
The Shadow Machine Project

Project Proposal

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Introduction

The study of photography has never been more critical. In what has become a photographic information culture, cameras are becoming thinking machines that are starting to see for themselves. Does photographic practice still require a photographer, a camera or even a photograph? What could our experience of the photographic be as we are becoming increasingly incidental to its operation?

The future of technologies are often inscribed in their past and new understandings are to be gained by reconsidering historical concepts in contemporary contexts. This project will seek to demonstrate that valuable insights for contemporary photographic practice lie deeply rooted in its past. This project explores the photographic pioneer William Fox Talbot's concept of '*Fixing the Shadow*' within the context of the algorithmic age.

The aim of the Shadow Machine Project is to critically engage with challenges facing contemporary photographic practice. It explores not only what old technologies teach us about our newest technologies, but what our newest technologies teach us about past practices.

Rationale

The study of photography has never been more urgent. There are more images being made now than at any time in history. The circumstances where the proliferation of imagery allowed by computational networks is affecting how we understand the world as perceived through visual media. Although photographic practice has never had a single or unified definition, we now experience images mostly created with, distributed through, and encountered upon, computational devices. As Andreas Müller-Pohle, argues; “*photography informed culture so totally, so globally, that we can call it, essentially, a photographic information culture*” (1985).

The volume is causing change. In the age of algorithmic processing, machine learning, vast networked computational speeds, a dramatic change is happening to how we experience the image, and how the image experiences us. Just as Eadweard Muybridge’s invention of cinema in 1878 was brought about through the transition from still to sequenced image, once again a numerical change is signalling the beginning of a new era for the photographic. As the photograph becomes an algorithm, its very essence changes. As Trevor Paglen asserts something new and unexpected is occurring in the world of images; that “*machines are starting to see for themselves*” (2014).

The emphasis of photographic imaging is moving from a traditional human optical perspective towards computational machine vision. In many cases it is not even humans that make, select, process or distribute images (Rubinstein, 2013). John Tagg argues that the days of the camera as an ‘*analogue of the eye, and so the mind*’ are over (2009). Human vision is no longer the centre of the photographic universe. The theories of Vilém Flusser explore the camera as a programmable apparatus, and one that, in a contradictory manner, also programs the photographers (whom he calls; functionaries) who use it (1984).

As humans become increasingly incidental to photographic processes, the central question is what is the role, if any, for the human in the photographic process? As images can be made without a camera, without lenses and without light, what does this mean for photography’s traditional role as having an indexical connection to past events? If imagery is not being made to be seen by humans, but to assist in algorithmic processes, what is the place of the photographer within this system? As agency is being displaced, what form or function will the photographic hold in the future?

This project will explore issues of photographic agency and technology through a process of looking back at the origins of photographic practice with particular regard to the algorithmic in both contemporary and historical modes. In 1837, the photographic pioneer William Henry Fox Talbot described what he called *photogenic drawing* as the ‘*process by which natural objects may be made to delineate themselves without the aid of the artist's pencil.*’ This project explores Talbot's concept of ‘*Fixing the Shadow*’ within the context of the algorithmic age. This identified parallels will be explored as possible pathway towards future notions of the photographic. The project asks not only what our oldest technologies teach us about our newest technologies, but what can our newest technology teach us about past technologies.

A practical project, or a body of work will result from this inquiry. Developed through a practice-led approach, this work will explore the concepts of the inquiry in a physical form. It will provide a working model for the application of concepts and ideas that proposes a contribution to photographic practice in a contemporary practice. The practical work will be supported by a written exegesis that will be the exploration of the concepts, theories, technologies and contexts related to the research question.

The importance of the photographic persists. John Tagg declares photographic practice as “*a function of the mind, as a site of meaning*” and argues that it remains central to its continued relevance in the world of visual communications (2009). Currently there is uncertainty of the consequences of the ‘algorithmic turn’ for photographic practice. This project will critically engage with what Daniel Rubinstein describes as the “*deep chasm between the computational code of software and the cultural codes of visuality*”, and consider these questions with particular reference to the photographic tradition.

