

De/Mystifying Smartphone-Video through Vilém Flusser's Quanta

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Contents

Abstract	3
Introduction	4
Methodology	21
In Practice: <i>Structure</i> (iPhone 4, 2011)	24
<u>Film and Video</u>	
Structural/Materialist Film	28
Technical Supports	35
“Moving Image”	38
The Instability of Digital Video	48
Unstable Methods in Structural Practice	54
Digital Duration	59
The ‘Coming into Presence’ of Film and Video	64
In Practice: <i>Desert Rose</i> (iPhone 6, 2016) and <i>Elm</i> (iPhone 6, 2016)	73
<u>Smartphone-Video</u>	
User-Video 2005-2010: Production and Distribution	81
User-Video 2010-2020: Video Hierarchy and the Poor Image	89
Smart Cameras and AI Aesthetics	97
Early Awareness of Video Automation	103
User Integration of 20th Century Avant-Garde Techniques	109
High Profile Usership	117
A Brief Survey of Distributed Camera Phone Video Practice	126
User Anonymity	129
In Practice: <i>Symi</i> (iPhone 7 Plus, 28/09/17-03/10/17)	135
<u>Quanta</u>	
Thinking in Quanta	145
Quantum Dialogues and Intersubjective user(s)	155
Thinking Machines, Soft Thought, and the ‘Something-New’	162
Smartphone-Video as a Non-Polarised Quantum Dialogue	168
The Act of Recording	174
In-Camera Smartphone-Video	179
The Ritual Gestures in Smartphone-Video	181
Improvisation in Smartphone-Video	189
The Gesture of De/Mystification	195
In Practice: <i>T-rex, Stone Circling, It’s Gonna be a Beast</i> (iPhone 7 Plus, 13-15/08/19)	204
Conclusion	214
In Practice: Online Archive selection	219
Bibliography	220
Works	239

Abstract

Videos made on smartphones are recognised in popular culture in a manner that is not reciprocated in media theory and fine art practice. The difference between smartphone-video and other film and video technology has been obscured within post-medium contexts such as “moving image,” where an ideological indifference creates new physical and psychological barriers between video ‘*user*’ and moving image ‘*artist*.’ This thesis considers smartphone-video as a significantly different gesture to other moving image technologies, which I raise through media theorist Vilém Flusser’s interpretation of “quanta,” and his interest in ‘the gesture of video’ as a “quantised phenomenon.” I approach these ideas through my own smartphone-videos, which are initially influenced by principles of Peter Gidal’s structural/materialist filmmaking. By readdressing Gidal’s methods of non-illusionist demystification, smartphone-video can be considered a very different gesture to filmmaking. Film becomes stable, causal, and Newtonian; while video becomes unstable, probable, and *quantum*. Developments in digital imaging and computer processors highlight such quantum mechanics, which although complex, *function in ways classical physics cannot explain*. This thesis proposes *how* Flusser’s concept of quanta can account for the unstable qualities found in smartphone-video’s manner of operation when de/mystified through principles of Gidal’s structural/materialist filmmaking. Such observations consider video’s quantum instability through AI driven automation and user-friendly features that enable “quantum dialogues” between user and machine as *decision-makers*. Observing smartphone-videos as non-polarised quantum dialogues through improvisation in the act of recording, expresses Flusser’s theory of gestures, and elucidates his proto-decolonial efforts against “universal phenomena.” The gesture of smartphone-video encompasses much more than I had imagined, and subsequently — with the aid of Karen Barad — considerations are made to a *de/mystification* of video’s gesture, operating through proximity in an *intra-subjective network of user(s)*.

Introduction

We need to think in video. (Flusser, 2014a: 25)

Video is understood in popular culture as a mode, tool, or function of many camera-integrated devices, and yet recognising *this* video remains an inconclusive subject of media theory. Within this field, video can be: ‘analogue’ though not digital (Spielmann, 2008: 72); ‘the digital’ as part of a broader ‘new media’ (Manovich, 2001: 68); ‘hybridised’ as indeterminate through relations to other predetermined media (Rodowick, 2007: 36); and/or ‘moving image’ as mediumless and/or ‘film’ under the post-medium condition (Kim, 2016: 71). It is outside this academic discourse where ‘video’ functions in practice as a social tool through its integration into various devices such as televisions, laptops, doorbells and dashboards etc., though most notably in the smartphone. The term video is commonplace within these tools, as ‘video mode,’ ‘video upload,’ ‘video call’ etc. Yet despite the proliferation of video devices and their widespread use, *this* video lacks a critical framework to acknowledge and understand videos made by users of such devices. This thesis represents an attempt to consider “smartphone-video” as a relevant topic of media theory, expanded upon through my ongoing smartphone-video experiments accompanying this thesis. In approaching

my understanding of smartphone-video, I adopt principles of Peter Gidal's structural/materialist filmmaking as a means of *demystifying* video; and the concept of 'quanta' as interpreted by media theorist Vilém Flusser, and consider this as a process of *de/mystification* toward the end of the thesis.

Structural/materialist filmmaking is commonly associated with Gidal and affiliated filmmakers at the London Filmmakers Cooperative (LFMC) from 1966. I have adopted principles from structural/materialist practice (expanded upon below) as a means of 'demystifying' smartphone-video's 'coming into presence' while upholding a 'one to one relationship between viewer and viewed' in a context relevant to the smartphone-user (Gidal, 2016: 37, 39; 1990: 1, 7). In filmmaking, these principles led to a non-illusionist clarification of film through a dialectical relationship between the physical material base of film's celluloid strip and the image represented on the screen. Resulting ideas of 'film as film,' as a supposed medium specific investigation, have been interpreted as a definitive understanding of film as a 'medium' (20). I expand upon various problems with this understanding below, but it is this idea of a comparative 'video as video' that *initially* inspired my video practice through a naive investigation into what video might offer if these same principles were applied.

There are various coexisting understandings of video in media theory. Some maintain that video can only exist as 'analogue,' as media theorist Yvonne Spielmann proposes in *Video: The Reflexive Medium* (2005). She writes, if 'video merges into the matrix of computer media, another stage of the development of the media appears, which no longer belongs to the realm of video' (72).

Computer, or 'digital video' becomes part of a wider field of 'digital media,' which for some, such as Mary Ann Doane, is questioned as an 'oxymoron' (Doane, 2007: 143); while others, such as Lev Manovich, have claimed, 'There is no such thing as "digital media"' (Manovich, 2013: 152). Within

this complex and undulating field, it becomes difficult to identify the thing we make when in video mode on our smartphones, that are filed in video folders, and conform to video upload specifications.

These issues run parallel to the prevailing post medium condition, where defining media on their own terms is undesirable. The post medium condition opposes the modernist position of medium specificity commonly associated with critic and essayist Clement Greenberg in the mid 20th century. Greenberg's essentialist fetishisation of a medium's essential form came to be dismissed by artists and critics for its rigid and elitist framework, ushering in the 'post medium condition' as notably proposed in critic and essayist Rosalind Krauss' "A Voyage on the North Sea": Art in the Age of the Post-Medium Condition' (1999). More recently, in essays 'The Guarantee of the Medium' (2009) and book *Under Blue Cup* (2011), Krauss promotes a move towards ideas against the post medium condition under the term "technical support." In the opening chapter of this thesis I challenge some of Krauss' position, but the potential for a middle-ground between modernist essentialism and post-medium indifference becomes a useful means of positioning an understanding of smartphone-video outside of these polarising approaches.

In media theory, video and the digital are discussed in terms of an 'unstable' quality (Spielmann, 2006: 58; Malevich, 2001: 84). This flexible/dynamic/variable/manipulatable quality has led some to question the potential of establishing a definitive understanding of digital video (Kim, 2016: 96), which seems to 'exude a fantasy of immateriality' (Doane 2007: 143). It may then appear counterproductive to apply 'materialist' principles — those used to demystify the physical support of film's celluloid — to video. This research takes a step back from this position by considering celluloid as the result of, rather than the reasoning for, a non-illusionist materialism. Video can be considered as a similarly illusionistic technical support in terms of representation. The importance is

not the physical materiality, but an illusion to be demystified. It is here that I adopt Vilém Flusser's quanta as a crucial framework in considering the instability of video as capable of being demystified through structural/materialist principles; and where video begins to diverge dramatically from filmic thinking, and into the quantum concerns proposed by Flusser.

Quanta is a problematic wording for many, as it holds connotations in various fields through computation, physics and pseudo-science. Flusser's position — and thus that of this thesis — can be considered an interpretation of quantum physics, as an understanding of the world based on 'probability and statistics,' rather than causal logic:

Quanta means that the world, once seen as solid, is no more than a swarm of tiny particles whirling about at random. And so probability and statistics have become the mathematics best suited to this world. Cause and effect only appear as statistical probabilities. (Flusser, 2011a: 141)

Quanta functions as an alternative to the deterministic logic associated with classical Newtonian causality which favours stability (Barad, 2007: 19; Rovelli, 2016: 30). For Flusser, this shift in science became a shift in 'the gesture of searching,' from "universal phenomena" to "quantized phenomena" (2014a: 173). The difference between these positions, for Flusser, is not to consider *that* smartphone-video exists, in a purist sense; but *how* the gesture of smartphone-video expresses itself. (175)

Flusser associated quanta with then 'new' digital developments, to which quanta functions as a means of understanding unstable properties, as 'it is clear from the outset that there is nothing solid to be criticised in the new' (Flusser, 2011a: 152). Yet Flusser's quanta has been widely overlooked, exemplified in *Flusserania - An Intellectual Toolbox* (2015), which does not feature 'quanta' or 'quantum' in its encyclopaedic glossary of Flusserian terms. While for Flusser, quanta was a

recurring and important topic, making a strong case for its focused study in *Does Writing Have a Future*, published in 1987, where he writes,

We need to devote our full attention to the problems raised by quanta. Far from being solely practical or epistemological issues, these are existential, political, and aesthetic ones. They should not be left to scientists and technicians. (142)

More recently, contemporary theorists have made considerable developments to relatable ‘problems raised by quanta,’ most notably Karen Barad’s 2007 book *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Barad’s research has been invaluable to this thesis, though due to my focus on digital video, Flusser’s views on quanta as directly relatable to ‘technical images’ and ‘digital code,’ along with the lack of awareness to Flusser’s quantum interpretations, Flusser’s quanta has been the focus of my research.

A broader and unexpected aspect of this thesis is the decolonial thinking in understanding video’s instability. Flusser’s philosophy has been described as representing ‘a postcolonial perspective, long before this school of thought established itself’ and has been positioned in relation to decolonial thinker Walter Mignolo (Finger, Guldin & Bernardo, 2011: 51, 79; Flusser, 2017: 25).

Understanding Flusser’s quanta requires a post-Enlightenment perspective aided by Mignolo (2011), Barad (2007, 2010), Rasheedah Phillips (2015), and Denise Ferreira da Silva (2007); as contemporary views on quantum physics, posthumanism and decolonial methods form a surrounding field of contemporary thought that this thesis aims to support through the understandings and implications of smartphone-video as quantum.

Flusser was a Czech-Brazilian philosopher who died in a car crash in 1991, only months after the first webpage went live. Although Flusser never experienced smartphone-video, his speculations in

Into the Future of Technical Images (1985) were prophetic, observing how ‘in the future, everyone will envision. Everyone will be able to use keys that will permit them, together with everyone else, to synthesise images on the computer screen,’ what might be considered today’s smartphone (31).

Flusser’s writing was difficult to follow as he wrote in Portuguese, German, English and French. Thanks to the efforts of the Flusser Archive, many of his books are being translated for the first time into other languages, and republished or published posthumously for the first time. For this study I focus mainly on interpreting Flusser’s quanta and surrounding study of the technical image, decision-making, and the theory of gestures through their relatable quantum characteristics that arise through my application of structural/materialist principles aimed initially at demystifying smartphone-video.

Gidal wrote ‘The Theory and Definition of Structural/Materialist Film’ in 1976, partly in response to film critic P. Adam Sitney’s ‘controversial’ ‘Structural Film’ in *Film Culture*, 47 (Summer 1969) (Sitney, 2001: 448). Gidal later edited the *Structural Film Anthology* in 1978, and wrote *Materialist Film* in 1989. A selection of other essays were collected in *Flare Out: Aesthetics 1966-2016*, published in 2016. Gidal writing uses a ‘dialectical’ writing style, containing intentional ‘difficulties’ in achieving a comprehensive understanding, as D.N. Rodowick notes,

By imposing difficulties in reading, the dialectical text engages its reader in the process of knowledge by resisting the utilitarian logic of most critical prose with its rationalist and empiricist connotations of completely comprehending its object. (Rodowick, 1988: 128)

This dialectical method has (purposefully) problematised a definitive understanding of Gidal’s structural/materialist film, as historian A.L. Rees raises, ‘Gidal’s films hover on the cusp of a contradiction which they also recognise’ (Rees, 2011: 94). What can be determined, is Gidal’s

response to 'structural film,' and his interest in a Marxist dialectical materialism as embodied in the dialectical text. Labelling Gidal can be an equally difficult task, as not definitively 'structuralist' and/or 'materialist' as Chris Kennedy describes Gidal's theory as 'a hybrid of European post-structural theory (à la Roland Barthes) and Marxist dialectical materialism' (Kennedy, 2016: 17). In Gidal's initial definition of his materialist position, he highlights a need to 'combat' both the structuralist and post-structuralist methods of Barthes' 'lamentably reactionary, symbolic interpretation,' and Michel Foucault's 'superb Marxist/Althusserian *interpretation*' (Gidal, 2016: 59). He later suggests that the post-structuralist position of Jacques Derrida's '*differance*' was 'worked through filmically in certain London Filmmakers Co-op films long before Derrida verbalized them' (Gidal, 1990: 17).

Gidal's dialectical position is often misinterpreted, which he recognised in the theory and definition of 1976, as he proposed,

Using the term Structural/Materialist is dangerous as well, since it refers to Structural Film. Equal emphasis must be put on the Materialist 'half' of the term (and a dialectical materialism, not a mechanistic materialism, is necessary). (Gidal, 2016: 79)

Some of these developments have led to Gidal being understood as a modernist due to terms such as 'film as film,' though Gidal also rejects these associations in a dedicated chapter of the same name in *Materialist Film*, where he writes,

This dangerous formulation of mine from 1971 was wrongly taken to mean that film's essential nature was the proper area of investigation for avant-garde/experimental film. It was never up to the structural/materialist filmmaker to recover films' essential nature, i.e. film as film. (1990: 20)

What I outline here is how structural/materialist film is as interwoven theory within the field of experimental film and video, which Sean Cubbit elaborates on in his introduction to Jackie Hatfield's *Experimental Film and Video*,

These were not theories in the sense of coherent discourses grounded in axioms, and built brick by brick as theorems and theses. They were assertions, political manifestos, memos from the cutting rooms and gallery floors. (Introduction to Hatfield, 2006: ix)

I raise these observations here simply to highlight that structural/materialist film is not necessarily defined by its *isms*, but rather a response to somewhat internalised developments in avant-garde filmmaking. Gidal's interest in developing a wider theoretical framework of filmmaking was part influenced by his background in philosophy; while for Sitney 'cinema was under assault' due to the influence of some post-modernist thinkers (Sitney, 2001: 410).

The principles of structural/materialist filmmaking I adopt are not aimed at locating or pursuing the 'essential nature' of smartphone-video, nor of establishing a dialectical materialism in smartphone-video. I aim to use principles of structural/materialist filmmaking in smartphone-video to consider video in its popular context. These principles developed intuitively and naively through my own smartphone-videos, in a method somewhat akin to Gidal and the LFMC, where practice developed before theory (Gidal, 1990: 8; Rees, 2011: 89). As my smartphone-video practice began before this research, I am retroactively applying principles of structural/materialist film theory as a method of demystifying an understanding of what smartphone-video might be; rather than proposing structural/materialism as the practice I situate myself within.

The first principle I have adopted is from the opening section of Gidal's 'The Theory and Definition of Structural/Materialist Film:'

Structural/ Materialist film attempts to be non-illusionist. The process of the film's making deals with devices that result in demystification or attempted demystification of the film process. (2016: 37)

Which is elaborated on as not 'representing' the filmmaking process, but,

viewing such a film is at once viewing a film and viewing the 'coming into presence' of the film, i.e. the system of consciousness that produces the work, that is produced by and in it. (39)

The second is *Materialist Film's* opening chapter, 'The one to one relation between viewer and viewed' in which Gidal states,

This concept of a one to one relation means that there is a direct analog between the represented film-time and the time for the viewer in the viewing-context. (1990: 1)

And in this the attempt to be 'anti-illusionist',

A materialist experimental film practice engages on that level with the illusions of representation and the illusory (and real!) constructs of viewing film, or anything, as if it were natural [...] Filmic "trying to see" instead of seeing, trying to know instead of (The illusion of) knowing. Not believing what is seen. (7)

These two principles of structural/materialist film — the anti-illusionist demystification of the 'coming into presence,' and the anti-illusionist 'one to one relation between viewer and viewed' — are those I have found to be applicable to both of film and video's illusion of representation. They form the basis of my application of Gidal's structural/materialist theory to smartphone-video outside the necessity for a material base or unit.

My adaptation of structural/materialist filmmaking is a pluralistic one. As art critic Boris Groys states in his 2020 essay “Anti-philosophy and the Politics of Recognition,” ‘It is a well-known fact that contemporary philosophy is pluralistic—it includes many conflicting and even mutually exclusive traditions, trends, and individual positions’. Here, Groys claims how an ‘externality of philosophy means precisely that certain ideas and positions can be taken from the philosophical archive, re-cognized as new, and implemented independently of their former historical use’ (ibid). I am using a similarly pluralist method, which adopts structural/materialist principles as a source of inspiration and as a theoretical tool, while not being defined by, or attempting to be, it or its historical use.

Alongside these principles, Flusser’s quanta becomes the substance by which smartphone-video can be understood. Quanta accounts for video’s instability through ideas of decision-making as ‘quantum-leaps’ attributed to mind and machine (Flusser, 2011a: 145). These ideas open into broader dialogues of ‘user-friendly’ features, automation and artificial intelligence (AI) as essential to smartphone imaging. To update Flusser’s prophetic speculations, I find contemporary perspectives on ‘thinking machines’ through Luciana Parisi and Stamatia Portanova’s concept of ‘Soft Thought’ (2011); Lev Manovich’s ‘AI Aesthetics’ (2018); and James Bridle’s *New Dark Age* (2018). I also address the terminology used by smartphone brands promoting their “AI” features.

Video has become a tool for billions of people through smartphone integration. It is in academic and institutional contexts that this popular use of video is not considered a different technology to analogue video and celluloid film. I attribute this indifference to the ‘post-medium condition’ and the development of the term “artist moving image,” which commonly encapsulates contemporary artist and experimental film and video. Moving image has no definitive position or definition, and so much of my research in this area requires case studies into the representation of video (in its

popular understanding) within the context of education, galleries, museums and distributors. These case studies highlight the use of video technology and the omission of the term “video;” an extension of what Erika Balsom’s understands as how ‘the institute betrays its mandate’ through the indifference to film and video (2017: 97, 102-103). These case studies have in part required the physical attendance of exhibitions, resulting in a London-centric focus. I propose that the post-medium mindset of moving image is far from indeterminate, as ideologically distinguishing itself from assessable user-video technology, while the same technology is in use.

In distinguishing artist practice from the technical support of the user, the technology in use becomes extraneous, as no longer a point of concern when video can *be* film ‘at the expense of sacrificing some material attributes of celluloid’ (Kim, 2016: 71). This highlights a distinction of practice outlined by Nicky Hamlyn in his book *Film Art Phenomena* (2003), with the useful distinction of ‘those who use the media unreflexively and those whose work necessarily includes an investigation of their manner of operation’ (183). The latter mode of practice is important in understanding smartphone-video and the automation exemplified in the smartphone more generally; where the manner of operation — *how* the device operates — is crucial, though currently lacks the case for its investigation.

My position then, is not a formal or aesthetic study into smartphone-video, nor a definitive understanding of what smartphone-video is. It is rather to put forward the consideration of the gesture of smartphone-video, the manner of operation in this highly automated and accessible device, as a significant tool of contemporary society with broader implications around automation, user culture, and digital media more generally as raised by Flusser (2000, 2011a, 2011b, 2013, 2014a, 2014b), Manovich (2018), Parisi (2017), Portanova (2013), Bridle (2018), Antonia Majaca

(2016) and others. Through this thesis I reconsider automation as a quantum process that is exemplified in smartphone-video, as a significant tool requiring investigation.

Automation is essential to the ‘user-friendly’ nature of the smartphone, and made evident in the time-based qualities of smartphone-video. Automated focus/exposure/white balance/colour grading/stabilisation etc. become visible functions when making and watching smartphone-video, as the familiarity of the tool can raise awareness to once ‘invisible’ (Flusser, 1983: 38) ‘black box’ processes that are ‘influencing the imagination of billions’ (Manovich, 2018: location 16). It is this illusion of the ‘age of automated cognition’ (Parisi, 2017), that I initially aimed to ‘demystify’ through a ‘one to one relation’ found in structural/materialist filmmaking, though one that is very different in the quantum properties of the smartphone.

My research question is then: Can quanta account for the unstable qualities found in smartphone-video’s manner of operation when demystified through principles of structural/materialist filmmaking?

My research aims are initially to outline a position in which smartphone-video and its manner of operation can be distinguished as a point of investigation through Flusser’s quanta. By understanding smartphone-video as a point of investigation, I attempt to demystify smartphone-video’s manner of operation by combining aspects of Gidal and Flusser, to propose smartphone-video as an important user-practice with wider connotations of quantum and post-Enlightenment thinking. My emphasis on investigating the smartphone’s manner of operation as quantum, and capable of dialogue through *decision-making*, is also linked to establishing smartphone-video as a low-cost creative practice, accessible *to all smartphone-users*. I determine these *user-friendly* features as half of a quantum dialogue between user and machine in the act of recording

smartphone-video, which becomes the foundation for establishing a ‘one to one relation between viewer and viewed’ as *intra-subjective user(s)*; which is developed through the thesis.

I understand these ideas through an ongoing archive of smartphone-videos that inspired this research and accompany this thesis. A major hurdle has been the use of writing to describe and rationalise this practice, similar to ideas raised by Gidal in the ‘verbalised’ film (1990: 17); Flusser’s views on ‘indescrivability’ (2011a: 151-152); and later in the thesis, to Derek Bailey’s descriptions of improvised music (1992). I have found relatable problems with verbalising indescribable practice, and so have structured the thesis and practice as parallel elements by highlighting smartphone-videos as paradigms of practice through a chronological development in the conclusions of each chapter. These ‘In Practice’ conclusions function to evidence elements raised in the writing, but also to expand upon these ideas in a more intuitive and practice-led response through writing, and as a means of progression into following chapters.

With these ideas of practice and theory, I do not elaborate on the structural/materialist films of Gidal, nor of any other filmmaker outside of a direct reference to video. This is because I am using the principles of structural/materialism as a tool, not a definition of practice, and thus the directions taken in film are distinct from those of video. This is addressed in terms of stability in the first chapter ‘Film and Video,’ and followed by the chapters: ‘Smartphone-Video,’ focusing on popular video use; and ‘Quanta,’ focusing on Flusser’s views on video, quanta and its wider implications.

‘Film and Video’ begins with an overview of structural/materialist film and how it came to define film as a point of investigation through Gidal’s writing with surrounding positions from Malcom le Grice (Gidal, 1990, 2016), Rees (2011), Sitney (2002), and Rodowick (1988, 2007). I then outline my position on Krauss’ ‘technical support,’ and some contestable connections to Greenberg and the

white cube gallery context (Krauss, 2011). Through such reconsideration of the post-medium condition, I then form a UK and London based case-study into the origins and affects of “moving image” as a post-medium ideology. Moving image’s lack of context requires the review of terminology in university prospectuses and gallery/museum practice, with additional context from Balsom (2017), Hamlyn (2003) and Jonas Mekas (2018). To gauge an idea of video I look to various media theorists discussing video and digital media including: Spielmann (2006, 2008, 2012), Jay David Bolter and Richard Grusin (2000), Manovich (2001, 2013), Doane (2007), le Grice (2001), Hamlyn, and Jihoon Kim (2016). With this I establish video’s ‘unstable’ characteristics, and raise this instability through a shift in practice noticed in makers related to structural/materialist ideas. Through works of Simon Payne, Chris Welsby, and Rose Lowder, I put forward how their use of fixed integers developed into hand-held continuous takes as a mode of instability. From this, I expand upon the prospect of unstable integers through broader problems raised in digital duration, expanding upon ideas of Spielmann, Hamlyn, Doane, Rodowick (2007), Peter Osborne (2010), and Shane Denson (2016), determining that video operates in a different temporal manner to film. With this understanding of video, I compare the technical ‘coming into presence’ of video to film, as a means of accounting for the stable and unstable qualities of film and video, with additional technical knowledge from Alan R. Katritzky and Gebran J. Sabongi (2004), Daniel Durini and D. Arutinov (2014), and R. J. Gover (2014) which establishes an understanding of film and video’s stable and unstable “core states.” I conclude with a study of my smartphone-videos *Desert Rose* (iPhone 6, 2016) and *Elm* (iPhone 6, 2016) as a means of evidencing and expanding upon the unstable characteristics found in practice with the aid of Phillips’ interpretation of “quantum time” (2015).

‘Smartphone-Video’ begins with two subchapters focusing on the development of video as a user tool through production and distribution, and the creation of a consumer hierarchy in video

technology. Due to a lack of research in this area, I predominantly source industry and popular culture related evidence, concluding with a reinterpretation of Hito Steyerl's "poor image." With this outlining of video's development as a social tool, I focus on the role of the smartphone as an automated user-friendly device, and the role of artificial intelligence in smart-cameras, raising views of Manovich, Doane, Osborne and Barthes (1977), as to question preconceptions of the photographic image. To gauge an awareness of automation in video I then highlight three video works by artists Josef Robakowski, Dieter Kiessling, and Steve McQueen that use automation as a feature, and how this has been received by audiences in the written material surrounding them, with some evidence of its application in cinema as a narrative device. Remaining inconclusive in areas, I follow with a broader case study into user-generated-practice. This research is mostly referencing popular culture coupled with traditionally cited avant-garde techniques, offered as an indication of a wider interest in the manner of operation within user practice. Through relatable methods in high profile artists working with user devices, namely David Hockney, Cindy Sherman and 2018 Turner Prize winner Charlotte Prodger; I collate material found in artists' interviews, exhibition methods and surrounding dialogues that have implemented physical and psychological restriction onto artworks made on user-devices *to be viewed on other user devices*. To broaden this view with a focus on smartphone-video, I carry out a brief survey of artist film and video distribution collections, finding commonalities in phone related video practice through their written descriptions. With this broader understanding, I address the role of anonymity in structural/materialist film and the 'lyrical' filmmaking approach Sitney distinguished it from. Relating this to video's unstable core state by raising the inability of the maker's masterful or anonymous use of smartphone-video. I conclude with an "In Practice" study of my 'home movies' with a focus on *Symi* (iPhone 7 plus, 28/09/17-03/10/17), elaborating on: the practical role of unstable, user-present methods, the one to one relation between user(s), and some wider ramifications and user fetishisation.

‘Quanta’ briefly introduces a broader context of post-Enlightenment instability, before outlining Flusser’s position of quanta. Here, Flusser’s theory is relatable to quantum mechanics with the aid of physicists Barad (2007, 2010) and Carlo Rovelli (2014), and science writer Brian Clegg (2014). Flusser’s focus on digital media becomes further relatable to positions of Manovich, Doane, Cubitt, Rodowick, Spielmann, Parisi, Portanova, Majaca and Bridle through Flusser’s perspective of quanta as relatable to decision-making. This expands into ideas of human-computer conversation as “quantum dialogues,” through which I combine Flusser’s quanta with positions taken by Manovich, Kay and Goldberg, Timothy Binkley (1998), and Spielmann. With this idea of a dialogue, I use positions raised by Flusser in relation to the contemporary views on thinking machines in Manovich, Parisi, Portanova and Majaca, and elaborate on Gidal’s concept of the ‘something new’ in the context of AI. Then expanding upon the quantum dialogue in smartphone-video as an extensively automated process, I form a comparison with autocorrect typing through tech-writer Gideon Lewis-Kraus (2014), smartphone brand terminology, and broader contexts from Flusser, Manovich, Parisi and Majaca. Turning to practice, I look at how video functions impact the operation of user-friendly devices in the act of recording through a selection of continuous take, handheld videos by Hamlyn, Welsby and Robakowski; and how relatable methods in the smartphone-videos of Hannah Taverner and Amy Dickson offer a different perspective on the paradigms of video practice. Expanding upon this through Flusser’s theory of gestures through ‘the gesture of video,’ the ‘ritual gesture,’ and “quantized phenomenon” from his final book *Gestures*.

Here I am able to expand into Flusser’s protodecolonial criticism of Western rationalisation, which I initiate through relatable ideas of improvisation discussed by Bailey and Krauss, and expanded through the work of Femi Okiji’s *Jazz as Critique* (2018), and Stephen Alexander’s *The Jazz of Physics* (2016). Observing a selection of improvised smartphone-videos by Taverner, Dickson, Alex

OB, and Zara Joan Miller, smartphone-video's quantum dialogue is continued through Parisi and Majaca with the issues of a paranoid white-male "Kantian filter." Looking at these findings through Flusser's theory of gestures, a gesture of smartphone-video is reconsidered from the principles I started with, which with the aid of Barad, become a method of "de/mystification" within a network of "intra-subjective user(s)" through Barad's in/determinacy and *intra*-action (2007, 2010, 2014).

Smartphone-video may appear to be an unlikely means of encountering the strange logic of quantum mechanics, and functioning as a means of discrediting the stability of Newton's Enlightenment. But to Flusser,

The gesture involved in manipulating a video camera represents in part a change to a traditional gesture [...] one way of deciphering our current existential crisis is to observe this gesture. (Flusser, 2014a: 142)

And it would appear, that in observing the gesture of video — as this thesis attempts — that current existential crises of: AI, social media, capitalism, colonialism, and freedom; are all expressed in the gesture of smartphone-video as points for further consideration.

Methodology

My methodology interleaves practice within my theoretical developments in the form of concluding subchapters. This methodology comes from a hesitance to illustrate theory by grounding practice in theoretical underpinnings. Instead, my smartphone-videos become points of consideration. The distinction of practice and theory allows for a more open approach to practical elements, while still informing, and informed by, theoretical considerations. Relatable methodologies are used by my two key thinkers: Peter Gidal and Vilém Flusser.

From Gidal's perspective 'practice is often ahead of theory' (1990: 8), as a wider consensus of the LFMC. Rees also describes how Le Grice 'maintains that the Co-op film-makers began with no theories; theory was applied to the films after they were made, as analysis of what had been made' (Rees, 2011:89). In this analysis, Gidal recognises 'a split between filmic and verbal articulation' (Gidal, 1990: 17). From a structural/materialist filmmaking standpoint, there are benefits to the distinction between practice and any definitive theory.

Flusser held a relatable notion of the ‘split’ between video and articulation in the shift from language and the alphabet, to ‘technical images’ and ‘new digital codes’ (2011a: 145, 147). How the ‘cameraman’ offered a ‘methodological doubt that is without parallel in history — a new form of knowledge’ (2013: 101). In such newness, Flusser asserted, ‘to want to describe it is to want to force it into the old thinking, to show how what is coming necessarily comes from the old, to explain it in terms of the old’ while rather ‘What is new about the new is its very indescribability, and that means that what is new about the new consists exactly in the absurdity of wanting to explain it’ (2011a: 151-152). Flusser’s ‘new’ combines technical images, digital code and quanta (2014b: 45, 93), which are all evident in digital video; with further cause for non-rationalisation in the prospect of the ‘ritual gesture’ (2014a: 120).

For Flusser — considered a proto-decolonial thinker (Finger, Guldin & Bernardo, 2011: 51, 79; Flusser, 2017: 25) — his broader position on the indescribability of ‘the new’ stems from his working against the ‘Western worldview’ as ‘analytical, rational, and [leading] to greater and greater abstraction, to a distancing from the concrete’ (2014a: 68). As a method of countering the Western worldview — considered today’s colonial worldview — Flusser proposed the ‘theory of gestures’ in his final book *Gestures* (1991). Flusser outlines the ‘ritual gesture’ as requiring ‘the complete renunciation of reason (in the sense of explicability and purpose) and the unconditional surrender in the gesture and to the gesture essential to the real artist, the real Zen monk, the real prophet’ (134).

While I am nervous in labelling my practice in such terms, it is through Flusser’s interest in the gesture of video that I position my smartphone-video practice, and raise the prospect of ritual gestures in smartphone-video. As such, my discussion of practice in “In Practice” sections function as a means of *de/mystifying* my practical efforts through the final three subchapters of the final

chapter of this thesis. My selected smartphone-videos, in regards to this thesis, become a means of steering my theoretical direction through practice. In addressing my own videos, I take a more improvised and interpretive approach. The practice and theory becoming inevitably entangled, sometimes raising contradictions.

My methodology aims to address my research question while upholding the distinction between theory and practice that is asserted respectively by Flusser and Gidal. The chronological selection of videos also mark my own theoretical considerations, and the shift towards the quantum perspectives of Flusser, through the three main chapters.

In Practice: *Structure* (iPhone 4, 2012)

Available at: <http://www.jamiejohnjamesjenkinson.com/2012/06/Structure.html>

My first example smartphone-video is *Structure* (iPhone 4, 2012), a one minute video of a crane that becomes distorted through rapid camera movement. I made this as a student on the MA Visual Communication at the Royal College of Art after completing my BA Video Art Production at University for the Creative Arts, Maidstone. The Video Art Production course was originally founded by pioneering television artist David Hall, who coined the term ‘time-based media’ through an early version of the course in the 1970s (LUX, 2017). Although changing over time, the course continued an emphasis on technology as exemplified in the course title. It was here that my tutor Hamlyn introduced me to structural and structural/materialist films, and with continued interest that I went on to RCA due to A.L. Rees’ research position there, as well as tutors Hamlyn and Jennifer Nightingale; each of whom had previous connections to Maidstone and inspiring practices. Gidal had also taught on a previous filmmaking course at RCA.

As a student I was lucky enough to spend time with Rees, who generously broadened my understanding on experimental film and video, and introduced me to Simon Payne’s *New Ratio* (SD video, 2007), a flicker video structured between 4:3 and 16:9 ratio combinations in base video colours and an image-generated pitch soundtrack. Payne (also a Maidstone graduate) had made the video as a practical element of his doctoral thesis, ‘Materiality and Medium-Specificity: Digital Aesthetics in the Context of Experimental Film and Video’ (2008), supervised by Rees at RCA. This video was a pivotal moment in my understanding of the video image as a material concern. Payne’s relatively simple process producing complex and immersive flicker structures caused me to want to move away from the approach I had brought with me — of expanded cinema/video installation — and to concentrate on the image itself.

I was also aware of a disconnect with the structural rigidity of Payne's approach, one also being pursued by Gareth Polmeer in *Sea* (HD video, 2011) and *Field* (HD video, 2011) who had also been my tutor at Maidstone. Polmeer produced these works as the practical elements of his doctoral thesis at RCA, titled, 'Motion to Becoming: Nature and the Image in Time' (2015), also supervised by Rees. These videos, although inspiring, did not *demytify* video in a manner I could relate to in the practical use of a video camera. For me, video was made in the act of recording, while for Payne, Polmeer and related practitioners, there was an emphasis on postproduction.

An unlikely influence running parallel to these video experiments came from the televised camera phone footage of Colonel Muammar Gaddafi's overthrowing in 2011, recorded by users who uploaded their content to online video hosts. The images felt viscerally and materially *real*, with a shock that reminded me of awful videos that circulated online in the early 2000s, and those now raising awareness to police brutality. The Gaddafi video, of a person being beaten to death, was being broadcast on national television. I drew freeze frames of the Gaddafi video in response to a compulsory drawing class at RCA taught by Anne Howson and Catherine Anyango. Through this process the video stills lost their horrific content, becoming blocks of colour and form as the pixelated video footage presented a different materiality in the way the colour forms were produced, losing their concrete content, and able to reveal the illusion of their representation; while still creating the sensation of being *more real* than comparably high definition images. This presented a conundrum, as viewing these almost impressionist recordings, the 'poor quality' images appeared more real than the comparatively 'high quality' ones. Though by this same virtue, the 'poor quality' video footage is easily revealed as a construct upon minor inspection.

In this I saw the image itself as a material, not in a way I understood, though also not in the structural manner that was the subject of my education. As a result I began experimenting with my smartphone to make videos that focus on the production process through single take continuous recordings, as a method inspired by the ‘in-camera edit’ films of Hamlyn, Nightingale and Rose Lowder. *Structure* was my fifth smartphone-video experiment, following: *Paper* (iPhone 4, 2012), *Tree* (iPhone 4, 2012), *Light* (iPhone 4, 2012), and *Light II* (iPhone 4, 2011). To make *Structure I* glued a small plastic 10x telephoto lens to my smartphone’s case, and shook the camera rigorously while pointing at a crane. I used the lens to magnify the camera’s movements, with the intention of distorting the device’s progressive scan. Progressive scan is the technical process of recording digital images, in which the image is scanned from top to bottom, one pixel row at a time, causing multiple timeframes to be held within each frame. My high speed movements distort the image of a crane, causing a triple-helix effect upon playback.

As the title highlights, I understood this video as a development in structural thinking (having originally titled it ‘*Structure I*’ implying that this was to become a series of similar experiments). This was the case, but not with the rigidity of this structural formula, which seemed to remove something from the video making process, as merely exemplifying how to make the imaging process fail, rather than an investigating of the image’s ‘coming into presence.’ Applying Gidal’s position here, *Structure* ‘represents’ rather than ‘deals with’ this process (Gidal, 2016: 37). The experiments that followed were more intuitive and playful, such as: *Expanded Cinema* (iPhone 5, 2012) using a copy of a book flicked against the smartphone’s tiny lens; *Spokes on Light Box* (iPhone 5, 2012) making patterns using a bicycle wheel and a light box; *Botanical Garden* (iPhone 5, 2013) a ‘shaky-cam’ video relatable to *Structure* only with a far more complex image; *Shutter* (iPhone 5, 2013) continuing these ideas through pattern; and *Spiral Staircase* (iPhone 5, 2013) made while walking up a spiral staircase.

I highlight *Structure* as it points to a moment that appears on the surface to achieve some of my aims, of revealing some underlying nature of the video image. But the rigidity of its structural integrity and visual phenomena lacks everything that I enjoy about making videos, and appears closer to the stability of film, only without the material support that may underpin such rigidity. Through further smartphone experiments, video's lack of filmic stability became more and more evident, as there was no celluloid to pin it to, only what appears to be immaterial data.

Structure functions as my point of departure from stability. It highlights a practice that does not account for the unstable machine, and instead simplifies a mechanistic and seemingly causal process, as if it were directly comparable to the stability of film. With this realisation, I began making smartphone-videos prolifically, in the mindset that over thinking my making process had become counterproductive to my practical developments. Through this mindset I have made hundreds of smartphone-video experiments as a means of investigating the manner of operation in the gesture of smartphone-video.

Film and Video

Structural/Materialist Film

Peter Gidal's writing does not allow for a definitive position to be achieved. D.N. Rodowick continues his thoughts on this from the introduction with those raised by Deke Dusinberre in his essay 'Consistent Oxymoron: Peter Gidal's Theoretical Strategy', published in *Screen*, Summer 1977:

By imposing difficulties in reading, the dialectical text engages its reader in the process of knowledge by resisting the utilitarian logic of most critical prose with its rationalist and empiricist connotations of completely comprehending its object. According to Dusinberre, Gidal adopts contradiction as his trope to emphasize the materiality of discourse and to problematize the activity of reading. Gidal's negativity—his contradictions and restatements of former positions; his avoidance of any linear form of exposition; his fragmentation of discourse; and the collage effect of his citations resembles not only the aesthetic strategies of his films, it also globally defines his project as the disintegration of any unified subject of representation by ceaselessly deferring the temptation of final closure or meaning. (Rodowick, 1988: 128)

Adding to Gidal's dialectical writing, critic Michael O'Pray described Gidal's practice as 'crystal hard, intransigent, and film *in extremis*' (quoted in Rees, 2011: 136), continuing at least, the difficulty in comprehending Gidal. But it is nonetheless through his theoretical underpinning that

film has come to be considered a definitive ‘medium’ for many. As Gidal has inspired my own smartphone-video practice, it is important to understand the wider position of structural and structural/materialist film, from how it has been interpreted as modernist, Gidal’s ‘dialectical materialism,’ and the position I have taken in terms of working with principles of structural/materialist filmmaking.

The initial definition of ‘structural film’ was established in relation to other lines of practice in North American avant-garde cinema by P. Adam Sitney, in his essay ‘Structural Film’ published in *Film Culture* magazine, 1969. Interpretations of ‘structural film’ have been problematic, for example: Sitney’s focus on North American practitioners is described by Gidal as adding to a ‘vacuum’ of study that rarely considered ‘British avant-garde film since 1966’ (1978: 20); while Fluxus founder George Maciunas criticised the term for its similarity to Fluxus film, evidenced in a one page diagram rejecting the term (Rees, 2011: 86). Later, in 1981, film theorist Bruce Jenkins argued in his essay ‘A Case Against “Structural Film”’ that structural film was ‘a critical myth, a model of film which never really existed in practice [that] resided more in the book space of criticism and theory rather than in the screen space of cinema’ (1981: 9-14).

Sitney’s definition of structural film was in part a signalling that some avant-garde filmmakers were deviating from the traditions of visionary and lyrical styles in what was, put simplistically, a move from ‘complex forms’ to ‘simplified forms’, which he outlines as,

The structural film insists on its shape, and what content it has is minimal and subsidiary to the outline. Four characteristics of the structural film are its fixed camera position (fixed frame from the viewer’s perspective), the flicker effect, loop printing, and rephotography off the screen. Very seldom will one find all four characteristics in a single film, and there are structural films which modify these usual elements. (2002: 347, 348)

Gidal reflects on how Sitney's definition of 'structural film' was received by related practitioners working at the LFMC, as 'Around 1971 the debates at the London Filmmakers Cooperative were against the mechanistic notion of structure adumbrated by P. Adams Sitney in his 1969 essay "Structural film"' (1990: 145). The LFMC became crucial in the development of process driven 'material' methods that were more common across European avant-garde filmmakers who 'generally showed more concern for film's 'material substrate' — its physical qualities — than for the image or shot' (Rees, 2011: 84).

