

Motion to Becoming

Nature and the Image in Time

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Abstract

This research comprises interrelated elements of video works and a thesis. The philosophy and aesthetics of nature are explored through light and motion in the time-based image. Framed within selected aspects of G.W.F. Hegel's philosophy, I explore digital aesthetics, nature and dialectics, bringing new perspectives to the poetics of the image and a different understanding of the formative influences of nineteenth century aesthetics and twentieth century modernism on contemporary film and video.

I approach these questions from the position of practice, of which the project has two components. Firstly, the representation of natural phenomena is discussed in a number of experimental films and videos, examining selected works in Europe and North America across the last century. The practices focused upon are those where techniques and processes of moving image technologies are brought into critical reflection in the representation of nature (and interests in motion and form). This includes the ways in which photosensitive silver halide crystals on film, electronic signals or pixels are engaged in the material process of the work's making.

Secondly, the works that I have made focus on the constituent technologies of the videographic image; the progressive scan, pixel, properties of digital colour, compression and display technologies. The technologically mediated image of nature is foregrounded with recordings of the sky, sea and terrain explored through system-based processes. The outcomes reflect a dialectical theory of knowledge in the experience of landscape and the human relation to nature. The video works have made present, in sensuous form, the transient ideas accorded to nature in the theories and concepts defined. The relations of practice (video works) and theory (the thesis) are dialectical, where both components interrelate, reflect and determine one another.

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In memory of my grandfather, Joseph Owen Squires.

Author's Declaration

During the period of registered study in which this thesis was prepared the author has not been registered for any other academic award or qualification. The material included in this thesis has not been submitted wholly or in part for any academic award or qualification other than that for which it is now submitted.

Signed:

Date:

Gareth Polmeer, April 2015

Introduction

...light has difference outside it, as the Not of light...¹

...we see that the Now is just this: to be no more just when it is.²

The idea of *motion to becoming* reflects the dynamics of the image in time: a dialectical movement of nature and aesthetics in the ephemeral optics of the pixel. In this research these contexts are brought to reflection in the processes and systems of the moving image. In reviewing a range of films and videos, and in developing and evaluating the production of my own, I discuss images, light and motion, and focus on digital media through expressions of natural phenomena and their histories in the experience of landscape.

The relations of time and motion, humans and nature converge through the movements of light and colour. Specific aspects of moving image technologies and optical phenomena are aesthetic elements against which the discursive frames of this thesis are made dynamic. Dialectics illuminates perspectives on digital aesthetics, with light as aesthetic phenomena, and light as knowledge interconnecting through the motion and flicker of the screen.

In this exploration I reflect upon themes in Hegel's philosophy by interconnecting interpretations around the German aesthetic and philosophical tradition and broader aspects of eighteenth and nineteenth century thought. Such elements are imagined as

1. Hegel, *Philosophy of Nature*, p. 89.

2. Hegel, *Phenomenology of Spirit*, p. 63.

expanded images in which the dialectical relations of vision and thought are projected.³ I discuss my contexts for dialectics, drawing from Hegel's philosophy to bring questions to natural phenomena and the aesthetic properties of the moving image. In words that might elsewhere be attributed to an artist (and the motions of the time-based image), Hegel writes in 1807 of the '...immanent content of the thing ...the life of the object...immersed in the material, and advancing with its movement...' (1977a, 32). Such language echoes out of aesthetics and philosophy into much of the work I discuss, and it is to these intellectual histories that my own thoughts develop, following the paths set out by practice, experiments with process and the myriad destinations at which they arrive. The dialectic of light and darkness illuminates thought, but also creates shadows, or refracts into iridescent colour. In these differences new insights are sought. Light as aesthetic phenomena and light as knowledge intertwine in the electronic visuals of videographics.

In the works I discuss, and in the writings of artists and filmmakers, the relation of humans and nature are variously considered in a narrative of post-Enlightenment thought. These are ideas variously balanced between the relations of art and science, and the technological relation to nature. The filmmaker Chris Welsby writes for example of his aim for an '...ontological shift in the way we see ourselves in relation to nature...' (2011, 102) citing Immanuel Kant and the German philosophical tradition. These are points and historical contexts to which I will return. Through natural phenomena, the film and video image becomes a means to explore experience through the diversity of light and colour. The image reflects questions of existence, orientating the human relation to the world as the interconnections of experience, nature and art.

Whilst the essay traverses abstract landscapes, both conceptually and aesthetically, it aims towards a concrete understanding of technology, vision and new human perspectives in nature. In the image, natural light is mediated and becomes meaning. It becomes knowledge of the world, of nature and the creative process of human

3. I focus upon a selection of Hegel's texts, henceforth referenced as the *Phenomenology of Spirit* (1807), *Science of Logic* (1812-1816 and 1832), *Logic, Philosophy of Nature* and *Philosophy of Mind* (1830) and the *Lectures on Fine Art* (1835 and 1842). I have used English translations of texts for references throughout. In some of my references to Hegel's texts I have quoted sections from the *Zusätze*, which are accompanying sections of transcriptions/notes.

experience within it. Projected on a surface or emitted from a screen, the light of film and video works manifest such thoughts, with ideas made dynamic in the perceptual movements of the image. That humans are part of nature becomes a mediating aspect of the work – of experiments with process and form - bringing thought and practice into dialectical relations. These are ideas variously explored in both my work and within the other practices I discuss.

The ‘time-based’ or ‘moving’ image appears to be a difficult medium to examine these ideas. Its movements are both conceptual and temporal. But the fleeting aspect of the image - its ‘becoming’ - can be seen as a means by which finitude and change in reality reflect ideas of nature, technology and modernity. I am interested in what film and video works do in working through their material and temporal possibilities, and it is these ideas that will be considered to evolve new perspectives on nature and the image.⁴

The research is practice-based and the thesis elaborates details on both my work and others’. Insofar as this writing is representative of the outcome, the work I have made remains (in some ways) outside of the thesis. The aim of the works, as experiment, is to explore elements the thesis cannot. This is a question of interpretation, being as the writing generates wide-ranging ideas, whilst the optical event of the work remains abstract. It is in this way that I draw upon the relations of theory and the artwork, as they have been discussed in the aesthetic histories I cite. Together, these forms constitute a questioning and exploration of the image in the process of research.

4. Hegel writes: ‘Finite things *are*, but their relation to themselves is that they are *negatively* self-related and in this very self-relation send themselves away beyond themselves, beyond their being. They *are*, but the truth of this being is their *end*.’ (1969, 129).



Fig. 1. *Sea*. Gareth Polmeer

In the video works that I have made surface and material constituents are reordered to reveal an image that is relative to the continual motion and becoming of light and forms in video. I have focussed on momentary events, reworking glimpses of light or small movements into complex sequences and formations. Abstraction moves to figuration and vice versa. The terrestrial space of landscape - processed and re-structured through recordings - merges into forms with the virtual space of digital colour. The inherent abstractness of the digital image, as something always developing, is made present by the conditions of its transience in a momentary optical event. Natural phenomena have been represented through such processes to examine what questions the image brings to the conceptual reflections of research, with the poetics of film and video a catalyst for new theoretical understanding.

In my videos such as *Sea* (2011) (Figs. 1, 2 and 3) such ideas emerge in considerations of perspective, line and colour, where the framing of the horizon line of the landscape bisects the image space between sky and sea. Through temporal delays and offsets these patterns of flicker become drifting videographics. Colour forms emerge and light moves

across the frame.⁵ In processing the original form of the image structure, a new one emerges of a representation between the rhythms and dynamics of nature, and the technologically mediated aspect of digital visualisation.

The work shifts in instances of viewing, drawing the pro-filmic, editing and exhibition of the work into relations that emphasise ephemeral nature in unison with the means of representation. The form and content of the work interrelate, with technique and natural phenomena informing patterns and structure. Abstractions become a flittering optic of image and movement.



Fig. 2. *Sea*. Gareth Polmeer

In Chapter 1, ‘Contexts and Methods’, I discuss the historical thought and practice that has influenced my own approach to this project, explaining aspects of Hegel’s philosophy and how this connects with ideas and processes in film theory and practice.

5. Some paragraphs in this thesis are included in a different form in the article ‘Sequences and Intervals’ published in the journal *Leonardo*. © ISAST. See Polmeer (2015a).

This chapter functions as a basic theoretical foundation, and is framed within a number of broader questions around history and nature.

In Chapter 2, ‘Dialectics and the Temporal Image’, I draw speculative relations between elements of Hegel’s philosophy and the ontologies and histories of film and video. This aims to show how questions around space and time, nature, ‘becoming’ and motion have connections with artists’ film and video practice over the last century.

Chapter 3, ‘Aesthetics and Nature’, will discuss a range of works by others in Europe and North America. I discuss Chris Welsby’s comments around ‘dualism’ and the relations of humans and nature, and his contexts to Kant’s ‘thing-in-itself’. This will be shown to connect to twentieth century German philosophy, Hegel’s dialectic and current practice. Welsby’s idea of a ‘post-Romantic’ landscape connects with elements of Hegel’s thoughts on nature, and to his own dialogues with the contemporaneous Romantic movements of the early nineteenth century. This is brought to context with various frameworks in film, art and media histories.

In Chapter 4, ‘Movement and Concepts’, I discuss landscape films by Kurt Kren and others. This chapter considers ways in which process, innovation, experimentation and technique reveal phenomena in an experience of nature that is more than figuratively representable in images of landscape. This emerges through particular engagements with interval, time and light.

In Chapter 5, ‘Sequences and Variations, Processes and Intervals’, I undertake a detailed discussion of the processes, ideas and experiments in my own video works, drawing these to comparisons with others. This will also draw some other relations between the intervallic nature of image processes and technologies, and the concepts of motion, time, light and darkness in the theories discussed. In this chapter I will show how the theoretical and practical contexts interrelate, and how elements of practice – making, experimenting, screening, reviewing – inform the theoretical considerations.

In the conclusion I draw together reflections on the outcomes of the project, considering relations of theory and practice, and offering some summary ideas for future work. I also discuss the scope and limitations of the project, and offer some thought on the relations developed in practice-led research.



Fig. 3. *Sea*. Gareth Polmeer

These ideas set the frame of the project. The concepts around nature, time and light discussed in this thesis will be reflected upon from different perspectives in relation to a number of films and videos. It is their combination - the 'intervals' in their relations - that which will shed light on particular ideas in the work, and in their materials and production. Motion and stillness, light and darkness form core elements for the discussion.

Considered in the temporal dimensions of the image of landscape, new perspectives on experience and nature are imagined, and it is these ideas that I embody within practice, material and processes with the image. In this way I consider how the aesthetic of the time-based image highlights elements of thought that echo aspects of Hegel's dialectic. The outcome of this project will show what dialectical reflections brings to questions of

nature and the aesthetic, and also how the ideas of motion and change that it embodies bring to bear questions around the video image and digital aesthetics in the twenty-first century.

In the context of doctoral research, I have aimed to present the abstract aspects of the philosophical and aesthetic histories I discuss in a clear and systematic way. Where complex terminologies or formulations appear I have aimed to render these intelligible within the broader context of film and video practice. As a subject spanning many fields, and with a focus on film/video, my discussion of Hegel's philosophy is often connective and selective rather than fully exegetical. This has been a matter of scope, a means of writing that befits the context of research, and a way to provide a broader relevance to the historical and evaluative aims of this project.

In the next chapter I discuss Hegel's theory of consciousness and aesthetics, establishing the relations for the further considerations of nature and the moving image. My focus and interpretations of Hegelian themes are framed within humanist perspectives of nature, experiential reflections on time and motion, aesthetic considerations of the infinite, and a poetics of videographics and the imagination through the becoming image in time.⁶

6. The title for this project encompasses a combination of interests from Hegel's philosophy and broader ideas of time and movement in film and video. My first reading of Hegel's work came through theories of motion, for example the phrase in his *Science of Logic* that '...motion is *existent* contradiction itself' (1969, 440). Ideas around 'becoming' also became of interest; for example the *Philosophy of Nature*: '...it is not *in* time that everything comes to be and passes away, rather time itself is the *becoming...*' (1970, 35), and the *Logic*: 'To become' is the true expression for the resultant of 'to be' and 'not to be'...(1975, 131).

Hegel's thoughts on time, motion and becoming develop out of connections to ancient philosophy and here the history of the moving image and the philosophy of time connect more recently with Henri Bergson's thinking on cinema and 'becoming': i.e. that 'Whether we would think becoming, or express it, or even perceive it, we hardly do anything else than set going a kind of cinematograph inside us.' (1911, 306). This extends to filmmakers influenced by these ideas such as Viking Eggeling, who speaks of 'Becoming' and that 'What should be grasped and given form are things in flux.' (In Richter 1971: 112-113). The term 'becoming' is also widely used in contemporary writings on time-based media, and in Chapter 2 I expand and discuss these contexts.

1. Contexts and Methods

Philosophy has to consider an object in its necessity, not merely according to subjective necessity or external ordering, classification, etc.; it has to unfold and prove the object, according to the necessity of its own inner nature.¹

In this chapter I discuss aspects of Hegel's philosophy, before returning to film and video histories and aesthetics. This is in summary form, establishing contexts for the theories of knowledge and relations to nature that many of the writers, artists and filmmakers that I subsequently refer to have considered. I approach these questions from a different perspective to the broadly postmodern influences of recent decades (in film/video/art theory). The philosophical and aesthetic traditions that I discuss in relation to Hegel have largely conventional historical narratives in contemporary philosophy and contemporary art. Resultantly, influential aspects of postmodernism – relativism or the obscuring of knowledge - have overlooked insights that Hegel's philosophy brings to bear for questions of nature and aesthetic experience, with misconceptions of such thought further precluding relations to film/video practice and contemporary digital media.

There are however many writers for whom the theories of recent decades have important antecedents in nineteenth century thought. I cite such texts to show differences of historical interpretation to postmodernists, departing from the theoretical influences of the latter on film theory, and instead showing aspects that inform my own position, and certain continuities and aesthetic/theoretical interests relevant to the contexts I discuss.²

1. Hegel, *Lectures on Fine Art*, p. 11.

2. Within the period to which I refer, around the 1980s and 1990s, many writers offer different perspectives on postmodernism in relation to nineteenth century philosophy, encompassing aesthetics, science and theories of knowledge (e.g. Bowie, 1990; Crowther, 1993). Historical contexts of the nineteenth and twentieth centuries are variously considered, as are contexts and relations to modernism (e.g. Harvey, 1989). Hegel's work is also variously reframed in its contexts to twentieth century interpretations (Rose, 1981). The term 'postmodernism' itself is broadly defined, and is variously

Reductive accounts of the Hegelian dialectic overlook the relevance of this thought, and whilst I do not adopt or agree with all of the content of Hegel's philosophy, I show that it brings prescient and concrete insights. Similarly where some of the narratives around Hegel's contemporaries (and Romanticism for instance) have been historically reductive, I show that the questions posed by many filmmakers within the frames of recent film theory have antecedents in early nineteenth century thought.

These theoretical interests are a means by which my interests are further historically related as an interpretative framework to movements from the experimental and abstract film of the 1920s and 1930s (e.g. Viking Eggeling), 'structural' film of the 1960s onwards (e.g. Chris Welsby), and 'image-processed' video of the 1970s onwards (e.g. Steina Vasulka). These connections of films/videos are not historically definitive, but there have been shared goals, focussing towards material and structure, time and technology, and possibilities for new meaning in light and colour. Within these histories I examine practice that has evolved considerations of nature through abstraction and experiment with the image, where theoretical interpretation and writing – following praxis – are related to screenings and exhibition, and then further production and experimentation. Whilst retrospect forms a canon between these works, it is often divergences and differences that cohere the greatest insights. I am interested in the historical continuities and critical contexts that this work has with aspects of nineteenth century aesthetics and philosophies of nature.

I have mostly limited my examples of others' works to activities (broadly) historically affiliated with the London Filmmakers Co-operative and Media Study department in Buffalo, New York. These works have been variously innovative and exploratory in elements of landscape, colour, form and visual perception. Amongst such work (and surrounding writings) there have also been various interpretations regarding the contexts of nineteenth and twentieth century aesthetics. My interest is in the commonality of

historicalised within a timeframe around the 1970s to 1990s (whilst extending into influences in contemporary art/media theories). I also use the term postmodernism broadly, but generally refer to popular models of theory in avant-garde/experimental film from the 1970s-1990s. In the historical aspects of film theory from this period this encompasses the influences of 'structuralist' and 'poststructuralist' thought. By way of example some of these contexts (and their differences) are included in the edited volume by Gerald Mast, Marshall Cohen and Leo Braudy (1992).

works where nature is explored in projection, flicker and electronic signals. This encompasses the dynamics of perception, experience and knowledge, and the active role of thought and the imagination in relations with technology and nature.

Across the twentieth and twenty-first centuries philosophers, art/media theorists and historians connect nineteenth century thought and dialectics with aspects of the aforementioned artists' film/video histories (as do the writings of artists themselves). Where Marxian or other narratives have informed some of these theories, and postmodernism has extended influence to much contemporary art theory, my focus does not lie in following these interpretations here. In bringing new perspectives to the questions of moving image work, I focus directly on ideas in Hegel's philosophy and how they can (and to extents have already been) variously contemporised around light and time, aesthetics and technology, dialectics and a 'disenchanted' nature in works and writings by film and videomakers.³

In doing so I relate selected themes of Hegel's thought with the formative histories of video and digital aesthetics. I do not give a detailed account of Hegel's philosophy, but

3. The historic sense of disenchantment - in the secularisation of nature, Enlightenment and the relations of the natural sciences, reason and the aesthetic - forms a central narrative in German philosophy and aesthetics. These derive from the varied discussions around Romanticism, *Naturphilosophie*, F.W.J. Schelling and his 1797 *Ideas for a Philosophy of Nature* (1989). For instructive discussions of disenchantment and other aspects in relation to Hegel's work see Alison Stone's *Petrified Intelligence* (2005). The legacies of early nineteenth century thought and disenchantment extend to twentieth century German philosophy (alongside the interpretations of Hegel's thought). For a discussion of these contexts in connection to writers such as Theodor W. Adorno, Georg Lukács, Max Weber and others see Susan Buck-Morss's *The Origin of Negative Dialectics* (1977, 43-62). I do not focus on the contexts of these theories here, but rather show that some of the ideas of nature, culture and history that they frequently explore have historical origins in Hegel's thought.

the interpretations I develop bring different connections to dialectics and ideas of ‘becoming’ in the time-based image. My interests in becoming do not develop the flux or meaninglessness to which it has been often attributed in postmodernist thought, but instead see it in relations to Hegel’s thought in the movements, disjunctions and contingencies of experience; of motion and difference, identity and change.⁴

In this research I integrate contexts from art history, philosophy, technology and digital aesthetics, all of which are balanced around a focus on film and video practice. It is in the latter area that I have allowed for the most detailed analysis in connection with artists’ statements or technological characteristics of the image for instance. My focus is production, rather than spectatorship. Consequently, I have omitted a wider discussion of the philosophical contexts and differences in contemporary interpretations of Hegel’s work.⁵ However it should be noted that within such work there have been many aspects that critically re-evaluate historically conventional views of Hegel’s thought in the fields of philosophy, science and aesthetics.⁶

4. In the sense of motion, dialectics and time in ‘becoming’ I cite other twentieth century thinkers – e.g. Theodor W. Adorno, Walter Benjamin and Henri Bergson – to show the Hegelian (and Kantian) ideas that underpin thoughts on nature, technology and modernity (although in doing so, I depart from the orthodox twentieth century interpretations of Hegel).

5. For example, on differences in interpretation Alison Stone writes that ‘Broadly, “metaphysical” readings contend that his philosophical system sets out to describe the structures of the world as it really is. By contrast, “nonmetaphysical” readings hold that Hegel’s system explicates a set of categories through which we must confer intelligibility upon our experience.’ (2005, 21). Stone gives further details and discusses a number of interpretations and contexts.

6. There is an extensive secondary literature on Hegel’s work (and many differences and contexts therein). Beyond Hegel’s texts themselves, at the origins of my research, my interests were within so-called ‘continental’ aspects of philosophy. In this regard, my secondary reading of Hegel was through Theodor W. Adorno’s writings, such as *Hegel: Three Studies* (1993) and relative contexts (Buck-Morss, 1977). Gillian Rose’s *Hegel: Contra Sociology* (1981) brings other informative aspects to Hegel’s philosophy in relations to Kant, critical theory and poststructuralism (in terms of aspects of Hegel’s thought and twentieth century philosophy).

In the contexts of aesthetics, Paul Crowther’s *Art and Embodiment* (1993) has detailed analyses of Hegel’s work and the contexts and relations to postmodernism that I have found of interest, showing the contemporary relevance of Hegel’s writings on aesthetics. I have also found the discussion of Hegel’s work and its contemporary import to be instructive in Stephen Houlgate’s *The Opening of Hegel’s Logic* (2006), and his edited collection of essays *Hegel and the Philosophy of Nature* (1998). J.N. Findlay’s *Hegel: A Re-examination* (1958) is incisive and his forewords to Hegel’s *Philosophy of Nature* (1970, v–xxv), *Philosophy of Mind* (1971, v–xix), *Phenomenology of Spirit* (1977a, v–xxix) and *Logic* (1975, v–xxvii) provide historical contexts to his philosophy and aspects of those texts. Within all of the above there are further diversities of connection and interpretation, and thus I have focused upon selected contexts within the scope of this research.

The broader relations of nineteenth and twentieth century thought to histories of vision, science and technology have been instructive in books such as Jonathan Crary’s *Techniques of the Observer* (1990),

J.N. Findlay's statement of 1958 still holds today, insofar as '...Hegel is worth restating and reassessing on account of the great contemporary relevance of many aspects of his thought.' (1958, 26). In this regard, whilst Hegel's thought is frequently painted as totalising, determining or a 'subjective idealism', these points can be variously refuted. The interpretations I develop, from both Hegel's texts and others', are considered to show aspects of realist, materialist and naturalist thought in the 'idealism' of Hegel's dialectic. Thus Hegel's statement that 'What is reasonable is actual and What is actual is reasonable' (1975, 9) can be explored at its reversal, and considered as a point of movement between thinking and sensuousness, ideas and reality and how they develop into and determine one another.⁷ In the concrete sense of what experience and a dialectical thinking is Hegel writes that

It is customary to treat Dialectic as an adventitious art, which for very wantonness introduces confusion and a mere semblance of contradiction into definite notions...Often, indeed, Dialectic is nothing more than a subjective see-saw of arguments *pro* and *con*...But in its true and proper character, Dialectic is the very nature and essence of everything predicated by mere understanding...by Dialectic is meant the indwelling tendency outwards by which the one-sidedness and limitation of the predicates of understanding is seen in its true light, and shown to be the negation of them. For anything to be finite is just to suppress itself and put itself aside. Thus understood the Dialectical principle constitutes the life and soul of scientific progress, the dynamic which alone gives immanent connection and necessity to the body of science...(1975, 116).

and amongst the varied artists' writings I discuss (which themselves variously reflect the differences of interpretation of nineteenth century aesthetics and twentieth modernism on artists' film and video practice). In the area of experimental/film video itself, the thorough contextual and historical work, and discussion of new practices by A.L. Rees (2011) has been a central point of reference in the interconnections of philosophy, art history and the moving image.

7. Texts such as Findlay's *Hegel: A Re-examination* (1958) bring to bear relevant points on misconceptions of Hegel's philosophy. Where Hegel has been termed a 'transcendent metaphysician' Findlay's view is that '...Hegel's philosophy is one of the most anti-metaphysical of philosophical systems, one that *remains* most within the pale of ordinary experience, and which accords no place to entities or properties lying beyond that experience, or to facts undiscoverable by ordinary methods of investigation.' (1958, 348). For Hegel's own critique of metaphysics see his *Logic* (1975, 48-50).

On Hegel as a 'subjectivist' Findlay writes that he '...is no idealist in the sense of holding that to be is to be perceived, or that to be is to be conceived, or that objects exist only if there are conscious minds to consider them or to refer to them. Even less is he an idealist in the sense of thinking that the mind *imposes* its forms on the material of sense, or that it 'constructs' the world in its activities of imagination or thought.' (1958, 22). Findlay compares this to the '...dualistic Kantian idealism, which opposes things as they exist *for consciousness* to things as they exist in themselves...' (1958, 22). See Hegel on Kant's 'subjective idealism' (1975, 73).

In contemporary studies Stephen Houlgate (2006, 54-69) and William Maker (1998, 1-27), amongst others, show alternatives to postmodernist and contemporary European philosophy's conventional interpretations of Hegel.

How might these ideas be further considered in some of the contexts I have highlighted? Is it problematic to do so (with Hegel's philosophy anyway preceding cinema)? Can they be applied?⁸ Reflecting these questions, I examine nature and landscape through a juxtaposition of dialectics and the moving image in the speculative nature of research. In this respect my interpretations are anachronistic. My aim however is not to resolve these contexts within a specifically philosophical framework (such as the aspects of Hegel's logic for instance), but to show what is frequently compelling in Hegel's ideas to suggest concepts of light, motion and time that parallel those offered by twentieth century philosophers, film/media theorists and artists as they discuss the time-based image. In the aims of my own work, this has been a means to think of the form of the image – structure, process, light and medium - as reflecting ontological questions in both sensuous phenomena and knowledge.