This project will create continuity between the present and past to deepen understanding of current practice and it will offer strategies for contemporary photographic practice. Connections between previously unassociated contexts, practices and technologies will be investigated, created and developed and presented as a practical working model. Theoretical inquiry will contribute to the discussion of the role of the photograph in contemporary culture. An innovative notion of the photographic will be proposed that will be designed to take its place in a greater photographic historical continuum.

‘The modern lens is no longer tied to the narrow limits of our eye’
(Moholy-Nagy, 1925. p7)

Current State

It is without a doubt that we are entering a new era for the photograph. It appears that photography and the photograph that we know is evolving in previously unimaginable ways due to technologies allowing the large number of images being taken and 'shared' online. The photographic reproducibility that was initiated by William Fox Talbot with paper prints; has evolved into the flood of digital facilitated proliferation as suggested by Walter Benjamin in his 1936 essay '*The Work of Art in the Age of Mechanical Reproduction*'.

The event of the digital has caused a number of major shifts in the photographic. Michael Fried claims that due to digitalisation a fixed definition of the photographic has become impossible (2008), but '*digital technology does not subvert "normal" photography because "normal" photography never existed*' (Manovich, 1995). Geoffrey Batchen talks about photography as a separate entity being on the verge of disappearing forever and that we have entered into a "post-photographic" moment, '*after but not yet beyond photography*' (Batchen, 2000).

The field of the photographic is continuously expanding (Baker, 2006), and the effect of digitalisation is proving to be a fundamentally challenging era for photographic practice. Martin Lister summarises the effects of digital as: it asks us to reconsider the photographic association with realism; it renews interest in its indexical nature; the emphasis on the reception, rather than the production of the image; and it suggests the grounds for a 'post-human' vision (Wells, 2004 p 328). It is this last point that offers possible perspectives for investigation as Daniel Palmer boldly suggests that '*apparently humans are increasingly incidental to photographic production.*' (Palmer, 2015).

Does the photographic still require a photographer, a camera or even a photograph? Many imaging systems no longer need to see the world from the perspective of the human eye (Crary, 1998). If we take such processes as medial or navigational imaging systems for example, much of the output of these imaging system is not even limited to images (Toister, 2016). The photographic image has become data. What is clear is that the form and amount of digital imagery is creating an unprecedented form of the photographic. Victor Burgin describes broadband internet '*turning every photograph on the Web into a potential frame in a boundless film*' (2011: 144). The affordances that the digital offer make it radically different from its previous manifestations as we now use a computer to make and view the image. Ultimately, the photographic story becomes one of computation, in what William Uricchio has termed the 'algorithmic turn' as we now have '*increased access to new ways of representing and seeing the world, ways dependent on algorithmic interventions between the viewing subject and the object viewed.*' (Uricchio, 2011).

As this project will seek to demonstrate, the formations of current photographic practice lie deeply rooted in its past. Its relationship to computing is not a new development but one that has been evident throughout its history. This is by all means, not the only, or necessarily the most dominant, history of the photographic, but one that will shed light on the wide scope of contemporary practice. Geoffrey Batchen calls for a new, broader history of the photographic, one that '*looks at photography, not just at art photographs*' (Batchen, 2002: 3). This project will track the algorithm through the history of the photographic and uncover a current darker and shadowy aspect.

A Historical Approach

This project will take an approach to the photographic that traces its origins and tracks it to contemporary practice. It is the intention to gain new insights by then reasserting identified notions into contemporary theoretical and technological frame works. It is not intended that the project be a comprehensive history of the photographic, or offer definitive definitions of either the photographic or photographic practice.

One particularly significant instance in the history of the photographic practice and its relationship to its technological contexts and processes will be analysed. The vision of generative creation as shared by both the photographic pioneer William Henry Fox Talbot and the originator of the programmable computer, Charles Babbage, will be established as holding valuable insights for contemporary photographic practice. This previously under emphasised connection will be investigated, analysed and explored. The investigation will adopt a phenomenological approach where the research will seek essentially to interpret rather than explain.