Although the LFMC was rooted in the principles of the New York Filmmakers Cooperative, with a focus on screening and distributing film, the LFMC was given 'a new and unique twist' as Rees described it, through a focus on production introduced by Malcolm Le Grice and David Curtis (83). A focus on production methods was unique to the LFMC at the time, and arguably led to the rise of material driven concerns around the physicality of the celluloid strip and, subsequently, to structural/materialist film.

Gidal wrote 'The Theory and Definition of Structural/Materialist Film' in 1976 as the opening chapter to *Structural Film Anthology*, in which he added the materialist element inspired by Marxist 'dialectical materialism', which Gidal defines as,

Dialectical materialism: the dynamic interconnectedness of things and concepts. Or rather, "the theory of reality affirming the continuous transformation of matter, and the dynamic interconnectedness of things and concepts, and implying social transformation through socialism toward a classless society, which was advanced by Marx and Engels and adopted as official Soviet philosophy" (*Webster's Collegiate Dictionary*, 1971). (1990: 127)

This formed the underpinning of Gidal's theoretical departure from structural film, in which 'both the abstract and the represented real are concrete, and (the concept of) materialist film theorizes the

inseparability of the two in practice (i.e. they are still “two” not “one”)' (126-127). Gidal rarely comments directly to Marx in *Materialist Film* (albeit a more focused study on the subject). In *Structural Film Anthology* Gidal says of Michael Snow's *Back and Forth* (16mm, 1969) (who is Sintey's 'dean of structural film-makers' (Sitney 2002: 352)) , 'The structure of the film, both as representation and as actuality of material is de-mystified (It would not be too far-reaching to attribute a Marxist-materialist ethic to these matters.)' (Gidal, 1978: 47). He continues that, 'If one wants to call the film Marxist one accurately can, although of course such a defensive position shouldn't be necessary' (48). Gidal's interpretation of Marxist theory is entwined within his filmmaking efforts, though defining Gidal as such is unnecessary; and perhaps even counterproductive to Gidal's own Marxist dialectical position.

More broadly, Gidal's shift from Sitney's 'mechanistic notion' of structural practice does not pursue a simplified and representational formalism, as Gidal outlines in the opening paragraph of *The Theory and Definition*,

Structural/Materialist film attempts to be non-illusionist. The process of the film's making deals with devices that result in demystification or attempted demystification of the film process. But by 'deals with' I do not mean 'represents'. (Gidal, 1978: 1)

Gidal's non-illusionist position led to the proposition that 'The Structural/Materialist film must minimise the content in its overpowering, imagistically seductive sense, in an attempt to get through this miasmatic area of 'experience' and proceed with film as film' (2). This term, 'film as film,' is later described by Gidal as a 'dangerous formulation' of his, which was 'wrongly taken to mean that film's essential nature was the proper area of investigation for avant-garde/experimental film' (Gidal, 1990: 20). Here, Gidal is making reference to what Le Grice raises more directly as the

‘Greenberg critical framework,’ which he too rejects as ‘interpreting materiality in a neoplatonic, essentialist way’ (Le Grice quoted, 167-168).

Greenberg’s critical framework pursued the essential nature of a medium in the pursuit of “purity,” and in its “purity” find the guarantee of its standards of quality as well as of its independence’ (Greenberg, 1955: 86). These views became highly problematic, as Rosalind Krauss raises this in her 1999 essay “‘A Voyage on the North Sea’: Art in the Age of the Post-Medium Condition’, as seemingly unconnected artists ‘could be said to be united around their deep hostility to Clement Greenberg’s rigid version of modernism with its doctrine of flatness’ (24). Gidal could be considered part of this ‘united’ group, as he argues,

It was never up to the structural/materialist filmmaker to recover films’ essential nature, i.e. film as film. If anything, it is *a* film’s concrete existence which must interest; its possibilities of militating against transparency; its presentation/formation of processes of production which have as their uses meanings constructed by, through, and *for*. (Gidal, 1990: 20)

Gidal was not attempting a Greenbergian essentialism, but for many, structural/materialism is understood as a modernist concept. This is proposed by Rees in his book *A History of Experimental Film and Video*, where he concludes, ‘For [Gidal], film is very clearly a ‘modernist art’’ in as much as ‘Gidal’s vision asserted that [films’] properties were as specific as those of painting or sculpture’ (2011: 90). The interpretation of Gidal as a modernist is continued by others, such as Mary Ann Doane’s statement ‘For the Structural filmmakers of the sixties and seventies (e.g., Peter Gidal, Hollis Frampton, Michael Snow, Paul Sharits), medium specificity was incarnated in film’s material base’ (Doane, 2007: 129). A contradiction here is that, for Greenberg, ‘scientific technology’ such as film was corrupting the purity of traditional modernist artist mediums (Greenberg, 1955b:

292). Gidal, has made efforts to disassociate himself from medium specific purity in theory and practice, though this modernist stigma remains (Gidal, 1990: 95).

Structural/materialist film does not conform to the principles of Greenberg's critical framework in the pursuit of film's essential nature, it merely identified a dialectical materialism in film that was located through practice. Gidal's main criticism of postmodernism and 'post-structuralist critics' appears to be how many 'have an exceedingly hard time watching, and engaging with' structural/materialist film, to which Gidal adds, in the case of Derrida's 'différance', 'Such concepts were worked through filmically in certain London Filmmakers Co-op films long before Derrida verbalized them' (Gidal, 1990: 17). He later describes Gilles Deleuze's description of Snow's *Wavelength* as a 'teleological fairy-tale,' critiquing Deleuze's approach to reviewing film, rather than his wider poststructuralist philosophy (168). It is difficult to say whether Gidal is definitively a structural modernist, poststructural postmodernist, or otherwise; as while he does discuss film in terms of 'flatness' as associated (and associating him) with Greenberg's modernity, he also rails against the modernist 'abstract-expressionism,' as 'expressionism, neo-or otherwise, inculcates the imaginary self-identifications that materialism radically struggles against through its (historical) dialectic, the latter in terms of both the spectator's sexual and economic objectivity and, not always separable, individual subjectivities' (16, 36).

It is through Gidal's interpretation of Marxist dialectical materialism in relation to film that he established a position of what film can be. This position has made him the figurehead of a modernist position of 'film as film' that I find to be wrongly determined, though not entirely incorrect. Gidal's dialectical approach to film is, on the one hand 'inseparable from the material-physical support', while on the other, the 'concept of materialism cannot be covered by the concept and concrete reality of physicality' (15, 16). This outlines Gidal's dialectical materialism of film, as

definable as a 'medium' in its material qualities represented in their non-material qualities. This may outline film is a medium for some, but pursuing *this* medium in a platonic sense is not of importance to Gidal, or structural/materialist filmmaking (95).

The principles of structural/materialist film I outlined in the introduction are similarly not in pursuit of the Greenberg critical framework, though they are neither in pursuit of a Marxist dialectical materialism as they are in film. I have adopted what I describe as 'principles' of Gidal's structural/materialist filmmaking to use as tools to begin attempting to demystify smartphone-video. In approaching smartphone-video, I expand upon and question the notion of medium through Krauss' "technical support" as a proposition of avoiding the limitations of medium specificity and the post-medium condition.

Technical Supports

The concept of technical support is raised by Rosalind Krauss as a means of going against the ‘post-medium condition’ she had promoted in the 1990s. She writes,

As medium specificity fell out of fashion, it seemed retrograde for artists to attempt it or for critics to praise it. Art had, it seemed, entered a “post-medium condition” in which the inauthentic seemed more daring and up-to-date than the exploration of limits and materials.

This essay is a consideration of such a “post-medium condition” from the vantage of those few artists who have resisted its seductive pretense to displace the avantgarde’s relation to modernism. I will be arguing that these hold-outs against the “post-medium condition” constitute the genuine avant-garde of our day in relation to which the post-medium practitioners are nothing but pretenders. (Krauss, 2009: 141)

Krauss’ one-eighty attempts to avoid the pitfalls of Greenberg in what she describes as the ‘approximate medium specificity’ of technical supports (142). Krauss’ technical support is the ‘backbone (or undergirding)’ of an artist’s practice, from which ‘the technical support can be seen to generate its own specific rules,’ what she also describes as ‘fantasy rules’ (ibid). Her examples are: Ed Ruscha’s ‘automobile;’ William Kentridge’s ‘drawings for projection;’ Sophie Calle’s ‘investigative journalism;’ and Christian Marclay’s ‘synchronous sound’ (142, 143). Through the technical support, Krauss counters the post-medium condition, and while I too find issue with the post-medium condition in terms of the ‘moving image’ (expanded in the following subchapter), Krauss’ proposition of the technical support raises other concerns.

In her 2011 book, *Under Blue Cup*, Krauss makes some useful definitions: ‘I am substituting “technical support” for the traditional idea of a traditional medium [...] As opposed to these traditional foundations “technical supports” are necessarily borrowed from available mass-culture forms’ (Krauss, 2011: 16). Here, Krauss contradicts Greenberg’s views presented in ‘Avant garde

and Kitsch' (1939), where Greenberg disassociated 'mass-culture forms' from the avant garde as 'kitsch' practices associated with what he describes as 'peasants.'

Krauss makes these assertions with reference to Foucault's position on the *historical a priori* as a 'barbarous term' (15). Krauss suggests that the same 'form of dispersion in time, a mode of succession, of stability, and of reactivation' that occurred in modernity's medium-specificity, is now happening in postmodernity (15). Krauss makes the case that postmodernity's 'discursive unity' has itself become 'historical' in 'the successive rejections to Greenberg's modernism' (15, 16). This presents another contradiction in some respects, as in supporting Foucault's position of the *historical a priori*, Krauss argues that the position against a 'discursive unity' has itself becoming 'stabilised and reactivated' as *historical a priori* (16).

Krauss' position of the technical support is variable, though by applying her position back onto her own views (as she does with Foucault) her own technical support is made apparent: the 'white cube' gallery. This is what she describes as 'this book's crusade — the resistance to the collapse of the white cube,' which can be considered as the 'backbone (or undergirding),' the technical support, in Krauss' practice as a critical supporter of this space (84). Krauss's technical support then becomes entrenched with its own *historical a priori* as a signifier for the relevance of the white cube, one that is historically linked to Greenberg, post-modernity, and a version of the avant-garde as recurring elements of her texts. And yet, the technical support does offer an alternative to the post-medium condition that is useful to my understanding of smartphone-video, but my use of the term does not align with the implications of Krauss' own technical support. It becomes a more entangled discussion that remains inconclusive, but the term technical support offers an alternative perspective of understanding what may otherwise be (mis)understood as a modernist 'medium,' while also functioning in dialogue with Krauss as an eminent figure of the post-medium condition.

The technical support then, although not completely addressing the complexities of medium in today's making environment, offers a distinction from modernist medium specificity and the post-medium condition, as a vantage point from which smartphone-video can be investigated as a 'mass-culture form' that is distinct from film. Vilém Flusser raised this distinction of film and video as 'different branches of the tree of image genealogy. In comparing them, we are able to see it, setting video and TV free from the control exerted by the model of film' (Flusser, 2014a: 144). Yet since these assertions of Flusser's in the 1960s, the post-medium condition has subsumed these genealogical differences under the mediumless umbrella of "moving image."

“Moving Image”

A definitive understanding of video would be problematic and is unnecessary, but so too is the post-medium remedy to combine film and video under their illusion of movement as “moving image.”

This dramatic response to medium specificity removes the medium and its manner of operation in favour of its illusion as an ideological practice *at a time when video has become a social tool*. The term “moving image” has become the dominant term for artist film and video practice, in part validated by Tate Modern’s 2001 symposium *Moving Image as Art*.

The term “moving image” was not always associated with fine art practice as it is today. In 1988, The Museum of Moving Image was established in London, housing ‘an eclectic collection including original models of the Daleks and the dress Marilyn Monroe wore in *Some Like It Hot*,’ a very different context to contemporary understandings of ‘artist moving image’ (Kennedy, 2002). The museum closed in 1999 due to a lack of financial support (ibid). Soon after, Tate began using ‘moving image’ as a non-specific term for artist film and video practice. “Moving image” became a useful term as defining media continued to be unfashionable, to which a consensus of what moving image means remains undetermined. Such a definition of moving image may go against its own non-specific origins. Or perhaps the term implies its own definition, encapsulating all media producing the illusion of movement, lacking a need for further definition. Though as I elaborate here, “moving image” appears far more specific in its ideology than its interpretation implies.

One vague definition can be found in the official ‘mission’ statement of the New York based Museum of Moving Image, also established in 1988 in a similar fashion to the London equivalent, which came to encompass artist practice. It reads as follows;

Museum of the Moving Image advances the understanding, enjoyment, and appreciation of the art, history, technique, and technology of film, television, and digital media by presenting exhibitions, education programs, significant moving-image works, and interpretive programs, and collecting and preserving moving-image related artefacts. (Museum of Moving Image, 2020)

What is significant here is the omission of ‘video’, while ‘film, television, and digital media’ are specified. This is what I have come to understand as a the ideology of moving image, in which ‘video’ — although the most commonly understood and relatable form of ‘moving image’ practice in the world — is actively omitted from statements, descriptions, titles etc. producing a hierarchy of practice in which video is ideologically removed, while technologically prominent. To evidence these claims I look to recent London-based exhibitions and UK university courses *using the term* ‘moving image,’ and use this as a means of establishing some consensus on this post-medium ideology, albeit from a UK and London-centric standpoint.

UK universities have adopted the term moving image in Fine Art course titles and pathways. I have selected courses below featuring the term moving image, highlighting patterns emerging through their online prospectuses around the mention of video. On the ‘MRes Art: Moving Image’ at Central Saint Martins, University of the Arts, London, the prospectus mentions ‘film and video’ while highlighting ‘the importance of the moving image as an art medium’ (UAL, 2020). The ‘BA hons Moving Image,’ University of Brighton, Brighton, does not use the term ‘video’ rather differentiating ‘the contexts of fine art, experimental film and artists' moving image’ (Brighton University, 2020). The ‘MA Artists’ Film & Moving Image,’ Goldsmiths University, London highlights the lack of video in the title, which is continued in the course prospectus which does not mention video (Goldsmiths University, 2020). The ‘BA (Hons) Film and Moving Image Production,’ Norwich University of the Arts, Norwich, also excludes video from the title and prospectus (Norwich University of the Arts, 2020). Others include the term “moving image” in their

fine art and equivalent courses, such as ‘MA Contemporary Art Practice, Moving Image Pathway,’ Royal College of Art, London, which does not feature the term ‘video’ while outlining ‘Documentary, abstract film, and script-driven narrative cinema’ (Royal College of Art, 2020). The ‘BA Fine Art,’ Glasgow School of Art, Glasgow uses the term ‘moving image’ in their prospectus, but neither film or video is mentioned (Glasgow School of Art, 2020). The ‘BA Fine Art,’ at The Slade School of Art, London, feature ‘moving image’ in their Sculpture pathway, not video; while ‘film and video’ are mentioned in the Fine Art Media pathway (The Slade School of Fine Art, 2020).

This selection of seven leading UK universities using the term ‘moving image’ gives an indication of the erasure of video and lack of consensus on what ‘moving image’ stands for. Course titles such as ‘Film and Moving Image’ highlight the post-medium ideology, in which Film is differentiated from Moving Image, while the omitted video remains the dominant technology in use. This may appear arbitrary, as ‘Film’ connotes cinema, and ‘Moving Image’ something else, but within these vague outlines emerges an ideological hierarchy that discredits the awareness of video’s manner of operation, and with this, its function as a social tool.

Another example of such moving image ideology is Lisson Gallery’s 2016 group exhibition *Audience/Performance/Mirror*. Lisson describes how the exhibition ‘celebrates moving image’ through eighteen ‘moving image’ artworks spanning 1962–2016, none of which are labeled as film or video (Lisson Gallery, 2016: 3). This is initially problematic in a fine art context, where artworks are commonly meticulously labelled, as referenced below in a random selection of works from the Lisson Gallery website.

Marina Abramović, *The Force*, 2019

Alabaster, LED lighting component inside 49.5 x 53.5 x 7.8 cm 19 3/8 x 21 x 3 in
(Lisson, 2020a)

Mary Corse, *Untitled (White Multiple Inner Band, Vertical Strokes)*, 2003

Glass microspheres in acrylic on canvas 243.8 x 609.6 cm 96 x 240 in
(Lisson, 2020b)

Ai Weiwei, *Illumination*, 2019

Lego bricks, 308 x 385 x 3.1 cm 121 1/4 x 151 1/2 x 1 1/8 in
(Lisson, 2020c)

John Akomfrah, *Four Nocturnes*, 2019

Three channel HD colour video, 7.1 sound Installation view, 'Ghana Freedom', Ghana Pavilion, 58th Venice Biennale, Venice, Italy, 2019. © Smoking Dogs Films. Courtesy Bolton & Quinn. Photography David Levene.

(Lisson, 2020d)

The detailed extent to which these works are labelled (some including video) highlights the conventional labelling of fine art practice. In the context of Lisson's celebration of moving image these conventions do not apply, as the original medium and the method of presentation are omitted. This is potentially detrimental to the works on show, especially those transferred from film to video, and presented via the gallery's looping presentations of two large video projections and a pair of mirrored CRT monitors. Presented in this way, the artworks — originating on film and video respectively — only exist through their illusion of movement. As although *technically* video presentations, in this ideological context, they are neither film nor video.

Nathalie Djurberg and Hans Berg's *Worship* (2016) is featured in the exhibition as interchangeably a 'claymation film' in the introduction, and a 'claymation video' in the caption, while the Lisson Gallery website currently lists it as a 'digital film' (Lisson Gallery, 2016: 1; 2020f). Cory Archangel's *Ideas in Action (starbucks.com)* (2014) is discussed as 'a video' though only as a cultural signifier, as to 'whether a video of someone clicking around a website can be considered art' (Lisson Gallery, 2016: 19). These are the only uses of video in the extensive handout. The

works on show are described more broadly as ‘film practice,’ though there is not a single frame of celluloid is the exhibition. All the works are presented exclusively in video as the technical support of the gallery.

Lisson’s exhibition evinces a similar mindset to the university courses, in which ‘film’ and ‘moving image’ are prioritised over ‘video,’ although video is the dominant or sole technology in use. Here we see moving image’s terminological hierarchy, as film (and its cannon) appears to be more desirable than video, even though video is the technology in use — while moving image implies they are indifferent?

Further problems arise when films are shown as videos, in which the technical support is being altered without notifying the audience, or in cases, the artist. This is evident in John Latham’s 16mm film *Speak* (1962) shown at *Audience/Performer/Mirror* without the intense colours, contrasts, and flicker effect of its original celluloid projection, instead presented within a looping programme on a CRT monitor. The subdued colours of a small beveled glass screen are very different to the large, flat, vivid colours of film projection, especially in a film displaying ‘stroboscopic effects’ as the Lisson handout describes (14). In this setting, presented as the original work of Latham, those who have not experienced the stroboscopic effects of film, will imagine that this experience on a small CRT monitor is achieving the desired effect. A CRT monitor is incapable of presenting this experience, especially in a well lit room as it was in the exhibition. Furthermore, as the CRT monitor is relatable to the time period the film was made — and the only mention of *Speak’s* projection is at a Pink Floyd concert (ibid), which could be misunderstood as a scaling issue — visitors would be forgiven for thinking this was the work’s best possible presentation, as Lisson describe this display as a ‘rare opportunity to become acquainted with [Latham’s] avant-garde film practice’ (ibid).

Similar issues are highlighted by media writer and critic Erika Balsom in her book *After Uniqueness: A History of Film and Video Art in Circulation* (2017). Her Balsom discusses how ‘the institute betrays its mandate’ in the exhibition of film transferred to video, as film becomes ‘diluted of any substance’ (Balsom, 2017: 97, 102-103). She describes how this is unique to video, which has been ‘tarred with the brush of mass culture’s reproducibility’ and ‘implicitly held as being worthy of less care [...] as dematerialised, mediumless data’ (97).

Another notable example is the late experimental avant-garde practitioner Jonas Mekas, who voiced a strong opposition to films being exhibited as video transfers. Mekas highlighted this in a discussion with Hans Ulrich Obrist at Peckham Plex, London in 2018, in which Mekas put on a rubber dog-mask and the persona of an ‘angry dog’ (Lithuanian Culture Institute, 2018). Mekas argued for several minutes about the current state of film and video in the gallery, and how he — through this dog persona — was angry about museums showing films on video, alongside other issues of scale and commercialisation (ibid). Mekas voiced his position in response to the Whitney Museum showing a selection of Warhol’s *Screen Tests* (16mm, 1964—66) originally shot on 16mm, as ‘they were showing them on video!’ (ibid). This method was repeated at Tate Modern’s Andy Warhol exhibition, 2020, featuring a selection of Warhol’s *Screen Tests* and *Sleep* (1963) using digital video projections labelled as ‘Film, 16mm, transferred to digital file, black and white’ (Tate Modern, 2020a). Again, although video technology is the technical support of these digitised films, the term ‘video’ is omitted from the description. This is continued into a series of Warhol’s video works: *Andy Warhol’s T.V. on Saturday Night Live* (video, 1981), *Andy Warhol’s Fifteen Minutes* (video, 1986) and *Factory Diary, Andy Warhol in Drag* (video, 1981) with Vincent Fremont; each labelled as, ‘Videotape transferred to digital files, colour, sound’ (Tate Modern, 2020a). Now ‘digital file’ becomes a stand in for video, though this could equally be an image, audio or text file,

as ‘digital file’ is ubiquitous with all other file formats. Why not ‘digital video file’? Such continued traits of a moving image ideology upholding a post-medium condition that appears unique to its ideological hierarchy of film over video.

Another example is Fernand Léger and Dudley Murphy’s seminal experimental avant-garde film *Ballet Mécanique* (1924) exhibited at Tate Britain’s *Aftermath: Art in the Wake of World War One* (2018). The highly influential film was Léger’s first, to which the Tate caption describes it as exemplifying ‘the mechanisation of modern life’ and how Léger ‘argued for the relevance of the modern machine to contemporary art-making’ (Tate Britain, 2018). Tate emphasis the role of the projector, and of film, as specific characteristics of the work as the ‘modern machine,’ yet they exhibited the film as a looping video transfer on a CRT monitor, labelled *as* 35mm film, with no mention of its transfer.

The *proper* procedure here is to label the transfer of media. In Tate Modern’s exhibition of Aldo Tambellini’s *Black Spiral* (1969), the label reads: ‘Digitised 16mm transferred to video’ (Tate Modern, 2019), which credits the film as *not the original format*. *Ballet Mécanique* is changed in its new presentation on an outdated CRT monitor only capable of 640 x 480 resolution. To show 35mm film on this display — when 4K (3840 x 2160) video is capable of displaying this image at 27 times its resolution, and OLED screens are capable of presenting almost true darkness as film is capable of — further highlights the ignorance to the required specifics of such film presentation, in which the use of film is significant to its production. (I am not necessarily against such presentation, but if such shifts in medium as acceptable, why not make all such works available online? Furthermore, why not apply this logic to painting and sculpture, to offer open source printable versions as the original? Why is this logic only applicable to film and video?)

Ballet Mécanique will likely have been viewed by audiences passing its looped presentation in the gallery (intended as a linear cinematic presentation) as the original. Aided by the unnecessarily *old fashioned* technology of the CRT display, which although having no historic or contemporary relevance to the film, may be considered accurate by contemporary audiences. These alterations, applied to works by deceased artists, go unquestioned. This retroactive transfer to alternate media and display situations also appears unique to film *as* video, which I attribute to the post-medium ideology of moving image.

And yet, these ideals are continued by living artists, such as Cindy Sherman in her 2019 retrospective *Cindy Sherman* at the National Portrait Gallery, London. (This exhibition as a useful example due to the use of photography as a relatable technical support to film and video; the extent to which post-medium methods have been used; and as Sherman is a point of reference later in this thesis). In the exhibition, Sherman's photographs are accompanied by highly specific labelling outlining their production method, such as: 'gelatine silver prints,' 'dye sublimation metal print,' 'chromogenic print,' and 'pigment print of Photo Tex adhesive fabric' (National Portrait Gallery, 2019). This is in line with conventional gallery and museum practice discussed previously. Sherman's films being exhibited do not follow this pattern. *I Hate You Super* (8mm, 1975), *Untitled (Dolls Clothes)* (16mm, 1975), and *Unhappy Hooker* (Super 8, 1976) are shown without definition, described collectively in a caption as 'student films' (National Portrait Gallery, 2019). The films are transferred to a looping video projection, though this is not mentioned, nor is that each film is a different format: 8mm, Super 8 and 16mm, requiring different cameras, and perhaps evidence Sherman's experimentation across different formats.

This case study of a handful of UK and London based examples of "moving image" practice are from some of the most influential universities, galleries and museums in the world; Lisson

describing themselves as ‘one of the most influential and longest-running international contemporary art galleries in the world’ (Lisson, 2020e). The practices of these institutions and artists have an impact on what becomes the norms of wider practice and education. I understand the use of a film-video hierarchy as the ideological trait of “moving image,” as methods that would otherwise be criticised in other media have become common practice in film *as* video. Film can be exhibited in ways that drastically alter its presentation, while maintaining the context of film’s historical cannon and prestige through the erasure of the video technology *in use*, made possible by the hierarchy of “moving image.”

Such a hierarchy goes against the principles of indifference, and rather creates a new hierarchy likened to that of the low art high art distinctions of modernity. Hamlyn accredits such responses to film and video to wider sociocultural influences similar to Balsom,

The fact film and video are commercial media, within which context they are understood instrumentally as ideally interchangeable ‘originating’ media, has tainted the debate about the distinctions made by artists who chose one over the other. Their reasonings have been traduced as essentialist of old hat, which in the context of painting they never would be, expect perhaps by those for whom painting is finished anyway. (Hamlyn, 2003: 13)

Since 2005, developments in video accessibility (expanded in the following chapter) have led video technology to become a social tool. And while *this* video remains dominant across popular (social media, smartphones, internet) *and* elite (museums, universities, galleries) culture, the ideology of moving image imposes a distinction between the popular video user, and the high art of film and moving image practices in elite institutions, *while the same technology is used throughout*.

In moving image — established through the freedoms of the post-medium condition — I find an underlying incentive to use filmic *terminology* and video *technology*. There is a contradiction here,

as favouring either media ascribes specific qualities, be it the context/history of film, where videos are described as films; or the hidden technology of video, where films are presented as ‘film,’ while video is the technology in use. Such practice creates an ideological hierarchy where the idea of film is favoured over video, while video is used extensively (no celluloid film presentations are discussed in this subchapter).

I have found the ideology of “moving image” expressed here to dominate the current discourse around film and video, in which an internal hierarchy favours the idea of film and discredits video. Such ideas might be considered in terms of Flusser’s genealogical distinction between film and video:

Genealogically, film can be traced to the line fresco–painting–photography; video can be traced back to the line water surface–magnifying glass–microscope–telescope. In its origin, film is an artistic tool: it depicts; video, conversely, is an epistemological tool: it presents, speculates, and philosophizes. (Flusser, 2014a: 144–145)

Thus film can be considered the preferable tool of the artists, to which moving image ideology is capable of transforming the epistemological tool of video, into the artistic tool of video, when what is produced is determined as art. This forms an ideological barrier — physically (film as video presentation) and psychologically (video production as film) — between the videos made by artists *as films and/or moving image*, and the consideration of videos made by users of the same technology, as ideologically erased from consideration *as art*. While there are multiple concerns in such ideological transformations (economy of production *and* distribution, high/low art social divides) the issue I focus on here is how the gesture of smartphone-video might be observed, its manner of operation made a point of interest, if the tool in use is ideologically removed as a point of consideration?

The Instability of Digital Video

Understanding video on its own terms has been problematic, and for many undesirable due to worries of a deterministic stance. However, some have made efforts to reconcile such issues around video, notably media theorist Yvonne Spielmann in her significant contribution *Video: The Reflexive Medium* (2005). Here she outlines how video presents a shift in the understanding of media more generally as a result of the ‘electronic image,’ in which the ‘media history of fixed images of reality’ are ‘brought into a fluid motion [by] the nonfixed video image [...] summed up essentially under the heading of an increase in dynamism’ (119). It is through these views of video’s ‘immediate, flexible character’ that Spielmann defines video as ‘the reflexive medium,’ which means ‘understanding it as a discontinuous process of construction and reconstruction of signals’ (129, 134).

Spielmann focused on analogue video, arguing when ‘video merges into the matrix of computer media, another stage of the development of the media appears, which no longer belongs to the realm of video’ (72). Spielmann makes the case for a difference between the analogue ‘electronic’ and the computer based ‘digital,’ understanding video as a solely analogue medium, though later states how ‘video, despite its status as an analogue medium, shares significant features of the digital,’ which appear as a result of ‘the flexibility and unstable appearance of electronic media images’ (Spielmann, 2006: 58). Spielmann sees a distinction between analogue and digital video, though recognises that they share an ‘unstable appearance’ (ibid). In her 2006 essay “Video: From Technology to Medium”, Spielmann attributes video’s instability to the indifference it receives under the post-medium condition. Film and video’s consolidation ‘overlooks historic factors’ to which video’s ‘flexible, non fixed, and unstable structure’ makes it ‘an easy tool to adapt to all different kinds of media’ (60, 61). Spielmann argues that ‘this misunderstands the directions of media development and reverses the history of the use of video, reducing its status as a medium

back to the level of a technology' adding how, in a gallery context, 'What is specific about video *as* video eludes discussion' (61, 63). Spielmann's own definition of video — of dynamism, flexibility, transformation — can be characterised under her term 'unstable' in appearance and structure, and attributed across video and digital media.

Similar ideas are raised in the subject of "new media," developed in part by media theorists Jay David Bolter and Richard Grusin as 'What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media' (Bolter & Grusin, 2000: 15). These ideas of refashioning highlight the difficulty in defining film as refashioned analogue and/or digital video, as for Spielmann, 'the same line of argument almost neglects [analogue] video,' as 'once the rubric of "digital" is introduced to video, there seems no need to talk about video and computer as distinct media' (Spielmann, 2006: 63). The case for analogue and digital video remains open, as they share the characteristic of instability. Contemporary video technology can be understood as unstable.

In media theorist Lev Manovich's *The Language of New Media* (2001), he describes new media as 'characterized by variability', as "variable", "mutable" and "liquid" (56). Here we find similar traits to Spielmann's description, as Manovich's digital is 'even more fluid and unstable' thanks to 'the new capacities offered by a computer: its flexibility in displaying and manipulating data' (84, 97). It would appear that digital video can be characterised as 'unstable' in both its original and new media form, though these traits have led some to question the validity of digital media at all. Media theorist Mary Anne Doane discusses similar characteristics as the 'fantasy of dematerialisation' in how,

Digital media emerge as the apparent endpoint of an accelerating dematerialization, so much so that it is difficult not to see the very term “digital media” as an oxymoron. Is the digital really a medium, or even a collection of media? Isn't its specificity, rather, the annihilation of the concept of a medium? (Doane, 2007: 143)

These strong views continue the disdain for the rigid modernist principles of medium specificity, also voiced by Le Grice in a ‘growing awareness to the difficulties of applying modernist principles to electronic media and communication devices,’ principles he also rejects (Le Grice, 2001: 10).

Relatable views are continued in theories of ‘hybridity,’ as media theorist Jihoon Kim discusses in his 2016 book *Between Film, Video, and the Digital: Hybrid Moving Images in the Post-Media Age*, exploring the possibilities of hybridised film, video and other media as a new position of post-media understandings. Kim outlines how ‘modernist assumptions about video’ suggest a ‘stable substance as a medium’ again implying video’s lack of stability, which for Kim, offers scope for hybridisation (55). Kim’s position of hybridity favours the ‘demise of modernist medium-specificity’ through a ‘dialectical negotiation between medium specificity and media hybridity’ (299). In these blurred boundaries of medium and media, Kim continues that hybridity requires ‘a reconfiguration of medium specificity in tandem with media hybridity’ (11), an approach in which media are not defined in and of themselves, but rather redefined through their relation to other media, which Kim pursues through a method of ‘diachronic and synchronic’ specification (34).

In Kim's more subjective approach to what constitutes a medium, he attempts to tackle an issue raised by media theorist D.N. Rodowick in that ‘what makes a hybrid cannot be understood if the individual properties being combined cannot be distinguished’ (Rodowick, 2007: 36). In light of this, Kim makes efforts to define video in hybridity, which he does while asserting ‘any attempt to reassure [a] modernist belief in medium specificity’ would impose ‘limited parameters’ that disrupt

the ‘intermedial flow [of] video’s key specificities;’ which he defines as ‘temporal manipulation and surface manipulation’ (Kim, 2016: 96). According to Kim, applying the ‘stable substance’ of modernist medium specificity goes against the very nature of video as capable of ‘manipulation.’ This could also be understood as video’s ‘unstable’ characteristics, to which applying modernist stability is counterproductive — or at least needs rethinking, as Spielmann notes, ‘the matter of medium-specificity needs more attention in the video debates’ (Spielmann, 2006: 63).

Kim discusses the extent in which a medium’s hybridity can be present using the example of Bill Viola’s *Quintet of the Astonished* (2000). The work was shot on 35mm film at 300fps and transferred to video, and features several performers acting out a scene to a static camera. Kim’s hybridising method posits a ‘subtle coexistence and interrelation of painting, photography, and film —at the expense of sacrificing some material attributes of celluloid’ (Kim, 2016: 71). Kim focuses on the material loss of film’s celluloid, though as paint is never used, it cannot lose its material attributes. Kim puts forward a method in which all media are reducible to their interpreted qualities, while material attributes become extraneous and/or expendable. Yet there is a contradiction here, as Kim’s choice of hybridised media are predominantly modernity-established “high art” media. In Kim’s subjective view of media hybridity, it seems odd to favour those established through rejected means. From this mindset, all activities can be understood as hybridised. In the Viola example, there are many other qualities that could be ascribed to *Quintet of the Astonished* beyond the media defined by Kim, further complicated when hybridised in terms of Krauss’ technical support as mass-culture forms: characters movements become dancing, martial arts, acrobatics; the looped presentation could generate ideas of cycling, hula-hooping, and astrology; outfits become costume, fashion photography, and textiles — their clothes as present as celluloid, and more so than paint.

My concern with Kim's hybridisation is not the potential of hula-hooping as an art form (I would argue it is), but the manner in which observed hybridity favours modernist forms. Through such methods, makers are told what their mediums are after they have made the work, as the responsibility of the viewer/theorist/critic, rather than the concern of the maker's own manner of operation; which may be misread in the work itself. If anything can be included as a hybridised medium, it opens the potential for different media to emerge, but not when those defining hybridity are tied to media sought through the stability of modernity. In such methods, the development of alternative, current, mass-culture forms remain tied to the stabilising efforts of modernity, rather than engaging with the manner in which things are made today.

Similar hybridisation is explored in developments of new media. In Malevich's 2013 book *Software Takes Command*, he develops Kay and Goldberg's term "metamedium" from their 1977 essay "Personal Dynamic Media," reaching a similar conclusions in terms of understanding the digital. Malevich indirectly continues Doanes' 'oxymoron,' in the self-proclaimed 'bold' statement, that there 'is no such thing as "digital media." There is only software— as applied to media (or "content")' (152). Malevich continues that this analysis of the computer medium is 'the direct opposite of the modernist media paradigm' as the "software medium" is made up of the "media-specific" (the algorithm for a specific data structure) and "media-independent" (a set of algorithms working across data structures) (65, 70, 212) — yet Malevich's develops do not recognise video.

According to Malevich, 'Video, in short, remains video' (170). But what is *this* video? For Malevich it is a process in which 'frames quickly replace each other producing the effect of motion' though this is a description of film projection, not video's progressive scan (170). Film and video are again interchangeable and without distinction, as Malevich interchangeably discusses "film clips," "film frames," "film objects" and a "video player" in the following two paragraphs

(170-171). He goes on to develop hybridising method similar to Kim's, but again, does not answer Rodowick's problem of defining the media being hybridised (122).

Malevich notes that his idea of hybridity 'works in theory. In practice, however, it is often hard to say in what category a particular technique or a medium should be placed' (112). This is evidenced in his understanding that the user interface and tools of software programme After Effects 'bring together fundamental techniques, working methods, and assumptions of previously separate fields of filmmaking, animation and graphic design' (247). This works in theory, but in practice, these three fields can be found in many early abstract films (such as Hans Richter's *Rhythmus 21*, 16mm, 1921); continuing an indifference to film and video.

The theories surrounding video and the digital remain open, yet the understanding of video and the digital as having properties that are similarly unstable becomes a continuing thread through those questioning, hybridising, and affirming the existence of digital video. For some, video's unstable characteristics differ so much from the stability of traditional understandings that they remove the existence of video. For others, such as Spielmann, it is 'Because of these medium specific characteristics, [that] video largely differs from other analogue media and plays a major role in the intermediate processes of the emerging computer' (Spielmann, 2006: 59). It is with these positions of video and the digital as unstable in various manners that I attribute instability to be a vague yet fundamental characteristic of digital video.

Unstable Methods in Structural Practice

In Simon Payne's doctoral thesis *Materiality and Medium-Specificity: Digital Aesthetics in the Context of Experimental Film and Video* (2008), the interval is understood as a common characteristic of film and video. For Payne 'the different configuration of the intervals [in a selection of films] reveals the materiality of the medium, which is not located in the substance of the technology, but in its attendant processes' (25). Although the interval in video 'is more difficult to site,' Payne determines that it occurs in video's scanning process, and 'between pixels' in digital video (26, 28).

Payne recognises the broad scope of his integer-based materiality of video, attributing the interval to the painting techniques of Gene Davis, Ellsworth Kelly, Kenneth Noland and Bridget Riley (124). Payne outlines how,

Different mediums and technologies call for different considerations; my analysis of the way that intervals, framing and abstract form have been structured in various experimental films and videos is an attempt to think through strategies that my own practice might adopt. (105)

It is in Payne's video practice, resulting from his consideration of the interval, that I initially reconsidered the video image as a material concern. Yet Payne's definition of the interval presents a stability in the characteristics of video that I now understand as unstable. This may be due to Payne's understanding of digital media as 'essentially abstract' processes that are nevertheless essential to digital video. Payne explains,

What is specific to digital video is the process that entails the sampling and codification of spatial and temporal coordinates, in relation to frames, lines and pixels. This too is a material characteristic of the medium. (104)

Payne's understanding of the interval does not directly address the 'abstract' nature of digital media, though it is here in the abstract, there video becomes unstable. This subchapter aims to address elements of instability found in the practice of Payne, Chris Welsby and Rose Lowder; each of whom have produced significant works exploring similar concerns to Payne's materialist interval, and to Gidal's structural/materialist filmmaking. I am setting out a claim that each practitioner has independently worked towards destabilising their production, setting it away from the stabilised interval through the continuous handheld recording; that I too have adopted.

After *New Ratio* in 2007, Payne released solely 'flicker effect' digital videos for six years using frame by frame digital editing software; a practice that appears to have developed out of his doctoral thesis. These include: *Iris Out* (2008); *Point Line Plane* (2010); *Vice Versa Et Cetera* (2010); *Twice Over* (2012); and *Window Piece* (2013). It was in 2013 after installing a remodelled version of *Primary Phase* (2006/2012) at Media City Experimental Film Festival in 2012, featuring no flicker effect — which also bookends this period of flicker focused works — that Payne produced *Cut Out* (2013), a 3 minute 'largely hand-made' video with no flicker effect (Payne, 2019a).

For *Cut Out*, Payne records his own hand while holding and moving coloured pieces of card with rectangular 'apertures cut out of them,' which he moves towards and away from the camera's lens (ibid). A collection of these videos are then superimposed using a method that is 'adding to the instability of the various planes, edges and colours' (ibid). Here, Payne steps away from his more overtly interval-based flicker structures, opting for an 'instability' made possible through continuous handheld video recording and overlay. Payne continues these unstable methods in *NOT AND OR* (2014), again featuring a handheld camera, though this time rerecording a screen that is intercut with a 3D render of similar movements, featuring flicker alongside longer continuous recordings.

Payne's choice to apply instability is a significant shift to a process that had been dominated by the stable and controllable structures of frame by frame digital video editing. By introducing the handheld camera as an unstable element (compared to frame by frame digital editing) Payne's use of the continuous take actively introduces an element of uncontrollability through the desire for unstable hand-movements (also exemplified in *+X* (2015), a pre-made flickering square re-recorded nine times, superimposed, and rearranged into a series of grid formations (i.e. 1x1, 3x3) through a preplanned structure of varying handheld screen recordings). Re-recording the screen adds further instability, more noticeable in *NOT AND OR*, which causes 'tonal variation' from which 'The viewer is left questioning what kind of surface or screen they are looking at, or through, and how they might perceive or read it' (Payne, 2019b). Payne makes a notable shift in these videos, from the stable process of frame by frame editing, to finding value in the handheld recording and a lack of control — albeit as predetermined concerns.

Chris Welsby's recent videos push this shift further. Welsby, self-described as 'heavily influenced by Structural Materialist film theory at the London Film Makers Co-operative' (Welsby, 2020a), has begun making continuous video recordings, such as: *Mercury* (4K, 2016), *Desert Spring* (4K, 2018), *Crocodile Teeth* (4K, 2019), and *Tree Again* (4K, 2019). Welsby is known for his landscape films, most notably *Seven Days* (16mm, 1974), which was screened alongside *Mercury*'s premier at Tate Britain's *Co-op Dialogues 1966-2016*, in conversation with filmmaker Emily Richardson in 2016. *Seven Days* has an interval structure defined by cloud cover, as the camera is pointed towards the sun when behind a cloud, and turned towards its own shadow when in direct sunlight. He does this using an equatorial stand, moving at the same speed as the earth, and filmed in time-lapse (LUX, 2020a). When answering a question from the audience about the ontological disparity between *Mercury* and *Seven Days*, Welsby responded,

I just wanted to get back to the idea of more like a co-op film, of going out with a Bolex, but not a Bolex, one of these wonderful little Sony cameras [...] You can go out and point it at things, and its all you need [...] it's almost like a Bolex and a Steinbeck, its affordable and instant. (Tate Britain, 2016)

Welsby's move to continuous video from interval based film appear to be, for Welsby, directly related to the thinking of the LFMC, which he relates to structural/materialist filmmaking.