The philosophical questions around being, nature and experience that Hegel's philosophy illuminates also regularly chime with the ideas and language used by film/videomakers and the contexts with which they identify in a post-Enlightenment narrative of art, science and nature. Below, I give a broad outline of some of the central ideas in Hegel's works to suggest ways that these connections begin to develop.

Where film and videomakers have considered the dynamic image as a way to bring thought into new movements, the conceptual and historical movement of Hegel's dialectical thought might be initially considered. Hegel writes in the *Phenomenology of Spirit* that 'Consciousness simultaneously *distinguishes* itself from something, and at the same time *relates* itself to it, or, as it is said, this something exists *for* consciousness; and the determinate aspect of this *relating*, or of the *being* of something for a consciousness, is *knowing*.' (1977a, 52). And that '...consciousness is, on the one hand, consciousness of the object, and on the other, consciousness of itself...' (1977a, 54). Hegel discusses a

8. The application of 'theory' can be problematic, assuming that the object (painting, film etc.) to be analysed can be something to which the theory can be 'applied' or which 'illustrates' the theory. This is a particularly complex question in theories of art. Hegel's thought is 'immanent' and not a system or method applied for analysis (see note 10 below). Therefore, insofar as I suggest a 'dialectical approach' to the histories I discuss, and to the film/video works, there are acknowledged anachronisms and differences of context. My aim is to work out of each area, and then to show their differences and convergences, rather than putting the theory forward as suitable to be applied to the practice from the outset.

'...dialectical movement which consciousness exercises on itself and which affects both its knowledge and its object...' (1977a, 55).⁹

The movements of dialectic can thus be seen in filmic analogies to reflect a sense of movement, edits, process or montage, and are towards what Hegel terms 'speculative thought' which is the '...the grasping of opposites in their unity, or of the positive in the negative...' (1969, 56). This is 'immanent' he writes, such that '...the method is the consciousness of the form of the inner self-movement of the content of logic.' (1969, 53).¹⁰ Hegel writes of '...self-conscious reason with the reason which *is* in the world...' (1975, 8)¹¹ – the knowledge and intelligibility of reality - and of 'Spirit' and the movements of experience. Paul Crowther writes that '...spirit is self-consciousness progressively articulated and unified through concrete interaction with that which is ostensibly Other than it.' (1993, 120) and J.N. Findlay comments in the foreword to Hegel's *Philosophy of Nature* that 'There is, for Hegel, nothing ideal or spiritual which does not have its roots in Nature, and which is not nourished and brought to full fruition by Nature.' (Hegel, 1970: xiii).

9. Hegel differentiates the 'understanding' from a dialectical and 'speculative' thought. He writes that 'Wherever there is movement, wherever there is life, wherever anything is carried into effect in the actual world, there Dialectic is at work.' (1975, 116). The purpose of dialectic, Hegel says '...is to study things in their own being and movement and thus to demonstrate the finitude of the partial categories of understanding' (1975, 117). To confine thought to a form of understanding '...sticks to fixity of characters and their distinctness from one another...' whereas considered dialectically '...these finite characterizations or formulae supersede themselves, and pass into their opposites.' (1975, 113-115). J.N. Findlay writes that 'The Understanding, we may say, cuts off the corners of our ideas, all the fine penumbra by which they shade into other ideas...' (1958, 60).

10. On Hegel's sense of 'immanence' he writes of dialectic in his *Logic* that '...we need only at the outset observe that, instead of being brought to bear upon the categories [of thought] from without, it is immanent in their own action.' (1975, 66). In the *Science of Logic* he writes that '...it can be only the nature of the content itself which spontaneously develops itself in a scientific method of knowing, since it is at the same time the reflection of the content itself which first posits and generates its determinate character...' (1969, 27). In the *Phenomenology of Spirit* he writes that '...content shows that its determinateness is not received from something else, nor externally attached to it, but that it determines itself, and ranges itself as a moment having its own place in the whole.' (1977a, 32).

11. On the 'objective value and existence' of thought see the *Science of Logic* (1969, 50-51). Stephen Houlgate remarks that the categories in Hegel's logic are '...both forms of thought *and* structures of being as such.' (2006, 436). Hegel writes in the *Logic* that 'To speak of thought or objective thought as the heart and soul of the world, may seem to be ascribing consciousness to the things of nature...It would be necessary, therefore, if we use the term thought at all, to speak of nature as the system of unconscious thought, or, to use Schelling's expression, a petrified intelligence.' (Hegel, 1975: 37). In the *Philosophy of Nature* he writes that 'Not only must philosophy be in agreement with our empirical knowledge of Nature, but the *origin and formation* of the Philosophy of Nature presupposes and is conditioned by empirical physics.' (1970, 6).

It is from such connections that works by film/videomakers begin to come into view, particularly in ways that echo other aspects of German philosophy; for instance in Chris Welsby's thoughts on ontology, and relations to nature through technology and the aesthetics of landscape (2006b; 2011). Such works bring new perspectives to the representation and experience of nature. The language of filmmakers engaged with nature, aesthetics and science, and of how to represent nature's ephemerality and particularity in the time-based image, have echoes in Hegel's *Philosophy of Nature* with his comments that

The more thought enters into our representation of things, the less do they retain their naturalness, their singularity and immediacy. The wealth of natural forms, in all their infinitely manifold configuration, is impoverished by the all-pervading power of thought, their vernal life and glowing colours die and fade away. The rustle of Nature's life is silenced in the stillness of thought... (1970, 7)

Such 'stillness' is the result of the world considered only from the theoretical perspectives of the 'understanding', a view of nature that is '...a duality of object and subject and their separation, something here and something yonder.' (1970, 8), believing that 'natural objects' are 'nothing in themselves' and 'shut to us' (1970, 9). However in the context of nature and aesthetics, the work of art, Hegel writes, gives meaning to what 'slips past' in nature ('a fleeting ray of light') and to 'momentary existence' (1998, 163).¹² The sensuous is '...liberated from the apparatus of its merely material nature.' (1993, 43) and '...generality made absolutely individual, and sensuously particularized.' (1993, 56). Aspects of such thinking acknowledge the dialectic of defining or determining the structures of the world. In the foreword to the *Philosophy of Mind*, J.N Findlay remarks of Hegel's thoughts and Spirit that '...we most profoundly find ourselves in the world when we most profoundly lose ourselves in the

12. 'Now on what the spirit draws from its own inner resources in works of art it confers permanence in their external existence too; on the other hand, the individual living thing in nature is transient, vanishing, changeable in outward appearance, while the work of art persists, even if it is not mere permanence which constitutes its genuine pre-eminence over natural reality, but its having made spiritual inspiration conspicuous.' (Hegel, 1998: 29).

fixed pattern of things, and that the transformation effected by thought upon things is also the disengagement of what those things intrinsically are.' (1971, viii-ix).¹³

In thinking the ephemera of the 'time-based' image – of its aim to 'fix' elements in time - whilst it must also animate them - these ideas might reflect how nature is definable, documentable or recordable – as 'represented' or 'representable' – in the terms of the technologies of visualisation in the arts and sciences. If the material of an artwork brings form to the transient, then the 'moving' image (being itself transient) seems to preclude such a relation, or at least disadvantage it. Thus this relation of nature and representation further echoes into the thinking of artists, for whom the question of form defines the diversity of nature. Welsby for example writes that in his films/videos he has '...concentrated on 'close up' detail and the more transient aspects of the landscape.' (2001).

Within historical ideas between science and aesthetics, Denis Cosgrove's 1984 book *Social Formation and Symbolic Landscape* draws connections between socio-historical contexts and the visual representation of landscape. He writes that

Landscape is a way of seeing that has its own history, but a history that can be understood only as part of a wider history of economy and society; that has its own assumptions and consequences, but assumptions and consequences whose origins and implications extend well beyond the use and perception of land; that has its own techniques of expression, but techniques which it shares with other areas of cultural practice. (1998, 1)

13. Findlay again: 'For Spirit can only exist as Spirit in so far as it is confronted by an other which it cannot render completely transparent...in realizing the opacity of the other to be the necessary condition for its own self-consciousness.' (1958, 82). Connections to light and darkness, clarity and obscurity in Hegel's thought will be discussed in the next chapter.

Cosgrove reflects on an emergent ‘idea of landscape’ from the Renaissance through Romanticism to the 1900s, whilst showing that a certain predominance of distanced, observable and controllable forms of nature have often contributed to the separation of subject and object in the contemporary experience of place.¹⁴

In 1970s/1980s film and video practice in Britain, landscape featured amongst the works of many practitioners, and such questions around nature were variously explored. Near contemporaneous to Cosgrove’s book in 1983 *Undercut*, the magazine associated with the London Filmmakers Co-operative (LFMC), published a double issue on landscape. A.L. Rees wrote in the editorial that ‘Landscape is not nature, but nature seen through a temperament... The truth is that nature for us is not natural.’ (Rees, O’Pray et al., 1983: 3). Rees further comments on the dynamic interrelations of nature and history, understood thorough organic and geological time, and of the histories of nature through human activity. These questions are well recognised by artists and filmmakers in defining how the technologies of the moving image historically reflect and shape the idea of nature, and are also evident throughout much of the German philosophical histories that Welsby and others allude to. In the age of cinema’s proliferation in the early twentieth century, Walter Benjamin wrote in his 1936 essay ‘The Work of Art in the Age of its Technological Reproducibility’ that ‘Just as the entire mode of existence of human collectives changes over long historical periods, so too does their mode of perception. The way in which human perception is organised – the medium in which it occurs – is conditioned not only by nature but by history.’ (2002, 104).

Whilst questions around the historically determining factors of modernity (social, cultural and economic) are mediating aspects of the human condition and of nature and its aesthetic, such aspects have also been given too great an importance in the narratives of postmodernism (and in conservative views of landscape and the environment). Such views variously de-value a humanist perspective of nature, which would bring to light

14. Hegel comments on nature as ‘idea’ in the *Philosophy of Nature* insofar that ‘In thinking things, we transform them into something universal; but things are singular and the Lion as Such does not exist. We give them the form of something subjective, of something produced by us and belonging to us, and belonging to us in our specifically human character: for natural objects do not think, and are not presentations or thoughts.’ (Hegel, 1970: 7)

the active process of human thinking and creativity, and of the developments of consciousness within nature through the practical capacities of the work of art. Thus Hegel writes that natural beauty is only beautiful ‘...for *us*, for the mind which apprehends beauty.’ (1998, 123). The work of art is the material relation between sensuous nature and thought. The beauty of nature is formed into the artwork, given meaning and ‘sensuous presence’ (1993, 43) amidst its otherwise transient motion.

Whilst I discuss Hegel’s aesthetics selectively, another comparison to the aims of film and videomakers emerges in the sense of what an image is, and how it relates to or reveals the world. Hegel suggests that the appearance of art moves beyond the appearances of reality. In his *Lectures on Fine Art* he writes ‘...in comparison with the appearance of immediate existence and of historiography, the pure appearance of art has the advantage that it points through and beyond itself, and itself hints at something spiritual of which it is to give us an idea...’ (1998, 9).¹⁵

This expresses ideas reminiscent of many filmmakers, where ephemeral representation in the time-based image is a mediating point between thought and the appearance of nature, and of the time-based processes of the work (as material) with the temporality and materiality of nature represented. In the works that I discuss in this essay, this reflects how the image embodies various kinds of aesthetic aims, with artists’ developing processes and systems in film (scratching or painting on it, rewinding/using multiple exposures, or using single frame/flicker for instance) and video (developing processing tools and programmes, working with electronic signals or multiple frames). This is also where film/videomakers furthermore explore the rhythms and properties of natural phenomena (tree movements, flowing water or light) in dialogue with the recording equipment or editing processes.

This is initially comparable to the aims of works such as my own like *Sea*. The experience of nature is manifest in a specific optical/technological moment in which the

15. Hegel writes that ‘Philosophy has the same content and the same end as art and religion; but it is the highest mode of apprehending the absolute Idea, because its mode is the highest mode, the Concept.’ (1969, 824). Crowther’s discussion of Hegel’s aesthetics (1993, 119-146 and 169-179) brings further contexts to the significance of the artwork over the emphasis on thinking (the Concept) given by Hegel above, insofar as the artwork, Crowther writes, brings experience into an ‘enduring object’ (1993, 178).

mediating aspect of representation – of the creative process of re-presenting - brings a dialectical relation of material and process (how a work ‘points through and beyond itself’).¹⁶ The momentary sensuousness of natural phenomena is given a persistence in its recording, but this recording, itself momentary – edited, layered, processed and projected – becomes a point for a reflection beyond its limit. This occurs *within* the time-based image and its inherent temporality: that it ‘moves’ and changes in time, and that such movement is a means to explore questions of process and representation. The image as flowing and transient makes momentarily visible the very transient phenomena it aims to represent. Thus Hegel writes in the *Science of Logic* that ‘...contradiction is the root of all movement and vitality; it is only in so far as something has a contradiction within it that it moves, has an urge and activity.’ (1969, 439).¹⁷

Within the aspects of Hegel’s *Philosophy of Nature* and *Lectures on Fine Art* that I have cited, there is a means to navigate the interconnectedness of thought and reality, and of the material, sensuous relation of human beings and the diversity of natural phenomena. How then do these ideas further manifest in the materials of a work’s construction, and as nature as images in time? What can Hegel’s philosophy and dialectic relate to in the terms of film and video? What is in a work’s potential to bring new perspectives to the experience of nature through their materials and technologies?

How might these ideas begin to further reflect questions of the time-based image? In considering this ‘beyond’ I discuss the concept of the ‘interval’: as limit, measure and boundary. I do so primarily in reference to ideas posited by film/videomakers in both practical/technological senses (i.e. frame lines, montage, scan lines etc.) and also conceptual ones (i.e. between representation and meaning, image and idea). It is in this way that certain kinds of possibility are realised within practice. This interval echoes the disjunction and incompleteness of the dialectic, of its movements and limits. Dialectic is

16. By way of connection to contexts of historic film practices, Hans Richter (whom I discuss in the next chapter) wrote that The main esthetic problem in the movies, which were invented for *reproduction* (of movement) is, paradoxically, the overcoming of *reproduction*. In other words the question is: to what degree is the camera (film, color, sound, etc.) developed and used to *reproduce* (any object which appears before the lens) or to *produce* (sensations not possible in any other art medium)? (1951, 157).

17. In the *Logic* that ‘To see that thought in its very nature is dialectical, and that, as understanding, it must fall into contradiction – the negative of itself – will form one of the main lessons of logic.’ (1975, 15).

in sequence, transition, intervals and breaks. Hegel writes that ‘A thing is what it is, only in and by reason of its limit...a something is implicitly the other of itself...’ (1975, 136).

In this sense, film and videomakers bring other important connections to this research, through interests in landscape and systems, but also in philosophical interests and critical writings on nature and ontology. One of Welsby’s more recent essays *Technology, Nature, Software and Networks: Materializing the Post-Romantic Landscape* (2011) will be of particular relevance, as his engagement with histories of landscape and the aesthetic manifest around Kant’s ‘thing-in-itself’. I will discuss this at length in interpretations of Welsby’s films in chapter 3, alongside Kant’s ideas (and Hegel’s discussion of them).

Welsby writes of his philosophical interests, the ‘post-Romantic’ landscape and the ‘post-Enlightenment’ period central to the German philosophical traditions, speaking of a ‘deeply felt love of landscape’ and his ‘rejection of dualism’ (2011). Other filmmakers such as Peter Tscherkassky have written of post-Enlightenment rationality and ‘The Framework of Modernity’ in the terms of avant-garde cinema, disenchanted nature and the history of modern art. (2012, 311-316). In relation to aspects of contemporary writings on Hegel, Alison Stone writes that her reading of Hegel’s *Philosophy of Nature*, ‘...accentuates certain strands in Hegel which affiliate him with romanticism: in particular, his belief in the need to overcome disenchantment through a more “magical” picture of nature, which would simultaneously reunite the rational and sensible sides of human personality.’ (2005, xvii).

These questions bring about on-going considerations of the relation of nature, science and the aesthetic, and filmmakers like Welsby explore such aspects in the convergence of image and technology. Much of this extends from the late eighteenth century and here Hegel’s philosophy can be seen to emerge in numerous ways. For instance, where Welsby discusses a ‘post-Romantic’ landscape, this connects with the historical legacies of the Romantic era and German Idealism, and the kinds of theories that emerged in

response to the philosophy of Kant (whom Welsby discusses in terms of the ‘thing-in-itself').¹⁸ Hegel comments in the *Logic* that

Thoughts, according to Kant, although universal and necessary categories, are *only our* thoughts – separated by an impassable gulf from the thing, as it exists apart from our knowledge. But the true objectivity of thinking means that the thoughts, far from being merely ours, must at the same time be the real essence of the things, and of whatever is an object to us. (1975, 67-68)

The ‘objectivity of thinking’ and that something is ‘an object to us’ has been variously embodied in the questions I discuss throughout, but they are also evident in film and video works alongside questions between the natural sciences, physical nature and a philosophy of nature through the aesthetic.

The working through of technical possibility realises diversity and possibility in the image. In considering these ideas liquidity, flow and interval have been central elements of my own work. Whilst other elements of natural phenomena feature – cloud formations, trees etc. – the principle referent is water, in that fluidity is intrinsic both to ideas of time and change, and to the nature of digital media. In the next chapter, I show how ideas of motion and ‘becoming’ in Hegel’s dialectic bring various connections to both ancient and modern ideas of stasis and liquidity, and introduce a number of other works where these ideas appear.

18. Stone writes that the ‘...negative picture of romanticism is being made increasingly untenable by the growing body of work reassessing romanticism’s theoretical sophistication and political complexity, as well as its decisive influence upon European philosophy since Kant.’ (2005, xvii)

2. Dialectics and the Temporal Image

...motion is existent contradiction itself.¹

'...it is not in time that everything comes to be and passes away, rather time itself is the becoming...'²

In this chapter, I will draw some selected comparisons between Hegel's ideas of 'becoming', and how both practitioners and theorists in the fields of film and video have expressed this term in the ontologies of the moving image. Hegel writes firstly in the *Science of Logic* and secondly in the *Philosophy of Nature* that

Being, pure being, without any further determination. In its indeterminate immediacy it is equal only to itself...It is pure indeterminateness and emptiness...Being, the indeterminate immediate, is in fact *nothing*, and neither more nor less than *nothing*...*Nothing, pure nothing*: it is simply equality with itself, complete emptiness, absence of all determination and content...Their truth is, therefore, this movement of the immediate vanishing of the one in the other: *becoming*, a movement in which both are distinguished, but by a difference which has equally immediately resolved itself. (1969, 82-83)³

The dimensions of time, *present, future*, and *past*, are the *becoming* of externality as such, and the resolution of it into the differences of being as passing over into nothing, and of nothing as passing over into being. The immediate vanishing of

1. Hegel, *Science of Logic*, pg. 440

2. Hegel, *Philosophy of Nature*, pg. 70

3. Hegel's also writes that 'Being, as Being, is nothing fixed or ultimate: it yields to dialectic and sinks into its opposite, which, also taken immediately, is Nothing.' (Hegel, 1975: 126). For a detailed discussion of this opening section of the *Science of Logic* and its philosophical contexts see Houlgate (2006). Adorno discusses the abstract nature of this text and others in his essays on Hegel. For example, '...the subject too is not static like a camera on a tripod; rather, the subject itself also moves, by virtue of its relationship to the object that is inherently in motion – one of the central tenets of Hegel's *Phenomenology*.' (1993, 99).

these differences into *singularity* is the present as *Now* which, as singularity, is *exclusive* of the other moments, and at the same time completely *continuous* in them, and is only this vanishing of its being into nothing and of nothing into its being. (1970, 37)

These ideas evoke provisional analogies to the time-based processes explored by artists working with film and video (and the movements of natural phenomena in such images). There is ‘movement’, ‘becoming’ and ‘immediate vanishing’. The ‘Now’ is both *exclusive* and *continuous*. How might, or indeed *can* these links manifest further in relations to the moving image? In what follows I consider some of the ways that these ideas relate to the works of artists/filmmakers, explaining some contexts where Hegel uses the term ‘becoming’, and how such terms have been echoed (and directly referenced) in the writings of others on the film and video image.

In the *Science of Logic* there appears a compelling, almost cinematic reference. In a striking visual analogy Hegel writes that

...one *pictures* being to oneself, perhaps in the image of pure light as the clarity of undimmed seeing, and then nothing as pure night – and their distinction is linked with this very familiar sensuous difference. But, as a matter of fact, if this very seeing is more exactly imagined, one can readily perceive that in absolute clearness there is seen just as much, and as little, as in absolute darkness, that the one seeing is as good as the other, that pure seeing is a seeing of nothing. Pure light and pure darkness are two voids which are the same thing. Something can be distinguished only in determinate light or darkness (light is determined by darkness and so is darkened light, and darkness is determined by light, is illuminated darkness), and for this reason, that it is only darkened light and illuminated darkness which have within themselves the moment of difference and are, therefore, *determinate* being. (1969, 93)

Neither light nor dark, being and nothing are *determinate*, as pure light and pure darkness, they are as yet both nothing (two voids); it is only their dynamic that reflects determination, their movement into one another. This conjures images of film frames – the image and frame line - in the whirr of the projector mechanism illuminating motes of dust, or the charge sparkling images to motion from the darkness of the Liquid Crystal Display as millions of pixels change. It is in the interplay of these elements, of this ‘seeing’, that the image-in-time could be speculatively thought, from its indeterminateness, to transition, and the questions of many artists’ works towards light, time and motion (where light and dark are developed towards new questions of seeing, and the visual as a means of new knowledge).

This relevance of light and darkness (in an aesthetic sense), engages both the literal (projection/screen technologies, RGB values, silver halide crystals and Charge Couple Devices (CCD) etc.) and the analogical (relations of light and darkness in theories of knowledge and perception). Where illumination and enlightenment have stood for knowledge, darkness has often represented the opposite. Dialectic shows both to reveal knowledge, and to have value, in their determinations (‘distinguished only in determinate light or darkness’). A remark by William Blake near contemporaneous to Hegel’s 1807 *Phenomenology of Spirit* encapsulates this. In his commentaries on the writings of Sir Joshua Reynolds from 1808, Blake annotates Reynolds’s statement that ‘A picture should please at first sight, and appear to invite the spectator’s attention;...’ with the comment, ‘Please Whom? Some Men cannot see a Picture except in a Dark Corner.’ (1972, 476).

Light and dark are central and subtle connections. Seeing, vision and meaning are interconnected with knowledge, reality and representation. On ‘motion at a standstill’ A.L. Rees would suggest with the digital image that ‘...we see only a shadow’s shadow...’ (Rees, 2006: 6).⁴ It is in this way too that filmmakers such as Peter Gidal

4. The relations of the late eighteenth century and early nineteenth century philosophies (i.e. Hegel, German Idealism and Romanticism) under discussion have particular relations to both postmodernism and the theories influential on experimental film/videomakers from the 1970s onwards. Much of this has revolved around the nature of light/darkness as the bearer of meaning, and the significances of both obscuring and asserting the image in filmmaking. For a theoretical overview and discussions of light,

have remarked that ‘...the film material and the process of viewing together transform film into a new object and process. Filmic “trying to see” instead of seeing, trying to know instead of (the illusion of) knowing. Not believing what is seen.’ (1989, 7). Stan Brakhage writes in his *Metaphors on Vision* to ‘Imagine an eye unruly by man-made laws of perspective, an eye unprejudiced by compositional logic, an eye which does not respond to the name of everything but which must know each object encountered in life through an adventure of perception.’ (2001, 12).

Elements of twentieth century thought have influenced some artists, bringing about contexts for critiques of images and the visual (Levin, 1993; Jay, 1994). Out of, through and in relation to these influences, a form of the negation of vision has appeared in some artists’ films. But such negation is counterbalanced and made dynamic in the dialectic of light and darkness in Hegel’s thought. Darkness becomes a locus for knowledge as much as light. There is a visual dimension to that connects with these considerations. Stephen Houlgate discusses ‘visual intuition’ and Hegel’s thought considered in the contexts of an ‘objectifying’ or ‘reifying’ optic, writing that with it

...our own identity is not defined in opposition to – through the negation of – what is outside of us, but rather is gained through attending to and affirming the presence of what is outside of us. That is to say, we are aware of ourselves and present to ourselves in and as the *opening* of ourselves to, and the beholding of, other things...it is itself nothing other than being attentive and open to, and so being filled with, what is independent of and outside of us...it discloses the way in which the object is itself “the other of itself,” that is, the full objectivity of things themselves. (1993, 113)

This relates to questions of an exploratory vision by film/videomakers, and returns to the affirmative aspects that come out of the prior negations of the moving image. The

darkness and philosophy see Martin Jay’s *Downcast Eyes* (1994) and Michael David Levin’s edited volume *Modernity and the Hegemony of Vision* (1993).

