. Can you provide some reasons why you currently teach celluloid acquisition as part of your course/program?
2. What are the reasons why your film school stopped teaching celluloid acquisition and the use of film cameras?

Responses to Question 1

Some themes arising from responses to Question 1 and examples of related comments are as follows:

It encourages discipline, thinking, planning, organisation and precision (40 percent of schools).



Celluloid acquisition teaches a student how to use their imagination. It teaches concentration, planning, thinking things and ideas through, not just pressing the button.

When teaching cinematography with film, the student has to break down the many steps involved in the processes of shooting, forcing them to think cogently about exposure and the precision needed to use professional equipment.

Shooting on celluloid forces students to a different kind of thinking when preparing their production—mainly because it is much more expensive than shooting on digital and there is also a finite length of material that they have. Thus it pushes them to be more precise, to prepare everything more thoroughly, to prepare their scenes better.

We think that the use of celluloid film asks a level of abstraction more than the digital camera. The students have to make a reflection before and during the shooting.

The photochemical aesthetic. The discipline of the on-set procedure, it's cheaper than digital because we have cameras. It's popular with students.

Using celluloid is an effective way to teach pre-production and planning. We typically give ten minutes of raw film for a three-minute short. So the script, locations, lighting and cinematography must be prepared well beforehand.

Teaching rigorous and precise methods of filming commanded by celluloid shooting and processing [maintains standards].

We still use film cameras on a very limited basis because of the discipline involved in using the camera properly.

In an interview, William McDonald, Chair of Film, Television and Digital Media at University of California, Los Angeles, comments:

In my undergraduate introductory cinematography course, we shoot 16mm film for about two-thirds of the term. Then I introduce an exercise in which they use digital cameras. On that day, I witness the students grab the cameras and head for the door, assignment in hand. On each of the previous film shoots, these same students spent 30-plus minutes carefully prepping their cameras, looking at the assignment, considering their choices, given their 100 ft of film. With the digital shoot, they didn't even stop to see if their lenses were clean.²⁸

It teaches craft and important technical processes, such as exposure, latitude, lenses, lighting, etc. These skills are transferable (39 percent of schools).



Teaching celluloid offers students a deep comprehension of the use and effect of light and the physics of the creation of the image.

Students learn to think thoroughly before they 'push the button'. They learn exposure and contrast matters really more intensely through film. Editing students have to really cut the material; it is a different experience for them.

It is the best way to teach light and colour. After learning film, digital is easy, although coming from digital to shoot film is very difficult.

As head of cinematography, my philosophy of image capture is quite simple. My belief is if you learn the intricacies of shooting on film you are then in a position to shoot on any of the current digital or video formats and any format that is likely to become available in the future.

Shooting film is the best way to help students understand technical details such as exposure and focus. The film shoot makes everyone on

the set more focused on the actual moment of shooting. The limitation of film material encourages students to 'think'. They have to make solutions in correspondence with plans.

It is important for them to experience film acquisition as part of their training, in terms of handling the medium and the discipline of the process.

Helps students understand lens characteristics, depth of field, and manipulation of space within the frame.

We understand that there are certain knowledges that are only possible with celluloid. We invest in preservation and we think that teaching with celluloid is part of the process. We think that our students are not only prepared for what the market is doing at the moment, but to a much wider perspective and teaching celluloid acquisition is part of this.

Many students want to learn film acquisition (21 percent of schools).



It [film] is still valued by students and staff. Alumni believe that their 16mm experience gives them the edge over competitors when looking for work.

Students are still very keen to use film and consider it superior to digital in its qualitative and aesthetic qualities.

We find that students want to learn using film cameras.

There is still some interest from the students. When they stop asking for film, or film is unavailable, we may stop using it.

16mm is a strong reason why students choose to study with us.

Our students want it [film] very VERY badly.

It encourages industry standards and professionalism (17 percent of schools).



Alumni believe that their 16mm experience gives them the edge over their competition when looking for work. It definitely makes for better cinematographers.

It is necessary for their education in cinema production. About 50 percent of our thesis films are still shot on film. Many concepts aren't easy to teach in digital, and film remains a serious teaching tool for those interested in becoming directors and cinematographers.

