Digital Fluidity

Beyond re-mediation in theory and practice

An interdisciplinary PhD exploring the impact of digital technologies on moving image practice

Submitted by **Benjamin Sherriff**, to the University of Exeter as a thesis for the degree of *Doctor of Philosophy in Film* [August 2013]

I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

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Abstract

> What is cinema? The emergent digital era poses this question in a new and interesting way because for the first time in the history of film theory the photographic processes is challenged as the basis of cinematic representation. If the discipline of cinema studies is anchored to a specific material object a real conundrum emerges with the arrival of digital technologies as a dominant aesthetic and social force (D.N. Rodowick 2007: 9).

Over the past twenty-five years or more there has been a paradigm shift occurring in the manner in which moving images are conceived, acquired, produced, disseminated and consumed. This transformation of the modus operandi of production can be attributed to the overwhelming expansion and rapid advance of digital technologies. Through both critical reflection and creative practice this thesis will explore the extent to which there might be a discontinuity between analogue and digital cinematography; whether cinema itself and the basis of photographic representation have been changed, as Rodowick infers. It will draw on debates of realism, the index, and of the medium in relation to the seminal theories of new media.

The thesis will introduce the term Digital Fluidity. This is the central concept that has emerged out of my research that describes how technologies utilised in production and post-production function together to enable a fluid process or mode of filmmaking, based on a logic of hybridity and technological convergence. Digital Fluidity engages with two key arguments in new media theory, namely that of ‘re-mediation’ (Bolter and Grusin, 2000), and the ‘computerisation of culture’ (Manovich, 2001). The thesis comprises of a 30 000 word dissertation and a portfolio of practical work of three films. Firstly there are two documentary shorts *Grasp the Words Which Sing* (2010), and *Picnic Pilgrimage* (2012), which deal with themes such as the perception of art in the case of the former and the mobility of both the camera and the subject in the latter. In the documentary productions the reflective focus is concentrated on the digital camera as capture device, re-appropriation of technology, and continuity with analogue production techniques. The films are produced on a modified DSLR camera with 35mm lenses and demonstrate a progression in visual style from a static camera in the case of the first film to a necessarily more mobile camera in the second

and third. A longer dramatic production *Not For Human Consumption* (2013) is a tragic love story that explores the emotive social issue of legal high substance misuse. This film uses improvisation and experimental camera systems as well as some conventions that hold their lineage in the silent era, such as the long take and frontal framing. Here the theoretical analysis explores the integration of analogue and digital techniques and equipment by looking at the processes involved and relating these practices with the concept of Digital Fluidity. The improvised narrative was created as the film was in production – a choice that was facilitated largely by the decision to shoot digitally. The three films, although very different, are related by the connection between the *processes* of filmmaking undergone in each case and the thesis' core definition of Digital Fluidity. The central research question poised within this thesis will therefore be: 'Do digital technologies offer the filmmaker enhanced opportunity for creating new cinematic language and a more fluid mode of production than previous forms?'

Critical Introduction

Critical thinking surrounding the transition from analogue to digital imaging has tended to highlight a discontinuity between analogue and digital cinematography and modes of production. Cinema Studies has often focused too narrowly on this perceived difference. This critical introduction aims to highlight the research of key theoreticians who adopt this normative standpoint, and contrast that with the key theories of 'new' media and the digital realm.

The concept of Digital Fluidity occurs within what Lev Manovich has termed the 'computerisation of culture' (2001: 9), and to what Dudley Andrew asserts 'the cinema of the twenty first century must absorb' - the subject matter that surrounds it, an 'increasingly new media culture' (Andrew 2010: 94). It seeks to define technology as a process that offers a democratised and fluid mode of high quality, high-resolution, imaging to the contemporary moving image practitioner and explore the effects of this 'computerisation' and fluidity through theory and practice. The term also holds relevance to the dissemination and consumption of images and the 'commodity fetish' (Cubitt 2004: 5-7), that of human beings' obsession with understanding the world through visual representation.

By interfacing theory and practice through the central critical concept of Digital Fluidity this thesis will examine how digital technology functions in relation to practice. I shall explore the extent to which digital technologies present a form of discontinuity in relation to previous analogue modes of moving image production though the shift from celluloid to digital media. Two of the most significant and influential theories in 'new' media studies that have held most relevance, since their publication over a decade ago, are that of Bolter and Grusin's theory of *Remediation* (2000), and Lev Manovich's *The Language of New Media* (2001). Manovich provides an original text that is far reaching in its aim to provide both a theory of the founding principles of new media and evidence of the continued importance and centrality of the cinema within this new digital, 'new' media paradigm. The concept of Digital Fluidity attempts to expand upon one of Manovich's key principles - 'the principle of

variability' (2001: 36), and articulate how Bolter and Grusin's concept of remediation exemplifies the importance of *hybridity* within new media's forms. Digital Fluidity is a concept derived from the following areas of theoretical research: 1). Technology *as* Process, (Realism, Resolution and the Camera) 2). *Cinema* Digital, (The screen) 3). *Hybridity* and convergence 4). Art and Organics. On the other side of the debate commentators such as Laura Mulvey and David N. Rodowick argue that the 'altered and virtualised' digital image diminishes the cultural value of the filmic image as 'Index', indeed Rodowick asks whether the digital image can in fact be considered an image at all.

> Certainly, computers make images available as graphical or spatial outputs. But these "images" are never fully present to us and are always incomplete in space and in time… Digital presentations have no presence or identity that is not commensurate with the structure of electronic displays. Having disappeared into information, the image can be reborn or reconstituted only as an electronic signal (Rodowick 2007: 134).

Rodowick and Mulvey seem to fetishise the material form of film and instil in their shared conceptualisation a sense that celluloid holds a privileged indexical relationship to the 'real' material world that is somehow more important than digital. They seem to suggest that something is lost in the transition to digital, that the moving images lose their 'natural magic'.

> The story of mechanical, photographic, reproduction of reality came to an end. The conversion of recorded information into a numerical system broke the material connection between object and image that had defined the earlier history. No longer derived from the chemical reaction between light and photosensitive material, these images lost their 'natural magic' (Mulvey 2006: 19-20).

Even if we agree that this loss has happened we ought to question whether this in fact even matters to audiences today. For Andrew, cinema's magic still exists but 'the magic has migrated to the computer, where soundtracks are additive concoctions of tracks, and pictures are composited, not composed' (2010: 9).

In the first area of theoretical research I aim to investigate how technology functions as process and articulate the cause and effect of digital technologies mimetic alignment with film, whilst challenging foregrounded traditional oppositions. I will explore the concept of Digital Fluidity in relation to

questions of cinematic realism and the ontology of the image, a line of enquiry that inevitably leads me back to the work of Andrè Bazin (his essays *The Ontology of Photographic Image* and *The Myth of Total Cinema* (1945). The first truly technological arts of photography and motion pictures have always been associated with the idea of 'realism', for they are concerned with representation of 'the real'.

Furthermore, the problem of the object of cinema seems as relevant in today's studies of Digital Cinema as it has been since the work of the great French critic and the Cahiers group. Bazin promoted techniques and styles such as the long take, deep focus cinematography, an un-adulterated view, with an intrinsic set of values. The aesthetic language of the cinema is itself something that is in a constant state of flux – despite the many accepted codes and conventions and established 'norms'. In Dudley Andrew's provocatively titled book *What Cinema Is!* Bazin's positive view of the unadorned cinematic image is critiqued.

> He sides with directors who "put their faith" not in the image but in reality, and in case after case he demonstrates that the reality attained by a film is what precisely is not visible in its images. This is the Bazin for whom the screen is the photographic negative of reality, something essential but preliminary to the reality sought by the director. This "shadowy Bazin," let's call him, re-entered serious film discussion thanks to Gilles Deleuze and Serge Daney, both of whom recognized his affinity with a philosophy of the virtual that has become the order of the day (Andrew 2010: 8).

Cinema might therefore be seen as an art of the invisible whereby elements external to the frame are as important as that which is contained within. Perhaps then, cinema is simultaneously the art of the indexical and the virtual; the phenomenology of the cinema is often the focus of the key philosophy of its ontology. This brings me to the second point of theoretical context within Digital Fluidity; that of the screen and the site of interpretation. In contrast to Bazin and Dudley, the question Sean Cubitt asks is not 'What is cinema?' but what is its effect? What does it not do? (Cubitt 2004). Cubitt's approach can be considered to adopt elements of Manovich's digital materialism. He investigates the problem of the object of the cinema and the place of technology in relation to the commodity fetish. Cubitt's enquiry into cinema's unique or special effect ultimately results in the observation that

cinema's effect comes after its own existence as cause - its *effect* is to struggle with its own existence. 'It points toward what is not present, that which is coming into being' (Cubitt 2004: 365). When related to the ideas of realism and new media's potential to create new cinematic language perhaps Cubitt's question is of more relevance than Bazin's, but it also demonstrates the value in returning to Bazin's influential work. Daney, cited in Andrew underlines this point, today cinema exists in a position where its image is 'not always taken for real. The electronic image ignores the (mirror's) silver. Paradoxically, it is just because of this that he remains essential' (Andrew 2010: 9). Pre-digital audiences did not necessarily accept every image the screen presented them with as 'reality', rather Andrew argues that we arrive at this position because he feels that the shift to the digital has removed that privileged indexical link to reality.

Digital Fluidity attempts to find a cohesive way of explaining the shift in the dissemination and consumption of the moving image, a 'state change' that has expanded the boundaries of the cinema way beyond the world imagined by Gene Youngblood when he wrote of an *Expanded Cinema*, 'Conventional cinema can be pushed no further. To explore new dimensions of awareness requires new technological extensions. Just as the term "man" is coming to mean man/plant/machine, so the definition of cinema must be expanded to include videotronics, computer science, atomic light' (1970: 135). This expansion of the screen and the implications for the shifting of the cinema from the film theatre in a digital age, encourage wider debates about the perception and interpretation of the moving image. Cinema Studies is faced once again with the pressing issue of semiotics and the interpretation of the cinematic image, a point Cubitt highlights in discussing the semiology of the figure zero. Zero, Cubitt explains, is not 'nothing', it is not a quantity but rather a relation. This semiotic point is critical to understanding the completeness of the digital image and aesthetic, since zero 'serves to denote origin in coordinate space, the point at which the axes of graphs intersect' (2004: 33). Cubitt augments Christian Metz's definition of film as language, and

Bordwell's definition of film as psychological[1] with a digital and mathematical analysis of the basis of motion. Cinema has moved to 'the display', a raster grid of pixel addresses; 'Each pixel address is symbolized by its distance from zero, its difference from the nonidentical fullness of that apparently empty address (0,0)'. For Cubitt, this mediation of the screen is critically located at the semiotic since in his terms language itself cannot exist without mediation. Understood in this way zero represents a 'non-identity' out of which the (digital) image arises and in turn becomes useful to my own interpretation: that of Digital Fluidity and a digital materialist strategy. Heterogeneous digital displays, screens, pixels and light emitting diodes now communicate and construct the image for the contemporary spectator. At the epicentre of this transition from theatrical viewing space remains the virtuality of perception and the interpretation of meaning in the (now) digital image, zero and the apparent emptiness become the basis for the redefinition of the image that Digital Fluidity engages with. The pixel and its location in screen space become the foundation for the existence of the image and its reconstitution in the eye of the spectator, regardless of the heterogeneous space or display the image emanates from.

Andrew has noted the capacity for Bazin's argument to break down at the shift and expansion of the cinema screen (cinema's *interface*, in Manovichian terms):

> Of the three sectors comprising the film phenomenon, projection is the one where Bazin's line of thought is at most risk of breaking off or bending out of recognition. Has the digital era brought with it a shift so profound in how films are screened that we should no longer expect the same of, or from, them? That we should perhaps no longer even assume the phenomenon to be related to the cinema that went before? (Andrew 2010: 66).

The notion that cinema itself has shifted *is* to say that technology has transformed the way in which we view and interpret the moving image, that the image has been redefined by the digital. We need no longer enter a darkened room in order to experience a film; in addition to the traditional environment of the cinema theatre we also have the choice to interact with

[1] Metz and Bordwell are cited in Cubitt's text, for more on his summary of his approach see Cubitt 2004: 7-8

digital images elsewhere as broadband speeds and availability of Internet television increase. This represents an expansion of screen space itself, today photographic mechanics operate in cinematic digital spaces. That is to say that the mechanisms of photography; the lens, the camera as capture device, the material 'memory card', (instead of celluloid) exist and operate within a new framework of mathematical but material, digital heterogeneous spaces. Moreover, these are spaces that harbour cinematic qualities on the basis of the viewer's active decision to enter into a relationship with the screen and the world represented within.

The third area of contextual research within Digital Fluidity, hybridity and convergence, attempts to nuance the concepts of remediation and variability with the idea of difference and change. It seems to me that a paradox is present whereby there is a sense that everything continues to evolve and to change but neither has 'commodity digital film' (to adapt Cubitt's term) morphed into something consummately new in the digital age. Digital Fluidity seeks to highlight this continuity through theory, whilst arguing the multiplied creative potential for an increasingly fluid mode of production that stems from hybridity in practice. Aligning this progression within Manovich's 'computerization of culture' Digital Fluidity places the computational device philosophically as a 'complex biological object' (Dawkins 1986: 1), given that these devices were designed by human beings (ourselves biological objects), and are manufactured from organic materials. This peculiar mix of the organic machine that begins with the abacus and results in a computational device in the palms of individuals serves as a basis for my critical thinking surrounding Digital Fluidity and the development of moving image technology as a process of evolution or progression, rather than revolution.

Both Rodowick and Mulvey have offered compelling counter arguments to the concepts of 're-mediation' and Manovich's 'variability' and redefinition of the Image, which shall be addressed in this critical introduction. For Manovich, the digital represents a revolution, but importantly he articulates the 'newness' of new media whilst aligning this 'increasingly new media culture' with older existing media of visual representation; 'The computerization of culture not

only leads to the emergence of new cultural forms such as computer games and virtual worlds; it redefines existing ones such as photography and cinema' (Manovich 2001: 9). Bolter and Grusin define 'new' media, and indeed 'the medium' as 'that which re-mediates':

> It (medium) is that which appropriates the techniques, forms, and social significance of other media and attempts to rival or refashion them in the name of the real. A medium in our culture can never operate in isolation, because it must enter into relationships of respect and rivalry with other media (Bolter and Grusin, 2000: 65).

Rather than being explicitly new any media must by their existence enter into 'relationships' with other media. So for Bolter and Grusin no media can operate in today's digital landscape in a state of isolation. Whilst aligning remediation with 'the real', they point to media paying respect to other types but also highlight a state of conflict that exists between both 'old' media and 'new'. This state of conflict is apparent when reading the key theories of new digital media, as highlighted by Rodowick and his fetishism of film/celluloid as pure cinematic medium in *The Virtual Life of Film* (2007). Digital Fluidity responds to Rodowick's fetishisation of the medium of film as the 'object' of film studies by adopting aspects of Manovich's digital materialism and Bolter and Grusin's concept of re-mediation.

The fourth area of theoretical research within Digital Fluidity; that of art and organics, attempts to find an understanding of how newly democratised technology might afford a greater creative freedom, the ability to improvise or make creative decisions 'on the fly', and a greater control over the end product for the practitioner than was previously achievable using analogue (and specifically material film) media and technologies. Whilst this idea is at play in all three films I have produced it is most apparent in the final and major film production *Not For Human Consumption* (2013), as the film is largely improvised, the dialogue was not rehearsed in any way before shooting. I shall return to analyse the working practices in production and post-production on *Not For Human Consumption* in a later chapter. For now it is sufficient to note that the choice to shoot digitally afforded a greater potential in the editing of the film as I was able to shoot with three low cost high definition cameras.

This multi-camera approach has enabled me to demonstrate technological advances in post-production, for example the 'assembly' editing for the multi-camera scenes is done 'on the fly', in real time as the three angles are played back simultaneously (borrowing terminology and interface from a live television gallery). Similarly, during production shoots, creative narrative decisions were made as the camera rolled with a skeleton cast and crew: an approach that whilst achievable with analogue and celluloid is something made much simpler and cost effective with the application of digital technologies, their inherent immediacy and 'reusable' file based media. The notion of 'immediacy' is something that both Manovich and Bolter and Grusin explore in detail and is certainly a prominent aspect of what I am defining as Digital Fluidity.

Taken at face value as a means of describing a technological transference, the term Digital Fluidity may be read as overly reductive, suggesting that the development and implementation of new technology is a smooth and un-interrupted process, allowing limitless new possibilities, or what Rosen refers to as a utopian view of the digital 'forecast' (Rosen 2001: 301-26). I wish to avoid technological determinism in my use of the metaphor of flow (Digital *Fluidity*). Therefore, I do not intend to suggest that media shape and define exclusively how we as societies and individuals act and feel. Rather, the metaphor allows the convergence of concepts such as remediation, variability, and the fetishism of celluloid film. In turn this allows me to demonstrate how they function in the context of practice to enable a fluid mode of production. The idea responds to the perceived loss of the object of the cinema by explaining this perception as a kind of cultural pessimism associated with the digital. This thesis considers the ontology of the image and key scholarly enquiries within Cinema Studies in tandem with a more progressive stance that invests the *digital* humanities with a mathematically based philosophical discourse surrounding the image and its representation. By engaging with each side of the debate surrounding the indexical value of both the profilmic celluloid and digital image, Digital Fluidity attempts to offer an understanding of how and why certain theorists, scholars, critics, and practitioners fetishise older analogue forms and have focused their attentions on this morbid discourse of the death of the cinema and the object

of study. At the same time, the concept must also challenge this viewpoint through critical and practical reflection. The shift of technologies is based around hybridity and remediation – Digital Fluidity articulates that existing technologies and practices are not simply superseded by new ones but in fact that they are absorbed into them. In this way I argue that the digital's hybrid relationship with earlier technologies must form part of our understanding and interpretation of their implementation. The key differential of (a lack of) indexicality levelled at digital media, is a result of its ontological hybridity and obscures the reading of the digital image. In the mathematical formulations of the digital, Philip Rosen observes that '(digital) imaging is not just a matter of technically efficient inscription, but of sundering the contact between world and image, and between machine and reference, which is the very currency of the indexical' (2001: 306). At the same time that the indexical link of the image is 'removed' by the immediacy of the digital, this immediacy also presents a democratisation of the High Definition and the ultra High Definition image. An intrinsic affect of the 'commodity fetish' has lead to a renewed vitality in film production and output, an expanding sphere of influence, and a rebirth of cinephilia. Through this technological process the public are able to engage in cinematic meta-narratives online in digital communities of many nations – a 'new' aesthetics of digital dissemination.

One of the key problems with technological development, for both theorist and practitioner, is the speed at which things develop and change. In the case of cinema this creates not only financial pressures on production companies and individuals as investment must be made into them, but also a vast amount of professional debate and testing before any kind of standardisation can occur. This standardisation is seldom able to keep pace with the rate of development of technology, a lineage that we can trace back not only through the history of the cinema but to the beginning of the industrial revolution. This point is clearly demonstrated by the integration of digital projection technologies in cinemas across Europe. For example, David Bordwell acknowledges 'In December 2000 the world had about 164,000 screens. Only around thirty of them were digital. Five years later 848 were. At the end of 2010, however, 36,103 screens were digital – about thirty percent of the total.' (Bordwell 2012: 9). Bordwell cites 2010 as being the year that

‘iced the cake’, offering the statistic that in this year 80% of all releases in the United Kingdom were indeed digital releases. Last year Twentieth Century Fox declared that at the end of 2012 it would cease to circulate film prints. ‘We have passed the tipping point. By early 2012, over half of the 137,000 screens in the world have converted’ (2012: 10). Generally speaking, independent and low budget filmmakers adapt to new technologies quicker than mainstream producers, distributors and exhibitors, and thus begin to exploit their creative artistic potential as soon as they acquire the technology. In the low-budget independent sector it makes absolute and immediate sense to embrace these technologies in many different capacities such as financial, creative and logistical reasons. In the global infrastructure of digital acquisition Digital Cinema camera technology has been embraced long before the change has occurred in cinema projection. Historically speaking this has always been the case; new technology seems to be ‘introduced in the production sector and resisted in the exhibition sector’ as Bordwell puts it. A point of fact that is largely determined by the enormous cost of replacing all equipment in a film theatre, standardisation in exhibition (what we might call, full digital vertical integration) will not occur until it makes fiscal sense and will turn a profit. Furthermore, due to the hegemony of digital devices and displays and the immediate (or on demand) nature of electronic distribution, digital standardisation also changes working practices and maybe even business models for distributors and exhibitors.

The notions of digital variability, remediated forms, and technology unleashing creative artistic potential reminds us of the work of Walter Benjamin and his famous essay *The Work of Art in the Age of Mechanical Reproduction* (1936), which sought to define the problem of articulating what was to be considered as ‘art’ when all manner of art forms were infinitely copy-able; reproducible without loss of quality – an almost identical appearance to the original. It is an interesting parallel that today similar debates are raging in the academic study of the visual arts, these debates relate with Benjamin’s concept of the ‘aura’. The shift to the implementation of digital technologies within the field of the cinema has led film theoreticians to question not only the validity of digital images as index, but also the artistic and aesthetic value of such media, as exemplified by Rodowick; ‘The digital

arts render all expressions as identical since they are all ultimately reducible to the same computational notation. The basis of all representation is virtuality: mathematical abstractions that render all signs as equivalent regardless of their output medium' (Rodowick 2007: 10). Repeatedly, Rodowick fetishises the material importance of the medium of film and in so doing favours the indexical approach to the cinema. Though Manovich also denies the digital image 'indexicality', his (formalist) digital materialistic theory of new media is central to my reading of the cinematic landscape of today since the digital becomes tangible.