The allegory of Plato’s cave in his *Republic* Book VII (Plato, 1997: 1132-1155) has variously entertained the philosophical reflections of filmmakers and writers, particularly in reference to the idea of shadows, knowledge and reality. Thus Maxim Gorky famously wrote in the 1890s of the ‘Kingdom of Shadows’ (In Burch, 1990: 23). For a detailed discussion of shadow and visual perception see Michael Baxandall’s *Shadows and Enlightenment* (1995).

image is negated in one sense, to be reaffirmed in another. The eye is closed and reopened. Vision is in movement, taking in aspects all over the frame (and outside of it). This suggests a physiological awareness of the eyes as lenses, and of the retinal effects of afterimage and flicker. Vision shifts to indeterminate paths, which suggest an expanded sense of projection and viewing.

Other remarks from Hegel's *Philosophy of Mind* on recollection, imagination and memory have some passing relations to these contexts, in that they bring forth the means by which certain thought processes are brought into perceptual tension, and out of which impressions/sensations become thought. For instance, where certain kinds of images in film bring to bear a relation between prior experience, reflection, memory and perception.

In a passage reminiscent of Marcel Proust, Hegel says that 'No one knows what an infinite host of images of the past slumbers in him; now and then they do indeed accidentally awake, but one cannot, as it is said, call them to mind.' (1971, 205). He also comments that the '...opposition between my subjective or represented content, and the intuitively perceived content, of the object.' (1971, 202) becomes more determinate in intelligence and '...disperses the night-like darkness enveloping the wealth of its images and banishes it by the luminous clarity of a present image.' (1971, 208).

Here questions of darkness and light illuminate questions of vision and knowledge. This returns to aspects of the videographic image and ways that artists have explored light. As light, the video image is always in relation within itself, with the LCD or additive blend of RGB colours and millions of pixels. The processual developments of the progressive scan, as one image in the other, is multiple in time. Hegel writes, 'A thing is what it is, only in and by reason of its limit.' (1975, 136).

The image is determined from the fluctuation of binary code, zero and one. These numeric bases are subject to the variability of their combination. These simple elements alone (zero and one) evolve into the complexity of the digital image. In his *Philosophy of*

Nature Hegel writes that ‘...light has difference outside it, as the Not of light...’ (1970, 89), and in another passage from this book reminiscent of the *Science of Logic* cited above that:

...light has a limit, a defect or lack; and it is only through this its limit that it manifests itself...Light as such is invisible; in pure light nothing is seen, just as little as in pure *darkness*; it is dark, nightlike. If we see in pure light, we are a pure act of seeing; we do not as yet see anything...It is only after light has distinguished itself as light, as against darkness, that it manifests itself as light. (1970, 89)

It is ‘only through this its limit’ that light ‘manifests itself’. It is in difference and negation. Hegel writes that ‘The foundation of all determinateness is negation...’ (1975, 135) and of ‘...*determinate* negation...’ (1977a, 51), that ‘...thinking is always the negation of what we have immediately before us.’ (1975, 17). He writes that ‘If we take a closer look at what a limit implies, we see it involving a contradiction in itself, and thus evincing its dialectical nature.’ (1975, 136).

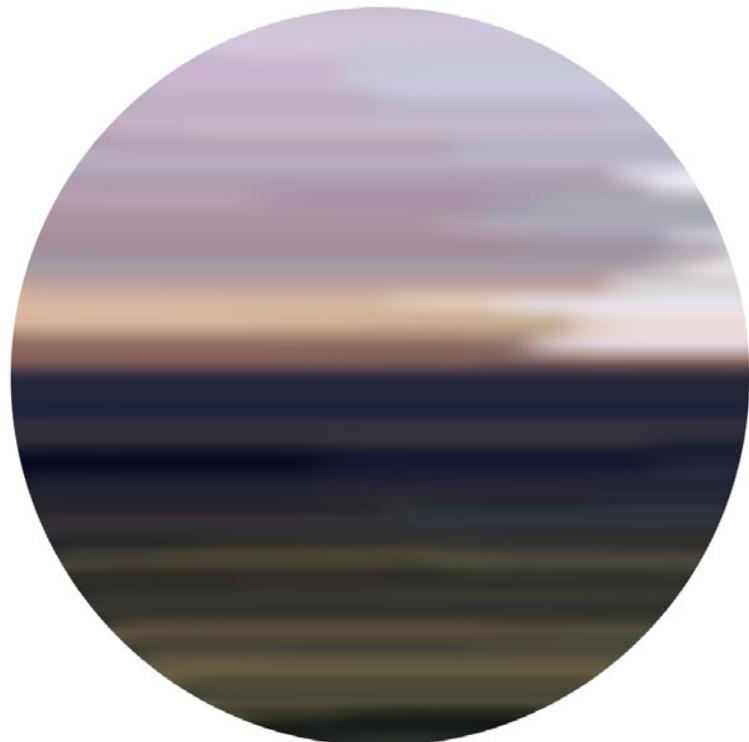


Fig. 4. *Field/Variation*. Gareth Polmeer

In the contexts of film and video, these questions are admittedly abstract, but the kinds of images and processes that are interesting in many works aim, through such considerations, at a concrete set of questions about the relations of technology and nature. The image technology is a type of process (or limit) to certain forms of representation. The production of my own work *Field/Variation* (2014) [Fig. 4], for example, is a reflection on its nature as an image developing in time. What determines the image – pixels, scan lines, RGB colour, compression, and rectilinear forms – moves through itself in processes and montage. The processes are quantitative, but they are made in such a way as to emphasise transitory qualities (variances in specific-optical/temporal relations).

These ideas become image-like, evoking what filmmakers have called ‘sequences’ and ‘intervals’. The videographic image itself implies certain dialectical ideas between images and concepts, and between vision (video; *videre*) and writing/drawing (graphic; *graphikos, graphe*). How do images create meaning *as images* when their definition is through theory? How does understanding become dynamic with the video object perceived? What is the object – the video, the image – to be studied, and is the discursive frame of writing adequate to its description? How can the sensuousness and transience of the time-based image be described? The etymology of the word ‘video’ from the Latin *videre* – to see [*vide*], to perceive/understand – becomes dialectical. It is in an *interval* of these moments that certain ideas appear, insofar as videographic technologies are based on types of *intervals* (both quantitative and qualitative) in pixel, raster and scan line, and in image, meaning and representation.

Such ideas are emphasised, and central to many experimental film and video works where the structures, materials and processes of the image are questioned and developed. These relations of images and ideas are considered in Peter Gidal's writings and films that work through levels of perceptibility in repetition, close-up, light and darkness. In the front matter to Gidal's book *Materialist Film* (1989) there is a citation from Christine Delphy that frames aspects of the relation of concepts to images:

When you say experimental film is about trying to understand the relationship between an object (in this case an image) and its name, how we come to know what we see, questioning the division of reality into discrete entities, what are you questioning about images? Images are not concepts, so how does one go about questioning them? (1989, vi)

Andrew Bowie's near-contemporaneous book, *Aesthetics and Subjectivity* (1990), shows how such questions are also embedded within the German philosophical tradition from Kant two hundred years prior. Bowie points to an important passage of Kant's *Critique of Judgment*, discussing this as one of the foundational questions around the relations of philosophy, nature, science and the aesthetic. Here Kant speaks of 'aesthetic ideas' as '...a presentation of the imagination which prompts much thought, but to which no determinate thought whatsoever, i.e., no [determinate] concept, can be adequate, so that no language can express it completely and allow us to grasp it.' (1987, 182) and of '...a presentation that makes us add to a concept the thoughts of much that is ineffable...' (1987, 185).



Hegel's texts have some relations to the temporal questions around images and experience brought about by cinema some sixty years after their writing. In part of the

Science of Logic entitled ‘Moments of Becoming: Coming-to-be and Ceasing-to-be’

Hegel writes

...in so far as being and nothing, each unseparated from its other, *is*, each *is not*. They *are* therefore in this unity but only as vanishing, sublated moments. They sink from their initially imagined *self-subsistence* to the status of *moments*, which are still *distinct* but at the same time are sublated. (1969, 105)

Hegel’s reference to what is ‘sublated’ – that each *is* and *is not* – articulates the complexity of meaning, movement and change. In further defining the term, Hegel writes on the ‘Sublation of Becoming’ that,

‘*To sublate*’ has a twofold meaning in the language: on the one hand it means to preserve, to maintain, and equally it also means to cause to cease, to put an end to. Even ‘to preserve’ includes a negative element, namely, that something is removed from its immediacy and so from an existence which is open to external influences, in order to preserve it...Something is sublated only in so far as it has entered into unity with its opposite; in this more particular signification as something reflected, it may fittingly be called a *moment*. (1969, 107)

In thinking about videographics, the concept of sublation is both out of context and abstract.⁵ If one were to consider it in the terms of film/video and its ontologies, it does bring to bear some sense of the elements of transition, preservation and change that are both part of the image’s technical functions, but also its phenomenal aspects (the ephemeral nature and flux of time-based media, and the relations between image, process, material and meaning). The idea of the ‘moment’, distinct, yet interrelated, that

5. The term sublated [*Aufhebung*] does appear in Hegel’s *Aesthetics*, and in terms of motion and images might be drawn into the comparable aspects of space and time he discusses on music. For example: ‘Music, too, treats the sensuous as ideal, and does so by negating [sublating] and idealizing into the individual isolation of a single point, the indifferent externality of space, whose complete semblance is accepted and imitated by painting. The single point, *qua* such a negativity (excluding space) is in itself a concrete and active process of positive negation [sublation] within the attributes of matter, in the shape of a motion and tremor of the material body within itself and in its relation to itself.’ (1993, 94-95). For a detailed definition of sublation see Michael Inwood’s *A Hegel Dictionary* (1992, 283-85).

each ‘is’ and ‘is not’, of ‘coming-to-be’ and ‘ceasing-to-be’ is in the optical complexity of the videographic image. Several artists and writers on the moving image have alluded to these ideas through ‘becoming’.

An image in the progressive video scan is simultaneously many, both in the sense that as one image ‘ends’ another ‘begins’ - that they are integrated, so to speak - but also that the blocks that average pixel data make areas disappear and re-approximate them to a new unity. Information is lost, such that a new unity can be made, a unity averaged out of difference. In this sense, the operations of the image compression technology carry out a selective preservation, with only what is deemed algorithmically necessary used to sustain the image to a certain level of realism (in turn negating, or bringing an end to the variance of other elements). In the way that the image develops out of nothing and has determinations it begins to interrelate within itself, and to other images in sequence and montage (and within the frame and its multiple spaces/times).

These comparisons of Hegel’s conceptual terms (being, nothing and becoming) to the time-based image of film and video might well be thought anachronistic, and so they are. However in another connection the references to Zeno of Elea (and the ‘paradoxes’) and the Eleatic philosophers in Hegel’s philosophy are a bridge to the 20th century ideas of Henri Bergson and others.⁶ In relation to Zeno, Hegel’s pre-cinematic theory of motion is compelling, despite not having the cinematograph as his contemporaneous referent (like Bergson). In a passage from the *Science of Logic* Hegel describes the question of motion and change in relation to the Eleatics as follows:

External sensuous motion itself is contradiction’s immediate existence. Something moves, not because at one moment it is here and at another there, but because at one and the same moment it is here and not here, because in this ‘here’, it at once is and is not. The ancient dialecticians must be granted the contradictions that they pointed out in motion; but it does not follow that therefore there is no motion, but on the contrary, that motion is *existent* contradiction itself. (1969, 440)

6. A section of Bergson’s *Creative Evolution* (1911, 304-311) on ‘Form and Becoming’ is included in Wesley C. Salmon’s edited volume *Zeno’s Paradoxes* (2001) as ‘The Cinematographic View of Becoming’. Salmon’s book has detailed accounts of the paradoxes from a number of different commentators.

That something ‘is’ whilst becoming otherwise evokes the motion of cinematographic technologies, and of stillness and movement. The ‘at one and the same moment’ or ‘at once is and is not’ suggest successions of ‘still’ frames constantly developing as the ‘moving’ image. These ideas also echo videographics and electronic signals where the image is processual, a ‘becoming’ of itself and of others in linear sequences.

That ‘motion is *existent* contradiction itself’, as Hegel writes, is reflected throughout the historical conditions of the time-based image and early twenty-first century film and media theories. Laura Mulvey writes of the ‘...fundamental, and irreconcilable, opposition between stillness and movement that reverberates across the aesthetics of cinema.’ (2006, 67) and Mary Anne Doane, who discusses Bergson, suggests that ‘...the normalization of cinematic vision conceals an intense epistemological work of fragmentation. The reconstitution of a “naturalized” movement is a laborious process subject to certain standards for the reconstruction of time.’ (2002, 213). These questions are variously considered relative to historical and cultural questions of time. History and nature converge in the temporalities of technological mediation. Sean Cubitt writes that

The moving image moves. But where does that movement come from? For a certain approach in art history, an image is a discrete, whole entity. To move from one image to another is already an immense wrench: even the analysis of a diptych is wildly complex. What then is it to speak of “a” moving image, constructed from thousands of constituent images? In what sense is it *an* image? Cinematic movement is a fundamental challenge to the concept of wholeness and integrity, its becoming a test of the primacy of existence. In particular, it raises the question of temporality: when is the object of cinema? When, indeed, is the moving image? (2005, 5)

In the early twentieth century Bergson reflected on the nascent technologies of the cinematograph as a means to examine thought and time. Paul Douglass writes that, ‘Bergson considers the film camera antithetical to the intuitive perception of life because it makes a mechanical transcription of perception.’ (1999, 210-211). Reality is thought as a series of successive states of stasis – like a filmstrip. This, Bergson argues, is an error in our way of thinking, writing in his book *Creative Evolution* from 1907 that, ‘What is

real is the continual *change of form*: *form is only a snapshot view of a transition...our perception manages to solidify into discontinuous images the fluid continuity of the real.*' (1911, 302). In the same text he writes that,

Instead of attaching ourselves to the inner becoming of things, we place ourselves outside them in order to recompose their becoming artificially. We take snapshots, as it were, of the passing reality, and, as these are characteristic of the reality, we have only to string them on a becoming, abstract, uniform and invisible, situated at the back of the apparatus of knowledge, in order to imitate what there is that is characteristic in this becoming itself. Perception, intellection, language so proceed in general. Whether we would think becoming, or express it, or even perceive it, we hardly do anything else than set going a kind of cinematograph inside us. We may therefore sum up what we have been saying in the conclusion that the *mechanism of our ordinary knowledge is of a cinematographical kind.* (1911, 306)

Writers such as Stephen Kern (1983) have charted the social and cultural shifts that brought about different conceptions of time and space in this period, but nearly one hundred years before this text by Bergson, Hegel wrote of 'becoming' as an element of dialectics. He writes that "To become" is the true expression for the resultant of 'to be' and 'not to be'; it is the unity of the two; but not only is it the unity, it is also inherent unrest...' (1975, 131). The Hegelian and Bergsonian terms of becoming are different. Where Bergson's term implies a continual flow, for Hegel becoming is '...an unstable unrest which settles into a stable result.' (Hegel, 1969: 106). In this, the break or interruption to flow is part of the dialectic of stillness and motion, fix and flux.

Theodor Adorno writes that 'In its microstructure Hegel's thought and its literary forms are what Walter Benjamin later called "dialectics at a standstill"...' (1993, 133).⁷ The

7. Many of Hegel's dialectical movements and concepts - the ideas of the 'now', history, motion and change – are reflected in 20th century philosophy (and relations to an aesthetics of film/photography). In his 1920s/30s *Arcades Project* Walter Benjamin wrote that "It is not that what is past casts its light on what is present, or what is present its light on what is past; rather, image is that wherein what has been comes together in a flash with the now to form a constellation: in other words, image is dialectics at a standstill." (1999, 463). Adorno writes in his 1970 *Aesthetic Theory* that 'If, as images, artworks are the persistence of the transient, they are concentrated in appearance as something momentary. To experience art means to become conscious of its immanent process as an instant at a standstill...Movement at a standstill is

Hegelian and Bergsonian aspects of becoming (as well as Benjamin's concepts) appear in the works of Adorno, who writes for example that

Natural beauty is suspended history, a moment of becoming at a standstill. Artworks that resonate with this moment of suspension are those that are justly said to have a feeling for nature. Yet this feeling is – in spite of every affinity to allegorical interpretation – fleeting to the point of *déjà vu* and is no doubt all the more compelling for its emphemeralness. (1997, 71).

At the beginning of Hegel's *Logic*, as he writes, becoming is the 'vanishing of the one in the other'. He writes in the *Philosophy of Nature* that '...it is not *in* time that everything comes to be and passes away, rather time itself is the *becoming*...' (1970, 35). In notes from the *Logic* Hegel explains the transitions of becoming at different stages:

As the first concrete thought-term, Becoming is the first adequate vehicle of truth. In the history of philosophy, this stage of the logical Idea finds its analogue in the system of Heraclitus. When Heraclitus says 'All is flowing'...he enunciates Becoming as the fundamental feature of all existence, whereas the Eleatics...saw the only truth in Being, rigid processless Being...Life is a Becoming; but that is not enough to exhaust the notion of life. A still higher form is found in Mind. Here too is Becoming, but richer and more intensive than mere logical Becoming. The elements whose unity constitutes mind are not the bare abstracts of Being and of Nought, but the system of the logical Idea and of Nature. (1975, 132-133)

Heraclitus, Hegel writes in the *Science of Logic*, '...brought forward the higher, total concept of *becoming* and said: *being* as little *is*, as nothing *is*, or, all *flows*, which means, all is a becoming.' (1969: 83), commenting elsewhere on a kind of stasis and movement that '...the Eleatics never got beyond Being, or Heraclitus beyond Becoming.' (1975, 17).⁸ The allusions to Heraclitus here do not therefore suggest endless flux, but ideas of identity and difference. Thus becoming is a complex term in Hegel's thought, and

eternalized in the instant, and what has been made eternal is annihilated by its reduction to the instant.' (1997, 84-85).

8. In Plato's *Cratylus*, Socrates says that 'Heraclitus says somewhere that "everything gives way and nothing stands fast," and, likening the things that are to the flowing of a river, he says that "you cannot step into the same river twice.'" (Plato, 1997: 120)

whilst it does not necessarily refer to the kinds of aesthetic analysis I have given, it nevertheless illuminates perspectives on time and motion relative to the histories of cinema and the transience of the image in time.

Interpretations of the apparent difference between a ‘processless’ being, and the dynamics of becoming – of stillness and movement - have been at the centre of many artists’ attempts to question and explore representation and the image (and the potential for the visual to explore relations to nature, technology and modernity). Such ideas around fixity and flux reflect into the dialectic of the time-based image, of LCD screens, photons and wavelengths of light, and of photograms, flicker and projector mechanisms. It is the means by which the fluidity of light is quantized into bits and bytes of data in digitisation processes, and in cinematic terms the segmentation of time into discrete frames on the filmstrip.

These are ideas that emerge in the shifting forms of early twentieth century abstract film. Hans Richter quotes Viking Eggeling, who says that ‘The laws which condition Becoming in relation to other Becoming are the constant substratum of appearance...’ (1971, 112) and that ‘Becoming and duration are not in any way a diminution of unchanging eternity; they are its expression. Every form occupies not only space but time. Being and becoming are one...What should be grasped and given form are things in flux’ (1952, 81; 1971, 113). Eggeling was an artist active in Paris, Zurich and Berlin in the early twentieth century, with affiliations to Dada. This language of ‘becoming’ and ‘flux’ echoes Hegel, although as Louise O’Konor writes, Eggeling’s ‘Film’ notes ‘...consists almost entirely of extracts from Henri Bergson’s *L’évolution créatrice...*’ [Creative Evolution] (1971, 78) continuing that

It seems more than likely that Bergson's ideas have had great significance for Eggeling's film experiments. We may say that the film *Diagonal Symphony* is enacted entirely in time, and from the extensive quotations in Eggeling's notes it is evident that Bergson's ideas (perhaps just because Bergson is a metaphysician) have played a rôle for the conception of this film. Eggeling uses "*la méthode cinématographique*"... In his film the forms are *generated* by the past and the present pervading each other; this is what produces continuity. This is the current flow, "*la durée*" in Bergson's philosophy. (1971, 79-80)

These dynamics and contradictions of motion, of the forms '...*generated* by the past and the present pervading each other' reflect the overlapping temporalities of the film and video image. In the latter, the electronic flow transforms the image, top to bottom, left to right, as linear sequences scroll progressively on the screen. The frame is processual, a multiplicity of images, immediately perceptible only as 'an' image. Despite past and present being intrinsic to its unfolding, it is always also a 'now'. Exploring this 'now' is one of the aims of the abstract cinema of the early twentieth century; with time and space developed into new meanings and forms of communication, and transformative relations of nature and experience.

These works variously shift between figuration and abstraction and resonate with the ideas I have sought to consider in the aspects of my works, such as *Sea* or *Field/Variation* that have a painterly quality, of abstract forms and planes in motion. In an essay for De Stijl from 1921, entitled *Principles of the Art of Motion*, Richter discusses '...the possibility not only of regarding painting as an art of planes, but of projecting it in time also.' (1921, 144). The aesthetic of abstraction and the relation to nature develops variously in De Stijl, with figures such as Piet Mondrian. Here, a certain claim is made to bringing nature closer by means of abstraction. Mondrian writes in 1919 that '...you must first try to see *composition, colour, and line*, and not the representation *as representation*... Precisely for the sake of nature, of reality, we avoid its natural appearance...' (1919, 119-122). Eggeling's drawings for *Diagonal Symphony* show a development of landscape forms, and both Eggeling and Richter draw influence from Hegel's contemporary, Johan Wolfgang von Goethe and his *Theory of Colours* (1970) (Elder, 2007).

Richter's own 1921 film *Rhythm 21* is a complex layering of planes and forms in time, enacting a shifting reflection of 'moments'. White rectilinear forms hover and move in depth, bringing planes into motion and relation (Fig. 5 and Fig. 6). This film creates a dynamic between the fixity and movement of frames, as the total frame is the boundary that creates multiple spatial dimensions in time, re-framing and re-drawing the overall formal relations in the image. Richter writes of the film that 'When I say that there is no Form in *Rhythm 21*, I mean that by taking the whole movie screen, pressing it together and opening it up, top, bottom, sides, right, left, you don't perceive form anymore, you perceive movement.' (1971, 132).

Figs. 5 & 6. *Rhythm 21*. Hans Richter

These questions of time and motion echo from Hegel's *Phenomenology of Spirit*. In phrases that recall the ephemeral nature of film frames, Hegel remarks that '...we see that the Now is just this: to be no more just when it is.' (1977a, 63) or that 'In essence the object is the same as the movement: the movement is the unfolding and differentiation of the two moments, and the object is the apprehended togetherness of the moments.' (1977a, 67). In the *Philosophy of Nature* Hegel comments that 'This Here is now equally time, a Present which immediately sublates itself, a Now which has been.' (1970, 40), and in the *Phenomenology of Spirit* of 'sense-certainty' that 'The 'Now', and pointing out the 'Now', are thus so constituted that neither the one nor the other is something immediate and simple, but a movement which contains various moments.'

(1977a, 63-64)⁹. Anachronistic to Richter's films as they are, and without full context, these ideas still bring remarkable analogies to the perceptual phenomena that unfold in these abstract films, and how movement and structure relate in time, not only compositionally, but also in how knowledge is made manifest in aesthetic form.

The idea of isolating natural phenomena and bringing them into new spatial and temporal configurations is mentioned by Richter in his essay *The Film as an Original Art Form* where he speaks of a '...conscious attempt to overcome reproduction and to arrive at the free use of the means of cinematographic expression.' (1951, 159). The key elements of these works develop in time. They give expression to the change of form, and of the relations of form within layers and frames. The works are processual, varying, but they come back to ideas, fragment, and offer differing perspectives. The 'now' and the interval are points to consider the possibilities of light in time. Laszlo Moholy-Nagy described Eggeling's work as the '*articulation of space in motion*', saying that Richter's has '...come near to creating a light-space-time continuity in the synthesis of motion.' (1969, 21). A title by Frederick J. Kiesler at the beginning of Eggeling's abstract film *Diagonal Symphony* (1924) announces that it is '...an experiment to discover the basic principles of the organization of time intervals in the film medium'.¹⁰ Dziga Vertov wrote of his films in 1922 that,

Intervals (the transitions from one movement to another) are the material, the elements of the art of movement, and by no means the movements themselves. It is they (the intervals) which draw the movement to kinetic resolution.

The organization of movement is the organization of its elements, or its intervals, into phrases.

In each phrase there is a rise, a high point, and a falling off (expressed in varying degrees) of movement.