Finally, I turn to filmmaker Rose Lowder, who although not working in video, has shifted from interval based flicker films to continuous recordings. Lowder is discussed by Gidal as a Materialist filmmaker in response to her film *Composed Recurrence* (16mm, 1981), and is known for her in-camera edited flicker films (Gidal, 1990: 136). These films are shot frame-by-frame, covering the lens at times, and then rewinding and reshooting to produce an interchange between various imagery (flowers, boats, animals, a washing line etc.) through the in-camera editing process. However, in Lowder's more recent 16mm works she has moved away from the interval-based flicker, focusing on the continuous handheld take in films such as *Tartarughe d'Acqua* (16mm, 2016) studying turtles in a pond. Subsequently, Lowder has voiced a desire to move away from flicker in an interview with Desistfilm, in which she states, 'The flicker isn't a good thing for me, I would like to dispense with it, but it's a part of the process of working with film' (Desist Film, 2018).

What I find in the aforementioned makers, each being interested and/or associated with structural/materialist filmmaking, is that in recent years they have each moved towards the continuous take over the use of edit based intervals. This is discussed by Payne in conversation with filmmaker Jennifer Nightingale at the screening *Pairs -/-*, in how 'cutting/editing is a paradigm that derives from filmmaking, rather than video or digital media' and how video editing adopts 'filmic

thinking' (Nightingale and Payne, 2017). A question then might be, what is 'video thinking'? Is this simply represented in the continuous take, or does this require a more in-depth examination of video, its integer, and its relationship with time?

Digital Duration

As filmmakers at the LFMC distanced themselves from the practices of their American counterparts, duration ‘became a hallmark of British structural film’ (Rees, 2011: 83). According to Gidal, duration was a materialist concern, the film frame a ‘material piece of time,’ ‘the basic unit’ and the material interval of filmic duration (Gidal, 2016: 53). Le Grice describes this practice as ‘treating duration as a quasi-sculptural dimension’ enabling the viewer to have an ‘experience of duration as a material experience’ (Le Grice, 2001: 166). This structural/materialist understanding of time as material is not limited to physicality, as this quasi-sculptural ‘concept of materialism cannot be covered by the concept and concrete reality of physicality’ (Gidal, 1990: 15).

In the interval-based practice of Payne, Welsby, and Lowder discussed previously, duration is structured around the (pre)determined interval of a structure that is not always based on the physicality of film. Lowder’s flicker works are produced with the film frame as the physical basic unit, and where the material support of film is relatively clear, as the technical support has predetermined intervals as its basic function. But Welsby’s interval is more complex, as the use of time-lapse alludes to extended intervals in the recording, as well as the structuring of wider intervals based on cloud cover. Neither interval durations are determined by the maker, but are rather the result of mechanical and natural occurrences, both of which hold physical properties, be it celluloid or water vapour.

For Lowder’s continuous films and Welsby’s videos mentioned previously, the decision of when to start and stop a recording of a subject, as a durational interval, becomes a subjective process, with little to no apparent relationship with their subject through structure as technological, mathematic or physical. These latter works are investigative, and appear to hold characteristics of the lyrical film, notably associated with works of Stan Brakhage, which Sitney describes, ‘The lyrical film

postulates the film-maker behind the camera as the first-person protagonist of the film' (Sitney, 2002: 160). This is a position set at odds to the structural/materialist view, as Hamlyn discusses in terms of 'pure' duration.

In order for that experience to be a pure experience of duration, things have to occur, but these occurrences must not lead back into an experience of image as an expression of the filmmaker's subjective vision, as they do in Brakhage. (Hamlyn, 2003: 93)

Yet, I argue that the discussed works using the unstable continuous-take may continue structural/materialist concerns when explored in digital media; only resulting in very different outcomes. The role of subjective vision in video is addressed in the following chapter in relation to Gidal's want to remove 'the filmmaker's subjective vision' as a materialist 'desire for a relative form of anonymity' (Gidal, 1990: 156). For now, I consider the differing temporalities of duration in film and video.

Spielmann and Rodowick examine discrepancies between montage in film and digital video. For Spielmann, film is 'montages based on time' while computer generated images produce 'collages coalescing in space' (Spielmann, 2008: 118). This notion is expanded upon by Rodowick, who takes the opposing view of the same principle, that the digital image is 'always montage' (Rodowick, 2007: 166). He goes on to state that this is not montage in the traditional sense, but a montage of 'numerically defined values' (169). He determines this from Alexandr Sokurov's 'continuous take' movie *Russian Ark* (2002), where a series of 'digital events' disrupt the continuous take, causing the 'continuity of automatic analogical causation [to be] broken' (166).

Rodowick's digital events are edits in the image and audio that do not hold the material unity of filmmaking, as the 'separation of outputs from inputs, and the process of calculating light into code,

unravel the unity of the profilmic spatial event unfolding in a unique duration' (165-166). Rodowick determines this 'unique duration' as determining a more spatial than linear montage, one that could equally be determined as Spielmann's 'collage.' This understanding of duration in digital images continues those described previously in the characteristics of video's unstable and flexible image, and in Kim's 'temporal manipulation' (Kim, 2016: 96). What is broadly agreed upon is that time and duration becomes something different in digital video, at the very least, in relation to film.

Rodowick has suggested that we 'feel duration less in the numerical image' (Rodowick, 2007: 175). A relatable point is raised by media theorist Peter Osborne, for whom the digital holds a far more destructive relationship with time, as digital imagery 'exhibits something like a *de-temporalization*' in which,

In the digital image [...] time is not immobilized or engorged so much as obliterated, insofar as any ontological significance of the physical contiguity of digital data is negated by the rupture in its visual form: its translation into binary code. (Osborne 2010: 65-66)

These bold claims are mirrored from a more practical standpoint in Hamlyn's description of digital images, which do 'not exist in a determinable moment of time, but [are] being continuously updated' (Hamlyn 2003: 9). This is a stark contrast to film where 'duration as material piece of time is the basic unit' (Gidal, 2016: 53), through which Gidal's materialist approach to duration suggests a one to one relation between viewer and viewed, as he states,

Duration can be produced in various ways in experimental film, none of which necessitate denial of editing, and none of which posit a positivistic one to one relation between a continuum of time here and a continuum of time *there* (on screen, in frame). But there remains a problem, within the very *concept* of durational equivalence between shooting time and viewing time. (Gidal, 1990: 1)

Gidal sees the potential for various forms of time in the viewing of a film, which he describes in ‘The Theory and Definition of Structural Materialist Film’ as: ‘real time,’ a ‘time presented as it is for the filmmaker [...] presented as a single take or film segments;’ ‘illusionistic time, time made to seem what it is not;’ and ‘Eisensteinian time’ as a ‘post Newtonian time’ (Gidal, 2016: 55). Further expanded in *Materialist Film*,

The notion of post-Eisensteinian editing, with, for example, parallel montage (two things going on in different places at the same time, building suspense) is fundamentally opposed to film-as-duration. (Gidal, 1990: 7)

Gidal’s definitions of time in film relate to his anti-illusionistic methods, and of the dialectical relationship between the filmic representation and the physical celluloid strip, in the pursuit of a one to one relationship between viewer and viewed. I do not believe this is possible in video, as it lacks a stable, material basic unit, and may be better understood in terms of Gidal’s elaboration of Eisensteinian time as post-Newtonian time.

Similar ideas are raised by media theorist Shane Denson in “Speculation, Transition, and the Passing of Post-cinema” from *Post What Post When, Rethinking Moving Image* (2016), in which he discusses the idea of ‘speculative temporality’ in digital media as having a ‘microtemporal duration that is outside the window of subjective perception’ (31). Denson relates this to sociologist Maurizio Lazzarato’s ‘video philosophy,’ of ‘time-crystallizing machines’ that ‘in no way resemble the perceptual acts to which pre-electronic analogue media (phonography, photography, etc.) are held to be analogous’ (29). Doane raising similar concerns, as ‘What is lost in the move to the digital is the imprint of time’ (Doane, 2007: 144). For some media theorists, such duration-less, *de-temporalization* of digital media, coupled with ideas of immateriality and abstraction, lead to

conclusions of indeterminacy, and subsequently support the indifference of the post-medium continued.

For others, the difficulty in defining digital video's temporal and material qualities remains an ongoing condition of its use. As Gidal argues 'practice is often ahead of theory' I evidence a potential shift towards the continuous handheld take, within which I see a line of enquiry — in practice if not in theory — as developing an investigation into the manner of operation in digital video as a temporal concern. I find such a manner of operation to be significantly different to film, both temporally and materially(/spatially), to which continuous, unstructured, and improvised methods become temporally applicable to the digital when considered in terms of post-Newtonian, post-Enlightenment, quantum time. Such ideas of temporality highlight a notable difference between film and video, which I elaborate through a direct comparison of film and digital video's "coming into presence" as defined in the 'Production' section of Gidal's *The Theory and Definition of Structural/Materialist Film*.

The ‘Coming into Presence’ of Film and Video

Production

Each film is a record (not a representation, not a reproduction) of its own making. Production of relations (shot to shot, shot to image, grain to image, image dissolution to grain, etc.) is a basic function which is in direct opposition to reproduction of relations [Here] is the core of meaning which differentiates illusionist from anti-illusionist film. When one states that each film is a record of its own making, this refers to shooting, editing, printing stages, or separations of these, dealt with specifically. Such film mitigates [sic] against dominant (narrative) cinema. Thus viewing such a film is at once viewing a film and viewing the ‘coming into presence’ of the film, i.e. the system of consciousness that produces the work, that is produced by and in it. (Gidal, 2016: 39)

While on the surface film and video look similar, it is on a practical level that they are clearly distinguishable. It may then be in how film and video ‘come into presence’ that their differences emerge. Here I argue that film and video’s material, spatial and temporal differences are the result of each technology’s “core state,” and how this state leads to its functionality and resulting practices. To reach this point, I look to the initial step of making the recording, and how this can be understood through input, core state, and output.

Film’s coming into presence is grounded in the stable materiality of its physical basic unit: the celluloid strip. Here, individual frames are clearly determined in the material substrate of the celluloid, itself revealing the illusion of filmic movement with relative ease. By contrast, digital video cannot be looked at outside its digital translation onto a screen, as opaquely held within its “black box” of invisible data. To achieve a comparison of these processes, I focus on traditional lens-based use via the camera obscura, as a shared technique of both technologies. This subsequently excludes deviations such as film’s Rayograms and mark-making; and video’s solely

computer-generated imagery and postproduction, as rather determining these as approaches resulting from film and video's core state as outlined in this chapter.

The camera obscura in both film and video are the same in principle: light shone through an aperture creating an image of the outside world. To understand video's 'record of its own making' in terms of film, it is important to understand how light is translated into an image to be sequenced into the illusion of movement, as the technical support influences 'the system of consciousness that produces the work.' In film, this is the mechanical movement of photosensitive celluloid through the camera's gate, as each frame is recorded separately. In video, it is the light sensor, which is held in a fixed position, able to record multiple images *as data*. Both media produce images as 'frames' from this process, to be sequenced into the illusion of movement through relative frame rates.

When shooting a film, the framing of individual frames does not originate or emerge from within the celluloid as the photosensitive element. Frames are placed onto the celluloid by the camera apparatus exposing sections of the filmstrip. This frame *can* be placed anywhere on the celluloid, as is exemplified in Jennifer Nightingale's pinhole camera films such as *West Window East Window* (16mm, 2013), in which a frameless, continuous recording is achieved by hand cranking film across a pinhole aperture using a modified magazine, and her finger as a variable shutter. This evidences how the framing is applied by the apparatus of camera and projector, rather than contained within the light sensitive film itself.

Film's image is made using a photosensitive silver halide emulsion. There are various methods of 'dispersion' and 'absorption' of silver halide emulsion, causing a variable amount of silver halide to be suspended in a gelatine substrate which constitutes the photosensitive 'film' (Gunther, 2004: 123). It is not possible for an exact, even dispersion of silver halide across the entire celluloid strip,

as ‘silver crystals aren’t perfectly and uniformly distributed in a grid pattern’ (Richard Photo Lab, 2020). Rather, each frame has a unique number and distribution of silver halide, causing variability between frames.

When creating such images ‘Stability is one of the most important performances required for silver halide photographic materials’ (Katritzky & Sabongi, 2004: xix). Film’s initial stage might be considered ‘unstable,’ due to the requirement of ‘stabilisers.’ Alan R. Katritzky and Gebran J. Sabongi’s book *Stabilizers for Photographic Silver Halide Emulsions* (1974) expands upon photography’s complex chemical process with many variables, though stability of the image can be understood as the physical chemical process of light reacted silver halide becoming fixed as silver crystals (40). Stabilisation is achieved by submerging exposed film into a chemical ‘stabiliser bath’ to be developed through oxidation, and form the image grain from light reacted silver atoms; followed by a ‘stop bath,’ fixing the process of stabilisation as a grain based image (246). This second stage of film stabilisation emerges from an initial recording method *as unstable*.

The equivalent coming into presence of video can be considered the reverse to film’s in its initial stages. Each video frame is in uniform spatiotemporal relation to every other frame in the sequence, defined initially by the image-sensor grid. The most common image sensors are the charged coupling device (CCD) and complementary metal-oxide-semiconductor (CMOS). As the later has become the dominant of the two — especially in smartphones — I focus on CMOS (Gove, 2014: 191). CMOS sensors are a flat rectangular surface, fixed behind the lens within the camera obscura. Where film’s celluloid would pass through the camera gate, the CMOS sensor is stationary, with all frames captured in the single sensor, meaning all frames in sequence are structurally identical in pixel number and ratio.

The operation of the CMOS sensor is explained by Daniel Durini and D. Arutinov in their essay “Operational principles of silicon image sensors” in *High Performance Silicon Imaging* (2014). They outline the CMOS and CCD sensor as ‘p-n junction based photodetectors’ using a ‘doped silicon’ to accommodate ‘p-type’ (holes) and ‘n-type’ (electrons), capable of reading electrons in ‘n-wells’ (29). In simpler terms, as outlined by How Stuff Works, the CMOS sensor is described as a ‘solar cell’ (the p-type), like a solar panel, in which each pixel is read in terms of light/brightness as electricity (the n-type) (How Stuff Work, 2020). This functions as the p-n junction diode traps photons as electrons, reading their voltage as ‘units of watt’ through ‘wells’/‘photosensors’ (Durini & Arutinov, 2014: 11). The watt of each well can then be processed into a pixel within a raster grid, forming an image with full charge relating to the maximum brightness, and no charge to minimum brightness of a pixel, as a grey scale image.

The application of colour in digital imaging is a further distinction to that of film. Film’s colour continues the fixation process through ‘sandwiched’ layers of the same process, only with different colour filters and oxidation processes (Katritzky & Sabongi, 2004: 96). This is again a more complex process, but the principles of stabilisation through causal and chemical processes remain. Digital imaging colorisation requires further explanation beyond causality, as is expanded upon in R. J. Gover’s “Complementary metal-oxide-semiconductor (CMOS) image sensors for mobile devices,” also from *High Performance Silicon Imaging*, in which he explains the process in a microlens colour filter array (CFA),

The CFA and microlens arrays selectively steer red, green or blue photons across the sensor’s optical plane on to a defined grid of photosensors or pixels so the sensor can measure color intensity across the image plane. A Bayer color filter pattern uses twice as many green as red or blue [RGB] pixels to mimic the performance of the human visual system with more sensitivity in the green. (Gover, 2014: 201)

The separate RGB fields are then processed into their respective colours. This differs again to film's stabilisation, where the material goes through a chemical process as a whole, as video pixels are individually processed, which involves enhancing the sensor reading.

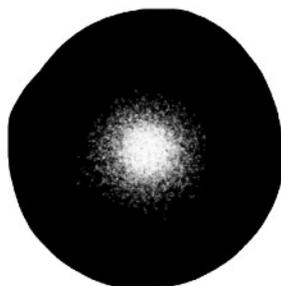
Enhancements are required due to input variables, such as: read "noise" in the CMOS sensor including: 'dark shot noise,' 'signal noise,' 'fixed pattern noise,' and 'thermal noise;' as well as the 'spectral responsivity' that is 'normally characterized through the effective quantum efficiency,' as the amount of photons read/turned into electrons (Durini & Arutinov, 2014: 31, 32, 34, 48). To achieve the image we commonly associate with digital imaging requires a series of enhancement processes, as Gover elaborates in terms of smartphone cameras, 'a fully tuned CMOS camera that automatically optimized exposure, white balance, color balance and others, created an impressive camera' (Gover, 2014: 195-196). Video becomes unstable as data in its core state as numerical values are changed through optimisation and enhancement that are mathematically statistical, rather than physically causal, as they are in film.

To put this in relatable terms, technology writer David Pierce writes in his *Wire* review of the Google Pixel 2 smartphone, 'Rather than dump as much raw camera hardware as it could into the Pixel 2, Google hopes to prove that taking great photos is mostly about software' (Pierce, 2017). This raises questions to the indexical reading of the sensor, as the causal hardware becomes secondary to mathematical software-driven alteration, to enhancements. Stability is highlighted in the terminology: *hard-ware* as stable, physical material; *soft-ware* as unstable, mathematical data. In these terms, the CMOS sensor hardware is a stable reading, that becomes unstable as data though software.

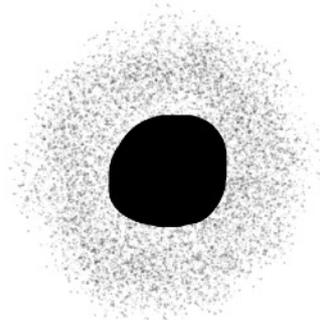
Rodowick continues this premiss, in how ‘digital synthesis produces an image of what never occurred in reality. It is a fully imaginative and intentional artefact,’ an ‘elastic reality’ in which ‘Production becomes the first step in postproduction’ (Rodowick, 2007: 169-170, 173). Video requires postproduction in its production, in the sense that the stable hardware reading must be destabilised through enhancement software *as its coming into presence*. So rather than film’s causal stabilisation of *what is there*; video is trying to establish *what could have been lost* — or even, *what might look better* — to ‘*imagine*’ rather than ‘*fix*.’

These processes are then reversed in playback through the illusion of movement. Film’s celluloid as a stable core state becomes unstable as the projection of light, capable of changing focus and distortion through projection surface; exemplified in expanded cinema performances such as le Grice’s *Horror Film* (1971), Annabel Nicolson’s *Reeltime* (1973), and Anthony McCall’s *Line Describing a Cone* (1973), where body and smoke are used to distort the projected light. By contrast, videos’ output reverts back to stability, as the data stream is momentarily fixed to the display settings in a raster grid relatable to (though not necessarily the same as) the initial sensor reading.

The diagrams below visually examples the stability and instability of video and film’s “core states.”

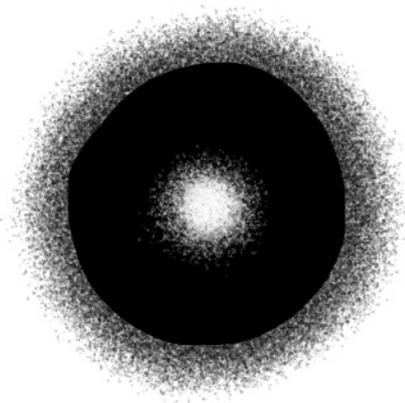


Video

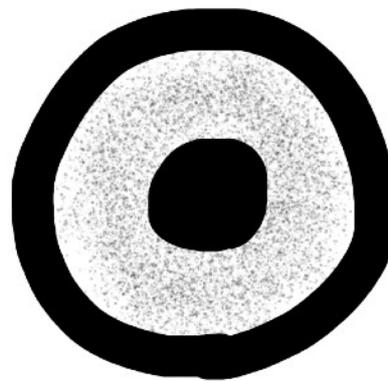


Film

Film's stable core state requires instability in its input and output. Video's unstable core state requires stability in its input and output. Similarly, if an additional layer is added, such as the production of a photography or the projection of video (which projects through a small, stabilising LCD screen inside the projector) another layer is added that opposes the prior layer, as exemplified below.



Video



Film

Film and video are structurally opposed when looked at in terms of their stability. This may address why video has been difficult to understand, especially in terms of filmic thinking. Taking a structural/materialist perspective, the dialectical considerations of film's 'basic unit' can be understood in terms of the stability of the core state and the instability of the representation. A relatable logic in video might then require demystifying the core state as unstable, in what could be understood as a dialectical with its illusion of stable representation; but I find this interpretation too simplistic.

Film's stable core relies on principles of causality, and the cause and effect of stabilisation. Video's unstable core does not rely on causal principles, but operates through methods that do not function

under classical Newtonian physics. Digital imaging sensors rely on quantum mechanics, a simplistic understanding being how photons of light (as a wave) can become an electron (as a particle). The efficiency of this process in images sensors named accordingly as ‘quantum efficiency.’ The quantum properties of digital sensors are discussed in Durini and Arutinov’s ‘Fundamental principles of photosensing’ from *High Performance Silicon Imaging*, which expands upon the ‘origins of solid-state photosensing through the development of quantum mechanics and the different applications of the photoelectric effect’ (Durini & Arutinov, 2014: 1). While quantum effects also occur in film, *an understanding of quantum mechanics is not required in filmmaking*. It is required in digital imaging sensors.

Quantum mechanics is required for the CMOS sensor, but also the processor and screen to operate. As Durini and Arutinov continue ‘the fields of quantum mechanics and solid-state physics [...] helped develop the first transistor, enabled the production of microchips, and basically shaped the world in the way we know it today’ (15). This is also exemplified by the website of European Commission research group *The Quantum Flagship*, who highlight the use of quantum physics in smartphones (The Quantum Flagship, 2020). Which is also put more directly by science writer Brian Clegg in the introduction to his 2014 book, *The Quantum Age* as, ‘Without Quantum physics there would be no matter, no light, no sun ... and most importantly, no iPhones’ (3).

Although I am not scientifically capable of fully comprehending the technical aspects of quantum mechanics in video, it is through Flusser’s interpretation of ‘quanta’ that a framework to understanding smartphone-video begins to emerge that simultaneously accounts for video’s unstable qualities and broader ideas of quantum mechanics; which is the focus of the final chapter. This chapter has aimed to differentiate film and video through interpreted principles of structural/materialist non-illusionist demystification. The key difference I have found is the respective core

states of each technology both spatially (physically) and temporally (durational), which I consider in practice through my smartphone-video's *Desert Rose* (iPhone 6, 2016) and *Elm* (iPhone 6, 2016).

In Practice: *Desert Rose* (iPhone 6, 2016) and *Elm* (iPhone 6, 2016)

Desert Spring available at: <http://www.jamiejohnjamesjenkinson.com/2016/04/DesertRose.html>

Elm available at: <http://www.jamiejohnjamesjenkinson.com/2016/04/Elm.html>

For around four years following *Structure*, I focused on the application of “shaky-cam,” experimenting with various aesthetic compositions and superimpositions made possible through this process. These were mostly inspired by the films of Lowder, Hamlyn, and Nightingale, and in this sense, continued filmic thinking. It was not until slow motion recording became a smartphone feature that I began to realise—albeit abstractly—how to engage with the instability of video’s core state. My shaky-cam videos had developed from *Structure* to be less structured in their methods, though implied a somewhat indexical relationship between input and output that bypassed video’s core state and the potential of its instability.

The iPhone 6 features a “slo-mo” video mode, recording 240fps at 720p, relating to an approximate recording-time to playback ratio of 1:8. Shaky-cam did not achieve the same results when shooting in slow motion, as I cannot shake the camera fast enough to produce any desired effect. Wanting to experiment with slow motion as an accessible smartphone feature, I felt I had to exchange fast camera movements for high-speed events. My first slow motion video was *Water in a Glass* (iPhone 6, 2015), which shows a glass in a sink being filled with water from a high pressure tap causing a fountaining effect.

When watching the video back, I found the subtle flicker of light on the sink, and pixelation noise on a jiffy cloth pattern, to be far more interesting than the intended event of the fountaining water. Here I saw that the device itself is also working in a higher temporality, as itself a high speed event. I wanted to engage with this, though when shooting slow-motion video, the act of recording and the

act of rewatching become quite different experiences, far more pronounced than in shaky-cam, as slow motion captures imperceptible temporalities. Using Gidal's definition of times, this could be "illusionistic time" as 'time made to seem what it is not,' though for Gidal this is the result of cuts to new locations through cinematic distortions of time through narrative. It could then be argued that slow motion is closer to "real time," as it presents time in a manner that is an expansion of optical perception, expanding what *is actually there*. Neither temporalities function here in terms of slo-mo (where Gidal has discussed slow motion, it is in relation to technique rather than time (1976, 11)), so I discuss such temporal dilation as "relative time," as considered different but relative to other times.

In the slow motion playback of higher frame rate video, the cameras automated processes are more evident (auto-exposure/white balance/colour balance/focus/etc.) which appear to occur at a different frame rate to the video recording (at least in the iPhone 6 and iPhone 7 plus, as evidenced in the slo-mo videos *Allotment* (iPhone 6, 2015), *Old Man* (iPhone 7 plus, 25/03/18) and *Elm* discussed more below). This was lessened in *Desert Rose* as I turned off the more overt automated features of exposure and focus. In *Desert Rose* I move a piece of desert rose rock towards and away from the camera lens, zooming in and out, with smartphone and rock in either hand resulting in variables.

In the act of recording, the image appears smooth, while in playback, the background light flickers, and the digital zoom jumps through increments within an otherwise smooth recording. The display in the act of recording cannot show all 240fps, as the screen's 60hertz refresh rate can only display 60fps (Apple, 2020a). It is through playback, at a relative frame rate (30fps), that the lighting and the digital zoom become distinct integers, as timeframes running at different rates to the slow motion recording. What might be described here as "relative time" still functions through the filmic thinking of stable integers.

For *Elm*, an improvised study of a beech tree, I left the automated features active. This resulted in similar effects, only with more evident automated processes also occurring as integers through jumps in exposure and focus. The automation offers another spatiotemporal dimension to the video, as processes occurring outside my operation of the camera, and the light entering the sensor. Changes are being made by the smartphone, which actively disrupts the transcription of input and output as it attempts to enhance its own reading. In comparing the temporality of *Desert Spring's* “relative time” to *Elm*, the activation of automation offers a different, deeper temporality, as the automation occurring in *Elm*, as decisions being made by the machine, also require time to be processed.

The subtle difference in the origin of the image opens an alternative context of time, one that I reflect upon with the aid of Rasheeda Phillips’ reanalysis of time in *Black Quantum Futurism: Theory and Practice Vol. 1* (2015). Phillips describes a non-linear time involving “retrocausality,” which expands on ideas raised by quantum physicist David Bohm (17). Phillips’ retrocausal process involves future predictions influencing the present, and subsequently the past. Applying a simplified form of retrocausality to smartphone-video, the camera’s automation *predicts a future* through preprogrammed aesthetics. *This* aesthetic is applied to the image from the past, as a means of creating a desired aesthetic within unknown future images; what is relatable to Manovich’s “computational aesthetics” (2018: location 258), and Joy Buolamwini’s research into racial biases and the need for “InCoding” (Buolamwini, 2016). The smartphone-video image being presented in the act of recording is not the indexical *present*, but a post-processed, post-present influenced after the fact. These elements become embedded within the digital image as Spielmann’s ‘collage coercing in space’ and Rodowick’s ‘always montage’ as spatiotemporal disruptions, which run far deeper than the automated processes found in the slowing down of these videos.

Deactivating automation in *Desert Rose* only reduced its visibility, while *Elm* embraced and encouraged it. They are both generated over multiple timeframes of past (codes) present (record) and future (processing). This is exemplified in “Multi-frame image processing,” a form of image making using multiple frames compiled as a single multi-spatiotemporal image. Early developments can be found in Marius Tico’s “Multi-frame Image Denoising and Stabilization” produced for the Nokia Research Centre in 2008. Today, this has become a feature of smartphone advertising, such as Apple’s description of its low light photography setting “Night Mode” in its iPhone 11 series, stating,

When you tap the shutter, the camera takes multiple images [...] Then the camera software goes to work. It aligns images to correct for movement. It discards the sections with too much blur and fuses sharper ones. It adjusts contrast so everything stays in balance. It fine-tunes colors so they look natural. Then it intelligently de-noises and enhances details to produce the final image. It all adds up to [...] more detail, less noise, and an authentic sense of time and place. (Apple, 2019a)

The ‘fusing’ of multiple images is a manufactured retrocausality, combining past, present and future into a single image amongst aesthetic preferences *as enhancements*. Spatiotemporal elements become indeterminable in the image itself, as each pixel can contain information from multi-temporal sensor readings, additional aesthetic principles, and errors. The image becomes spatiotemporally indeterminate due the entangled past (codes) and future (processing) of the algorithm, surrounding the act of recording.

In one sense, *Desert Rose* can be perceived as “relative time” in comparison to *Elm*, which features additional retrocausal elements through additional automation. But *Desert Rose* still contains the multiplicity of past, present, and future spatiotemporal elements in its standard imaging, to which

singling out an automated event in *Elm* does little to reveal the instability of the image, as itself a form of stabilisation.

Apple's description of 4K video recording adds further points of consideration,

Think of video as a series of frames. Thanks to incredibly fast camera sensors, iPhone 11 is able to produce 120 frames per second, alternating between standard exposure and short exposure frames.

The image signal processor and video encoders analyze each of those frames in the moment to capture as much detail as possible. To take it even further, the Neural Engine uses real-time machine learning to optimize the different components of the scene. For example, it might relight the person in the foreground, while reducing noise and enhancing color in the sky. It all happens instantly and automatically. (ibid)

Apple are promoting the capabilities of its processor by highlighting multi-frame processing in its highest video recording format, 4K at 60fps. This, along with the earlier developments of Nokia, suggest that multi-frame processing is occurring in less demanding video formats; or that lower quality formats are at the very least capable of recording through methods of multi-frame processing. It can then be assumed that multi-frame processing — of collaged/montaged/quantum spatiotemporal images — is a characteristic of smartphone-video, and of digital imaging more generally.

Video then presents a very different understanding of the 'one-to-one relationship between viewer and viewed,' where filmic "real time" can be understood in relation to its stable core state, as bound causally to its material basic unit — a "Newtonian time." Video's unstable core state functions through multiple temporalities, as an entangled time without a spatiotemporal *present*. This is relatable to Gidal's 'post-Newtonian' logic of "post-Eisensteinian time," though there must be a

distinction here, as what I am raising cannot be applied to Gidal's description as parallel montage (Gidal, 1990: 7).

To make this distinction, I look to quantum physicist and feminist theorist Karen Barad's views on time in relation to Quantum Field Theory. Barad writes,

At the core of Quantum Field Theory, a theory of nature's transience, is the radical undoing of the separation between being and nothingness. Time is out of joint. It is diffracted, broken apart, exploded, scattered in multiple directions. Each moment is an infinite multiplicity where other moments are here-now in particular constellations. "Now" is not an infinitesimal slice, but an infinitely rich condensed node in a changing field diffracted across spacetime. (Barad, 2019: 525)

While Barad is discussing wider ideas than smartphone-video, there are parallels between video's duration and the quantum interpretations by Barad and Phillips, which I call "quantum spacetime." Barad's 'condensed node' as the pixel operating through processes of Phillip's 'retrocausality,' function here as an insight into video's unstable coming into presence. From the CMOS sensor reading, CFA debayering, multi-frame processing, and automated enhancements; "quantum spacetime" becomes an adequately complex, non-Newtonian prospect of smartphone-video's temporality.

The quantum spacetime of smartphone-video presented here functions as an equivalent to Gidal's real time of film. That is, smartphone video's durational one to one relation between viewer and viewed, is problematised. Viewers may not be able to experience the multiple temporalities of quantum spacetime as operating beyond Newtonian interpretation, which may account for: Hamlyn's 'unique timeframe;' Rodowick's 'unique duration;' Kim's 'temporal manipulation;' Doanne's 'timelessness;' Osborne's '*de-temporalization*'; and Denson's 'sub-perceptual flux' as the

product of quantum spatiotemporal qualities that cannot be addressed through stable/Newtonian/filmic thinking.

A further consideration is raised in the assumption of the one to one relation between viewer and viewed as a reworking of the Cartesian duality: “knower and known.” The attempted temporal equality (one to one) of Gidal’s structural/materialist filmmaking may not be determinable in the quantum spacetime of smartphone-video; which raises the question as to whether the relationship between knower and known even functions? From a post-Enlightenment standpoint, Barad relates such ideas to quantum field theory,

The knower cannot be assumed to be a self-contained rational human subject. Rather, subjects (like objects) are differentially constituted through specific intra-actions. [...] Knowing is a distributed practice that includes the larger material arrangement. To the extent that humans participate in scientific or other practices of knowing, they do so as part of the larger material configuration of the world and its ongoing open-ended articulation. (2007, 341–342)

In this respect, I propose such a ‘distributed practice,’ through the consolidation of an equivalent smartphone-video dialectic: *user and used*; into an *intra*-action between *user(s)*. Intra-action constituting ‘*a radical reworking of the traditional notion of causality*,’ signifying ‘*the mutual constitution of entangled agencies [...] only distinct in relation to their mutual entanglement; they don't exist as individual elements*’ which is raised again towards the end of the thesis (33).

Understood as *user(s)*, the notion of transference within the duality of viewer and viewed, knower and known, is exchanged for a shared intra-action of video’s quantum spacetime. Such ideas are then developed with Flusser as *intersubjective user(s)*, and combined with Barad as the *intra*-subjective *user(s)* (Barad, 2007: 33). In this I find a different set of values to the one to one relation between viewer and viewed as a purely non-illusionist methodology; as awareness, familiarity,

accessibility, inclusion, and availability become material elements of smartphone-video practice. These ideas are raised in the following chapter, focusing on smartphone-video in popular culture, before raising further implication of the quantum in the final chapter.

Smartphone-Video

User-Video 2005-2010: Production and Distribution

Video has become a common term for the smartphone/computer-user through ‘video-mode/upload/player/file’ etc. Sean Cubit discussed the potential democratisation of early analogue video and television in his 1991 book *Timeshift: On Video Culture*. Cubit offers a new dialectic for the democratisation of video and television in the early 1990s, an ‘unstable dialectic of the real and the apparent, the present and the absent, the visible and the invisible [as] the condition under which TV enters into the social’ adding,

There is no better reason for political action than wanting a decent life now. Video’s relation to the fading of the subject, to death and to silence, makes it closer than other media to the state of the secular, unstable and atomised subject of contemporary capital’ (2004: 31, 145)

Cubit’s potential of video surged into the 1990s as video became a digital social tool — perhaps becoming something worse than capital, as McKenzie Wark suggests (2019) — though a critical awareness to video waned around 2000 through its ideologically absence as “moving image,” while technologically present and proliferating.

The social potential for video is further evidenced in the London Community Video Archive (LCVA), hosted at Goldsmiths, University of London, which outlines video as a community medium,

Portable video recording — now a technology routinely embodied in smartphones — became available for the very first time back in the early 1970s, making it possible for individuals and communities to make their own television. The medium was taken up by people ignored or under-represented in the mainstream media – tenants on housing estates, community action groups, women, black and minority ethnic groups, youth, gay and lesbian people, and the disabled. (LCVA, 2019)

LCVA specifies video's potential as a tool, operating outside moving image ideology. The Goldsmith's course "MA Artists' Film & Moving Image" (mentioned previously) does not reciprocate video's relevance, erasing the term from its title and online prospectus, while predominantly using equatable video technology (Goldsmiths School of Art, 2020). Within this context, video becomes an outdated term, also highlighted at LCVA's *All You Need's An Excuse* exhibition at LUX, London in 2019, which featured the publications *Video with Young People* (Tony Downumt, 1980), *Street Video* (Graham Wade, 1980), *Video Culture* (ed. John Hanhardt, 1986), and *Rebel Video: The Video Movement of the 1970s and 1980s* (Heinz Nigg, 2017). Interestingly, there is no mention of a contemporary context surrounding video, and how it has become 'routinely embodied in smartphones.'

This chapter attempts to consider smartphone-video as a significant mode of video practice by continuing my considerations of video from the previous chapter. Smartphone-video can be considered special in its widespread use and usability as a social tool, made possible through its compact mobile design, and automated 'user-friendly' features. Flusser, as Cubit, made a case for video in 1991, describing 'the gesture of video' as an significant tool in 'deciphering our current

existential crisis;’ though one yet to be unfolded (Flusser, 2014a: 142, 145). The smartphone has familiarising, proliferating, and unfolding such a gesture of video, through which I trace its technological developments between 2005 and 2020.

A key development of user-video — and the beginning of this timeline — was the founding of YouTube in 2005. YouTube was the first functional online video host of user-generated-content, enabling users to upload their own videos for a public audience. Though it was not the first, as Chase Norlin launched shareyourworld.com in 1997. Norlin ended shareyourworld.com due to a lack of online advertising, serious bandwidth problems and transcoding issues leading to its demise (Beet.TV, 2007). Norlin described his market as ‘early adopters’ of video ‘becoming semi-pro content creators,’ which broadened into YouTube’s audience with the integration of video capable mobile phones (ibid). Norlin describes YouTube’s success as doing ‘a fantastic job of timing this market’ (ibid).

Integrating video recording into mobile phones was a progression from still digital photography, available on a limited number of devices since the millennium (i.e. Kyocera VP-210, 1999; Sharp J-SH04, 2000). 2005 was also a pivotal year for user-video production, as alongside YouTube’s distribution, Nokia (the leading smartphone brand of the time) released their high-end camera phone, the N90, sporting a Carl Zeiss lens and video recording capabilities at a pixelated and jumpy 15fps 352x288 image. Close to half the standard image and frame rate of available prosumer camcorders at the time (PAL/SECAM 25fps, 720x576; NTSC 29.97fps, 720x480), the N90’s video quality was relatively poor, yet the device’s design highlighted its video capabilities through its camcorder style, transforming from flip-phone to handy-cam mode via a swivelling flip-screen. Nokia marketed the integration of camcorder and mobile phone in adverts such as *Film Set* (Nokia, 2006) for the upgraded Nokia N93, which features actor Gary Oldman describing “what are the

ingredients that go into a great movie?” and after listing various aspects from New York street scenes, he concludes: “something to shoot it with” bringing the N93 into shot (ibid).

These “movie” aspirations have continued to an extent (discussed below), but a more functional understanding of these devices are as a combination of mobile computer and webcam. Camera integrated devices at this time were technologically similar to webcams, as compact video graphic array (VGA) cameras. Webcams, as their name suggests, are cameras capable of being linked to the internet. The first functioning webcam was Cambridge University’s *Trojan Room Coffee Pot* in 1991, as a live local network monochrome image of a coffee pot’s levels. The commercial appeal of the webcam came to market in the Logitech *QuickCam* in 1994, popularised by webcam broadcasters; notably Jennifer Ringley’s pioneering *Jennicam* (1996-2003), the first broadcast of a person's own life online via webcam. The webcam was limited by slow internet bandwidths, poor quality imaging, and a lack of mobility due to its connection to a computer. Mobility was enabled through its integration into a mobile internet device, as internet connectivity became the new desirable of mobile devices.

YouTube became the first big step in making prerecorded video watchable online, by facilitating the uploading of material alongside feasible viewing bandwidths. The ability to watch and broadcast video was an instant success, with YouTube named ‘the fastest growing website’ in 2006, and fifth most popular website on Alexa the same year (AdAge, 2006). YouTube pioneered the popularisation of user-generated video through its well timed ease of access to the distribution and consumption of user-generated video content. Yet to shoot, transfer and upload a video, still required some technological knowhow; arguably limiting the content that made it from user to YouTube. Norlin describes YouTube’s success as ‘more of a viewing phenomenon than a sharing phenomenon,’ with more users watching than generating content (Beet.TV, 2007).

In 2006, around 65,000 videos were uploaded to YouTube every 24 hours (Kalyani, 2017: 26). Due to this volume (although a fraction of what it is today) a definitive study of uploaded videos is difficult. What is known is that some of these uploads were subject to copyright infringements, as they were not recorded by the uploader, or user-recordings of copyrighted material, such as live bands (Arthur, 2010), which Norlin described as ‘a tool to build audience’ (Beet.TV, 2007). Such non-user-generated content was a relatively low percentage, exemplified in the Viacom company lawsuit that issued the take down of 100,000 videos in 2006, equating to less than two days’ worth of uploads (Arthur, 2010). The site’s primary intention was for user-generated video, as user-copyrighted, and shot on the available technology of the time.

User-video at this time was limited to prosumer grade camcorders, webcam limitations, and high-end camera phones. Video access required some enthusiasm towards video from the user, as either to buy video dedicated equipment, or to purchase more expensive devices with integrated video capabilities. This limited video use to those with a vested interest, rather than user-by-association as in today’s smartphone user where video is a standardised feature. The next big step of the camera phone — and subsequently the smartphone — was the integration of the communicative possibilities of the webcam and mobility of the camcorder.

The Nokia N95, released in 2007 (continuing the N90 and N93 series), was one of the first camera phones able to shoot video in 480p standard definition (SD) at 29.97fps. Although numerically matching professional video technology of the time, it lacked the technological specification of today’s consumer hierarchy (expanded below). Nokia went with the relatively clumsily marketing slogan ‘DVD-like quality video’ (Nokia, 2007). Nokia’s advertising prioritised its integration of multiple features (not just video) describing the N95 as a multifunctional ‘magic box’ (ibid). At this

same time, social networking sites such as Facebook and Myspace were making mobile internet access desirable for social and cultural connectivity, losing its gadget fetishism as a high-end product, and becoming part of social networking. YouTube also began to invest in mobile phone connectivity, launching their mobile site in June 2007, capable of watching and uploading videos straight from a mobile device (Beaumont, 2010).