I shall now explore the four outlined contextual areas from film and new media theory in further detail before offering a succinct definition of Digital Fluidity and drawing conclusions about the initial responses that it may offer. To summarise, these are as follows: Realism and the (digital) Image (technology as process), the Screen and the site of interpretation, Remediation and Variability (Computerisation of Culture), and the notion of Art and Organics in the digital age.

Realism, The (digital) Image and The Index

> The fanatics, the madmen, the disinterested pioneers, capable, as was Berard Palissy, of burning their furniture for a few seconds of shaky images, are neither industrialists nor savants, just men obsessed by their own imaginings. The cinema was born from the converging of these various obsessions, that is to say, out of myth, the myth of total cinema (Bazin 1945: 202).

Bazin viewed the cinema as an extension of photography, born out of the obsessions and eccentricities of its inventors, out of convergence, but also born of a myth, a technological promise, and the utopian 'total cinema'. The central Cahiers axiom identified by Andrew amongst others (Daney, and Rohmer)[2] is that the cinema has always failed to represent the real, with which it has an inherent rapport. Realism has long been a central focus in academic cinema studies and in the semantic debates surrounding the interpretation of the filmic image. The insistence of photography's capability to provide a mechanised and material trace of the physical world lies at its core. Stephen Prince notes:

[2] Daney and Rohmer cited in Andrew, Dudley 2010, *What Cinema Is!* Wiley Blackwell, Oxford. 8-10.

> Assumptions about realism in the cinema are frequently tied to concepts of indexicality prevailing between the photographic image and its referent. These, in turn, constitute part of the bifurcation between realism and formalism in film theory. In order to understand how theories about the nature of cinematic image may change in the era of digital-imaging practices, this bifurcation and these notions of an indexically based film realism need to be examined (Prince 1996: 28).

Through mimetic alignment with film, a specific problem is posed for the digital image; 'If the digital is such a revolutionary process of image making, why is its technological and aesthetic goal to become perceptually indiscernible from an earlier mode of image production?' (Rodowick 2007: 11). Rodowick points to an issue that requires further inquisition; his reading is grounded in an accurate observation that digital cinema technology has had to 'prove' itself as being capable of delivering the same or better results than conventional celluloid based systems in order for it to be an acceptable medium to the industry's artists and technicians. The problem of digital mimicry has its roots in the pursuit of the real and further underlines the need for a re-investigation of how Bazin's insistence on celluloid's material connection to physical reality manifests itself in contemporary critical thinking surrounding the cultural value of profilmic material image as 'Index'. It is also perhaps an inherent contradiction within the realm of 'the digital and new' – an issue I will return to when discussing remediation and variability.

Whilst underlining the issue of digital mimicry Rodowick also defines the digital via material difference, invoking a sense of loss; 'what remains absent from the process of digital representation is what thinkers like André Bazin or Roland Barthes held fundamental to the photographic image: its causal force as a literal spatial and temporal moulding of the originating event, preserved in physical material.' (2007: 11). In contrast to pure photographic representation where the 'historicity of representation' of 'physical material' (Jacques Aumont 1994: 198), is seen as the predominant intrinsic 'given' value, Rodowick defines the digital image by absence and impersonation. This reading holds its lineage in the work of Bazin who concluded, "Painting was forced, as it turned out, to offer us illusion and this illusion was reckoned sufficient unto art. Photography and cinema on the other hand are discoveries that satisfy, once and for all and in its very essence, our obsession with

realism" (Bazin 1945: 197). Seen in this way the cinema represented an ultimate objective and direct image of time; "Now, for the first time, the image of things is likewise the image of their duration, change mummified as it were." (Bazin 1945: 198). Bazin's reading was influenced by his religious beliefs; he favoured stylistic trends such as the long take as editing was almost unholy, somehow undoing this 'direct image of time' and historical referent.

Siegfried Kracauer also defined the cinema as having identical technical properties to the properties of photography and thus described film as being 'uniquely equipped to record and reveal physical reality and, hence, gravitate toward it.' Adorning it with an inherent realistic tendency (Kracauer 1960). V.F. Perkins comments:

> Bazin and Kracauer share the view that film is 'essentially an extension of photography' and that as a result 'the nature of photography survives in that of film'. The position is taken for granted, not argued; it is both theoretically misleading and historically false. Movies owe their existence to a peculiarly mixed marriage between the camera, the magic lantern and the optical toys of the nineteenth century (Perkins 1972: 40-41).

For Perkins, the cinema has its roots in the technologies of photography as well as those of the illusion of movement from as early as the mid Seventeenth Century. Perkins recognised that technological development of cinema's apparatus and recording mechanisms have all 'tended in one direction: towards completing the illusion of reality.' He also understood that Bazin's view was ultimately that cinema had always fallen short of the 'integral realism' that its inventors promised and he reminds us that Bazin's ideas have not always been read with such a keen eye and ear. Furthermore, Perkins' discussion of the concept of progression of technology 'demands both respect and caution from the theorist since the cinema's image has always excluded more elements of reality than it has presented.' (Perkins 1972: 47). The promise of this 'complete illusion of reality', this 'total cinema' in Perkins' view is 'also justified by the mechanical evolution of the movies in the past seventy years'. Perkins' observations hold great relevance to the concept of Digital Fluidity and the debates surrounding the indexicality of the digital, given the advances made in technology since he wrote *Film as Film, Understanding*

and Judging Movies (1972). For though, as Perkins notes the concept of technological progress and an ever-increasing realism to the image is one that must theoretically be approached with caution (given the impossibility of the medium presenting 'the real'); it articulates how there is a profound sense with the coming of the digital age that everything has changed and nothing has. Almost exactly the same debates have raged in the past in regards to new film stocks, colour processing techniques, the arrival of sound etc. The observations Perkins made hold their relevance in regards to the digital image because he differentiates the cinema from photography in the sense of the illusion of movement. Mulvey's approach to align the filmic image with the still image will prove helpful in regards to Digital Fluidity since her articulation of the inherent stillness of the filmic image provides a fertile starting point to think about the discourses surrounding resolution and the Index and the perceived loss of the object of study.

> Everyone knows that celluloid consists of a series of still frames that have been, by and large, inaccessible to the film spectator throughout its history. Digital technology enables a spectator to still a film in a way that evokes the ghostly presence of the individual celluloid frame (Mulvey 2006: 26).

In contrast to Perkins, Mulvey offers a reading which foregrounds the stillness of the moving image, the relationship to the photograph and the privileged indexical link to reality. Perkins' writing demonstrates that technology and its promise of a closer proximation of 'the real' (despite the impossibility of the myth of a 'total' cinema) is an axiomatic part of the medium of the cinema. This is something that has always been there and an axiom in the sense that the medium itself is grounded in technological development and invention. The arrival of the digital and the promise of increased realisms and resolutions, both demands and claims the existence of the analogue past and the Image as Index, and it is perhaps understandable how the camera and material difference have been positioned when it comes to theories of the digital, producing this reactionary and culturally pessimistic reading of the digital.

The Screen and The site of interpretation

> However moving images are conceived – as institution, experience, or aesthetic – their past and present are unthinkable without screens. Large or small, made of cloth or liquid crystals, screens provide a primary interface between the forms and inhabitants that constitute visual culture (Haidee Watson 2007: 74).

Debates surrounding realism, the Image and 'celluloid as index' focus their attention on the mechanical or digital capture device – the camera, but this is only part of the narrative of the shift in media. If, for Cubitt, cinema's first 'effect' is to exist, then its second is to be seen - to be seen as the illusion of 'movement'. Images are created in order that they may be seen and interpreted, the primary phenomenon or 'effect' of the cinema is that the moving image does exactly that – it moves. In his text *The Image* (1990), Jacques Aumont provides a different starting point for how we can think about 'the Image' as a concept. Aumont focuses his attention, not on realism in the first instance, but on the history of visual perception. For Aumont, we do not see images (although they are indeed made to be seen) rather we see light, the illuminated sign of the referent. Digital Fluidity seeks to develop our relationship to 'the Image' as film scholars and academics by articulating that what you see in the image (on the screen), is not only what you see, rather a perception about what you see; a virtualisation or projection of the 'real', a 'digital event' and/or 'virtuality' which paradoxically often represents the real. This goes deeper than the relationship of subject, viewer, and object, that is repeated in lines of interpretation that foreground the indexical qualities of the photographic image. It accounts for the additional types of 'spatial montage' that may have been created digitally within a shot[3] (Manovich 2001), and acknowledges that the viewer's primary role is to perceive, a role to which they are simultaneously mobilised and immobilised: Mobilised to the act of perceiving and immobilised in the sense of their own time suspended, seated in the cinema or in front of the screen. 'Cinema and its associated media merely industrialize the stasis of the audience in the movement of the image' (Cubitt 2004: 6). Cinema becomes an industry and medium of both mobility in

[3] Manovich presents us with the term spatial montage, he brings together the practice of digital compositing and conventional montage – see Manovich 155- 159.

the image and stasis in the spectator. The question we must ask in relation to the contemporary spectator is do they in fact care about the medium? Does it matter to them? Given the rise of mobile devices, and the countless ways in which individuals and society as a whole both access and are presented with moving images – have viewers become users? No longer must they be situated in a static theatrical environment. Must as Philip Rosen suggests, the cinema be separated from its medium? The notion that technology has shifted the way we view moving image media is one that cannot be ignored in film theory. Wasson asserts, 'cinema scholars must do even more to integrate into their critical frameworks the multimediated environment that is clearly forcing a new definition of cinema' (Wasson 2007: 75).

Theoretical discourse and critical thinking about the digital filmic image often focuses its attention around the themes of 'loss' and 'otherness', the digital image is continually referred to as Digital Cinema, as if it were almost a genre, or style of film. For example, Manovich offers the following definition of 'Digital Cinema', 'Digital Cinema is a particular case of animation that uses live action footage as one of its many elements' (Manovich 2001: 302). Though clearly sympathetic to 'the digital', Holly Willis offers another definition based on difference in *New Digital Cinema, Reinventing the moving image*, by saying that the process (of recording the image) is 'fundamentally different' and 'new':

> Rather than transcription, information recorded with digital video goes through a process of conversion. A digital camera does not record an analogue signal of continuously varying voltages but instead a series of zeros and ones in a pattern of relationships defined by mathematical algorithms (2005: 6).

Whilst Manovich's definition has appeal when applied to composited films and new media objects on the Web, for me his description does not accurately describe the use of digital technologies when used in the creation of profilmic media. Furthermore, I argue through Digital Fluidity that the *Cinema* exists before the *Digital*; it is not a type of cinema, it is an extension and enhancement of it. Since the arrival of digital technologies within mainstream cinema this demarcation of difference has typified normative critical thinking surrounding the digital in film theory. As a theoretically informed practitioner, I assert that this is both an incorrect and misleading way to conceive of the

implementation of these technologies. The initial meaning may well have held more relevance in regards to discussions of block buster Hollywood movies such as Steven Spielberg's *Jurassic Park* (1994), given that these were sold to the cinema-going public by virtue of their *digitality*, their visible 'special effects' and the digital were foregrounded as visual spectacle. Dan North has commented in his book *Performing Illusions, Cinema Special Effects and the Virtual Actor,* 'perhaps the most controversial application of special effects technologies comes when the malleability of digital images is exploited to make tiny cosmetic changes to a film or television broadcast' (North 2008: 141). North's reading of these 'cosmetic' uses of digital technology suggests an invisibility of digital malleability that provokes further questions about the value of the digital profilmic image as Index. North articulates clearly his position that 'digital technology has assisted with manipulation, erasure and adjustment of images, but has not invented the idea that the image must be controlled and censored on its journey from recording to reception' (North 2008: 147). Understood in this way, the concept of Digital Fluidity points to a cinema that, although shifted, is still *cinema* first and digital second. North's articulation of the increased malleability of the image suggests that we ought to be theoretically cautious when considering the manipulation and mutability of the digital image. To the practitioner though, this mutability, this potential for cosmetic alteration, becomes a cornerstone within an enhanced and fluid mode of production I shall come to explore in relation to my own work.

We are entering a time where all cinema will be digital; will then cinema forever moving forward be known as Digital Cinema? It seems to me that a more appropriate term would be *Cinema* Digital. The cinema's apparatus itself has mutated and morphed to include the networked screen and in so doing the walls have expanded far beyond the universe described by Youngblood. As Wasson acknowledges 'One way to understand some of the changes digital technologies have brought to moving-image culture is to think about the ways in which streamed Web films index a distinct kind of networked cinema' (Wasson 2007: 81). Interestingly Wasson's reading figures historicity and the indexical as being an inherent quality of this new and 'distinct' (or altered) networked cinema. The presence of moving image media on the Web will in Wasson's view serve as an Index to the visual in the digital age, and I am

inclined to agree. This represents a new age in the modernity of the cinema 'the specificities of time in the age of capital and globalization' (Cubitt 2004: 6). The Deleuzian Time-Image has shifted to a new realm in the age of digital capital and globalisation, it is absorbed into the commodity fetish whereby the emergent entertainment industries of the twentieth century allowed for 'surplus time' to become commoditised. Cubitt can be aligned theoretically with Aumont and his insistence that we see light and not images, 'Strictly speaking things are invisible: what we see is not things but light; but the light we see is impure. Pure light is as blinding as darkness.' For Cubitt, in the cinema or indeed in all visual images:

> What we witness is instead the becoming-visible of light. So what then are we looking at when we look at recordings which fix into stability the becoming visible of light? The problem becomes increasingly urgent when we move from reflected (projection) to emitted light from electronic screens (Cubitt 2011: 28).

After the shifting of cinema's image, the expansion of the screen space and the fixing into stability of light the question of realism and perception again rears its head. 'The cinematic event cannot claim absolute truth, as photography had done. But neither does it deny all possibility of truth… Instead it insists on the revelation that truth is impermanent and exists not even in flashes but as the stuff of movement itself: time' (2004: 22). Cubitt acknowledges cinema's contradiction; that it has the potential to tell the truth yet it is also the stuff of fictions and lies.

> An image is a crack in the universe that proves its imperfection, the impossibility of unity, the impossibility of eternity. Now that we are in a position to understand the historical role of the moving image in the genesis of contemporary imaging processes. Movement is of the essence in imaging because there is no fullness to the image itself (2011: p30).

The concept of wholeness is central to the conceptualisation of *the Image* (both as art and ideology). In Cubitt's reading, photography teaches us to 'recognise the latency proper to all images', if we observe the components of the image i.e. technique and depiction as both simultaneous but distinct qualities. (2011: 32) There is a latency in the visual perception of a individual looking at an image as they decipher and interpret its meaning. But Cubitt points to a difference between the projected screen and the electronic emitted

one as they ‘fix into stability the becoming visible of light’. The notion of stability connects with the concept of wholeness and provides useful theoretical ground in regards to Cubitt’s discussion of the semiotics of zero and the pixel. Cubitt articulates that zero is not a quantity but a relation. The semiotics of zero are critical to understanding the completeness of the Digital Image and Aesthetic.

> Because we look back from an age in which images are encoded mathematically, and because in a digital age the humanities can no longer afford to remain innumerate, the cinematic present, the frames we can see on the screen rather than the separating framelines that stay invisible, can be considered as pixels, with the significant difference that these pixels are temporal, not spatial. The cinematic present, like the point of origin of graphs, can be given a number: zero (Cubitt 2004: 33).

The instability of the pixel becomes for Cubitt the perpetual source of movement, the fixing into stability the becoming visible of light. This fixing into stability, the reconstitution of the image suggests a certain ‘wholeness’, or ‘completeness’ to it that is denied in the definition ‘Digital Cinema’. Thus in turn further corroborating a digital materialist standpoint:

> The mathematical zero of cinema read from the age of the digital image is not a zero of emptiness and inactivity but its opposite: the sum of all activities (Cubitt 2004: 34).

Cubitt’s dense and mathematical definition of the digital aligns the zero of the pixel (the ‘sum of all activities’) with older forms of spatial and visual representation, a discourse that brings out stability in the ‘variability’ of Manovich’s ‘operations’. For Cubitt, the pixel becomes ‘the iteration of time’; ‘the cut’ becomes the objection of space (of ‘secondness’, perception and representation) and the vector (the position in space) the production of meaning (2004: 97). The mechanics of mapping screen space remain consistent with older forms of representation, further corroboration to the idea of continuity at play within Digital Fluidity. The question of perception, of ‘viewing’ and or ‘using’ media, means that we must ask not just where but also when is the object of the cinema? Theories of authorship complicate matters still further and this I see as another reason that *Cinema* Digital is a more appropriate term – the debates and philosophical reasoning behind

‘creative control’ and the interpretation of the image are as intrinsic as ever, no matter how, when and where images are made or seen.

The Computerisation of Culture

> It is often said that computers are "extraordinarily fast and extraordinarily accurate, but they also are exceedingly stupid and therefore have to be told everything." This process of telling the computer everything is called computer programming. The hardware of the human bio-computer is the physical cerebral cortex, its neurons and synapses. The software of our brain is its logic or intelligence, that which animates the physical equipment. That is to say, hardware is technology whereas software is information (Youngblood 1970: 185).

Lev Manovich bases his theory of new media on four key principles or trends. These are modularity, automation, variability and transcoding. For Manovich, these trends are symptomatic of the fact that we ‘are in the middle of a new media revolution – the shift of all culture to computer-mediated forms of production, distribution, and communication’ (2001: 27). Over a decade later it seems that we are still in the midst of this ‘revolutionary shift’, but almost certainly in a much more developed phase than the context within which Manovich wrote – think, for example, of the effect that touch-screen technology and the meteoric rise of the mobile device (smart phone or tablet) has had on the way we consume all manner of digital media, including film. Moreover, in the context of cinema, 2012 has revealed a decisive shift to the digital in mainstream cinema production, distribution and exhibition. For example, Roger Deakins has commented about the choice to shoot the fiftieth anniversary Bond film *Skyfall* (2012) digitally: ‘Right now I don’t see a reason to go back and shoot on film… And probably if I leave it much longer then I won’t have the opportunity, because it just won’t exist anyway.’ (Deakins in Tapley: 2012). As Bordwell has enforced full vertical integration of digital technology in global cinema is almost here; ‘We have passed the tipping point’ (2012: 10).

Manovich’s *computerization of culture* asserts that all cultural objects will now become mediated or transcoded to a digital format, the computer is situated as multimedia viewing device. Bolter and Grusin provide a slightly different reading to this ‘revolution’ of which Manovich speaks. They suggest that all any new technology can do is define itself in relationship to earlier

technologies (of representation). Defining ‘a medium’ as ‘that which remediates’, they identify two logics of remediation ‘the logic of transparent immediacy’ and ‘the logic of hypermediacy’ (2000: 21-22), Bolter and Grusin’s concept of remediation holds direct connections with previously outlined theories of realism through immediacy and ‘the appeal to authenticity of experience’, in their assertion that ‘a digital photograph can be as transparent as an analogue one. The process of digitizing the light that comes through the lens is no more or less artificial than the chemical process of traditional photography’ (2000: 110). Immediacy within digital technology becomes the basis for a new understanding of all photography. For them, rather than culture migrating to computer-based forms, contemporary culture is merged with new media. Given this merging, this fluid exchange, media do not and cannot operate in isolation. Digital Fluidity seeks to expand this point by articulating that interpreting the algorithmic digital image as a reduction or alteration of truth is purely a cultural decision, given that previous media types were also incapable of functioning in isolation.

Manovich also recognises that many of his principles are not unique to new media, indeed he connects the digital world with the birth of the cinema; ‘any digital representation consists of a limited number of samples. For example, a digital still image is a matrix of pixels – a 2-D sampling of space. However, cinema was from its beginnings based on sampling – the sampling of time’ (2001: p50). Manovich argues that cinema has always employed ‘discrete representation’, a description that integrates the discrete representation of digital imaging technology with that of the analogue indexical cinema offered by celluloid since both are concerned with sampling time. This metaphor extends beyond the capture device, ‘as media is being “liberated” from traditional storage media – paper, film, stone, glass magnetic tape – elements of the printed word interface and the cinema interface that previously were hardwired to content become “liberated” as well’ (Manovich 2001: 73). In reading the cinema through the lens of the discrete, the screen and its phenomenology have been “liberated” by new media and the *computerization of culture.* Manovich’s principle of variability states that a new media object is not something fixed, but rather ‘something that can exist in different, potentially infinite versions’ (2001: 36). Variability in this sense is

dependent on his first two principles, that of numerical coding or representation, and that of modularity, i.e. smaller elements that are built up to create a whole. For Manovich variability guarantees in the digitally/optically sampled time-image, a transparency and immediacy that Barthes and Bazin vested in the filmic image. Yet paradoxically it presents a profound challenge to cinema's indexical identity given the possibility that simulated/virtual visual environments and composited layers can be added to an image after recording, that a simulated reality *is not* indexically related to the existing world; 'cinema can no longer be clearly distinguished from animation. It is no longer an indexical media technology but, rather, a subgenre of painting' (2001: 295). Digital Fluidity addresses this problem by articulating that the interpretation of the algorithmic image as a reduction of truth, authenticity and indexicality is a cultural decision by the theorists who adopt this standpoint. The aforementioned debates surrounding the subject of realism and the image have been an integral feature of film theory for more than sixty years, regardless of the technologies used in the creation of moving image media. Furthermore, Digital Fluidity places digital technologies as offering an expanded opportunity for creating *more* realistic images and *fluid* workflows to the practitioner. This argument, which is key to this thesis, appears to be corroborated by Roger Deakins' comments on shooting *Skyfall* using prototype Arri Alexa cameras. Not only does Deakins see no reason to shoot on film, he elaborates; 'I think digital is a better representation of reality than film…film isn't quite as sensitive in terms of its color depth, the color contrast. You get more subtleties [with digital] than you do with film' (Deakins in Tapley: 2012). Deakins observes the synthesis and hybridity of analogue optics and digital capture by acknowledging that an optical viewfinder on set meant he was always confident in the images he was shooting.