9. 'The Now has a tremendous right; it *is* nothing as the individual Now, for as I pronounce it, this proudly exclusive Now dissolves, flows away and falls into dust.' (Hegel, 1970: 36)

10. Edmund Husserl comments in his lectures from 1905 on *The Phenomenology of Internal Time-Consciousness* that 'A now is always and essentially the edge-point of an interval of time.' (1973, 95). Aristotle, referenced widely in Hegel's discussions of motion, says in his *Physics* that 'Time, then, also is both made continuous by the 'now' and divided at it...In so far then as the 'now' is a boundary, it is not time, but an attribute of it...' (1984, 372-373). These words seem to suggest the ephemeralness of the planes in Richter's films and the shifting organic forms of Eggeling's. Gaston Bachelard's book *Intuition of the Instant* (2013) from 1932 has interesting discussions around Bergson, the instant, time and duration. These have some intriguing parallels with Hegel's discussions of space and time in his *Philosophy of Nature* (1970, 28-44).

A composition is made of phrases, just as a phrase is made of intervals of movement. (1984, 8-9)

Diagonal Symphony is a meeting of time, technology and becoming, of conceptual and temporal intervals, and multiple temporalities developing in a new graphic language. Eggeling's plans for his work, alongside those of Richter, involved considerations of the scroll. The filmstrip, held at length is like the scroll form, coiled and spliced onto reels. Segmented by iterations of frames, the filmstrip is a flow of time punctuated by intervals. The scroll form has more in common with the nature of the video image, like the signal of electronic images, of the progressive scan. In the shifting, abstract graphics of *Diagonal Symphony* certain sections of the film seem to appear like the jagged edges of digital glitch (Fig. 7 and Fig. 8), with fluid forms giving way to harder geometric edges. Malcolm Le Grice writes in his 1974 essay *Computer Film as Art* that

...*Diagonal Symphony*, is in many respects eminently suitable to have been made by a computer. It is largely linear and composed of simple abstract elements which are put together in a gradual formation of a single complex abstract unit. Not only is the image one which could be output on present computers, but, more importantly, the kinds of relationships and animated developments could have been analysed and programmed. (2001, 224-225)

Figs. 7 & 8. *Diagonal Symphony*. Viking Eggeling

In this essay Le Grice further alludes to relations between film and computer programming through Dziga Vertov in the 1920s and Kurt Kren in the 1960s (filmmakers whose work I will return to alongside the works of artists like Steina Vasulka). In various writings, and in his book *Abstract Film and Beyond* (1977) Le Grice has connected works from this period to concerns with structure and duration in contemporary film and video. If these historic films explore time as a condition of the industrialisation and mechanisation of everyday life, Le Grice's works have a similar approach in a dialogue with film, computers and video, in works such as *Berlin Horse* (1970) and *Arbitrary Logic* (1988) (Figs. 9 and 10).

Jackie Hatfield alludes to the concept of becoming in an interview with Le Grice; in comments that reflect the relations of the sensuous and the discursive, and the ephemera of light and colour in the image. Becoming has been integral to numerous theorisations of the time-based image, with Hatfield writing in her introduction to the interview that if cinema is,

...a synaesthetic, sensuous, experiential, live, time-based thing, presence is central to its becoming. A single moment, never to be repeated, and in its complete form it will resonate only in the memory of its audience. How does this work get written into history? How does an historian map this perceptual, intangible language? (2006, 75)

Le Grice has drawn much focus around time in his work and writings. His 1972 essay *Real TIME/SPACE* works through some of the questions and tensions between material, time and process in film (2001, 155-163). In this text, Le Grice develops a theory of aesthetic experience and the relation of the viewer to light and film – what he terms the ‘primacy of the projection event’ (2001, 156). This also elaborates a number of temporal considerations between the various points of a work’s making and exhibition. Le Grice has developed some of these concepts further, more recently, in an idea of ‘represented time’ and ‘spectator time’ in the essay *Time and the Spectator in the Experience of Expanded Cinema* (2011).

Fig. 9. *Berlin Horse*. Malcolm Le Grice

In an essay entitled *Projection: Vanishing and Becoming* Sean Cubitt writes that projection technologies ‘...can participate in generating worlds, and specifically in the production of meaning as the articulation of points of becoming one with another.’ (2007, 419). Cubitt writes of Le Grice’s work of ‘... the embodied nature of vision, the sensory, sensual, sensuous fabric of the spectrum in motion through time.’ (2001, xiv), and elsewhere on the image and ‘becoming’ that

An image, unlike a thing, is all potential, always already virtual, a leap into becoming other than what it is, enabled by the very flaw in its ontology: that it is non-identical and, to that extent, it does not exist. *Instead it oscillates in its inherent difference from itself.* (2011, 29)

Such thoughts on the image and on becoming continue a connection across a century of artists’ moving image practices with central concerns for time and ontology. A.L. Rees has written of the links between early abstract film and the varying experiments that have followed from practitioners into the 21st century in his essay *Frames and Windows: Visual Space in Abstract Cinema* (2007), drawing a certain isomorphism between grid, frame and database structures (in contemporary media and computer systems) as the means by which the human sensorium is entwined in history with technology and ways of seeing.

Fig. 10. *Arbitrary Logic*. Malcolm Le Grice

Lev Manovich refers to such ideas in the terms of ‘the database logic’ (2001, 218), framing this idea as a kind of ‘symbolic form’, a term from the German aesthetic tradition.¹¹ In a volume on the ‘digital dialectic’ (Lunenfeld, 1999) Manovich suggests that ‘...cinema can no longer be clearly distinguished from animation. It is no longer an indexical media technology but, rather, a sub-genre of painting.’ (1999, 175), alluding to effects and processes of digital image editing towards a synthesised photorealism between recorded and computer-generated content.

In this regard, the works that I have made have a complex relation to indexicality, realism and painting in the way that I have used paint-like processes towards a non-photorealistic and abstract image using the properties of the digital image. These are points to which I will return in a latter chapter on my work.

11. See Erwin Panofsky’s 1924 essay *Perspective as Symbolic Form* (1991).

3. Aesthetics of Nature

...mutability lies in the notion of existence, and change is only the manifestation of what it implicitly is.¹

In this chapter I will focus my discussions around the film, video and computer based work of Chris Welsby and the contexts and movements out of which this work has developed. These works are innovative, with experimental approaches to image making and questions of landscape. There are several distinct practical and theoretical relationships in Welsby's works and writings that I will discuss. These bear relevance to my own working processes and videos, and theoretical contexts. The relations of light, darkness, motion and colour form new ideas of landscape. Technology, nature and the visual are made dialectical.² As digital formats are proliferating in cinemas and televisions displays, and with ever-increasing resolutions, the pixel grid approaches the appearance of nature asymptotically.

In the 1970s, around London Film-makers' Co-operative (LFMC) activities, 'landscape' was a subject of significant interest (Curtis, 2007: 94–102). Here through a diversity of practitioners, a rich and varied body of works emerged, as they did in contemporaneous movements in North America.³ In March 1975 the Tate gallery in London screened a

1. Hegel, *Logic*, p. 137

2. Some sections of this chapter are published in a different form in a *Millennium Film Journal* article 'Transient Landscape'. © 2015. See Polmeir (2015b)

3. Peter Gidal's edited collection *Structural Film Anthology* (1976) charts some of these connections, as does Malcolm Le Grice's *Abstract Film and Beyond* (1977). Le Grice's later *Experimental Cinema in the Digital Age* (2001) has insights into computerisation and avant-garde film. David Curtis's *A History of Artists' Film and Video in Britain* (2007), A.L. Rees's *A History of Experimental Film and Video* (1999, 2011) and the co-edited book *Expanded Cinema* (Rees, White, Ball and Curtis, 2011) explore some of these histories and contemporary innovations of practice. In North America, P. Adams Sitney's *Visionary Film* (2002), William C. Wees's *Light Moving in Time* (1992), Scott MacDonald's *The Garden in the Machine* (2001) and the more recent *Buffalo Heads* edited by Woody Vasulka and Peter Weibel (2007)

number of works in the show ‘Avant-garde British Landscape Films’, including those by Welsby. In 1983 *Undercut*, the LFMC magazine published a double issue on landscape featuring a wide range of practitioners (Rees, O’Pray et al. 1983). Deke Dusinberre wrote programme notes for the Tate films, and an article by him around some of these works was published in a special issue of *Afterimage*, ‘Perspectives on English Independent Cinema’ in 1976. Here Dusinberre wrote that,

The significance of the landscape films arises from the fact that they assert the illusionism of cinema through the sensuality of landscape imagery, and simultaneously assert the material nature of the representational process which sustains the illusionism. It is the interdependence of those assertions which makes the films remarkable—the “shape” and “content” interact as a systematic whole. (1976, 11)

The ‘sensuality of landscape imagery’ can be seen in the representation of natural phenomena in many contemporary films and videos, and in instances where the ‘representational process’ is also developed. The formulation of ‘shape’ and ‘content’ remains pertinent for the various film and video works to be discussed here, as they do for some of the questions I have sought to explore in my own video works, to be discussed in chapter 5.

Form and content, nature and technique are interwoven in Welsby’s film, video and computer works, orchestrated by the meeting of natural forces and the systems and structures of filming and editing procedures. This extends from early works like *Wind Vane* (1972) (Fig. 11), in which a camera and tripod with wind vanes attached is shifted by the elements, or more recently *Tree Studies* (2006) (Fig. 12) where weather data and specially designed computer software affect image playback, during what Welsby terms the “flickering ephemeral nature” of the light in projection (Welsby, 2006a). In other works such as *Time After* (2010) (Fig. 13) patterns of light form within the rectilinear bounds of the screen, with pixels and blocks adapting over varying temporal scales.

encapsulate the emergent relations of the works here. Gene Youngblood’s *Expanded Cinema* (1970), Lucinda Furlong’s texts on ‘image-processed video’ (1983 and 1985) and Yvonne Spielmann’s *Video – The Reflexive Medium* (2008) discuss a range of international practice and technological processes.

Across these works, installation, expanded and single-screen formats feature open and contemplative experiences of sensuous nature, and engage with the transitory qualities of both nature and the time-based image.

Fig. 11. *Wind Vane*. Chris Welsby

A section of notes in Hegel's *Logic* appear to embody these connections and many of the central ideas considered throughout Welsby's works. Hegel comments that,

Everything that surrounds us may be viewed as an instance of Dialectic. We are aware that everything finite, instead of being stable and ultimate, is rather changeable and transient; and this is exactly what we mean by that Dialectic of the finite, by which the finite, as implicitly other than what it is, is forced beyond its own immediate or natural being to turn suddenly into its opposite...Take as an illustration the motion of the heavenly bodies. At this moment the planet stands in this spot, but implicitly it is the possibility of being in another spot; and that possibility of being otherwise the planet brings into existence by moving.

Similarly the ‘physical’ elements prove to be Dialectical. The process of meteorological action is the exhibition of their Dialectic. It is the same dynamic that lies at the root of every natural process, and, as it were, forces nature out of itself. (1975, 118)

Fig. 12. *Tree Studies*. Chris Welsby

This nature ‘out of itself’ connects in a number of interesting ways both with Welsby’s works, and a number of others to be discussed below. Here the dialectic is shown in its immanence to thought and nature; the process by which what ‘is’ becomes otherwise. Welsby’s works have a sense of incompleteness between structure and technique, and it is here that natural elements become expressive, creating forms of reflection in the intervals of the work’s production. There are some initial comparisons to make here between Hegel’s thoughts above and a statement by Welsby on his 1974 film *Seven Days* (Fig. 15), where he explains that the ‘shape’ of the film is ‘...a product of the interaction between the predictable mechanistic nature of technology and the chance-like qualities of the natural world.’ (2015). He writes that

Some of these events pertain to the human some to the technological and others to nature...the relationship between the parts and the whole were not distinct but formed instead an interconnected network of forces held in temporary state of dynamic equilibrium, their status as objects blurred by the passing of time...a process occurring across a range of interconnected time fields...(Welsby, 2012)

Fig. 13. *Time After*. Chris Welsby

The ‘interconnected network of forces’ echoes the idea that ‘Everything that surrounds us may be viewed as an instance of Dialectic’. Welsby writes elsewhere that, “Unlike the landscape painters and photographers of the nineteenth century, I have avoided the objective *view* point implicit in panoramic vistas or depictions of homogeneous pictorial space. I have instead concentrated on ‘close up’ detail and the more transient aspects of the landscape...” (Welsby, 2001). Here Hegel’s thoughts echo, as above of the ‘changeable and transient’.

Welsby’s ‘dynamic equilibrium’ is a kind of suspension (echoing a ‘dialectic at a standstill’). Further evoking dialectics, Welsby defines the interconnections that he sought to explore in the work, in what he terms a ‘partial list of events’:

... the exchange of thermal energy between high and low pressure weather systems, at a global level; effects of light on silver halide crystals, at a photo chemical level; the rotation of the planet in relation to the sun, at a planetary level; the firing of neural synapses in response to deteriorating weather conditions, at a neurological level; cognitive changes brought about by the metabolism of food and drink, at a somatic level; changes of in color temperature brought about by increases and decreases of water vapor in the atmosphere...(Welsby, 2012)

This kind of cosmic and geological interrelation echoes Hegel's phrase of the planet, of the '...possibility of being in another spot'. In what follows in this chapter, and in further contextualising these ideas with dialectic and Hegel's philosophy, I will consider Welsby's allusions to theories and movements broadly contemporaneous to Hegel's, and those antecedent, that are a central part of European thought; formative both for Welsby's works, as well as my own research here (i.e. those of Immanuel Kant).

Alongside his views of nature, 'dualism' and further references to German philosophy more broadly, Welsby's works and writings are situated within several theoretical concerns of this research, and thus further within Hegel's thinking on knowledge and nature.⁴

Jonathan Crary's book *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (1990) has two important connections that link digital media and the time-based image with the philosophical and aesthetic traditions discussed here. This discusses key historical narratives of knowledge and perception, and can be read as part of a broader reflection on the importance of eighteenth and nineteenth century philosophies to the present (a connection I will discuss further below in relation to Hegel and Kant).

The first connection Crary makes is to the changing nature of observer and representation in relation to history and technology, and the second to epistemology in the nineteenth century (contemporaneous to Hegel) through the influences of Kant on

4. J.N. Findlay comments that '...the main contemporary importance of Hegel lies in his recognition of the 'open texture', the unclear corners of all living notions...Our ideas of time, of matter, of infinity, of knowledge, of being and so forth, are all poised, as it were, in unstable equilibrium...' (1958, 26).

subsequent theories of knowledge and science. Crary's ideas echo back to a range of thinkers in the late nineteenth and early twentieth centuries, who have drawn historical parallels between perception and technology. He writes that

...Most of the historically important functions of the human eye are being supplanted by practices in which visual images no longer have any reference to the position of an observer in a "real", optically perceived world. If these images can be said to refer to anything, it is to millions of bits of electronic mathematical data. Increasingly, visuality will be situated on a cybernetic and electromagnetic terrain where abstract visual and linguistic elements coincide and are consumed, circulated, and exchanged globally. (1990, 2)

Bergson's ideas, as already mentioned, conceive of new temporal relations through industrialised technology, but the German traditions and debates around nature and science, often influenced by Hegel, are also variously prominent. Kant's philosophy features as an important point in the historical dynamics of science, culture and aesthetics set out in *Techniques of the Observer*. Crary discusses the program outlined in Kant's second edition of the *Critique of Pure Reason* (1787) as

...a definitive sign of a new organization and positioning of the subject. For Kant, continuing the use of optical figures, it is "a change in point of view," such that "our representation of things, as they are given, does not conform to these things as they are in themselves, but that these objects as appearances, conform to our mode of representation." ...In the aftermath of Kant's work there is an irreversible clouding over of the transparency of the subject-as-observer. Vision, rather than a privileged form of knowing, becomes itself an object of knowledge, of observation. (1990, 69-70)⁵

These ideas around Kant's theory of knowledge - of technology, digital imaging and the aesthetic - are all drawn within Welsby's works and writings. Here he has considered practice within the terms of a 'post-Romantic' landscape (2011), referencing Kant's 'thing-in-itself' and questions of nature and the time-based image. These concerns are

5. Crary's citation is from Kant's *Critique of Pure Reason* (1965, 24-25)

related to Hegel and others in German philosophy (within the Romanticism and Idealism of the early nineteenth century). Knowledge and the aesthetic in nature are amongst the key themes of these histories. In the contemporary contexts of film, video, nature (and a digital aesthetics) the pre-cinematic philosophy of the nineteenth century gives new perspectives to landscape.

Welsby writes that components of his practice ‘...function as syntactic devices that are inseparably connected to the meaning of the work.’ (Welsby, 2006b). In these allusions to language, nature, Kant, aesthetics and the ‘post-Romantic’ another connection develops. Andrew Bowie discusses what is important in early German Idealism and Romanticism’s considerations of art, and of what is ‘...already implicit in Kant, that nature is not just an object and is part of ourselves as subjects in ways we do not understand, and could not ever fully understand.’ (1990, 44).



Kant’s philosophy is the subject of extended discussion by Hegel. In this section I will evaluate some selective aspects. Welsby alludes to elements of Kant’s earlier philosophy in the *Critique of Pure Reason* (1781 and 1787). Here there appears a difference between the subject and nature to his later text (encompassing beauty and the sublime), the *Critique of Judgment* (1790). Through a discussion of some of these ideas I will show where Welsby’s points connect to these traditions, and to the commentary on them by Hegel. This is done in abbreviated form, and I will focus my discussion of Welsby’s theories and his own work from two of his essays, and then selectively relate these to

Hegel's interpretation of Kant's 'thing in itself'.⁶ The first is Welsby's chapter *Films and Installations – A Systems View of Nature* (2006b) and the second his essay *Technology, Nature, Software and Networks: Materializing the Post-Romantic Landscape* (2011).

Welsby incorporates questions about knowledge - and its limits - into his own writings on the image and nature, stating in his own terms that 'In Kant's philosophical model, the world beyond that which is known by our senses, the *Ding an sich* (thing in itself), is not readily available to human perception.' (2011, 103). These ideas are expanded upon elsewhere. Welsby writes that in his work *At Sea* (2004) (Fig. 14):

...digital technology is used to produce a sort of chart or map...But there are no fixed points on this map, and any attempt at spatial orientation is made impossible by the relentless shifting of a few ephemeral co-ordinates. My intention was not to create a panorama, a view, or a depiction of homogeneous space, but to create instead a model of mind.

The authors of the Santiago theory propose, 'The world everyone sees...is not *the world* but a world which we bring forth with others'. In this model of reality, *the world*, Kant's *ding an sich*, *the world* beyond that which is known by our senses, is not readily available to human perception. It would seem that our perceptions are designed specifically to screen out all but the most essential information and that our only knowledge of *that world* is derived from the internal representation that is continuously being constructed by the cognitive processes that connect our conceptual map to the territory. In *At Sea*...It is my hope that this 'bringing forth' of an unknowable subject, in this case the incomprehensible vastness of the ocean, may be read as a metaphor for the process of cognition.' (2006b, 34-35)⁷

How do these ideas relate to Kant's epistemology, and what is the 'thing-in-itself'? In his 1783 *Prolegomena to Any Future Metaphysics That Will Be Able to Come Forward as Science* Kant remarks that 'When I speak of objects in time and in space, it is not of things in themselves, of which I know nothing, but of things in appearance...' (1977, 76). Kant writes that

6. Hegel gives a commentary of various aspects of Kant's ideas relative to aesthetics in the *Introductory Lectures on Aesthetics* (1993, 62-75). For a detailed discussion of Kant's *Prolegomena* and philosophy, and the relation to Hegel's thought, dialectics and twentieth century thought see Rose (1981, 1-47).

7. Welsby (2011) refers to Maturana (1980) in his discussion of the 'Santiago Theory'.

There are many laws of nature which we can only know by means of experience; but conformity to law in the connection of appearances, i.e., nature in general, we cannot discover by any experience, because experience itself requires laws which are *a priori* at the basis of its possibility.

The possibility of experience in general is therefore at the same time the universal law of nature, and the principles of experience are the very laws of nature. For we know nature as nothing but the totality of appearances, i.e., of representations in us; and hence we can only derive the law of their connection from the principles of their connection in us, that is, from the conditions of their necessary unification in a consciousness, which constitutes the possibility of experience...

*...the understanding does not derive its laws (*a priori*) from, but prescribes them to, nature.* (1977, 56-58)

Kant establishes prescriptions such that our knowledge of an object is limited in the way that it appears to us. Hegel writes that ‘...“appearance” however – the phenomenal world – is not the terminus of thought...’ (1975, 94). Welsby’s works offer an interesting consideration of the questions between Kant and Hegel’s philosophy. In emphasising a ‘...conscious awareness of the process of representation and not on the representation itself.’ (Welsby, 2011: 103) his work is a commentary on Kant’s model, and proposes a balance with nature. This partly traces the trajectory of both Kant’s thoughts, and their subsequent interpretations in aesthetics, reflecting questions of experience and nature that thinkers such as Hegel have addressed.

I will outline how this is represented in the changes in Kant’s own thought, first discussing the epistemological sense of the ‘thing-in-itself’ in which Welsby partly cites Kant (i.e. the *Critique of Pure Reason* and *Prolegomena*), and secondly discussing elements of Kant’s aesthetics in the later *Critique of Judgment* (and the salient features of these ideas with which Hegel identifies). Through Hegel’s discussion of Kant, I will show the ways in which Welsby’s works reflect contemporary questions of nature that are based upon contexts with the Romantic period of German philosophy.

P. Adams Sitney suggests an Hegelian interpretation of Welsby’s ideas of landscape (1993, 124), based on an interview in the aforementioned *Undercut* landscape issue in which Welsby says that ‘Landscape is a subdivision of nature as a whole. The degree to which we call it landscape is the degree to which mind has had an effect on it, the degree

to which it is structured and modified by ideas and concepts.' (In Rees, O'Pray et al., 1983: 77). This can also be seen to reflect some of the questions of nature and mind posited by Kant.

In Welsby's text on *At Sea*, one finds an interesting relation between the ideas of Hegel and Kant, insofar as in Kant's work, nature is interpretable by what mind has deemed to be the limits of knowledge; that is, the *a priori* categories of the understanding. This question is interesting in Welsby's remarks, particularly as his work is suggested as a 'model' and later to be a 'metaphor' for the process of cognition, according with a kind of critical/reflexive awareness of thought and objects. Kant's question is of defining the limits of our knowledge, of the world 'in-itself'. Welsby speaks of 'bringing forth' such a world, and the relation here is one that develops in post-Kantian philosophies and aesthetics of nature.

Fig. 14. *At Sea*. Chris Welsby

Hegel writes that in Kant's philosophy there is '...the residue of a thing-in-itself, an infinite obstacle, as a beyond.' (1969, 51). He writes that 'Thought, as thought, therefore in its unmixed nature involves no limits; it is finite only when it keeps to

limited categories, which it believes to be ultimate.' (1975, 49).⁸ And that 'The real infinite far from being a mere transcendence of the finite, always involves the absorption of the finite into its fuller nature...'(1975, 73)⁹ Hegel writes in the *Logic* that 'All things are originally in-themselves, but that is not the end of the matter...the thing in general passes beyond its in-itself (the abstract reflection on self) to manifest itself further as a reflection on other things. It is in this sense that it has properties.' (1975, 181). These 'properties' create a qualitative, developmental view in the experience of an object, and this might be considered in the way that a film or video work seeks to move and shift its meanings in time, reorienting thought through material, structure and process. Hegel writes that 'Reflection is required in order to discover the real constitution of the object – and that by such reflection it will be ascertained.' (1975, 33).

With the image this in the varied perspectives from which an object is recorded, or the means by which montage brings alternative ideas. In systems and technologies time-based images are transformed through the perceptual phenomena of light. Changes brought about in camera and post-production - by multiplicities of views, layers and times in the experiments and processes of practice – brings a new conception of an object and of the temporalities between recording, editing and exhibition (of the eye, colour and the intricacies of colour and light). In regards to the 'in-itself' and his own

8. J.N. Findlay writes that 'For Hegel there can be no absolute, infinite experience which is not also, from another point of view, limited and personal, nor can the Whole appear otherwise than in the perspective of an individual consciousness, stamped with the ineffaceable mark of the Here and the Now.' (1958, 349). Filmmakers have variously reflected questions of the 'infinite'. Hollis Frampton, for instance, writes of an 'infinite cinema': 'The infinite film contains an infinity of endless passages wherein no frame resembles any other in the slightest degree, and a further infinity of passages wherein successive frames are as nearly identical as intelligence can make them.' (1983, 114).

9. In his *Logic* Hegel writes that 'The phrase *infinite thought* may excite surprise, if we adhere to the modern conception that thought is always limited. But it is, speaking rightly, the very essence of thought to be infinite...The thinking power, the 'I', is therefore infinite, because, when it thinks, it is in relation to an object which is itself...Thought, as thought, therefore in its unmixed nature involves no limits...' (1975, 49).