The research into the selected technologies will be informed by authoritative writers in the field of the philosophy of technology and its historical development. The view of the relationship between technology and society, and approaches to the ethical implications of technology will be illuminated by the works of such writers as Martin Heidegger, Gilbert Simondon, and Bernard Stiegler, amongst others (Introna, 2005). The philosophical concepts of technologies with particular regard to the photographic that these and other philosophers have developed will form a core theoretical base for the project. The investigation will determine those particular technologies, and associated philosophies, that are significant and relevant to the project through a combination of Thematic Analysis and Practice -Led research methods. The assumptions and practices in which these technological function will then be interrogated and then informed by these selected theoretical approaches.

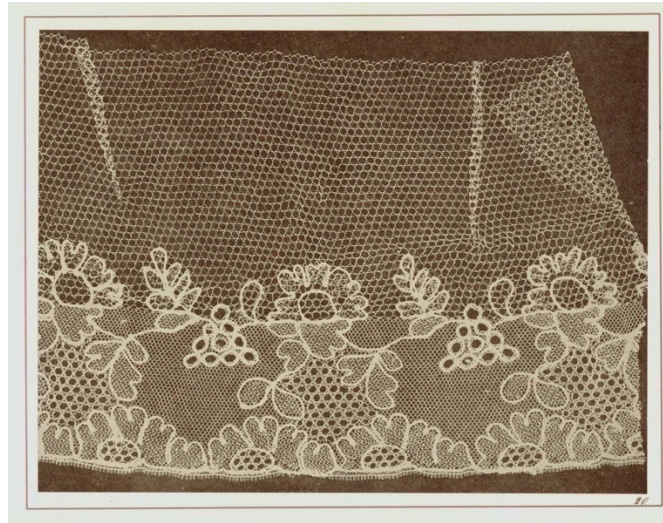
Preliminary themes for the project have been identified through an inductive process as part of the research method of this proposal.

- photographic as subject; with its history as a source of insight
- shadow as topic; as the conceptual theme for the project
- the 'algorithmic turn' as technological context

'If the nineteenth century, as a whole, can be seen, at least within the history of photography, as a continuous attempt to conceive of, and refine, the art of fixing a shadow then we should also see that most of the twentieth century was still under that same shadow.'

- Yanai Toister, 2015.

Relationship to Computing



Lace, Plate XX, *The Pencil of Nature*, William Henry Fox Talbot, 1844.

This is an image of Lace made by William Henry Fox Talbot sometime between 1839 and 1844. The pioneer of photography Talbot is known to have associated with the Charles Babbage and was known to have gifted him an image of lace, amongst others.

Talbot, a polymath, accomplished mathematician and inventor of the salted paper and calotype photographic processes, shared a close friendship with Babbage also a mathematician, philosopher, inventor, mechanical engineer, and the originator (along with Ada Lovelace), of the concept of a programmable computer.

One of the earliest photographic images, it is created by laying lace directly on photosensitive material and exposing it to sunlight, nowadays called a photogram. At the time of its creation it was the coming together of a number of technological and philosophical ideas. It suggests that the will to computing and the photographic stem from the same set of ideas around programmable, mechanised production.

Talbot encountered Babbage's mechanical computer in 1833, and Babbage proudly displayed Talbot's images along side the Analytical Engine where people would have encountered the analytical engine and photography for the first time at the same place.

Both technologies share a vision of generative creation. Geoffrey Batchen explores this idea of the two technologies sharing intertwined histories and comparable logics in his essay; *Obedient Numbers, Soft Delight* (2000). Batchen draws on Douglas Nickel's suggestion of an algorithmic connection between the two inventors. Babbage owned woven silk portrait that had been created using so-called Jacquard cards '*producing a pixelated weave so fine that some observers at first mistook it for an*

engraving or lithograph' (p. 169). Babbage later created the Analytical Engine, a programmable number-making machine of numerical differences. At the same time, and certainly in discussion with Babbage, Talbot talks about nature drawing itself, *The Pencil of Nature* (1844), and called an image of a building "*the first that was ever yet known to have drawn its own picture.*" The subject matter in this case, machine made lace, and as Batchen argues he demonstrates '*a binary approach of patterned light*' (p. 167) and in essence, his version of a programmable image making machine. Or as he put it; '*mathematics made visible*' (p. 169).