The processes of automation and digitisation/transcoding should not be seen to dehumanise the digital, but in light of Youngblood's and Dawkins' unification of the computer with the biological we can see that the semantic framework for the production of the digital moving image remains a human algorithm. Human beings must design, build, operate and programme the digital and mechanical machines we use to capture, produce and distribute the contemporary moving image. The computerisation of culture is reliant on

the existence of culture, for Bolter and Grusin the process is one of assimilation; culture and new media are merged and cannot be separated. For Manovich the cinema becomes a new form again ultimately through a perceived sense of 'material' difference. Herein lies the inherent contradiction mentioned earlier in relation to the digital, as Bolter and Grusin articulate 'Repurposing as remediation is both what is "unique to digital worlds" and what denies the possibility of that uniqueness' (2000: 50). The rise of the post-industrialised culture industries, and of 'commodity digital film' seem to provide the evidence that today's multiple cinematic spaces of heterogeneous display and dissemination (multi-screen, multi-form, 'on-demand' cinema), present us with somewhat of a double logic, whereby the digital worlds we create are both unique and not unique. The bio-computer and the computerisation of culture are at the centre of this dichotomy. This presents us with a challenging philosophical conundrum that this thesis and its central concept of Digital Fluidity seeks to address by investigating the process of technological transference as one of hybridity and convergence. In extrapolating the similarities and differences between the analogue and the digital and investigating exactly *how* the modus operandi has shifted I shall further explore the redefinition of the Image by the digital.

Art and Organics in the Age of Digital

> What does it mean to speak of an individual as a medium? It implies that environments, languages, and technologies not only antedate the individual who is born into them but that individual identity is a node constructed in the traffic of communication (Cubitt 2004: 359).

As a filmmaker who believes that his research informs his own practice, perhaps the most important critical question my work seeks to engage with is: Does technology define me as a filmmaker? Or perhaps, rather more eloquently - does it determine/influence my practices or modes of production? In the contemporary mode of independent film one must embody a plurality of roles, be it artist, filmmaker, technician, documentarian, screenwriter/author, producer, and so on and so forth. Working with new technology can often become a process of discovering not what the technology *can* do but what it

cannot – and then working within or around these limitations; like Mette Hjort's idea of creativity emerging from constraint in relation to the Dogme 95 movement. Hjort states that 'the history of art abounds with examples of artists setting limits on their own activities' (2003: 33). However, she cites a relatively recent work by philosopher and political theorist John Elster, *Conventions, Creativity, Originality* (1992), as being amongst the first to investigate the idea of creativity emerging from the self-imposition of constraint. There are several factors at play within Elster's observations; crucially it is acknowledged that self-imposed constraint comes after other *existing* constraints. Firstly, the artist may be constrained by the limitations of the technology that he or she choses to work with. In the case of my first film, *Grasp the Words which Sing*, my use of a newly available DSLR camera allowed me to capture high-quality moving digital images on a stills camera, the initial constraints were the relative immobility of the camera and issues with sound. Secondly, Hjort points out that economic factors mean that 'most artists will have to frame their activities in relation to available *monies*' (Hjort 2003: 33). This is certainly the case within my practical work since it is all self-funded and created on a shoestring budget.

Thirdly, production deadlines impose a *temporal* limitation on the creative process, something that one can identify with producing creative films in an academic setting (both in terms of the *timescale* for production and the *timebase* of required 'total' duration of content produced). The fourth and final category is that of self-imposition. Constraints are divided between those that are either *invented* or *chosen* by the artist. Hjort then extends this idea of the creativity of constraint to the Dogme 95 movement, one of the earliest and most prominent exploitations of the potential of 'digital' cinema by a group of filmmakers working largely at the margins of the system. Hjort thus seeks to contextualise the manifesto and the seminal works of the 'brethren' as works of cultural resistance from within the context of 'small' national cinemas. Far from being apolitical, as some commentators have suggested, Hjort argues that the Dogme filmmakers represent an overt political challenge to the dominant global industrial force of Hollywood Cinema; 'Dogme 95, then, is best thought of as a form of cinematic expression that comes to us from, and as a defense of, the margins of cinematic production that small nations and

minor cinemas inevitably are.' (2003: 31). Hjort's observations strike a chord with my experience as both theoretician and filmmaker. They reveal important similarities between the contemporary independent mode of image production and the Dogme movement, and the idea that art can be born in the digital realm. In punctuating her argument with this politicisation, Hjort allows a reading whereby the idea of medium specificity becomes marginalised, configuring Dogme as being against the grain of Hollywood and so-called 'Classical' narrative. This has implications for my articulation that we are now in a new democratised period for the cinema – the claim has been made before (within the Dogme 95 manifesto and 'Vow of Chastity'), and will more than likely be argued again in the future. However, perhaps most importantly it reminds us that in creating works of 'art', the artist engages with political dimensions whether or not it is a conscious decision to do so. The affect of this theoretical underpinning on my practice has been to realise that in the (small country, minor cinema) context of the independent mode of production at least, one must embrace and 'mediate' the political dimensions of these theories and concepts.

For Cubitt, mediation is an essential part of the human experience and thus remediation in Bolter and Grusin's sense of the term is already an intrinsic part of the experience of being, 'neither societies nor individuals are conceivable without language, that is, without mediation' (Cubitt 2004: 10). Therefore the place of semiology is further clarified within the study of the digital image, the language of the cinema itself can be considered as mediation; and thus exists before the phenomenon of remediation as observed by Bolter and Grusin. The continued evolution of a language of filmmaking and cinema today is one of mediation that predates its own existence. Perhaps then rather than remediation, new media and objects of Digital Fluidity simultaneously offer a cross pollination between the 'indirect' analogue world and the discrete world of the binary and a continuity with celluloid in its meditations of self-exploration (*What is Cinema*?). The identity of a filmmaker could be defined as a constructed plurality, 'a node within the traffic of communication' as Cubitt puts it. By extension the interface of the cinema also becomes part of the identity of individuals and societies, they become simultaneously subject, object, viewers, participants, creators. This is

precarious ground theoretically as the claim that social change is caused by technology is viewed as a justification for capitalism's technologically driven excesses in the late 20th Century. Bolter and Grusin negate the charge of *technological determinism* oft put to Walter Benjamin, (implicit within classical Marxist thought) and the idea that mechanical reproduction has a profound effect on the fundamental nature of art, thereby destroying the work's 'aura'. They do this by proposing to 'treat social forces and technical forms as two aspects of the same phenomenon: to explore digital technologies themselves as hybrids of technical, material, social, and economic facets' (2000: 77). I would add to this that conceiving of the computer as a biological organic object allows one to further distance oneself from a technologically deterministic viewpoint. If we look again at Benjamin's work there may be further relevance to his writing in relation to Rodowick and Mulvey's fetishisation of the celluloid image as cinema's index particularly in regards to the concept of *aura*.

Benjamin states 'that which withers in the age of mechanical reproduction is the aura of the work of art' (1999: 215). This concept holds interesting parallels to the themes of loss and otherness surrounding normative digital criticism, especially since the idea of authenticity also features within Benjamin's notion of the aura and a 'presence of an original' (1999: 214). Authenticity chimes with the debates surrounding realism and the indexical quality of the medium of cinema I have previously outlined. Celluloid is viewed as the authentic, original and pure *art* form of the moving image in Rodowick's view. So what becomes of the cinema when it 'loses' its treasured object? When all cultural forms merge with the digital, within the multi-platform, multi-screen, interactive, multiple-format, heterogeneous environment of digital media, all are transcoded to multiple formats. What becomes of the work of art when it is constantly remediated, reformed, mutated? Is film's *aura* lost? Digital Fluidity features in the problem of infinite duplication, and variation of the cinema's object, and its multiplicity of mediations and display modes in cinema's newly democratised and fluid mode. To say that the cinema has entered a newly democratised mode is a deliberately provocative critical decision:

> Benjamin posits that technology creates a new kind of political or revolutionary potential for mass art, a potential that can also be dangerous, as his concluding discussion of Marinetti and the futurists warns us. Benjamin's argument that technologies of mechanical reproduction are politically enabling has its counterpart today in the claim by some enthusiasts that new media, particularly the Internet, will bring about a new kind of democracy (Bolter and Grusin 2000: 74).

Economies of scale demonstrate that the technology to produce moving images today is at the most affordable price point that it has ever been, it is democratised. It is also apparent that digital technology is almost at a point where it is fully vertically integrated in the global motion picture industry, as exemplified by Roger Deakins' interview quoted previously, and Bordwell's citing of the year 2012 as the 'tipping point' in this integration. The evolution of the Internet and the popularity of YouTube have liberated the moving image to the masses in the years since Bolter and Grusin published *Remediation*. Their warning heeds true - cinema may well be then the art of the index but in the networked age of the cosmology of the computer it has perhaps become a truly universal art. This has the potential to create as much harm as it does good in the long term. Universal in the sense of the individual having control over the distribution of their film but conversely meaning sundering control of the effects of this dissemination.

The effect of the democratisation of the moving image in the digital age has facilitated mass demonstration, public and civil unrest, and been instrumental in recent uprisings and the so-called 'Arab Spring'. But this is society merging with and re-appropriating technology. It is not technology determining the behaviour of the masses; it is a political, social, religious and civil collectivism that technology is implicit with. Technology is merely the carrier of the utterance. The potential for the effect of new technology to create new codification and signification within cinema's images is theoretically true. Discovering the limitations of a set of technologies and transforming them into a virtue is often the most creative way in which to approach the idea of technology in the creative process, and this is something that I will come to explore within my own practice.

Digital Fluidity – Celluloid is dead, long live cinema

Holly Willis begins her text *New Digital Cinema* with a 'characteristically provocative' quote from Peter Greenaway 'Cinema is dead; long live cinema' (2005: 1). It is a telling provocation that epitomises many of the arguments foregrounded in the critical concepts that have been discussed in relation to the idea of Digital Fluidity and the shift of moving image technology into the digital sphere. Digital Fluidity seeks to find a way of understanding and interpreting this shift that avoids a cultural pessimism and obsessive discourse surrounding the mortality of the cinema that Greenaway shrewdly refers to.

The screen has expanded from theatrical to heterogeneous spaces and devices and we are simultaneously witnessing a democratisation of available technologies, the combination of which that has sparked a rebirth of cinephelia and an era of renewed vitality and vigour in independent cinema, of which I consider myself to be part. My evidence for this claim is based on the vastly increased potential for and output of fledgling and independent cinema that exists in the digital climate. Working with a number of small organisational bodies that have been established in the past fifteen years or more in tandem with the democratisation of moving image production technology, I have witnessed and been part of this 'renewed vitality' and rebirth of cinephelia.

Today digital filmmaking allows independent cinema a voice that can be at once localised and global given that the potential for the work to reach audiences at festivals and online. Digital technology has afforded me as practitioner the opportunity to both create and distribute. The suggestion that digital technology is somehow less valuable than analogue based forms *as* index has served as the basis for contextual thinking surrounding the term Digital Fluidity. Conceptually it responds to the normative demarcation of difference and the cultural pessimism that has been applied to the digital (after the shifting of cultural forms) though the previously outlined connective areas of theoretical research:

1. Technology as a process: *Realism, Resolution and the Index*. Evolution rather than revolution.

2. *Cinema* Digital: The virtuality of perception and the expansion of the screen.
3. Unique-Hybridity and cross-pollination of media and variable forms.
4. Art and Organics: Technology and creativity.

It seems to me that the line of enquiry, which places celluloid as the chief Index of the 20th Century, falls short of a deeper understanding that images have always been an index upon the past. History demonstrates that technology does indeed have the capacity to reinvent cinemas past[4], however as a practitioner I am inherently more concerned with attempting to reinvent cinema's present and absorbing the past. In the following write up of the practical work I intend to demonstrate how the independent practitioner must embody a plurality of roles, producing work at resolutions that were previously unimaginable on relatively affordable equipment. Perhaps 'The Myth of Total Digital Cinema', might not be so much of a myth after all. Today individuals and groups, small nations and minor cinemas are able to write, produce and distribute their materials from a single laptop machine. To conclude, I shall offer a clear definition of what I am calling Digital Fluidity. Digital Fluidity is a *process* or *mode* of filmmaking whereby technologies are seen as offering the practitioner enhanced opportunity for creating new cinematic effects, aesthetics and narratives. In this sense the digital's redefinition of the Image is described as a fluid process. This process manifests an inherent continuity with the historic technologies and techniques of the art form - in tandem with offering an enhanced opportunity for creative decision-making and control over the creation and distribution of the Image. Unlike the concept of remediation, Digital Fluidity does not set media types in opposition but seeks to enunciate the positive effects of media cross-pollination and hybridity, through the discovery of new forms. The concept is a response and challenge to traditional theoretical enquiries where the digital is seen as a reduction or alteration of truth in the image; this is a cultural choice that is levelled along the precocious theoretical grounding of indexicality.

[4] See Dan North's book *Performing Illusions. Cinema, Special Effects and the Virtual Actor*, for more on this. Also Chapter 9 in *Fluid Screens, Expanded Cinema History and Histrionics: Vision Machine's Digital Poetics* Michael Uwemedimo and Joshua Oppenheimer, for Vision Machine.

Methodology

One of the key claims that I wish to promote in this thesis is that a distinction between analogue and digital imaging has been largely over-emphasised, or at least presented as an insurmountable barrier between digital and analogue. Sean Cubbitt discounts the claim of the existence of indexicality in both the analogue and digital image:

> The claim (made by Kittler [2010] amongst others) that analogue photographs are always visible from exposure to final print is incorrect as is the claim that analogue imaging has a privileged and indexical relationship to the real. Both lose the image to latency: one to chemical, the other electrical (Cubitt 2011: 31).

Figure 1

The critical concept of Digital Fluidity is born out of the interfacing of theory and practice; it has emerged out of both the theoretical research outlined in the first chapter and out of the practice that I have engaged in over the course of my research. This interdisciplinary approach has enabled a symbiotic relationship between practice and research; the following three chapters chart the development of my theoretical concept and investigate how

the ideas, thematics and terminology outlined in the critical introduction section manifest themselves in my own practical work.

The films are mastered in high definition and are shot using a modified digital stills camera: the Canon 7D[5]. The timing of the beginning of this PhD by practice coincided with the release of the 7D (just over a year after Canon released their camera the 5Dmkii). Over the course of a year these cameras were to transform approaches of both the independent and professional moving image producers across the globe who adopted this new technology with much vigour. For example, in Figure 1 (on the previous page) we can see a 7D that has been adapted to mount a Panavision cinema lens on it by Fox's *24* DP Rodney Charters. Canon could not have foreseen how popular their new video capable stills cameras would become in such a short space of time. By giving users the ability to shoot full High Definition video in a variety of frame rates with an extremely compact camera body and 35mm (analogue optic) photographic lenses, the 7D allows a control over the depth of field of the image that was previously unachievable using conventional (low cost) high definition camera systems. This bifurcation of technology pays testimony to my idea of Digital Fluidity representing the hybrid beginnings of the cinema with its inception in the minds of 'the fanatics, the madmen, the disinterested pioneers', that Bazin wrote of over half a century ago. The camera is once again (as is the case with the cinematograph) also capable of outputting (or screening/interfacing) the image to the audience. Similarly the computer is now both production studio and interface to the cinema. In practice one does not screen the final film from the camera but the immediacy of the ability to play back shots in the field has clear benefits to the contemporary practitioner. There is still an inherent latency to the image, foregrounded by Cubitt's introductory quote to this methodology section, 'Both lose the image to latency: one to chemical, the other electrical' (Cubitt 2011: 31).

As a filmmaker I have tended to focus on documentaries that deal with the subjects that I am drawn to, the theory being that one makes a better film when one cares about the subject matter. After the acquisition of the new camera technology I set about producing my first film keen to explore what

[5] For abbreviation purposes I will now refer to the Canon 7D in shorthand as the '7D'.

this new technology offered. *Grasp the Words Which Sing* (05.36 minutes) deals with the idea of public art and looks at two commissions in the city of Exeter by sculptor Michael Fairfax. The works, commissioned by the City Council, have caused controversy locally due to the cost, funding stream, geographic locations and aesthetic impact of the works. This polarisation and the fact that the subject was aligned with the perception of art and the economic climate made it a clear choice for my first piece. In this first project I began to explore the potential of this new camera technology, learning how it could best be adapted from its *form* as a stills camera for increased usability as a moving image device. Consequently, the style of this film is fairly static and is heavily reliant on tripod shots framing the narrative that unfolds. Broadly there is a progression in the three films from a static to mobile camera, that said, static frontal framing and considered movement are features of my entire body of work to date and this is something that I have attempted to cultivate as a stylistic tendency (and may hold its roots in a passion for silent films that began as an undergraduate studying film for the first time at the University of Warwick[6]).

The second film produced for the PhD is more in line with other work I have produced in the past[7]. *Picnic Pilgrimage* (9 minutes) harbours a journey narrative that investigates the mind-set and current project (at the time of filming) of Norman Croucher O.B.E. Croucher is well known in worldwide climbing circles for his incredible achievements as a disabled mountaineer. Having lost his legs in an accident on a train line at the age of 19, Croucher found himself learning to walk on prosthetic limbs. He became a mountaineer and has tested himself on some of the world's highest mountains. At the time of filming, Croucher was 69 years of age and still had no intention of coiling up his rope. This film represented a real challenge in terms of the safety concerns of filming climbing and achieving shots that would demonstrate how intimidating some of the terrain was. I engineered my own (mechanical)

[6] Several modules were taught by Dr. John Burrows whom I have to thank for his infectious enthusiasm for the silent screen Image.

[7] For example, during my Masters degree I produced a short film *The Nightless Night of Jerri Hart* (2005), which looked at a local busker musician who had developed the spinal disease *Ancholosingspondylitis*. The film investigates how the central character's life and motivation for music making have been affected by his illness and how he (Jerri Hart) has come to terms with his bodily transformation.

stabilisation system for the camera to enable me to wear it round my chest with my hands free for climbing. This hyper-mobile system would have been much more difficult to achieve with conventional analogue and film based equipment, and was ideally suited the size and low weight of the 7D. I produced the film with no other crew, simultaneously acting as director, camera operator and sound recordist. The film was fraught with difficulties, from adverse weather, to learning to climb and self-rescue effectively and thus the narrative was in part led by events. In *Picnic Pilgimage* Digital Fluidity manifests itself in a number of ways, post production techniques were employed in conjunction with the use of new camera technology to enable a fluid process of narrative construction.

The third and longest film in the portfolio of work *Not For Human Consumption* (45 minutes) represents a clear break from my previous films in the fact that it is a fictional dramatic production. However, there are still some key links that are worth noting here. Firstly, the film is improvised and gleans much from the approach of 'classic' realist British filmmakers Ken Loach and Mike Leigh, in particular Loach's work *Cathy Come Home* (1966) and *Kes* (1969), and Leigh's famed improvised acting style employed in *High Hopes* (1988), *Vera Drake* (2004), and more recently *Another Year* (2010)[8]. This tie with realism aligns the film with the critical theories and concepts outlined previously. In order to demonstrate Digital Fluidity in practice I analyse how the use of digital technology brought advantages in the editing and construction of the film, aiding and abetting my attempt to bring something new to the classic British style of socially driven realist narratives. I began by writing a script that featured a rapper grappling with a traumatic past history of loss and a plot revolving around his misuse of legal high substances, which increasingly threatened to endanger his promising music career. I then cast a number of actors in the most developed roles I had written for the script, the film was shot over fourteen days spread across a twelve month period, it was exciting to challenge myself to create something completely new to me as a filmmaker. Secondly, I worked as a young actor in film and television before

[8] For more on the movement from the British 'new wave' through to 'Brit-Grit' please see John Hill's chapter 'Continuity and difference in working-class realism' in *British Cinema Past and Present*, ed. Justine Ashby and Andrew Higson, Routledge, (2000: 249-259).

deciding on going to university to study Film Studies and so I have experience in working with directors as an actor, which I hoped would translate to achieving credible performances. *Not For Human Consumption* is only the second film that I have produced that required me to direct actors and consequently represents a challenge to me as a filmmaker – the idea being to push myself into breaking new ground in terms of film style and substance through the vignette of Digital Fluidity to test whether or not new technology has indeed allowed new ways of working and new aesthetic potential. The film would have been nigh on impossible for me to produce in this elongated mode of production without employing digital technology. The improvised approach meant that multi-camera setups would be required in order to ensure as much shot 'coverage' of the scenes as possible to afford a greater choice in postproduction.