We train at professional level, and we believe that our graduate cinematographers should master both celluloid and digital capture.

It builds the mindset of the future DOPs based on the comprehension of the rules of the photography.

It is based on our curriculum. It reflects industry standards.

It encourages pre-visualisation, imagination, creativity and understanding of the 'look' (15 percent of schools).



We feel [film] is an important discipline for them to learn and will inform their imaging and creativity, regardless of what format they intend to use in the future.

Because it's the basic. Learning to work with hidden image teaches students how to use their imagination.

If we are talking about the visual side of the celluloid, it's a way to capture the light and the shadows, so it should be in the spectrum of the tools as handwriting still is.

It builds an understanding of the 'chain of history' and film language (8 percent of schools).



We strongly believe that an undergraduate education is about understanding the past as well as creating the future. The craft of 16mm acquisition and editing is still important for understanding the development of film language.

Film also helps the students to connect into the chain of history. It makes them more aware of the challenges in the past—and in the future.

Working on film helps contextualise the cinematic art, historic context, development of techniques.

It enhances communication skills (6 percent of schools).



It's the best way of teaching communication between DP and directors.

The director and the DP have to communicate; they don't just look at the monitor.

It's the best way to learn communication, light and plan the shooting. Less material when cutting, etc.

It is a simple and cheaper form of acquisition (4 percent of schools).



It's cheaper than digital because we have cameras.

Responses to Question 2.

Schools that no longer employ or have never employed celluloid acquisition in their programs (20 percent), and those schools that plan to give up teaching film within two years (13 percent) provided the following justifications. Some examples of themes and comments relating to Question 2 are:

The lack of lab and telecine services (58 percent of schools).



While we may wish to continue to shoot on film for whatever pedagogic reasons, the reality may be that we do not have a practical choice in the matter:

Practicality—labs in Toronto were closed so difficult to complete projects.

We would consider stopping due to lab access and cost issues.

Problems with acquiring film and the cost of film stock (50 percent of schools).



The difficulty and the expense of film stocks as well as problematic laboratory processing procedures.

High cost of film stock and processing. Longer time in post.

Difficulty getting stock, lab not working, general collapse of will.

It is getting more difficult to source the film stock here in Ireland, Kodak and Fuji ceased holding stock here this year. We have no labs in Ireland and many UK labs are now shutting down. The cost is getting more difficult to justify.

Mass production of film has been terminated by the company, hard to purchase or expensive to process, and most influential reason is the growth

of digital productions and facilities which can produce and save money, also more convenient and efficient.

Problems acquiring and maintaining cine cameras (33 percent of schools).



The use of film cameras? Fewer students want to learn it, the industry uses it less, and the equipment and film processing is harder and more expensive to utilise.

The availability of cinematography friendly cameras. New course in 1996 so we decided to go fully digital and teach celluloid capture from a historic perspective and why it was used in the industry then.

The cost of maintenance and the lack of the technical expertise.

The quality of digital images is equal to film images (25 percent of schools).



We switched to HD cameras that have interchangeable lenses because we have been getting better results in the student films and 16mm is becoming an obsolete format.

Industry pressure to focus on digital acquisition exclusively (25 percent of schools).



We invested in expensive state-of-the-art digital capture equipment a few years ago and, consulting with industry experts, felt it was time to move fully to digital technology.

FURTHER DISCUSSION

Some critical issues regarding the future of celluloid acquisition emerge from the following four questions:

- Will the world's film industries continue to employ celluloid capture at sustainable levels (and for how long); moreover, what qualifies sustainability in current economic realities?
- Will film manufacture, film processing, and downstream services remain economically viable at sufficient locations around the world, and where would these services be located?
- How long will the accumulated bank of film cameras remain in commission?
- Will film schools continue to see compelling reasons for teaching celluloid acquisition?

The first two questions are symbiotic, difficult to answer, and not critically examined in this report. With economies, markets, industrial, and technological environments changing so rapidly, these questions could form the basis of further examination and study. Certainly, celluloid capture may continue into the foreseeable future, in a 'boutique' sense, but will demand for stock and services provide appropriate economies of scale, and incentives for film manufacturers and film laboratories to continue operating?