The Lace image signals a formative and direct relationship between the origins of the photographic and the algorithmic. Or as Sarah Kember puts it; '*It is therefore a fledgling form of informational culture, one that since its inception records the presence and absence of data*' (2012, p. 199). That we now encounter the photographic image itself in a computational mode may be considered a re-unification of these technologies.

The Algorithmic Image

The contemporary photographic universe is undeniably a computational one. Photography is now characterised by “*the reproduction and consumption, flow and exchange, maintenance and disruption, of data*” (Ritchin, 2008). The consequences of this state create issues that cause us to question what we may now consider photographic and how we may expect it to function. And even if such distinctions are to be considered necessary.

This condition is not necessarily specific to the photographic; Claude Shannon (1948), Vilém Flusser (1984) and Friedrich Kittler (2010), all suggest that human communications have always been procedural and therefore computational. Lev Manovich a leading media philosopher, defines the new media object as being programmable (2001). Media made computational, enabled by interconnected networks, has produced a qualitative change brought about by a quantitative change. Peter Norvig director of research at Google, argues the amount of data available influences ... “*by changing the amount, we can change the essence*” (Mayer-Schönberger, 2013).

Photography itself might be seen as alliance between object and image for the last one hundred and seventy years. Now that the relationship is facilitated by mathematical code, it is no longer optical media, but ‘*a return to the symbolic in the form of signal codification*’ (Galloway, 2012) (Kittler, 2010). When the photograph becomes computational and programable, it becomes variable, unsettling its long-established indexical nature. Eivind Røssaak describes the ‘*algorithmic image*’; the image is now a programable object, one that may be expressed *as, with, in or through* software (2011) (Palmer, 2015). William Uricchio has termed this as *The Algorithmic Turn* and he argues that this fundamentally challenges our ways of seeing the world ‘*dependent on algorithmic interventions between the viewing subject and the object viewed*’ (2011).

Yanai Toister argues that the algorithmic is inherent to photography, and there is ‘*there is no such thing as ‘non-algorithmic image synthesis*’. He goes on to claim that ‘*accepting the configuration of the photograph in terms of visual content alone is becoming increasingly problematic*’ (Toister, 2015, p. 231). The machines used for photographic processing have their roots in text manipulation rather than image-processing. Photographic images made visible by algorithms make binary data look like an image we expect to see - one that we view on a computational device. But the image as data can be interpreted in any number of data outputs such as sound, text, string of number for example. The interpretations may occur with or without human intervention questioning the role of the photographer in its production. This leads to the question whether these interpretations are, or are not, photographic in nature. Do we need to distance this practice from photographic? Do we need to develop another term to describe it?

Intelligent Machine

William Fox Talbot, in his book *Pencil of Nature*, talked about the invention of the photographic, noting that nature might draw itself as '*photogenic drawings*' (1844). With this statement he signals that the camera has an agency of its own. It also suggests separation between nature, and its recording as a mechanised, automated process. Today, as photography has all but become a form of computation, the photographer's agency may also be brought into question as in certain cases, the photographer may prove incidental to the photographic process.

Various modes of computational photography now enable non-human centred forms of the photographic practice. Daniel Palmer describes this as a paradox where the transfer of agency is from the photographer (or in Flusser's terms - the functionary) towards that of the database (2013). It would appear that it is not only the database that becomes the functionary, but as Manovich maintains, it is the algorithms that bring it to life. Trevor Paglen argues that something new was happening and that '*machines were starting to see for themselves*' (2014), but this has been long underway.