The following three chapters analyse in detail the chronology of development of the camera system and the progression of editing technology over the duration of this PhD by practice. The first chapter – 'Digital Fluidity, the capture device, and increased resolutions' looks specifically at these topics in relation to *Grasp the Words Which Sing* and explores the notion of re-appropriation of technology and investigation of technological limitations in regards to creativity. The chapter also contains a brief textual analysis of the film and highlights developments to the camera system that emerged during its making, it concludes by connecting concepts and theories within Digital Fluidity to the production methodology and approach. The second chapter 'The mobile camera, the screen and digital post production' details the second film production *Picnic Pilgrimage* and articulates the depiction of motion in relation to theories of new media and the semantic framework for production – the human algorithm. The mutability of the digital image becomes a central part of the analysis of this film since there was a great deal applied in postproduction to achieve a vibrant and energetic look, this is investigated through detailed textual analysis and of the *process* of making it. Given that it was fraught with difficulties both logistical and practical and took twelve months to produce from conception to delivery I have ended up with a very different film to that which I set out to make. This is no bad thing. I had planned the film to be much longer but due to differences of opinion with the

film's subject and main participant this became impossible. However, the personal difficulties that I faced were to teach me valuable lessons as a filmmaker and indeed meant that I could begin to showcase how editing software and processes enable one to create a narrative in the most efficient and sutured manner possible. This relationship also highlighted some interesting issues to do with subjectivity and objectivity in relation to montage (creating the whole). The unknown elements in documentary production are what attracts me to it as an artist, the idea though that one can just observe reality and remain subjective is at best completely naïve and at worst a down right dangerous attitude to harbour.

The second chapter also deals with the questions of realism and truth and authenticity that are established in the critical introduction by exploring how the production was lead by the 'events' and linking these observations with Digital Fluidity. I achieve this by engaging with the film text in relation to the work of Stella Bruzzi and by investigating the dialectical relationship of performative truth at play within documentary filmmaking. This dialectical relationship is considered in tandem with the concept of Digital Fluidity and with the progression of technology towards ever increasing realisms, resolutions, and the aforementioned theories of the indexical that tend to favour a fetishised celluloid Image.

The third chapter 'Creativity and improvisation in *Not for Human Consumption*', is broken into three key sections, the first maps out the production - the idea of using new aerial camera technology, the choice to improvise, the workflow, processes and research involved. The second deals specifically with the challenging postproduction of the film and the integration of elements of production and post. This is articulated very clearly by the fact that I edited the film twice in two different editing applications, namely Final Cut Pro 7 and then FCPX. FCPX being the 10th anniversary of the Apple Inc. software that became accepted by the television and motion picture industry throughout the first decade of the 21st century. The arrival of FCPX contained a number of new features that held 'immediate' appeal for me as an editor, and has provided fertile ground for testing my concept of Digital Fluidity in a real world environment. The reason being that the software was launched and marketed as a paradigmatic shift – introducing new architecture for the

application's meta data engine through increased automation, transcoding, multicamera editing and a 'floating' timeline behaviour designed to streamline the process of assembling media in a digital NLE timeline. The third section of this chapter offers a focused textual analysis that seeks to highlight the key themes of Digital Fluidity in the work (Technology *as* process, the redefinition of the image by the digital, the computerisation of culture / vertical integration in production, art and organics in the age of digital inter-remediation).

Grasp the Words Which Sing – Digital Fluidity, the capture device and increased resolutions

Figure 2: The bifurcation of technology and the basic stills camera setup to record sound using a separate device.

The use of a stills camera to produce moving images represents a certain circularity that corroborates both the continuity and difference at play within Digital Fluidity; there is a return to the pure photographic origins of the art form and an enhanced and democratised opportunity to create aesthetically rich images. It has become a multi-media sampling tool that enables the operator to shoot in multiple frame rates, whether working for cinema at 24fps, or PAL for broadcast at 25fps, or indeed NTSC at 29.97fps. In stills mode the camera is capable of producing images of up to 5K resolutions. Despite the exciting and liberating implications of these features there were a number of limiting factors that had to be confronted and explored when choosing this camera system as a production tool. As I have mentioned in earlier theoretical analysis, these limitations would have an impact on how the production was engendered and on the kind of additional equipment required to produce a film. The first limitation that I had to deal with was the physical form of the camera. Stills camera bodies are shaped for holding in the hands easily and one can hold one's breath while depressing the shutter

and shooting images to achieve stabilisation. Transpose this to shooting video and there is an immediate and debilitating realisation that the camera shake will be too much to yield any usable material due to the direct contact between hand and camera body. This was a problem that needed to be remedied in order to use the camera as a serious production tool and it became a problem that I would obsess over for the next two years of production during my practice.

There is a clear lineage of progressive camera movement between the films, as I engineered increasingly sophisticated ways of stabilising the camera rig and adopted other technologies. As little as twelve months prior to shooting *Grasp the Words Which Sing*[9] I would have chosen a very different conventional tape based HDV camera (such as the Sony z1, Sony z5, or the Canon XH-A1). These camera systems are priced typically between £2000 and £5000 and were widely available in production hire shops throughout the country but do not yield 'cinematic' or 35mm optical results due to the lens systems they use. It was not possible to use 35mm photographic lenses with these types of cameras without the use of an expensive and unwieldy adaption kits. With the arrival of the Canon 5d mkii and the 7D finally a camera system was available on the high street for around £2000 that would allow the rich optical results achievable with 35mm film lenses, the advantages of tapeless acquisition and an unobtrusive, compact size, that was perfectly suited to independent/low-budget documentary production.[10]

The second major problem with using the camera for moving image production is the lack of professional (XLR) audio inputs. The camera features a 3.5mm jack audio input so recording sound from an external device to the camera, whilst possible, is not sufficient quality for broadcast and or cinema quality audio for a number of reasons. The camera adds a great deal of 'noise' to audio input in this way and there is no way of turning off the cameras 'automatic audio gain control' (AGC). Whilst many digital broadcast cameras have an automatic setting for audio levels as well as an automatic

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[9] The film is available to watch online as well as in the submitted DVD and Quick Time Media disks, you can see the film here https://vimeo.com/8805307

[10] Please see the additional research material section for communications between the city council and I as an example of this. When seeking filming permissions for the production it was useful to note that I was using a lightweight and unobtrusive camera system given that I would be working in a public space.

setting for exposing the image and even focusing the image, these features are something that the experienced and skilled operator turns off immediately when setting up the camera. Automation, one of Manovich's founding principles of new media, in fact presents the operator with a problem and not a solution, namely how to record sound for use with the 7D image files. The continued use of a historical production technique is required – the use of double system sound.

Mounted on the camera's flash hot shoe in Figure 2 (page 42) one can see the audio recorder (the Zoom H4n) with an XLR audio cable connected. This device records 48khz CD quality audio to low cost SD or SDHC memory cards, the audio files must then be synchronised to the picture in the edit manually using a clapperboard, or later via automated software (such as 'Pluraleyes'[11]). At the time of the production, automation software was not available for the purposes of syncing picture and sound but it is something that is frequently built into the NLE applications released in the past two years (something that I was able to use to full advantage in my final production *Not For Human Consumption*). This adds a task in postproduction and *in production* perhaps most notably, slows down the speed at which one can shoot. This 'limitation' of the technology acts as catalyst for a return to older (celluloid based) production techniques, further evidence of continuity within Digital Fluidity. A difference to earlier DV camera systems where audio was input straight into the camera and the operator did not need to think about sound. The resultant quality of the audio achieved with this setup of equipment is much higher than the quality of the audio that you get when using the older aforementioned cameras and their poor quality inbuilt microphone pre-amplifiers. This is a perfect example of working with the limitations of a new technology and turning them to your advantage. It also articulates the convergence between analogue, electronic and digital technologies that Digital Fluidity articulates. Slowing down the pace of shooting arguably results in more thoughtful images and a tightly focused crew. In combination with the 7D's restricted 11-minute file recording duration this results in an approach that has more in common with standard 35mm film

[11] For more information about this software see http://www.redgiant.com/products/all/pluraleyes/

reel lengths and timebase than it does with previous forms of digital and digital video cameras. This example thus supports my claim that Digital Fluidity features continuity with previous media, as well as offering the increased control and expanded potential for creation through the mutability of the image and its accompanying soundscape. The fluidity in production media acquisition chiefly lies in the immediacy of digital playback, but extends into post-production, as this is now something that can also be brought into the field. Digital Fluidity again suggests that everything has changed, and yet nothing has, to the practitioner this represents a 'best of both worlds' scenario.

Recording the audio to a separate device is as old as sound recording in the movies itself. The very nature of separate sound recording makes one much more aware of what sound you are actually recording when you come to shoot. As a filmmaker, since my Masters degree through research and practice, I have argued that sound is often more important than the image and accounts for more than simply 'half' of the experience of the cinema. Michel Chion demonstrates this idea in *Audio-Vision, Sound on Screen* (1994) through a reinvestigation of the critical concepts of film sound arriving at the definition; 'Film sound is that which is contained or not contained *in an image*' (Chion 1994: 68), sound itself is contained within the image, a sonoric-sign. The dual purpose DSLR camera offers exposure metering through the lens and a variety of options for setting up its colour space[12]. In contrast to DV and HDV tape based systems this represents a 'return' to the photographic process as 'the basis of cinematic representation', rather than its erasure as argued by Rodowick in the introductory quote to my abstract – 'for the first time in the history of film theory the photographic process is challenged as the basis of cinematic representation' (2007: 9). Automation is something that one uses, to a degree, but in terms of the 'pure' photographic process is not a feature that the cinematographer choses to use save for tasks such as file numbering and sensor cleaning for example.

This brings me to the next topic – that of sensors and resolution, the sensor is the most important part of the digital camera system. With the arrival of high definition the resolution of the digital image more than doubled to 1920

[12] The camera uses a REC 709 colour space – however my final production uses a LOG colour profile designed and coded for the Canon DSLR cameras by Technicolor.

x 1080 pixels making up the image in an aspect ratio of 16:9. The new frame size demanded bigger and better sensors that would in turn allow digital technology to offer a similar highlight response and sensitivity to light that cinematographers were familiar with from film. The cinema standard for digital delivery is written as 2K in shorthand and has a frame size of 2048 x 2048 pixels, an aspect ratio of 2:1. The 7D is shooting an HDTV resolution image and not a cinema resolution image. This point is complicated further when we come to think about image compression, as the mpeg 4 encoding utilised by the 7D does not meet the required technical specifications for broadcast. The files must be subject to post processing to transcode them to an editing and delivery format that meets these standards, another aspect of digital production that parallels the 'processing' of exposed film. Figure 3 below shows clearly the different sensor sizes – the 7D's sensor is marked as the APS-C sized sensor. Whilst smaller than a 35mm full frame sensor (such as that used in the 5Dmkii), it is markedly larger than the 1/3" sensors used in the older DV and HDV cameras I mentioned earlier. This means that the camera has a vastly improved dynamic range and is able to capture more highlights and shadow information than previous 'off the shelf' digital video cameras.

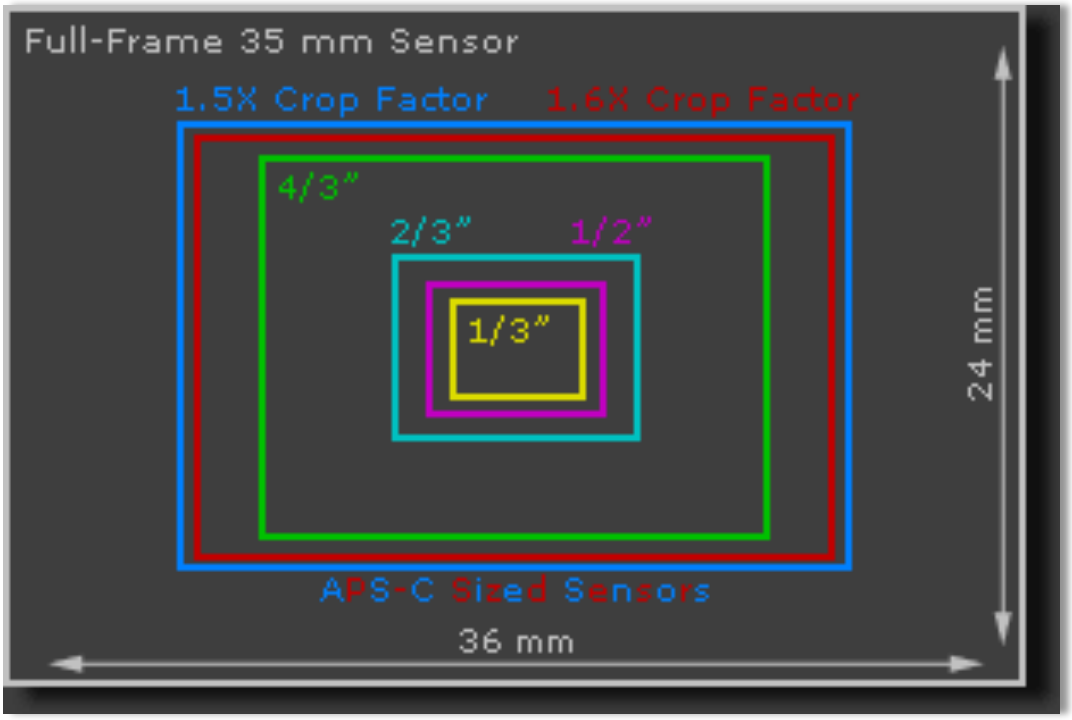


Figure 3

The idea of creativity coming from constraint (discussed by Hjort in relation to Dogma95) also relates to the concept of Digital Fluidity, since filmmakers have always had to work with constraints. The textual analysis I shall now offer is bias towards the analysis of creativity emerging from the constraint of the camera technology and looks at how it influenced the aesthetic choices and decisions made whilst shooting. The film begins with a disembodied voice over of the sculptor Michael Fairfax describing what he feels is the 'job of the public artist' – this close microphone sound adds an intimacy to the voice. The shot we see is a time lapse created from speeding up a long take shot in postproduction. The *Exeter Riddle* sculpture is seen in the centre of the frame with a strong backlight being provided by the sun. Indeed, the film only uses natural available light, a choice that was made in order to explore the 7D's potential in low or no lighting scenarios. This capability is directly related to the increased sensor size depicted above in Figure 3, (knowledge that would then be applied to my next film, *Picnic Pilgrimage*).

The decision to use a video time lapse at the beginning of the film with a fast shutter gives the appearance of a 'jittery' movement to the people passing through frame – an aesthetic choice that at the time of shooting was directly related to the constraints of the (then) unmodified camera system. Locked off tripod shots were initially the best way to get a static take from the 7D and it struck me as being the right choice to open with such an image that had the movement contained within the frame, especially since the film's 'objects' are static. The image serves to situate the sculpture within the local geography of Exeter city centre. The second shot appears to be handheld. In fact, the movement of the camera is stabilised simply by holding the tripod, the weight of which stabilised the camera. This cut from static to mobile camera can be seen as a microcosm for the progression of camera movement throughout the body of work created for this PhD. A key advantage of the DSLR - the camera(s) small form and weight - provided continuity throughout the films and the body of work, in that it offered (with modification) the potential for a hyper-mobile vision of immediacy, of fluidity and stylised movement. This immediacy and mobility connects with Digital Fluidity in a

number of ways, through the redefinition of the image, the expansion of the screen space and the democratisation of high-resolution imaging.

Grasp the Words which Sing is comprised of two key interviews with the sculptor Michael Fairfax and Cllr. Peter Wadham. It seeks to extract from the participants the approach of the artist, the controversial local politics at play in commissioning these public art works, and the notion of art and [art as] controversy; the notion of public ownership of art. The interview with Michael Fairfax is shot using a Nikon zoom lens that I took from an older 35mm film based Nikon stills camera, a low cost adapter was purchased to fit the lens to the 7D. This lens seemed to give a slightly softer feel in the ambient light of Michael Fairfax's home, where the artist was interviewed in order to keep him relaxed and open to discussion. This choice also enabled me to acquire lots of other coverage and cutaways of the drawings and plans that demonstrate the evolution of the idea for the sculpture. There are hand held cutaways of these drawings that were not filmed on a tripod. The reason for this was twofold – firstly there was the *constraint* that I did not expect that Michael's workspace was in fact in the top of the building, meaning that one had to climb a small ladder to reach the space. For simplicity's sake I chose not to struggle up the ladder with my tripod but instead simply hung the 7D around my neck. Upon seeing the drawings (a treasure-trove of cutaways for later when I came to the role of editor), I immediately knew I had to shoot them and so went about doing so holding my breath and pressing the camera viewfinder[13] into my eye in order to hold the camera steady. There is still a fair amount of quick jittery movement to these shots but it is controlled and for me adds a certain intimacy to these shots as they are such big close ups of the artists early drawing – something that I should imagine not too many people have been privy to.

It was fascinating to realise that the processes that Fairfax undertakes hold parallels to filmmaking, in particular the use of both analogue and digital technologies in the design process. For Fairfax too, fluidity and hybridity form a central part of his approach. The sculpture is *virtualised* through a

[13] This was another adaptation to the camera that I made after beginning the project, various viewfinders are available on the market that attach to the rear LCD screen on a DSLR camera that enable the user a more accurate focusing using the camera's display. I use the LCDVF, which was supplied by Glidetrack.

combination of visual trickery, mirrored realities, and the use of poetry and riddles. As the work and the installation are described we observe through the use of still images. Some of these were sourced from the artist and a few came from the council, their integration encouraged me to later use post-production techniques to create some movement and animation of these images in the form of digital zooms and push transitions where one image 'knocks' another out of the way.

Other techniques emerged due to the enhanced opportunity of 35mm optics, these included pull focus shots, time-lapse animation, and the use of shallow depth of field. When collecting vox pop style interviews to garner the pubic opinion and interpretation of the work I made a fatal mistake with my (then) brand new audio recorder, and managed to conduct around fifteen

Figure 4

interviews without actually recording them. This was a serious blunder that certainly reminded me to test new equipment and set it up more thoroughly before beginning a shoot. This meant that I had to use the camera sound for a couple of interviews as the points that the interviewees had raised simply had to be in the edit. At least the 7D recorded audio that could be edited in as postproduction audio filters allowed me to remove a significant proportion of the noise that existed on the waveforms. In documentary production generally speaking one finds there might be an understanding with the audience that

high quality audio is not always possible in the field. However, this was no excuse from a technical perspective.

The early reactions I received about the film in regards to the look in screening it to other research based PhD students was one of a reaction to the clarity of the image. A key comment was that the increased perceptive 'realism' to the image meant that one was observing much more detail in skin tones and facial features than with previous HD work (as in Figure 4 above). These observations neatly parallel Deakins' comments about shooting *Skyfall* digitally 'I felt I could play with things more in some of 'Skyfall,' because I could see with the optical viewfinder on set exactly what I was doing. It gave me more confidence to play, I think, than maybe if I was shooting film' (Deakins in Tapley: 2012). It seems that the key reaction to this film was in fact that the image quality had improved almost beyond recognition from my earlier DV and HDV based work. The film's aesthetic thus begins to enforce some of the key ideas at play within Digital Fluidity as it articulates an increased realism and the effect on the perception of art. Further connections lie in the hybridity central to its form, as it brings together 5K still images, timelapse, HD Video, the sculptures themselves (re-interpreted by the artist, the public, the filmmaker and the 'digital'), and digitally produced music.

Figure 5

The film contains another important parallel to the concept of Digital Fluidity as the artefacts that it places at the centre of its narrative are themselves mediations which speak with the idea of the *virtuality* of human perception. For example between 0.49 – 0.55, Michael Fairfax explains how the writing (on the sculpture) is only legible when viewing a reflection. So what we are looking at isn't actually there, it is a reflection that mirrors the reverse writing so we can read it in a *planar* or *virtualised* reality that parallels the key debates in Cinema Studies with the shift to the digital. In this textual way I hope to demonstrate how at a very early stage in this PhD by practice I began to connect the concepts of Technology *as* Process and the idea of a *Cinema* digital as this first piece clearly embraces these themes as well as the *Hybridity* of technology and the notion of *Art* and *Organics*.

Picnic Pilgrimage - The mobile camera, the screen and digital post production

Process

In January 2010 I met double leg amputee mountaineer Norman Croucher O.B.E. At the time Norman was in his sixty-ninth year and still keen to seek out new challenges and find in his words 'small peaks' to enjoy. We discussed the idea of producing a film that Norman could use for his public speaking and a film that I could produce for submission with my PhD. Norman was interested in producing a film that would serve as a *record* (or index) of his latest endeavour – a small mountain in the Pyrenees that had attracted his attention, the Agulles D'Amitages. This idea of producing a documentary as *record* (specifically a *record* of Norman's *present* that by screening the film would become *past* in combination with the narrative inclusion of histrionics of his life) directly connects with the concept of Digital Fluidity and the aforementioned debates surrounding realism and the index. I would be using digital technology to deliver a piece that had at its onset the idea of an indexically based reality – an expedition that would *become* the film meant

Figure 6: Overcoming the limitation that I did not have any prior climbing experience in Cornwall prior to the Pyrenees expedition.

that to a large extent I would be led in post-production by the events of the trip. The following write up investigates how this idea of producing a film

around an expedition was aided and abated by the mode of production that I call Digital Fluidity. I began by producing a treatment for the film that was used to seek funding and additional personnel by approaching various sponsors and funding organisations. Unfortunately, the economic climate and a number of other factors[14] meant that it was improbable that funding would become available.