2007 also saw the launch of Apple's first smartphone, the iPhone. It was an instant success, with images of eager customers queueing outside Apple stores broadcast on national news (Dundon, 2017). The device was later voted invention of the year by *Time Magazine* (Grossman, 2007). Apple continued their iconic design, made popular by the success of their MP3 music player, the iPod, while technologically the product was lacking in many of the features available in the Nokia equivalent (i.e. 3G connectivity, camera quality, video recording). Apple's sleek design, inside and out, became the defining factor alongside their slogan of internal progression, 'there's never been an iPod that can do this' (Apple, 2007).

As a social tool, internet access became the desired feature of the mobile/smartphone. Mobile internet access had been available since 1999 (NTT DoCoMo, 2020), but it was the 3G telecommunication network that made mobile internet browsing feasible, with a transfer rate of *at least* 200kbits/s; up from *a maximum* 50kbit/s in its predecessor 2G (ibid). The first 3G network was developed in Japan by NTT DoCoMo in May 2001, and products began accessing it throughout the following decade (ibid). The interest in 3G accessibility is reflected in Apple's follow up phone, the iPhone 3G, skipping a "2" model and featuring the term in the title. This was one of the later high-end models to incorporate 3G, released in 2008, but was met with further consumer desire, continuing into the iPhone 3GS in 2009, with an improved camera matching competitors on their 480p video capabilities, matching Nokia's N95.

Nokia, once leading the mobile phone market, saw a 21% drop in profit in their 2008/09 report, while iPhone sales continued to increase (Nokia, 2009). Apple had embraced the naturalisation of digital technologies in modern culture, normalising them into stylised objects, rather than tech gadgets. This move from gadget to luxury item is also exemplified in the popularity of the Blackberry smartphone as a ‘status symbol’ (McGuirk, 2011). Guardian journalist Justin McGuirk discusses this in his article “Trainers and Mobile Phones: the objects of our disaffection,” in which the Blackberry’s association as ‘the ultimate executive toy,’ along with Blackberry Messenger (BBM) — a free messaging feature for Blackberry users — led to the device’s iconic status in London’s grime culture (ibid). Artists began featuring lyrics and track titles with Blackberry and BBM related terms, such as P Money’s *Blackberry* (2011) and American rapper Sean Kingston’s *BBM* (2010). BBM is noted as the mode of communication used to organise the protests following the police killing of Mark Duggan, commonly known as the ‘2011 England Riots.’ McGuirk described the Blackberry as a symbol of ‘wealth and unregulated freedom that the urban poor can only dream of’ (ibid). Through the relative affordability of longer contracts, high-end devices such as the Blackberry and iPhone could be purchased on credit, making these status symbols available to a wider market.

Wealth was also an aspect of the “viral video,” put into action through the YouTube Partnership Program (YPP) launched in 2009. YPP began sharing the advertising revenue of participating YouTubers, turning a viral video into a lucrative opportunity. A notable example of the viral video is “Charlie Bit My Finger,” a home video of two children recorded on a dedicated camcorder by their parent, and uploaded to YouTube in 2007. The video went viral, and although predating YPP, such potential of the viral video popularised the video phenomena, becoming a hallmark of user-video achievement. The children featured in the 57 second video have subsequently gone on to ‘Takeover’

Channel 4 News in 2012 (Channel 4 News, 2012); act as spokespersons for YouTube's 10th anniversary on the ITV breakfast show *This Morning* in 2015 (Good Morning Britain, 2015); and have a dedicated Wikipedia page (Wikipedia, 2020). The popularity of the video at the time, now amassing hundreds of millions of views, likely influenced YouTube's boost to 15 hours of video uploaded per minute by the end of 2008, alongside the increased access of video capable mobile devices (Statista, 2019).

Towards the end of the 2000s, video recording was still a relatively gimmicky and exclusive activity. Popular smartphones such as the Blackberry and iPhone had not been pushing video as much as their competitors, using the status symbol as the device's selling point, and its internet connectivity becoming a socially required tool regardless of income. The following decade saw a focus on digital imaging, in which video quality became hierarchically defined beyond "DVD-like," achieved in the gold foil branding of "HD Video."

User-Video 2010-2020: Video Hierarchy and the Poor Image

By 2010, YouTube video uploads had reached 24 hours of footage per minute (Google, 2010), and video capable smartphones were becoming standardised on more affordable devices, such as the LG Optimus S (2010) retailing at \$49.99 (CNET, 2019). High-end devices began to push their video capabilities as a marketable feature. The first smartphone jumping from standard (SD) to high definition (HD) video was the Samsung Galaxy S in 2010, shooting 720p HD video. Slightly lower than the standardised 1080p ‘full-HD,’ this technological specification was already associated with high-end television programming, BluRay, and flatscreen televisions. Having said this, HD was still relatively new, only broadcast in the UK through telecommunications company Sky HD, launched in 2006, where the majority of programming was still upscaled from SD (Jay, 2006). 2010 saw a more general shift toward HD video in the UK, as alongside the Galaxy S, BBC One HD was launched, simulcasting BBC One programmes in a mix of HD and upscaled SD video; and YouTube increased their viewing quality to 1080p full-HD (BBC, 2010).

The terminology used to define the professional fields of cinema and television were now being used to describe user-video capabilities on equal terms. Users were, terminologically, getting access to HD video recording and distribution at the same time as the BBC, the longest running television broadcaster. It could be assumed that smartphone users were, in certain instances, capable of a higher video quality than the professional circuits of television and DVD, who were still using SD video quality. Although SD 480i/p had been achievable in mobile phones and consumer cameras for some time, equating numerically to television broadcasts, it was the commercial branding of 720p and 1080p video as “HD” that marketed video quality to the consumer beyond “DVD-like;” producing a consumer hierarchy.

The iPhone 4, released Sept 2010, was Apple's first 720p HD capable device, and its sales far exceeded Apple's expectations, stating 'It was the largest number of pre-orders Apple has ever taken in a single day and was far higher than we anticipated' (Apple, 2016). Video in smartphones before 2010 lacked the commercial hierarchy of the "megapixel" used in digital photography. The megapixel number system — relating to how many million pixel wells there are in the camera's sensor — had become a consumer carat rating for the quality of the camera and its image, while rarely taking into account other discrepancies such as sensor size and efficiency. HD video, on the other hand, suggested a binary hierarchy of high and standard definition, with "HD" becoming a notable term in the advertising of HD capable devices.

HD can be misleading, as in Apple's keynote presentation for the iPhone 4, then Apple president Steve Jobs describes the camera as 'full 720p [...] so that's real HD video' (Apple, 2010). 720p is not "full-HD," having its own term used in 720p displays as "HD-ready," to differentiate from full-HD televisions. Nonetheless, the hierarchy presented by HD became a desirable feature, though less coherent than the numerical system of megapixels. HD was presented as a step above SD, and although HD then held its own internal binary hierarchy (720p and 1080p), it was still presented as the pinnacle of video imaging at the time. Smartphones soon developed full-HD video recording, such as Apple's iPhone 4S, released in 2011. This model is significant as it doubled its predecessors' initial success with over one million pre-orders in the first 24 hours of its availability (Apple, 2011). It launched Apple to become the world's most valuable company (Satariano, 2011).

HD became a desirable feature of user-video, but this terminology is not as stable as it may appear, as HD labeled devices do not produce a uniform quality image, only a uniform number of pixels.

Full-HD video is defined by a camera/display's ability to shooting/display video with 1080

horizontal lines, which are most often 1920 x 1080 as a 16:9 ratio image; the industry standard of

HD video. A stable medium, like 35mm celluloid, upholds its physical size universally (emulsions and development can alter the image quality, but the celluloid size itself is fixed). HD sensors/ displays are not fixed in scale, available in a variety of sizes while maintaining a uniform input/ output specification.

Sensor sizes vary dramatically. For example, the iPhone 4S has a 4.54 x 3.42mm sensor, while a DSLR of the time, such as the Canon 5D Mark III (2012), is more than seven times the size, at 36 x 24mm. Both devices are branded as shooting HD video, while Apple shoots stills at 8MP and Cannon at 22.3MP (AnandTech, 2011; Canon, 2019). The size of the sensor, and the number of pixels/wells, does not relate to the definition of HD video recording. A HD image can be defined in the output, for example, the stability of the HD display holds a definitive number of pixels, but can be upscaled or downscaled from the input source. Similarly, two HD screens of different sizes will have the same number of pixels, as the size of each pixel is increased or decreased in relation to overall size of the screen. In some more recent personal devices, pixel densities are fit for purpose. A desirable pixel per inch (PPI) specifications is exemplified in Apple's "Retina Display," resulting in a variable number of pixels in a screen based on its physical size. For example, a 16-inch MacBook Pro has a 3072 x 1920 native resolution at 226 PPI, while the equivalent 13.3-inch display has a 2560x1600 native resolution at 227 PPI. Both screens are larger than HD, while the pixel size is (almost) uniform to the desirable 226 PPI of the Retina Display specification (Apple, 2019e).

The video image becomes variable across platforms within and outside of the image specification. For example, a video stated as "HD" online does not take into account the screen specification, or whether the video is in fullscreen mode. The Retina Displays mentioned previously could display this HD image upscaled or downscaled depending on the window configuration. Video's variability is a result of both software and hardware altering video from input to output through video's

unstable core. This causes video specifications to become ambiguous, which is not a feature of film where specifications are stable and material. A 35mm film will not fit into a 16mm projector, but a SD image will display upscaled on a HD screen. Video codecs facilitates this variability, which in user-video is predominantly Advanced Video Coding (AVC), also known as H.264, which can function on variable screen sizes through Scalable Video Coding (SVC) (Richardson, 2012: 287). Codecs such as these operate at the level of programming and/or postproduction that are separated to smartphone use — what Flusser describes as the ‘inventor’ rather than the ‘envisioner,’ expanded in the final chapter (2011b: 20).

The utilitarian functionality of digital video’s variability, alongside methods of user production and distribution, continued video’s prolific use. By 2014, 300 hours of video were being uploaded to YouTube every minute (Statista, 2019). User generated video content was becoming a dominant mode of video production and distribution, with HD at the pinnacle of its binary hierarchy of standard and high. This was until “4K UltraHD” broke away from the binary of standard and high, implying a megapixel-like numerical system.

As a professional image standard, 4K runs native in cinematic widescreen at 4069 x 2160 in 256:135 for DCI (digital cinema initiative), with the consumer version running at a slightly lower 3840 x 2160 in the more common 16:9 ratio. Standardised video specifications use the amount of horizontal lines in the image (480p, 720p, 1080p) making 4K “2160p HD.” This specification does not change over varying aspect ratios of 4K video, such as ultra widescreen at 5120 x 2160 in 21:9. Yet 2160 has not become a popular term — possibly due to a lack of marketability — being commercially branded as “4K UltraHD.” This relates to the DCI native ratio, with just over 4000 horizontal pixels, while the consumer version runs just under at 3840, and ultra widescreen just over

5000. Arguably, these three versions are 3K, 4K, and 5K when taking into account the variable horizontal pixel length, yet each format is specified as “4K.”

4K became the new pinnacle of video technology, and was quickly achieved in a smartphone by Sony’s Xperia Z2, released in 2014. Sony paid a price for this hasty upgrade, as the device was reported to overheat after around a minute of recording 4K video, with Sony covering their move, arguing it was to ‘future proof’ material made on the device (Sony Xperia, 2014). Other smartphone brands followed suit, and today most have a variety of 4K video recording capable devices.

It was not until 2017 that a smartphone featured a 4K display in the Sony’s Xperia XZ Premium. The 4K screen has not been widely adopted, as other leading brands such as Apple and Google do not currently have a smartphone with a 4K display, instead opting for optimal PPI. As such, it has become acceptable for devices to shoot a higher image quality than their displays can facilitate. So viewing 4K video requires transferring video files to 4K capable hardware. 4K is a higher quality than most laptops, desktops, and tablets, and is mostly limited to 4K smartTVs, featuring a limited computer processor allowing them to access the internet by functioning as a basic computer.

SmartTVs come with built-in and downloadable applications to watch video content from specific online hosts; a common preinstalled application in the UK is YouTube. If 2010 was the year for HD, 2014 was the year of 4K, as although the first 4K television (the LG 84EM9600) was released in 2012, it had very limited access to 4K content. It was in 2014 that YouTube increased their upload and streaming quality to 4K, and Netflix introduced 4K streaming for an additional fee. By 2015 most smartphone brands had a 4K capable video recording device, and through YouTube, users could produce and distribute 4K content. This is a significant point in video’s development, as smartphone users’ could produce and distribute video quality that exceeded the BBC, who only

began trialing 4K in 2016 (BBC, 2016), the same year that Samsung released the first 4K Blu-Ray player, the UBD-K8500. By the end of 2020, BBC only provide 9 programmes in 4K, while ITV, Channel 4 and Channel 5 have none.

With professional 4K video content only available through additional fees or purchases, YouTube became the most accessible streaming site for 4K video, meaning the most accessible 4K video was user-generated. Some YouTubers picked this up, dedicating channels to 4K video compilations, such as ‘4K Video Relaxing Ultra HD TV Test 2160p 20 minutes,’ many of which amass millions of views in a matter of months (4K Play, 2017). While some are shot by video enthusiasts using more prosumer grade cameras, there is also a wealth of 4K smartphone-video footage online alongside it. A simple “iPhone 4k video” search to YouTube in 2017 brought up over 17 million results (Accessed 05/09/17). This inverts the hierarchy of amateur and professional production, as the most accessible means of viewing the highest *available* video quality is via users.

8K Ultra HD is currently accentuating this divide, with 2020 the year of 8K. 8K is used to specify an image of 7680×4320 in 16:9, relating to *almost* eight thousand horizontal pixels. 8K was made available to smartphone users in the Samsung Galaxy S20 series in 2020, with 8K video uploads also supported by YouTube this same year, and various 8K SmartTVs also on the market. Currently, there is no professional television broadcaster in the UK supporting 8K video (video gaming consoles such as the Microsoft *Xbox Series X* and Sony *PS5* can support 8K gameplay, both also released in 2020). While the necessity of going beyond 4K remains unknown, it should be remembered that HD was initially described as ‘like looking out of a window.’

Such redistribution of video quality offers a reinterpretation of Hito Steyerl’s ‘poor image’ from her seminal essay “In Defence of the Poor Image” published by e-flux in 2009, in which she states,

Poor images are poor because they are not assigned any value within the class society of images—their status as illicit or degraded grants them exemption from its criteria. Their lack of resolution attests to their appropriation and displacement. (Steyerl, 2009)

She goes on to define these images as ‘popular images—images that can be made and seen by the many’ and with this,

The poor image thus constructs anonymous global networks just as it creates a shared history. It builds alliances as it travels, provokes translation or mistranslation, and creates new publics and debates. By losing its visual substance it recovers some of its political punch and creates a new aura around it. This aura is no longer based on the permanence of the “original,” but on the transience of the copy. It is no longer anchored within a classical public sphere mediated and supported by the frame of the nation state or corporation, but floats on the surface of temporary and dubious data pools. By drifting away from the vaults of cinema, it is propelled onto new and ephemeral screens stitched together by the desires of dispersed spectators. (ibid)

What is this image today, if the poor image of the user is no longer the low quality image it was in 2009? Today’s smartphone is being realigned with ‘the vaults of cinema,’ exemplified in cinematic showcases of smartphone video advertisements, and their use by some directors (Sean Baker’s *Tangerine*, 2015) and artists (Charlotte Prodger’s *BRIDGIT*, 2016) who are praised for their *professional* use of smartphones (elaborated below). With this, the smartphone is reigniting the N93’s initial prospect of moviemaking, exemplified in Apple’s slogan “your movies look like movies on iPhone 7” (Apple Ad, 2019). This moves away from the humbly radical ideals of the webcam, such as *Jennicam*; and the development of the smartphone on its own terms. As Apple’s ‘Shot on iPhone’ video campaign advocates “make every video epic” while showcasing conventionally cinematic camera use (Apple, 2019c).

Steyerl’s poor image is perhaps something else in the current smartphone driven context, to which the ‘aura’ obtained by the low quality poor image may have been short lived. As although poor

quality images still exist, and are often located in areas requiring this ‘political punch’ — as in my own experience of Gaddafi’s overthrowing in 2011 — *this* low quality image has become a pastiche of its own cultural reference, used as a cinematic device and art aesthetic exemplified in the “deep fried” memes of online subcultures (KnowYourMeme, 2020). The political weight of these images is subsumed as cinematic and/or aesthetic trope, weakening the punch of such ‘poor images.’

Yet, I find a more pressing consideration, not in the the image itself (user-video becoming a higher quality than professional broadcasters), but in *how* it came into presence. Apple ad campaigns suggest that users, without any professional training, can produce cinematic images (Apple, 2019c), through automated professionalisation. Aesthetics decisions are being made by the camera, on the behalf of the users, to induce professional looking images. User-video and professional-video are becoming harder to distinguish, dissolving the political punch of their image quality. But the visibility of such visual aids can lead to amateur looking images as unprofessional, offering an alternative potential for the ‘aura’ and/or ‘political punch.’

Smart Cameras and AI Aesthetics

User-video and smartphone-video can appear somewhat interchangeable, but there are differences. “User-video” implies the study of a group (users), while “smartphone-video” implies the study of a tool (smartphone). While smartphone-video is a tool of user-video, I am shifting the focus here onto the tool, and its ‘manner of operation,’ rather than the group of people associated with the tool. My aim here is to shift the focus of study from an outsider perspective of video-*as*-community-medium-*as*-cultural-signifier; to operating *within* this community; I am a smartphone-user. From within, the entangled familiarities of how the tool operates become the point of focus in the *intra*-action of smartphone-user(s). User-video implies such familiar associations, but can be produced on tools the user-as-audience are unfamiliar with *as user(s)*: i.e. drone-video or action-cam-video. “Smartphone-video” aims to activate the audience-as-user-as-practitioner, to associate *our* use of tools to the images *we* make and see.

Part of this *use of tools* involves the integration of automated features. Under the guise of “user friendly” and “smart,” automation enables the operation of devices without formal training. Similarly, these features have been fundamental to the development of high quality imaging in compact and affordable camera integrated devices. Such operational and functional automation has been crucial to my understanding of smartphone-video’s instability, which further differentiates film and video practice, while also distinguishing professional and ‘poor’ manners of operation through the use of automated features.

What initially distinguished the mobile-phone from an equally *mobile* smart-phone was the combination of a personal digital assistant (PDA) with mobile phone connectivity. The BMI *Simon*, released in 1992, was the first of these devices, and predates the term smartphone which was coined later (one example being the Ericsson GS88 released in 1997, featuring the separated “Smart

Phone” on the box). The smart feature in phones and other devices has come to mean the integration of a computer processor, which through desires for connectivity, has become the norm. Yet, these devices are not equally smart, with processor development becoming a marketable feature (Apple, 2018).

From around 2017, smart-features were being marketed with “AI” related branding, such as Apple’s 2018 iPhone X featuring the ‘Intelligent A12 Bionic.’ The chip was promoted as ‘the smartest, most powerful chip in a smartphone, with our next-generation Neural Engine’ (ibid). While these ‘intelligent,’ ‘bionic,’ ‘neural’ features cover a variety of operations, there is a specific focus on their role in the functionality of the camera. As Google state, ‘your Phone app and camera both use on-device AI to give you new superpowers, allowing you to interact more seamlessly with the world around you’ (Google, 2018). Samsung describe how their Galaxy S10’s ‘hardware is complemented by a next-generation Neural Processing Unit (NPU) – a layer of intelligence for all your photos – that streamlines image processing and makes already smart features better’ (Samsung, 2018a).

How then do these more interpretive ‘intelligent’ images relate to traditional understandings of the photographic image? In Roland Barthes’ essay “The Photographic Message” (1977) he describes the photograph as ‘a perfect analogon,’ a direct equivalent of perception, though one that is ‘a medium without a code,’ which sets out his theory of photography (17). While Barthes’ is aware that the photographic image holds some reductive qualities, they are ‘at no time [...] a transformation (in the mathematical sense of the term)’ (ibid). Traditionally, the photographic image holds a causal stability between the subject and its record. The images produced by the smartphone are systematically codified and mathematically transformed, become distinct from Barthes’ photographic image. This raises the question of whether smart/digital-imaging can be understood in terms of photography, as probable *interpretation* rather than causal *transcription*.

Issues of digital media's indexicality are raised previously by Mary Anne Doane and Peter Osborne in terms of 'annihilation' and 'obliteration.' The digital's apparent inability of presenting an indexical/analogous image and temporality due to its unstable, relative and/or quantum spacetime, has enabled smartphone developers to move away from the stability of causal recordings and focus instead on prediction and probability. I suggest that the smartphone has embodied this understanding more than any other device. Rather than increasing causality as a method of improving image quality, smartphones are a leading technology in how the interpretation of smart features, calculating huge datasets of information, can produce desirable results; as Samsung describe 'the more it's used, the more accurate it becomes' (Samsung, 2018b). But what is this accuracy based upon, if the causal reading requires interpretation?

Apple's description of 'When you tap the shutter [...] the camera software goes to work' (Apple, 2019a) is a very different understanding to Barthes' photographic image, but can be likened to D N Rodowick's views on digital video where 'production becomes the first step in postproduction' (Rodowick, 2007: 173). In this sense, the production of the image is not solely in the sensor, but requires the computational interpretation of data. Apple go on to describe how this 'fine-tunes colors so they look natural [...] intelligently de-noises and enhances details [which] adds up to [...] more detail, less noise, and an authentic sense of time and place' (Apple, 2019a). Apple's odd terminology appears contradictory, when describing alterations to a photographic record as 'natural' and 'authentic' — leading to similar observations of Doane and Osborne's detemporal obliteration.

The smartphone embodies this rethinking of the photographic record. Its compact size limits camera hardware developments, requiring improvements in data processing, to which tech writers assure

‘taking great photos is mostly about software’ (Pierce, 2017). This focus on software over hardware is made possible by the unstable core state of digital imaging, which prioritises change over fixation, instability over stability, probability over causality, and quantum over Newtonian. Some potential issues of computational interpretation are how the photographic record is being described as ‘more accurate,’ ‘authentic,’ and ‘natural’ when *chosen* by a machine.

Lev Manovich writes on such decision making in his 2018 eBook *AI Aesthetics, as* ‘AI now plays an equally important role in our cultural lives and behaviours, increasingly automating the processes of aesthetic creation and aesthetic choices’ as ‘cultural AI’ is ‘influencing the imagination of billions’ (location 44, 16). The issue here is not simply that ‘smart’ automation is happening, but that it may be happening through opaque processes, as Manovich expands more broadly, ‘It is often not known what is learnt through neural networks, with this information contained within a ‘black box’’ (location 235). Manovich’s approach to navigating AI continues his position established in 2001, in how ‘Database becomes the centre of the creative process in the computer age’ (2001: 200), and concludes *AI Aesthetics* with a proposition that widespread production of digital artefacts has generated a vast amount of ‘cultural data samples’ that can be processed through ‘unsupervised machine learning’ to discover ‘new categories [of] cultural analysis’ (2018: location 384-391).

One result of the unsupervised machine in found in Joy Buolamwini and Timnit Gebru’s study of facial recognition software. In their groundbreaking paper ‘Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification’ (2018) the computer scientists example how racial biases have resulted from processes in which ‘decisions that have traditionally been performed by humans are rapidly made by algorithms’ (1). In their study ‘all classifiers performed best for lighter individuals and males overall. The classifiers performed worst for darker females’ (12). This was not the intention of the software, but a shortcoming of its developers.

Buolamwini and Gebru's research examples Manovich's unsupervised machine in its resulting cultural analysis, revealing systemic racism. What this approach does not achieve is an understanding of AI's opaque manner of operation, as the unsupervised output does not engage with the coming into presence of the bias data in question. Flusser raises such issue in terms of 'decoding' technical images in *Towards a Philosophy of Photography* as, 'The encoding of technical images [...] is what is going on in the interior of this black box and consequently any criticism of technical images must be aimed at an elucidation of its inner workings' (1990: 16). The smartphone is a similarly opaque device. Its built-in and standardised automation means it is not only capable of unsupervised processes, but this has become its primary function, compiling internal biases of the unsupervised machine. Manovich raises a similar question, 'Does such automation lead to a decrease in aesthetic diversity over time? Is this inevitable, or are there other forces that may counteract this, increasing diversity?' (location 82).

Expanding on Manovich's questions, I find his 2001 insights into the video equipped computer a more useful method than the unsupervised machine in how, 'with the help of a mouse or a video camera, a computer is transformed into an intelligent being capable of engaging us in a dialogue' (2001: 99). It is this potential of holding a *dialogue* with a machine that elucidates its otherwise opaque manner of operation. In the case of smartphone-video, the machine's live interpretation of the world via its screen offers a dialogue with the user through a shared coming into presence of the image, which is focused upon in the final chapter as a "quantum dialogue."

Smartphone-video becomes a significant tool of such dialogue, to which my hyphenation can be further expanded through Manovich's proposition of "new media" containing a 'cultural layer' and 'computer layer' (63). Initially, "smartphone" appears to be the cultural layer due to its social

context, but this is the computer, the decision-making element; while “video” is the cultural layer, as a mode of operation defined through its cultural use. Manovich continues,

we can say that [cultural and computer layers] are being composited together. The result of this composite is the new computer culture: a blend of human and computer meanings, of traditional ways human culture modelled the world and computer’s own ways to represent it. (63–64)

Smartphone-video can be understood as a remodelling of sight (video coming from the latin *videre*, ‘to see’). With this, it has itself become a means of modelling a vision of the world through its concentration of automated features, which are addressed in the final chapter through the notion of the paranoid white-male data Leviathan, and the “Kantian filter” (Parisi & Majaca, 2016). For now, I address the awareness of such automation in the development of video technology, how the decisions of the machine can be *seen* within its use through dialogue.

Early Awareness of Video Automation

The automated video features of the smartphone camera continue developments from prosumer camcorders originating as early as the 1970s. The following decades became a period of experimentation for video makers, and as such, it would be expected that these automated features were incorporated and recognised in these experiments. Yet it appears that very few practitioners experimented with the user-friendly features of their devices. This subchapter examples a small selection video experiments *highlighting automation as a creative device*, and the discussion around them.

The earliest example I have found is Józef Robakowski's *Dla Warsztatu Formy Filmowej: Bliżej - Dalej/To The Workshop of The Film Form: Nearer - Farther*, Josef Robakowski (SD video, 480i, 1985), featuring a comedic deadpan use of motor-aided zoom and auto-exposure. The video has recently resurfaced through Profile Foundation's 2017 publication *Josef Robakowski: Nearer-Farther*, a retrospective of Robakowski's broad practice, named after this simple video. *Nearer - Farther* was dedicated to the 'then defunct Workshop of the Film Form' to which 'the video is an auto-ironic reminiscence of the analytical explorations of the 1970s' (Czubak, 2017: 72).

Robakowski was a key figure of the Polish neo-avant-garde movement, and although playing a comedic role, he also wrote on the subjects of 'pure film' and the benefits of video art since the early 1970s (Culture.pl, 2020).

Nearer - Farther features a dark portrait rectangle in front of a brightly lit window. Robakowski narrates over this image with "bliżej" (nearer) and "dalej" (farther) as he zooms in and out, increasing and decreasing the size of the rectangle in the frame using a motorised zoom. He continues this process for around 45 second with comedic timing, until the rectangle fills the majority of the screen, at which point the exposure is altered, illuminating the rectangle, revealing a

mirror reflecting Robakowski's image, speaking and looking through the camera; one hand by his side, the other on the camera visibly operating the motorised zoom. The reveal of the operator's image is also the reveal of the device's automation within the image it produces, Robakowski's rigid posture highlighting his minimal input. The reveal of Robakowski's role is also a reveal of the camera's, which automatically alters the exposure when it determines the image to be too dark. He then continues to zoom in and out of the image, with the autoexposure readjusting in response, which continues throughout the 3 minute video. Robakowski's setup highlights the input of the automated machine, and although a simple (and auto-ironic) setup, it is the earliest example of a creative experiment involving the dialogue between user and user-friendly automation in a video device that I have seen.

To view *Nearer - Farther* with a comprehension of this dialogue of user and machine requires an awareness of the autoexposure feature, and to understand that there are technical and aesthetic choices within the image that are not controlled by Robakowski. While a relatively simple process in the context of smartphone-video, autoexposure was less widely understood in the 1980s, as although a feature of consumer-grade video cameras at the time, it was a rarity in professional production due to its amateur context, meaning that some viewers may not have understood the dialogue taking place in the image. Even Robakowski himself may not have been fully aware of this dialogue within his own manner of operation, which only appears plausible through wider descriptions of the video.

In *Josef Robakowski: Nearer-Farther* there is no direct mention of the autoexposure feature. It is first described as 'Commands issued to the camera ("Zoom in!" "Zoom out!") cause his reflection to disappear and reappear again' (Czubak, 2017: 72). This idea of dis/re-appearance rather than exposure change may be a misinterpretation of the work; though as the translation of "bliżej" and

“dalej” is also incorrect — as Robakowski’s translated title highlights — this misreading could be due to a general lack of consideration. What is noted, is how ‘This seemingly analytical work on the camera’s technical capabilities turns into a kind of game played with the artist’s own image’ (ibid). This idea of game-play proposes a dialogue between players, and what is described as the artist’s own image, as rather the video image *displaying* the artists own image, and could be understood as a dialogue or ‘game’ between operator and apparatus.

The ‘game’ or ‘dialogue’ is also raised in *The Hidden Decade: Polish Video Art 1985-1995* (2010). In the opening chapter, “The Hidden Decade: An Outline of the History of Polish Video Art 1985-1995,” Piotr Krajewski discussed *Nearer - Farther* as ‘the most structural work of Polish video in the ‘80s,’ although he also observes ‘how the camera had ceased to be a tool for objective recording, and had become an element of a new bio-mechanical relationship,’ pointing again to ideas of a dialogue with the machine (Krajewski & Kutlubasis-Krajewska, 2010: 175-176). And yet, understanding the automation of the device remains inconclusive.

Krajewski discusses Robakowski’s autoexposure process as part of a ‘masterful use of the optical incapacity of his camera analyser’ (196). The implied ‘incapacity’ of the camera is continued in Wojciech Kozlowski’s *Hidden Decade* essay “From Disappearance to Appearance” (referencing Robakowski’s reflection in *Nearer - Farther*) describing the reveal of Robakowski’s reflection as ‘thanks to the primitive technology,’ although this was hardly primitive in 1985, and similar autoexposure features continuing to be used today (277). He continues that, ‘While filming, Robakowski could see his own reflection; the fact that the camera didn’t see it became apparent only when he played back what he’d filmed’ (277-278). This would be the case in film. But as video, and as the work itself highlights, Robakowski is looking through the viewfinder at the video image being recorded, enabling Robakowski to see these changes occurring *in the act of recording*.

Maria Anna Potocka also discusses *Nearer-Further* in her *Hidden Decade* essay “Existence in the Frame,” though the autoexposure process is not mentioned.

What becomes evident in the reception of *Nearer - Farther* is how, despite its significance, there remains a lack of awareness and/or interest to Robakowski’s use of autoexposure. This may suggest that, even today, this dialogue with the machine can go unnoticed. I have shown *Nearer - Farther* on many occasions through lectures, classes, and workshops, and have found the response to be mixed, some seeing the exposure shift as the response of the camera’s autoexposure, others seeing the change as a result of natural occurrences, some not seeing it at all. The reception of this work remains inconclusive, and I am unable to definitively confirm that the event taking place in the video is in fact an autoexposure, other than the evidence displayed in the video itself.

Deiter Kiessling’s closed-circuit video installation *Two Cameras* (1998) utilises the *autofocus* function, which is regularly accredited in the work’s description,

Two video cameras record one another and transmit the pictures to two monitors. Yet the distance between the two cameras is too short to produce clear images. Since the autofocus function is switched on in both cameras, they constantly try to produce clear images of one another by adjusting the focal length of the lenses. Due to these continually changing focal lengths the images of the cameras played on the monitors constantly change with regard to both sharpness of focus and size. The sound of the autofocus mechanism is amplified and emitted by the speakers of the monitors. (Blink Video, 2019)

Kiessling’s use of autofocus is also noted in Spielmann’s *Video: The Reflexive Medium*, though this is a side note to how ‘mediatized self-observation’ can be understood as a critique of surveillance systems (2008: 172). In terms of understanding smartphone-video, *Two Cameras* does little to highlight the dialogue between human and machine, as the close-circuit loop removes human interference beyond the initial setup; as a dialogue between *unsupervised machines*. Although the

autofocus is widely noted in *Two Cameras*, the implications of this use are rarely discussed beyond a technical feature, while an awareness of this feature is fundamental to understanding the work. Without this awareness, *Two Cameras* may be misunderstood as acting out a series of preplanned movements, rather than autonomously responding in the moment.

Another use of autofocus is Steve McQueen's *Illuminer* (SD video, 2001). McQueen starts the video recording from a hotel room overlooking a bed that is illuminated by a television. McQueen then lays in the bed, as the changing light from the television broadcasting a documentary in French of SU troops being deployed to Afghanistan. Television light confuses the camera's autofocus, shifting between focused and blurred forms, between the abstract and figurative. Initially shown at Maria Goodman gallery, their archive describes the video as 'incessant blurring and sharpening of the image [which] seems curiously to follow the sound and the brightness of the television.' (Maria Goodman, 2001). This strange interpretation of the autofocus feature appears to miss the direct relationship between the sharpness of the image and the brightness of the television, which are working in unison over McQueen's image.

A more accurate description is in Wyatt Mason's "The Boundless Artistry of Steve McQueen" (2015), where the work is described as 'one long shot whose single technical alteration is the autofocus of the camera repeatedly hunting in the dark.' *Illuminer* is also described on the website of the Schaulager Laurenz Foundation as using autofocus (Schaulager, 2019), but in the 2020 exhibition of this video at Tate Modern, autofocus is not mentioned, described instead as being 'shot using a domestic digital camera' (Tate Modern, 2020b). The latter suggesting that the autofocus process — McQueen's manner of operation — can perhaps be recognised in its familiar domesticity?

It would appear that there is no consensus on the use of automated video camera features, as often misread or simply stated without further consideration. And yet, autofocus has become a cinematic device, exemplified in Eduardo Sánchez and Daniel Myrick's *The Blair Witch Project* (1999). The iconic spoof-documentary/horror-movie features a candid camera crew exploring a local myth. The presence of two cameras is made apparent as onscreen props referenced through dialogue, and via different camera images: monochrome film camera, and colour video camera. There does not appear to be any automated camera use in the movie until the penultimate death scene, where the videocamera operator and camera fall to the floor. The camera is left stationary on the floor, fixed on an abstracted section of floor/wall, and in this moment, the only visible autofocus plays out. This cinematic device, of the camera now freed from its operator, accumulates in an eerie autofocus pull. For this narrative to succeed, the viewer must have an understanding of manual and automated focus, seeing this as the camera controlling itself. This is crucial, as if the audience does not read this focus pull as automated, they must assume it is the living, *not dead*, camera operator. While we don't see the operator's death, the eerie autofocus pull of the cameras control cements the death of the operator in the audience. The technique is exaggerated in Matt Reeves *Blair Witch* inspired monster movie *Cloverfield* (2008), which uses autofocus to the same dramatic effect.

These early examples of automation highlight a potential lack of interest or awareness to automation in experimental/artist video practice. Although a small selection of videos — possibly due to the lack of videos exploring automation as a creative device — the selected works are by significant practitioners, for whom the use of automation remains a vague, and in cases overlooked feature; while also being used as a cinematic device. The creative use of automation appears to be a relatively untrodden area of experimental video practice — one that is essential to smartphone-video making, and may be more evident in user-culture.

User Integration of 20th Century Avant-Garde Techniques

In Al Rees' forward to *Experimental Film and Video* (2006), he raises a predicament for experimental practitioners,

the incorporation of classic avant-garde techniques into standard digital software, but stripped of context and offered as a tool-kit of effects, challenges artists to re-appropriate the medium and its language for time-based and screen-based experiment. (Introduction to Hatfield, 2006: x)

Access to this de/contextualised avant-garde tool-kit over the following decade appears to have influenced the way user-based tools are used. To better understand this, I have selected a handful of user-practices highlighted in mainstream culture that example how, in cases, 20th century avant-garde techniques, although outside traditional avant-garde contexts, have become somewhat standardised in user-practice. The purpose of this study is to raise awareness to the contemporary use of these techniques, while operating from a different perspective to their avant-garde originators. They evince a wider interest within user culture towards the manner of operation developed through first-hand experience within a wider normalisation of techniques once considered avant-garde.

The proposed synergy between *access to* and *interest in* production methods also appears in the development of structural/materialist filmmaking at the LFMC. The introduction of production equipment at the LFMC was a 'new and unique twist' to the existing Filmmakers' Cooperative models of screening films rather than making them. (Rees, 2011: 83). The LFMC made filmmaking more accessible *to some*, while remaining a relatively niche and expensive practice. Rees describes how structural/materialist filmmaking, particularly that of Gidal, had 'often been on partisan audiences of film-makers,' becoming "internal documents' of the avant-garde' (94). The resulting

rhetoric of “films for filmmakers” added to existing difficulties in watching structural/materialist films (Gidal, 1990: 17); a paradigm very different in the context of “Smartphone-use for smartphone-users.” Through the following examples I suggest that a relatable synergy of access to and interest in production has emerged in user practice, as traditionally avant-garde methods have become relatively conventional practice for the contemporary user.

#nofilter is a notable example of mainstream user interest in their own manner of operation, and that of others. The hashtag was adopted by Instagram users in around 2013, and tagged to images highlighting that no image filter had been used, suggesting an unaltered image. Users of #nofilter have found social value in the tag’s (seeming) lack of postproduction, implying a level of purity that necessitates this didactic awareness. This is further evidenced in a study from the University of Windsor, Canada, which found 12% of their catchment images with the #nofilter tag were in fact filtered (Santarossa, Coyne & Woodruff, 2017). They raised this as a psychological concern (ibid).

#nofilter can be connected to modernist ideals of purity, as discussed in relation to Greenberg and the purity of the medium (Greenberg, 1955), as well as the notion of ‘straight photography’ proposed by Sadakichi Hartmann in 1904, and notably adopted by Alfred Stieglitz (Hartmann, 1978). The now iconic hashtag — although recontextualised and presented as pure through didactic means — still examples a wider interest in the user’s manner of operation. #nofilter can also be understood as activating the audience to engage with the image’s ‘coming into presence,’ albeit in a simplified form. These methods may not hold the same radical intention as the avant-garde claimed, but they indicate how traditionally radical methods are evident in contemporary user culture.

A wider interest in the manner of operation is the popularity of “Vine star” Zach King, who began making 6 second video loops for the social media platform Vine. King used Vine’s short video loop

system to showcase the broad potentials of editing techniques, namely the jump cut and graphic match. King describes these as “digital sleight of hand,” as his “magic” editing techniques allude to physically impossible events such as jumping through fences and pulling dollar bills from images on a computer screen (King, 2020). These magical editing techniques can be found in pioneering filmmaker and illusionist Georges Méliès, who stumbled across the technique in the late 1800s when his camera jammed while filming a street scene, and the image of a bus transformed, as if by magic, into a hearse upon projection (Méliès & Liebman, 1984: 30). He described the technique as the “stop-motion trick,” now known as the jump cut or graphic match. Méliès used his stop-motion trick in many films around 1900, and extensively in *Le Magicien* (1898), further establishing its magical context.

King's “magic” continues the art of Méliès' stop-motion trick, though rather than the viewer questioning the event on screen (as popularised by street magician David Blane), King's audience are interested in his manner of operation, in this case, the editing process. This interest was highlighted in 2014, when King's online popularity gained him a spot on the US chat show *Ellen*. The show's host, Ellen DeGeneres, does not mention magic, asking specifically about the “edit,” in which King responds ‘it really comes down to the editing,’ and discusses his time at film school (*The Ellen Show*, 2014). This normalised discussion of video editing on daytime television evidences King's audience's interest in his manner of operation. His magic becomes a puzzle to solve, to demystify the ‘coming into presence.’ And although very different to relatable efforts in structural/materialist filmmaking, still requires the ‘mental activation of the viewer’ to question the complex illusions being presented (Gidal, 2016: 41).

King's significance is evinced in his popularity: gaining hundreds of millions of online views; the intertextual use of his tricks in the Disney movie *Zootopia* (2015); a TED talk; various talkshow

appearances; and product placement and advertising gigs with brands such as LG and Hewlett-Packard (King, 2020). King's videos reach a large demographic, from online culture and daytime television, to children's movies and adult oriented advertising (televisions and printers), implying a widespread interest in King's methods. So although produced in a professional manner, King's videos could be understood in the context of user-culture, possibly even user-video, as they are designed for those with an interest in King's manner of *use*, presented within a user-generated context of online video hosting. What distinguishes King's practice from other users is his production methods, using professional equipment and skillsets to produce skilfully edited videos that are currently unavailable to the general user, though a simplified use of the stop-motion trick, and other editing effects, have become an inbuilt "Editing" features of TikTok. With this wider awareness to editing processes, King's videos become editing conundrums for the audience-as-practitioner; the *how-done-it* of user-culture.

While King's skillset is advanced, there are the near universal abilities made available through automation. These features have also become a point of reflection through familiarity and firsthand use, developing an awareness to incorrect calculations as "fails." A common example is the "autocorrect fail," which occurs when an automatic spell checker alters a word it determines incorrect (Lewis-Kraus, 2014). This is a common occurrence in user-writing systems such as text messaging, with more comedic examples being published as autocorrect fails; their relative popularity resulting in dedicated websites, forums and "best of" articles, such as entertainment-news site BuzzFeed's "The 30 Most Hilarious Autocorrect Struggles Ever" (Misener, 2013).