Many producers, directors, and cinematographers around the world believe that film acquisition should be an option and, further, that film capture is still the industry standard. Interestingly, some argue that employing film capture adds little to the cost of production in certain circumstances. But will their desire prevail?

Many governments subsidise their national film industries in one form or another. For example, in Australia, the Producer Offset Scheme provides a refundable tax rebate for producers of Australian projects. The Australian federal government's Screen Australia and the states' various Film Offices provide further enticements. These take the form of grants, locations scouting, location offsets, payroll tax rebates, co-pro incentives, and many other schemes to encourage screen production

These initiatives certainly have some impact on the consumption of film stock and laboratory services;

however, more direct government (national and regional) incentives, such as direct subsidies for film processing labs, should be considered. In addition, tie-ins and collaborations between laboratory services and film libraries, museums archives, conservationists and similar entities should be contemplated. A further factor to consider is the preservation and longevity of historical moving images; currently, film is regarded as the best medium for preserving moving pictures.

Governments and communities around the world are also beginning to understand that film manufacture and film-processing laboratories are cultural and historical artefacts, as important to conserve and maintain in good working order as the many other industrial processes and sites that receive generous and ongoing support. The film industry and its heritage are valuable commodities and important community assets.

With film-camera manufacture terminated last year, the longevity of the world's remaining stock of film cameras should be considered; how long will this accumulation last? Again, this is a hard question to answer. Motion-picture cameras are robust, with limited inbuilt obsolescence, and, assuming that spare parts and maintenance skills continue, the stock of residual cameras may remain operational for another twenty years or more.

The fourth question is perhaps a little easier to answer. The evidence gathered in this survey indicates that many film schools around the world anticipate continuing to employ film capture into the future. This decision is underpinned by the notion that learning cinematography when using a film camera and celluloid acquisition encourages the development of rigor, precision, discipline, craft, intuition, economy, pre-visualisation and imaginative thinking, aesthetics and communication. There are other abstract, illusive, and less definable rewards. Those who support these notions also argue that skills and abilities learned while shooting film are readily transferred to and enhance competencies in digital acquisition.

Nevertheless, the fourth question hinges on the first three. Many schools that wish to maintain celluloid capture in their curricula concede that this will depend on unfolding circumstances regarding the availability of film stock, film cameras, and negative processing. One school stated that a reason why celluloid acquisition "may" cease is because of a "general collapse of will". No further explanation was given; however, this

statement could hint at a lack of collective action and resolve by industry and education to jointly ensure that film services are maintained and remain an acquisition option.

Clearly, the majority of film schools surveyed would like to continue teaching celluloid acquisition, while those that anticipate abandoning celluloid acquisition in the next few years, together with those who have already done so, generally made these decisions based on actual or predicted loss of services rather than for pedagogical or educational reasons. There is a collective belief that celluloid acquisition is still relevant.

But industry workers may see a different reality from that perceived by screen educators. Matt Moriarty, an 'A' camera/steadicam operator, observes:

There will be a point in the next five or ten years where there simply is no fiscal model that can pay to heat the negative bath, much less sustain the whole film workflow. Do I like it? Nope. The changeover has diminished all of our crafts. Five years ago, over a few drinks, you probably could have gotten me to cry about it. But as someone who's watching this changeover happen, smack in the middle of his career, I don't have the luxury of moping. I don't allow myself regret or guilt as this whole issue is so utterly out of my control.²⁹

Regaining control, however, may still be a possibility. As previously stated, in Australia, Deluxe closed in April 2013. However, the collective protest caused by this event *may* have encouraged a reverse of the situation, with a new laboratory proposing to open later in the year. Certainly, community and industry action designing imaginative solutions and fashioning new economic models may tip the balance in favour of maintaining valuable services and choice. In addition, governments should be encouraged to value and invest in skill, knowledge and infrastructure, conservation, industrial heritage, cultural assets, and employment relating to the film industry.