The first major hurdle for me personally was to become skilled in climbing. I embraced the challenge with commitment in the knowledge that I only had a few months with which to become proficient enough to climb whilst carrying filming equipment. The camera's small form again providing the potential for hyper-mobility and immediacy whilst, at the same time (with mechanical adaptations) I had to ensure safety by attaching the camera rig to my harness so that nothing could be dropped onto people bellow. The film thus offered me a unique opportunity to gain insight into the mind-set of a climber and the potential to identify at least in a small degree with Norman's passion. Digital Fluidity and the transformation of the cinematic image and the notion of realism are, therefore, at the centre of these processes. The subject matter of mobility, the approach to image acquisition, and the need for an adaptable narrative allowed me to expose the key elements of Digital Fluidity. Eventually I came to place myself *as filmmaker* within the narrative since identification with the sport became an intrinsic part of my approach as I quickly became fixated with climbing and the complex ethic and moral issues that it can often bring to the surface.

There were a total of around eight days of filming that included a weekend trip to Cornwall to climb at the Lizard – which would eventually form the conclusion to the film *Picnic Pilgrimage* in the absence of acquiring the footage we had hoped for in the Pyrenees, due to adverse weather conditions. I also sought and received sponsorship from Alastair Brown and his company *Glidetrack*[15] in the form of a Glidetrack shooter SD camera slider. This piece of mechanical equipment is small and extremely portable

[14] Other 'constraining' economic factors were the timeframe before the proposed shoot in the Pyrenees was only four months (too little time to secure funding). After initial interest from the Spanish division of Toyota, the car manufacturer bad publicity the brand received at the time of approaching them meant that projects of this nature were not considered.
[15] http://www.glidetrack.com

and has the dual functionality of being a short (50cms long) camera track enabling a small dolly move and doubles as a means of shoulder mounting a DSLR camera such as the 7D. Whilst I didn't use this device in the Pyrenees due to the additional backpack weight, it was employed, in combination with both POV cameras and a small Flipcam throughout the film's final sequence. The expedition shoot was planned for 10th-20th June 2010. Myself, Norman, his wife Jude, and two other climbers Courtney Farmer and Jamie Boyle would form the team for the expedition. Unfortunately upon arriving in the Pyrenees we were to discover the worst spring season the range had

Figure 7: Elements of nature outside of my control impact upon both aesthetic and form in *Picnic Pilgrimage*

experienced in more than twenty-five years. I felt truly introduced to the world of climbing, a pursuit where one can become consumed with the completion of a goal you have set yourself and, in a similar way to producing a film, obsessed by it. The weather can always impact upon the amount of footage one is able to realise on a shoot (especially in documentary or location based shooting). However, the impact of weather conditions are further intensified in the case of this film, since the team's activities (the mountain climbing that was intended to *become* the film's *profilmic* reality) were vastly restricted by consistently poor weather during the trip. The obstacles that were encountered are an eloquent example of Mette Hjort's notion of 'creativity coming from constraint'. The constraint of the lack of *any* footage of Norman actually rock climbing in the Pyrenees had to be imaginatively overcome and

negated in the assembly of the film in post-production, and ultimately resulted in a different narrative structure and form to that which I had initially planned.

In the Pyrenees it was impossible to make an attempt at our primary objective (Figure 7 above) and so we descended the mountain. The feeling of

Figure8: Secondary peak *Pena Foratata* on the approach road the morning we set off to climb it.

disappointment we all experienced was tangible and made for a tense situation. Fortunately, on the penultimate day of our trip the skies cleared (this weather *event* becomes the backdrop for the time lapse title slide of the film) and conditions for climbing looked to be vastly improved. Despite a strengthening wind we packed our kit light (I did not take a tripod), for a speedy ascent of secondary summit *Pena Foratata*. This *event* or *record* was initially planned as the closing (dramatic-action) sequence, however *Pena Foratata* did not offer actual rock climbing and due to the time constraint of this being our final day in the Pyrenees there was only one opportunity to shoot this footage. Even when attempting this - our 'consolation' peak - we were prevented from summiting due to the wind conditions. The constraints encountered by elements both inside and outside of my control have had clear impact upon the construction of narrative and on the assembly editing of this film that I shall develop in the following section through a textual analysis that details the depiction of motion, in its thematic and theoretical senses. These constraints would have been there if I had shot on analogue film, the key point is that digital technology and processes allowed me to find flexible

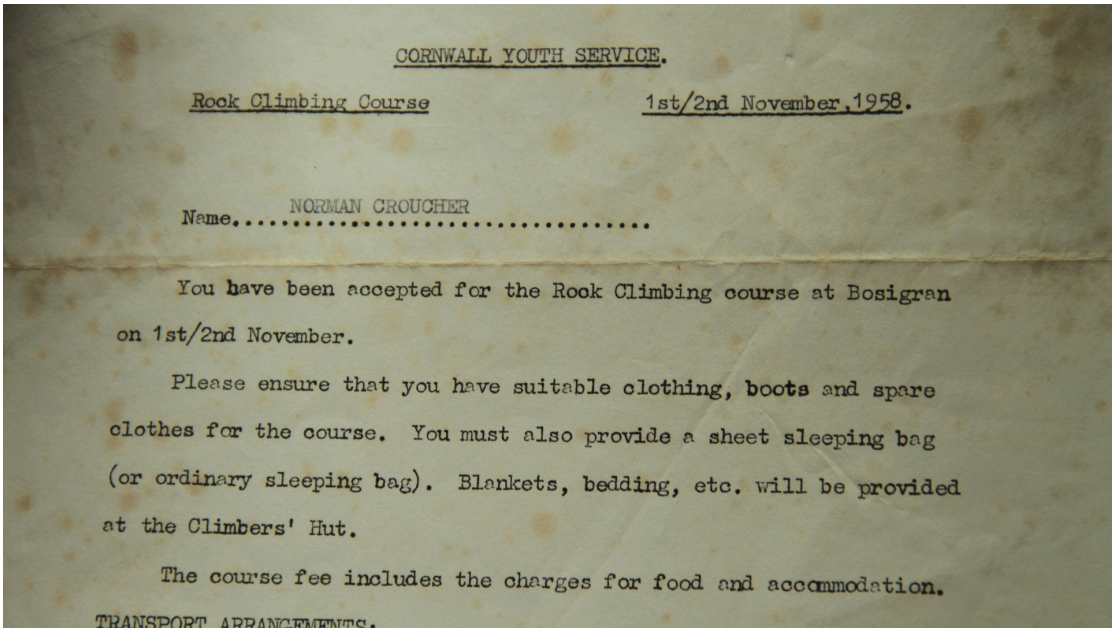
creative solutions to these problems in post-production and greater mobility in the field.

Picnic Pilgrimage began life in a traditional 'observational' sense by research and negotiation with the subject. My experience and approach connects with my assertion that technology operates via a process of hybridity and absorption; that defining the digital solely by material difference is an incorrect theoretical approach that discounts a digital filmmaker's appreciation of the historic techniques of film production, regardless of the media type employed. In researching the form of the film I watched a number of documentaries. The majority of these were connected to the subjects of mountaineering, ethics and or disability in conjunction with the notion of performance and documentary. The first of these was *Touching the Void* (Kevin Macdonald: 2003), which employs a combination of performative dramatic reconstruction, intercut with on camera interviews with the two climbers whose traumatic experience the film depicts. The narrative unfolds though a simple three-act structure that elicits responses, which Stella Bruzzi describes as being 'as primal as they are intellectual' (2006: 246). Bruzzi refers to the shocking nature and human impact of the narrative, which led me to dismiss the idea of using dramatic reconstruction to depict Norman losing his limbs fifty years previously. This was partially down to my realisation (during training and initial filming) that Norman continually re-historicised this *event* from his life and the story would change in subtle ways each time he told it. Another key reference was *Blind Sight* (Lucy Walker: 2006), which depicts the journey of six blind Tibetan teenagers to climb a mountain in the shadow of Mount Everest. This film relates to both issues of disability mountaineering and the ethics of climbing and is perhaps the film I came to align *Picnic Pilgrimage* most closely with, given that the narrative is formed from Walker's *recording* of an actual expedition. Finally, two very different films informed my planning and ultimate execution of this project. Firstly Danny Boyle's *127 Hours* (2010) came to represent the antithesis of my approach, given that its entire 94 minutes exists as a biographical reconstruction or virtualisation of a real event, that of canyoneer Aron Ralston's entrapment under a boulder in an isolated Utah canyon and gruesome self-rescue which involves amputating his own arm with a pen

knife. The dramatic realism of this film lies in the extremity of the experience depicted, some exceptional prosthetics and in Boyle's imaginative direction of a static event. Secondly, *Restrepo* (Tim Hetherington and Sebastian Junger: 2010), a gritty cinema verité journey into the experiences (*record*) and the effect of these experiences (through reflective interviews) upon young marines fighting in an Afghanistan. *Restrepo* fuses together a conventional observational approach (we know through the proximity of the bullets whistling past the camera that their lives are in *real* danger) with aspects of the performative. Elements of performance begin to creep into the narrative that Hetherington and Junger subtly extrapolate through montage to reveal intimately how the men deal with the horrors of war. I found it inspirational to see how Hetherington and Junger got close to their subjects in order to achieve natural behaviour and for the marines to accept Hetherington and Junger as one of their own. This is something that I attempted to cultivate in *Picnic Pilgrimage* through my commitment to climbing and through my research.

The Depiction of Motion – A Textual Analysis

When approaching and conceiving ideas for the film I placed the depiction of motion high on my list of priorities; both in terms of the approach to developing the camera system and in subject matter. The reason for this decision was twofold; firstly, this would allow me to integrate my ideas surrounding the concept of Digital Fluidity most effectively by demonstrating exactly how motion was captured in production and post, and secondly, it had more in common with my previous body of work. I was fortunate to find an individual and a narrative that encapsulated both of these desires, though the narrative became vastly condensed due to limitations that were outside of my control. As I have articulated by discussing theoretical concepts in chapter one, moving images are created in order that they may be seen, observed and interpreted; they are made to move. Throughout the creative editorial process movement of both subject, object and or camera has a great impact on the decisions and choices one makes. Movement bears upon montage.



CORNWALL YOUTH SERVICE.

Rock Climbing Course 1st/2nd November,1958.

Name. NORMAN CROUCHER .....

You have been accepted for the Rock Climbing course at Bosigran on 1st/2nd November.

Please ensure that you have suitable clothing, boots and spare clothes for the course. You must also provide a sheet sleeping bag (or ordinary sleeping bag). Blankets, bedding, etc. will be provided at the Climbers' Hut.

The course fee includes the charges for food and accommodation.

TRANSPORT ARRANGEMENTS.

Figure 9: Remediating Norman's artefacts from years spent on rock and creating artificial motion in post.

In *Picnic Pilgrimage* there was a vastly increased need for dynamic and interesting shot coverage (compared with the previous film), which in turn would maximise shot selection in post. This approach also became reliant on not just camera adaptation but also on the hybridity of media with the

application of digital, mechanical, analogue, and traditional technologies such as; radio, print and celluloid based photography. I collated a great deal of images from Norman's personal library that were transcoded, digitised and categorised for potential integration in the edit – the challenge was to use these conventional documentary elements in a new or interesting film style, through the employment of digital post-production technology.

Figure 10: Norman defies his body image, dramatic exposure of the valley below on the ridge of *Pena Foratata* and the presence of another camera in the shot articulates the profilmic Indexical nature of the climb itself.

The subject of mobility became immediately enticing to me as a filmmaker and has deeper connections to Bolter and Grusin's theory of *Remediation* and the concept of Digital Fluidity. In *Picnic Pilgrimage* the central character represents a *remediated* body, Norman has turned the extreme 'remediation' of the loss of his legs to his advantage by becoming a climber and defying his 'body' image (see Figure 7 above) – as a practitioner this is what makes him an interesting and *cinematic* subject. Bolter and Grusin articulate that 'the body functions as a medium: *through* traditional means such as choice of clothing and jewellery, as well as more radical ones such as cosmetic surgery, bodybuilding, and body piercing' (2001: 237). Although they discuss this in relation to sexuality and consider 'whether the possible desire for immediacy within the visual technologies of transparency might be an exclusively male desire' (2001: 236). This important articulation of the remediated body parallels with Cubitt's purporting of the individual self as

medium and resonates in *Picnic Pilgrimage*, 'neither societies nor individuals are conceivable without language, that is, without mediation' (Cubitt 2004: 10).

Norman lost his legs at the young age of nineteen, this permanent alteration (or loose 'remediation') to his body image had such a profound effect and would alter the course of his life, ultimately motivating him to become a mountaineer. Norman remediates through challenging perceptions of what it is possible for a double leg amputee to achieve. He also mediates his image in other ways. For example, he maintains a certain childlike charm through the 'quirky' addition of objects such as the felt bear sown into his hat that we can see in the interview at Commando Ridge where he first began to climb. I wanted to show what Norman's experience of climbing looked like through his own eyes and so I decided at an early stage to use the newly available GoPro[16] HD Hero camera, a low cost miniature wearable HD camera that would allow for first person perspective on the climbing. Instead of simply filming the climbing I would invite the audience to a position of empathy through this first person 'action' and virtualised point of view. The arrival of miniature 'wearable HD sports cameras' is an important articulation of Digital Fluidity. The *evolution* of micro-camera technology allows for perspectives seldom seen on film and more closely aligned with the world of digital video games, it represents a potential test bed for new aesthetic possibilities. This fresh organic view of action gives an immediate contemporary feel to the film's final sequence. By situating the audience in the first person perspective the image is invested with a sense of immediacy that speaks with the overarching schematics of Digital Fluidity. The perspective does not *exactly* show the viewer what climbing looks like through Norman's eyes but rather an approximation or a *mediation*, that is a new experience for the viewer nonetheless. Secondly the first person perspective brings together other cultural and visual forms that were born in the digital – namely the video game. This idea again resonates with the notion of realism and the Index – the idea that technology delivers ever increasing realisms is highlighted by the

[16] The American company has grown incredibly quickly in the past four years since the beginning of this PhD by practice and has subsequently delivered two upgrades to the camera I used in *Picnic Pilgrimage*. The camera system records in a variety of frame rates including the film's native format of 1920x1080 25p. Their use is now commonplace in broadcast worldwide.

fact that during the course of this PhD GoPro have released two updates to the HD Hero that offer the user greater control over the image and increased resolutions, again pointing to debates of the Indexical since the camera is designed to be worn – to simply *record* action as Index. The sequence of Norman climbing at the Lizard and indeed the film itself serve as a historical record to his achievements as a climber and will likely represent one of the later moving image records of him climbing given his advancing years and the bodily limitations that age inevitably brings. It will therefore (despite the pixel becoming the foundation for the reconstitution of the image in the eye of the spectator) serve as indexical signifier for both Norman Croucher as

Figure 11: Shooting with the *Flip Camera* 50 feet above the ocean at The Lizard in Cornwall, situating myself as filmmaker *recording* the action within Norman's POV. Establishing our relationship as being part of the film's narrative (albeit in a subtle capacity).

mountaineer and myself as filmmaker when seen in relation to the debates in film studies relating to digital realism and the indexicality of the image.

The use of this camera also enabled me to achieve car mount shots that would provide a means of punctuating the narrative with both my own journey of making the film and the film's journey itself. This decision was based on engaging with and deconstructing Rodowick's claim that 'the photographic process is challenged as the basis of cinematic representation' (2007: 9). This is precisely why I chose to be a participant in the film albeit to a minor capacity, a point most clearly articulated by the inclusion of a cutaway

that situates me as filming the narrative and unfolding action on the ridge of *Pena Foratata*. I want to the viewer to acknowledge the presence of the camera, as the participants do. The theoretical underpinning being not that one might achieve a 'total' realism but that there will be inherent resistance to the idea of 'authenticity through transparency' (Bolter and Grusin: 192). In *Picnic Pilgrimage* Digital Fluidity and my theoretical research suggested to me that I must include my own participation in the climbing and the conscious decision to use lightweight digital camera technology; that this was absolutely the right decision for me in the context of independent cinema with a limited monetary budget, but also in the context of practicality. I became part of the narrative as a *reflexive* decision based on challenging the notion of film's transparent reality. Engaging with the Bazanian question 'What is Cinema?' is about much more than attempting to challenge conventions and investigating the shifting of the cinema screen in the digital age. Having surrendered any hope of true objectivity in either analogue or digital formats, if we consider the celluloid image as Index, then the digital film object ought to be just as valued as Indexical signifier. I directly challenge Rodowick's claim that the photographic process no longer forms the basis of representation; in my opinion the process remains with the clear advantages of digital practice and improved artistic control. This is the key articulation within Digital Fluidity. To engage fully with Rodowick's claim in my view one must be situated within the narrative, even if at its margins, since the relationship between the subject and myself was central to the way in which I produced the film.

This film, above any other I have produced has revealed to me how participants in documentary films (regardless of the technologies involved in production) are empowered to one degree or another to construct and mediate their own identity when filming be it through choice of clothing, badges sown into clothes, or what they simply chose to omit or embellish when conducting on camera interviews. If the photographic process remains as it did before (whilst the camera is liberated by its reduced size coupled with increased resolutions) then the continuity between analogue and digital approaches is that the participants in documentary (and most likely the audiences as well) do not care about the medium, they care about their representation. This phenomenon occurs between the conception of the idea

and the assembly of the narrative and re-interpretation that occurs in the editing of the film. Further interpretations to the resultant object will occur after editing; in distribution and consumption it will be viewed and responded to in a plurality of ways. This dissemination of the film will occur not through theatrical viewing spaces but online through virtualised cinematic spaces.

If identity is constructed during the filming process then it will also, by extension, be deconstructed and reconstructed again in postproduction. This goes beyond the human characters we see on screen to all objects both man made and natural that we see. For example, there were a number of instances where I applied digital stabilisation to the moving images we see on screen. This is an occurrence of what Dan North has referred to as 'cosmtic' alteration and certainly a demonstration of the operation of compositing that Manovich features as an 'operation' of digital imaging. Digital stabilisation was introduced to Final Cut in around 2006, in Final Cut 7 it is known as 'Smoothcam' and enables the editor to stabilise otherwise unusable shaky hand held camerawork. In the case of *Picnic Pilgrimage* there are a number of shots that required stabilising on the climb that begins the film, this was mainly due to the strengthening winds we experienced on the mountain that day and the desire to include camera movement. The technique is another example of the Digital Fluidity and represents a single node within the 'spatial montage' applied to all the images in the film. I prefer the term 'nodal-compositing', which articulates *how* the editor, or colour grader actually works on shots in postproduction and explains the fact that there is generally a hierarchical relationship between visual effects and correction tools applied to an image ('*Digital Mutability*'). Other 'nodes' include primary colour correction, celluloid modelled gamma curves and vignettes to help expose, correct and enhance the image.

In applying the film's colour grade I went to the extreme limits of what I felt I could get away with. I wanted to articulate the vitality and vigour of the film's subject but also the idea within Digital Fluidity that the semantic framework within production and post remains a human algorithm – despite the many digital tools and measurement monitors available in post production today it is your eyes that you trusts the most during this stage of production; chemical computations in the brain of the editor/colour grader/director and

human discussions result in the final *aesthetic*. The processes for post-production prior to this final stage before the film is output, compressed and transcoded again for distribution, remain as they have done for over a century. The footage is logged, reviewed, ingested, and organised prior to its assembly in the editing timeline. This time acquainting oneself with the media is critical to my workflow and reminds us of Manovich's analysis of Vertov's database form in relation to new media. As an *editor*, I must attempt to detach myself from the event of filming and *detach* myself from shots that I invariably become *attached* to at the time of filming. I purposely use the word 'attempt', as this complete detachment or *objectivity* is never in my view possible to attain. At the very least one has to attempt to envision the whole as seen from the outside, to view one's work as if looking and reading from the outside. The dataset of browsing and organising a project's media lies at the heart of this process; it can help the independent filmmaker view their rushes with detachment.

That said, when shooting documentary there are times when the camera is rolling that you capture a moment that will certainly be included in the edit, such is the effect of envisioning a narrative around the observational style. One such moment in *Picnic Pilgrimage* occurred after we had completed a planned interview (in front of Commando Ridge) where Norman

Figure 13: Against the Bazinian deep focus realism; the prime lens and shallow depth of feel provides an intimacy as I finally find I have illicited a genuine emotional response from my subject.

had learnt to climb. I found I was less than satisfied with his prescribed responses in the planned interview. They have in part made the cut of the film (as he talks about how he started climbing and his experiences on Everest), but I needed to change tack in an effort to achieve more emotive response. Noticing the field of yellow Cornish wildflowers upon returning to the car I quickly attached my 50mm prime lens and sprung an unexpected question on Norman, exposing the image with a very shallow depth of field. 'How did other people respond to you on the course? Were they dismissive?' Norman responds at first with a 'stock' response I had heard him give before, quoting his climbing instructor as saying 'legs can be pretty handy when you're climbing', but he elaborates further and his pausing at the end of his retort as he says 'but others, wouldn't climb', feels genuine enough to me, and acts as a stark reminder that attitudes towards disability sport were very different when Norman began climbing after the loss of his legs. At the time I recall thinking that I had finally managed to illicit a genuine response in Norman, whom was characterised by being media savvy, and consciously mediating and re-historicising the narrative of his life whenever the camera rolled.