The fail requires an awareness of the feature's manner of operation, and an interest in highlighting deviations from their *proper* function. It also raises similar enquiries to avant-garde writing methods, such as Tristan Tzara's "To make a Dadaist poem" from *On Feeble Love and Bitter Love:*

Dada Manifesto (1920), and later Brion Gysin's "cut up" technique, as notably adopted by William Burroughs and David Bowie. These avant-garde methods cut up larger texts and rearranging them at random to produce new sentences, in a similar fashion to that which is occurring in autocorrect fails — and "predictive text games" discussed below — as the absurd and/or uncanny logic of the text becomes a point of interest.

Another popularised automation fail is the "face swap," in which a smartphone application uses facial recognition software to "swap" two faces within the camera's frame. The feature gained popularity in 2016 through its integration into the social media application SnapChat, through which users began to highlight, and in cases pursue, "face swap fails," also leading to dedicated forums and "best of" articles, such as BuzzFeed's "19 Face Swaps That Failed So Spectacularly They Almost Won" (Barnett, 2016). Many of these appear accidental, as a face is swapped with background objects resembling a face, such as a fist, plug socket, or nostrils; but others actively subverted the facial recognition feature by using dolls, drawings of faces, and finding face like objects to swap with, such as a cookie.

The results can be likened to the avant-garde assemblage movement established by cubist painter Georges Braque's "papiers collé" and pursued with Pablo Picasso between 1912-13. Collage was then taken up by Dadaists such as Hannah Hoch, Marcel Duchamp, and Raoul Hausmann, who used collage to subvert material such as newspaper clippings and photographs through new collaged contexts. Face swap fails may not pursue the same radically critical intentions of these practitioners, but they do reflect a similar want to subvert the material they are working with; be it mainstream imagery or software. For the user, the face swap fail actively subverts the proper manner of operation, though rather than radical intervention, these methods have become a more general mode of use, as playful and game-like.

A game-like attitude to subverting and/or disrupting autonomous features is used in the 2013 video advert for IKEA's augmented reality application *IKEA Place*. The app is initially used *correctly*, as a family augment items from the IKEA collection into their home. As the advert develops, the family begins to play with the app, and rather than testing furniture, they create optical illusions (King's digital sleight of hand?) by subverting the technology as a communal game. For example, a child is shown to carry a large sofa above their head. And then the same sofa is used to imply that an adult has extremely long legs. While showcasing the function of the app, IKEA also show how the limitations of its use can become a point of entertainment through gameplay.

User gameplay is also exemplified in "predictive text games" mentioned earlier, in which a prompt is used to direct responses from predictive text algorithms, now a standardised smartphone feature. A popular example is writer Alex Zalben's tweet: 'Just type "In 2019 I am going to" and then mash that centre button' (Roos, 2019). Results of these games have been playfully described as poems, biographies, and life goals, also becoming the focus of online forums and "best of" articles. This method is not a fail as such, but a reflection on the user's text messaging dataset. One with a directed yet randomised process linking it to the cut up techniques mentioned previously. It also relates to the instruction works of Sol LeWitt established in 1968, who was quoted in 1971, "each person draws a line differently and each person understands words differently" (Searle, 2006). In this sense, each person texts differently, and predictive text games evince this.

The user practice mentioned here aims to highlight elements of user culture that suggest a popular interest in user(s) manner of operation. I attribute these interests to methodologies established through 20th century avant-garde as a practice intended to be absorbed into society. The effects of avant-garde integration is recognised in Matthew S. Witkovsky's book *Avant-garde Art in Everyday*

Life: Early-twentieth-century European Modernism (2011), and can be found in the avant-garde's original proposition by socialist thinker Claude-Henri de Saint-Simon, in his 1825 book *Opinions Littéraires, philosophiques et industrielles*. The avant-garde's purpose was to 'spread new ideas' as a 'positive power over society' (Saint-Simon, 1825), to which the user methods mentioned here may be the result of avant-garde methods being adopted into society more generally; even if 'stripped of their context.'

What is this context or lack thereof? One means of addressing this can be in terms of "newness," as a factor of the avant-garde outlined by Peter Bürger in his 1974 book, *Theory of the Avant-Garde*. Bürger's historicised avant-garde held that 'the category of the new would be applicable,' while remaining 'too general and nonspecific' as it cannot 'distinguish between faddish (arbitrary) and historically necessary newness' (Bürger, 1984: 62, 63). Bürger's elaborations of newness hark back to Greenberg's 1939 essay "Avant garde and Kitsch," of distinguish kitsch 'fads' from the 'necessary' avant-garde. User practice may be stripped of 'newness,' but its 'necessity' as a position of modernity is itself outdated.

Krauss' "technical support" as 'mass-culture forms' offers the kitsch as 'the genuine avant-garde of our day,' but only when occurring inside Krauss' *non-mass-culture* 'crusade' of the white cube. When viewed *as* mass-culture, rather than *of* mass-culture, user-practice offers an alternative to the once radical newness of modernity's avant-garde tradition and the white cube. Bürger associates such modernity to that avant garde through Theodor Adorno, as stating 'Modernism is art through mimetic adaptation to what is hardened and alienated' (1984: 61). Such adaptation in the avant-garde was predominantly necessitated by bourgeoisie society (59).

User culture has similar mimetic qualities, commonly associated to the meme. But the memetic nature of user culture is chosen on mass, to which adaptation is attributed to the *unstable and familiar*, distinct from Adorno's hardened alienation. The significant shift here is the direction of production, from what is *applied onto mass culture* (often through images of popular culture as Guy Debord outlines in *Society of the Spectacle*, 1967); to what is sent outward, *from mass culture*, through the use of tools such as the smartphone. The direction is shifted, and while elements remain, they are different.

A potential issue here is that the hardened and alienated remain points of consideration. For example, it may be considered that film is the hardened and alienated medium of moving image, to which its stable history and alienated use through video accommodates such methods. Such lack of consideration for such unstable and familiar methods can be seen in Geert Lovink's 2017 e-flux essay 'Overcoming Internet Disillusionment: On the Principles of Meme Design' and the alt-right adoption of meme culture. Memes require instability (as mutable) and familiarity (as socially relevant), to which Lovink calls for 'alternative' memes, those going against 'disillusionment' (ibid). Instagram accounts such Jerry Gogosian, Freeze Magazine, and The White Pube have all made what can be considered alternative memes, but with a focus on (and this within) the art world.

What becomes problematic here is the distinguishing of "user" and "artist." In terms of meme generation, "meme artist" has been coined as an ironic oxymoron; the alternative to an artist becoming the user, in which meme's *as art* are memes *about art*. Another alternative might be in the acceptance of being a user(s), and how such a manner of operation considers users and artists, and smartphone-video and artist moving image, as different. I consider this in the use of user-tools by high profile artists.

High Profile Usership

Smartphones and tablets have become creative tools for some high profile artists. I focus here on the use of personal smart-devices by three renowned practitioners: Cindy Sherman, David Hockney, and 2018 Turner Prize winner, Charlotte Prodger. Each artist uses a smart-device to produce creative outputs in their respective fields, with each holding a different position on how these works can and should be distributed, understood, and/or discussed. Through the user-practices of these artists, I find a consensus in the implementation of physical and/or psychological restrictions to the user-as-audience. I associate these methods with the hierarchical ideology of moving image.

Since May 2017, Sherman has posted heavily manipulated “selfies” via her Instagram account. The first was posted with the comment, “Selfie! No filter, hahaha” as a slight on the #nofilter trend (Elbaor, 2017). To produce these images, Sherman uses a variety of ‘beautifying’ applications such as: Facetune, Perfect365 and YouCam Makeup; which use facial recognition to alter the user’s face through feminine gender and racial biases (perhaps less considerate to those with facial deformities) (Russeth, 2017). Using multiple applications, Sherman layers these effects, subverting their intended beautification into bizarre collage-like manipulations. These works follow Sherman’s ongoing critique into the depiction of women in photography, established in her influential *Untitled Film Stills* (1977-80).

In *Untitled Film Stills* — a series of 60 black and white photographs — Sherman takes on the persona of various female cinematic stereotypes, and photographs herself in various situations. The photographs raise surrounding cinematic narratives informed by gender biases. When making the series, Sherman is described as having taken a ‘guerrilla style’ approach, by then MoMA curator Eva Respini (Respini, 2012). Sherman would take a small suitcase containing her camera and outfit

into public settings, shooting photographs without a studio. These images were aesthetically and financially low value, taking the form of throwaway prints from B-movies or European arthouse cinema, in a similar context to her Instagram selfies (ibid).

Sherman's Instagram selfies have raised mainstream interest, but when The Guardian journalist Noah Becker asked for a statement, Sherman's New York gallery, Metro Pictures, replied "Cindy prefers not to comment on her Instagram posts" (Becker, 2017). Later that year, Sherman's Instagram page featured a link to a *wmagazine.com* interview with art critic Andrew Russeth. Here, Sherman discussed her smartphone manipulations as 'silly sketches,' and explains how she does not feel that they compare with her 'serious work' (Russeth, 2017). Sherman has found some value in this lack of seriousness while 'playing with her phone,' adding how they are 'kind of freeing me up a little bit and maybe making me more open to experimentation' (ibid). This experimentation is a diversion from Sherman's now typological studio-shot self-portraits, and similar to the 'guerrilla' approach of her *Untitled Film Stills*.

Sherman's disconnect between her Instagram selfies and 'serious work' is also evidenced in her 2019 retrospective at the National Portrait Gallery, London, which did not feature or mention her Instagram selfies. Other artists have used Instagram images in galleries, such as Amalia Ulman's *Excellences and Perfections* (2014) and Richard Prince's *New Portraits* (2014), both of whom printed Instagram images with their surrounding iconography for exhibition and commercial purposes (Whitechapel Gallery, 2020; Parkinson, 2015). Sherman has taken a different route, as rather than apply value to her Instagram selfies as 'serious works,' she devalues them as 'silly,' to which the art object need not be applied; both commercially and as a feature of Sherman's retrospective body of work. Sherman's dismissal of her user-practice as 'silly' forms a psychological restriction between the audience-as-user and user-artwork.

David Hockney has taken a very different approach in his use of the iPhone and iPad as a drawing/painting device using the application Brushes Redux. Rather than ‘silly,’ Hockney regularly describes this as ‘a new medium,’ which he began making on his smartphone around 2010, and emailed as ‘gifts’ for friends (Canau, 2019: 284). Hockney had been aware of digital painting since 1987, when he used the then hi-tech Quantel Paintbox Graphics System in the BBC programme *Painting with Light* (1987), which featured a glass tablet and stylus separate to the screen. Hockney described the image he was making to the viewer at home, as ‘what you’re actually seeing is the original, there’s no piece of paper left [...] there is no distance between you and the mark being made [...] it doesn’t exist in any other form’ (*Painting with Light*, 1987). Hockney described this as ‘a new art form, a new medium’ which he now continues in the smartphone and tablet (ibid).

Hockney irrevocably understands his digital drawings/paintings as artworks. As such, unlike Sherman, Hockney included these works in recent ‘David Hockney’ retrospective exhibitions, while limiting their availability online. Here we have two different approaches, as while Sherman’s selfies are readily available as ‘silly’ — though arguably radical photographic works of wider intrigue — Hockney’s use of the same device as serious artworks are made inaccessible to the audience-as-user as commercial art objects. Where Hockney initially described these works on screen as the original, his iPad drawings are now printed in editions, in a mode of commodification similar to Amalia Ulman and Richard Prince (Sothebys, 2020).

In António Canau’s paper “Digital technologies, a modern medium,” he elaborates on Hockney’s decision for his smartphone/tablet paintings/drawings ‘to be sold/commercialised as any other work of David Hockney’ (Canau, 2019: 284). Canau adds how Hockney’s recent presentation methods, as either larger screens in galleries or printed art objects, differ to their first exhibition where they were

presented on iPhones (ibid). Musée Yves Saint Laurent corroborate that Hockney's iPhone drawings 'were presented in their original format in order to respect the artist's intention to display luminous, colorful images' (Musée YSL Paris, 2010). Hockney's move to print his iPad drawings goes against his initial conception that 'there's no piece of paper left,' in a process of nullifying the bright colours made possible by the display. Hockney's smartphone and tablet images could be available online as the original, as Sherman's are in the original and intentional user context of the smartphone. It appears commercial interest has necessitated Hockney's use of the art object as a physical restriction.

Hockney and Sherman continue their field of practice in their use of smartphone/tablet, but take opposing approaches to the accessibility and understanding of their content. Sherman's Instagram selfies as not serious, are accessible online as original non-artworks. Hockney's iPad drawings as serious, are unavailable online-*as-original* artworks. In both cases, user access to serious art is reduced, which raises the hypothetical question: *would user access be more acceptable to Hockney if he did not regard these as serious artworks?* And likewise, *should Sherman regard her Instagram selfies as serious, would they be taken offline and/or recontextualised as printed art objects in a similar vain to Hockney, Ulman and Prince?* (Ulman did this, removing her images from instagram once they became significant as artworks).

Similar questions around the use of a smartphone to make art were addressed in Prodger's Turner Prize win. Her 'iPhone film' *BRIDGIT* (2016) is a semi-autobiographical single-channel video exploring ideas of identity through transgender, queer, and feminist literature, as well as landscape, technology and time (LUX, 2020b). It may then appear superficial to focus on Prodger's choice of camera, but it was Prodger's use of an 'iPhone' that led to the significance of *BRIDGIT* as a Turner Prize winning artwork. Turner Prize chair and Tate Britain director Alex Farquharson highlighted

this in his short yet calculated statement presented that ‘*BRIDGIT* represents a breakthrough, and a use of a technology we’re all familiar with to make something that is profound’ (Marshall, 2018). He went on to describe it as the ‘most profound use of a device as prosaic as the iPhone camera that we’ve seen in art to date. [...] It ends up being so unexpectedly expansive. This is not what we expect from video clips shot on iPhones’ (ibid). The repeated reference to the use of an ‘iPhone’ highlights the importance of this factor to the Turner Prize judges, a position not reciprocated by Prodger.

Upon announcing the award, media headlines jumped onto user-affiliated terms of ‘iPhone film’ by an ‘iPhone artist’ that Prodger immediately dismissed (Higgins, 2018). For Prodger, the use of a smartphone is merely one aspect in a myriad of concerns she raises in her work; ‘For me, it’s just another format’ (ibid). Controversial re/misinterpretations are part of the Turner Prize’s relatively mainstream popularity, yet this dialogue presents something contrary to notable “headline” years, as rather than latching onto a sensationalised negative, the media have found what could be viewed as a hopeful positive, in the implied familiarity of smartphone use in art. Though as Prodger disputes these claims, the significance of the ‘iPhone’ becomes blurred, as notions of a unified “user” become purely symbolic in a work that actively supports its own exclusivity through contractual commodification. *BRIDGIT* is an edition of 3 with 2 artists proofs, and is thus contractually not available online, where the vast majority of published smartphone videos can be found, and is thus unavailable to user(s) (Arts Council Collections, 2020).

User accessibility is not the concern of Prodger, who began using her smartphone for practical reasons, such as shooting alone and as a more tactile device, and continues to work with professional equipment alongside this (Higgins, 2018). Her smartphone is not emblematic of her practice, as she continues ‘I just sometimes think: “just stop talking about the iPhone”’ (ibid).

Similar pop-culture associations have been made to Sherman and Hockney, as a ‘selfie artist’ (Russeth, 2017), and ‘iPad artist’ (Louisiana Channel, 2016), both of whom — like Prodger — have discredited their ascribed user-centric titles. There is a sense that these artists are actively separating themselves, physically and psychologically, from user association, while accommodating user devices in practice.

The use of the smartphone is a specific choice for Prodger, though not for the popular context that the Turner Prize Judges and media commented on. For example, Prodger sees the inability to hold a smartphone camera still as a desirable characteristic; ‘If you try to do a static shot, you see your body breathing. The systems of the body are enmeshed with the camera. It’s a kind of symbiosis, but also a kind of grappling. I like that’ (Tate, 2018). This is not a unique method to Prodger, but a subtle nuance of user aesthetics associated with the vast majority of videos produced on user devices; all handheld smartphone-videos hold similar characteristics. Prodger also goes against this characteristic, adopting more conventional methods for many of the shots in *BRIDGIT*, such as locked-off evenly composed images achieving a more professional, cinematic look. Professionalism is continued in Prodger’s editing process, as her original iPhone video clips were taken into postproduction, cut and trimmed into montage, text and motion graphics added, a high quality narration put over it, and possibly colour graded and stabilised; each in a professional manner. Each technique is available to the user in one way or another (i.e. filters, stabilisers, text, “sticker” graphics etc.), each holding their own user aesthetics that Prodger could have pursued through user-friendly tools throughout her production, *had this been a point of interest*. But this was not Prodger’s focus, nor her intention, and thus she chose to professionalise her practical smartphone recordings beyond user accessibility.

It is in this professionalisation that moving-image ideology comes into play, turning Prodger's 'video clips' into a 'film.' At the work's initial presentation at Hollybush Gardens, London, the press release introduces the work as a 'video,' but then goes on to describe it as a 'film' (Hollybush Gardens, 2016). An almost identical text is used in the LUX collection, only with one of the uses of 'film' changed to 'video,' though again using both terms to describe the work (LUX, 2020b). This is significant in a work produced on an "iPhone," as while it is not necessarily the terminology used by Prodger, the wider dialogue of the video is as an "iPhone film" by arts organisations such as Frieze (Frieze, 2018). Such a post-medium repositioning prioritises the smartphone's social significance, while distinguishing *this* video into the spectatorial, high art canon of film.

Manovich's cultural and computer layer can be used here. Considering smartphone-video's suffix as its cultural layer (video) and the prefix its computer layer (smartphone), "iPhone-film" follows the same pattern. The prefix remains the computer, and the suffix "film" becomes the cultural layer. Where "video" functions as a term of user-accessible technology, "film" — in this post-medium context — recontextualises the iPhone outside of user-culture, and into the ideological canon of film as a predominantly spectatorial high-art.

Connections to film are also raised in relation to Prodger's previous works, as *BRIDGIT*'s

Hollybush Gardens press release continues,

For Prodger the iPhone presents a set of rigorous formal parameters not unlike her previous explorations in 16mm. Where 16mm film has a fixed length (eg 100ft rolls), the iPhone has data storage limitations that constrain her shots to roughly 4 minutes in length and under, just slightly longer than a roll of film. (Hollybush Gardens, 2016)

The understanding of the iPhone as holding relatable durational constraint to film is odd. As

highlighted in the previous chapter, duration in film and video do not hold the same limitations, and

to suggest that Prodger was limited to 4 minutes shows Hollybush Gardens' lack of understanding to the device and media in use. Apple define one minute of video shot in the same quality of *BRIGIT* (1080p HD video at 30fps) as approximately 60 megabytes, putting 4 minutes at approximately 240 megabytes. The smallest iPhone capable of this quality is an eight gigabyte iPhone 4S, released in 2013. Two gigabytes of this storage would be approximately 32 minutes, the total duration of *BRIDGIT*. The implied filmic constraint of the iPhone functions as a fetishistic connection to the prestige of 16mm filmmaking. A way of generating a context of smartphone-video in line with the canon and stability of filmmaking through a moving-image ideology; rather than considering its actual manner of operation.

Prodger, like Hockney, positions their work produced on a user device in line with established media practices. Prodger's views differ from Hockney's in the idea of 'a new medium,' as Prodger describes the smartphone as 'just another format,' to which its wider context is 'just not a thing for me' (Higgins, 2018). Yet it is Prodger's use of the smartphone that has brought this work to critical acclaim, in a similar manner to Sherman's Instagram "selfies" and Hockney's "iPad paintings," which have also led to wider discussion and intrigue.

A useful statement in understanding user devices in a fine art context is Farquharson's description of the iPhone as 'prosaic,' and regarding Prodger's use as 'unexpected' and the most 'profound use' of such a device 'in art to date' (Frieze, 2018). Farquharson's comments reflect a wider bourgeoisie understanding of user devices in art practice as incapable of artistic or poetic execution. This may be the incentive for: Sherman to discredit her smartphone practice as silly while making it accessible to other users; Hockney to accredit smart devices as 'a new medium,' while restricting user access through commodification; and Prodger to be rewarded for using a user device while actively disassociating herself from it, and restricting other users from her artwork.

Each of these artists take a different approach in contextualising their dialogue with the user-as-audience/practitioner. What unifies these decisions is the choice to restrict viewership of ‘serious’ artworks. As digital files, Hockney and Prodger’s works could exist online *as the original*, should the artist deem this acceptable. By contrast, Sherman’s images are available online, but not as serious artworks as determined by Sherman. These modes of practice by leading and influential figures of the art world reflect an active separation between user(s) and serious artworks produced on user devices. Such methods actively dismantle any one to one relation between *user(s)*. Similar to the moving image ideology of distinguishing user-access to artistic tools (video technology through filmic ideology), the practices mentioned here devalue user-access to art, by either removing their user-generated artworks from user accessible platforms, or keeping them there, only not as art.

A Brief Survey of Distributed Camera Phone Video Practice

Studying the use of smartphones and tablets by high profile artists is useful due to the amount of discourse around their practice. This level of discourse is not reciprocated in experimental film and video, but information about films and videos can be found in the short statements and descriptions of works featured in the collections of experimental artist film and video distributors. Using the databases of these distributors, I can gauge a broader understanding of smartphone-video in these collections. To do this, I looked into the catalogues of 24 distributors, and using those with a “search” feature, I located videos whose descriptions mention the term “smartphone,” “cellphone,” “cameraphone,” “mobile-phone,” “phone,” and “telephone.” Through this process I found several videos made using camera integrated phones, from which I produced this brief survey of experimental videos expressing their use of a cameraphone.

Although the catalogues were international, language barriers limited my research to the Americas, Scandinavia, and Europe. Many of the catalogues came up with no related results. The only collections with related results were *LUX* (UK), *Light Cone* (France), and *Argos Arts* (Belgium). From this limited Eurocentric survey I find two prominent modes of practice: low quality cameraphone video as a desirable aesthetic; and overt postproduction methods. Alongside this were a small number of alternative approaches, which I outline in more detail.

The lo-fi aesthetics of early cameraphone-video was a focus in: Mathew Noel-Todd’s *Nausea* (2006) as ‘Crudely low resolution’ that ‘retains a fuzzy warmth and familiarity’ (LUX, 2020d); Stephen Dwoskin’s *Phone Strip* and *Phone Portrait* (2007—8), as ‘near primitive and raw’ (2020d); Michel Amarger’s *Explosion* (2009-2010) as ‘blurry, pixelated images’ (Light Cone, 2020a); Edison Barrus’ *Sur Portable* (2007) and *La Choukrane* (2007) as ‘splendid low-resolution’ (Light Cone,

2020b); and Pieter Greene's *Nocturne #2* (2012), described as 'cultivating the aesthetics of the mobile phone image quality' (Argos Arts, 2020a).

Other videos prioritised postproduction through professional video editing software. These include: Steve Hawley's *Speech Marks* (2004) as extensively collaged video using mobile phone video's 'limitations creatively' (LUX, 2020e); Anthony Rousseau's *Imago* (2014) uses smartphone-video that is 'reworked in post-production to create [a] "morphing" effect' (Light Cone, 2020c); Holly Fisher's *Think Tank* (2014) features '24 layers of iPhone video' (Light Cone 2020d) and *Goldfish Layers* (2014) as '18 layers of shifting [iPhone] video' (Light Cone 2020e); and Prodger's *LHB* (2017) uses a 'formal template to tessellate a personal camera-phone archive' (LUX, 2020f). There is also Prodger's *BRIGIT*, also superimposing more subtle graphic forms in postproduction, along more nuanced methods mentioned previously.

These two approaches polarise cameraphone-video's use, as either: a low quality aesthetic that is highlighted, 'cultivated,' as 'fuzzy warmth,' 'splendid,' 'raw;' or an image to be 'reworked' beyond its 'limitations,' through filters, layers, and templates via more professional methods beyond user access and familiarity (at their time of their production).

Videos that didn't quite adhere to these methods were:

Jeff Scher's *Spring City* (2011), utilising the smartphone's limited progressive scan effect to create 'jello-like' buildings through 'shaking the phone violently' (Scher, 2015). Rather than fetishise low quality video, Scher expands upon its process through an investigation into its manner of operation. The effect is similar to *Structure*, while Scher's video is a montage edited to music, giving the impression of dancing buildings.

John Smith's *Steve Hates Fish* (2015) uses a smartphone application capable of translating text in real time. Smith subverts this process by changing the settings to translate French into English, while looking at English text on signs and posters. This confuses the app, resulting in a comedic display of nonsensical jittering translations, such as the work's title appearing on a fish and chip shop. Here, Smith is allowing the device to make decisions on his behalf, based on the content he presents to the camera. Through this, wordplay is generated by the device, which Smith edits into a best-bits montage.

Last is Andrew Kotting's *A Walk Back to the Last London by Way of Watling Street* (HD video, 2017), which is 'shot on an iPhone with a super 8 app;' also used in *Edith Walks* (HD video, 2016) (LUX, 2020g). What I find interesting is Kotting's description of the video as 'never intended,' developing organically as a result of having a smartphone on him (ibid).

From this survey I find that the two polarising methods of cameraphone-video in European artist video distributors: favouring low-quality, and overt postproduction. The final three videos show something different, their manner of operation uses the device beyond the social significance of its image quality, and/or as something to be elevated through professional methods. They use accessible methods that can have a one to one relation between user(s) such as: in-camera manipulation, user-friendly automation, and spontaneity. Rather than user as social spectacle, these methods place the user(s) as practitioner and audience, producing a presence that may be addressed in terms of the structural/materialist filmmaker's anonymity.

User Anonymity

Structural/materialist filmmakers adopt methods of anonymity, which is in part a position of ‘anti-narrative.’ Peter Gidal expands upon such anti-narrative approaches in *Materialist Film*, using a supporting quotation from Malcolm le Grice,

What must be rejected is narrative as it is understood in conventional cinema and broad narrativity as it comes to reappear in experimental film variously through: the replacement of story diegesis by mechanistic structure, the illusion of documentary transparency, particularly under the guise of representing the process of a film's making, and most centrally, narrative as it comes to reappear through any form of anthropomorphic, individualist identification with the film-maker. (le Grice, quoted in Gidal, 1990: 156)

Such structural/materialist anonymity is rooted in the narrative conventions of cinema associated with filmmaking, to which anonymity might not be attributed to video *in the same way*. Manovich raises such a distinction in how,

cinema privileged narrative as the key form of cultural expression of the modern age, the computer age introduces its correlate — database. [...] Database becomes the centre of the creative process in the computer age [to which] As a cultural form, database represents the world as a list of items and it refuses to order this list. In contrast, a narrative creates a cause-and-effect trajectory of seemingly unordered items (events). Therefore, database and narrative are natural enemies. (Manovich, 2001: 194, 200, 199)

Manovich’s distinction of narrative cinema (film) and digital databases (video) may also be understood in terms of their core states: narrative’s stability of ‘cause-and-effect trajectory;’ and database’s instability as a *non-causal trajectory*. While a simplification, this may suggest that video’s instability is less suited to narrative cinema, which may be embodied in film’s stability. I suggest that this distinction holds much broader implications into what it means to use of film and video.

For example, there is the growing practice of narrative cinema shot on smartphones. Festivals such as: African Smartphone International Film Festival, Lagos, Nigeria; Dhaka International Mobile Film Festival, Dhaka, Bangladesh; and Toronto Smartphone Film Festival, Toronto, Canada, each promote the accessibility of the smartphone to produce cinematic works (ASIFF, 2020; DIMFF, 2020; TSFF, 2020). Platforms such as these utilise the accessibility of the smartphone, and by working against the notion of the smartphone as prosaic, they are democratising cinema. They do so by professionalising its use from user-video methods to *film*(-festival) production ideals, incorporating cinematic conventions.

A widely discussed example is Sean Baker's *Tangerine* (2015), shot entirely on an iPhone 5S (Academy Museum, 2017). By employing cinematic conventions, Baker shifts the would-be smartphone-user(s) into the professionally anonymous camera-operator by accentuating cinematic aesthetics through an additional lens, camera rig, and cinematic 2:35:1 ratio (ibid). The professionalised aesthetic becomes distinguishable from the general smartphone-user in movement, ratio, and colour grading. These methods can demystify the smartphone as non-prosaic, but do so by adopting a professional aesthetics as distinguishable from the viewer-as-user(s); and thus holds a different intention to my own.

In user culture, ideas of narrativity and anonymity arises in fictional and/or alternate online personas. Whitney Phillips elaborates on this in her 2016 book *This Is Why We Can't Have Nice Things: Mapping the Relationship Between Online Trolling and Mainstream Culture*. Phillips raises anonymity in relation to online trolling, stating 'almost every troll I worked with had created at least one alternate persona' (233). Relatable methods are discussed as a cyber-bullying tactic in Jonathan Glazzard and Samuel Stones' 2019 paper "Social Media and Young People's Mental Health,"

suggesting some psychological concerns around user anonymity and the ability to build narratives around such anonymous positions.

Narrativity becomes a point of fictionalised personas in Moya Sarner's Guardian article "The Age of Envy" (2018). Sarner discusses online narratives with clinical psychologist Dr Rachel Andrew, who states,

What I notice is that most of us can intellectualise what we see on social media platforms – we know that these images and narratives that are presented aren't real, we can talk about it and rationalise it – but on an emotional level, it's still pushing buttons. If those images or narratives tap into what we aspire to, but what we don't have, then it becomes very powerful. (Andrew quoted in Sarner, 2018)

These nuanced understandings of fictional online personae, those often presenting an idealised narrative of the user's life, are raised again as a psychological concern in Oren Gil-Or, Yossi Levi-Belz and Ofir Turel's 2015 paper "The "Facebook-self": Characteristics and psychological predictors of false self-presentation on Facebook." They define the "Facebook-self" as 'usually a more socially acceptable and popular self, and as such, can be very different from the user's real or "true self."' The circumstances that lead to the creation of a false "Facebook-self" may differ from one user's situation to another' (2).

A simulated "Facebook-self" was the subject for Amalia Ulman's *Excellences and Perfections* mentioned previously. Here, Ulman used Instagram to create the fictional persona and narrative of 'an aspiring actress who relocates to LA and goes through a number of cosmetic surgery procedures' (Quaintance, 2014). Potentially intended to raise awareness to such social problems, Ulman's methods are questioned by art critic Morgan Quaintance in his 2014 Art Monthly essay "Right Shift: on the end of post internet art." He argues that Ulman's work 'didn't dismantle

anything, it just revelled in, fed off and profited from the exploitative logics of late capitalism' (ibid) (further exemplified in her removal of her Instagram uploads-as-artworks from Instagram).

These broader ideas of narrative and anonymity in user culture reveal some differences between cinematic narratives and user narratives. To understand this in terms of anonymity in video, it is necessary to address the alternative to structural/materialist anonymity. P. Adam Sitney defined the 'lyrical' films of Stan Brakhage as an alternative approach to the American structuralists (Sitney, 1974: 155).

The lyrical film postulates the film-maker behind the camera as the first-person protagonist of the film. The images of the film are what he sees, filmed in such a way that we never forget his presence and we know how he is reacting to his vision. (160)

Lyrical films include: Marie Menken's *Glimpses in the Garden* (16mm, 1957); Brakhage's *Window Water Baby Moving* (16mm, 1959); and Mekas' *Reminisces of a Journey to Lithuania* (16mm, 1972). Each of these use techniques that may appear structural, such as flicker effect and repetition, but their personal, often diaristic approach distinguishes them from the anti-narrative methods of structural/materialist filmmaking. Although structural/materialist filmmakers did not agree with Sitney's definition of structural filmmaking, they distinguished themselves from lyrical methods through methods of anonymity.

Gidal's 'sought-for anonymity for the filmmaker' was not merely an aversion to Sitney and lyrical filmmaking (Gidal, 1990: 156). It supported ideas of 'real time,' duration in the one to one relation between viewer and viewed (ibid). Hamlyn adds, for 'a pure experience of duration, things have to occur, but these occurrences must not lead back into an experience of image as an expression of the

filmmaker's subjective vision, as they do in Brakhage' (Hamlyn, 2003: 93). Problems arise in these notions of one to one and pure duration when understanding video's temporality, what I am calling a *quantum spacetime*. Here, the relation between viewer and viewed might be seen as de-temporalized and obliterated. Anonymity in video may not offer the same function as it can in film. Anonymity might be impossible in video.

Gidal further attributed anonymity to 'No aesthetic of individual genius' which functions as a means of addressing the apparatus in use.

You sit there with a machine and you are process, no more or less than the machine, because the handling is necessary yet does not cause an effect. (Gidal, 2016: 117)

Gidal's anonymity can then be seen in relation to film's stability. The causal machine is unresponsive beyond causal operation (pushing buttons, turning dials etc.). The filmmaker can adopt a similarly causal, irresponsive, un-effective method to filmmaking, embodying this causal process that Gidal expands as 'unknowns.'

These 'unknowns' have specific determinate effects, which thus matter and are of matter, but what was important was that there could develop in the practice of cinema no aesthetic/ethic of mechanistic or idealist causality. (ibid)

Gidal's methods require a filmic stability that does not play out in video. For a similar relationship between user and smartphone-video, the *presence* of the user as *decision-maker* puts them on similar terms, as 'no more or less than the machine' *when the machine is also a decision-maker*. It would appear then, that the presence of the user may function as a structural/materialist method.

I find an explanation for video's lack of anonymity in an interview with Brakhage, where he is discussing his dislike of watching video because it is 'like jelly, jello. It's all a-shake with itself' and how he does not use video because it 'has no fixed colour' (Optic Nerve, 2015). Brakhage, a dedicated lyrical filmmaker, defines video's unstable characteristics as the cause of his rejection to using it (Hamlyn, 2005: 126). Hamlyn discusses Brakhage's relationship to video in his essay "The Roman Numeral Series," describing how in film 'the eye meets the Image' while in video 'mixing takes place on the retina' (124). In this, we may consider that film appears to have a causal relationship between what is filmed and what is seen; the transfer of the filmmaker's vision. While the videomaker's vision is a variable, probabilistic relationship, as a 'jello-like' mixing, both in the retina, and as a condition of video's technological instability. The variability between video and audience is a known occurrence of digital technologies, as Rafael C. Gonzalez and Richard E. Woods raise in *Digital Image Processing* (2018) 'color across [digital] devices such as monitors and printers can vary significantly unless these devices are properly calibrated' (549). In this sense, a videomaker cannot be sure that the images they are making are those that will be presented to the audience — at least not to the extent that they might in film — and so the videomaker cannot accurately transfer their own vision.

I argue that video's unstable core state may render the videomaker incapable of producing the materialist anonymity (Gidal) or lyrical mastery (Brakhage) that filmmaking may be capable of. I do not see this as a problem for the videomaker, as such polarising tendencies are themselves problematic. Video may instead require a state of equilibrium, of unstable balance, which I expand upon in the following chapter. To conclude here, I consider the broader context of the "home movie" in relation to my smartphone-video, *Symi* (iPhone 7 Plus, 28/09/17-03/10/17).

In Practice: *Symi* (iPhone 7 Plus, 28/09/17-03/10/17)

Available at: <http://www.jamiejohnjamesjenkinson.com/2017/10/Symi.html>

Here I will discuss the role of the “home movie” in my own practice, and its connection to avant-garde filmmaking. For Sitney, the home movie is relatable to ‘quotidian lyrics, spontaneous, perhaps tentative, records of a sensibility in the midst of, or fresh from, experience.’ He continues,

In a sense this genre is closely related to home movies. But home movies freed from their deadly conventions: historic landmarks, descriptive pans, a concentration on what is collectively considered important, the evasion of “unpleasant” events, automatically homogenized exposures. While the avant-garde quotidian lyric shares the home-movie maker’s recognition of the importance of place, of family celebrations, of capturing the look of people and things against the pressures of time, it is also particularly receptive to nuances of light intensity and to the articulation of mood through the film-maker’s manipulation of the time in which events are represented. [...] Crudely, if the home movie apes the habits and topoi of snapshots, the quotidian lyric finds cinematic equivalents to the compositions, moods, luminous densities, and textures of high art photography. The home movie’s conventions are particularly anesthetizing within the temporality of the shot, legislating a pacing that does not risk the “boredom” of long contemplation or the “incomprehension” of very fast editing. (Sitney, 2002: 424, 425)

Sitney’s quotidian lyrics — translating to “daily poetry” — actively dismisses the home-moviemaker in both description and latin terminology. He instigates a separation between viewer and viewed, user and used, where the viewer as potential home-moviemaker (and those who established home movie practice) are actively seen as less able than the *quotidian lyrical filmmaker* in their ability to ‘find cinematic equivalents,’ becoming ‘high art.’

While Gidal does not support Sitney’s categorisations, he too could be seen in opposition to the home movie through notions of no-aesthetic/ethic. Yet it is in Sitney’s description of quotidian lyrics as: spontaneous, tentative, fresh from experience; that I find a similarity to Gidal’s ‘unknown’ as occurring through ‘spontaneous, untheorised practice’ (Gidal, 2016: 117). Spontaneity becomes

a factor for both Gidal and Sitney, only from opposing positions: Sitney's elevation of certain high art filmmaker's abilities; and Gidal's untheorised no-aesthetic and the unknown. I raise spontaneity as it has become an important part of my own practice, in which a home-movie approach offers unknowns within the dialogue of user and user-friendly device. This is not the same unknown as Gidal's — which may be understood as a pursuit of 'something-new' (Gidal, 2016: 221) — but of the familiarity between user(s).

When first making smartphone-videos I had the preconceived notion to continue a structural/materialist anonymity. This was until *Boxing Day* (iPhone 7 Plus, 26/12/16), a smartphone-video I made to pass time. Without a point of focus to structure the video — as had previously been the case in varying degrees — *Boxing Day* begins with a wide shot of my parent's living room and dining room as set up for Christmas. The television is on in the background (I would have usually turned this off), and I wander the two rooms, aimlessly looking for moments of interest, stopping when I am called to help in the kitchen. Watching the video back, I found the lack-of-structure to have a life that my structurally focused videos lacked. I began rethinking my methods and unofficial video categorisation as 'serious' videos, through attempted structure and anonymity; and 'personal' videos, as spontaneous, diaristic, and playful.

I had made personal videos since the early 2000s through skateboarding. These developed into more diaristic methods towards the end of the decade, making various "home movies" for friends. I began enjoying the energy of these methods around 2015 with *Argentina 15* (iPhone 6, MacBook Pro, 2015), *Winterwood* (iPhone 6, MacBook Pro, 2015) and *Portugal 16* (iPhone 6, MacBook Pro, 2016). These videos were diaristic records of different periods, but remained outside my 'serious' interests, what I had naively considered to be structural/materialist. It was through *Boxing Day* that I realised I should not separate my personal and serious methods.

I wanted to lose my structural limitations, while holding onto some aspects that felt important. My first home movie to combine these methods was *Tuscany 17* (iPhone 7 plus, 09-15/04/17), as the first to be chronologically sequenced directly on my smartphone using the iMovie app *without trimming clips*. Previously, I had used the precise editing features of professional editing software Final Cut Pro 7, which simulates filmic thinking by mimicking frame-by-frame editing. The iMovie app does not cater for such professional precision, having to finger-drag thumbnail clips via a small touchscreen, rather than navigating a precise timeline with a cursory and keyboard. Precision trimming is not an issue when sequencing full video clips, and this continues to be the method I use to “sequence” (rather than “edit”) videos.

The untrimmed chronological method prioritised the recording event, to which editing and reordering felt misleading. I began structuring videos around user-based subjects, such as “holiday videos:” *Tuscany 17*, *Symi* (iPhone 7 plus, 28/09/17-03/10/17), *Cairngorms 19* (iPhone 7 plus, 14-20/04/19); and “wedding videos:” *Grasmere* (iPhone 7 plus, 14/07/17) and *Uppermill* (iPhone 7 plus, 29-30/07/17). I would have been making videos of these events anyway, so I began using the method of chronologically sequenced untrimmed video clips for these videos, which to my surprise, were better received by friends and family than my previously laboured, professionalised edits.

As a point of focus I have chosen *Symi*; a 33minute holiday video of a short trip to the Greek island. *Symi* is notable as I included all the videos I would have previously separated as stand alone videos, such as *Malha* (iPhone 6, 2016) and *Restaurante* (iPhone 6, 2016), which were both shot during *Portugal 16*, but are not in the edited home movie. My home movies are personal, and are not *intended* for cinemas or galleries, they are memories for myself as much anything else, which can situate them within the broader context of the ‘home movie’ (Zimmerman, 2008: 8-9).

Symi features both diaristic videos, such as: sunbathing, sight seeing, parties etc. similar to videos that might appear on social media; but also longer, more structured sections similar to *Desert Rose* and *Elm*, which include: a long slow motion from a boat; another of a goat; a finger-over-lens flicker section; a shaky-cam of a window; and a improvisation responding to music from a CD player. I understood these videos as different to my more diaristic recordings, and initially separated them from the home movie. Sequencing on my phone led me to including these videos, as while in computer editing I would preselect and transfer only the desired clips; on my phone, all the clips were available, and I could sequence the video in-situ. I began testing longer clips in the sequence retrospectively towards the end of the trip, adding more after an interesting sequence of the finger video connecting to goats ramming.

What became apparent was how, although these videos appear to have structural traits, they do not allude to a stability of the device or otherwise. They are improvisations made in a moment of inspiration and without intention; spontaneous and untheorised, fresh from experience. *Boxing Day* and the videos mentioned here made me realise that my unconscious definition of ‘serious’ and ‘personal’ was unwarranted. Rather, the videos that would be considered *more* serious due to their stylistic connections to structural/materialist film and related canons, such as *Structure*, become superficial.

In the home movie context, I began seeing the importance of improvisation through spontaneity within a broader framework of an event (holiday, wedding, birthday etc.), meaning individual videos do not require an internal structure. So although some longer clips in *Symi* have some vaguely structural influence, to impose a system that does not allow this, would be far more limiting

in prescribing a stabilised method. Rather than stable structural studies, these videos are playful experiments of various methods within broader personal videos.