In the *Philosophy of Mind*, Hegel writes that 'The very fact that we know a limitation is evidence that we are beyond it, evidence of our freedom from limitation. Natural objects are finite simply because their limitation does not exist for the objects themselves, but only for us who compare them with one another. We make ourselves finite by receiving an Other into our consciousness; but in the very fact of our knowing this Other we have transcended this limitation. Only he who does not know is limited, for he does not know his limitation; whereas he who knows the limitation knows it, not as a limitation of his knowing, but as something known, as something belonging to his knowledge; only the unknown would be a limitation of knowledge, whereas the known limitation, on the contrary, is not; therefore to know one's limitation means to know of one's unlimitedness.' (Hegel, 1971: 23-24).

thought, Hegel explains further in the *Phenomenology of Spirit* that ‘experience’ is a ‘dialectical movement’.

...it is for the same consciousness to know whether its knowledge of the object corresponds to the object or not. The object, it is true, seems only to be for consciousness in the way that consciousness knows it; it seems that consciousness cannot, as it were, get behind the object as it exists for consciousness so as to examine what the object is *in itself*, and hence, too, cannot test its own knowledge by that standard. But the distinction between the *in-itself* and knowledge is already present in the very fact that consciousness knows an object at all. Something is *for it* the *in-itself* and knowledge, or the being of the object for consciousness, is, *for it*, another moment. Upon this distinction, which is present as a fact, the examination rests...this *dialectical* movement which consciousness exercises on itself and which affects both its knowledge and its object, is precisely what is called *experience*. (1977a, 54-55).

Kant’s later writings on aesthetics, beauty and the sublime are also framed within Welsby’s ideas. His comment of the ‘...‘bringing forth’ of an unknowable subject, in this case the incomprehensible vastness of the ocean....’ (2006b, 35) echoes Kant’s description of the sublime in the *Critique of Judgment*, that ‘...it is an object (of nature) *the presentation of which determines the mind to think of nature’s inability to attain to an exhibition of ideas.*’ (1987, 127). Kant remarks further that

This effort, as well as the feeling that the imagination [as it synthesizes empirical nature] is unable to attain to that idea, is itself an exhibition of the subjective purposiveness of our mind, in the use of our imagination, for the mind’s supersensible vocation. And we are compelled to subjectively *think* nature itself in its totality as the exhibition of something supersensible, without our being able to bring this exhibition about *objectively*...we are dealing only with nature as appearance... (1987, 128)¹⁰

Alongside Crary’s points – of the questions of the aesthetic and the observer after Kant – Bowie comments that the ideas of post-Kantian thought - to the kinds of questions

10. Kant also discusses the ocean: ‘...we must be able to view the ocean as poets do, merely in terms of what manifests itself to the eye –e.g., if we observe it while it is calm, as a clear mirror of water bounded only by the sky; or, if it is turbulent, as being like an abyss threatening to engulf everything – and yet find it sublime.’ (1987, 130)

raised by Welsby on knowing nature - ‘...revolves around whether there can be a reconciliation of our subjectivity with a nature which is both in us and outside us.’ (1990, 34). Hegel writes of Kant’s ‘construction of phenomena’ in his 1801 essay *The Difference Between Fichte’s and Schelling’s System of Philosophy* that

Nature can only offer variegated displays that could count as contingent schemata for laws of the understanding, exemplary by-plays whose living peculiarity would fade away precisely because only the determinations of reflection [i.e., the categorized aspects] are recognized in them. And conversely the categories are only impoverished schemata of nature.

If nature is only matter, if it is not Subject-Object, then no scientific construction of nature is possible for which knower and known are necessarily one. A Reason which has made itself into reflection by opposing itself to the object absolutely, can only proceed by deduction when it lays down more about nature a priori than its universal character as matter. (1977b, 164)

Hegel suggests that Kant remains within subjectivity, that the categories of such thought are ‘...only impoverished schemata of nature.’ (1977b, 164).¹¹ However he considers that Kant’s later work suggests the kind of ‘subject-object’ relation he expounds, discussing the ‘instructive and remarkable’ aspects of Kant’s move to ‘intuitive understanding’ in the *Critique of Judgment*. He comments in his *Aesthetics* that

...Kant did press on still further in so far as he found the required unity in what he called the *intuitive understanding*; but even here he stopped again at the opposition of the subjective to objectivity, so that while he does affirm the abstract dissolution of the opposition between concept and reality, universal and particular, understanding and sense, and therefore the Idea, he makes this dissolution and reconciliation itself into a purely *subjective* one again... (1998, 57)

11. In a research discussion at the Royal College of Art, an anachronistic, although intriguing relation to cinematic imagery emerged in connection to J.G. Fichte’s discussion of the ‘thing’ or ‘thing-in-itself’, in what he refers to in his lectures on the *Science of Knowing* from 1804 as ‘...the absolute projection of an object whose origin is inexplicable, so that between the projective act and the projected object everything is dark and bare...a *projectio per hiatum irrationale* [projection through and irrational gap]’ (2005, 119).

Hegel regards that despite Kant's developments of intuitive understanding '...he comes to a standstill in the contradiction of subjectivity and objectivity...' (1993, 63). He discusses the *Critique of Judgment* and Kant's intuitive understanding further in his *Logic* (1975, 88). Where this remains 'purely subjective' Hegel argues, is that thought can only know phenomena (appearances), whilst defining this as a limit. Thus he writes that

The things of nature are limited and are natural things only to such extent as they are not aware of their universal limit, or to such extent as their mode or quality is a limit from our point of view, and not from their own. No one knows, or even feels, that anything is a limit or defect, until he is at the same time above and beyond it. (1975, 91-92).

In Kant and Hegel's aesthetic theories, forms of artistic and natural beauty become central points of the relation to nature and to reality. It is from this history that the kinds of questions around landscape and Welsby's work - and the idea of a 'dualist' 'relation' to nature or an 'ontological shift' as he terms it - become pertinent. The ideas of disenchantment and the connections of art and science are a dialectical relation of contemporary moving image practice with these aesthetic traditions.

Welsby's film *Seven Days* (1974) is a visual and conceptual montage of nature, light, cinema, science and technology. The work has themes of Welsby's ongoing contemporary interests in film, video, computer-based works and the ecologies and aesthetics of the digital. This film sets out many of the fundamental ideas that Welsby has explored in his work; ideas of motion, time and change; of determinacies between

nature, technology and perception. The film has shifting movements between the recording equipment, the single-frame, the filmmaker, terrain and the rhythms of the Earth's rotation, interconnecting the times of celestial objects, the flow of streams, clouds and film. For the camera, Welsby used an astronomers' equatorial stand to track the movement of the earth's rotation. Over a week, a frame is recorded every ten seconds during the hours of daylight. When the sun was out the camera was turned to face its shadow on the ground, and when obscured by cloud, the camera was turned to face the sky. Welsby writes that

In my single screen films and single channel videos the mechanics of film and video interact with the landscape in such a way that elemental processes—such as changes in light, the rise and fall of the tide or changes in wind direction—are given the space and time to participate in the process of representation. (2001)

The landscape flickers in iridescent patterns, expanding and contracting the frame. With interests in cybernetics and John Cage, Welsby suggests that the film becomes '...a series of samples at different temporal scales.' (Welsby, 2012). The vortices of light and colour evoke parallels with J. M. W. Turner's landscape paintings of the 1840s that move beyond rationalised vision, in that, as Crary writes "...his painting is concerned with experience that transcends its possible representations, with the insufficiency of any object to his concept." (1990, 143). This draws the 'post-Romantic' concerns of Welsby's work into the context of Crary's *Techniques of the Observer* (and the importance of scientific, philosophical and artistic relations of the nineteenth century to contemporary questions around vision and knowledge). Denis Cosgrove's remarks that

...Turner searched for a new language and new techniques, breaking the conventions of realist art as then understood, by using multiple perspectives, dissolving outline and distance in an intensity of light and colour, bending forms into a vortex of force to capture nature's power and the immensities of space and distance...Turner always remained a realist but that this was no longer the realism of an eye as a distant, controlling observer. It was the realism of an eye that had been carried by both the body and the imagination into the actual operation of natural processes. (1998, 239).

Fig. 15. *Seven Days*. Chris Welsby

Other relations to painting appear in Welsby's work. He compares temporal themes in Claude Monet's work with videographics, suggesting that Monet's sequential *Rouen Cathedral* and *Haystack* paintings '...are more like a video image in that they are composed of brush strokes (pixels) and frames canvasses.' (2012) (Figs. 16, 17 and 18). Turner's paintings relate with Hegel's contemporary, Johann Wolfgang von Goethe and his 1810 *Zur Farbelehre (Theory of Colours)* (1970). As with Hegel's dialectical view of interconnection in nature, in Welsby's films the 'dynamic equilibrium' or 'interconnected time fields' relate with Goethe's thoughts from 1825:

In nature we never see anything isolated, but every thing in connection with something else which is before it, beside it, under it, and over it. A single object, I grant, may strike us as particularly picturesque: it is not, however, the object alone which produces this effect, but it is the connection in which we see it, with that which is beside, behind, and above it, all of which contributes to that effect.
 (1850, 266)

Sergei Eisenstein cites a section of this passage from Goethe at the beginning of his 1929 *A Dialectic Approach to Film Form*, with nature brought to questions of time, structure,

montage and process. In a manner comparable to the relations of the Hegelian dialectic to Welsby's ideas, Eisenstein writes:

The logic of organic form vs. the logic of rational form yields, in collision,
the dialectic of the art-form.

The interaction of the two produces and determines Dynamism. (Not only in the sense of a space-time continuum, but also in the field of absolute thinking. I also regard the inception of new concepts and viewpoints in the conflict between customary conception and particular representation as dynamic – as a dynamization of the inertia of perception – as a dynamization of the “traditional view” into a new one.) (1969, 45)

The echoes of Hegel's own words are here evident, as much as other filmic ideas, such as Noel Burch's theories of 'Spatial and Temporal Articulations' in montage (1973, 3-16). Burch also speaks of dialectics, citing Eisenstein's ‘...dialectical opposition between a continuity and a discontinuity.’ (1973, 71). Recall again Hegel's words that “...motion is *existent contradiction* itself.” (1969, 440).

Figs. 16, 17 & 18. *Rouen Cathedral*. Claude Monet

As works like *Seven Days* and *Time After* imply the iterative, there are other strands of ideas that link to fluidity, particularly in the representation of water. Welsby's *Stream Line* (1976) (Fig. 19) delineates a straight line across a streambed, evoking a complex relation to time and the terrain. To make the film Welsby created a rig that suspended the camera above the water. This allowed it to be tracked in a straight line across a ten yard steel cable on a motorised carriage at a controlled speed (Welsby, 2006c, 8). The stream is closely framed, three feet above the water, in an eight-minute continuous recording. Welsby writes that

I think of the straight line formed by the tracking device as a metaphor for technology. However, the straight line does not dominate the landscape like a highway or a row of buildings; in this model the straight line is used as a means to articulate the complexity of nature. The tracking device is invisible to the viewer, but if one were to take the spool of film and roll it out on the floor one would see a surface of celluloid running parallel to the water surface, a second straight line complete with rocks and rushing water. When the film is projected the viewer becomes aware of this line through the passing of time; in *Stream Line* space is represented through duration. (2015b)

Fig. 19. *Stream Line*. Chris Welsby

That ‘space is represented through duration’ evokes Bergson, as well as Hegel’s ideas, drawing theories of time, experience and nature into connections. At first seemingly simpler than *Seven Days* in its process, *Stream Line* evokes other intriguing questions on the nature of temporality, fixity and flux in the moving image. In the film water is flowing down stream, from the top towards the bottom of the frame. The camera on the other hand moves in the opposite direction, upwards, against the flow of water. The motion of film frames, like the water, moves downwards as the filmstrip is pulled through the projection mechanism, and in this sense moves against the flow of the image, as well as the stream. The filmstrip fragments space and time to reform a continuum; the divisibility of the recording operation – intermittent images punctuated by the shutter and frame line –reconstituted as flow and apparent motion.

Fig. 20. *Sky Light*. Chris Welsby

Forty-eight hours after the announcement of the Chernobyl nuclear accident Welsby made film recordings of clouds for his *Sky Light* (1988) (Figs. 20 and 21). The film begins with a series of shots of the sky, reflected in pools and rivulets of water, which are variously superimposed, occasionally flickering with reflections of sunlight. Flares of light simmer at the edges of the frame, and then form hazes of orange and red. On the soundtrack, running streams of water are subtly layered with the crackles of a Geiger counter and then the fuzzy sound of indistinct radio voices from short-wave frequency static.

Fig. 21. *Sky Light*. Chris Welsby

This calm scene, in which the outlines of trees ripple gently with the sky on the surface of a river, begins to change, and the following sequences of shots juxtapose bursts of clouds with increasingly quick flashes of white light and orange flare. The subsequent extended section of the film moves to a barren, icy landscape where wide shots pan slowly in indiscernible relations between sky and ground. The film then moves towards a sequence of hand-held shots over rock faces protruding from snow. The stones takes on anthropomorphic qualities, with the Geiger and short-wave sounds seeming to emit from them like utterances in a technological language, evoking the ‘syntactic devices’ that Welsby speaks of.

Another sequence of flickering images follows this part of *Sky Light* and at the end of the film, as the image breaks down to an abstract whiteness, the light flickers with the buzz of the Geiger sounds and the background radiation echoing in the radio interference as they reach a crescendo. The film ends with whiteness in both image and sound (the camera casing was deliberately opened to fog the film).

Fig. 22. *Black Ice*. Stan Brakhage

Welsby has made some of his recent work in Canada. The North American and European philosophical histories of the nineteenth century converge in artists' films in other ways. In writings on American filmmakers and Ralph Waldo Emerson, P. Adams Sitney writes that for some visual artists "... the primacy of vision always contains a dialectical moment in which visibility is effaced by whiteness." (2008, 8). Here Sitney cites Emerson's *Nature* from 1836: that "The ruin or the blank that we see when we look at nature, is in our own eye." (2008, 8).¹² Other North American filmmakers interconnect these questions, with, for example, many of Stan Brakhage's works, such as the hand-painted *Black Ice* (1994) (Fig. 22), evoking abstract landscapes, darkness, light and vision with emerging forms of colour in motion.

12. See Emerson (1983, 47). This is somewhat reminiscent of Hegel's *Philosophy of Nature* too: 'If we see in pure light, we are a pure act of seeing; we do not as yet see anything...It is only after light has distinguished itself as light, as against darkness, that it manifests itself as light.' (1970, 89).

Fig. 23. *Central Region*, Michael Snow

Light, darkness and the aesthetic reflect into theories of knowledge. Goethe writes that ‘In darkness we can, by an effort of imagination, call up the brightest images...’ (1970, liii) and Hegel again that ‘...Pure light and pure darkness are two voids which are the same thing’ (1969, 93). This also comes into other connections with more recent German philosophical and aesthetic thought. Miriam Hansen discusses links between the ‘structural’ film of the 1970s, nature and figures such as Benjamin, Adorno, and Siegfried Kracauer. Adorno writes in *Aesthetic Theory* that ‘Art holds true to appearing nature only where it makes landscape present in the expression of its own negativity...’ (1997, 67-68). In the relation to nature Hansen suggests that films by Michael Snow, such as the 1971 *La Région Centrale* [Central Region], ‘...evoke a sense of dissonance even if and where they show a seemingly idyllic nature’. In this sense, the means by which this film moves towards nature, Hansen writes ‘...leads *through* technology, aesthetically instantiated by cinematic technique.’ (2011, 231) (Fig. 24).

Shot in the mountains of the Canadian wilderness using a specially designed apparatus, a camera pans and turns through multiple permutations on an axis, meditating on the terrain in a synergy that Stephen Heath described as ‘...landscape as movement, movement as landscape...’ (1981, 58). The film apparatus writes through its geometries as it simultaneously describes and inscribes the space of the landscape into the film plane. The wilderness of the mountains becomes ponderous, whilst the movements of the apparatus give the landscape a sense of emptiness.

Fig. 24. *Central Region*, Michael Snow

It is in continued relations to such questions of light that Welsby's latest video work-in-progress *Failing Light* continues his considerations of landscape. Reflecting back on *Sky Light*, Welsby cites his context for this video following the 2011 Fukushima nuclear accident in Japan. A single-take, fixed camera shot faces out to sea. Fog condenses the image and silky ripples of water hover across the surface. The image on the video is ghostly, the sound richly complex. Foghorns bellow protracted, bassy notes, echoing out of the distance from passing ships, winds whirl in the background, and a bell clangs amidst the occasional chatter of birds. The sound and image envelop and immerse, as they also strike a feeling of distance. There is a starkness to the image and sound and it appears at times as if the fog starts to lift, revealing the horizon, before again disappearing. Looking into this space, a subtle play of light and darkness emerges. In this instance, in the relations of technology and nature, new ways of seeing begin to appear where landscape and the image are transient.

4. Movement and Concepts

...if we are to have genuine cognition, the object must characterize its own self and not derive its predicates from without.¹

...quality is implicitly quantity, and conversely quantity is implicitly quality.²

Hegel writes at the end of the *Science of Logic*, that ‘...what is to be considered here as method is only the movement of the *Notion* [Concept] itself...’ (1969, 826). Thought is and develops out of the motion of concepts.³ This is an idea that I have developed in my foregoing discussions of films and videos, and various considerations of processes and systems. In this chapter, I will continue these themes, mainly in relation to three ‘structural’ landscape films by Kurt Kren, referencing a number of other film/video makers and moving image histories in their contexts to nature.⁴

The first of Kren’s films I will discuss is *3/60 Bäume im Herbst* (*Trees in Autumn*, 1960) remarkable for its subtle complexity. Over the course of the film a series of shots of trees are juxtaposed in a rapid succession of movements. Drawn against the sky, there is melancholy in the branches. Made bare by the autumn winds, they create a latticework that constantly shifts within the frame (Fig. 25). In the movements of the image of a tree, the ‘here’ and ‘now’ are displaced in the variability of natural phenomena. These

1. Hegel, *Logic*, p. 50

2. Hegel, *Logic*, p. 161

3. Adorno comments that ‘If anywhere, then it is in aesthetics that Hegel’s formulation of the movement of the concept has its locus. The reciprocal relation of the universal and the particular, which takes place unconsciously in artworks and which aesthetics must bring to consciousness, is what truly necessitates a dialectical approach.’ (1970, 181).

4. Sections of this chapter will be published in different versions as essays in the book *The Films of Kurt Kren: Structure and Experiment in Austrian Avant-garde Film*. © Intellect. 2015. (Polmeir, 2015c; 2015d; 2015e).

elements echo Hegel's preliminary considerations of 'sense-certainty' and immediacy in the *Phenomenology of Spirit*.

The recurrence and focus of *Trees in Autumn* echoes Hegel's description of consciousness, towards '...the immanent content of the thing...immersed in the material, and advancing with its movement...' (1977a, 32) Adorno's remark from a 1962/3 essay that '...Hegel's publications are more like films of thought than texts.' (1993, 121) is contemporaneous with Kren's structural films of this period. Kren's film is not a representation of consciousness, but the images and processes in it are a catalyst to self-reflection, in the Hegelian sense that '...consciousness is, on the one hand, consciousness of the object, and on the other, consciousness of itself...' (1977a, 54). This corresponds in the film to the relationships between material nature, recording, representation, projection and experience. The systems of images draw nature into the forms and rhythms of film, bringing about a dialectical movement between seeing and thinking the image-in-time.

Fig. 25. *Trees in Autumn*. Kurt Kren

The film brings attention to the relation between image and referent: of what is seen ‘now’ in ‘this’ image ‘here’. These ideas are brought into the connections of nature, space and time, and the means of defining the particularity of ‘a’ tree, despite the film’s intense focus. Such problems do not refute the existence of trees (or general claims to meaning) but show particularity in difference, moving between the perceptual ambiguities of ‘this’ tree ‘here’ and ‘now’. This seems particularly evident in a film that moves indistinguishably through rapid juxtapositions of the same and/or different trees. Hegel writes of ‘sense-certainty’ in the *Phenomenology of Spirit* that:

The ‘Now’, and pointing out the ‘Now’, are thus so constituted that neither the one nor the other is something immediate and simple, but a movement which contains various moments... The *Here pointed out*, to which I hold fast, is similarly a *this Here* which, in fact, is *not this Here*, but a Before and Behind, an Above and Below, a Right and Left. The Above is itself similarly this manifold otherness of above, below, etc. The *Here*, which was supposed to have been pointed out, vanishes in other *Heres*, but these likewise vanish. What is pointed out, held fast, and abides, is a *negative This*, which *is negative* only when the *Heres* are taken as they should be, but, in being so taken, they supersede themselves; what abides is a simple complex of many *Heres*. The *Here* that is *meant* would be the point; but it *is not*: on the contrary, when it is pointed out as something that *is*, the pointing-out shows itself to be not an immediate knowing [of the point], but a movement from the *Here* that is *meant* through many *Heres* into the universal *Here* which is a simple plurality of *Heres*, just as the day is a simple plurality of *Nows*. (1977a, 63-64)

The images in *Trees in Autumn* seem to echo these words, in displacements and shifts, reflecting how objects relate with what is excluded in representing them: in this case how a single tree is relative to multiple others; of how ‘here’ and ‘now’ become a moment past. This is mirrored rhythmically in the appearance of moving trees that are also in stasis, as single frames flittering through the shutter - foregrounding the movement and stillness of all film projections. The trees dance in the frame through a rapid montage. Motion shifts between photograms, between shots and between the branch edges stencilled by the frame’s 1.37:1 ratio as the camera moves. At moments the film is fluid. Hand-held camera movements and framing are in constant interplay. It is

unclear whether the rapid sequence of shots is made of repetitions or variations, and this remains largely indeterminate in the serialisations that carry the work forwards.

The film's shots are isomorphic with the mechanical rhythm of the projector gate, but it is as if frames occasionally jam and judder. This adds to something like a slippage between shots, at times appearing systematic, at others arbitrary. Sometimes this is a smooth transition as the free forms of branches complement each other figuratively. At other times the image jolts as the juxtapositions clash. In working through questions of nature and structure, Kren's film echoes ideas of motion and becoming discussed in Chapter 2, and again Hegel's comments in the *Science of Logic* that 'Something moves, not because at one moment it is here and at another there, but because at one and the same moment it is here and not here, because in this 'here', it at once is and is not ... motion is *existent* contradiction itself.' (1969, 440)

Trees in Autumn seems to echo in this 'at once is and is not'. That is, of the contradictions of motion referenced both by the interval and simultaneity, and of stasis and flow. In this way Kren's film also develops around intervals such as the shifts between stuttered images, the similarities/dissimilarities between trees and shape, and the spatial and temporal breaks. Hegel writes that 'It is quite correct to say that we can go beyond every *definite* space and beyond every *definite* time: but it is no less correct that space and time are real and actual only when they are defined or specialized into 'here' and 'now'...' (1975, 79)

There is music to the movements of branches. Working in Vienna, Kren's films and system-based approach, as well as that of his contemporary Peter Kubelka – with the film *Arnulf Rainer* (1960) (Fig. 26) - have drawn various comparisons to the serial systems of the Second Viennese School of composers Arnold Schoenberg, Alban Berg and Anton Webern. Although Kren had a diagrammatic plan for *Trees in Autumn*, which has something of a metric structure, the movement of branches seems irregular and causes counter-rhythms.

Fig. 26. Arnulf Rainer. Peter Kubelka

The graphic scores for some of Kren's films resemble musical notation and the numbered composition, like Kubelka's, resemble elements of serialism. This seemingly rigid and measured process embraces the technical logic of the apparatus, but what emerges is far from definite or calculated. The formal composition is exceeded in its visualisation, and the contingencies create variable experiences in multiple viewings. In Hegel's terms of 'measure' and 'alteration' - with musical notes given as an example in the *Logic* – such an event in *Trees in Autumn* might be termed the movement of quantity into quality, and vice versa (1975, 160).⁵ Hegel comments on the musical scale in the *Science of Logic*, speaking of *per saltum*, or 'at a leap' and of 'sudden interruption' which intimates the intervals and breaks in the image; between recording and referent - the ideal and the real – and gives further expression to the musicality of the work.