The challenge for this project will be to define a mode of photographic practice in a context that explores a shift in agency. Digital photography has moved away from valuing traditional concepts, such as perspective and opticality that have their roots in the Renaissance (Rubinstein, 2013). In what Joanna Zylińska calls 'posthumanist photography' (Zylińska, 2016. p. 206), now it is computers that are making, processing, storing and distributing images. Fox Talbot's vision of the objective and mechanised '*pencil of nature*' has logically evolved into Flusser's apparatus and we now face the dilemma of Paul Virilio's Vision Machine. Photography's vision is increasingly from a non-human perspective and can be seen as an expansion of human perception.

The review of relevant philosophical concepts is part of the continual, iterative research process of this project. Themes discussed concerning the role of human agency have led the investigation towards concepts of posthumanism. For this the works of N. Katherine Hayles, Bruno Latour, Donna Haraway, Peter Sloterdijk, Joanna Zylińska and others will be considered. Other areas of investigation include issues concerning the materiality of the medium as argued by the authors Bill Brown, Mark Hansen and Jack Burnham. The non-human philosophies of Object-Oriented Ontology argued in the works of Graham Harman, Levi R. Bryant and Steven Shavero will also be considered.

Project Design

The aim and subject of the project is to investigate and develop a new notion of contemporary Photographic Practice through the reinterpretation of significant forms of photographic practice that hold relevance both historically and in contemporary contexts. The project is practice based and draws from a Hermeneutic framework to synthesise investigations across areas of thematic analysis.

This subject will be researched utilising a combination of approaches and research methods. The project will consider four, interconnecting areas that will be investigated in unison and will be unified in a central part of the project where analysis, interpretation and synthesis will take place.

The sections are:

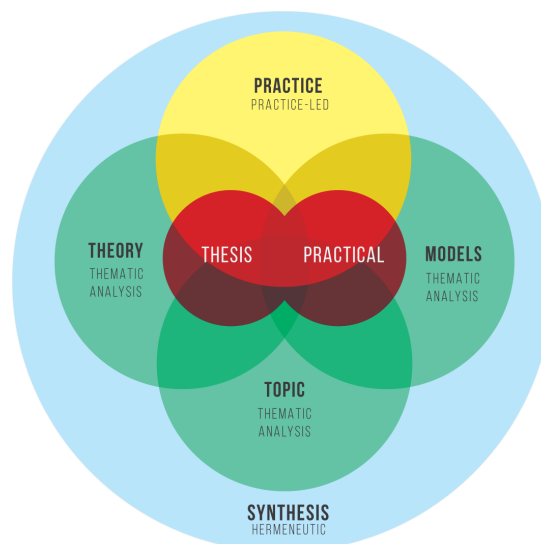
Shadow - the topic of the investigation (*thematic analysis*)

Theoretical - concepts and ideas (*thematic analysis*)

Practice - practice-led investigation

Models - bodies of work that inform the investigation (*thematic analysis*)

The unifying area of activity will take the form of analysis, interpretation, synthesis as characterised by the hermeneutic research methodology. This process will distil the investigative activities of the project towards the generation of the outputs of the project.



Project Outputs

The final output of the project will be the presentation of a written exegesis and a body of practical work.

The written exegesis will be the exploration of the concepts, theories, technologies and context related to the research question. It will provide a clear research question and an approach to responding to that question. It will deal with the theory, historical study, philosophical argument, and interpretations of literary and artistic works related to the research objectives. It is not intended that it be an account or explanation of the practical work, but an exploration and report on the concepts that inform its development and eventual creation. The purpose of the written exegesis is to demonstrate the project's significance.

The Practical work is where the specific and relevant concepts investigated in the written exegesis will be synthesised and an interpretation presented in physical form. The work will be presented as an exhibition installation that will offer the visitor a tangible encounter as an experience of the chosen concepts. Rather than being a deliberate illustration of the concepts explored, the practical work will embody an interpretation of the synthesised findings of the research, both theoretical and practical.

These two aspects of the project will be in dialogue with each other, consolidating to provide a comprehensive and definitive response to the research question, and original contribution to the field of photographic practice.

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