Realism, truth and authenticity

In *New Documentary,* (2nd edition) (2006) Stella Bruzzi articulates a shift from a traditional observational since the beginning of the 21st century towards authentic fictualisation and new observational documentaries. Bruzzi presents us with the idea that 'a documentary film can never simply represent the real, that instead it is a dialectical conjunction of real space and the filmmakers that invade it' (2006: 153). The logical extension to this analysis, Bruzzi argues, is a non-fictional style that focuses explicitly on performance. *Picnic Pilgrimage* is both observational and historical, an Indexical referent and a subjective take on an individual and the shifting nature of the *digital* image by a referential style that includes my 'invasion of' a real space. It seeks to observe its central characters progression and current project but also flesh out his individual history and indicate the legacy that he might leave the world of disability sport. It also aims to promote awareness of the importance of prosthetic technologies in a world where many are losing

limbs[17]. I aimed to be stylistically innovative through this combination of observation and history and seek a contemporary fast paced cutting style, whilst avoiding the potentially prescriptive 'reconstruction' of certain dramatic events such as Norman losing his legs. In the early stages of development I had envisaged reconstructing this event from Norman's life to begin the film. Bruzzi foregrounds the impossibility of objectivity on the documentary screen by acknowledging the performative quality to the 'truth' they declare to present:

> All documentaries, including observational ones, are performative in that the 'truth' depicted on screen only comes into being at the moment of filming and that, far from being equivalent to or a substitute for the truth that existed before filming began, all documentaries are the products of a dialectical as opposed to synchronous relationship between these two 'truths'. (Stella Bruzzi 2006: 222).

Bruzzi powerfully articulates the dialectical relationship of performative truth at play in documentary production. In *Picnic Pilgrimage* this dialectical relationship was apparent to me from an early stage. Based on this understanding I decided to give Norman a *Flip Camera*[18] so that he was able to record anything that he felt might be relevant to the film – in dramatic film production the director must manage the different types of actor personality and treat them accordingly. In documentary and working with all types of people and non-actors on camera the director's role is always to put people at ease and to manage certain aspects of their personas. My approach was to encourage the protagonist to express his own voice during the production - a choice that seemed most suitable in this instance given my early acknowledgment of Norman's constant mediation of his public persona and image. I decided to include how Norman lost his legs in a much more subtle way than by reconstructing an accident with a train, Norman simply says 'Don't drink too much at the railway inn', referencing the part alcohol had to play in his accident.

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[17] The climb in the Pyrenees was to raise money for the Jaipur limb project, an organization based in India that manufactures low cost limbs. http://www.jaipurfoot.org

[18] Flip Camera was popular at the time of production but has been largely superseded by mobile phone camera technology and video capable stills cameras. It records to an internal hard disk in High Definition 1280x720 in a variety of frame rates using H.264 compression. The camera was a perfect choice for Norman whom required a camera that would be easy to use and included a small screen for reviewing footage after he or his wife Jude had shot it.

The film is narrated through a combination of media, initially the film's audio is provided by an interview about the project on BBC Radio Devon. This allowed me to condense the narrative of the journey to the Pyrenees into the first few minutes of the film, a decision that was completely different to the planned sequential order. The *authenticity* (rather than realism) resulted in less shot coverage and fewer choices in postproduction, but this *economy* of media forces one to discover new ways of suturing the narrative. Creativity again functions in relation to notions of constraint where uncontrollable elements have an *affect* on the filming possibilities, resulting in less coverage and forcing a higher level of creativity, in terms of both camera and post production technologies. Through the editing process I was able to re-craft the film into being an anthropological and subjective look at an individual through the vignette of Digital Fluidity, and by locating myself, and the making of the film within the narrative itself (the *now* of the film is the film's creation and *existence*).

In *Picnic Pilgrimage* the shifting of the time-image (into the digital age) and its renewed or invigorated mutability corroborate Cubitt's reading that truth is impermanent and exists not even in flashes but as the stuff of movement itself: time. Personally for me *Picnic Pilgrimage* was an incredibly difficult project, there were disagreements between the subject and myself that meant the idea had to be scaled back. The film's *now* therefore mirrors the debates about the shifting nature of the image that I outlined in the section 'The Screen and the Site of interpretation'. My personal truth is therefore 'impermanent'; the *realistic* truth is that this was the most challenging documentary film I have produced to date and that I came to dislike my subject and his ethos – a testimony to the qualities of digital technology that have allowed me to re-craft the film into something that exists as more than a simple *recording* of a project that subtly looks at the psyche of the man rather than the success and pure spectacle of the project. The issues discussed are not specific to the digital and corroborate Digital Fluidity's continuity with analogue forms. These are human factors involved in collaborative art (working with others, creative collaboration, handling egos, compromising to complete the shoot) that have always been at play since (and a long time before) cinema was invented.

Creativity and improvisation in *Not for Human Consumption*

Themes and Approach

Whilst the first two films allowed for an exposé on Digital Fluidity's engagement with realism, technology *as* process, and the redefinition of the Image by the digital, they speak less about the notion of creativity facilitated by certain aesthetic and technological choices. As a practitioner, I have demonstrated how themes of the digital such as adaptation and hybridity of media and forms impact upon the creative decisions I make; but this process is not solely about analysing and understanding the constricting factors. When preparing to write a narrative film for the first time, I decided from the onset on a fairly radical improvised approach. I wanted to create a work that fully utilised and exemplified the fluid mode of production and the differentiated hybridity that Digital Fluidity outlines; this meant considering realism, interpretation, computerisation, art and organics and the impact of technology on creative output.

I began by drafting a screenplay to help me establish an idea of narrative direction, or at the very least some characters, relationships, situations, histories, locations and spaces. This screenplay would then become a framework for casting a small number of actors and beginning to shoot the film. Initially, I attempted to completely ignore any notions of constraint when conceiving of the project, generating ideas and concepts was a process of *inclusion* rather than exclusion. My approach to the conception of the creative idea and producing a script and/or treatment was to research, write and discover broadly what it was I wanted the film to enunciate and then explore and exploit creative opportunities through fluid experimentation. This would be achieved through the choice to improvise and via the integration of production and postproduction technologies and processes; a key symptomatic trend within the osmosis to the digital, an inherent factor within Digital Fluidity's articulation of technology *as* process, that I shall expand upon later in this section. I did not limit my imagination in creating the film's hypothetical universe since the screenplay itself was simply a framework – a base starting point. That said, I was aware when writing that I would end up improvising and thus I needed to remain mindful of the impact of this creative

choice when writing certain *stylistic* elements. The use of improvisation was grounded in the name of achieving performative realism, a fluid narrative mode that comments on a genuine *social* issue, or current (affairs) subject matter. There were several documentaries in existence that had been televised that looked at the issue of legal high substance misuse and the problem of legislating against it, but never a dramatic film, and certainly not an improvised one. This creative decision would allow me to work with non-professional actors and free them from the situation of performing rehearsed dialogue, which can often result in unconvincing performances. There were certain *stylistic* ideas that I held in mind when writing that were influenced by this spontaneity as follows:

> 1). The film would employ the long take in a meditation on Bazin's articulation of its uninterrupted truth and wholeness (Bazin's 'direct image of time' (1945:198), a comment on the privileged indexical link to reality and the concept of a Total Cinema that allows for the camera to roll and the actors to perform.
> 2). A fairly static (often necessarily multi-camera) camera style would be punctuated and framed by a dynamic camera that would go beyond the hyper-mobility I had achieved in *Picnic Pilgrimage*. A relationship between the image and the character's psychology of movement would be established from the beginning of the film.
> 3). The initial narrative would be linear; post-production technology would be used to facilitate a non-linear narrative, edited 'whole'.
> 4). Space and landscape would have an *affect* on the characters; nature would be audible but not visible (save for landscapes).

The third idea was instrumental in my decision to write a linear screenplay, as this would allow for a rough chronology of narrative events. I would then be able to develop key scenes from the screenplay and decide which chronological events and characters I thought were achievable and *necessary* and which were best suited to use as back-stories to assist the actors in both the understanding and development of their character's

journeys and histories[19]. The script is included in the additional supporting materials section but here it is sufficient to note the key character, spaces and concepts to emerge from it as follows: Dan King; in the script he is a rapper but the narrative fleshes out a back story for Dan that is present in the final film – that of a traumatic past story of grief and loss of faith. Dan meets Sam Palmer (or Sam Hill in my original script), a 19-year-old student whom I initially created as secondary character to Dan (the protagonist in my script). She has a more stable background than Dan but also with absent parents and was initially conceived as a love interest for Dan. I also devised Sam's best friend Jodie at this stage of development, although her narrative function again shifted and matured through the production process. Dan King's father the vicar is also present in the original screenplay but completely absent from the Image in the resultant film. This character (much like the medium of the cinema *digital*) is both indexical and virtual – a historical presence in the narrative that exists within the Image, and virtual as his actual existence in the world of the film is as *absent* father outside of the frame. Other than these characters, key inclusions in the final film that were present in the script are the idea of an accidental death complicated by the presence of legal high substances, but instead of showing it explicitly it is slowly revealed and implied from an early stage. From the conceptual beginnings I had an idea in mind for how I wanted the film to begin and the location I wanted to use. The location, an ancient hill fort and surrounding moorland are described in the script as a 'beautiful wasteland'. This is the first location choice that was transcribed directly from my initial screenplay. Other than this location the church, the head shop, Sam's car and a very brief number of shots of the couple at the beach are the only other locations that remain in the final version of the film.

Beyond the Hyper-Mobile camera

To create high production value, dynamic camera angles and innovative moving imagery without a budget is no easy task. I realised that if I

[19] Later a chronology of events would become intrinsic to creating a shooting schedule for the main narrative shoot in order to plan the correct times of the day to film at given locations and in order to facilitate costume, hair and makeup changes.

wanted to corroborate the concept of Digital Fluidity in practice, to articulate a democratisation of available technologies and expose new potential for aesthetic techniques and styles then I would need to produce work that contained exactly that – namely new aesthetic and filmmaking technique that was facilitated by digital technology and human ingenuity. The aesthetic goal was thus to produce, through dynamic movement, a camera vision that would provide digital moving imagery that is inventive and experimental at the very least and providing a test bed for new cinematic language at best. At the same time the concept of Digital Fluidity and the theorietical ideas that it unities suggest that whether consciously or not there will be inherent hybridity and historical continuity within the work. As a theoretically informed practitioner I actively sought to borrow and re-interpret (rather than remediate) from other artforms and visual media, and contrast the different aesthetic approaches with my own visual, directorial and editorial style. Theoretically this led me to the path of wanting to go beyond the hyper-mobility and hyper-mediacy that I had achieved and demonstrated in the previous work (through the use of point of view in *Picnic Pilgrimage* for example). This mobility would frame and become juxtaposed with a narrative of stillness and contemplation – of the long take, of experimental form, and a deep routed psychological trauma, revealing a naturalistic acting style where the words and dialogue would become less important than the character's interior thought process and the affects of their natural surroundings, spaces, and histories (or internal Indexes).

I had the idea of a sequence that would use a fluid long take or aerial style image, moving through woodland to introduce one of the film's key locations at the start. The camera would also track the character of Dan running through the woodland – a detachment that would serve as his 'dream', or 'premonition' of a bad event that was going to occur, or had already occurred. I researched a number of options for achieving a fluid camera style that would offer up something fresh and new – perhaps unsurprisingly these came initially in the form of mechanical devices that have been around in the production industry for many years. I managed to loan a low cost *Steadicam* replica manufactured by an EBay trading company DV Shop 23, however it did not perform as one would hope. I spent a few weeks

adapting the rig so that I could acquire some usable flying shots as I realised that *linking* movement would be essential between scenes that would become necessarily static, or whose staging would be in a sense constrained by the multi-camera and improvised approach[20]. But to simply use a *Steadicam* rig to increase production value would not demonstrate how the new technology allowed new creativity. It would only serve as a comment that we can now use lighter weight cameras on *Steadicams*, in any case the one I had was capable of lifting a 10 Kilogramme camera system – ironically I found myself adding weight to the DSLR in order to fly the camera and balance the rig. I improved the functionality and speed with which I could switch between, slider, tripod, and *Steadicam* by the addition of a standardised quick release plate to the three mechanical devices. This improved speed and functionality would be critical when working with actors and a larger crew allowing for minimal disturbance to the camera setup when it needed to change. The *Steadicam* would be useful, but after a great deal of experimentation, practice, trial and error, and reading many a 'build your own' blogs[21], I discovered a new direction and focus for my desire to create something new and unseen.

As a child I had been interested in remote control electronics, thinking back to this experience one day, I had a very exciting conceptualisation. I had seen on one of the RC web sites[22] that there was a new emerging market – that of drone helicopters (initially sold to hobbyists). Unlike single rotor helicopters these are much more stable in flight and to a degree easier to control and to fly. This UAV (Unmanned Aerial Vehicle) technology was available for development and it seemed easy to acquire. I thought that if I paired a small aerial drone with the GoPro HD Hero camera I had employed on *Picnic Pilgrimage* and a simple gyro-stabiliser then I had the potential to create some extremely dynamic flying camera movement. A camera that was capable of morphing between *Steadicam*, dolly, crane, and helicopter. Furthermore, due to its small size it would be able to fly in close proximity to the actors. I spent another few weeks researching and investigating the

[20] These were mechanical adaptations, namely: Shortening Main Post, Changing Bearings in arm end, embedding an HDMI cable, adapting a monitor mount for monitoring, and increasing the support offered by the vest.
[21] http://www.homebuiltstabilizers.com was a valuable source of information for modifications to the Steadicam, but the forum is offline at the time of writing.
[22] http://www.buzzflyer.co.uk

potential problems I might face with using this type of technology. It became complicated very quickly. As today's microprocessors are powerful enough to include GPS (Global Positioning Systems) data navigation, many of the drones that are on the open market are capable of autonomous flight. This in combination with their ability to fly above a ceiling height of 1000ft means that their (legal) use is governed and regulated by the CAA (Civil Aviation Authority). I therefore realised quickly that to utilise this technology, to design, build and licence it myself would be impossible to achieve without significant investment. It is not just the aircraft that must be signed off by the CAA, the pilot and all controls also require legislating, licencing and insurance.[23] By coincidence I was speaking to a technician friend about the flying camera idea and he told me about the work of father and son team Jonathan and Chris Watts at British Technical Films. I was aware of Chris' dad Jonathan's work in natural history but had not heard about their latest project *Skybot*. My eyes lit up and several phone calls later we had set up a meeting.

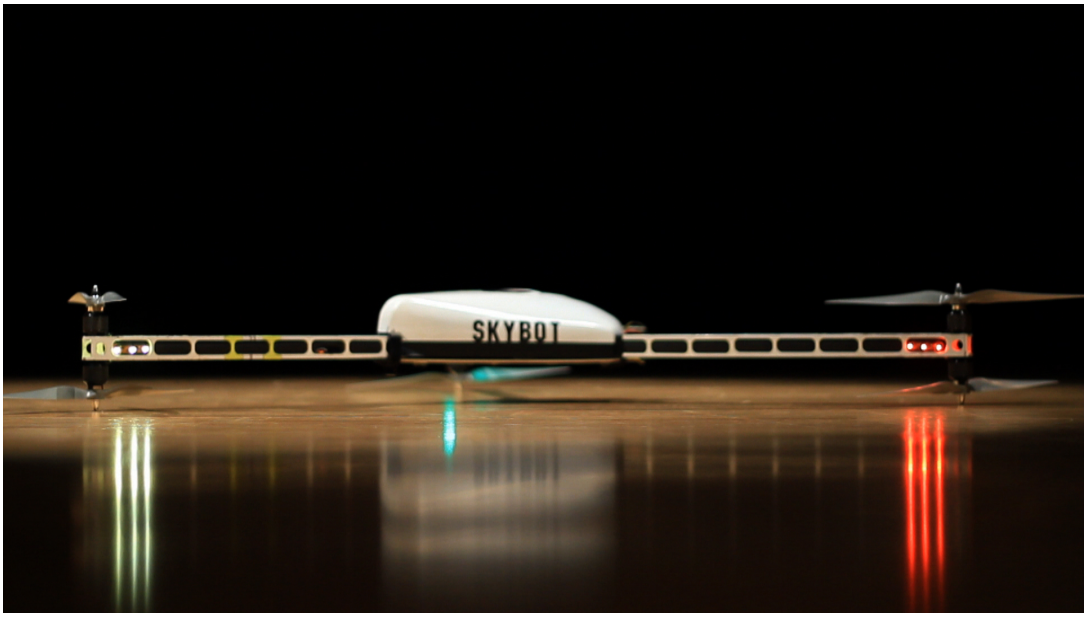

Figure 14: British Technical Films' Skybot mkii

I agreed with Jonathan and Chris Watts that we could do some kind of exchange between ourselves for using their services in a small part on my

[23] I estimated a setup cost of around £15,000 for legal fees, insurance and licencing. One could purchase a UAV to fly with these permissions for anything between £3,000 and £20,000 (excluding camera systems).

production.[24] I developed an excellent working relationship with Chris and he would come to be the main camera operator on the final key film shoot that occurred a year after we went to the woodland to shoot the opening aerial cinematography that opens and frames the film. Stylistically I hope that its use engages with the themes and theories embraced and discussed by Digital Fluidity, most notably the convergence of technology and the advantages of technological miniaturisation, as this democratisation of technology liberates the camera skyward. Importantly from the initial conversations we had, the first question British Technical Films wanted to ask was not *how* I wanted to use the flying camera platform they had developed but *why*? I explained that the reason was twofold; firstly it embodied various themes from my critical concept of Digital Fluidity, and secondly, that it was able to represent the characters I was portraying through a psychology of shot and movement. The freedom of the *Skybot* camera in the wild moorland landscape represented the freedom that the character's found in the use of legal high drugs. It would serve as to provide a psychology behind their mobility and immobility.

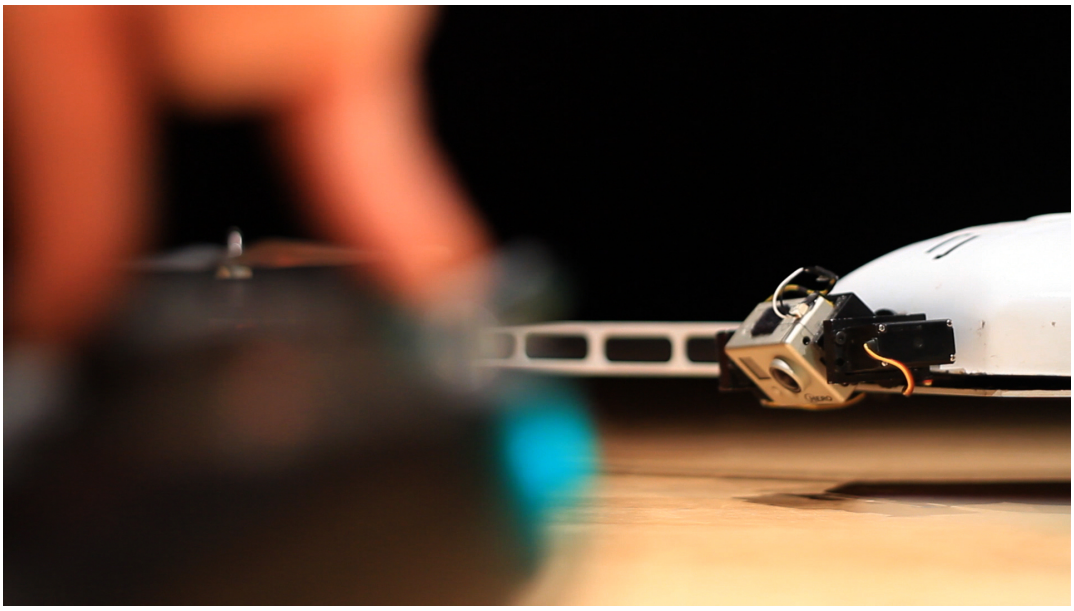

Figure 15: Remote control over the tilt function of *Skybot's* onboard camera – full radio linkup to a mini monitor on the gyro-controller gives the camera operator on the ground an image direct from the camera in the air.

[24] British Technical Films first used *Skybot* for cinema release on Werner Herzog's celebrated 3D documentary *Cave of the Forgotten Dreams* (2010). I edited a show reel of some of the footage they shot for this film as part of this exchange. You can see the reel here: https://vimeo.com/23967658

The *process* of technology with the advent of drone cinematography is again one of convergence, various technologies collide and conform to bring about a new way of controlling and imagining camera *sight* and camera *movement*. Moreover, the particular technology being employed also enhances the idea of a *cinema* digital, as the resultant image contains remediations from the virtual worlds of computer games and from the fully virtual digital worlds that Rodowick and others argue remove the privileged indexical link to reality. This movement also embodies Digital Fluidity's unique-hybridity of digital media and the alignment with the organic and the human – given that a human being piloted the quadcopter and hexacopters flown in the production of *Not For Human* through hand eye coordination alone. The remote control nature of such a device inevitably brings a parallel to the interpretation of the cinematic image and the concept of authorship - the film's creators remotely controlling or rather influencing the audience's perceptive engagement with the text.