In the musical scale which is built up on quantitative differences, a quantum gives rise to an harmonious relation without its own relation to those on either side of it in the scale differing from the relation between these again and their predecessors and successors. While successive notes seem to be at an ever-increasing distance from the keynote, or numbers in succeeding each other arithmetically seem only to become other numbers, the fact is that there suddenly emerges a *return*, a

5. 'Quantity...is naturally and necessarily a tendency to exceed itself...This process of measure, which appears alternately as a mere change in quantity, and then as a sudden revulsion of quantity into quality, may be envisaged under the figure of a nodal (knotted) line. Such lines we find in Nature under a variety of forms...the difference of musical notes may be regarded as an example of what takes place in the process of measure - the revulsion from what is at first merely quantitative into qualitative alteration.' (Hegel, 1975: 160)

surprising accord, of which no hint was given by the quality of what immediately preceded it, but which appears as an *actio in distans*, as a connection with something far removed. There is a sudden interruption of the succession of merely indifferent relations which do not alter the preceding specific reality or do not even form any such, and although the succession is continued quantitatively in the same manner, a specific relation breaks in *per saltum*. (Hegel, 1969: 368-369)

The framing ranges from wide-shot to close-up, and the movements along branches by the camera wander towards the frame's edge, towards off-screen space, the shadows and light extended beyond the edges of the projection in the room. These images have a musicality that could be said to shift pictorially in harmonies and disharmonies. The sequence of shots and frames move in a binding flow, but the quick movements continually appear to break. The film moves across these fissures, shifting the tree from the image. This is a continuation of the graphic planning, of the musicality and fluidity that moves between the numbers and grids, of the dialectic of stillness and movement in cinema.

As film progresses through the projector mechanism, an optical track, a few millimetres wide and running alongside the images, has a variable area of transparency that would ordinarily change in width according to the frequency and volume of the sound. Light from an exciter lamp, shining through this transparent area, is picked up by a sensor and sent as a variable voltage to an amplifier. In *Trees in Autumn* a drawn line, rather than an audio waveform, creates the soundtrack (Fig. 25). Pops, crackles and other sounds become associated with the occasional flickering film grain and the movements of trees, creating tangible relations between the pro-filmic and projection events.

The film's recording process is also like an inscription, but with light, appearing at times like a scribbling, jittering motion. The single-frame patterns of recording sometimes imply a continuous short burst of recording with a juddered hand/arm movement. In this way, and with those aspects discussed above, Kren sets into play a subtle layer of material connections in this film; the apparent repetitions become something more. No one place, no one tree or landscape seems to be defined, but is instead left open; thus, in the initial considerations of sense and space, as Hegel wrote, '...we see that the Now is

just this: to be no more just when it is.' (1977a, 63). In Kren's film, this is not an endless relativity, but a way to the particularity of things through their juxtapositions and contexts.

These themes are developed in another later work on trees. *37/78 Tree Again* from 1978 was the first film that Kurt Kren made in the U.S.A. (Fig. 27). Filmed in Vermont, it was produced with out-of-date infrared film and features a series of shots of a tree and the surrounding fields, at different times, over a period of fifty days. Alongside Kren's *Tree Again*, the films of Rose Lowder and Chris Welsby, and the videos of Steina Vasulka are comparable for movements between intention and contingency; planned decisions in framing or structure, alongside unpredictable natural phenomena; and means by which landscape, technology, artist and nature interconnect to form a unique investigation of place.

What unfolds on screen in *Tree Again* is a palimpsest of colour and forms. Filmed in a field, a lone tree stands the height of the frame. Behind it a clump of trees disappear in a curve, left of frame, and on the right, an open expanse of field with trees in the background. Whilst the film is shot over fifty days, Kren assumes roughly the same filming position for each sequence. In this way, the single-frame recordings generate a stuttering, flickering time-lapse, with constant misalignments and re-framings shifting the position of the tree and horizon line. The result is a sensuous and impressionistic dance of the changing density of leaves, light on the trees and shifting bursts of colour (gold, red, blue, green, flashes of white).

Fig. 27. *Tree Again*. Kurt Kren

Cinematographic technologies are mostly manufactured for particular consistencies in factors such as colour value and contrast ratio and ‘accurate’ visual reproduction. A conventional filmstrip is layered with different emulsions with sensitivity to different wavelengths of light (blue, green, red), which in printing approximate a realistic colour image (infrared film, discussed below, is more or less monochromatic, i.e. sensitive to only a narrow part of the colour spectrum). The slippages and inaccuracies of colour and motion in *Tree Again* emphasise this as a painterly quality, as if daubs of colour have been blotted into the tree’s foliage. The film sometimes appears to be like a painting in motion, as if paths suggested by brushstrokes move a distance beyond the frame.

Alongside the differing illumination of the tree and the sometimes bleached-out sky, the balance of colours sometimes offsets the depth between foreground and background. Towards the last ten seconds, the time-lapse changes into a ‘real-time’ recording. Whilst the film image creates a semblance of the world, it also reflects reality, and retains an indexical trace of its referent. *Tree Again* explores the idea of trace, as the complex collage of the tree comes together through natural phenomena.

Unlike *Trees in Autumn* where the branches of the trees appear in proximity to the frame, frequently breaking from its constraint, there is a sense of distance in *Tree Again*.

Things are further away, in perspectival depth; grazing animals moving around seem small as they scatter about in fragmented animation, and the clouds roll across the sky.

In *Tree Again* Kren makes distance a form of immersion. Whilst taken from a fixed point-of-view, the trees and broader landscape are not beheld from outside; distance does not objectify as the image is constantly fluctuating on the film surface. The surface becomes a question of the depths of the image, that is, of the complexities such investigations imply; that times and spaces distant - indeed never there as such - are brought to reflection.

What appears as a whole image is constituted through its parts – multiple layers and colours in time - and it constantly seems to disintegrate as light shifts rapidly. There seems to be no predetermined vision, and no specified outcome that would accord with an intention, especially with the uncertainty of using an out-of-date infrared film stock and its technical characteristics. This emphasises a question of the image and of vision: infrared light has a wavelength of 800 nanometres to 1 millimetre, extending beyond the visible electromagnetic spectrum of human visual perception (of 400 to 700 nanometres). The image that results in *Tree Again* is a spectral landscape, bringing forward something absent from below the surface. Absence is always present in cinema, but its presence is mostly obscured.

Film and video have their own technical evolution, where plant-based cellulose becomes the celluloid filmstrip, sedimented organisms (oil) become plastics, aluminium becomes camera bodies, and silica becomes lenses. In videographic technologies there are Organic Light-Emitting Diodes (OLED) and silicon becomes microchips. The image of nature becomes familiar (naturalised as such), and further mediated within technological reproduction, sedimented into the apparatus and its histories. Through images, the ‘idea’ of nature becomes divided and re-animated into new sequences. *Tree Again* explores this as figure and ground, engaging the technology, and the questions of compatibility and difference between the two-dimensional semblance of reality on-screen. In *Tree Again* the image approaches a burst of abstraction, the flurries of colour and flitters of light present a landscape always on the brink of vanishing. What is

perceived on one hand as a whole image is constantly restructuring. This fluctuation of the image means nature appears as becoming something other in the film.

Fig. 28. *Recurrence*. Rose Lowder

Kren's landscape works are comparable to number of other filmmakers' in Europe and North America, who were also using structural and systematic approaches around this time. The filmmaker Rose Lowder developed what Scott MacDonald calls an 'Ecological Cinema' (2001, 82-87). Films such as *Retour d'un Repère* (*Recurrence*, 1979) (Fig. 28) or *Champ Provençal* (*Provençal Field*, 1979) feature meticulous investigations of landscape, with sequences of images in varying focal lengths, framing and rapid in-camera montage. In *Recurrence*, shots of a tree from the window of Lowder's Paris apartment become reflective permutations of foliage. She comments that '...you're filming a tree that's moving around; it's never in the same position when you come back to it. The structure is repetitive, but it reveals a developing reality.' (In MacDonald, 1997). This 'developing reality' parallels Kren's film. It too is a morphing tree, which at once is always 'that tree there' but also fluctuating and never really there. This also echoes some of the Hegelian themes discussed.

Fig. 29. *Selected Treecuts*. Steina Vasulka

The systematic approaches often employed by Kren also emerge alongside the operations of computers and pixels. Contemporaneously in the U.S.A. Steina Vasulka was looking at natural forms and the structures of the electronic video image. In *Selected Treecuts* (1980) (Fig. 29) ‘The contrast between the “real” camera images of trees and the frozen, digital computer images forms an essay in motion and stillness, the organic and the synthetic, tracing a trajectory from the photographic to the electronic.’ (Vasulka, 1980). In an interview with Steina Vasulka, Yvonne Spielmann comments that

...in your work there is a particular stress on movement in nature, movement of the wind, the water, and so on. It looks like the landscape in some regards performs the motion that you are interested in exploring in electronic arts. And when we look at how landscape is dealt with in the history of media, we find that to a great degree landscape/nature is conceived as still image; this is not only in painting and photography but, surprisingly, the depiction of natural movement in film for the most part employs immobile camera. So differently from these practices, you seem to be more interested in dealing directly with the motion and mobility that you find in nature? (Spielmann, 2007a: 515)

This ‘motion and mobility’ echoes Hegel and the ‘...changeable and transient...dynamic that lies at the root of every natural process, and, as it were, forces

nature out of itself.' (1975, 118). Welsby's system-based approach to landscape films in the 1970s, discussed earlier, drew influences from painting and the logic of sampling emergent in computer technology, and is also comparable here. Recall 16mm film works such as *Seven Days* (1974), *Cloud Fragments* (1978) and *Sea/Shore* (1979), where '...the mechanics of film and video interact with the landscape in such a way that elemental processes - such as changes in light, the rise and fall of the tide or changes in wind direction - are given the space and time to participate in the process of representation.' (Welsby, 2001). In another 'tree' work, Welsby's *Tree Studies* (2006) uses single-frame recording methods employed from earlier films evolve into a dialogue with computer code, using live data from weather systems to control the playback of digitised footage of a tree from three perspectives. As *Tree Studies* works through a technologically mediated reflection on nature for the 21st century, so *Tree Again* envisages these questions for its time.

Welsby has said that his films are explorations of transient nature, and of the complex interactions of natural phenomena. In this sense too, *Tree Again* traces everyday, fleeting moments. The combination of systems, images and colour, evoke a sensation of nature within the form and content of the film that is experienced as presentation, rather than represented, so to speak. It is variously ephemeral and on the verge of nothing; intersecting clouds, wind, light and leaves in an expression that works on its fundamental instability, a sensuousness realised only through the idea that when the film comes back from the lab it may just be blank. That may well have been the case given the out-dated stock Kren used. Reflecting on the film himself, Kren said, 'I spent 50 days shooting this film, without any hope of anything at all being on the film. And I thought, I'm totally crazy. That's the way it is with all the films I've made – the adventure that I'm never completely sure what the end result will be.' (In Burger-Utzer and Schwärzler, 2004: 16).

This contingency extends into another of Kren's films, *31/75 Asyl (Asylum)* (Fig. 30). This film reflects the sense that the frame's wholeness is always unstable. Light moves into darkness, missing the expectant latent photosensitivity of silver halide crystals that might embalm time, as André Bazin wrote.⁶ When each frame is pulled through the camera mechanism, the shutter also draws another void - the frame line - between each photograph. It is within the intervals of these processes that I will discuss *Asylum*, a film that reflects on the ephemeral transitions of landscape and the material surface of the filmstrip. *Asylum* comprises three rolls of film, each rewound and re-used, but with different areas of the frame exposed each time. This is achieved by placing interchangeable pieces of cardboard in front of the lens, each with different apertures cut out as image-masks, so as to allow light through only to selected parts of the film surface. Kren describes the process of making the work, which was recorded from a window with a view onto a rural landscape.

The film was shot in 21 days. The film stock went through the camera once each day. There was a black mask with five holes in front of the camera, and the light shone through them and exposed the film. The holes changed every day. All the holes together would release the entire image after 21 days. (In Burger-Utzer and Schwärzler, 2004: 14).

The different arrangements of openings in different masks create areas of multiple exposures with blurs and overlap. The different times that footage is filmed, and the adjustment of exposure levels, create a collage of landscape scenes with differences in light, the motions of trees and the appearance of fields and snow-covered ground. The changing space of the landscape is re-presented constantly throughout the film. Different combinations of masks mean that at times only a couple of areas appear. In other moments of the film as many as a dozen are visible, whilst at others the entire frame is revealed, with several areas overlapping to create a seemingly total image.

On one level, the selections and contingencies that Kren introduces – framing, masking, the time of day - are echoes of the micro-operations in the filmstrip. A detailed close-up

6. '...photography does not create eternity, as art does, it embalms time...' (Bazin, 1960: 8).

of film's surface recalls a constructivist painting or early abstract film: the substrata of intervals suggested in an electron micrograph image of the silver halide crystals in film emulsion (Fig. 31). Compositions of polygons - cluttered, neighbouring, sometimes overlapping – appear as hovering forms in space, darkness enveloping their edges. Zoom out and the darkness vanishes. In this sense, the appearance of the image in this film is a void made present. Just as the light entering the many apertures of the cardboard mask hits only selected areas of the frame, the density and dispersion of crystals in film emulsion has a selective response to photons. A latent image is formed on film as photons are absorbed in multiple levels of silver halide crystals for colour and latitude. Even the most apparently simple film image is a complex of layers.

Asylum suggests a relationship between silver halide crystals and the pixels of digital media. The film's grid systems place it at a key historical juncture with relations to windows, multiple frames and spaces, and the proliferation of the pixel and raster grid. In 1975, the year Kren made the film, engineers Gareth Lloyd and Steven Sasson at the Eastman Kodak Company developed the first digital camera using a charge-coupled device sensor (CCD). The first image recorded by the new camera was 10,000 pixels in resolution. Like film emulsion's selective layers, the pixel and compression algorithms approximate too, reducing visual phenomena to an averaged value, leaving intervals in the neighbouring blocks of colour.

Fig. 30. *Asylum*, Kurt Kren

The grid in *Asylum* is suggested in a number of relations, including the window through which it was shot, the film frame and the graphic score used to compose the montage of shots. As with several of his ‘structural’ films, Kren devised diagrams to realise the work using a plan of sequences worked out on paper. These processes shift between the ordered space of the grid and a fluidity of movements and natural forms. The film has a kind of matrix structure, with the framing giving orderliness, but this is continually blurred and reshaped by the different exposures, flitters of light and distortions created by the masks. In this sense, the film is something of a ‘virtual window’ intersecting frames across time (from the perspectival image of historical landscape painting to the multiple spaces of the Graphic User Interface) (Friedberg, 2006).

Comparison with the interface of a contemporary computer-based video-editing programme, such as Final Cut Pro or Adobe Premiere Pro, shows a similarity between Kren’s plans and the layering and compositing of digital media files such as QuickTime movies or JPEGs on a ‘timeline’ (Figs. 32 and 33). In this type of software, the user/editor works within the ‘non-linear’ structure, adjoining, overlapping, cutting and layering. Like the ‘database imagination’ (Manovich, 2001: 239) of Dziga Vertov’s *Man with a Movie Camera* (1929), Kren’s diagram and process - in which the layered bars in different colours appear to represent the ordering of shot sequences – approaches the working through of database possibilities. Here again the contingencies of the film recording itself are contrasted with the rigidity of the rectangular blocks. The play between order and disorder is played out into the mutability of the image. Other diagrams show Kren’s detailed method; the symbols like a form of code that write the complex structures of fixity and fluidity that permeates the films.

The idea of landscape develops both through nature, and the nature of representation in this film. In this sense, the film is not only about technology per se, but also about the idea of film as an apparatus; the way in which image technologies shape the relation to nature, and in turn are shaped by those conditions. Whilst Kren invents a procedure specific to film, the work directly anticipates the different procedures of digital media. Embracing structure and system, and the photographic capabilities of film, nature appears as an image developing in time.

Fig. 31. Electron micrograph of tabular grain emulsion. Kodak

The motion of photographs or the progression of pixels is always holding on to the present (a present also in a paradoxical relationship with its claim to something past). In *Asylum* space, time and movement interconnect as days and times overflow into one another. Here it is about the material of light as much as the filmstrip. By making visible the selective operations of framing and exposure, the conditions of the image are examined in detail and indeterminately. The location in *Asylum*, the landscape *there* in the image is questioned, synthesised and reshaped. The underlying structures of crystal or pixel that constitute the film or video image emphasise its condition and appearance. Flickering to the surface, the layering of silver halide crystals echo the pixels of the raster display, a digital landscape to be traversed, where the containment of the grid might break open.

Fig. 32. *Asylum* diagram. Kurt Kren

Fig. 33. *Asylum* diagram. Kurt Kren

The grid has a diverse history. As one of the defining structures of industrialisation, it is embedded in modernity. It structures, frames and shapes the matrices of screens and digital camera technologies. It has been claimed variously both for and against nature. Mondrian wrote that ‘...if we wish to reflect nature fully we are compelled to find another plastic. Precisely for the sake of nature, of reality, we avoid its natural appearance.’ (1919, 122).

The multi-levelled constructions of *Asylum*, the temporal and spatial possibilities engaged through its production and planning, the relations of the database, pixels, grids and windows in the emulsion, place the work within the nascent computer-age and contemporary systems. New computer interfaces and software open multiple spaces and windows within the frame. Sean Cubitt writes that

Cinema starts out as a raster display, but rather than a spatial map like the bit map of computer images, it is a map of time. The frameline separating frame from frame distinguishes between past and future, negative and positive time, so that the frame itself, the present, appears as their pure difference, the moment of cinematic motion...the cinematic present, the frames we see on the screen rather than the separating framelines that stay invisible, can be considered as pixels, with the significant difference that these pixels are temporal, not spatial. (2005, 32-33)

Compositing and editing operations brought about by computers enable modes of ‘spatial’ montage, beyond the largely temporal concerns of cinema hitherto. Here space and time in montage both have crucial importance, as Lev Manovich (2001), who first developed many of these ideas, suggests. Like Zbigniew Rybczynski’s *Tango* (1982), an example Manovich cites, *Asylum* might be seen as another kind of proto-compositing experimental film in which spatial montage operations are explored in relation to layers, pixels and windows. As Birgit Hein comments on the film, ‘The exchange of the masks does create movement, but not as a course of time towards a goal.’ (1977). Thus, the film can be regarded as having a progression – in that the darkness ‘moves’ to more complex areas of multiple exposure - whilst contrarily lacking a definite momentum.

The sequences are time-based, but in the manner of their layering and non-linearity, are directed away from a definite temporal structure or direction.

Asylum brings into relation a number of planar levels: apertures within apertures, windows within windows, frames within frames. With a camera mounted on a tripod facing out of a window, Kren first of all frames the landscape outside, the fenestration of the architecture providing an opening into the room, like the dark chamber of the camera obscura. Passing through this glass plane, the apertures cut into the cardboard masks filter the incoming rays further, allowing shards of light to proceed to the camera's aperture, opened accordingly to an f-stop, and then through to the filmstrip and its layers. *Asylum* invites a sensuous re-examination of what it means to frame landscape, to reflect on the imaginative possibilities and spaces of cinema and the art of light. But just as light both moves towards and spills out of the screen - is projective and reflective - so the territories delimited in the image have shifted in digital media (in networks, databases, pixels) and in the emissions of the monitor display (electrons flowing from the cathode-ray tube, charged ionized gases in plasma, or electroluminescence in light emitting diodes). *Asylum* intersects these histories with its myriad levels – frames, windows, apertures, crystals and pixels.

In another intriguing relation between the grid and its breakdown in *Asylum*, light enters through several rectilinear openings - the window, the small rectangular holes in the mask - but in its journey between mask, glass lens, the cylindrical lens chamber and film plane, the final shape embedded within the emulsion takes on a more fluid form. Through the rectangular mask shape, the light has expanded and lost its shape and focus. Towards the end of the film, as the edges fluctuate between the different pinhole exposures, the image completes. The entire landscape is seen as 'whole'. But as a reminder of the instability of this image, darkness envelopes again. At the very end of the film, one final burst of orange light flares out across the frame. This draws the image back to the light. The photons emerging from the screen meet the beam that shines towards it from the projector in momentary equilibrium.

5. Sequences and Variations, Processes and Intervals

...quantity is a concrete unity only in so far as it is the unity of distinct moments.¹

In the foregoing chapters I discussed the contexts and histories that have informed my interests, and out of which some of my own works can be seen to develop. I have interwoven practical and theoretical contexts, where theory brings insights to practice, and practice reflections on theory. In this chapter I bring some of these points to convergence. The philosophical interests developed out of Hegel's work, and the broader German philosophical tradition, has shown itself to be not merely analogous and anachronistic, but to have intrinsic links to aesthetic concerns in the relations of art and science, and the potential to illuminate ideas of nature, knowledge and experience in the time-based image.

Many of the works that I have discussed so far have embodied conceptions of nature in their materials and processes. This is either directly – as in the relations between Kant, nature and aesthetics cited by Welsby – or indirectly in the kind of autonomy of process and systems that intersect historical energies in the works of others such as Kren. In what follows I discuss, in chronological order, works that I have made during the four-year duration of this research. I will make some reference back to the practitioners already discussed – where their works overlap with mine – and also introduce a number of other contexts as I have with the relations of programming, computing, painting and music with those already discussed. I draw historical comparisons to explore continuities and shared interests in certain processes. The influences extend beyond those cited here, so my selections bring some other perspectives to the processes of the work.

1. Hegel, *Science of Logic*, 199

The themes I have discussed are layered into the kinds of work I have made and are lenses through which the perspectives and processes developed can be seen; thus the ideas of ‘sense-certainty’ and the ‘here’ and ‘now’ from the *Phenomenology of Spirit*, or of ‘sublation’, ‘moments’ and ‘becoming’, or motion and contradiction in the *Science of Logic*. The ideas of subject/object and human/nature that I have elaborated inform the ways in which the processes of recording, editing and projection of these works has dynamically intersected questions of vision, knowledge and experience. In this regard it is these questions of how the material brings concepts to the matter of the work’s form that become important. Thus, Hegel’s *Aesthetics*:

...the sensuous aspect of a work of art, in comparison with the immediate existence of things in nature, is elevated to a pure appearance, and the work of art stands in the *middle* between immediate sensuousness and ideal thought. It is *not yet* pure thought, but, despite its sensuousness, is *no longer* a purely material existent either, like stones, plants and organic life; on the contrary, the sensuous in the work of art is itself something ideal, but which, not being ideal as thought is ideal, is still at the same time there externally as a thing. (1998, 38)

Hegel’s philosophy is a process, such that where it ‘...exhibits itself as a *circle* returning upon itself, the end being wound back into the beginning...’ (1969, 842) one can draw comparisons to the realisation of ideas, of the work of art and its temporal structures, and of processes of research.²

There is a sense that the works I have discussed by many film and videomakers work through themselves, insofar as elements of montage bring spatio-temporal organisation into convergences with nature and sensuous experience. This has similarly been an aim of aspects of my video works. I have explored palindromic structures with videos playing forwards, backwards and ‘through’ themselves. This apparent finitude creates a varied

2. In the *Science of Logic*: ...each step of the *advance* in the process of further determination, while getting further away from the indeterminate beginning is also *getting back nearer* to it, and that therefore, what at first sight may appear to be different, the retrogressive grounding of the beginning, and the *progressive further determining* of it, coincide and are the same. (1969, 841). In the *Logic* Hegel writes that ‘...philosophy exhibits the appearance of a circle which closes with itself, and has no beginning...’ (1975, 23), and in the *Lectures on Fine Art*, ‘...each single part is on the one hand a circle returning into itself, while on the other hand it has at the same time a necessary connection with other parts.’ (1998, 24).

outcome. Complexity arises out of diversity within the work's internal relations and repetitions. There are differences of the same *moments*; moments that are quantitatively identical but made non-identical in time through their qualitative variability. This draws upon the immanent sense of change and movement. To recall Hegel's *Logic* that '...mutability lies in the notion of existence, and change is only the manifestation of what it implicitly is. (1975, 137).

My work has reflected on certain properties of 'moving' images, considering how the idea of landscape appears within videographic technology and projection. As the broader research has defined, these works explore the relationship between time, colour and light and to this extent I am interested in working within the intervals of technological processes, where something more emerges in the image of natural phenomena than is figuratively representable; elements which shift in the raster structure and compressions of video imaging.³

The video frame is multi-dimensional, divisible and ephemeral, as process, duration and colour. As many filmmakers have worked within the basic constraints of the cinematic apparatus, I have been interested to explore the pixel and the videographic apparatus through the basic possibilities of frames, the grid, masking and layering. I have considered how a realistic image is already something abstract. To this end I have undertaken simple structural shifts and re-orderings to reveal the underlying complexity of the image. This is mostly achieved manually, insofar as image masks and layers are drawn, measured and positioned on screen, rather than through coding operations. In this way works take on precise quantities that are made (rather than generated).

The video 'instant' of one frame has duration, is in-itself temporally divisible, as it is also spatially by the raster grid. The 1920 x 1080 HD image is comprised of over two million pixels, shifting from left to right, top to bottom over microseconds. Spatial stasis is still temporal. The image is an underlying flux of the instant. In relation to my interest in wave movements in *Sea*, the moving image also has a certain sense of

3. As Robert Smithson wrote 'There is no escaping nature through abstract representation; abstraction brings one closer to physical structures within nature itself.' (1979, 219).

liquidity. This flow emerges as properties of changing voltage or the scanning saw-tooth wave of the electron beam on a television display. These considerations of instant and continuum have led me to questions of time embedded within technology and the imagination. This immersion in the material reflects a material approach to practice, and the somatic – rather than purely mental – nature of experience and perception.