Summing up the rationalist case, the feudal economic paradigm, the pervasion of inevitability, and the sense of loss that permeates this debate, Frank Prinzi of the ASC comments:

The politics of filmmaking has changed with the digital world now becoming the party of choice. Much like the political climate today, money and

powerful companies rule. With all the R&D focused on digital, I don't see film existing side-by-side with digital too much longer. I hope I am wrong.³⁰

Prinzi's views may resonate with those who believe that the commercial assassination of the hemp industry, assisted by propagandist films such as *Reefer Madness*, was orchestrated to sway public opinion against hemp and in favour of new, artificial fibres developed and produced by DuPont.

Talking of his documentary, *Side by Side*, which looks at technological changes in the film industry (albeit from a Hollywood perspective), Keanu Reeves notes:

The debate isn't about whether digital is better than celluloid. It's about giving an artist the choice. *Side by Side* ultimately arrives at the point where the distinction is about the individual's style—it's not pining for the past, nor championing a digital revolution.³¹

The stylistic Steampunk ethos can be easily dismissed as romantic, retro-pop immersed in nostalgia. But, more may lie beneath the surface. Simone Jones, exhibitions manager at Brisbane gallery artisan, suggests that: "Steampunk seeks to reject the conformity of the modern, soulless, featureless design of technology."³² If a filmmaker chooses film for acquisition rather than digital, are similar thoughts in mind? When director J. J. Abrahams embraces the "warm and human and analog" nature of celluloid, it would be too easy to assume he is rebuffing the cold, utilitarian and soulless embrace of the pixel. He is perhaps, just exercising his option to choose between two powerful, supple and brilliant mediums of moving-picture expression.

Regarding the so-called 'death of film', Reeves says:

If you'd asked me six months ago if we were at that point I'd have said the situation was dire. But it's unlikely that film will completely vanish ... there is a significant body of directors still using film for image acquisition. It's important that they have the tools to make films in the way they want to. I'm certainly much less worried about the fate of celluloid than I was when I started making the documentary.³³

No doubt the future will inform both Reeves and us all too soon.

ENDNOTES

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APPENDIX A

The Film Schools participating in this survey were:

Aalto University	Finland	Kopia	Sweden
AFI Conservatory	USA	Lassalle College of the Arts	Singapore
AFDA	S. Africa	London Film School	UK
Australian Film Television & Radio School	Australia	Maale Film School	Israel
American University	USA	Newport Film School	UK
Baltic Film and Media School	Estonia	National Film School Institute	Ireland
Beijing Film Academy	China	National Film & Television School	UK
Boston University	USA	Ngee Ann Polytechnic	Singapore
CALARTS	USA	Nihon University	Japan
Centro Capacitacion Cinematografica	Mexico	NYU Tish Asia	Singapore
Cleveland College of Art	UK	NYU Tish School of Arts	USA
CUEC	Mexico	PWSFTviT Lodz	Poland
DIMA	South Korea	Republic Polytechnic	Singapore
Dramatiska Institutet	Sweden	RITS	Belgium
Ecole Des Medias	Canada	Ryerson University	Canada
Ecole Nationale Louise Lummier	France	Sam Spiegel F&TV School	Israel
EICTV	Cuba	Sheridan Institute of Technology	Canada
Fondazione Centro Sperimentale		TAMK	Finland
Di Cinematografia	Italy	Universidade Federal Fluminense	Brazil
Florida State University	USA	UMDK Wien	Austria
FTFVSMU	Slovakia	UNATC	Romania
Georgian State University	Georgia	Universidad del Cine	Argentina
Griffith Film School	Australia	Universidad Lusofona	Portugal
Goteborg University	Sweden	University of Creative Arts	UK
Hamburg Media School	Germany	University of Gloucestershire	UK
HFF Munchen	Germany	University of North Carolina	USA
Hogeschool Sint-Lucas	Belgium	University of the Philippines	Philippines
Hong Kong Academy P Arts	Hong Kong	University of Southern California	USA
IFS, Cologne	Germany	Victoria College of the Arts	Australia
Institute International de l'Image	France	Whistling Woods International	India
Istanbul Kultur University	Turkey		

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