Working with actors – Developing the narrative

Initially I cast the two most important roles, that of Sam and Dan. I sourced both actors through Exeter University as I decided this would be best for availability and cohesion with the resources I had to hand, it would also minimise travel expenses. I cast a second year drama student Kirsty Profitt in the role of Sam and Jonathan Craze, a final year drama student, in the role of Dan. I had initially attempted to find a non-actor who was a rapper to play the role of Dan but after meeting three local rappers who had the talent to pull it off I found that unfortunately they were not reliable enough when it came to the commitment involved. For this reason, I resolved to hold auditions at University and after meeting only a handful of actors, (the response was fairly poor) I decided to cast Kirsty and Johnny on the basis that they had worked together in the past before University and seemed to gel well on camera. I did not want them to be influenced in any way by the script that I had written for several reasons. I wanted them to work autonomously (at this initial stage) with creative ideas, but also develop improvised *dialogue* without allowing them the opportunity to see any pre-written material. I therefore chose not to

disclose the script to them but instead spent a full day of development investigating the characters and asking them to generate new ideas for narrative (based loosely around the backstories I had from my initial screenplay). This development occurred in conjunction with a writer I had assistance from on *Grasp the Words Which Sing*, Julian Preston. Julian has a background in writing for television and I felt it important to involve someone with relevant experience in the practice of narrative and character development. Another advantage was that Julian had no emotional attachment to preconceived ideas or situations, as again I had only described the basic narrative idea to him[25]. After a day of mind mapping the characters' histories and investigating the psychological issues associated with legal high substance misuse it became apparent that the character of Sam and her involvement in the legal high scene was a more interesting and subtle narrative to pursue. Taking this on board it was decided that Sam would perhaps be the 'bad influence' on Dan and not the other way round as I had initially written. This represented a more original take, since Dan was the obvious character to lead the other astray. The story became much more about the deep routed potential psychological effects of taking the drugs and of the fallout from Dan's death in suspicious circumstances, Sam's journey became darker and the idea of her implication in his death was born.

This initial day of development was followed by four days of solid shooting with the two founding characters. Unfortunately, I had been let down by several people that were due to help me during these four days so I was forced to work alone and simultaneously act as director, cinematographer and sound recordist. With so many different camera setups and locations in mind for the week this fact had a knock on effect on the amount of rushes I was to achieve, resulting in an additional shoot at a later date with the actor playing Dan. This created certain challenges in post production, most notably in cleaning up and digitally fixing, editing, or removing audio interference and glitches in radio microphone channels and designing around, smoothing out or removing camera handling sound (the result of often having to shoot with B

[25] I had worked with Julian in a freelance capacity on corporate productions. We became friendly and discovered that he had coincidentally written part of a series of *Children's Ward* ITV (1998) I had performed in as an actor at the age of sixteen.

roll on board camera sound with a necessarily handheld setup). The lightweight camera and the adaptations I had made to the stabilisation systems over the course of the first two films, combined with the ability to replay takes immediately in the field facilitated this approach. Furthermore I could cherry pick when I recorded sound and if necessary direct the actors from behind the camera as it rolled; the film's narrative also suited a centrality of the portable and handheld camera as it reflects the agitated mental state of the central protagonists. Although physically demanding, this methodology proved successful and I managed to shoot the majority of the scenes where we see Sam and Dan together, all of the scenes where we see Dan at Sam's flat, and finally the material of Sam finding Dan in the woodland. During this initial week of production I felt fairly satisfied with what I had achieved single handily but became aware upon reviewing the rushes that some of the acting was not at a high enough standard. I may not have correctly identified this problem at the time of filming due to the fact that I had too much to focus on, acting as cameraman and director at the same time I failed to really concentrate on the performances. I tried wherever possible to portray character's internal movements and progression without the need for dialogue. It is interesting to note that the one scene that remains in the film (with Sam and Dan delivering dialogue) is in the woodland scene where they kiss (Scene 13). In shooting this scene Chris Watts was on location for filming the aerial shots of the two characters running and so was able to provide camera assistance, which freed me up enough to extrapolate a natural performance.

Through another six months of post-production development (which I shall comment on in more detail in the following section) and some additional shoots with the character of Dan King, I decided to change the narrative and subordinate the character of Dan. The key reason for this was a lack of commitment on behalf of my actor. Having failed to achieve what I required from his character in the first shoot it would be another four months before he was available again for reshooting. The subordination of his character was based initially in the inadequacies of his performance, though I came to find a directing style where I managed to achieve a realism to this; often through removing the delivery of lines and interiorising the character's emotions. The

reworking of Dan was something that was perhaps initially driven by this dissatisfaction, but it gradually became clear to me that his narrative was far less interesting and relevant to the overall context than that of Sam. The film's central narrative drive should now become about how her relationship with Dan and legal high substances psychologically affects her character. I also decided that I would not direct multiple actors again without a minimalist crew at the very least. The process of directing an actor is far more involving than directing an individual in a documentary, their personalities and motivations need to be managed in different ways and it is not possible to do this correctly when operating other technical equipment. Furthermore, the intimate nature of directing improvising actors required my total and complete concentration, which was not always possible with the camera in my hands; it would certainly not be practical when staging scenes with more than two actors. The principal shoot to acquire the central body of footage would not be attempted until I felt certain that I could achieve what I needed to produce a deeper and more meaningful story. This process saw the integration of production and post, a revised treatment, and careful thought and planning in terms of both logistics and crew; key foundational elements of an approach that relied on Digital Fluidity and its organic production mode. This shoot was not to occur for ten months after the initial rushes were acquired. Therefore it made sense to create a final narrative where the time*frame* was distanced somewhat from the events depicted previously.

The narrative development first took the form of further research into the issue of legal high substance misuse; I was grateful for the advice of Devon and Cornwall police who were knowledgeable and willing to share their experience of the issues. I wanted the story to resonate with some of their real world examples, to enforce the alignment of technology with discourses of progressive realism within film theory and the concept of Digital Fluidity. I had now developed the idea of Sam's implication in Dan's death by devising her purchasing of the 'legal' highs (that turn out in the film's present to be an outlawed substance, Mephedrone[26]). The events and technicalities of the

[26] This mirrors the reality of the drug of Mephedrone, which was initially a Legal High substance until the Conservative government outlawed on 16th April 2010. For more information on Mephedrone and its reclassification under the misuse of drugs act please see http://www.drugscope.org.uk/resources/drugsearch/drugsearchpages/mephedrone

police investigation were explained in great detail and I resolved to focus the narrative on the psychological breakdown of the central character Sam. From the discussions with Devon and Cornwall police I devised the other protagonists – Detective Inspector Morton and forensic Psychiatrist Dr. Francis Wender. The film would now begin after Dan's death and focus on the psychiatric rehabilitation of Sam and the police's role in this rehabilitation and their subsequent investigation of her as the principal witness in Dan's 'Drug Related Death' (or DRD to use the police acronym). Sam experiences psychological breakdown after consuming a vast amount of drugs after panicking and leaving Dan on the moorland, and we begin the film by gradually revealing her mental state to the audience.

Having reworked the screenplay, refocused the narrative and created new characters, I then used the popular website Talent Circle[27] (http://www.talentcircle.org) to advertise for actors to play the newly created roles [Dr Francis Wende, DI Morton, and Sally (the care home manager)]. Fortunately, this resulted in a good response within a few days of placing the advert and I knew immediately when Fleur Poad responded for the role of Dr. Wende that I had found the character of Francis. Fleur is a professional actor who has studied various improvisation techniques including the Meisner technique, a concept developed by the American theatre practitioner Rudolph Meisner that is developed around Stanislavski's behavioural techniques[28]. Fleur was perfect for the role being half German, the right age, passionate about the directorial approach and professionally qualified. This was possibly the key learning experience from the first shoot – working with non-professional or unpaid actors one must absolutely qualify each and every person based on their talent, enthusiasm, visual suitability, availability, and commitment to the idea and approach. If an actor (professional or non-professional) is not fully committed to the project then they will never deliver a believable or *realistic* performance, and worst of all one might be let down

[27] I was aware of Talent Circle when I cast the first two roles from Exeter University students, I was initially keeping costs down by using local students. When casting the adult roles I had to broaden my search to a national level given that I needed an actor (especially for the role of Dr Francis) whom could deliver a credible performance but who also looked right for the part.

[28] For a brief explanation of the Stanislavski technique please see http://www.acting-world.com/method.html Stanislavski pioneered a behavioural acting system that could be learned that has come to be known as 'method acting'.

completely. This is another example of Digital Fluidity's articulation of continuity and affiliation with the historic techniques of the art form, a human aspect that relates to realism and *achievability* of one's artistic goals.

There are three key events that make up the majority of the film's 'linear' narrative, as follows:

1). The visit to the woodland – a beautiful wasteland which gradually reveals a traumatic past event.

2). Meeting with Sam at a private psychiatric hospital to asses her mental state and viability as a witness, and gain an understanding of her relationship with Dan. Within this there is a subplot that provides some relief from the tense discussions between Francis, DI Morton and Sam. Sam's best friend Jodie is somewhat guilt ridden having been a part of Sam's initial introduction to the legal high scene whilst at University.

3). The film's 'conclusion' - Sam's subsequent caution for purchasing the former legal high substance – *Mephedrone*. This aspect provides the narrative with some form of closure and in so doing demonstrates the blurred line in both legality and reality that the 'legal' high drug scene epitomises.

Surrounding these linear but distinct events within the diegesis, we intercut to experiences, moments, memories and imaginations from the past that persist in haunting Sam. The film's past becomes constantly relived by the character of Sam as part of the present (the ever presence of the traumatic past). The spectator is invited to enter her visual and mental point of view through the use of sound and cutaways that reveal the narrative truth to the audience, a story of episodic psychosis induced through trauma. I applied this idea of a gradual revelation to the film as a whole and directorially to the individual scenes as constituent components.

The drive to achieve performative realism has its technological parallel in the historical alignment of new technologies with the promise of increased realisms (as discussed previously). So for me, the choice to improvise holds a direct theoretical and dialectical relationship with the choice to shoot digitally on the Canon 7D, albeit a choice that is helped through economic constrictions outside of my control (as was the choice to use non-professional or expenses-only actors). I have demonstrated that despite this apparent constraint there are ways and means to negate and re-imagine such

restrictions, such as the use of the consumer GoPro camera on board a multi-rotor helicopter, or by continued adaptation and willingness to experiment with mechanical apparatus. It also points to a further parallel that is an indicator of the convergence, continuity and hybridity of analogue and digital technologies that expands upon Cubitt's observation of the continued latency of the Image. There is a similar latency to the digital image, and also a file *limitation* on the individual 'take' recording time of the cameras – an 11-minute duration. This duration, as mentioned previously, is more in line with a standard 35mm film reel than it is with a perceived endless supply of reusable digital media. Meaning that on set I had to maintain the actors focus on moving the scenes forward, being conscious of the *limitation* of duration of recording[29]. A practical limitation that was augmented by the fact that actors would tend to either become tired or lose concentration when improvising for this extended period of time. This presented me with a specific directorial challenge, as I did not want to put words in the mouths of my actors rather to allow them to surface only if and when they had genuinely experienced an emotion or internal movement.

The concepts of *credible*, or *believable* and *realistic* acting are the antitheses of *hollow* acting that lacks *credibility*. These ways of denoting a 'value' to the actor's performance expose a similarity between *performance* and the theoretical discourses that Digital Fluidity engages with. How do we as spectators value and judge an actor's performance? If we take the binary oppositions outlined above then a final parallel to my theoretical underpinning surfaces; that of the concept of 'wholeness' or 'fullness'. In *Not For Human Consumption* the stability of the image, (the becoming visible stability of light) becomes fixed through an often static long take, where the actors are liberated to create the 'whole' of the cinematic image through their 'total' or 'full' engagement with the character, and editing becomes to a degree subservient to this. As Michael Rabiger has commented in *Directing Film Techniques and Aesthetics* 'hollow acting usually results from the players and

[29] I have discovered several explanations for the limited recording duration of individual takes as follows: because of EU regulations if the camera has longer recording times it is classified as a video camera and Canon wish to market it as a stills camera primarily with video capability (this potentially changes tax duties as well for importing into Europe). It might also be due to the heat generated by the camera's dual processors during extended periods of operation. 16GB card can record 48mins of 1920X1080 25p footage; solely the take duration is limited to 12minutes. (Similar to a film reel).

their director treating the dialogue as the body of the scene. Words are only the surface outcome of something happening deeper inside the speaker' (1989: 68). In an effort to expose the organic hybridity that Digital Fluidity foregrounds, the words of the actor were at once treated as 'surface tension', and yet also necessary in order to have a story at all. In multi-camera setups that covered the film's major 'conversational' style scenes (chiefly scenes 12, 14, and 16)[30] the second and third camera would be 'roving', I would operate the main camera shooting the close ups of Sam; Chris Watts operated the mid wide shot (setup on a dolly), and second camera Alex White took control of the close ups of Dr. Francis. I tended to attempt to acquire enough footage from improvising no more than four takes on individual setups, as I realised that once we had gone beyond this number of takes the performances began to flatten. Through the film's collision of tenses (sheets or episodes of present in combination with the past) the process of montage within a contemporary NLE (non-linear editing system) has allowed me to integrate the multiple takes into a seamless sutured narrative and remediate and reconstitute the performances that were to a degree 'Indexically' acquired. Montage has morphed into becoming part of the production workflow and the cameras 'unadulterated view', married to it rather than divorced from it. Montage itself has become performative, rehearsed, tried and tested before the contemporary practitioner arrives at the creation of the whole.

The Erasure of Post-Production

The idea of performative montage holds a significant value in regards to Digital Fluidity. Firstly, it speaks with the notion that as an independent practitioner one embodies a plurality of roles and secondly it outlines a base level quality of digital non-linear editing and digital media in general – the fact that the *process* is non-destructive. Within the digital editing environment one is empowered to create as many different versions and 'cuts' of the film as one sees fit, as well as experimenting with 'looks' exploiting the increased control over the dynamic range of the image that the digital microscope now offers. This works on a micro-level as well as a macro one within the context

[30] For extended Scene breakdown list please see the additional supporting materials section.

of desktop video editing and this specific film and is something I shall return to shortly in discussing the power of multi-camera editing in FCPX. The postproduction of *Not For Human Consumption* began on the first days shooting that occurred, keen to engage in the role of DIT (Digital Imaging Technician) from the word go and to investigate how various transcoding processes might afford a better quality to the (relatively) low resolution of the GoPro media. Furthermore, ingesting the rushes into the edit system as a film is in production allows one to log the footage and effectively begin to create an Edit Decision List. Approaching post-production in this way allows one to experiment in an organic manner with different shot patterns, colour grades and image sound relationships at this very early stage.

From Final Cut Pro to Final Cut X

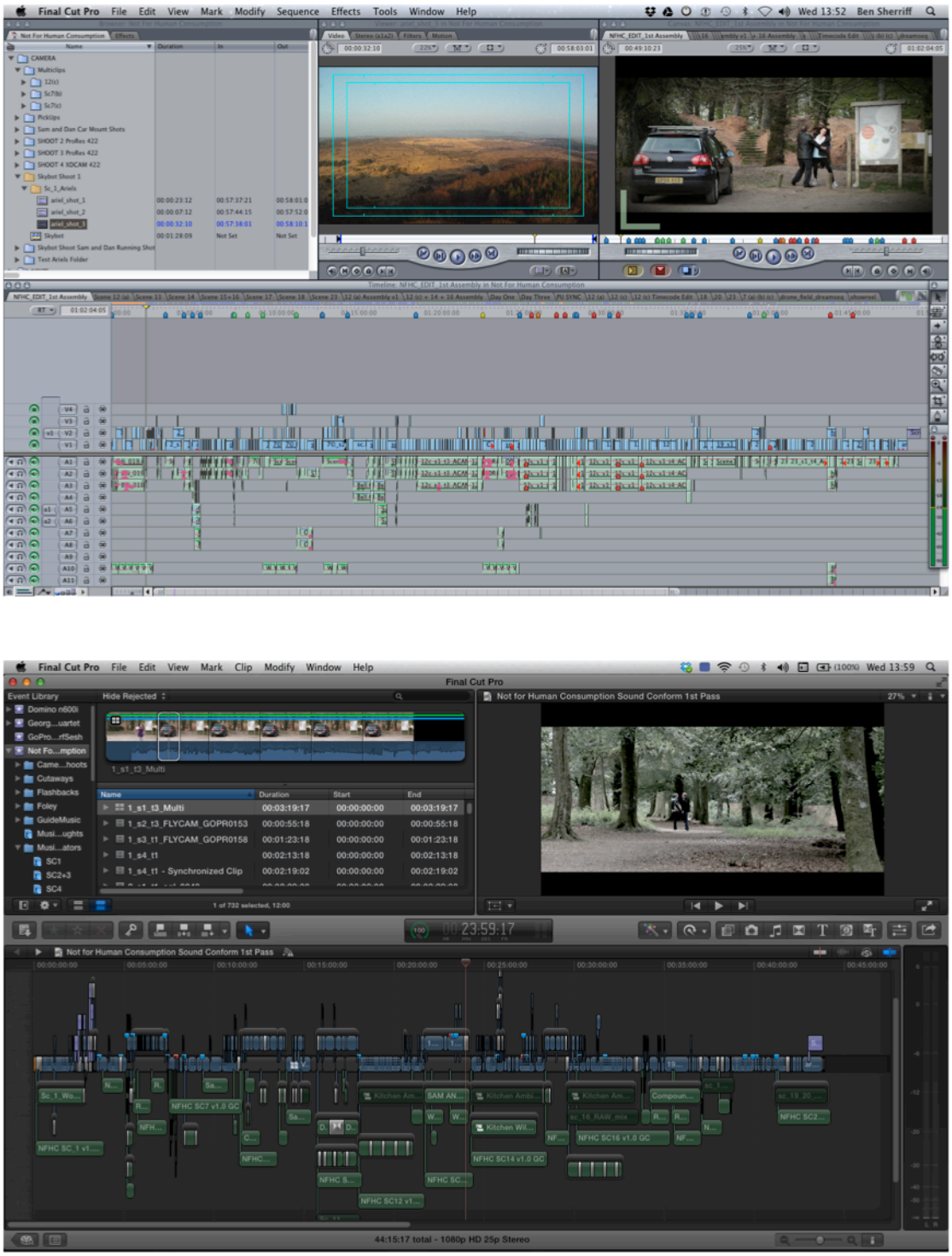

Figure 16: Streamlined floating timeline without tracks allows for quicker simpler editing with less visual clutter.

After the first shoot with my two central characters I spent several months editing and becoming acclimatised with the footage in Final Cut Pro 7.

During the ensuing months of development with the narrative, theoretical research, and planning for the second and major shoot Apple released a new version of their flagship professional video production software, Final Cut Pro X[31]. Upon its release it was greeted with a very mixed reception in the production world, it contained some new features that were immediately enticing whilst at the same time seemingly removed many 'professional' features that had existed in previous incarnations of the software. It has an organisational browser (or meta-data engine) that is unparalleled with any other software currently available and a level of automation that provides editors with a clear workflow advantage. As an experienced professional editor I know that the quality of an edit (whilst obviously dependent on the rushes to be edited) is primarily constructed at the stage of organisation, to understand the rushes to the highest degree results in the most creative and informed decisions. It is for this reason that the erasure of postproduction, or perhaps more accurately, through the *convergence* of production and post that Digital Fluidity's articulation of technology *as* process allows an enhancement of creative and artistic potential. If one methodically logs and organises the media to a finite degree, then one is able to focus on telling the narrative with the best possible available media, when one does come to suture together the first real assembly edit.

Firstly, the film was edited in Final Cut Pro 7, as my 2008 Mac Pro would not run the new software due to it being 64bit in architecture. Inspecting my rushes, engaging in the role of DIT in the edit, I soon discovered a serious technical problem with the separate sound I had recorded for the film's key narrative scenes (Sc12, 14, 16). I had borrowed an Edirol R-44 multi-channel audio recorder that unknowingly had attached an incorrect frame rate to the audio files (23.97fps). This in combination with long takes and manually synced clapperboard caused sync drifting to occur after three or four minutes of synchronous picture and sound. After amending the meta-data of the wave files and relinking the new media to the data on my hard disk the problem still existed. One of the many aspects of useful automation built into FCPX is the ability of the software to sync image and sound by analysing the waveforms of

[31] For example on their web site Apple describe the software as being 'revolutionary', http://www.apple.com/uk/finalcutpro/

the files and so I looked at sending the edit from FCP7 to FCPX. This became the immediate source of another technical challenge and revealed another quirk associated with the use of the DSLR camera, the lack of continuous timecode. Due to the lack of continuous timecode I was unable to send the edit from FCP7 to FCPX via XML (a popular file interchange format), or data alone. This meant that I would need to re-log all of the media acquired in fourteen days of shooting again in the new software in order to begin editing. Needless to say this was an incredibly time-consuming process that could have been avoided if I had added continuous timecode data to my video and audio clips at the beginning of the initial FCP7 edit. The *process* of editing in such an elongated mode was then (as technician initially and then later as director), about investigating problems that arose or were created in production and allowing new fledgling and developing technology to provide the solutions. It was a bold decision to embrace the new software that came about by the need to fix sync problems, however once I had made the decision I soon realised that Apple's new paradigm would allow me to articulate how Digital Fluidity relates to the developments within and teething troubles of the new paradigm. Through the process of producing the film I have come to see FCPX as being a versatile production tool for efficiently assembling ones project, and I can say with some degree of confidence that its hyper-organisational abilities have resulted in a more engaging and dynamic narrative that makes a better use of a higher proportion of the rushes than the edit I created in FCP7.

The two most powerful articulations of its improvements that greatly assisted in a fluid production mode are the ability to multi-camera edit (performative montage) in real time, and the introduction of a floating or 'trackless' timeline. The later of which meant that I ordered and assembled my narrative using several '*Storylines*' rather than tracks. The idea of a 'floating' timeline simply refers to the fact that Apple designed into the timeline interface a process of automation whereby none of the media in a given timeline can lose sync, and where edit commands that were once input by the editor are now a 'behavioural' functionality of the interface.