The works made for the project, and the works that I have so far discussed by others, all share a focus on the sensuously particular, and attention to the technological specificities of film and video; be it the temporalities layered in multiple exposures in Kurt Kren's experimental systems, the repetition and pattern in Rose Lowder's films, or the meeting of process and technology in Steina Vasulka's videos. How such an aesthetic is made immanent to certain properties of videographic images is factored into the works that I have produced. Momentary aspects are foregrounded in the flow of electronic imaging. But the abstractions of these works - of their particularity, technical specificity and focus on transient phenomena - are wider expressions of the sense of nature in the history of ideas I have discussed. In terms of their compositional and technical aspects, it is the dynamic relations of thought and reality in the materials and temporalities of the work.

I have considered basic structural properties of the image to bring questions to time, using commonly available software to produce the work, without any particular degree of computing specialism. In working in this way, some of the simplest elements of the image, embodied in its structure, have been explored in visual/aesthetic spaces, surface/compositional characteristics, frames and 'windows'. In this regard, the tools that I have used in the works for this project have certain predeterminations, and I have not worked with them on an algorithmic level. I engage certain specificities of the image, without technological essentialism, and this is something that has likewise interested me about the various kinds of dialogue with tools and techniques by Chris Welsby, the Vasulkas and others. Welsby's work for example has techniques which develop out of ordinary characteristics of the film apparatus (as with *Seven Days*) incorporating systems into the filming and in-camera editing procedures. But he has also worked with specialist software (as with *Tree Studies* or *Time After*) where programming has enabled

other aspects to be explored. Steina Vasulka's *Tree Studies* is a dialogue with particular tools (Furlong, 1983 and 1985).

Outside of the scope set by this project, other strands of my work have involved the use of programming to develop specific applications and tools. Here I have used standard editing and compositing software to develop video recordings towards abstraction, whereby the image becomes separate from its referent. This is achieved by developing the abstraction already immanent within the image. The image maintains the element of its photographic/representational nature, but the dividing of it into fundamental elements one pixel in width causes the naturalistic imagery to appear abstract (and then, to appear naturalistic again). This process has subsequently brought about a new appearance in the resulting image, where it comes back to representation.⁴ Abstraction and figuration move through one another.

Qualitative difference is explored within the quantitative limits of the image by means of loop and palindromic structures in the video composition. The works are poised between specific systems and various contingencies. Certain kinds of processes might involve chance-like momentary recordings, which are then processed into determined patterns of layers. The original material of the recording, developed through these systems, emerges in a new and variable way.

The works that I have made can be defined across three (relative) areas of technical practice. The first is the progressive video image; the second, the interlacing video image; the third, block-based compression. All of these elements are related by their connection to the pixel and raster structure (i.e. lines and quadrilaterals). The works have affinities with painting, and to early abstract film. These are thought alongside connections to abstract space in video and computer-based work. My considerations have variously explored panorama, plane, depth, colour and frame.

4. This kind of negation of the image, or anti-illusionism/anti-realism brings the image back to a new kind of illusionism and realism. In this manner I don't take 'illusion' to be negative. Indeed, the works I have made are illusionistic to the degree that they create an impression of reality that appears photorealistic. For discussions around questions of illusion and the moving image within the traditions/works discussed see Jocelyn Cammack's interesting views on films that '...intentionally fracture engagement in one aspect of the illusion while deepening engagement in the alternative illusory aspect.' (2013, 312).

I have worked within the delimitations of a ‘fixed’ frame – much in the manner of a canvas - where others in an ‘expanded’ cinema tradition have otherwise explored the frame dynamically.⁵ I have worked in rectilinear and circular (‘tondo’) forms, and presented the works as fixed position, looping projections. This has been done to engage the terrestrial dimensions of space and natural phenomena, and for various compositional reasons that will become apparent in more specific discussions of the videos. With a fixed projection, the pyramidal light cone - as perspectival vanishing point into the image - functions as a central counterpoint against which certain experiments and processes have been undertaken in my work. I have attempted to set certain frames of practice within the project within which line and colour can be explored. The invariability of certain components stands to emphasise the immanent fluctuations and variability that are already at play in the fixed frame and image.

I have exhibited four video works with this thesis, made between 2011 and 2015; *Sea* (2011), *Field* (2013), *Field/Variation* (2014) and *Double Field* (2015). Foundational elements have been the pixel, block and scan line. These rectilinear structures, embedded variously within the digital video image, have been used to consider fluid elements such as waves, progressions and signals particular to electronic imaging. It is here that I have drawn connections with abstract colour painting and systems, and to the particularities of RGB imaging and colour palettes. The central historical connections to abstraction and natural forms in my work can be drawn within the aesthetics of early avant-garde filmmakers like Eggeling, especially with his interests in creating abstract graphic forms from landscape and ‘...revealing linear developments through time.’ (Elder, 2007: 19). The linear optics that I have developed in my videos, and abstractions of natural phenomena, have equally sought to bring ideas to form in time.

5. On ‘expanded’ cinema, variously considered, see Rees et al. (2011) and Youngblood (1970). Whilst my work for this project doesn’t engage the ‘expanded’ tradition it nevertheless has some interests connected with broader contexts of the sculptural qualities of light. Anthony McCall’s *Line Describing a Cone* (1973) and *Vertical Works* (2011) are interesting in this respect.

For Dziga Vertov, as Anthony Smith writes, the ‘...camera *researched into* vision, and was a tool that illuminated reality as much as it reflected it.’ (1996, 87). Vertov wrote in 1929 that

Kino-eye plunges into the seeming chaos of life to find in life itself the response to an assigned theme. To find the resultant force amongst the million phenomena related to the given theme. To edit; to wrest, through the camera, whatever is most typical, most useful, from life; to organize the film pieces wrested from life into a meaningful rhythmic visual order, a meaningful visual phrase, an essence of “I see.” (1984, 88)

It is instructive to take Smith’s point above that the camera both adds to and reveals reality. In this sense such an approach posits a relation between the active role of perception and the sensuous world. Lev Manovich suggests that the photographic realism brought about by cinema in the twentieth century returns to a prior mode of production. Cinema’s indexical status – the naturalism common to most forms of film representation – is shifted by the ability to produce and computer simulate photorealistic images, such that subsequently cinema is ‘...no longer an indexical media technology but, rather, a sub-genre of painting.’ (1999, 175). Manovich suggests that the equivalence of all digital material effaces difference insofar as the ‘...mutability of digital data impairs the value of cinema recordings as documents of reality.’ Cinema then becomes a ‘...painting in time. No longer a kino-eye, but a kino-brush.’ (1999, 192). ‘Digital cinema is a particular case of animation...’ (1999, 180).

The abstract nature of my works allude to this shift of the index, being as they develop out of lens-based (digital recordings) and always remain as such, although abstractly. The lines of images are still ‘the’ original image, but stratified into thin layers. Taken by themselves, they do not resemble the original recording, but reconstituted make a new ‘whole’ image again. In *Sea* the index is at a distance, given that what appears at times as a contiguous body of water is the combination of 1080 instances of the same sequence from 1080 different times (appearing as a unified time). The direct link between image and referent is present and absent simultaneously. This interrelates ideas of landscape

and digital mutability into the virtual space of the computer. In my work, I have attempted to make these aspects the process of representation itself, such that erasure and mutability becomes the image, in contradictions between movement and stillness, and light and colour. New forms create the nature of the image out of the means of its appearance. In discussing Manovich's questions of digital cinema Tom Gunning suggests that '...if cinema should be approached as a form of animation, then cinematic motion rather than photographic imagery becomes primary.' (2012, 50).

Zoom in to the 1920x1080 pixel HD video image and its constituent structures of lines and squares are apparent. In this proximity, the image is abstract. The single video image is the simultaneous activity of millions of others. It is always relational, and unlike the essentially extrinsic relation of one frame to another in film, it is intrinsic. The screen/frame (projection or monitor) is a singular space, but it is also more complexly a series of other intra-quadrilateral relations or 'pixel pitch'; the grid spaces *between* pixels (Fig. 34). There are therefore intervals and relations both *in* and *between* frames.

Some of the principles at work in compression algorithms for video formats are of interest here, and have formed part of the realisation of the exhibitions of videos in this project (both as looping disc playback, and as online streaming video, or files played back from a computer). My remarks on the algorithm are summary here, as my interest is to draw upon some of the conceptual and aesthetic possibilities implied by such technologies, rather than their mathematical/technical characteristics. This will be clear from the ways that I have subsequently incorporated these questions into my work. What is of interest is that the encoding process of such formats apportions the

compression to areas of 16x16 pixels (a ‘macroblock’) as part of internal, relational and bi-directional processes, which means that, ontologically, the given content of an image, as a ‘now’, has acquired a multi-dimensionality (prior to any kind of adaptation or editing). That past, present and future simultaneously determine the image is foregrounded into the questions of my work. The works develop these aspects, which are ordinarily underlying, to become the visualised nature of the work itself.

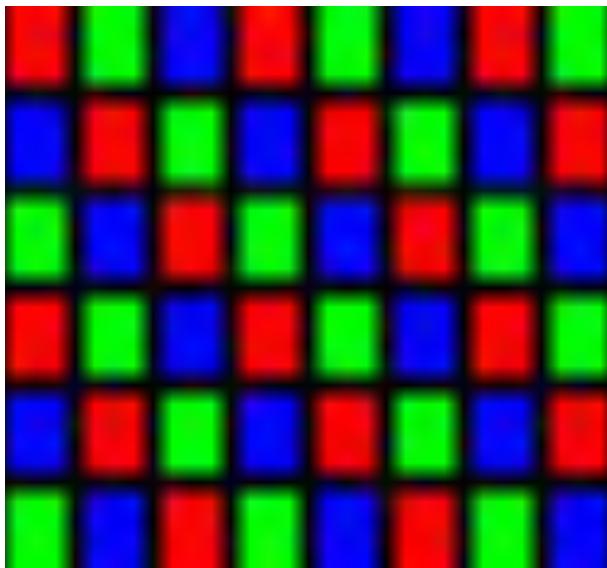


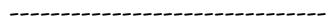
Fig. 34. Example mock-up graphic of pixel pitch

Taking the example of a tree, alluded to in others’ works earlier on, and the ideas of sense-certainty from Hegel, one might start to consider the way the ‘nowness’ of natural phenomena in the image is predicated on other times. For instance, the fact that a fixed-position shot of a tree in motion might contain variable/invariable elements means that at any point in the sequence of frames difference is erased in duration (by the duplicability of unchanging image elements). The tree seen ‘here’ and ‘now’ might include elements consistent from earlier frames – or predictive elements based on what it might need to look like to be consistent with the next frame - and so its appearance in the present is also an image of its past. Its actual ‘nowness’ is never present. Thus Hegel: ‘The ‘Now’, and pointing out the ‘Now’, are thus so constituted that neither the one nor the other is something immediate and simple, but a movement which contains

various moments.'(1977a, 63-64) or that 'This Here is now equally time, a Present which immediately sublates itself, a Now which has been.' (1970, 40).

Stasis is a form of duration as pixel values move along the orientations of the progressive scan. The grid of the raster display seems both immobile and dynamic. In the flux of the instant, the now becomes a relation of before and after. This happens in the approximate pixel data in and between frames in block-based processes of spatial and temporal correlations, using information from other frames to inform the image to come. The present image is necessitated by its similarity to another time.

Within some of the processes of videographic imaging, various means can explore visual phenomena in some of these processes. Simple structural shifts – layering or image-masks - re-orientate and reconfigure. Recordings of landscape are abstracted into blocks and lines, spatially and temporally offset and juxtaposed in different ways. Ephemera emerge in the intervals of technique and process and varying natural phenomena appear. Sequencing orders of pixels into different configurations and offsets means that the original footage is no longer linear. The temporal and spatial relations of the varying phenomena in the image are in diverse sets of interchange, suggesting other forms of light and colour in a becoming optical event.



Questions of sequence, interval and flow recur. The interests of my work in considering these ideas return to other connections in the history of film. Rudolf Arnheim described the fragmented continuum of photograms on the filmstrip in his book *Film as Art* as an '...imperceptible montage...' (1969, 88) and Peter Kubelka commented in a 1967 interview with Jonas Mekas that 'It's between frames where cinema speaks.' (In Sitney, 1971: 292). Earlier I discussed a number of ideas around intervals and motion, and here

I will expand a few other points. Historically this emerges in practice as the notion of a break in film's ontology, of its incompleteness. In my work this has developed around the iterations of scan lines where the spatial reorganisation of the image has 1080 layers of the same - temporally offset – sequences.

Where these kinds of intervals are the point for variations in my work, Arnheim's ideas resonates with German filmmaker Werner Nekes's statement on film that '...every change from one frame to the next is a montage.' (1977, 8). Every frame in the digital image is immanently montage through the proximities of changing pixels. Nekes, comments in a 1977 lecture entitled 'Whatever happens between the pictures' that

...cinema is the difference between two frames: the work the brain has to do to produce the fusion of the two frames. This small unit which I call kine is the smallest particle of a film one can think of. Though it is composed of a lot of elements, the visual components do not yet determine the filmic language. If you, for example, take this big unit: a single frame, you have a photographic information; if you take two frames, the difference between them defines the smallest unit of filmic language that is possible, one filmic information. Every film can be regarded under the principle of this difference, which is a construct of a time/space relation. (1977, 8)

In videographic terms, this is both between *and* within two frames in the terms of predictive algorithms. Video compression is also the difference between frames, but furthermore on a difference between 'blocks' that encode changes between frames on the bases of sending the differences. This question becomes intervallic with the flow of electronic signals. The 'bi-directional' nature of the process uses future and past frames in the present predictive aspects of motion estimation for a frame 'now'. Nekes' idea of 'kine' is discussed in an interview between Gene Youngblood and the Vasulkas where Woody Vasulka comments that,

The practitioners of film, by paraphrasing Eisenstein who speaks of the collision of scenes, have brought it closer to the collision of frames. Now as a worker in digital video, I must extend this analysis even further and say that the collision of

my codes is actually between two codes on the screen; in the same location.
(Vasulka and Weibel, 2007: 443)

To work within these kinds of processes is to consider a new level of montage, and recalling Eisenstein and Vertov, of the intervallic. Phrases, patterns and sequences of video draw different temporalities together. In a text from 1929 Vertov writes ‘...for construction of the film-object upon “intervals,” that is, upon the movement between shots, upon the visual correlation of shots with one another, upon transitions from one visual stimulus to another.’ (Vertov, 1984: 90).⁶ As Le Grice draws Vertov within the context of computer programming, Manovich draws concepts in Vertov’s film *Man with a Movie Camera* around the notion of the database; that Vertov is the first ‘database filmmaker’ (2001, 239). Here, one of the many links between the experimentations of earlier filmmakers draws historical relations to video, digital formats and the histories of artists work with time-based media.

The early technologies of videographics set new kinds of ontologies for the time-based image. Developed in terms of the video signal, Steina Vasulka’s works such as *Mynd* (2000) (Fig. 35), *Lava & Moss* (2000) or *Twisted Water* (2004) intrinsically relate form and process. Vasulka comments that ‘*Twisted Water* is a time-warped digital processing of turbulent waters. The computer program “reads” the image from left to right at a predetermined rate, reworking the turbulence into slow and elegant streams.’ (In Spielmann, 2007a: 517). Yvonne Spielmann writes of ‘unstable states of pictoriality’ and ‘electronic transformativity’, saying that

Video’s lack of fixity separates it from the passage of discrete images in film, where, through transition, the interval in space and time between single image frames is bridged, lent motion by means of projection, and only then merges into a continual flow of images. In a discontinuous flow, the electronic technologies of

6. Another film theorist writing on intervals, Stephen Heath, comments that ‘...[Maurice] Merleau-Ponty writes that ‘the aspect of the world would be transformed if we succeeded in seeing as *things* the intervals between things’. The formulation can now be recast: the relations of the subject set by film – its vision, its address – would be radically transformed if the intervals of its production were opened in their negativity, if the fictions of the closure of those intervals were discontinued, found in all the contradictions of their activity.’ (1981, 62-63).

imagery negate this concept of difference, because it exists in the constructed and continuous process of film images... The composite image of film – which depends technically on an interval between the image frames – coalesces only in projection into a coherent, perceptible image in motion. Compared to the filmic process of lining up images, the electronic image displays an inherent linear structure, which demands that the signal must be synchronized where it shifts lines (leaping lines vertically). It is a question, then, of this signal permanently moving, not of an electronic process of rapidly lining up single images...the “video image” essentially represents an incomplete and discontinuous type of image. (2008, 49)

Fig. 35. *Mynd*. Steina Vasulka

The spatial/temporal reorganisation of lines is a practice developed by other artists who have sought to explore certain properties of video signals and image structures. One technique used by some, of which there has been some interesting work, has been to use ‘slit-scan’. Visually, there are some comparable elements to my work, but some slit-scan work tends to emphasise contiguity between lines - and a more didactic spatial/temporal interrelatedness - whereby the ‘effect’ is foregrounded over the outcome. The work can be illustrative, and has to ‘represent’ its effect as part of the process, thus making it extrinsic to the internal dynamics of the work and material.

The notion of interval or break is always in relation with a certain fluidity or liquidity of cinema, as A.L. Rees, referencing Hegel amongst others, writes in his essay *Liquid Cinema and the Watery Substance of Vision* (2010). This reflects into the relations of Bergson and duration, and the aforementioned ideas of being and becoming, fixity and flux. But the iterations and developments of the image through pixel and block structures, the discontinuity in continuity that is the process of the videographic image, has other echoes of Hegel's philosophy. In a section of the *Science of Logic* entitled 'Continuous and Discrete Magnitude' he writes,

...continuity is indeed one of the moments of quantity which requires the other moment, discreteness, to complete it. But quantity is a concrete unity only in so far as it is the unity of *distinct* moments. These, are, therefore, also to be taken as distinct, but are not to be resolved again into attraction and repulsion, but are to be taken as they are in their truth, each remaining in its unity with the other, that is, remaining the *whole*. Continuity is only coherent, compact unity as unity of the discrete... (1969, 199)

Such ideas might be considered relative to concepts of line, measure and ratio, and to the mathematics and processes of pixels, algorithms and the raster grid. The digital image is a fragmented 'unity of *distinct* moments'. The image's appearance of continuity lies within divisions of pixels and rectilinear structures. In these ways, *Sea* uses high-definition video recordings that pan from left to right across the horizon of a seascape (Fig. 36). These sequences are used to shift between the perception of depth, three-dimensionality and the flatness of the image as a projection. By working through certain features immanent to the processual flow of the image, several optical effects emerged after the work's production. Given the predictive structures already part of processing and compression, the work anticipates and explores the spatio-temporal operations that take place in making the image. This video, as with the others I have made, does not work with the algorithmic nature of the video codecs, but in its aesthetic sense, draws attention to their functions.



Fig. 36. *Sea*. Gareth Polmeer

There are a number of overlapping spatial and temporal elements to *Sea* that are structured into the production of the work. These are developed around two principles; the first ‘in-camera’ and the second in post-production. The recording took place over several hours, during the middle of a bright, clear day. An HD video camera (1920x1080, 25fps) was positioned on a tripod, around one hundred metres from the shoreline (allowing for variations in tidal changes during the time of recording, and the proximity of the tide line to the recording position). A number of pans were made across a total arc of around one hundred and twenty degrees, left to right (this was done iteratively, and the pans were varied within the overall arc of movement). The speed at which the pans took place varied to degrees of abstraction and light play (a faster sweep blurring the light forms reflecting from the water, and a slower sweep making wave formations more recognizable). The initial set-up of each pan involved bisecting the frame between sea and sky on the horizon line. This was done in various permutations (for instance 50:50, 25:75 and so on). The length of the recording was contingent on responses to light and colour.



Fig. 37. *Sea*. Gareth Polmeer

Having recorded these various sequences, the video footage was then imported to a computer for editing and compositing. Firstly, the video clips were cut and assembled into a linear order. These juxtapositions were decided by patterns of light and motion, and the chronology of clips was varied. Having compiled a single layer video file, the raster area was divided with 1080 image masks matching the horizontal lines of resolution in the image. Each line, or section of 1920 x 1 pixel, was offset by iterations of 1/25th of a second from the next, reflecting the frame rate of the video format. The footage is both temporally and spatially offset into 1080 layers or ‘instances’ of the same sequence. Zoomed in to the 16x16 pixel grid – equivalent to a macroblock in video compression – the images form a combination of greys and blues (Fig. 37).

The layered movements and pans in *Sea* affect the depth of the image. The vanishing point is not isolable in the distance, and the area that might traditionally define this is reordered within the projected video works. The source material is recorded from a series of pans, establishing one of the basic contradictions between the mobile camera and the normally ‘fixed’ frame. That is, the frame moves in recording, but this same

motion is delimited in the static frame of projection. Anne Friedberg comments on this that

A key paradox of the movie camera's mobility is that its fluid "panning", its mechanically aided movement through space, is reduced to the fixed frame of the screen. The movie viewer looks not at a horizontal panorama but at a fixed rectangular frame. Simply put, the camera's "eye" is not the same as the view of its recorded moving images. (2006, 128)



Fig. 38. *Sea*. Gareth Polmeer

In *Sea*, the image is reconstituted such that movements appear at times to be continuous, in that waves move over or between spatially and temporally distinct parts of the picture. Progressions of wave movements from the top (background) of the image space move towards the bottom (foreground) as oscillations of tidal flows shift and rebound from horizon to shoreline. By eliminating elements of perspective the abstraction constructs apparent depths from colour gradients (Fig. 38). Movements of light and colour frame a sensuous unfolding of landscape through the fragmentary properties of the image technology. Superimposed monochrome blocks of colour 'eye-

dropped' from the footage move downwards over the top of the waves. The illusion of motion in the video is the perception of changes between spatially frozen parts. The paradox of all 'moving images' is brought to light.

The systematic nature of patterning and sequence in *Sea* draws comparison with forms of systems painting and the work of other filmmakers (Fig. 40). These connections embody similar concerns for temporal developments and optical spontaneity (or movement within certain fixed parameters). The finitude of pattern becomes the occasion for variations in viewing experience, with slight shifts prompting a flutter of the eye. Here composition and measure create a ratio against which interruptions and variations take place. Hegel speaks of 'transition' and 'interruption' in relation to measure, saying that

...we have seen that the alterations of being in general are not only the transition of one magnitude into another, but a transition from quality into quality and *vice versa*, a becoming-other which is an interruption of gradualness and the production of something qualitatively different from the reality which preceded it. (1969, 370)

Fig. 39. *Frozen Film Frame Series*. Paul Sharits

The 'something qualitatively different' emerges in the function of technique over material. In a passing comparison, one might consider the movement of Hegel's logic –

of motion to becoming - analogous to the relativity of moving images (of ‘the’ image being multiple, becoming others). He speaks of ‘Something’ and ‘...*the mediation of itself with itself*.’ That ‘Something as a *becoming* is a transition, the moments of which are themselves somethings, so that the transition is *alteration...*’ (1969, 116).

Paul Sharits’s *Frozen Film Frame Series* (1971-76) (Fig. 39) encases filmstrips within Plexiglas. Alongside other drawn works, the intervals of arrangements and colour are analogous to a digital aesthetic, where pixel-like structures and pixel-pitch emerge in sequences of frames, suggesting a raster display and progressive scan lines of video. The ideas of ‘moments’ have some further relations to the kind of colour/flicker of Sharits’s works and some of my own. Considering the optical effects of his work, Sharits wrote in a 1971 statement that

I wish to abandon imitation and illusion and enter directly into the high drama of: celluloid two-dimensional strips/individual rectangular frames/the three-dimensional light beam/environmental illumination/the two-dimensional reflective screen surface/the viewer’s retina screen, optic nerve and individual psycho-physical subjectivities of consciousness. (1971, 57)

Through these means, Sharits proposes in a 1978 *Afterimage* article ‘Cinema as Cognition’, ‘...contradictory concepts of perception-consciousness/knowing-meaning’ might be synthesised into a shifting and reflexive form of understanding’ (Sharits 1978, 108). Sharits’s works use both abstract colour fields and representational imagery. The forty-two minute *S:TREAM:S:S:EXTION:S:EXTION:S:S:EXTIONED* (1968-71) is ‘A conceptual lap dissolve from “water currents” to “filmstrip current”...’ (In Vasulka and Weibel, 2007: 323). Sharits also evokes the ontologies of flux and flow in his writings, and developed a series of drawn ‘scores’ in relations to the themes of frozen film frames. He comments that

...this process of making, at the same time, both a ‘temporal’ score and an all-at-once ‘drawing’ oscillates consciousness at a rate of change which propels one into wholly unexpected tributaries of the ‘stream’ of filmic consciousness (which is the specific perimeter-boundary conditions of film’s total structure); within these perimeters, the ‘scores’ are recordings of coexisting maps of intersected layers of

'pattern-consciousness' and maps of gestalted time zones...' (In Vasulka and Weibel, 2007: 371)⁷

These ideas converge further in films of paintings, such as Kurt Kren's *11/65 Bild Helga Phillip* (1965) in which he filmed an abstract painting by Helga Phillip, using systems and structures relative to film frames and composition. Whilst my works are not videos of paintings, they bring to bear some of the same questions (as do Sharits's films and frozen frames). It might be expressed in the connection to my work thus: that painting has to overcome stasis by the intimation of movement (the temporal effects of elements implied beyond the space of the frame) but that video has to overcome its temporality by the intimation of stasis (elements that compose the sequencing of lines/pixels in time across the space of the grid). My videos shift between these elements, and the shared visual and kinetic aspects that emerge in relation to painters and their interests in the moving image are elements of the same focus (Fig. 41).