What became the stabilising factor was my theoretical interpretation of the home movie. This runs the risk of becoming more of a cultural signifier than a familiar user practice. The linear home movie is not common practice in contemporary users, as social media invites a more database approach to accommodating personal videos, as algorithmic ‘newsfeeds’ operate in non-linear, non-narrative methods as unordered database modes of story telling (Manovich 2001: 194). My home movies become more associated with ‘amateur film,’ as Patricia Zimmerman expands in the introduction to *Mining the Home Movie*, 2008, ‘These amateur films and videos can be produced in all formats but are originally not meant for viewing in professional audio visual circuits’ (8-9). She expands how the home movie as an ‘amateur film’ is understood as ‘any work that operates outside of exchange values and is not produced to function as an exchange commodity’ (ibid).

The context of the home movie has perhaps become outdated in the age of social media. It may be something I have come to fetishise, rather than addressing current modes of distribution in user-culture; as Ulman’s use of Instagram in *Excellences and Perfections*. Social media users tend to upload snippets of their lives, forming these databases of material for other users to browse, rather than longer, linear sequences to watch. I have found social media difficult to accommodate. I am not comfortable with its impact (i.e. “Facebook-self”) and corporate commodification, as discussed more directly in McKenzie Wark’s *Capital is Dead: Is This Something Worse* (2019), how, ‘If you are getting your media for free, this usually means that you are the product. If the information is not being sold to you, then it is you who are being sold’ (1). I continue to struggle with the issues Wark raises.

I host my videos on the advert-free video host Vimeo, and embed the videos on a stripped back and reworked Blogger site with a personal URL. By using Vimeo the content can be advert free as I pay a subscription for them to be available online. My website removes all surrounding content, separating the videos from wider user contexts, which can make videos appear significant. Significance is problematic, as if *Symi* became significant — due to this discussion for example — it would be counterproductive to the aims of the one to one relation of user(s) as inaccessibility-as-significance (as not all home movies are discussed in doctoral theses). Reviewing my practice, the previous methodology of the single take video is more attuned with user culture, as an online database of videos. Here, the sequence of videos can be determined by the user, to which my database, as a string of hyperlinks to video pages, does not offer a linear or ‘proper’ mode of viewership. The significance of an individual video would problematise this process by becoming a point of stability; a go to. With no signature video, the database becomes something that is *used*, able to choose the video and how it is watched. It is perhaps here, in the online database, where a more user-applicable methodology is used, rather than the potentially fetishised “home movie,” as perhaps an extraneous theoretical structure — but one that I still enjoy and arrived at without theorisation.

By making these longer home movies the videos become more like stable narratives, rather than a more familiar database of elements. As the videos are online, they can be searched, paused, skipped through, in a nonlinear manner, using the playbar, but the videos are still sequenced, implying a ‘proper’ mode of viewership. Pursuing such a practice that does not aim for any significant work, aiming instead for a body of content forming a practice, holds similarities in user culture to the “influencer.” In Brittany Hennessy’s *Influencer: Building Your Personal Brand in the Age of Social Media* (2018), she makes a case for the influencer as a specific type of ‘content generator,’

A content creator has to make videos, take photos, and create posts that make people want to trust her and see more. She has to use various marketing tactics to increase her audience size and keep her audience engaged. She must also adapt her content for each platform, because what works on YouTube will not work on Instagram. (17-18)

Hennessy distinguishes influencers from celebrities and general-users, as ‘there is an art and a science to becoming a full-time influencer,’ while also stating how “influencer” has become ‘practically a dirty word’ (10, 17). I agree, but not on the same terms as Hennessy, who promotes influencers for their commercial potential through word-of-mouth social-media marketing (16). There is perhaps an alternative, non-commercial practice of the influencer, one that may be relatable to the avant garde intentions of de Saint-Simon, ‘to spread new ideas’ as a ‘positive power over society,’ *to have an influence* as the avant garde. And while I find Saint-Simmons war-time terminology, dictatorial stance, and modernist interpretation highly problematic; relatable values can be found in the role of the influencer. The influence of social media accounts in the political and social movement of Black Lives Matter and related anti-racism campaigns cannot be understated.

I am not comfortable positioning myself as an influencer, but the methodology of the influencer, what might be considered a user-focused database of accessible material aimed at promoting/supporting/influencing *a matter* (be it commercial, social, or otherwise), is more relatable than the pursuit of the significant and inaccessible “masterpiece” that I attribute to fine art practice. The *matter* of my smartphone-videos is initially to promote creative, low-cost practice in becoming memetic *in the virtues of accessibility*. Artist moving image does not promote such virtues, reducing the accessibility of moving image artworks both psychologically (omitting video from discussion) and physically (contractually sold editions) through goals of commercialised masterpieces. In this sense, I may be closer to the practice of influencer than fine artist. A potential issue here might be that my content is not influential, but again, individual significance is not important, it is about

promoting the wider idea that user practice is creative; a collective significance of intersubjective user(s).

A question here is whether creative/experimental/unconventional methods are appreciated in user culture? An example is the video *Camera falls from airplane and lands in pig pen--MUST WATCH END!!* uploaded to YouTube by Mia Munselle in 2014. The video is described by Munselle as ‘Camera falls from a sky diving airplane and lands on my property in my pig pen. I found the camera 8 months later and viewed this video’ (2014). The video was started by an unknown skydiver who inadvertently dropped their camera out of a plane (likely an action-cam capable of surviving the fall). The camera spins uncontrollably, revealing the camera’s progressive scan through distorted landscapes in a relatable, though more interesting manner to *Structure*. The camera then lands in a pig pen, where a pig inspects the camera, and — if the video is untrimmed, it would appear that — the pig inadvertently stops the recording with its mouth. Munselle must have appreciated this video to have uploaded it. *Uploading is a creative act of accessibility*. Munselle must have considered that this video could be of interest to others, perhaps *influenced* by the viral success of *Charlie Bit My Finger*. It has since amassed over thirty-million views and forty-thousand comments, which through YouTube’s YPP, can amount to a substantial revenue.

To propose a hypothetical: if this video was planned as intentional *by an artist*, as *artist moving image*, how would it differ? To intend that the camera’s spin would produce this visual effect; navigate the phone’s landing in the pig pen; to interest the pig; and perhaps for the pig to stop the recording? This would arguably require some skill. Munselle’s video, *as accidental* (untheorised and spontaneous) has proven its significance in online views *as a video*. Though if these traits were intentional, *as not accidental* (theorised and planned) it may not be considered with the same significance *as a moving image artwork*. If the hypothetically intentional video became as

significant an artwork as it is a viral video, it would likely be distributed in the same manner of significant artworks, becoming an internal document of the art world, made available to collectors and occasionally to those with access to art institutions. *It would not be available online.* As a found, unintentional, accidental video, it is arguably the most viewed video highlighting its progressive scan — with perhaps David Hall’s radically televised *This is a Television Receiver* (television, 1976) as its interlaced predecessor.

In this speculation, I argue the chance occurrences that popularised Munselle’s video are not valued in the same manner as the rational intentions of artists. Whereas in popular culture, the value of chance occurrences in video can be evidenced in ‘caught on camera’ TV shows such as *You’ve Been Framed*, and continued into ‘fail’ culture mentioned previously, and perhaps also evident in the rise of reality TV programmes. I am not condoning these methods as they are currently practiced, but raising the concern of how art distinguishes itself from mass-culture, promoting the rift between the concerns of artists and the concerns of society. Had art not distanced itself from popular culture, and instead addressed it as a point of consideration, this rift may not be as debilitating as it has become.

By trying to address such a gap, through low-cost accessible practice, it may not be merely a case of imitating user-culture through the home movie or database as I discuss here, but of a creative practice relatable to other user(s). As familiar but not the same, highlight the issues of social media, commodification, big data and AI through differences in familiar practice; offering alternatives *within* such a culture, rather than showcasing its problems as inaccessible *art*, or avoiding it altogether. This is not to imply that such a practice should imitate/idealise/fetishise user-practice, but that creative practice can promote familiar values of user-culture. My home movie’s operate through spontaneity and lived experience, but these freeform methods are stabilised in the

sequenced viewing process, while database may offer a more freeform approach; both holding familiar yet different values for consideration.

What begins to matter is the consideration of user(s)-practice as significant and influential. As I have outlined, smartphone-video can be understood as an unstable practice, but the totalising or aimless pursuit of a pure instability must not be the intention. Rather, it is by understanding video as unstable that more invasive concerns can be raised and hopefully addressed. In the following chapter I raise some of these concerns through the prophetic considerations of Vilém Flusser. Flusser envisaged a gesture of video that has been invaluable to my understanding of smartphone-video, and somewhat accidentally, into an understanding of the quantum universe.

Quanta

Thinking in Quanta

I begin this chapter by connecting ideas of stability and instability to that of Enlightenment and post-Enlightenment positions. For contemporary thinkers such as Karen Barad, Denise Ferreira da Silva, and Walter D. Mignolo, post-Enlightenment positions offer a break away from an Enlightenment notion of stability that can be directly associated with Newtonian physics (Barad, 2010: 248; Silva, 2007: 26, 74; Mignolo, 2011: 207, 151). Merely (re)addressing the world as unstable, as a broad post-Enlightenment position, is insufficient in challenging Enlightenment conditions such as colonialism and racism (Silva, 2007: 2; Mignolo, 2011: 250). The stable/unstable binary is a simplistic reading of what might be better understood in the transition from classical to quantum physics; ideas that are being raised as a means of destabilising the authority of colonial conquest (Silva, 2013: 62; Barad, 2007: 55).

I raise this here as relatable incentives were at the heart of Vilém Flusser's interests in video and the quantum. Contemporary readings of Flusser regard his writing as supporting 'a postcolonial perspective, long before this school of thought established itself' (Finger, Guldin & Bernardo, 2011:

51). He has also been associated with Mignolo (79), as while Flusser did not use the term de- or postcolonial, it is considered that ‘Flusser had addressed these concerns, but mostly in other places’ (Flusser, 2017: 25). One of these other places, I argue, is Flusser’s lesser discussed interest in quantum physics through ‘quanta.’ Flusser’s quanta functions as a means of challenging the Enlightenment principles of modern/colonial practice as stability and hierarchy (Mignolo, 2011: 153, 271).

I focus on Flusser’s interpretation of quantum physics due to our common interest in video as a significant gesture, and links to machine decision-making (Flusser, 2014a: 142; Flusser, 2011a: 143). Flusser positioned these ideas in terms of ‘quanta,’ while also voicing his concern toward it in 1987,

We need to devote our full attention to the problems raised by quanta. Far from being solely practical or epistemological issues, these are existential, political, and aesthetic ones. They should not be left to scientists and technicians. (142)

Although Flusser had no lived experience of our digitally connected society due to a fatal car accident in 1991 — just months before the first webpage went live — his forecasting on its implications have been profoundly insightful, leading to the translation and republishing of several books some decades after his death. Flusser’s writings have been essential in my own connecting of instability, the digital, decision-making, and the gesture of making, through his understanding of ‘quanta.’

Flusser’s ‘quanta’ appears to have gone somewhat unrecognised. This is exemplified in *Flusseriana - An Intellectual Toolbox* (ed. Zielinski, Weibel, & Irrgang, 2015) where the terms ‘quanta’ and ‘quantum’ are not featured in what is otherwise an extensive encyclopaedic study of 226 Flusser

terms. Also, in *Vilém Flusser: An Introduction* (Finger, Guldin & Bernardo, 2011), although Flusser's interest in quantum physics are mentioned, his elaborations of 'quanta' are missed (86). This lack of recognition to Flusser's interpretation of quantum physics has required a more focused study. Flusser's relatively early interpretations of quantum physics are limited, and at points I interject contemporary interpretations, but this study is somewhat focused on Flusser's understanding of quanta, video, and thinking machines. In developing a more cohesive understanding of Flusser's quanta, I have focused on his elaborations of the term in: *Towards a Philosophy of Photography* (1984), *Into the Universe of Technical Images* (1985), *Does Writing Have a Future* (1987), *Gestures* (1991) and *On Doubt* (1999).

Flusser's 'quanta' stems from his interpretation of quantum physics, which he elaborates as,

[Quanta] means that the world, once seen as solid, is no more than a swarm of tiny particles whirling about at random. And so probability and statistics have become the mathematics best suited to this world. Causes and effects only appear as statistical probabilities. (Flusser, 2011a: 141)

Flusser associated this quanta with 'the new digital codes' which in contrast to 'The old criticism, this dismantling of solid things, would be lost in the gaps between intervals, in nothingness [...] For it is clear from the outset that there is nothing solid to be criticised in the new' (152). Flusser's quanta offers a distinction between Newtonian causality through 20th century developments in quantum theory. What is unique about Flusser's interpretation is the way he attributes it to decision-making, the digital, and technological images (143).

Comprehending quantum theory is notoriously difficult, but has become more widely recognised in relatively understandable terms through publications such as physicist Carlo Rovelli's best seller *Seven Brief Lessons on Physics* (2014). In his chapter titled 'Quanta,' Rovelli outlines physicist

Niels Bohr's phenomena of 'quantum leaps,' and how 'In 1925, the equations of the theory finally appeared, replacing the entire mechanics of Newton' (14). A 'quantum leap,' is when an electron "jumps" from one atomic orbit to another with fixed energies, emitting or absorbing a photon when they jump' (14). Rovelli describes how 'quantum leaps' occur 'largely at random,' and how they are 'not possible to predict,' only to 'calculate the *probability*' that they will occur (16). These terms mirror those of Flusser's. They also promote ideas of instability, as 'quantum leaps' occur 'according to the strange laws of quantum mechanics, where everything that exists is never stable' (30). Newtonian physics supports, perhaps invented stability, while quantum physics reinstates instability. It is with this basic understanding that I find a logic to account for digital video's instability, as itself a quantum technology (Durini & Arutinov, 2014: 1).

The technological presence of quantum mechanics in digital video was not the focus of Flusser's position, who came to this understanding through the digital as a language. Flusser argued that 'A completely different critical method is required [as] alphabetic thinking is useless [...] We will have to learn to write digitally' (Flusser, 2011a: 152). Flusser saw a synergy between the use of language by machines and humans where digital codes 'advance against letters to overtake them' (147). Flusser dedicated much of his writing to language, positioning it as the limitation of the intellect in *On Doubt* (published posthumously in 1999) where he argues 'The intellect's limitation is given by the structure of language [...] If we consider man an intelligent being [...] Words are the intellect's data' (2014b: 45, 52). Relatable ideas are expanded in post-structuralist thought, notably Jacques Derrida's *Of Grammatology* (1967) which raises the issues of 'using and being used by a language that is also shifting and unstable' (2016: 63). For Flusser, language and thought are a connected and unstable system which can be understood in terms of quanta, and highlighted in the digital: 'The new digital codes arose from the new understanding of thought, and feedback is making us think in quanta and images more clearly the more we use the new codes' (Flusser, 2011a: 145).

Although Flusser does not appear concerned with the physics of the digital *as* quantum, *using* these new codes is now understood as functioning though quantum physics. All digital devices function through quantum physics, as is explained in science writer Brian Clegg's 2014 book *The Quantum Age*. Clegg describes how 'These quantum technologies are all around us,' and features chapters on camera sensors and screens, to which 'It's almost pointless to try to imagine a world without quantum technology' (77, 263). My argument here is not to apply quantum physics, but to suggest that connecting the logic of quantum phenomena to digital technologies is not arbitrary; or at least no less arbitrary than applying Newtonian causality. How to not impose the logic of Newton's causal stability onto digital media.

An insightful example of such stable application is found in media theorist Sean Cubitt's 2014 book *The Practice of Light: a genealogy of visual technologies from print to pixels*. Cubitt raises the relationship between analogue and digital photography as 'a print medium,' and the role of automation in reference to Flusser and photographer Ansel Adams; describing the latter as 'a serious rationalist, engaged in a meticulous practice of cause and effect' (84, 85). With Adams' causal understanding of photography as a print medium, Cubitt elaborates on developments in automation in the 'photographic apparatus,' referencing Flusser in terms of 'randomness,' 'numbers,' and 'language' (92). Cubitt suggests that both processes of analogue and digital photography 'do not describe but replace the object' and from which 'The world of objects begins to be replaced by a world of measurements. The automation of this process from box brownie to mobile phone cameras is only one step away from Adams' meticulously calculated construction of the picture plane' (93).

Flusser's quanta questions this logic, as where Cubitt continues the wider consensus of Adams' causal readings, he takes the position that measurement processes are the same between the

analogue (box brownie) and digital (phone camera), and that this measurement functions as an equaliser between the two. It is this universalist notion of measurement based on Newtonian causality that Flusser's quanta opposes, as a form of measurement based on 'probability and statistics' rather than cause and effect. With this equalised idea of measurement, Cubitt suggests, 'It appears that photography has furthered what Flusser criticised as the verbalisation of perception' (93). Cubitt is referring to Flusser's posthistorical understanding of technical images from 1983. But when considered in terms of quanta, as an alternative form of measurement, the development of user automation into the smartphone is far from equal to that of the box brownie, as the process of measurement shifts from attempted causal record ('a print medium') to probable interpretation (aesthetic enhancements). From which, the notion of the causal measurement no longer functions as an equaliser. This is not to say that all causality should become extraneous, but that some devices make use of eliciting quantum phenomena more than others, and through such phenomena their manner of measurements differ.

Without the option of quanta, Newtonian causality functions as the essential nature of the universe, which is incorrect. Causal stability does not function as the essential framework of everything, but occurs as a *possible* outcome of quantum mechanics; a position raised more effectively in the work of quantum physicist Karen Barad,

This strange quantum causality entails the disruption of discontinuity/continuity, a disruption so destabilising, so downright dizzying, that it is difficult to believe that it is that which makes for the stability of existence itself. Or rather, to put it a bit more precisely, if the indeterminate nature of existence by its nature teeters on the cusp of stability and instability, of possibility and impossibility, then the dynamic relationality between continuity and discontinuity is crucial to the open ended becoming of the world which resists acausality as much as determinism. (Barad, 2010: 248)

Flusser's limited interpretation of quanta is less considered than Barad's, who has focused on feminist and queer theory. I interject Barad in particular to bolster Flusser's overlooked research in the area, to which Barad's groundbreaking work becomes a guide when considering Flusser's quanta as a bridge between the quantum and the digital. This is not to say their positions are the same, but that Flusser's insightful interpretations of quanta and the digital can be aided through Barad.

The 'dizzying' destabilisation of the quantum may account for the difficulty in understanding the digital in causal terms. Mary-Ann Doane 'grounds' digital code in mathematics as 'the most abstract of epistemological realms' (Doane, 2007: 143–144); as does Rodowick and Spielmann's 'numerical image' (Spielmann, 2008: 57); and Manovich's 'a world reduced to geometry' (Manovich, 2001: 202). Each method continues stable ideas of complexity and abstraction when thinking with a classical reductionist understanding of numbers as stable positions, rather than entangled probable measurements: what is the role of a number (abstract or concrete) if it has no determinate value? Which may also allude to Doane's detemporal 'annihilation,' and Peter Osborne's 'obliterated' time (Doane, 2007: 143; Osborne 2010: 65-66). Or what might be understood from Manovich, in how 'If in physics the world is made of atoms and in genetics it is made of genes, computer programming encapsulates the world according to its own logic' (Manovich, 2001:197).

Flusser's quanta offers an alternative to logic of mathematical abstraction and stability, through the logic that 'thinking "quantizes"' (Flusser, 2011a: 144). He elaborates,

What we call an idea, a feeling, a wish, or a decision turns out to be a statistical summary of quantum leaps; what we call perception turns out to be a summarising of quantum leaps into a representation. (143)

Here Flusser is interpreting Bohr's 'quantum leaps' and ascribes their logic to the mind, and then to digital machines, as a method 'of giving meaning to quantum leaps in the brain from the outside' (145). Understood in this way, Flusser combines digital and user thought in terms of quanta as based on the unstable probability of the quantum leap phenomena.

Flusser then attributes this relationship between machine and human thinking as producing 'feedback,' which suggests an intellect beyond the limitations of language, through 'quanta and images' (ibid). Flusser develops his ideas of quanta through an understanding of the digital, not as the stable abstract file of numbers, but as a simplified version of the human mind (143). By equalising human and machine thought as quanta, Flusser suggests how, rather than using human thought to understanding how digital machines operate, we should use machine thought to better understand the human mind.

In the brain, representations are formed from distinct elements, and from these in turn spring (in quanta) ideas, desires, feelings, and decisions. Given the nearly unbelievable complexity of the brain, the detail of how this happens is incomprehensible, but a simplified form of it can be simulated in thinking machines, so this understanding of thought is pragmatically "correct". (ibid)

It could be argued then, that these quantum leaps in mind or machine come into presence as acts of decision-making. Flusser adds to this in *Towards a Philosophy of Photography*, in how 'The structure of the act of photography is a quantum one: a doubt made up of points of hesitation and points of decision-making' (Flusser, 2000: 39). Quanta as decision-making serves as a useful application in the initial understanding of Flusser's quanta. One that perceives phenomena as a probable process *relatable* to 'decision-making,' rather than a pre/deterministic causation.

Flusser's initial ideas of quantum photography, as outlined in 1983, was likely analogue photography, in which 'the camera does what the photographer wants it to do, although the photographer does not know what goes on in the interior of the black box' (27–28). Such photographic opacity of 1983 is relatable to the analogue 'print medium' associated with the stability of its measurement as Cubitt elaborated. The quantum nature of analogue photography is not digital, but rather the 'act' of decision-making by the human operator. In today's digital camera, with the aid of quantum instability, these decisions — as quantum acts of photography — can be automated by the machine. Flusser noted such automation, but perceived it to be 'invisible' in 1983,

In the case of fully automatic cameras this leap, this quantum nature of photography, has become totally invisible—the leaps take place within the micro-electronic 'nervous system' of the camera. (38)

Here, although likely discussing analogue photography, Flusser highlights the electronic nature of automation that has been accentuated in digital cameras. Today, automation has become *visible* in parts of popular culture, as discussed previously in the narrativised use of autofocus, and autocorrect 'fails.' Although this awareness to machine-made decisions remains vague, such processes can be considered as machines *quantising* on behalf of the user; operations that smartphone advertisements wish to keep invisible, describing them as 'natural' and 'authentic.'

Concerns around digital machines hiding their quantum leaps is discussed — though not in terms of quanta — by Manovich in his 2018 ebook *AI Aesthetics*, in how "cultural AI" is 'influencing the imagination of billions' (location 16). The potential problems of such automation are expanded by media theorist James Bridle in his 2018 book *New Dark Age*, where he suggests,

Given the option of relinquishing decision making, the brain takes the road of least cognitive effort, the shortest cut, which is presented near-instantaneously by automated

assistants. Computation, at every scale, is a cognitive hack, offloading both the decision process and the responsibility onto the machine. As life accelerates, the machine steps in to handle more and more cognitive tasks, reinforcing its authority – regardless of the consequences. We refashion our understanding of the world to better accommodate the constant alerts and cognitive shortcuts provided by automated systems. Computation replaces conscious thought. We think more and more like the machine, or we do not think at all. (87-88)

Bridle's assessment is equatable to Flusser's 'problems raised by quanta,' in which quantum feedback is turning quantum leaps into invisible processes of the opaque machine. Bridle later expands upon a case of problematic machine decision-making by quoting Hito Steyerl's 'digital stupidity' as the cause of unwanted automation (126). Such anthropomorphising of machines as 'intelligent,' 'smart,' and subsequently 'stupid' is common terminology in the contemporary dialogue around advanced automation. While for Flusser 'The intellect is absurd' (2014b: 62).

Flusser's quanta offers an alternative approach to machine decision-making in term of (human)*intelligence*, by instead positioning quanta (as decision-making) as a means of better understanding the universe. 'The rules that once sorted the universe into processes, concepts into judgments, are dissolving. The universe is disintegrating into quanta, judgments into bits of information' (Flusser 2011b: 15). In the pre-quantum logic of Newton, all actions that appear to be the result of logical decision-making were either made by a living-being, or serendipitous/divine intervention. Digital quanta adds another factor into our understanding of events which appear to be the result of logical intentions, as not the result of cognitive thought, but decisions made by un-living machines — a liveness that Barad tentatively attributed to the quantum, in how atoms can "know" (2007: 312).

Quantum Dialogues and Intersubjective User(s)

Finally, with the help of a mouse or a video camera, a computer is transformed into an intelligent being capable of engaging us in a dialogue (Manovich, 2001: 99)

Manovich makes these claims of an intelligent dialogue with a computer in *The Language of New Media* (2001). Later, in *Software Takes Command* (2013), he grounds this position in earlier ideas of computing, such as Ivan Sutherland's doctoral thesis on *Sketchpad* (a digital drawing device from the 1960s), in how 'Rather than conceiving of Sketchpad as simply another medium, Sutherland presents it as something else—a communication system between two entities: a human and an intelligent machine' (88). He adds how Kay and Goldberg also foregrounded this communication dimension, referring to it as “a two-way conversation” and describing this new ‘metamedium’ as “active” (ibid).

As discussed in the first chapter, the theories surrounding medium, especially those of video and the digital, remain blurred. But this longstanding idea of a human-machine dialogue is one that I also find in practice, exemplified previously in *Elm*, as well as the works of Robakowski, Kiessling and McQueen. These ideas can continue into the video-connected-computer as capable of ‘dialogue’ — be it “intelligent” or not — as grounded in practical evidence in these videos. Theorist Timothy Binkley expands this idea of dialogue in how, when using a computer, ‘we require a conversion from objects to numbers. To get it back out again, the converse conversion is needed’ (Binkley, 1998: 112). Following this logic, a dialogue of sorts is required to *translate* data into a format palatable to humans. Users and machines cannot (currently) hold a direct conversation *in their own languages*. At both ends, the language requires translation, which can be addressed in terms of

Manovich's 'intermediary' as 'in order to make media accessible to our senses, it has to be analog' (Manovich, 2013: 153). This requires an internal dialogue of translation between initial language and analogue output, such as a machine's screen, speaker, etc., or human's gesture, speech, etc.

Manovich elaborates, 'With all data types now encoded as sets of numbers, they can only be accessed by users via software applications which translate these numbers into sensory representations' and that 'all "properties of digital media" are now defined by the particular software as opposed to solely being contained in the actual content, i.e. digital files' (155-156).

Manovich outlines how the software of interpreting media and the 'actual content' are entangled. Yet there is stability in Manovich's logic, as it understands the digital file as empirically determined as numbers, to which the software is a transformative mediator capable of change. An unstable position might understand the digital is fundamentally unstable, and the software as a mode of momentary *stabilisation* through its translation into analogue.

Either way, the analogue output of the intermediary stabilises the data through this translation into the analogue output. And in doing so, creates a barrier between the user and the internal dialogue of 'quantum leaps' within the machine, and vice versa. Manovich comments on this barrier in terms of contemporary developments in machine learning as 'It is often not known what is learnt through neural networks, with this information contained within a "black box"' (2018: location 235). In this sense, it would appear that there is no 'intermediary' or 'translator' capable of allowing the user to have a direct conversation with machine language. It may be assumed that it is only possible to interpret the stabilised analog output of the intermediary, but this is stable thinking.

The collaboration between user and machine, through various forms of dialogue, continues to be raised by those attempting to understand user-machine relations. For Bridle, ‘cooperation [...] reduces the sting of computational opacity [to which] we might gain a deeper insight into the way in which complex machines make their decisions’ (Bridle, 2018: 302). Spielman adds, in terms of video’s merge with computing, ‘the fact that the desired effects are subject to the machine’s own jurisdiction, a degree of co-creativity with the machine already reveals itself, which increases with computer use and becomes particularly apparent in digital image creation’ (Spielmann, 2006: 133). These ‘cooperative,’ ‘co-creative’ approaches require a dialogue to ‘gain a deeper insight’ in these processes. I am considering this as a “quantum dialogue.”

Not a term used by Flusser, it is rather grounded in his understanding of quanta and video, which I initially find in his ‘opposition and collaboration’ in ‘technical image’ production raised in his 1985 book *Into the Universe of Technical Images*:

Technical images result from a gesture that is doubly self-involved, from an intricate opposition and collaboration between the inventor and the manipulator of the apparatus and an opposition and collaboration between an apparatus and a human being. (2011b: 20)

Flusser’s term ‘inventor’ is the person(s) and/or machine responsible for creating/coding the apparatus and the parameters of its use. They develop the algorithms and codecs integral to the apparatuses use. Yet this level of input is detached from the smartphone-videomaking process beyond the creation of the apparatus; especially when considering machine learning. The ‘manipulator’ is the ‘human being’ — the user(s) in our case — as those with the potential to ‘envision’ (ibid). Envisioning was a fundamental process in Flusser’s understanding of the world as quantum. And in 1985, Flusser foresaw a relatable version of contemporary image culture in terms of the envisioner and quanta, he wrote,

Producers of technical images, those who envision (photographers, cameramen, video makers), are literally at the end of history. And in the future, everyone will envision. Everyone will be able to use keys that will permit them, together with everyone else, to synthesize images on the computer screen. They will all be, strictly speaking, at the end of history. The world in which they find themselves can no longer be counted and explained: it has disintegrated into particles—photons, quanta, electromagnetic particles. It has become intangible, inconceivable, incomprehensible, a mass that can be calculated. Even their own consciousness, their thoughts, desires, and values, have disintegrated into particles, into bits of information, a mass that can be calculated. This mass must be computed to make the world tangible, conceivable, comprehensible again, and to make consciousness aware of itself once more. That is to say, the whirring particles around us and in us must be gathered onto surfaces; they must be envisioned. (31)

These broader ideas of technical images and their relationship to quanta and the digital highlight the importance Flusser held for the potential of digital images in relation to a quantum universe.

Flusser's envisioner works in dialogue with the machine, in 'opposition and collaboration,' to which they 'don't stand over apparatuses the way a writer stands over a typewriter; they stand right in among, with them, surrounded by them [...] When I envision technical images, I build from inside of the apparatus' which grants the 'power to envision [...] the power of drawing the concrete out of the abstract' (36, 38). This is not simply translating/stabilising abstract numbers into concrete outputs via an intermediary, but a combined quanta that is building from inside the apparatus, where although abstract, the envisioner, or simply the *user*, is able to hold a dialogue of 'opposition and collaboration' through the process of decision-making *as quanta*.

In Flusser's last book *Gestures* (1991), he raises the significance of video in the last chapter *discussing a tool*, "The Gesture of Video." Flusser describes video as 'a relatively new tool' from which 'the origin of the tool "video" gives the impression of a whole series of epistemological virtualities that have not yet unfolded' (142, 145). For Flusser, in 1991, he is discussing analog videotape, which although different to digital video, has a more relatable paradigm than film's stable core state. Flusser saw how the 'gesture involved in manipulating a video camera represents

in part a change to a traditional gesture' (142). And suggested how 'observing this gesture' was 'one way of deciphering our current existential crisis,' though one that needed 'setting video and TV free from the control exerted by the model of film' which he saw as genealogically distinct,

Genealogically, film can be traced to the line fresco–painting–photography; video can be traced back to the line water surface–magnifying glass–microscope–telescope. In its origin, film is an artistic tool: it depicts; video, conversely, is an epistemological tool: it presents, speculates, and philosophizes. (144–145)

Flusser foresaw a 'new quality' in the gesture of video that he could not yet comprehend, but one he understood through video as a dialogue,

This new quality will come from the dialogic structure of video. To put it briefly, we will be dealing with a gesture that no longer attempts to produce a work whose subject is the maker but rather with one that attempts instead to produce an event in which the maker participates, even if he is controlling it. (145–146)

It is through closer inspection to Flusser's quanta that a similar participation of the videomaker can be highlighted in the quantum dialogue. Where the videomaker participates in the act of recording smartphone-video, outside the polarity of the masterful or anonymous filmmaker.

Flusser saw how video 'opens a dialogue between itself and the scene, whereas [...] film is a discourse about the scene and forbids any immediate dialogue' (ibid). Although focusing on *recorded* material, Flusser's principles still apply, as where, 'A photographer needs to be "objective"; a video maker can be intersubjective' (144). Flusser considered intersubjectivity as having significant research implications, one capable of distinguishing "progressive" 'present research' from "progress" driven 'bourgeois research,' as he outlined;

Bourgeois research is a discourse whose utopian goal lies in an increasingly objective perception of the world. At present, research is turning into a dialogue whose utopian goal is an increasingly intersubjective perception of our living conditions. The utopian result of bourgeois research is a technology that manipulates the whole objective world. At present, the utopian result of research consists of the optimal transformation of living conditions to bring possibilities closer: telematics. So there is no linear progress for this kind of research. Progress is rather the approach to one another with the purpose of gathering shared possibilities. (157-158)

The decolonial aspects of Flusser's thinking become more evident here, as does his consideration of video as intersubjective, non-linear, and quantum. To integrate such an intersubjective position, my structural/materialist principle of the one to one relation between viewer and viewed must be altered accordingly. Where Gidal sought for an objective 'no aesthetic of individual genius' in the one to one stability of film; video — and perhaps digital media more generally as unstable modes of practice — may work towards a position of "intersubjective user(s)."

A similar case for this is addressed in Barad's *Meeting the Universe Halfway* (2007), in which Barad addresses physicist Niels Bohr's 'intersubjective notion of objectivity' within which, Bohr argues against the Cartesian presupposition that there is an inherent boundary between observer and observed, knower and known' (153-154). While Flusser's objective/intersubjective position becomes blurred here in the complex position of Bohr through Barad's "agential realism," the position of the intersubjective user(s) rather than the one to one relation between viewer and viewed shifts the onus from translation of information to the actions/gestures of the user.

Furthermore, Flusser's intersubjectivity may also be reimagined in terms of Barad's "intra-action," which '*constitutes a radical reworking of the traditional notion of causality*' (2007: 33). Barad elaborates,

The neologism “intra-action” *signifies the mutual constitution of entangled agencies*. That is, in contrast to the usual “interaction,” which assumes that there are separate individual agencies that precede their interaction, the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action. It is important to note that the “distinct” agencies are only distinct in a relational, not an absolute, sense, that is, *agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements*. (ibid)

Intra-action may be considered to be an advanced form of Flusser’s intersubjectivity through his interest in quantum physics. It *may be* the case that reimagining Flusser’s intersubjectivity as an “intra-subjectivity” — and the potential of “intra-subjective user(s)” — *may be* a more adequate interpretation of Flusser’s thinking. For the purpose of this thesis, I use the term “user(s)” in this intra-subjective sense, though one that requires further consideration of Barad’s theory.

For Flusser — who was unable to develop these ideas further due to his untimely death — video marked a significant point in his development of the “phenomenology of gestures.” And since he ‘lightly sketched’ his views on video, it has gone from a relatively new to a socially normalised tool of user(s) (2011a: 146). I argue that the smartphone has unfolded some of video’s gesture, accentuating its unstable core and quantum potential. And by observing the dialogical structure of video as a quantum dialogue, I suggest a manner of deciphering our current existential crisis in the development of thinking-machines.

Thinking Machines, Soft Thought, and the ‘Something-New’

Flusser outlines his position on human and machine thought as quanta in a chapter titled “The Digital” from *Does Writing Have a Future*,

We are in debt to neurophysiology for the knowledge that thinking is a process involving electrons, protons, and similar particles. It has shown that such particles jump across intervals in the astronomical numbers of nerve synapses that constitute the brain. What we call an idea, a feeling, a wish, or a decision turns out to be a statistical summary of quantum leaps; what we call perception turns out to be a summarizing of quantum leaps into a representation. In the brain, representations are formed from distinct elements, and from these in turn spring (in quanta) ideas, desires, feelings, and decisions. Given the nearly unbelievable complexity of the brain, the detail of how this happens is incomprehensible, but a simplified form of it can be simulated in thinking machines, so this understanding of thought is pragmatically “correct.” (2011a: 143)

Flusser is making some assumptions in connecting neurophysiology and quantum leaps. Bohr’s quantum leap differs to Flusser’s link to neurological synapses, but the relationship between the quantum and thought is not arbitrary. Physicists continue to speculate on the relationship between quantum mechanics and human cognition, and the connection cannot be overlooked (Fisher, 2015; Kent, 2018). What we can speculate is that quanta, as decision-making with quantum logic, can occur across both the mind and the machine. As Flusser was discussing this in the early stages of thinking machines, I propose a relatable and more recent consideration in media theorists Luciana Parisi and Stamatia Portanova’s concept of ‘soft thought.’

Soft thought is raised in their essay “Soft Thought (Architecture and Choreography),” published in *Computational Culture* 2011, as a process indicating ‘nothing more than that numerical and logical mode of thinking which is proper of software itself.’ Their aim is not to ‘overlook a fundamental aspect, that is the autonomy of code, ‘code in itself’ [but to establish a] real engagement with its specific aesthetics’ (ibid). From this, soft thought offers ‘a thinking not relatable to any subjective or

conscious reflection but to the automated, abstract dimension of numbers' (ibid). This may appear to reestablish Doane's 'most abstract of epistemological realms,' but soft thought's 'numerical logic' achieves a shift in the onus from 'intelligence' (relation to human thought), to thought as the product of its own language limitations, be it alphabetic or numeric. Understanding a machine's 'soft thought' as limited to a language of mathematics, can remain abstract in its language, while understandable as quanta as a decision-making process; be it intelligent or otherwise.

A significant difference between soft thought and biological thought might be the apparent determinism of mathematics, alluding to a causal, Newtonian logic. A counterargument is made by Parisi in a later essay "Reprogramming Decisionism" for e-flux 2017 where she addresses ideas of 'post-truth' in terms of algorithmic decision-making. She argues that 'computational indifference to binary problem-solving coincides with a new imperative: technological decisionism, which values making a clear decision quickly more than it does making the correct one' (ibid). Flusser makes a similar assertion expanding on how 'cybernetic control itself comes from the level of uncertainty and statistical probability' and how through this we are 'beginning to reflect in a disciplined way for the first time, that is, to think about thinking' (Flusser, 2011a, 144).

Parisi makes a similar assertion,

Instead of declaring the end of metaphysical thinking and its completion in instrumentality, it seems important to reenter the critique of instrumental reasoning through the backdoor, reopening the question of how to think in terms of the means through which error, indeterminacy, randomness, and unknowns in general have become part of technoscientific knowledge and the reasoning of machines. (2017)

Soft thought becomes comparable to Flusser's machine quanta as both question the notion of thought and are limited by their respective languages, while not limited to deterministic logic. In this vein Parisi adds, 'Even if algorithms perform nonconscious intelligence, it does not mean that they act mindlessly' (Parisi, 2017).

Soft thought suggests that more complex decisions may not always be presented equally through the intermediary as causality would intend. Decisions with multiple variables (some in their trillions) can be impacted by various factors required in processing data. Some of these computing and intermediary processes operate on a physically quantum level (i.e. CMOS sensors), but in perhaps more relatable, stable terms: the instruction set, clock speed, front side bus speed, bandwidth, CPU performance, amount of tasks being performed, power supply, and temperature can all impact the performance of the machine to make *not correct* decisions (if a 'correct' decision is even possible). Similar interpretations can also be read from Manovich's non-linear understanding of the database's refusal to order (Manovich, 2001: 199).

The indeterminacy, lack-of-order, and unknowns of the digital can be understood as a product of its instability. Flusser's introduction of quanta offers a physical understanding of such unstable properties, mattering these metaphysical concerns. By relating the probability of the quantum to decision-making, Flusser offers a means by which users and machines can engage in a dialogue; though not necessarily to understand one-another. To elaborate on these notions of thought, I interject Gidal's position of the 'something new' as a method of establishing a relatable position of quanta within the context of structural/materialist concerns.

Gidal raised this idea in his essay "Against Metaphor," first published in 1998, and revisited in 2005, and again 2015 for its publication in *Flare Out* (2016). Gidal positions the something-new as

a ‘meaninglessness’ against metaphor and recognition (230). Gidal outlines this position in the introduction to *Flare Out* as connected to his ‘experimental film practice that was a process against recognition—as recognition means something already known’ (18). Here I offer a condition in which the something-new can be understood in terms of quanta and soft thought as a material concern.

Gidal’s something-new occurs in the mind of the observer, and thus can be understood as a quantum act, or perhaps the lack there of when recognition is not achieved. If this is to be understood in terms of quanta, in theory, it should be possible to simulate a ‘simplified form’ of the something-new in thinking machines as Flusser proposed. A similar state is described by Parisi and Portanova in the ‘pure potential’ of soft thought, which is not a platonic purity, but rather how ‘the formal logic of algorithms is always inherently incomplete and infected with uncertainties’ (2011). With exposure to ‘intrinsic incompleteness which it tries to order and organize,’ input data must be understood as either: recognised, as something already known and responded to with existing logic; or not recognised data requiring new quantum responses, as *something new* (ibid). The impact of a ‘simplified’ something-new in machines can elaborate on Parisi and Portanova’s ability of machines as, ‘with their capacity to disrupt the ‘cold’ automated linearity of formal languages, these effects encourage us to perceive a dimension where algorithms have almost managed to ‘come to life’’ (ibid).

The prospect of the something-new could suggest that thinking machines require the something-new in order to be able to quantise. Parisi expands on similar principles as ‘error, indeterminacy, randomness, and unknowns in general have become part of technoscientific knowledge and the reasoning of machines’ (2017). Such relatability between human and machine thought led to Flusser’s speculation of ‘quantum feedback,’ which is becoming a common position in media

theory (Flusser, 2011a: 145). Quantum feedback may account for Bridle's 'We think more and more like the machine, or we do not think at all' (Bridle, 2018: 88); Manovich's 'AI now plays an [...] important role in our cultural lives and behaviours, increasingly automating the processes of aesthetic creation and aesthetic choices' (Manovich, 2018: location 44); and Parisi's need for 'a new envisioning of how to think in the age of automated cognition' (Parisi, 2017). Each of whom have promoted the dialogue between human and machine as a means of understanding the machine.

A quantum dialogue considers this process from the position of decision-making. Parisi and Portanova describe how user-machine dialogues are often skewed in favour of the user, where 'Looking for the glitch in the functionality of the algorithmic system, or waiting for new qualities and affects to be generated by it, have so far been the two interwoven, polarizing tendencies of contemporary digital aesthetics' (2011). This *looking for* glitch is discussed in different terms in Rosa Menkmen's *The Glitch Moment(um)* (2011), and the *waiting for* can account for Manovich's 'unsupervised machine learning' (2018: location 384). While credible positions, I continue Parisi and Portanova's concerns around polarising quantum dialogues, which I raise previously in terms of mastery and anonymity.