The Human Algorithm

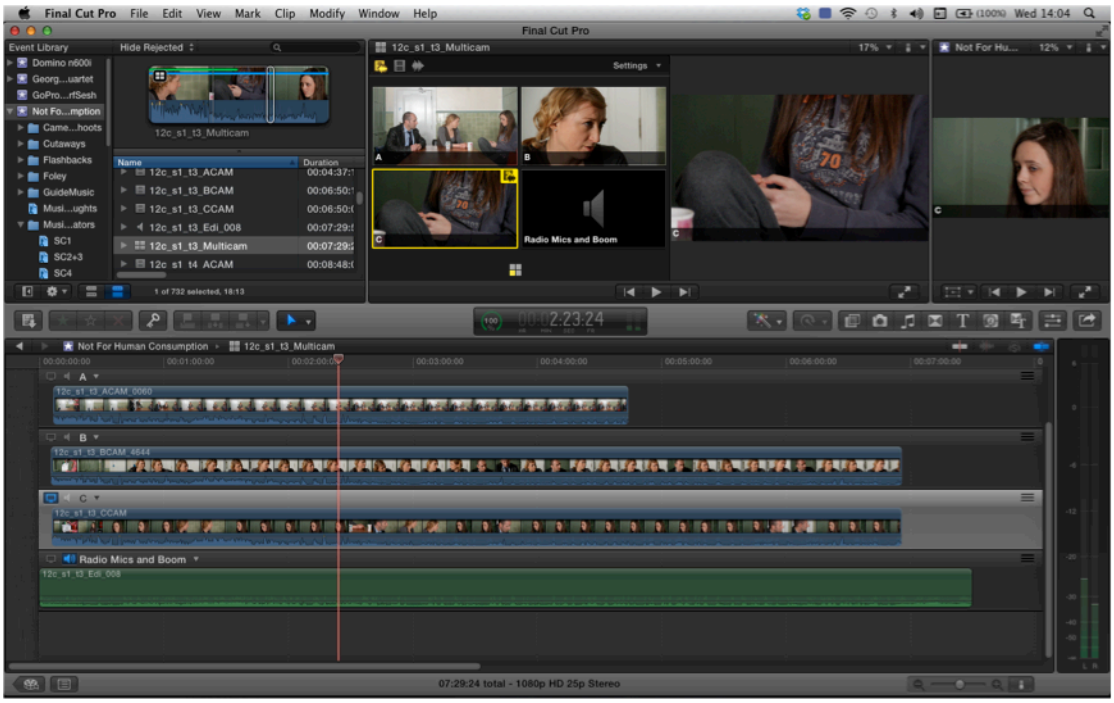

Figure 17: Powerful real time Multi-camera editing in FCPX

The powerful organisational and multi-camera functionality of the FCPX software is based around increased automation and is designed with the idea of streamlining the editor's workflow, allowing them to focus more of their time on telling the narrative. However, in my own practice there have been a number of issues with the software being updated whilst my film was in production resulting in new features that were added at various stages during the editing process. This meant that I would have to manually explore the enhancements and updates to the software, as Apple had not released a full user manual with its release.

As an experienced editor with a broad understanding of many different editing and digital manipulation applications the human algorithm in postproduction is always to understand how the software is best able to offer the maximum control over the image, this means (especially with a new application or app feature) deciding which aspects of automation to use and which not to use. In order to maximise the potential for control over the image attributes in the software I shot the footage using the then newly available

Technicolour Cinestyle[32] colour profile. This uses a logarithmic colour space as opposed to the standard REC 709 [4:2:0 (Y'CbCr)], and results in a dramatically improved dynamic range over the previous two films and greater 'headroom' in post-production for colour grading the images.

Post-Production as Production

The double negation of Digital Fluidity is to understand digital production through continuity with the analogue past, whilst simultaneously investigating and demonstrating an altered and evolved 'production mode' which *can provide* greater creative flexibility. Post-production has shifted from being the divorced partner of production into wedlock with it. I have demonstrated through the use of multiple software applications that digital NLE technology allows the filmmaker a plurality of ways of working that undoubtedly offer the practitioner improved creative freedom and *control* and thus a potential for the creation of new forms (that were simply not achievable with previous analogue technologies). That said the 'erasure' of post-production, despite my earlier claims (which still hold true) is in fact a myth that parallels Bazin's myth of a 'Total Cinema'. In terms of *Not For Human Consumption*, the ratio of time spent in post-production (whilst initially concurrent with filming) is almost immeasurably greater than the time spent shooting the film. In part this relates to the improvised nature of the narrative (and the fact that in order to explore Digital Fluidity I had to edit the film twice) but it is also a telling indication of how a film that is shot and edited digitally still takes longer to assemble and master in the edit than it took to shoot. Historically speaking this represents yet another continuity between older forms of cinema technology; a film only comes to existence as a film when it is presented as a *whole*, when montage releases from the images contained within that necessarily indirect image of time – the cinema's 'natural magic', that of the illusion of movement.

[32] The flat colour profile by Technicolor is available here: https://www.technicolorcinestyle.com/download/

Creating the Film Score

Figure 18: The coming together of digital and analogue enable composer to score the film 'live' through the use of layered recording techniques.

I am fortunate to have benefitted from working with composer George Cooper on a number of films since 2005. This experience and our friendship have enabled us to develop a working relationship that is never forced or strained. Originally we had planned to score the film digitally and write orchestrations to be played by a virtual midi orchestra (as had been the case with *Picnic Pilgrimage*). But upon completion of a first draft edit and trying out both urban and classically inspired arrangements I realised that there was a more dynamic way to use music and enhance the improvised narrative whilst articulating the key themes of Digital Fluidity, perhaps most notably that of *unique-hybridity*. I spoke to George about the idea of scoring the film using only a piano and he immediately agreed that the challenge would create something unique, and experimental, and would enable him total freedom to explore the instrument in this studio setting[33]. Firstly, the approach connects

[33] I have produced a five minute edit where George talks about the process of recording and scoring the work that also includes some footage of him recording in sync with the images. This supporting material can be viewed on the submitted DVD and is also available online here: https://vimeo.com/72340249

to the concept of continuity given the historical significance of the piano within the silent screen era. This occurs on two levels; on one the piano and the soundscape act *as* narrative, especially for the character of Dan as he is only has dialogue in one scene with Sam, and on the other the piano was recorded using a combination of analogue, electronic and digital technology, and then composited through digital manipulation, layering and editing. There is another level of re-interpretation occurring within the soundscape and that is the remediation of the instrument itself, George's approach was to engage with *prepared piano*, whereby objects are placed on the strings and the instruments *timbre* is subtly altered. Bringing together these ideas we used the technique of multi-track recording to record three separate piano parts for the majority of the film, beginning with a rhythm or noises generated by working with the strings and the struts inside the piano. George then edited the various takes and applied a combination of effects plugins both analogue and digitally modelled in order to produce the final masters.

The convergence of analogue and digital technologies and approaches that, in the opinion of this author, Digital Fluidity articulates is clearly demonstrated in the production of the film's score and soundtrack. I was loaned studio quality analogue valve pre-amps for the microphones in order to achieve a resonance and warmth to the microphone tone and an improved dynamic range over using digital compression. Apple's Logic Pro 9 has been used throughout the production for both scoring and mixing the project; in the event of recording the score the software's digital reverbs were used in order to enhance the sound of the rhythm parts. Each of the films twenty-three scenes were exported in isolation with a timecode burn in on the screen and the score was improvised as much as possible in situ in one or two takes. I extended the approach taken in the production shooting to the recording studio, the idea that through the synthesis of live improvised creativity and postproduction manipulation, finessing and research one can create an end product that is more than the sum of its parts. The piano is sculpted and the sonic universe of the film is based around its use not just as instrument but also as atmosphere, creating and enhancing the journey through psychosis that the character of Sam endures. The logical extension of the approach to improvise into the sound/music scape of the film was to work in real-time

through acoustic performance, digital capture, and performative editing. A recapitulation of the themes of Digital Fluidity through an organic yet technologically based development of an artistic idea. The film's analogue and digital score becomes part of the image and its redefinition by the digital.

A Textual Analysis

The film begins with a long take that establishes a set of enigma around the characters presented. The scene was shot in three takes (I used the third), and builds in tension as the woodland reveals memories to Sam, the scene's climatic moment of Sam attempting to run away did not occur to me until we were in situ filming. The character of DI Morton (whom remains an unknown in this introduction) walks in and out of the frame, a comment on the invisibility of the Image in general as well as establishing his character as initially on the margins. Furthermore, this psychology of shot is a meta-cinematic dénouement focused on the fact that much of the narrative of the cinema and of the image takes place outside of the frame. The actions that have caused the characters present state of mind and situation have already

Figure 19: Immediacy and intimacy in Scene 13 through close sound, distance and natural light.

occurred. The use of radio microphones and sound and by staging the scene with the characters moving away from the camera provides an intimacy to the words being spoken as Dr. Francis begins the film with the line 'Right let's go,

come on. Do you like it here?' This is an approach that is used again in Scene 13 where we return to the woodland location the film begins with and see Sam kiss Dan on a date out after meeting at a party. In both scenes the master shot remains wide and only natural ambient lighting is used. Then, in the next scene, a hyper-mobile camera introduces a past dramatic event that has occurred in Sam's life during the opening title sequence. As the camera cranes skyward Sam runs away in a panic, her mobility and flight from *something* reflected in the cinematic freedom of the camera, as she now runs to the margins of the frame.

Figure 20: Beyond the Hyper-Mobile: The camera flies from 10ft behind the actor to 100ft above.

The title sequence concludes as Sam is returned to what will be revealed to be a psychiatric care facility, an idea of security to the building is demonstrated through the use of CCTV image and treated sound that holds a meta-cinematic significance in regards to the concept of the fullness of the Image and the concept of wholeness in relation to the digital image. I used a combination of filming the CCTV screen that was in situ at the location with the post production filter of 'rasterization'[34] and a film curve LUT (look up table) that all the images are treated with to achieve the images final look.

[34] 'Rasterize' is a postproduction filter that digitally recreates the scan lines present in a Cathode Ray tube television, and here represents a 'grunge' effect that enforces the CCTV nature of the screen image.

Gradually it is revealed that Sam's past experiences haunt her character mentally. In the first scene with her best friend Jodie this manifests itself in her

Figure 21: Digital mutability, the long take and a psychology of security reveal in subtle ways to the audience that we are in a secure facility – a meta-cinematic reflection on the concept of wholeness and the digital image.

Figure 22: What Manovich might call spatial montage. Layering images to enforce the characters mental state and to show to the audience the true nature of the traumatic event the film reveals.

character displaying a 'flight of ideas', that can be associated with periods of psychosis. The soundtrack builds in intensity and tension as Sam's thought pattern speeds up, visual cutaways are both literal and completely detached from her irrational thought process – the editing, imagery and

sound relationships reflecting her inner monologue which we effectively hear aloud.

Later during the films' central scenes that reveal to the audience what happened in the woodland (as Dr. Francis manages to illicit some clear responses), I use a similar technique but overlay imagery of the past events that haunt Sam's *present* mental state together with the sound of her running away from Dan. This *visible* spatial montage hopefully demonstrates an awareness of the history of the cinema and brings together old and new techniques of superimposition and vertical montage within a proscenium and frontal camera, revealing to the audience the ever presence of a traumatic past. Conceptually this is motivated by the idea of creating a tense empathy of the spectator as they are invited to enter the state of mind of Sam's character. The relationship of image and sound and the beating drum (of the piano lid) reflect the unique hybridity of Digital Fluidity. Towards the conclusion of these scenes and during the finale to the whole film, after the police station interview, spiralling *Steadicam* shots are used to enforce the idea that the situation for the characters has spiralled out of control and that the cycle of problems that are associated to the legal high drug scene harbour the potential to spiral out of control. Furthermore, it also reflects the cyclical nature of the narrative and of the social issues it portrays. By contrast during the rest of the film Dan is mainly shot handheld or stabilised on a tripod (save for when he arrives at Sam's flat when he is shot on a *Steadicam*).

Where possible I exposed the image using only natural available light – with Dan's scenes in particular I placed great emphasis on scheduling and giving myself the best opportunity to capture natural light in early morning or evening. In the scene where Dan contemplates his journey sat by the canal this approach has yielded some effective and cinematic results. Again, this is an approach that was reliant on the improved low light capability of DSLR camera technology in combination with selecting natural light with the kind of tone and quality I wanted to capture. In Dan's introductory scene he awakes from a dream with a heavy head – strong overexposed backlighting enforces his character's physical, emotional and mental state. The use of a handheld camera, shallow depth of field, close framing, and jump cuts mirror the claustrophobic emotional state of the character.

Figure 23: The Steadicam stabilised camera spirals around Sam as she hunts for Dan in the woodland.

In *Not For Human Consumption* there are a multiplicity of techniques and styles that I believe function well to create the whole together. The centrality of technology within its production I hope to have articulated here in this brief textual analysis but if my schematics and stylistic tendencies act as intended then this will also be self evident in the film itself and in the marriage of production, post, and both analogue and digital media.

Figure 24: Available natural lighting and the portable Glidetrack shooter are used to great effect in this scene where Dan begins his journey away from Sam to confront problems from his past.

Conclusion – Digital Meaning and a *Cinema* Digital

Through the reflection upon my creative practice I have endeavoured to respond to the question of whether digital technologies offer the filmmaker enhanced opportunity for creating new cinematic language and a more fluid mode of production than previous forms? Digital technology remains the dominant aesthetic and creative force that has resulted in a new aesthetics of digital distribution and dissemination; a renewed vitality in the cinema and a rebirth of cinephilia of which forms part of my position as both filmmaker and PhD researcher. In both these respective roles, I am keen to explore and evaluate the creative potential of any available given technology. The increasing advancements in digital moving image resolution and the promise of improving picture quality and celluloid beating dynamic range represent nothing new in the broader context of the art form and the medium of the cinema. That which is based on convergence has always been heralded as refashioning or repurposing in the name of the real. In this new age of the aesthetics of digital distribution, where the perceived loss of the object of cinema studies has created a morbid discourse surrounding the apparent shift to the digital and the discrete, the question we must ask is not just where but *when* is the object of the cinema? The object now exists through the invisible mutability of digital technology *present* not just in the cinematic image but also within the invisibility of interface, and the ubiquity of heterogeneous displays and devices. As I have poised earlier in this thesis it is likely that audiences today do not actively engage with the nature of the medium that they bear witness to, such is the ubiquitous nature of the moving image within our daily lives. This can be seen as a hyper-mobilisation of what Cubitt has termed 'the commodity fetish', the rise of moving image media and the networked age of cosmology of the computer have continued to offer a lasting potential to serve as an index of the digital age.

The Image has shifted to a new realm and become redefined by the digital and one result is that through democratised technology the independent filmmaker is offered the route of global self-distribution. At the same time the older debates in cinema studies surrounding celluloid, realism and interpretation remain intrinsic to the academic study of the visual arts.

The hyper-mobilisation of the camera in the practical work seeks to operate as a test bed for new cinematic language. The constant state of flux of cinematic language and centrality of semiotics in cinema studies suggests that, by its very ontology, the digital image will be mediated and will develop. It will be *fluid*, because of the fact that any language system cannot exist without mediation. This is how and why, in Cubitt's view, the cinema struggles with its own existence, and is indicative of how the digital has been received and viewed with initial caution and definition by difference.

As practitioner, the process of using technology is about first understanding limitations and then adapting to or making changes that negate these limitations or indeed re-imagining the limitations as *liberations*. This is primarily the way in which I approach the use of technology in the filmmaking process and is critical to my conceptualisation of Digital Fluidity. The democratisation of technology (and the support of technicians from the University of Exeter Drama Department as well as other filmmaking colleagues and friends locally), and the fluid production mode it enables, have allowed me the opportunity to create a personal body of work that I believe offers something new and different to the work I have produced in the past. Advances in both digital acquisition and production tools that occurred during this PhD by practice facilitated this *fluid* mode of production. In embodying the plurality of roles from technician, to editor, writer, director, et cetera; one must remain highly disciplined in order to continually evaluate constrictive elements that occur both outside of and within your control. But fundamentally, as a practitioner who believes his theory informs his practice, I approached these roles with a conscious knowledge of the cinema and of contemporary working practices gained at first hand since an early age. The passion for the art form of cinema's *effect* is something that has always been there and for me transcends the notion of medium specificity and technology alone. In the age of *Cinema Digital* the form remains the art of invisibility. The digital now converges the sculpting of image, sound, human emotion and the very source of life itself: light.

Digital Fluidity – A logic of Hybridity and Convergence

Digital Fluidity conceptualises the employment and evolution of digital moving image technology *as* a fluid process: a developmental phenomenon that is an axiomatic part of the medium of cinema. Digital Fluidity articulates both continuity and difference with previous analogue forms, a logic of hybridity and convergence that ultimately expands the *realisms* and creative possibilities of moving image production. This expansion does indeed offer the filmmaker an enhanced opportunity for creating new cinematic language within fluid production modes. The arrival of the digital and the promise of increased realisms and resolutions, both demands and claims the existence of the analogue past and the Image as Index. To interpret the algorithmic digital image as a reduction or alteration of truth is purely a cultural decision. Reading cinema through the lens of the discrete Digital Fluidity attempts to argue beyond remediation in the articulation of hybridity and convergence and not opposition. In contrast to Manovich I purport that the digital moving image offers the same indexical relationship to the world as the profilmic celluloid image. Digital media is time and date stamped via an automated procedure and this provides us with a clear indexical piece of information that is attached to the digital file. If for Bazin the 'cinema was born from the converging of these various obsessions, out of myth', then today we are witnessing the idea and the potentiality for new cinema and new cinematic language through the democratisation of technology and a new digital wave in filmmaking which harbours a rebirth of cinephelia and a growth of short form content. This seems to me a very positive by-product of the commodity fetish and one that Digital Fluidity articulates through the double negation that everything has changed and nothing has. On the one hand, the idea that digital images *do not* have the potential to be *completely*. On the other hand, the fact that simultaneous advances in technology, like the introduction of increasingly sophisticated software, and convergence allow for new directions and avenues to be explored. The bio-computer is thus able to offer a means with which the artist is able to organically create and work as if working with a tangible surface or artefact.

Through my practice I have demonstrated that the semantic framework, or test bed for new cinematic language extends beyond the visual image to the sound image that has a dialectical relationship with the frame, that despite the potentiality of technology creative decisions remain fundamentally human elements. Today's cinema is a cinema without boundaries – developed and released beyond an Expanded Cinema first acknowledged by Gene Youngblood in the 1970s. Cinema may have shifted but its affect and ontology is one of an art that remains *Cinema* first and foremost. To speak of the ontology of the digital image is to accept the medium of the *Cinema Digital* as both simultaneously an indexical and virtual art – in my opinion this has always been the case regardless of whether or not work has been produced using either analogue or digital equipment or a combination of the two. This unique hybridity that 'new' media types and forms appear to offer goes beyond the theory of 'remediation' that Bolter and Grusin presented us with over a decade ago now. The pixel has become the grounds for a new stability in the image, the mathematical foundation on which the whole rests. The pixel is the basis for the *effect* of the cinema – that of movement released by montage into a state of *completeness*.

It is interesting that the critical and theoretical evaluations of the Image (in relation to the transition from analogue to digital) and the validity of it connect with this idea of wholeness central to the key debates surrounding realism in Cinema Studies. As a practitioner and artist, creating *the whole* and the idea of completeness are somewhat difficult concepts to embrace. As a digital artist who can work alone with the *Digital Mutability* of the digital moving image the most difficult part of the practice is often to understand and realise when one has created *a completed* piece. The extended creative freedom that one has with digital technology requires the practitioner to become exceptionally disciplined in order to know when a work is 'complete'. For me, this is another iteration that the artist's task remains consistent with analogue modes of production. The word digital itself is derived from the Latin *digitalis* meaning 'numerical digits', and this connects to the alternative meaning in English of the word 'digital', that is 'handcrafted'. Digital Fluidity asserts that the Image is at once virtual and material / tactile – it is not solely information as the information can always become reconstituted, observed

and interpreted. Accompanying the centrality of technology within the cinema and within the practice contained within this PhD is the centrality of the human condition – to question, represent and explore the world around us organically through art, science and technology. Indeed the etymology of the word technology also reveals this important connection. It is derived from the Greek *tekhnologia* meaning 'systematic treatment of an art, craft or technique'. It is technology acting *as* a process that has afforded me the opportunity as an individual practitioner to produce work with production value through both imagery and a creative approach to sound and music. As a filmmaker and artist the difficulty will always be to become satisfied with one's work, to know when one has indeed said *something*, for me this is a human aspect that forever maintains the excitement and lure of the cinema and its precious images locked within the hybridity that Digital Fluidity demonstrates. It is impossible to predict future technological developments and to articulate how cinema may expand further still over the next twenty-five years and beyond, but I for one look forward to creating more and embracing whatever new technologies arrive, and arrive they will for technology moves – just like the image.

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Glossary of Images

Figure 1. Rodney Charters DP Canon 7D and Panavision film lens. Source: http://philipbloom.net/2009/09/01/7d-with-a-big-cinema-lens-on-it/

Figure 2. Canon 7D and Zoom H4n.

Figure 3. Camera sensor sizes. Source: http://www.techradar.com/news/photography-video-capture/cameras/sensor-size-explained-1042035

Figure 4. Still frame from Grasp the Words Which Sing

Figure 5. *Ibid* reflections in the mirror (0.49-0.55)

Figure 6. GoPro HD Hero frame grab from me learning to climb at the lizard.