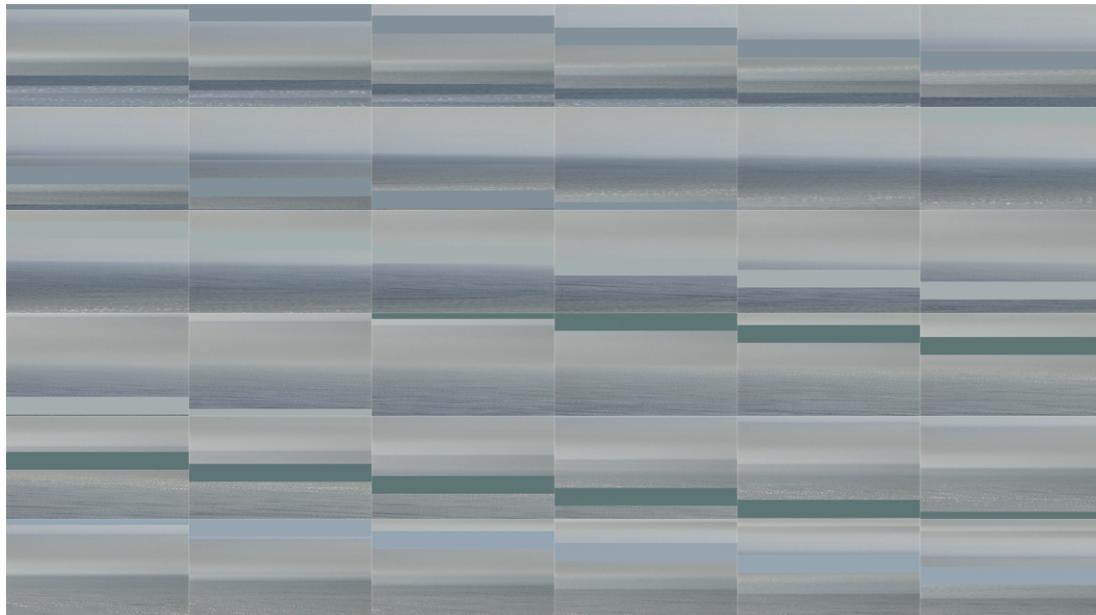


Fig. 40. *Sea*. Gareth Polmeer

7. See Spielmann (2007b) for a discussion of 'movement and non-directional motion' in Sharits's films.

The next works developed from *Sea* were made in a circular format. The projections are not actually circular; they are still full-frame, and the circular area is ‘masked’. The work’s form suggests an oculus, which refers to the Latin ‘eye’, but is also architectonic, being the circular opening to the sky of classical buildings such as the Pantheon in Rome. The oculus is a mediating, transitional space for light. In this relation the projected video further refers to the ‘tondo’ form (a circular painting), the shape that ‘...belongs everywhere and nowhere.’ as Rudolf Arnheim writes (2009, 72).



Fig. 41. *Sea*. Gareth Polmeer

This format brings the lines into other kinds of relations, and the masked area of lines, lacking the formal direction of the rectangular frame, seems to emphasise the flicker and pattern that extend beyond the limits of the circle. When watching the work, this internal/external relation sometimes seems to temporally erase the edges of the shape, and suggest lines beyond the boundary of the circumference. There are also passing comparisons to be made to the playback of linear/chronological footage on a circular

medium (such as a Blu-Ray disc) and to the spinning colour disc between lamp and chip in types of ‘Digital Light Processing’ (DLP) projectors.

Within the traditions I have discussed this circular form has emerged in a number of ways, for instance in Sharits’s ‘Mandala’ films, but also the video-processing experiments of the Vasulkas with works such as *Noisefields* (1974) (Fig. 42) where video noise is ‘keyed’ in a circular area using George Brown’s ‘Sequencer/Multikeyer’ and Eric Siegel’s ‘Dual Colorizer’.

Fig. 42. *Noisefields*. Steina and Woody Vasulka

Arnheim’s references to the circular format, or tondo, mention a range of historic examples from artists such as Michelangelo and Raphael. Within some of the contexts cited here, J.M.W. Turner’s ‘vortex’ experiments develop movements into this circular form in the nineteenth century as in his *Shade and Darkness - the Evening of the Deluge* (1843) in which darkness swirls around light. (Fig. 43). The kind of optical/colour effects of Turner’s paintings here draw comparisons with the swirls and juxtapositions resulting from Sharits’s flicker works or Welsby’s rapid sequences of frames.

Fig. 43. J.M.W. Turner, *Shade and Darkness - the Evening of the Deluge*

Returning to my two circular works, *Field* (2013) and *Field/Variation* (2014) (Figs. 44, 45, 46, 47 and 48). These images explore the interlaced and progressive scan respectively. *Field* is comprised of a two-minute, three thousand frame sequence of still images, recorded as part of a circular walk around the peripheries of an urban parkland, fields and marshes. The juxtaposition of individually recorded images – each with different framings and exposure of the environment - create a rapid flicker in the original sequence. The temporal offset for this sequence was to shift each of the 1080 lines of resolution by 1/25th of a second from the next. Given the already flickering/shifting nature of the image, this caused an abstract progression of forms and colour, which did not appear to have the same liquid/drifting effect of a slit-scan.



Fig. 44. *Field*. Gareth Polmeer

Following this process, the image was rotated by ninety degrees, such that the horizontal lines resulting from the processing now appear vertical. These are, however still constituted vertically, as can be seen in the detail close-up (Fig. 47). Here the ‘original’ lines can be seen to crosscut horizontal lines of the image. Two versions of the same file (one time-reversed) are then interlaced, with one taking the ‘upper’ and the other the ‘lower’ field of the two constitutive fields of the image. In effect, they flicker through and against one another in the video playback, causing a number of optical effects as different colours and intensities of light meet. This recalls Mondrian, who writes that ‘The plastic expression of colour and line alone is to establish *oppositions* by means of colour and line; and these oppositions express plastic relationship. Relationship is what I have always sought, and that is what all painting seeks to express.’ (1919, 118).

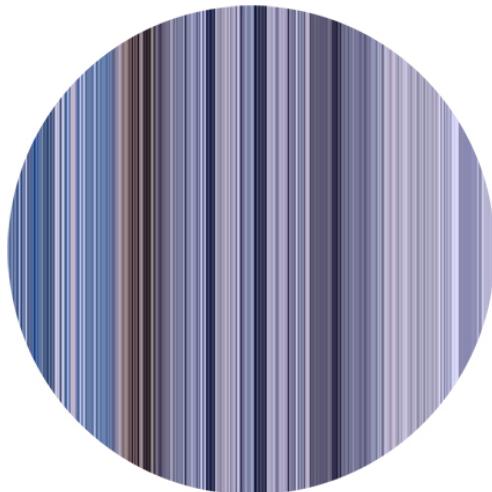


Fig. 45. *Field*. Gareth Polmeer

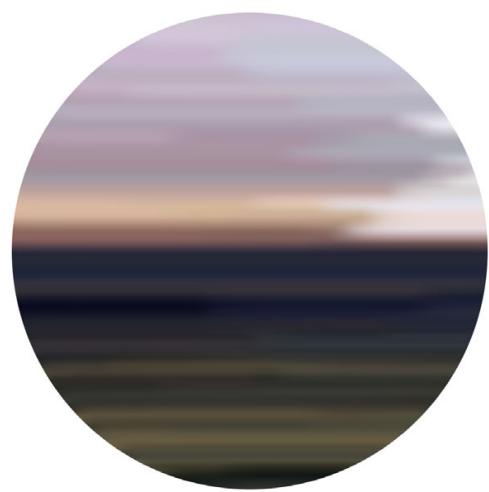


Fig. 46. *Field/Variation*. Gareth Polmeer

The recording for *Field/Variation* was different and unplanned compared to *Sea* and *Field*. This footage was recorded during a walk along the coast and is around five seconds in length. *Field/Variation* is composed of variations on this brief, hand-held pan from a hilltop, taking in a bay, shoreline, sea, horizon, sky and cloud cover. In a statement on the video I wrote that,

Images of sky and sea on the horizon form linear bands of colour through the spatial and temporal composition of scan lines. The video is composed of multiple instances of a singular hand-held recording from a hilltop facing out to sea. This has been layered and masked in different configurations with areas one pixel in height, each offset by varying iterations of 1/25th of a second from the next. These layers are duplicated, inverted and reversed for a looping projection such that the images develop through one another like a palindrome, with the textures a series of colour fields; a semblance of nature out of the contradictions and compressions of the videographic image structure.

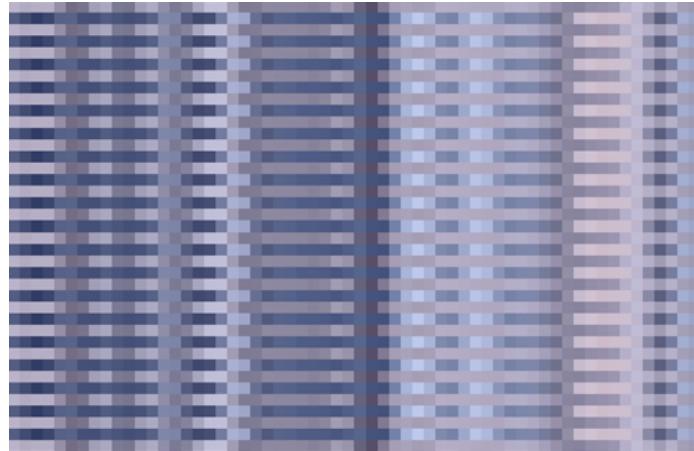


Fig. 47. *Field*. Gareth Polmeer

The work moves back through itself, moments return and overlap. The image is formed in different variations of the original recordings with multiple temporalities in relations with technology. This is a further form of reflection considering alterations and processes. Recalling Hegel, ‘By the act of reflection something is *altered* in the way in which the fact was originally presented in sensation, perception, or conception’ (1975, 34). In the depths and details of the image, amidst the numerical values of RGB or the abstractions of colour models, the instant emerges in constant difference. These ideas have been historically relative to the possibilities of technology and practice.

Fig. 48. *Field*. Gareth Polmeer

Reflection returns to ideas in Hegel's *Logic* where he discusses Being, or immediacy, coming into relation with itself, as Essence. It is '...reflection, or light thrown into itself...' (1975, 162). Hegel comments in notes to this section of the *Logic* that

This word 'reflection' is originally applied, when a ray of light in a straight line impinging upon the surface of a mirror is thrown back from it. In this phenomenon we have two things – first an immediate fact which is, and secondly the deputed, derivated, or transmitted phase of the same. Something of this sort takes place when we reflect, or think upon an object; for here we want to know the object, not in its immediacy, but as derivative or mediated. (1975, 163)

It is apt here that light and reflection should constitute the question of knowledge, and the sense of what the 'straight line' 'thrown back' implies has certain connections to the processes in the linear structures of video works, which by way of process and reflection, bring about such a 'derivative or mediated' question at an intersection of form and content.

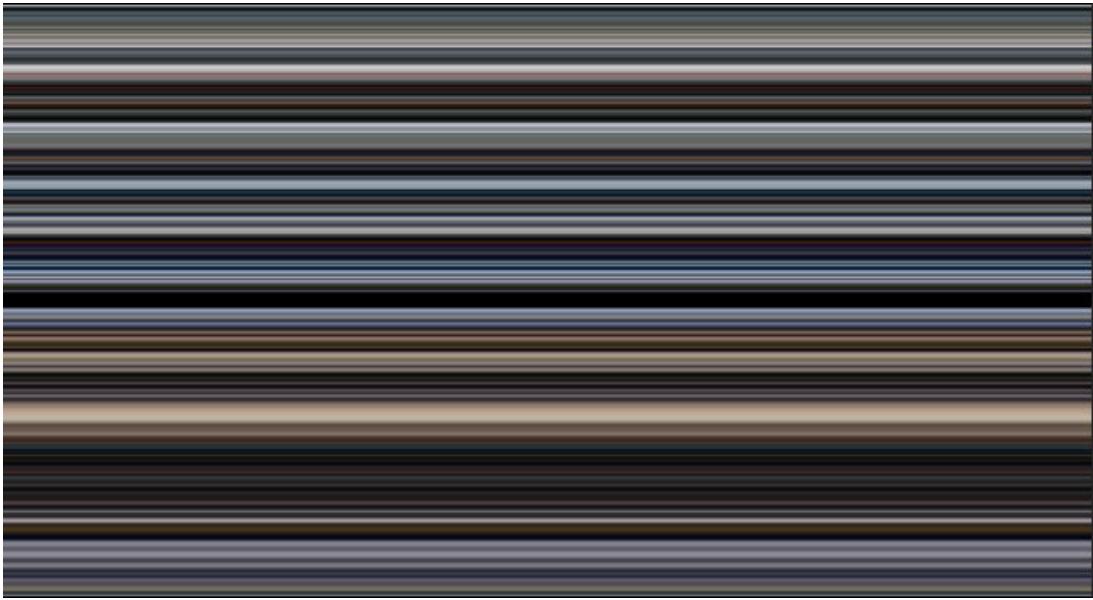


Fig. 49. *Double Field*. Gareth Polmeer

My final work, *Double Field* (2015) (Fig. 49) aims to bring together some of the aims of the three aforementioned works in the relations between the terrestrial and virtual landscape. In this work the flicker between sequences digitally reduced to bands of monochrome colour are juxtaposed with the footage. New images have been developed from the further intermix of digitally generated colour with recorded material. Samples are put into new configurations that echo the structures of the raster display, and the blocks and macroblocks of video codecs and compression algorithms. The recombination of source material with generated colour in the processes described above creates different perceptual phenomena in the visualisation of landscape. These are processes that I have begun to develop in new contexts to earlier works too (Fig. 50), revisiting the sequencing of *Sea* into different forms and the ‘variations’ in which I have shown these works in broader contexts.

Comprised of two versions of the same image sequence, *Double Field* interlaces two versions (one time reversed) into one another (back and forth). At one frame at the midpoint of the transition (1/25th of a second) in the work the two sequences are in balance, before again shifting. The colour field flicker and pattern between the works generates abstract landscape imagery in plays of light and darkness. The multiplication

of the ‘same’ recording into a grid (with the footage animated in a downward – top left to bottom right – drift) create a shifting optic that goes both with and against the linear flow of the image signal. The work is doubled on several levels: the fields of the video codec, the layers of recordings developing through one another, the loop and repetition of elements, the ‘real’ and ‘virtual’ interrelations of recording and digitally generated colour, and the bisected image moving in two directions.

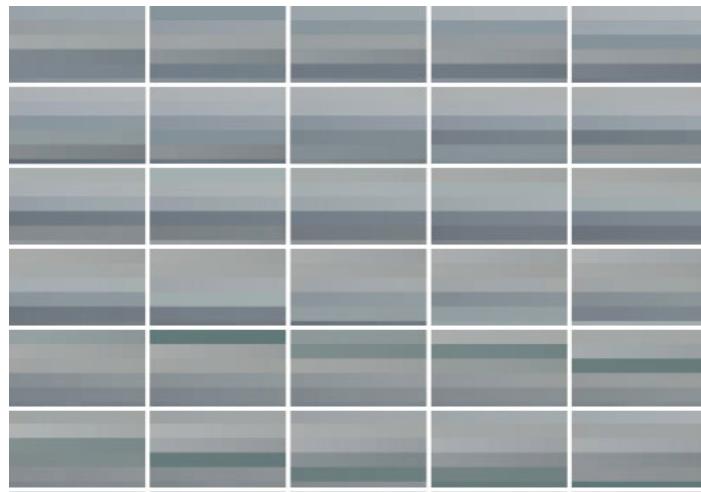


Fig. 50. *Sea*. Gareth Polmeer

The video is the most abstract made of those discussed here. Despite this however, as the image moves towards total abstraction the stratifications, the layer upon layer (the video has thousands interconnected and superimposed) develops impressionistic tones and shades that evoke a subterranean cross section. The image flickers – and contrasts with the more serene flow of *Sea* – jarring with interruptions and judders. But in its dialectical motion, the discontinuous flicker is contrasted by flow, as patches of the image blend lines in momentary colour fields, suggesting a distant landscape beyond. The contrast of the work’s negation of imagery with the foregrounding of its material bases and form (as pixels, compression and lines) is a point of balance. As a digital light projection, the work engages the processes of its appearance, with the formations of darkness illuminating its movements.

Conclusion

...time itself is the becoming...¹

This research has reflected different ideas of nature through the image, technology and dialectics. This has been framed within European philosophical and aesthetic theories and a near-century of experimental film and video work from the 1920s to the present. In the first instance this has been realised through an interest in the works (and writings) of a number of artists and filmmakers for whom the processes of representation in the moving image embody the technologically mediated relations of humans and nature. In the second instance, this has been how the theoretical contexts given to such works have connections with particular narratives around the relations of twentieth century avant-garde movements, and eighteenth and nineteenth century philosophy and aesthetics.

The central questions of this project – and the ways that many filmmakers position their work - return to Kant, Hegel and others. In the works I have discussed it is within this relation that the aesthetic of the time-based image poses questions in the intervals of frames, and the flow of colour and form. In exploring this, I have not given a definitive exposition of Hegel's philosophy, but have articulated the historical nature of knowledge and the dialectic relevant to certain questions. The ideas that Hegel's philosophy develops around the relations of subject and object, and the philosophy of nature and aesthetic theories, provide ways to approach the understanding of human and nature, of becoming and sublation, and of the ideas realised in the transient moments of the artwork. At times I have conflated logical categories with aesthetic ideas, and at others the intrinsic question of being and experience in Hegel's philosophy has reflected key questions in the histories of knowledge, the work of art and nature. The abstract nature of Hegel's texts themselves embody a kind of sensuous moment between the movement

1. Hegel, *Philosophy of Nature*, p. 35

of concepts and ideas such as light and darkness, and it is these elements, alongside the sphere of artistic practice, that I have taken to represent the broader historical dynamic of such thought to the technological vision of landscape.

Beyond the scope of this project there are other ways to re-evaluate the histories of experimental film, the contexts of postmodernism, and the historical influences of the nineteenth century. As several practitioners/writers cited here have shown through their work and writing, the ‘post’ (-modern, -Romantic, -Kantian) is dialectical. This can be seen in the way that the disenchantment of nature creates new means of re-enchantment, the ways that science creates a new aesthetics, and the way that the definition of nature becomes, in the artwork, what points beyond its definition. As A.L. Rees wrote, ‘Landscape is both more and less than the shape of time.’ (In Rees, O’Pray et al., 1983:3).

These are questions that perpetuate throughout the histories and practices of film and video I have discussed. Here practice becomes central, in that questions are posed in making and re-making the image, its developments and the technological means through which it is realised. Where some lines have been drawn between the nineteenth and twentieth century theories of aesthetics and knowledge, these often overlap amidst the continuities that the philosophies of the Romantic period and German thought suggest for today’s practice, the work of art, and the reflection of time and becoming in the image.

This thesis, in its academic framework, is a sequence from a wider re-evaluation of nature and digital aesthetics in my work, wherein Hegel is one of several nineteenth century artists and philosophers connected with contemporary moving image practice. Thus in scope, I have omitted a more detailed review of dialectics in the later contexts of twentieth century thought, and the deeper threads of light and darkness that run through images of time and aesthetics from ancient thought and Romanticism. I have also focussed on visual aspects, such that a broader question of the senses and experience of nature (with sound for example) would be a further area for discussion.

The project has drawn some geographical limitations on the works and ideas discussed in Europe and North America. This in itself has not been exhaustive, and the limitation invariably has shortcomings given the rich diversity of international practice. In the historical review of works and contexts, I have omitted a more diverse and detailed discussion of contemporary works, and of the many interesting artists working with film, video and computer-based imagery, who explore convergences in painting, colour and light. Similarly, given the range of areas juxtaposed, I have mostly included texts that are directly referenced, excepting some contextual sources.

The works I have discussed can be seen, within the contexts put forward in this thesis, to intersect and develop key technical and conceptual aspects, of which their making, processes and exhibition form a question of how to define the ‘moving’ image. This is both in the works that I have cited, and in the sense of being ‘experimental’ film and video (that making and material bring new insights to theory). The earliest work that I made out of these considerations *Sea*, has been that on which I have had most occasion to reflect, and the evaluation of the work through exhibitions and screenings has embodied questions of nature, aesthetics and science. It has been from working out of the various immanent aspects of the image that they have come to embody these interests. In this way, their dynamic relation of ideas, reality and material takes on an historical character, and thus, as Hegel suggests, begin to ‘point beyond themselves’.

This work has not been a thorough philosophical treatise, as I have reflected the consideration of these questions from the perspective of aesthetics and artistic practice. The juxtaposition of ideas from the many excellent contextual sources of German philosophy, with the films/videos with which they were contemporaneous, has brought different views. My own selective interpretation has engaged the means by which many of the artists and writers that I refer to variously employ Hegelian or quasi-Hegelian terms, and who themselves have interpreted dialectic and other philosophies around it, both engaging and rejecting ideas of methodological application. In the work that I have undertaken, dialectic is a conceptual apparatus, and it is used to focus on instances of time, image and practice. It has been a means to examine the developments between images and concepts. In bringing these into the context of time-based media, I have

aimed to create, as part of the outcome of the research, new interconnections that give different contexts to the histories (and futures) of practice.

I have omitted a more expanded consideration of Hegel's aesthetics (in their historical evaluations) and have instead focused on the aspects relevant to the works I have discussed. The connected writings that I have cited from others show where the ideas developed in Hegel's aesthetics, and their relations to questions of beauty and nature, continue to exercise significant influence on contemporary thought. This thesis is multi-disciplinary and traverses philosophical, art historical and media/technological fields, whilst attempting to find a weighting of these disciplines appropriate to the subject matter (and one that complements a thorough discussion of film/video works). The works and ideas discussed must be framed within the scope of the essay and by the limits of a practice-led project. This must also account for the works made. I have mostly considered questions around the work's material and processes rather than discussions of spectatorship. This is a means to principally consider the idea of the image and viewing from the perspectives of materials and production, and to discuss the historical immanence of ideas within the work and its processes.

I began this project with a wider, revisionary view of the intellectual histories of dialectics in the twentieth century, attempting to consider the full relations of this thought to my research. The ideas that interested me in a number of twentieth century philosophers and artists had their origins in Hegel's dialectic. In this sense I have worked my way back to the beginnings of Hegel's ideas, and so have focussed on specific texts and concepts. I have attempted to approach dialectic in an immanent manner, and in the context of my work as inherent to the questions of the subject matter, as *within* the image and its meanings. As an artist, I have also wanted to explore the kinds of universal/perceptual questions that a work might embody as material practice, especially as such aims can become diffuse within more highly theorised aspects of contemporary art.

The 'application' of 'theory' in discussing works of art can be nebulous. But the complexities of dialectical thinking, and the means by which this develops in Hegel's

thought, have I hope, been made intelligible within the frames of practice that I have cited. Where I have drawn emphases towards transience, changeability and becoming, this has been distinguished from relativism in aspects of some postmodernist thought, where meaning is in constant perspectives and re-readings. I have been interested in meaning, with the fundamentals of change, as part of a transformative question of experience through the aesthetic. This leads to concrete questions of knowledge, constructive discussions of work, and an historically developmental view of theory and practice.

Dialectic shows itself to be immanent to some of the central aesthetic questions posed in the relation of artist/filmmakers to nature, technology and experience. What this project, and the works made and exhibited during its development have shown, is that the Hegelian dialectic, and the epistemological and ontological questions it raises, bring insights into the questions and value of nature in the 21st century. In this regard my project, whilst influenced by dialectics, has also found new ways to consider it as part of a research outcome, from the initial ideas posited at the start. The same can be said of my video works, reducing the image to the constitutive elements of pixel, colour and line. From within the material, and its processual development, and through the various systems and experiments undertaken, a qualitatively varied image emerged.

Whilst the scope of this essay has taken in a broad range of theories and histories, much comes down to a specific question of light. The focus I placed on the image-in-time suggests that the flicker of a single pixel might re-orientate perspectives, an instance of the transformative nature of a work in a change of luminance. Such focus in the image is the meeting and becoming of light, time, technology and the imagination. As Hegel writes ‘...it is only darkened light and illuminated darkness which have within themselves the moment of difference...’ (1969, 93).

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