In polarising the quantum dialogue the user can: *look for* desirable effects through control, by mastering the machine; or *wait for* desirable affects by removing themselves, through anonymity. In both polarisations, the machine is subservient to the user. There are many issues with these mindsets. One of which, is how polarisation disengages with the quantum dialogue by collapsing the push and pull of 'opposition and collaboration between an apparatus and a human being.' A relatable example is in my own smartphone-videos. *Structure* presents my forcing of the machine's failure through glitch, and *Desert Rose* presents my dominance in deactivating some automated

features. Similarly, in the previous survey of cameraphone videos, these polarising tendencies are raised through fetishising quality and/or overt manipulation.

Parisi and Antonia Majaca elaborate on polarisation, in how ‘celebrating error for its own sake is a form of mystification that can only lead to depoliticized, naive triumphalism’ (Majaca & Parisi, 2016). This may also be said for *celebrating accuracy*, as the polarised notion of the erroneous or accurate implies some causal finitude, where the illusion of stability in celebrating the determinate failure/success.

As a possible illusion of stability, we may apply methods of structural/materialist anti-illusionism. Gidal describes how this ‘is not a matter of anti-illusionism pure and simple, uncovered truth, but rather, a constant procedural work against the attempts at producing an illusionist continuum’s hegemony’ (Gidal, 1990: 17). Through structural/materialist filmmaking, Gidal worked against representation and metaphor, through a polarised position of anonymity as a counterposition to lyrical mastery; a *waiting for* the ‘something new.’ This polarisation may have been a product of film’s stability, to which video’s instability requires a different method, one that cannot assume the stability of polarisation and determinate effects. Not to *look* or *wait*, but to *work with* the machine.

From this, we may deduce that video’s instability questions the polarisation of: mastery and anonymity, error and accuracy, failure and success; as forms of stabilisation. As an alternative method to this, I suggest the potential of a more equalised, non-polarised quantum dialogue. Through my practical experiments, I have found the potential for an equalised quantum dialogue in the act of recording smartphone-video. It is in the smartphone’s overt use of automation that the quantum dialogue of ‘totally invisible’ automation can be accentuated, raising awareness to processes ‘you’d never know’ were occurring (Apple, 2019a).

Smartphone-Video as a Non-Polarised Quantum Dialogue

In Manovich's *AI Aesthetics* (2018), he raises how machine "super-cognition" is 'increasingly automating the processes of aesthetic creation and aesthetic choices' (location 36, 44).

Smartphone's prioritise this automation to streamline the production of user-generated-content. The widespread use and usability of the smartphone has engrained its automation, both functionally and culturally, into general smartphone-use, rendering the smartphone a poignant, if not leading example of a technologically developed and socially familiar device capable of quantum dialogue. I would add that this automation is highly evident in the use of the smartphone camera, which as discussed, has become a focused of AI application.

A potential problem with smartphone automation is its invisibility, especially when the outcome appears accurate. To better understand the logic of automation, I compare it to the relatable process of "autocorrect," a now standardised feature of word processors and user-generated text.

Autocorrect is a simple quantum dialogue, with definable limits and understandable rules, from which the machine is able to doubt and decide the intentions of the user. Commonalities between digital images and words becomes a useful method of breaking down the complexity of smartphone imaging.

Autocorrect was developed for Microsoft Word in the early 1990s to aid the user by correcting unwanted spelling and grammatical errors when using their word processor software (Lewis-Kraus, 2014). As with much of user-culture, studies of autocorrection are a rarity, with my source material coming from tech writer Gideon Lewis-Kraus' 2014 Wired article 'The Fascinating... Fascinating History of Autocorrect.' In the article Lewis-Kraus interviews Dean Hachamovitch 'inventor on the patent for autocorrect and the closest thing it has to an individual creator' (ibid). Lewis-Kraus quotes Hachamovitch's view of pre-autocorrect typing as "a little bit of creativity and a whole lot of

scutwork” (ibid). Hachamovitch speculated that ‘by delivering us from scut’ he could make ‘our typing sleek and invisible’ (ibid).

Autocorrect functions within a specific framework of ‘correct’ orthography and syntax. Establishing this framework became essential to autocorrect’s development, with some errors unique to word processing software, such as the first two letters being mistakenly capitalised (ibid). An algorithm was developed to automatically de-capitalise all second capital characters, but problems arose with words featuring double capitalisation, such as “CD” (ibid). To resolve this, then intern Christopher Thorpe wrote a ‘master list’ of terms to exclude from this operation (ibid). The master list model was then applied to other similar systemic issues, and to safeguard (themselves) against unfortunate corrections, as Lewis-Kraus notes, ‘Thorpe went through the dictionary and took out all the words marked as “vulgar.”’ (ibid). And so a level of conformity and censorship became part of this corrective process; a logic that will become useful in understanding smart-imaging.

Writing has a relatively small amount of variables. For example in english, there are 26 characters in the alphabet, which commonly form words between one and forty characters (with exceptions in scientific terminology), though most are below ten. Character sequences form words, then word sequences form sentences through rules of orthography and syntax. Once these rules are established, the probability of intention within this system is greatly reduced, leading to its functionality and relative standardisation across user devices.

In digital imaging, many more decisions must be made; especially when using a smartphone. A relatable system is found in Gonzalez and Woods’ *Digital Image Processing*, and how pixels are chosen as ‘pseudocolors’ through ‘quantization’ and ‘predictors’ (2018: 550, 598, 662). The language used caters for scientific research, but the terms are relatable; even to Flusser’s quantising

as decision making. Gonzalez and Woods describe quantisation as the ‘decision and reconstruction levels of the quantizer,’ to which quantisation becomes a variable of ‘quantized errors’ as a process of ‘decision’-making (673, 666). Such quantising includes a corrective process, though rather than finding errors in user input (as in typing), smart-imaging is correcting the intermediary light sensor.

To make a comparison to language, the sensor-reading/image can be understood as a word, with each pixel a character. The variable of this pixel/character jumps from 26 letters in the alphabet, to the 16,777,216 colours of the relatively standardised 24 bits per pixel (BPP) image. Where words can differ in length, the digital image-as-word has a specified uniform ratio in the fixed raster grid of the sensor/display. For these images-as-words, there is no dictionary for correct words, rather each combination forms a new and unique image/word.

Within these images, millions of pixels are decided upon, each responding to the initial light sensor reading both specially and temporally (a quantum spacetime). Adding to this complexity, each pixel is itself a combination of variables from the RGB CFA values — which in this analogy of autocorrected writing, is like trying to make sense of each letter though various levels of handwriting legibility — as an additional layer of interpretation through debayering and de-noising which depends on the quality of the sensor. Each of these processes take time, and while digital cameras can process data very quickly, the time based quality of video’ frame rate adds a further dimension, as decisions must be made quickly; implying Parisi’s ‘technological decisionism.’

To grasp the complex temporality of this process: 30fps HD video calculates 62,208,000 pixels every second; 60fps 4K video, calculates 497,664,000; and recent 8K smartphones at 24fps calculate 796,262,400 pixels per second. Each pixel is chosen within a variable of 16,777,216 colour variations, a decision itself requiring multiple decisions, both spatially (within frames) and

temporally (across frames). The camera sensor enables the user to input these vast amounts of data in infinitesimal timeframes, which differentiates the camera sensor from more streamlined location and response input devices, such as a keyboard, mouse, trackpad or touchscreen.

Processing these vast amounts of data takes time, which is another distinction to film. Film's grain is transferred collectively, not individually decided. As such, exposing an 8mm frame takes just as much exposure, development, and stabilisation time as 70mm film, even though the surface area (and image) is many times larger. By contrast, a *bigger* video image requires *more* time, which is achieved through faster processors capable of speeding up the decision-making process.

The complexity of smart-imaging has reached a level that it is being evidenced in popular culture, as explained by Apple in the advertisement of their iPhone 11 series.

We built A13 Bionic to deliver unparalleled speed and advanced machine learning. It's what allows iPhone 11 to power through processor-intensive tasks. Shooting 4K video at 60 fps in extended dynamic range, for instance, is like a firehose of information hitting the video encoder at once. Processing it would be a challenge for most chips. But A13 rips straight through it.

Think of video as a series of frames. Thanks to incredibly fast camera sensors, iPhone 11 is able to produce 120 frames per second, alternating between standard exposure and short exposure frames.

The image signal processor and video encoders analyse each of those frames in the moment to capture as much detail as possible. To take it even further, the Neural Engine uses real-time machine learning to optimise the different components of the scene. For example, it might relight the person in the foreground, while reducing noise and enhancing colour in the sky. It all happens instantly and automatically.

Producing the highest-quality video in a smartphone isn't easy. But thanks to the super-powerful A13 Bionic, you'd never know it. (Apple, 2019a)

Here, Apple are highlighting the complexity of video recording, and the extent and speed by which alterations occur within their smart-imaging system. The processes they outline here, which

‘optimise the different components of the scene,’ by relighting, reducing noise, and enhancing colour, are processes of *autocorrection in the image*. This raises questions as to what mode of orthography and syntax these corrections are based on?

Comparing again to Microsoft Word, Lewis-Kraus notes the autocorrect of “judgement” to “judgment” (2014). Both spellings are acceptable/correct, though the latter is made more desirable to the automated system, as the optimal decision of *two correct possibilities*. Lewis-Kraus expands on today’s system as,

a vast statistical affair in which petabytes of public words are examined to decide when a usage is popular enough to become a probabilistically savvy replacement. The work of the autocorrect team has been made algorithmic and outsourced to the cloud. (ibid)

To compare with smart-imaging, how is the ‘optimal’ colour for sky *decided*? What is the equivalent ‘probabilistically savvy replacement’ in popular imaging, and how is this data gathered? A deeper understating of how this dataset is gathered has been difficult to source, in part due to the secrecy of smartphone brands. What Apple touch upon here is their ‘real-time machine learning,’ meaning that the machine may be rewriting its own framework as it goes, perhaps influenced by social media and/or other devices in use. The framework of correcting images is evidently far more complicated than that of autocorrect writing, as a constantly shifting ‘real-time’ (not in the durational sense) point of reference which, while benefiting from the complexity of its system, intentionally upholds its ‘you’d never know it’ invisibility.

Understanding automation as decision-making, as quanta, can make this process more relatable than its obscured numerical abstraction. In smartphone-video, the display as intermediary presents the decisions made by the machine; as the emergence of data, rather than the process(ing) itself. An

example might be an autoexposure change when pointed at the sun. While the data is obscured, we can recognise the machine's decision that the input was too bright. By then extrapolating this visible process across the complexity of digital imaging, an equalised dialogue can occur. Due to the vast amount of data that is input and decided upon via the image sensor and on to the display, and the speed by which the frame rates dictate these decisions, I suggest the potential for a non-polarised quantum dialogue through smartphone-video.

Smartphone-video elicits an increased quantum response from the machine in relation to its input. This can be understood in terms of *increasing* Rodowick's 'Digital synthesis' as producing 'an image of what never occurred in reality: it is a fully imaginative and intentional artefact' (Rodowick, 2007: 169). In this sense, smartphone-video is arguably the most *imaginative* video device due to the level of user-friendly *corrections* required in 'enhancing' and 'optimising' its vast data input. Frame rates adding the potential for Parisi's technological decisionism, which favours quick choice (quanta) over accurate reading (causation).

When recording a smartphone-video, the *imagined image* on the screen contains quanta from both user and machine. Such quanta emerges through the translation of thought into actions, be it an autofocus, camera/hand movement, colour optimisation, or point of interest. The user can see *the world* — that is, what we understand as *the world* — and the machine attempts to imagine *a world*. It does not attempt *the world*, but rather an *optimised* world, a desired, aesthetically enhanced world. The method by which this imagination as quanta is formed remains obscured. But it can be interpreted through an equalised quantum dialogue of emergent quanta in the act of recording; equalised in the sense that smartphone and user play equally prominent roles in the image.

The Act of Recording

The act of recording in videomaking is very different to that of filmmaking. In film, the effects of recording the world onto celluloid are hidden within the camera. It is impossible to see the grain of the image being produced *in the act of recording*. To achieve a desirable image in film, to produce and see the grain, the filmmaker must prepare, hope and wait to see the results some time after the act of recording. Video pixels (its grain equivalent), can be seen during the act of recording, via the device's intermediary display. As such, the act of recording for the videomaker can be prioritised *in a manner that it cannot in filmmaking*.

The act of recording has been a point of focus for some videomakers, and across a variety of video devices. I first noticed this in Hamlyn's *Autogrill Verghereto* (2008), part of a series of naturally occurring moiré pattern videos. The continuous handheld recording of a mesh chair, using a consumer pocket camcorder, is simple and unimposing in terms of filmic thinking. It is when understood as a quantum dialogue in the act of recording — when thought of as a video — that the camera's various interpretations of the moiré effect produced by the chair, and intensified by the camera's rasterisation, becomes a visible point of focus for Hamlyn, who investigates this within the act of recording through improvised camera movement.

Autogrill Verghereto would be impossible in film. The effects of the moiré pattern on the film grain would go unseen until the film was developed and projected some time after the act of recording. As such, filmmakers cannot prioritise a dialogue with the image *as it is being produced* in the act of recording. As video can achieve this dialogue, videomakers can prioritise the act of recording as the creative process. One that ends with the recording, and questions the use of postproduction. And it is this manner of operation, of the envisioner within the apparatus as Flusser describes it, that shifts the onus on the maker.

Experimental filmmaking has tended to either master the stable apparatus, or embody stability through anonymity; both methods relying on film's stable core state. Video's quantum dialogue in the act of recording problematises these stable polarisations, as the human cannot be presented as the visionary master due to its 'jello-like' instability. Nor can user *and* machine be anonymous in the filmic sense, as the device presents itself in the image as acts of quanta, as one half of the dialogue. (Similarly, as there is no active dialogue in film, Gidal's anonymity might be understood as a filmic equilibrium, as there is no dialogue to be held.)

The earliest example I have of a video which recognises the internal dialogue between automation and operator in the act of recording, is Josef Robakowski's *Nearer - Farther*, discussed previously. In Robakowski's video, his ability to see the images being altered by the camera, of seeing the machine's quanta in the image, correspond to the decisions made by Robakowski to zoom in or out. The video holds some polarising tendencies in the stability of its structure (such as the locked off camera; predetermined process/system). Other, lesser known videos of Robakowski are more subtle and playful in their quantum dialogue with consumer camcorders of the time. Two examples show Robakowski dancing with the camera, either behind it in *Taniec z Drzewami / Dancing with Trees* (1985), or in front of it in *Taniec z Lajkonikiem/ Dance with a Lajkonik* (1992).

Behind the camera, Robakowski is the camera operator, and while singing a tune, he sways and spins a handheld camera in a forest. The image becomes blurred and abstracted as the camera moves quickly, inducing subtle autoexposure shifts and colour changes depending on the angle and speed of the camera. When in front of the camera, Robakowski is topless, dancing with a glass bottle of clear liquid. The video begins to music (credited to Marek Chołoniewski and Krzysztof

Knittel) with a locked out of focus frame showing an off centre ceiling light. The bottle appears from a hand offscreen, shaking to the music, and continues into a full frame dance of Robakowski, to which the fixed focal length picks out moments of clarity from the shaking liquid, while autoexposure is activated as Robakowski covers the light behind him. These three videos show different states of the user in dialogue with the camera as pictorially in-front, behind, and *within* the image, as in *Nearer - Farther*.

Krajewski elaborates on *Nearer - Farther* as to ‘how the camera had ceased to be a tool for objective recording, and had become an element of a new bio-mechanical relationship’ (Krajewski & Kutlubasis-Krajewska, 2010: 175-176). This biomechanics relationship can be understood as the quantum dialogue, of Flusser’s envisioning ‘from inside of the apparatus.’ *Nearer - Farther* stabilises, and thus polarises the bio-mechanical relationship as a desired element of a system. While in the latter works, ‘dancing’ becomes an unstable method of engaging in a quantum dialogue.

Chris Welsby also raises the idea of ‘dancing’ in his recent continuous video *Desert Spring* as, ‘a joyful little dance between camera (autofocus), the wind and some flowering foliage I found high on the shady side of a mountain’ (Welsby, 2020c). Here, and in similar videos made with a small action cam (*Mercury*, 2016; *Crocodile Teeth*, 2019; *Tree Again*, 2019), Welsby utilises the act of recording as a means of observing a specific subject through a ‘dance’ with his camera, becoming a quantum dialogue.

Welsby also comments on the accessibility of this method in his description of *Tree Again*,

I made my first tree film half a Century Ago. It was a film selfie made by a tree. This one is a different and possibly a different me. Any one could make these films - I wish they would - again and again and again... (Welsby, 2019)

Although using ‘film’ in the post-medium sense to describe 16mm film and 4K video indifferently, Welsby highlights a difference in his videomaking in relation to his previous film *Tree* (16mm, 1974), of which he describes,

The camera was placed on the flexible branch of a tree in a strong wind. The composition included both stationary and moving trees (a wooded landscape). The relationship of this landscape to the vertical and horizontal plane was maintained as much as possible. The camera ran continuously until all the film was exposed. The world is seen from the point of view of a tree as its branches sway to the rhythm of the wind. (Welsby, 2020b)

This ‘film selfie made by a tree’ is an anonymous film. The filmmaker *intended* the film, rather than *made* the film, as the filmmaker's role becomes more conceptual than practical. In the video version, a ‘different’ Welsby *performs with the camera*, as a dancer in dialogue (similar to Robakowski) positioning himself as the maker of a video ‘anyone could make.’ This raises further support for an alternative understanding of anonymity and mastery in relation to film and video, as Welsby’s videos, rather than an anonymous *no-one* while remaining *some-one*’s concept of anonymity, become the synonymous *any-one*, where no conceptual rationale is required, only the willingness to ‘dance,’ or simply, to hold a dialogue between user and camera through the act of recording.

The videomaker’s presence as *anyone* questions the merit of error and accuracy as neither masterful or anonymous. In breaking down these polarisations, it raises the prospect of the inter/intra-subjective user(s). It presents an alternative to the polarising methods discussed previously, as neither looking or waiting for, but *with*. This process of working *with* the device *in* the act of

recording *as a quantum dialogue* offers a different focus to that of filmmaking, which I elaborate through the prospect of in-camera editing in film and video respectively.

In-Camera Smartphone-Video

I example in-camera video methods in the smartphone-videos of Amy Dickson and Hannah Taverner, whose inventive use of smartphone apps offer a counterargument to broader stable notions of video, digital media and editing more generally. Dickson and Taverner use different smartphone applications that incorporate the front and rear facing cameras of smartphones in a single act of recording.

In Hannah Taverner's *Front Back Up Down* (iPhone, 2016), her chosen app enables her to switch between the smartphone's front and rear facing cameras by tapping the screen. Taverner begins the video by vigorously tapping this function, causing the app to become overloaded and lag through a series of freeze frames while alternating between each camera. At this point, Taverner begins throwing the camera into the air, capturing abstract glimpses as the device attempts to catch up with Taverner's rapid taping. Taverner's process may be perceived as a polarisation in terms of overpowering the machine, but the process is neither masterful or anonymous, as Taverner and smartphone remain present in the image sequence. Taverner may be adopting an aggressive energy, but it does not necessarily polarise the dialogue.

Dickson uses the built in Sony app *Face in Picture*, which combines front and rear facing camera feeds in a single image through various configurations. In *Red|White* (Sony Xperia Z5, Face In Picture App, 25/05/17), Dickson covers the front facing camera with her finger, producing a red image, while the rear camera is moving towards a vase of red flowers against a white wall. With both images presented in a single image through a vertical divide, Dickson taps the screen sporadically, switching left and right feeds between front and rear cameras, causing a flicker effect. The video has some structural intentions in this sense, but the improvised act of recording remains dominant, and does not exploit the smartphone's shortcomings. (As part of a larger body of *Face in*

Picture videos, others, such as *Sun|Screen* (Sony Xperia Z5, Face In Picture app, 31/10/16), do not feature any screen tapping/switching of images, as Dickson uses various methods to approach this dual image dialogue).

My question here is: *what are these screen tap changes?* They can be related to similar methods of in-camera editing used by filmmakers, as mentioned in the first chapter in relation to Rose Lowder. Filmic in-camera editing process produces apparent cuts in the celluloid through stopping, starting, and in cases rewinding the camera forming a montage directly onto the celluloid “in-camera.” A reliable — though less accurate — process is possible in the linearity of analogue video tape, but requires additional software to function in digital video. Elaborating on these ideas, Simon Payne describes how ‘cutting/editing is a paradigm that derives from filmmaking, rather than video or digital media’ (Nightingale & Payne, 2017). The filmic paradigm of cutting/editing is commonly applied to video and digital media through postproduction editing software, as Manovich adds,

None of the new media authoring and editing techniques we associate with computers are simply a result of media “being digital.” The new ways of media access, distribution, analysis, generation, and manipulation all come from *software*. (2013: 148)

In video editing software, filmic paradigms are simulated in digital video, as not a feature of video *being digital*, but of the software enabling new forms of manipulation, often by simulating stable logic. This logic is exemplified in Manovich’s views on ‘cut and paste’ as a ‘ubiquitous and “universalist” [...] media-independent technique’ of digital media, as he outlines,

cut and paste are built into all media editing software—from specialized professional applications to consumer software included on every new media device sold. Further, these techniques can be applied to any media work regardless of its aesthetics and authorship. (122)

Understanding “cut and paste” as universal to ‘any media work’ examples how stable logic is being applied to digital media as processes emphasising postproduction; further exemplified in Rodowick’s ‘Production becomes the first step in postproduction’ (2007: 173). Neither of which utilise the instability of digital media. When making a video in the act of recording, cut and paste *is not an applicable feature in-production*, yet this process is the result of software. Cut and paste — skeuomorphs of stable, physical tools — imply that there is something already produced (stabilised) to be reworked; continuing Manovich’s understanding of the ‘remix’ as the ‘key aesthetics of our time’ (Malevich, 2013: 122). These positions emphasise postproduction in digital media, in which the quantum dialogue becomes polarised. Through equilibrium with machine instability, the quantum dialogue can be prioritised and investigated through opposition and collaboration, in which a creative process can be undertaken outside the stable logic of postproduction methods such as ‘cutting/editing’ and “cut and paste.” To engage with the digital as unstable, rather than reverting back to the safety of implied stability.

Edits in smartphone-video do not require this stable logic of postproduction, as with the examples of Taverner and Dickson, alterations can occur in the act of recording within production, presenting video as an alternative paradigm to film in terms of in-camera processing. Continuing this understanding, changes can also occur in standard video mode, as tapping the screen alters the focus and exposure, which can have dramatic and creative effect. Likewise, if the camera is moved, alterations are made through image-stabilisation; if the brightness or distance changes, further alterations in exposure and focus are made; further choices made by the device as alterations/edits in the image. Video’s unstable methods of alteration can be understood as Rodowick’s ‘digital events’ as ‘any discrete alteration of image or sound data at whatever scale internal to the image’ (2007: 167). Rodowick describes digital events as occurring in an ‘elastic reality,’ to which their ‘distinct aesthetic criteria’ includes ‘invisibility of layers,’ ‘continuity of movement,’ and

‘devaluation of film editing’ (170). Though for Rodowick — elaborating on Alexander Sokurov’s *Russian Ark* (2002) — these processes occur in postproduction, where stable ‘remix’ logic is applied to the ‘elastic reality’ of video.

In this sense, defining a specific digital event becomes a form of stability, even if the event takes place in the act of recording. For example, in *The Blair Witch Project*’s autofocus pull mentioned previously, the single sided dialogue of automation simplifies the process as a narrative device. Video’s instability forms an indeterminacy. For example in *Elm*, I decide where the camera moves in response to the device’s choice of pixels via the display. Each pixel in the smartphone-video contains both mine and the smartphone’s quanta, to which defining it as either would be a polarisation. Such reductionist methods do not function, while the emergence of collective pixels indicates quanta in dialogue.

Relatable methods have been extensively investigated in the *analogue video* experiments of Steina and Woody Vasulka since the 1970’s. Steina Vasulka’s *Violin Power* (1978), for example, combines video with audio feeds from an electric violin, to which the image is indeterminately the collective result of image *and* sound. Taverner and Dickson’s use of in-production alterations can be seen as a continuation of such video paradigms into digital practice. Spielmann’s ‘collages coalescing in space’ may then be a simplification, as rather than a collage of determinate items, video may be better understood as a coalescence of coalescence across space and time (2008: 118). This paradigm can be understood of video production more generally, as each pixel’s origin and representation is indeterminate, and its collage is not held solely within the raster grid, but flows across multiple pixels as quantum acts. An autofocus, camera movement, intention or accident cannot be seen in an individual pixel, but across collections of pixels, becoming evident through/as gestures. And it is

with this prospect of the gesture that I speculate the potential of smartphone-video in the context of Flusser's 'ritual gesture' (120).

The Ritual Gesture in Smartphone-Video

Flusser distinguishes three types of gestures in his phenomena of gestures: work, communication, and ritual. Here I am focusing on the latter, and how the ritual gesture may be a means of understanding smartphone-video as a user tool beyond the implications of a purely work and/or communication gesture. For the ritual gesture, Flusser argued that ‘the less intentional a gesture is, the less it pursues a goal outside itself, the “purer” is the ritual’ and how ‘The intention, which transcends the ritual gesture, could be called its “magic” aspect’ (124). These methods may suggest a trisector polarisation through implication of purity, but Flusser’s implied “purity” of the ritual gesture is not necessarily the intention,

For we are not concerned with a phenomenal classification, and any one of us constantly performs gestures of all three types, and each type possesses aspects of the others. We are there, in other words, in simultaneously stylizing ourselves with respect to the world (work), to others (communication), and to ourselves (ritual).’ (125-126)

In this sense, I am not discussing the “pure” ritual gesture as a goal, but in consideration to what the ritual gesture offers. In this, Flusser proposes ‘the complete renunciation of reason (in the sense of explicability and purpose) and the unconditional surrender in the gesture and to the gesture essential to the real artist, the real Zen monk, the real prophet’ (134).

Flusser positions such a renunciation of reason in opposition to the ‘Western worldview,’ as ‘analytical, rational, and [leading] to greater and greater abstraction, to a distancing from the concrete’ (68). Here, Flusser expresses what Mignolo outlines as the ‘decolonial option: to fight the inhumanity of the humanitas, the irrationality of the rational, the despotic residues of modernity’ (2011: 93). It may also be considered in terms of posthumanism, as Rosi Braidotti’s outlines an attitude ‘opposed to Western Humanism and to the West’s investment in rationality and

secularity as the pre-condition for development through science and technology' (2013: 48). Flusser distinguished the Western worldview from the 'Far Eastern worldview' as 'syncretic, aesthetic, and leads to, among other things, a mystical experience of the world' (2014: 68). Flusser's simplification holds some concerns in its generalisation; but the qualities he ascribes as 'Far Eastern' are those he desires in the ritual gesture; which he exemplified through his own gesture of pipe smoking (120).

Flusser associated pipe smoking with "sacred" rituals such as tea ceremonies, which he determines as 'a gesture whose motivation cannot be addressed using any causal explanation because it is a gesture, which is nullified by any rationalization because it is a ritual' (ibid). In this process, Flusser's ritual gesture functions as a means of recognising oneself outside of Western rationalisation,

It will be apparent to anyone who has ever made such a gesture that we recognize ourselves in them, and only in them: only in piano playing, only in painting, only in dancing does the player, the painter, the dancer recognize who he is. It is a founding principle of Zen Buddhism that self-recognition can be a religious experience, if the recognition is of the "whole" self: its rituals (tea drinking, flower arranging, board games) are therefore sacred rites. (133)

Flusser then goes on to readdress his question: 'Why do some people smoke pipes, when it limits their freedom, accomplishes nothing, and shares nothing?' elaborating,

The first answer that was offered was for the pure pleasure this gesture affords. Now it is possible to make this answer somewhat more precise. Some people smoke pipes for the same reason some people are artists, others monks, and still others prophets, namely, to act themselves out and find themselves. It's just that pipe smoking is far less demanding than a gesture of art, and even less demanding than the artistic gestures of Zen monks or orthodox Jews. This also makes it far less "open." So some people smoke pipes as a kind of substitute and caricature, which is to say a profanation of a ritual life. (134)

To some extent then, a ritualistic gesture can be determined, not by the *gesture*, but by the *gesturer*; in the recognition of ourselves in them.

Flusser proposes drumming as a counter argument to smoking a pipe, ‘drumming is sacred, not because it is magic, but because in it, being is expressed completely. And pipe smoking is profane, not because it is not magic, but because it is too superficial to express being completely’ (132). But drumming can be superficial, and pipe smoking — as one of the most sacred ceremonial rituals of many Native American tribes — can be ritualistic and self affirming; as Gregory Cajete discusses in *Native Science: Natural Laws of Interdependence* (2000: 45). As such, the intention of the gesturer becomes significant.

Further observations occur in the *pursuit of magic as work*, as the purpose of a ritualistic gesture. In this, Flusser distinguishes between the “genuine” and “pseudo”-ritual. He suggests that any pursuit other than the “closed or circular gestures” of the genuine ritual become pseudo (169-170, 166). That is, those operating as ‘open or linear gestures’ of work, communication and ‘disinterest’ (ibid). I address Flusser’s “purity” below as a condition of different gestures of searching, in which the ‘genuine’ ritual should not be mistaken as a polarisation of significance. Rather, a non-polarised position might be reached when considering gestures of work (purpose in the world), communication (relation to others), and ritual (ourselves) as interconnected properties, though one in which the latter is disregarded in Western rationalisation. It may be considered that Western values polarise gestures towards work and/as communication, and that more attention to the ritual gesture may offer a means or finding oneself; perhaps of countering the individual alienation of neoliberal capitalism.

If ritualistic aspects of practice can be understood as the genuine relinquishing of rationalisation—by which we recognise ourselves in them through circular acts—a relatable characteristic can be found in Flusser’s views of video’s dialogic structure. Polarisation of the ‘participatory,’ ‘doubly self-involved,’ ‘dialogic structure of video’ (what I outline as the quantum dialogue) can lead to “strictly communicative gestures” and “gestures of work,” where the self becomes the subject (i.e. “Facebook self”). A non-polarised quantum dialogue can be directed back at itself *as a quantum dialogue*, as participants rather than subjects, through a closed, circular, *cyclical* gesture in the act of recording that can still function with others in the world.

Such a cyclical gesture of video can be seen in user culture more generally. We make images without necessarily knowing their purpose. Selfies of ourselves in places to recognise ourselves in these places. Documenting our surroundings to create a sense of self, those that we distribute via social media, in which the magical aspect has become the purpose. The current use of digital images in social media is arguably a strange phenomena, one we do not know the full effect of. But a potential lack of purpose in the images we produce may become unsettling due to the Western need to rationalise a purpose through the incentive of work and communication, which I return to below. Such musing may evidence the gesture of smartphone-video as ritualistically circular. To which an awareness of the the ritualistic qualities of smartphone-imaging, and particularly video’s manner of operation, may lead to a non-polarised user methodology that can account for user(s) as ourselves.

Although Flusser does not describe video as a ritual gesture, he does suggest a connection in the significance he holds for video. In *Gestures* — where Flusser outlines his position of the ritual gesture — he describes video as ‘not yet unfolded’ as a gesture that ‘proposes new categories that aren’t yet clear enough to analyze’ (145, 146). And previously, in *Post-History* Flusser had described the operation of a ‘cameraman,’ (as distinguished from a ‘photographer’) as a

‘methodological doubt that is without parallel in history — a new form of knowledge’ (2013: 101)

Flusser’s difficulty in considering video’s gesture may be due to its lack of clarity as ‘new,’ of which Flusser was conscious not to apply the ‘old criticism, this dismantling of solid things’ as what is ‘new about the new is its very indescribability’ (2011a: 151-152). Where Flusser’s position of video was yet to unfold, I find relatable traits to Flusser’s ritual gesture through the potential for improvisation in smartphone-video.

Improvisation in Smartphone-Video

In “The Gesture of Video,” Flusser makes a connection between video and music as forms of ‘composing,’

A video maker manipulates the linearity of time. He can synchronize diachronic time. Any tape can be used again to synchronize varying temporal segments on the same surface. So it is about a composition comparable to that of a musician. But there is a difference. The musician synchronizes the diachronic time of sounds: he forms chords. Such a synchronization of sound can be called a *symphony*. The video maker synchronizes scenes: he superimposes them. Such a synchronization of scenes can be called a *symsceny*. (2014a: 145)

Flusser made this connection in relation to 1980’s analogue videotape, as a writing material similar to that of musical composition. I understand this as a stabilising condition of such early linear video recording, those subsequently applied to digital video. The linear time of composition (be it chords or scenes) is formed around this recursive linearity (used again), while video today can synchronise time *in the act of recording*, through non-linear *quantum spacetime*. Through such in-the-moment operation, a more apt connection to music might be found in improvisation.

Looking briefly into the impact of camera operator in creative practice, improvisation was also a point of consideration for Rosalind Krauss’s post-medium condition in *A Voyage on the North Sea: Art in the Age of the Post-Medium Condition*. Krauss discussed American philosopher Stanley Cavell’s “automatism” in response to the mechanism of the film camera (one now accentuated in video) in how ‘the concept of improvisation, of the need to take chances in the face of a medium now cut free from the guarantee of artistic tradition’ was a means of practice in which, ‘there would be no possibility of judging the success or failure of such improvisation’ (Krauss, 1999: 5, 6). Such

improvisation in the mechanised camera, accentuated in the dialogic structure of video, may have led to its significance under the post-medium condition.

In accounting for the potential to improvise in video, I raise relatable ideas found in musician Derek Bailey's 1992 book, *Improvisation: Its Nature and Practice*. Bailey's introduction raises similar concerns to Flusser's around rationalisation and the 'indescribability' of improvised music. For Bailey, 'Transcription, it seems to me, far from being an aid to understanding improvisation, deflects attention towards peripheral considerations [...] almost all the musicians I spoke to chose to discuss improvisation mainly in 'abstract' terms. In fact there was a commonly held suspicion that a close technical approach was, for this subject, uninformative.' (xi)

These ideas are continued in what Bailey describes as 'standard Western instrumental training' as,

In the non-improvisor, particularly the straight player, there is no sign of the instrumental impulse. One reason why the standard Western instrumental training produces non-improvisors (and it doesn't just produce violinists, pianists, cellists, etcetera: it produces specifically non-improvisors, musicians rendered incapable of attempting improvisation) is that not only does it teach how to play an instrument, it teaches that the creation of music is a separate activity from playing that instrument. Learning how to create music is a separate study totally divorced from playing an instrument (Bailey, 1992: 98)

Smartphone-video does not require 'standard Western instrumental training' in the manner that manual or *professional* cameras might. Such would-be training has become automated. And although the standards of Western instrumental training may be imposed through the automation of *properly* focused/exposed and *enhanced* images; this machine quanta is open to a dialogue. This is where instrumental impulse can be expressed through improvisation in the act of recording smartphone-video, rather than composing/planning/rationalising before/after the recording; as Manovich's 'remix' culture, and linear 'used again.'

Such improvisation offers a framework in which counter-rationalist methods, of operating beyond describability/writing, can become a condition in which *the creation of video* is not considered ‘a separate activity’ from camera operation. Such improvisation may be read from the videos of Hamlyn, McQueen, Robakowski, Welsby, Taverner, and Dickson; and Zara Joan Miller and Alex OB discussed below. The quantum dialogue raised the potential for improvisation in smartphone-video by relinquishing the need for Western instrumental training. But this is not to say the machine’s quanta should be passively accepted.

An insightful understanding of automation is raised in Parisi and Majaca’s 2016 e-flux essay “The Incomputable and Instrumental Possibility,” inspired by Octavia Butler’s sci-fi trilogy *Lilith’s Brood* (1987-89). Parisi and Majaca develop the notion of a ‘paranoid automated Leviathan of data prediction and control.’ Such a Leviathan may be within the smartphone’s automated features, enabling the improvised quantum dialogue; yet this is not to say that user(s) should succumb to the Leviathan, as Parisi and Majaca expand,

The implementation of logic in machines therefore did not only mark the end of reasoning and the failure of deductive truths, but also the very dawn of instrumental thinking: the origination of an alien activity of automated cognition. This precious discovery of alien logic should not be conceded to the paranoid automated Leviathan of data prediction and control. Rather, we should find in it the tools to critically reclaim the unknown and the incomputable from the paranoid apparatuses of the white-male subject of humanism, and equally from a mindless trust in the error. (ibid)

Majaca elaborates in “Little Daniel Before the Law: Algorithmic Extimacy and the Rise of the Paranoid Apparatus” how ‘the overwhelming logic of control, data positivism, and the paranoid reasoning of the algorithmically enhanced white-man cogito [...] is the total myth of humanism’ (2016). Here, Majaca connects these ideas to ‘a white, masculine ideal of rational

fullness and permanent progress.’ With Parisi, they asserts, ‘we need a “creative” logic that goes beyond the inductive and deductive reasoning of the paranoid data Leviathan [...] a logic of the subject that *no longer separates ideation from use*’ (emphasis added, Parisi & Majaca, 2016).

The improvised quantum dialogue of smartphone-video may offer such a creative logic *that no longer separates ideation from use*. Improvisation, as Bailey notes, requires that there be no separation between the instrument and creation, as a means of challenging the rationalisation of Western instrumental training; what may be considered the paranoid data Leviathan of smartphone-video automation. It is within the quantum (ideation) dialogue (use) where I also find a similar creative logic. As well as within Flusser’s conception of the “quantized phenomenon” where the connection of ideation and use becomes a crucial element of Flusser’s ‘phenomenology of gestures,’ as opposed to the ‘history of philosophy’ (2014a: 173). Flusser’s methods offers a similar counter position to the paranoid white-male/rationalist/Enlightenment worldview as “universal phenomena,” as Flusser describes,

The antinomy between the history of philosophy and the theory of gestures can perhaps be summarized as follows: the history of philosophy regards the gesture as a “universal phenomenon” in which a “universal human freedom” comes to expression (e.g., Hegelian spirit or Marxist subjectivity) so that the freedom does, in the course of time, come to expression. By contrast, the theory proposed here regards the gesture as a “quantized phenomenon” in which a specific, individual being-in-the-world is expressed in each instance, so that the expression occurs in a space-time specific to the individual, whereby an individual can, for his part, be considered a knot in an intersubjective network. (ibid)

Flusser’s combination of the quantum/quantised and the gesture/phenomena appear to raise ideas that are being considered today within the decolonial and posthumanist, perhaps even Barad’s agential-realist school(s) of thought. Barad opens *Meeting the Universe Halfway* with what might be a further considered position to Flusser’s intersubjective network, in which, ‘Existence is not an individual affair. Individuals do not preexist their interactions; rather, individuals emerge through and as part of their entangled intra-relating’ (2007: ix).

These notions of the individual as part of a larger intra-relating, intersubjective entanglement, are brought into the discussion of improvisation in Fumi Okiji's 2018 book *Jazz as Critique: Adorno and Black Expression Revisited*. Okiji raises a common misconception that jazz music's 'improvisational character is given as evidence of the independence of its musicians,' and how,

It is also hailed as the bearer of a democratic spirit that is manifest in its inclusiveness, its musical miscegenation, and its rejection of the composer-performer division of labor we find in the modern European tradition. Moreover, its spirit of spontaneity, and what appears as an unadulterated expression of life, acts as an antidote to the self-alienation experienced in most other areas of modern existence. Narratives of the individual have featured in jazz studies from early in its history. The proto-jazz studies contributions of Hugues Panassié and Robert Goffin— contemporaries of Adorno— present the notion that jazz was a remedy to the degradation inflicted on people by capitalism and the acute rationalization underpinning that malevolent system. (14-15)

Such bourgeois notions of jazz hold characteristics of Flusser's "pure" ritual gesture, of recognising the self as an antidote to self alienation and rationalisation. Okiji challenges these simplistic notions of the individual as not the only site of significance in jazz,

Sites of significance in jazz are found not only within the framework provided by the individual improviser, or the real-time interaction of a band, but also within various and combining expressive registers and ensemble configurations. The gatherings of contribution—what Stephen Henderson has termed "massive concentration[s] of Black experiential energy," or "mascons," in his writing on black poetics—frustrate the notion of time- and space-limited collaboration we most often encounter in jazz studies. (9)

Okiji presents the individual improviser in the gatherings of contribution, what might be considered 'a knot in an intersubjective network,' of 'entangled intra-relating'? Such quantum interpretations of jazz improvisation are not unfounded, as physicist Stephon Alexander raises in their 2016 book *The Jazz of Physics* (2016). Alexander introduces these ideas through jazz saxophonist Mark Turner,

whose ‘insight about the potentialities that open up in the middle of an improvisation relate directly to the quantum mechanical uncertainties in the early universe’ (159).

And yet, such notion of jazz as a “pure” ritual should not fall into ‘primitivist’ understandings, as Okiji highlights, ‘jazz represented a route of return to a pre-Enlightenment European sensibility [...] a course of spiritualized action, a way that decadent modern Europeans, through immersion in the experience of a jazz performance, could be cleansed’ (2018: 16-17). It is not that improvisation incarnates some primal freedom, but that in jazz, improvisation has been a focus of study for a significant period of time, where other disciplines have focused on rationalisation. Such efforts may be considered a redirecting of energy *into the ritual gesture*, rather than a relinquishing or cleansing as “pure” gestures of work or communication. It may be the case that jazz has been redirecting these efforts for some time—efforts that may be considered quantum over Newtonian—from which the the gesture of jazz may be considered an intra-relating quantised phenomena.

Improvised video is a surprisingly uncommon consideration. For the most part, video is considered in terms of linear editing, with a director-operator division of labour similar to the composer-performer of the modern European tradition. And yet for smartphone user(s), improvisation may be the most common form of video recording. User(s) do not impose such a division of labour, we direct ourselves in the act of recording *in the quantum dialogue* where improvisation is possible. Yet such methods are being diminished through more overt automation, such as TikTok templates directing user(s) through generic effects; Instagram filters; and Facebook’s automated “memory” compilations. Such direction can divert user(s) away from improvisation, which may be a consideration for demystification.

The Gesture of De/Mystification

Even in its theoretical aspect, the gesture of searching is once again becoming a gesture of living. (Flusser, 2014a: 157)

When making a smartphone-video, the quantum dialogue can be considered dangerous and useful. Dangerous in the conformity of uniform quantum acts; and useful, as supporting a lack of instrumental-training and the ability to improvise. If favouring either side becomes a stabilising polarisation, how can the act of recording smartphone-video — as an improvised quantum dialogue — be demystified beyond polarity? For Gidal's structural/materialist film—where my notion of demystification emerged—becoming 'necessarily demystified' meant going beyond "film as material," through ideas of meaninglessness and working against representation which involved anonymity (1990: 118-119). These methods remain a response to film, in which the polarities of mastery/anonymity in film specify/nullify video user(s) out of dialogue with the device. Likewise, notions of one-to-one relation invoke a universal phenomena that nullifies quantised phenomena. Demystification may be at issue here.

I follow such ideas through Flusser's quantised phenomena of gestures and the notion of freedom,

One might be inclined to say that when a gesture is technically informed, it is no longer free (and so is no longer a gesture). But this is a naive error. For what makes a movement a gesture is not that it is free but that a freedom is "somehow" expressed in it. And "somehow" means "by means of some technology." The technical application of a theory of gestures would not touch on the fact *that* a freedom expresses itself in the gesture but on *how* it expresses itself. (Flusser, 2014a: 175)

Flusser's shift from *that* to *how* is a condition of the theory of gestures, which he develops inline with his earlier conception of "posthistory" (ibid). The posthistorical, covered in Flusser's 1983

book *Post-History*, promotes the ‘escape’ from the historical ‘programme’ of the colonial ‘First World’ (160). Here he elaborates,

Freedom is conceivable only as an absurd game with apparatus, as a game with programs. It is conceivable only after we have accepted politics and human existence in general to be an absurd game. Whether we continue to be “men” or become robots depends on how fast we learn to play: we can become players of the game or pieces in it. (Flusser, 2013: 26)

Smartphone-video automation (and automation in general) might be considered such a program of technically informed gestures, and discussed in terms of such freedom. A demystification of such methods might reveal *that* freedom is expressed in the entanglement of improvisation *with* the white-male paranoia of the data Leviathan. But Flusser considered such endeavours as ‘almost impossible’ in the ‘decoding’ of photography,

Such a decoding of the cultural conditions of photography is, however, almost impossible since what appears in the photograph are the categories of the camera which ensnare the cultural conditions like a net with a limited view through its mesh. This is characteristic of all functions: The categories of the apparatus adjust to cultural conditions and filter them. Individual cultural conditions thus disappear from view: The result is a mass culture of cameras adjusted to the norm; in the West, in Japan, in underdeveloped countries - all over the world, everything is photographed through the same categories. Kant and his categories become impossible to avoid. (2000: 34)

The paranoid data Leviathan of smartphone-video might also be considered a “Kantian filter.” Such a filter operates by *normalising* quantum decisions of the user(s) through universalist ideals.

Majaca raises the role of Kant in her understanding of the white-male paranoid through brain anatomist Paul Flechsig, whose ‘ultimate achievement’ was the “localization of categories of Kant’s transcendental idealism in the frontal lobe of the brain.” From this,

Flechsigs' neuropathological paradigm marked the moment when the categories of incompleteness, incommutability, and unknowability begin to be generally understood not as a space of possibility and a terrain for a non-normative subjectivization, but as a threat and a source of social and political paranoia. (Majaca, 2016)

Such paranoia can be observed in the 'optimising enhancements' of smartphone-imaging's autocorrections which prohibit alternative methods of making. Such paranoia is comforted by conformity and uniformity of image, and the speed in which an image is focused, exposed, stabilised, balanced, colour graded etc. These acts of quanta have been redirected to the thinking machine; automated cognition; AI aesthetics; machines thinking for the user(s); embedding the threat of the unknown through their white-male Kantian conformist paranoia.

The Kantian filter is a danger to the intersubjective user(s), but demystifying *that* such a filter is at play becomes a polarisation. For example, the eerie autofocus pull of *The Blair Witch Project*, or the unsupervised automation of Kiessling *Two Cameras*. They show *that* automation is at play, but not *how*. *How* requires a non-polarised dialogue, as it is through dialogue that we can see *how* quanta is being automated in the collaborative, co-creative, dialogical structure of video that many have suggested as a means of addressing such issues. It is important not to polarise the quantum dialogue, by either forcing/tricking/manipulating/mastering the apparatus to fail (naive triumphalism); or giving total control to the machine, becoming anonymous as universal phenomena *through/as* the Kantian filter.

The question then is, how can the 'invisible' quanta of the machine be demystified beyond the master/anonymous user? A conflation occurs when such automated features are simultaneously: damaging (paranoid Leviathan of the Kantian filter), and useful (facilitating the quantum dialogue of improvisation in the act of recording). Demystifying damage can neglect its usefulness; and vice versa. Then demystifying smartphone-video's quantum dialogue should not determine *that* it is

damaging/useful, but *how*. The Kantian filter might not be considered damaging to those looking for a conventional image. Such automated features have helped user(s) to make videos, not least the spontaneous, off the cuff smartphone-videos that have become so valuable in contemporary society. Such videos represent a being-alive-in-the-world while in the act of recording; of being *inside* the smartphone, *with it*, rather than standing above it, controlling/being controlled.

The Kantian filter both gives and takes freedom in *how* it functions. Determining *how* automation is to be demystified becomes a quantised phenomenon, of the individual being-in-the-world, one that a universal phenomenon is unable to accommodate. Such a demystification may be attributed to Gidal's materialist film as 'not a matter of anti-illusionism pure and simple, uncovered truth, but rather, a constant procedural work against the attempts at producing an illusionist continuum's hegemony' (1990: 17). Gidal may not intend a universal truth in his dialectical approach, but there is a grounding in the celluloid strip through which his materialist efforts are anchored; and perhaps stabilised. Again, demystification might be at issue here, as directed towards procedural anti-illusionism towards the demystified.

Video does not contain film's stable material anchor point. As quantum, video can be dizzying, abstract, annihilated and obliterated as the potential conditions of its demystification. Such conditions appear to result in mystification, lack of clarity, and the unknown. Demystification and anti-illusionism suggest an alternative to the mystified and illusory, of knowing the unknown; or as Majaca and Parisi may consider, the white-male paranoia towards the unknown. Such implied stability and clarity of the non-mystified and non-illusion may be the illusion. The illusion of stability, that a point of stability is possible in video; of video *as film*. These implications require a different approach to video, one that may be found in Flusser's considerations of 'the gesture of searching.'

Flusser proposed the gesture of searching as a condition of research. He distinguished 'contemporary researchers' from "scientific" and "bourgeois" "pure" research, which may be attributed to demystification,

How would the "pure" researcher, this suspicious subject, this Frankenstein, this specialist, be able to grasp reality at all? Aren't his propositions always just ideological abstractions? And is this context of objects of which the researcher speaks, separated from concrete reality, actually the world we know and wish to change? Is it not a fantastic, unimaginable world? Rather than finding something, hasn't the researcher lost everything? Is the whole of "progress" not madness? (2014a: 154)

In this sense, "pure" demystification loses everything. Though Flusser observed how 'The gesture of searching for objective and exact knowledge is about to become impossible' and how 'another type of gesture of searching is emerging' (150),

Bourgeois research is a discourse whose utopian goal lies in an increasingly objective perception of the world. At present, research is turning into a dialogue whose utopian goal is an increasingly intersubjective perception of our living conditions. (157)

For Flusser, the gesture of searching was becoming a search for others, as intersubjective, and 'So research becomes dialogic' (ibid). From this, there is a change 'from digging down for reasons to reaching out broadly for attractive possibilities' (159). Demystification may be considered in this sense. A bourgeois demystification, searches for objective exactitudes, working towards a state of the demystified, as linear "progress" (158). An emergent demystification searches without the goal of a state of "pure" non-mystification, and rather accepts that demystification results in further mystification, in a circular "progressive" character' (166, 157).

Flusser's considerations of the gesture continue his position of posthistory, as not anti-historical, but how 'the theory of gestures would be related to the history of philosophy in roughly the same way nuclear physics relates to Newtonian physics' (171). Here, Flusser further asserts his interest in the quantum (nuclear physics as quantum, beyond the atomic), though as Flusser died before the publication of *Gestures*, he was unable to observe the emerging gesture of searching in relation to his observations. It is here that I tentatively elaborate on demystification as a "progressive" gesture of searching with the aid of Barad's agential realism, particularly Barad's 'cutting together-apart' in the *in/determinacy* of entangled properties,

Entanglements are not unities. They do not erase differences; on the contrary, entanglings entail differentiatings, differentiatings entail entanglings. One move – *cutting together-apart*. (Barad, 2014)

Barad uses the forward slash in "in/determinacy" as a cutting together-apart, as not either/or, but a 'quantum in/determinacy,' an '*Agential separability* – the agentially enacted material conditions of *exteriority-within-phenomena* – [as] what agential cuts enact in their cutting together-apart' (ibid). And so, in cutting together-apart demystification as mystification, this process might be understood as "de/mystification," adopting what Barad expands as,

This double movement, this play of in/determinacy, unsettles the self/other binary and the notion of the self as unity. The self is itself a multiplicity, a superposition of beings, becomings, here and there's, now and then's. Superpositions, not oppositions. (ibid)

Such superpositions reveal themselves in the de/mystification of smartphone-video. The quantum dialogue of user/machine, considering collaboration/opposition as a friend/foe as useful/dangerous, limiting/expressing freedom. I do not considering these positions as dialectical (occurring through polarisation) but in *how* a dialogue of entangled superpositions can emerge through de/mystification as a gesture of searching that is 'reaching out' rather than 'digging down.' In such reaching out I

attempt to de/mystify the dialogical structure of video in a small selection of improvised continuous smartphone-videos: Taverner's *Tree Throw* (iPhone [unknown model], 2016); Alex OB's *F Sharpish* (Google Pixel 4, 2021); Zara Joan Miller's *Hearse #2* (iPhone SE, 2020); and Dickson's *Hannah's Room* (Samsung Galaxy SII, 2013).

In Taverner's three minute slow motion smartphone-video *Tree Throw*, Taverner throws her device up into a forest of trees. The compact nature of the device means it can be thrown high into the branches, spinning and crashing against them. Taverner repeatedly catches and throws the smartphone back up into the trees, ending when she inadvertently presses the stop button during what becomes the final catch. Taverner's gesture of throwing (away) might be understood as a form of anonymity (i.e. Welsby's *Tree Film*), but *how* this is done, through the freedom to leave the dialogue, is itself a quantum act. Taverner becomes present in the video through the gesture of throwing, catching, repeating, fumbling, dropping, stopping; as statistical probabilities, uncertainties of the gesture of throwing. Taverner, smartphone, and even the trees become quantum elements, entangled as gestures 'gathered' onto the video screen.

OB's smartphone-video observes a guitar through aesthetics and use. OB improvises camera movements in the act of recording based on the image and the sounds produced as camera position/movement "plays" the guitar. There are connections to Steina Vasulka's *Violin Power*, which combines the analogue input of image and sound. Only for OB, the entanglement of sound and image is not their transcription as separate entities (video as clarity, sound as distortion), but an unstable dialogue between sound and image. Where Vasulka could choose to play a musical note, inducing a certain aberration on the screen; OB's dialogue is more unstable, as the result of a oscillating relation between sound and image preference (as quanta), rather than the direct sound-image transcription.

Miller's smartphone-video also incorporates sound, listening to a radio interview while videoing observations out of a window overlooking a parked hearse. The interview is discussing the Black Lives Matter protests of 2020, to which Miller improvises camera movements that appear to respond to the live broadcast. Miller's movements follow people, birds; become abstracted, automated, shifting in focus, on marks on windows, through movement in part conducted by the there/here of the radio broadcast. A similar observation is described by Okiji as a 'fantasy quantum collaboration' when her computer played two songs at the same time (2018: 67). There is an energy to the serendipitous dialogue of Miller, smartphone, radio-show, and the surroundings; to which everyday poetry is improvised in the act of recording through quantum dialogue. Life becomes the focus of a dialogue supported through technology.

Dickson's *Hannah's Room* was the earliest example of an engaged quantum dialogue that I have seen in a smartphone. The video is recorded in portrait mode (9:16), as a study of her flatmate's room as sunlight enters from a large window creating para-cinematic effects on the walls, and diffracted light patterns from mirrors. In the act of recording, Dickson's dialogue is between herself, smartphone, and light. Dickson plays with light, and the relation between her being-in-the-world and the machine's interpretation of it; swaying, focusing, adjusting her movements in a manner that invites the machine's input through observations that do not conform to the Kantian filter as unusual and unknown. A process observed through improvisation within a non-polarised quantum dialogue.

Each of these improvised smartphone-videos are *quantised* in the act of recording. That is, the decisions of video's dialogical structure are made in and through the quantum dialogue of the user(s), smartphone, and their being-in-the-world. De/mystifying this dialogue disrupts the notion of individual decision-maker, resulting in a shared quantum experience, an intersubjective quantised

phenomenon, an intra-relating entanglement of user(s) being-alive-in-the-world. This process is not the utopian bourgeoisie ‘search for an objective and exact knowledge,’ but ‘a dialogue whose utopian goal is an increasingly intersubjective perception of our living conditions’ (150, 157). That is, the result of de/mystification is not a ‘digging down for reasons’ but a ‘reaching out broadly for attractive possibilities,’ of searching for intra-relating entanglements *in dialogue*—a significant element of which, for Flusser, is the affect of ‘proximity’ which I may need to address through my own practice (156).

In Practice: *T-Rex, Stone Circling, It's Gonna Be a Beast* (iPhone 7 Plus, 13-15/08/19)

Available at: <http://www.jamiejohnjamesjenkinson.com/2019/08/>

[TRexStoneCirclingItsGonnabeaBeast.html](http://www.jamiejohnjamesjenkinson.com/2019/08/TRexStoneCirclingItsGonnabeaBeast.html)

In elaborating on video as an unstable, quantum, user device, I have come to readdress: *Structure* as a polarised form of stability, though one that raised ideas of instability and the potential of equilibrium; *Desert Spring* as a structured quantum dialogue, where *Elm's* automation offers further quantum temporalities; and *Symi* to question the role of anonymity, intention, and fetishisation in the act of recording. Now, through elaborations of Flusser, I focus on *T-Rex, Stone Circling, It's Gonna Be a Beast* (iPhone 7 Plus, 13-15/08/19) a three-part chronological smartphone-video sequence shot during a cycling holiday to Brittany with Amy Dickson.

The video was not chosen in an academic sense, as rational intention, but as a condition of my 'proximity' to it, of which Flusser elaborates,

Proximity is a dimension completely different from the "centimeters per second" measurement of bourgeois research. It does not measure intervals between objects. The "centimeters per second" that separate me from the dentist for whom I am waiting are not those that separate me from my son who expects to meet me. Proximity is certainly related to "centimeters per second," but the first makes the second existentially relevant. Proximity measures my hope, my fear, my plans. It measures my beckoning to the distance, which is to say, that which is meant by the prefix *tele-*. (157)

My holiday video with Dickson, as with the home movies mentioned previously, hold a closer proximity to myself, which may be the significance of the video here. Through Flusser, I now relate such feelings to quantised phenomenon of the theory of gestures, where,

theory is becoming a strategy for being-alive-in-the-world. The contemporary researcher, the contemporary theoretician, measures the nearness of the environment, but neither to observe its form nor to hypothetically explain it. It is rather to transform the approaching possibilities into freedom. Even in its theoretical aspect, the gesture of searching is once again becoming a gesture of living. (Flusser, 2014a: 157)

Before discussing my videos, I must address this notion of ‘freedom.’ Flusser describes the theory of gestures as ‘to contribute to an enhanced freedom, and to be able to actually make gestures in the full sense of the concept [...] Such a theory would not be value free; rather, its value would be freedom’ (2014a: 175—176).

Flusser’s position of freedom counteracts the Western “universal phenomenon” through “quantized phenomenon”; what might be positioned today as a decolonial or posthumanist move. Recent decolonial thinkers such as Mignolo and Partha Chatterjee have made efforts to establish a ‘decolonial freedom,’ one that can “feel” and “see” beyond both Kant and Foucault’ (Mignolo, 2011: 133). For Mignolo and others, ‘One of the key points in the dewesternizing argument is the concept of “freedom”’ (296). For Ferreira da Silva, ‘Western thought learns of the universality of law (juridical) and the universality of causality (scientific) which, it postulates, can be captured only by beings with reason,’ she elaborates,

It is here that the universality of the “laws of causality” and the presupposition of universal (God-given) freedom clash, a problem that Kant attempted to resolve with the categorical imperative, which establishes freedom as always already determined by interiorized universal reason. What happens here is that universal reason becomes the foundation of a polity, for the authority of the state rests on democracy; and more importantly than playing its dominant role is protecting freedom. (2007: 263)

Flusser’s theory of gestures, as quantised phenomena (neither causal or universal), also attempts to counter such Western notions of a simplified/stabilised universal/causal freedom. To which ‘The

technical application of a theory of gestures would not touch on the fact *that* a freedom expresses itself in the gesture but on *how* it expresses itself” (Flusser, 2014a: 175).

When considering my own smartphone-videos, through Flusser, I must address my own colonial-afforded privilege of “freedoms” as a white, European, heterosexual, able bodied, cisgender man; and clarify that the inter/intra-subjective user(s) outlined in this thesis do not assert some universal notion of the user, but rather a quantised condition of such user(s). In my individual being-in-the-world I am the subject *and thus* recipient of universal human freedom; which decolonialists and posthumanists are working to challenge (Braidotti, 2013: 24). In this sense, I cannot forego my own privilege, as Kalwant Bhopal describes in *White Privilege: The Myth of a Post-Racial Society* (2018), ‘While some white people do feel guilty because of the past actions of their ancestors, they still benefit from their own identity of whiteness – whether they like it or not!’ (22—23). Thus, my gestures may not express Flusser’s ‘enhanced freedom,’ as I begin from a position of *colonial-freedoms*.

De/mystifying my expression of freedom can become a point of consideration, as Flusser discusses,

For when I observe someone else’s arm movement, I cannot be sure of deciphering his innerness, his freedom, directly. Freedom, rather, possesses the strange capacity to hide itself in the gesture that expresses it. Freedom has the capacity to lie. Because this capacity to lie appears to stand at the center of the phenomenon of gesture, it—and in connection with it the method of discovering the lie—must also be the center of a general theory of gestures. In this way, the theory takes on an ethical (even engaged) character. The definition can be reformulated: gesture is a movement through which a freedom is expressed, a freedom to hide from or reveal to others the one who gesticulates. (Flusser, 2014a: 164)

It may be considered then, that de/mystification is a condition of Flusser’s freedom, to hide/reveal. I too have the freedom to hide/reveal, though my expressions of freedoms may be counteracted by “universal freedom” as applied causally outside the gesture. My freedom may not be expressed in

the gesture, as my being-alive-in-the-world affords me a the quantised phenomenon of universal freedom. Even in attempted counteraction, I inevitably remain a beneficiary of my privilege—*whether I like it or not.*

Flusser expands on disruptive freedom in the act of tipping over a chess board in a game you will inevitably lose. He describes this as an ‘ethical phenomena: a “motivated” movement,’ elaborating how ‘freedom is the framework in which ethical phenomena such as the disruptive gesture occur’ (57). But what is it to tip the table when you are winning a game that is rigged from the beginning? What would account for such a disruptive, motivated, ethical phenomena? Flipping the table, not playing, or even playing to lose would not change the rigged system of the game. Further considerations of Flusser, ‘Freedom is not about disregarding the rules (which can be done with the pen as well) but about changing them (which is possible with the machine)’ like a smartphone (21).

T-Rex, Stone Circling, It’s Gonna Be a Beast is a three part sequence is delineated in the title through commas. I decided on the videos to sequence intuitively after making the last video, *It’s Gonna Be a Beast*, and without watching the video as a whole. I came up with a title by scanning through the video. The video is not significant in an academic ‘bourgeoisie research’ sense. Nor should it be seen as a grand attempt to become significant as an expression of freedom, or solely directed at changing rules. Such methods would become a digging down for reason, a polarising rationalisation of the gestures of work and communication. I observe the videos as non-polarised gestures containing ritual, work and communication, with methods of reaching out through the significance of proximity and dialogue.

T-Rex is an 18 second slo-mo observation of an inquisitive turkey. I start on the turkey’s prehistoric feet, walking; moving up along their body, a spray painted marker; and up to their head and

blinking eye. The video was inspired by the turkey's presence, which becomes a dialogue between myself, smartphone, and turkey as decision-makers. The turkey does not partake in the image's dialogical structuring, as they cannot see the video, but can imagine how they are being seen. The slo-mo accentuates decision making elements, the turkey expressing freedom, implying the need to improvise in the act of recording.

Stone Circling is an improvised, diaristic wandering around a neolithic stone circle. While the recording method is somewhat unconventional, the site of record is a convention historical tourist site. My inspiration to record might be a tourist impulse, and might be considered ritualistic in the irrationality of recording such a well documented site. The tourist impulse may be problematic, as proof of extended proximity, in 'capturing' and 'taking' pictures of *out-of-our-world* locations. Is the unconventional recording enough to challenge such assertions of the tourist? And am I a tourist in France as a European, a distance I have cycled? What is my proximity?

It's Gonna be a Beast began as a playful looking into trees that unintentionally developed into a shaky-cam video. Having moved away from shaky-cam, I began using the technique again as I enjoy making them, but was also inspired by action camera brand GoPro's slogan 'Shakey Video is Dead' for their 'HyperSmooth' feature (GoPro, 2018); continued in Apple's 'Cinematic video stabilisation' (Apple, 2019d). Extensive stabilisation produces a normative ideal of the video image, but also a means of distinguishing a contemporary 'poor image' in relation to its lack of stability. Stabilisation is occurring in *It's Gonna Be a Beast*, which although de/stabilised, increases the potential for the device's quantum input in response to my movements, perhaps becoming more *imaginative* on the side of the machine. Such a dialogue is difficult to determine as either a more equal quantum dialogue, or a polarised one, as the extent of the shake exceeds those of the casual handheld recording.

It was the extent of this shake that led me to want to sequence this video, to add other videos before it to relax the impact of such an overt shake. To integrate it as part of smartphone use(s), to become a creative tool. In hindsight, the sequence intended to disrupt the disruptiveness of the shaky-cam, while keeping an element of unintentionality in the sequencing process. The videos themselves are improvised and spontaneous gestures of video. The sequencing, the intentionality of the sequence after the act of recording, might be considered a filmic consideration. Sequencing becomes a form of stabilisation with rational intent. In trying to make *It's Gonna Be a Beast* more palatable, I may be unable to set video 'free from the control exerted by the model of film' but the value of such freedom may be found in a similarly unwanted "purity" of video (144).

I realise here, that at the crux of my practice—far from defining *video as video*, a "pure" digging down that I naively began with—is to promote the low-cost creative practice of smartphone-video with a proximity for user(s) to express their own freedom with/through/towards an awareness to the Kantian Leviathan. De/mystifying such notions of smartphone-video disrupt the Moving Image hierarchy of lesser ('prosaic') or not, as these videos are a condition of proximity, as more/less interesting to user(s). The hierarchy imposed through Moving Image ideologically favours the inaccessibility of an ideological "pure film" and the control exerted through historic relevance and material restrictions. Smartphone-video should not create a new hierarchy where "pure video" is preferable. It is not to define *that* anything is anything or otherwise; but to address *how* the gesture of videomaking expresses a different freedom to filmmaking (filmmaking's freedoms and proximity are not expressed, rather repressed in Moving Image's ideology).

Continuing Flusser's previous quote on the theory of gestures,

Such a theory would not be value free; rather, its value would be freedom. It would consciously be an instrument of liberation and so antiacademic. But because it would be “formal,” it would simultaneously be antihistorical (anti-ideological). In this sense, the theory of gestures would be a discipline of a future that would call itself “posthistorical”: a discipline of so-called new people—in theory as well as in possible practice. (2014a: 175-176)

For Flusser, a possible practice of the posthistorical was the ‘new form of knowledge’ of the camera operator, which he discussed in his earlier text through filmmaking (2013: 15).

It was towards the end of Flusser’s life that video became a significant as a new gesture. Flusser saw how such new gestures raise “problematic” aspects that become ‘obscured by familiarity. A bed no longer raises any such questions [...] But if the tool is new, its problematic side shows. This is the reason new tools are so fascinating’ (2014a: 142). Yet, new tools are also “dangerous”, as Flusser describes,

The purposes of the tools that surround us are not necessarily our own. They are the purposes of those who made the tools. To change their direction means to be free. The new tools are fascinating because they, more than anything else, conceal unknown virtualities within themselves and because they permit acts of emancipation. (143)

Since Flusser wrote this, some two decades ago, the smartphone has familiarised video, and its ‘purpose’ has begun to show. Smartphone-video has become a means of documenting being-in-the-world, but, I argue, one that does not ‘express freedom.’ Its purpose appears to present what is discussed previously as the “Facebook self.” I see this in my younger family members who will sign off their personal smartphone-videos by saying “don’t forget to like and subscribe”, a phrase associated with YouTube channels. The purpose of smartphone-video may have become the intention of generating a wider following, of becoming significant through the presentation of a fictionalised and entertaining being-on-the-internet, of *being-online*, and generating content/data/information.

Such a purpose of smartphone-video emphasises the linear gestures of work and communication, while nullifying the circular ritual gesture. In this sense, the home movie operates as a ritual gesture in the circularity of its audience's 'proximity' to the maker's being-alive-in-the-world. For Flusser, such a proximity is 'by no means "subjective"' but rather,

We measure together. So research becomes dialogic. Proximity is an intersubjective dimension. It measures the being I share with others in the world. I encounter others spontaneously in the course of researching my environment. They are more or less close to me, more or less interesting. I must apply the measure of proximity to others. But if I meet them, we can then measure together. So the gesture of searching once again becomes a gesture in search of others. (157)

The proximity of present day smartphone-video on social media appears to include unknown others. Rather than searching for user(s) they are *more interested in*, there is an emphasis to search for others they are *less interested in*, to be *more interested in them*. User culture has embedded the hierarchical measurement of interest as its value system through the number of views/likes/shares that content receives — it has fallen to the bourgeois research of linear measurement.

The impact of such measurement becomes a validation of being-alive-in-the-world, through a manufactured being-online. Such measured validation may be causing the increase of anxiety in younger generations using social media, as evidenced papers such as "Development and Validation of Social Anxiety Scale for Social Media Users" by Yunus Alkis, Zafer Kadirhan, and Mustafa Sat (2017), "Social media use and anxiety in emerging adults" by Anna Vannuccia, Kaitlin M. Flanneryab, and Christine McCauley Ohannessianac (2016); and "Impact of Social Media on Social Anxiety: A Systematic Review" By Anca Dobrean and Costina-Ruxandra Păsărelu (2016).

Similar concerns are also raised by McKenzie Wark in *Capital is Dead: is this something worse* as a result of society controlled by big data.

Failure to live up to your own personal brand is understood through languages that are medical, therapeutic, or “spiritual.” This is a world of boredom, anxiety, depression, lack of focus, lack of will. It can take a lot of pharmaceutical management—legal and illegal—to produce the public face of today. (2019: 98-99)

Wark describes how this emerges from a new class system ruled by the “vectorialist class,”

The vectorialist class owns and controls the *vector*, a concept I use to describe in the abstract the infrastructure on which information is routed, whether through time or space. [...] I don't just mean the technology and telecommunication companies like Apple or Google or Verizon or Cisco or the drug companies like Pfizer. One could also think of the big banks as a subset of the vectorialist class rather than as “finance capital.” (43)

Under this, for Wark, is the “hacker class” ‘everyone who produces new information out of old information, and not just people who code for a living’ (13). Smartphone-videomakers might be considered part of such a hacker class, working with vectors of smartphone and social media corporations, in which Wark determines ‘What we all have in common is producing new information but not owning the means to realize its value’ (14). But what if the condition of this value could change? And when understanding smartphone-video in terms of Flusser, if rather than value free, its value was freedom?

For Wark, the definition of a hacker class is a way ‘to think and act as a class, producing not only collaborative knowledge but also experimental prototypes of another way of life’ (17). Could Flusser’s theory of gestures be such a collaborative knowledge of proximity, as ‘more or less close to me, more or less interesting’? The hacker class, user(s), are in proximity. The prospect of the ritual gesture, as a quantised phenomena supporting the expression of freedom in the intersubjective

individual being-alive-in-the-world, is not *that* the content of the video is to be of universal interest, but *how* others can also use such a gesture to become of interest to individuals *in their proximity*, to build *communities* rather than *followings*.

In *T-Rex*, *Stone Circling*, *It's Gonna Be a Beast*, the video holds more/less interest based on proximity to it: myself, friends and family, locals, holiday makers, experimental film and video makers; perhaps readers of this thesis? Proximity can thus generate more or less interest in the content being recorded, which is not intended to be of universal interest, of historic significance, but an interest through proximity. When using a tool such as a smartphone, user(s) are in proximity to the tool, even if the content is less interesting. The gesture of smartphone-video has a much broader proximity than my being-in-the-world, as a “quantized phenomenon” of space-time specific expression within an intersubjective network of user(s) (173).

Conclusion

The initial intention of this thesis was to clarify an understanding of smartphone-video based on my ongoing archive of smartphone-video experiments that were inspired by structural/materialist filmmaking. The aim of such clarity was to establish an entry point into smartphone-video's manner of operation as a subject outside the post-medium condition *and* medium specificity. Through principles of Peter Gidal's structural/materialist filmmaking, it soon became evident that film and video are very different in their manner of operation. What I initially outline as "stable" and "unstable," may be considered as "Newtonian" and "Quantum," "Enlightenment" and "post-Enlightenment," "Universal Phenomena" and "Quantised Phenomena" (though not necessarily directly interchangeable or dialectical). Following video as unstable through Flusser's quanta and his high regard for video, I have been able to expand upon smartphone-video practice in ways I could not have originally foreseen, far beyond my stabilising methods used in *Structure*.

I adopted principles from Gidal that had aided in the early distinction of film as an "artist medium," or what might be understood as Rosalind Krauss' 'technical support.' I initially understood smartphone-video as an equivalent technical support, functioning as a means of disassociation from

modernist medium specificity *and* postmodernist moving image. Both positions I find issue with in terms of their stable rationale, and neither addressing digital video. With video as a point of investigation through a vague framework of the technical support, video's unstable characteristics became evident through its manner of operation. I notice some developments towards instability in practitioners associated with structural filmmaking, and looking to my slo-mo smartphone-videos *Desert Rose* and *Elm*, I identify a "quantum spacetime" as a means of addressing the problem of multiple in/determinable temporalities in digital video. These ideas are raised through an understanding of video's 'coming into presence' as resulting from an unstable "core state" that functions *physically* through quantum mechanics.

Video has become a common tool in user-culture, which developed to enable user(s) to produce and distribute video to a high quality within a relatively short period. I have defined this period between 2005 with the launch of YouTube, and 2014 when smartphone-user(s) could produce and distribute video at a higher quality than national broadcasters. The smartphone played a significant role in the accessibility of video production, in which the automation of camera operation became an essential function. The general awareness of these functions remains inconclusive, as its use as a cinematic device is overshadowed by the practices of significant artists using these features that go unnoticed, or are disregarded as points of investigation. And while user's show an interest and awareness into the content they are producing, the discrediting of user features is continued by artists using user-devices, who disconnect their *use-as-art* from their *audience-as-users*, through psychological and physical barriers. Contrary to this, I find the role of the user to be of great importance, in which polarising methods of anonymity and mastery become problematic in the smartphone's manner of operation. I try to address this in consideration of my home movie *Symi*, while finding this method can form a fetishised context and linear narrative, rather than methods more applicable to user-

culture, such as the databased. Proximity adds another dimension to this, which requires further consideration.

It is through Flusser's quanta, as a means of addressing instability and automation in terms of decision-making that I begin to account for the unstable logic of smartphone-video. Combining surrounding ideas of dialogue in digital media with Flusser's quanta, the proposed "quantum dialogue" raises awareness to processes of 'thinking machines' as 'soft thought' that can occur in the act of recording video. Quantum dialogues are evinced in some videomakers not using smartphones; and directly through the smartphone-videos of Hannah Taverner, Alex OB, Zara Joan Miller and Amy Dickson. Such methods express the freedom to improvise with video in a manner that is not attributed to film. And through the significance Flusser held for video in his theory of gestures, combined with the ritual gesture, proximity and quantised phenomenon, Flusser's decolonial thinking through prospects of expressing freedom, proximity and being-alive-in-the-world begin to emerge. These ideas aid my consideration of *T-Rex*, *Stone Circling*, *It's Gonna be a Beast*, and redirect my thinking towards reaching outwards rather than digging down.

In answering my research question, Flusser's 'quanta' *can* account for the unstable qualities found in smartphone-video's manner of operation when demystified through principles of Peter Gidal's structural/materialist filmmaking. It is through Flusser's consideration for the gesture of video that I reconcile the stability and universal connotation of demystification with the aid of Karen Barad. Flusser was unable to observe the unfolding of video, or further address the quantum. Barad's quantum research through agential realism may be unparalleled. And it is with the aid of Barad's neologisms *through Flusser's considerations* that I reconsider my initial principles of clarifying smartphone-video as the de/mystification of the intra-subjective user(s). Such a process can be

considered an improvised quantum dialogue in the act of recording with proximity based more/less interest; or perhaps, observing the expression of freedom in the gesture of smartphone-video.

Such a clarity should be considered without clarity, an un/clear. It does not determine *that* a medium exists, but rather *how* a gesture might be expressed. I could not have anticipated the dramatic shift and direction of my thinking of video before this thesis, which has raised more questions than it asked. A limitation of this thesis has been the focus on Flusser due to the lack of awareness to his positions of quanta and around video. With this, there are many more points of consideration that require further observation and consideration.

Flusser's decolonial position remains tentative. Further research into Flusser as a proto-decolonial thinker requires consideration through notable contemporary developments, such as: Walter D. Mignolo's *The Darker Side of Western Modernity* (2011); Rosi Braidotti's *The Posthuman* (2013); Denise Ferreira da Silva's *Towards a Global Idea of Race* (2007); Priyamvada Gopal's *Insurgent Empire: Anticolonial Resistance and British Dissent* (2019) and more.

There are also the entangled considerations of the quantum. Further reading of Barad's "agential realism" is crucial, as well as other key thinkers: from early physicists Niels Bohr, Paul Dirac and Richard Feynman; to the contemporary experimentation of condensed matter physicist by Suchitra Sebastian, and poet philosopher Johnny Golding's "Entanglement" research group. There is also the role of the quantum in music through Stephon Alexander's *The Jazz of Physics*, entangled with the work of Camae Ayewa and Rasheedah Phillips' interdisciplinary art practice *Black Quantum Futurism*, along with the work of Fumi Okiji, Fred Moten, Ferrera da Silva and more.

More consideration is also needed in addressing the Kantian filter, of the paranoid data Leviathan, and the current issues around AI and the ‘problems raised by quanta.’ Observing our digital tools as gestures becomes a topic for further research with connections to James Bridle’s *New Dark Age* (2018); Mackenzie Wark’s *Capital is Dead: Is this something worse* (2019); Lev Manovich’s *AI Aesthetics* (2019); Hito Steyerl’s *Duty Free Art: Art in the Age of Planetary Civil War* (2017); and Luciana Parisi’s *Contagious Architecture: Computation, Aesthetics, and Space* (2013). Each of which, as considered in this thesis, become intra-related with the quantum and decolonial efforts.

The ideas I am raising here only scratch the surface of quantum physics, improvisation, the paranoid data leviathan, social media, and the phenomena of gestures; and yet they appear entangled, to which I again turn to Barad, ‘what is at issue is not mere homologies between different subject matters of different disciplines, but rather the specific material linkages and how these intra-relations matter’ (2007: 94). Barad’s agential realist ‘material’ is not the ‘brute positivity or the essential givenness of things,’ as “materiality” refers to phenomena, which are explicitly not elements of nature-outside-of-culture’ (211). Each of these existing areas of research present various entangled avenues for further research.

These considerations result from a process of reaching out broadly for attractive possibilities, of *how* smartphone-video *matters* through quantised phenomena. It is not a digging down for reason, to assure *that* smartphone-video exists as a universal phenomena, which *does not matter*. I leave this thesis with the beginning of an approach to smartphone-video as a de/mystification, of more/less interest through proximity, of expressing hidden/revealed freedom, of non-polarised gestures of ritual/work/communication, as an ending/beginning.

In Practice: Online Archive selection

Available at: <http://www.jamiejohnjamesjenkinson.com/p/video.html>

This thesis has resulted in understanding smartphone-video in ways I could not have foreseen. And yet, the practice remains intuitive. Inevitably, the ideas raised in this thesis influence the practice, but not in ways I intend or can really describe. Each video comes from an impulse to make, through which I find further connection to a statement by Flusser in *On Doubt*,

Let us continue the great adventure that thought is, but let us sacrifice the proud madness of wishing to dominate the all-different with our thought. Let us face the all-different by adorning it, that is, by being doubtful and submissive. In other words, let us once again be thinking beings; let us once again be humans. (Flusser, 2014b: 100)

In light of this ethos, and the open ended nature of this thesis' methodology, as a practical conclusion, please select a smartphone-video from my online archive. The archive is chronological, and selecting a video from the top of the gathered links will result in a more recent video, and the bottom an older video. Viewing the selected smartphone-video without description or significance, as quanta and images, is my preferred mode of viewing, and should function as the final point of consideration.

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- Autogrill Verghereto*, Nicky Hamlyn (video, 2008)
- BBM*, Sean Kingston (music track, 2010)
- Blackberry*, P Money (music track, 2011)
- BRIGIT*, Charlotte Prodger (video, 2016)
- Clapping*, Nicky Hamlyn (video, 2015)
- Cloverfield*, Matt Reeves (movie, 2008)
- Composed Recurrence*, Rose Lowder (16mm, 1981)
- Crocodile Teeth*, Chris Welsby (video, 2019)
- Cut Out*, Simon Payne (video, 2013)
- Desert Spring*, Chris Welsby (video, 2016)
- Dla Warsztatu Formy Filmowej: Blizej - Dalej/To The Workshop of The Film Form: Nearer - Farther*, Josef Robakowski (video, 1985)
- F Sharpish*, Alex OB (Google Pixel 4, 2021)
- Field*, Gareth Polmeer (HD video, 2011)
- Ernest Atkinson Park*, Nicky Hamlyn (video, 2012)
- Excellences and Perfections* (2014) Amalia Ulman
- Explosion*, Michel Amarger (video, 2009-2010)
- Ferrel*, Nicky Hamlyn (video, 2019)
- Field Impression*, Amy Dickson (smartphone-video, Sony Xperia Z5, 06/16)
- Goldfish Layers Goldfish Layers*, Holly Fisher (video, 2014)
- Hannah's Room*, Amy Dickson (smartphone-video, 2013)
- Horror Film*, Malcolm Le Grice (expanded cinema, 1971)
- Illuminer*, Steve McQueen (video, 2001)
- Imago*, Anthony Rousseau (video, 2014)

Iris Out, Simon Payne (video, 2008)

Jennicam, Jennifer Ringley (video, 1996-2003)

Jonas, Malcolm Le Grice (video, 2013)

La Choukrane, Edison Barrus (2007)

Le Magicien, Georges Méliès (movie, 1898)

LHB, Charlotte Prodger (video, 2017)

Line Describing a Cone, Anthony McCall (1973)

Matrix, Nicky Hamlyn (16mm, 1999)

Mercury, Chris Welsby (video, 2016)

Nausea, Mathew Noel-Todd (video, 2006)

New Ratio, Simon Payne (video, 2007)

Nocturne #2, Pieter Greene (video, 2012)

NOT AND OR, Simon Payne (video, 2014)

One Night from the Thousands of Nights and a Night: at the Lamb Pub, Jonas Mekas (video, 2018)

Painting with Light: David Hockney, David Goldsmith (television programme, 1987)

Panni, Nicky Hamlyn (16mm, 2005)

Phone Portrait, Stephen Dwoskin (video, 2007—8)

Phone Strip, Stephen Dwoskin (video, 2007—8)

Point Line Plane, Simon Payne (video, 2010)

Primary Phase, Simon Payne (video, 2006/2012)

Quintet of the Astonished, Bill Viola (video, 2000)

Reeltime, Annabel Nicolson (expanded cinema, 1973)

Reminisces of a Journey to Lithuania, Jonas Mekas (16mm, 1972)

Rhythmus 21, Hans Richter (16mm, 1924)

Sea, Gareth Polmeer (HD video, 2011)

Speech Marks, Steve Hawley (video, 2004)

Spring City, Jeff Scher (video, 2011)

Steve Hates Fish, John Smith (video, 2015)

Substation, Nick Collins (smartphone-video, iPhone SE, 2017)

Sur Portable, Edison Barrus (video, 2007)

Taniec z Drzewami / Dancing with Trees, Josef Robakowski (video, 1985)

Taniec z Lajkonikiem/Dance with a Lajkonik, Josef Robakowski (video, 1992)

Tartarughe d'Acqua, Rose Lowder (16mm, 2016)

The Blair Witch Project, Eduardo Sánchez and Daniel Myrick (movie, 1999)

The Coded Gaze: Unmasking Algorithmic Bias, Joy Buolamwini (mini doc, 2016)

Think Tank, Holly Fisher (video, 2014)

This is a Television Receiver, David Hall (television, 1976)

Tree, Chris Welsby (16mm, 1974)

Tree Again, Chris Welsby (video, 2019)

Tree Throw, Hannah Taverner (smartphone-video, 2016)

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Zoetrope, Nicky Hamlyn (video, 2008)

Zootopia, Byron Howard, Rich Moore (movie, 2015)

+X, Simon Payne (video, 2015)