Paper tensions: From flipbooks to scanners the role of paper in moving image practices.

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Abstract

Concerning the materiality of reproduction and duplication in film, this chapter explores the overlap of moving image and paper technologies. It presents an assemblage of paper related moving image artefacts: paper prints, posters, flipbooks, optical printers, scanners, pre-cinematic, early and digital cinema technologies, to explore what we can understand about the moving image when viewed outside of the cinematic apparatus of screen and auditorium. By considering the moving image and its history as an assemblage of overlapping mediums, we broaden our understanding of moving image technology in its material and immaterial aspects. This chapter explores how subjects and technologies interact. The paper begins with Elsaesser's assertion that there is a need for a new mapping of the moving image in the wake of research on early cinema to better our understanding of audio-visual media technologies. Utilising media archaeology and cultural techniques, this paper explores the connections between print media, film reproduction, and digital scanners. The chapter concludes that archival film practices of duplication are dynamically co-created through networks of technology and subject forming changeable expressions of practice.

Introduction

Let us consider the film in its everyday aspect, which is outside of the cinema auditorium setting, which is the pinnacle of a film's life. In this new consideration, we can think of film in relation to another form, such as paper. The release of a new film heralds a

graphic display of the film in its short form as a movie poster, hanging in bus stop shelters, adverts in newspapers, magazines, stuck to the side of moving buses or on the walls of train stations. Even within the confines of the auditorium, the cinema-goer views large-scale posters and character cut-outs as part of the mise-en-scéne of the modern cinema experience. Collectors and enthusiasts can collect the myriad of film postcards that twirl on the carousels at cinemas, film shops, galleries and museums. The reproduction of the moving image through paper has given the cinema goer the opportunity to take home a non-celluloid aspect of film. The portability of this mechanism of reproduction long before the digital turn allowed cinema to imbed itself in the everyday cultural aspects of our lives.

The film theorist Elsaesser asserted the need to rethink what cinema is. This rethinking followed new insights from theoretical shifts in theory, such as the new film history and technological shifts like digitisation (Elsaesser, 2004). This looking again at the network of technologies, objects and practices seen as both cinema's effects and affects, for Elsaesser was an important intervention to question what and how we understood film history, and cinema's place in our culture. The moment(s) where the perceived rupture of the digital, allows us to go beyond seeing the development of the audio-visual as one improvement after another, is for Elsaesser a moment to rethink "historical change" (Elsaesser, 2004) as both a linear change, and its opposite. This approach of film history as media archaeology considered in this chapter is a way to think through how we understand moving image technologies in their materiality, utilising paper as a mediator to consider both the technological implications of film and paper and its cultural inferences, particularly in relation to archival film practices.

Media archaeology as an approach to understanding the moving image allows us to inquire into how we read and understand the moving image. This theoretical context of overlapping media, seeing film as part of a wider network of technologies of the moving

image, the new film history (Elsaesser, 1986) and media archaeology and its variants (Strauven, 2014; Parikka, 2012) present a critical approach to media history.

Paper represents a medium that finds itself a converging point for other media. In this chapter, this proposition relates to how paper acts as a way of formalising information into a document. Film companies reproduced their films as printed matter in early cinematic technologies such as the kinora or pre-cinematic mediums like flipbooks. It was through copyrighting films as paper prints however that film was formalised as a medium. It is in the afterlife of film, its re-presentation and reproduction of film in its archival life, which reflects the moving image as a document. When we explore several technologies and expressions of cinema that existed in the pre, early, and digital cinematic history of film, and how they interrelate with paper, we can understand how we validate cinema through technological methods and cultural practices.

The chapter sets out an archaeology of paper and film, at first in relation to early cinema and pre-cinematic technologies, and then in relation to the archival practices of film in the analogue and digital realm. We can understand films ontology through the production of film documents; through practices such as reproduction and duplication that show how interrelated technological techniques and cultural practices co-produce what film is.

Some critiques of media archaeology argue that its materialism fetishizes technology or at least relegates human agency (Winthrop-Young, 2013). The question of how technology impacts culture, need not however be a binary consideration when thinking archaeologically. This chapter considers the flow between material and immaterial ways in which film through technological and cultural developments co-forms what film is. Methodological approaches in the section on *Reproduction and media documents*, particularly through the work of Bernhard Siegert and Lisa Gitelman, aim to ease the dualistic concerns of some approaches to media archaeology. These approaches lend themselves to thinking through different chains of

operations, technological and cultural, between film and paper, which lead to specific practices within the filmmaking archival processes. It is these processes of archiving that the chapter concludes with, a focus on how the archivist or scanner operator is formed and that of the thing that is produced, the film print, the archival document.

Film, flipbooks, and postcards

Looking into the history of pre and early cinematic technologies there are many accounts of the overlap with print technologies which show that cinema emerged and was transformed by other mediums. An illustration of the connection between print technologies and moving image technologies, includes the ways in which entrepreneurs utilised the new optical technologies to augment their own business. Studio photographers such as Bamforth and Co in 1870 recognised that new possibilities for their business were inherent in technologies such as the magic lantern and had manufactured lantern slides (Brown, 2005). With a studio set up to photograph slides of mainly life models, they could also adjust themselves to produce films. The company formed a partnership with the Riley Brothers of Bradford, whose moving image technology supplemented Bamforth's photographic skills, which allowed them to easily embrace the new market that was developing for postcards (Brown, 1996). Bamforth could manufacture postcards through reproductions of their magic lantern slides attaching words and poems as a supplement. These postcards productions, which were developed into sets of images soon became collectable items. It was the factory environment of their studio that allowed both the technological means for the production of slides, postcards, and film and the understanding of audiences who craved the entertainments they were offering. The first world war meant the company stopped making films but continued to build their company through manufacturing postcards. The story of Bamforth and Co.'s one of the largest producers of postcards in the world, and their foray

into film production via studio photography and magic lantern slide production is not unusual. The expectations and imaginations of audiences helped co-produce these mass entertainments, as early entrepreneurs competed to satisfy viewers' desires.

The overlap of print media and optical media at the end of the end of the 19th century and the beginning of the 20th century was never a one-way enterprise. The influx of optical technologies did not supersede print media, rather, it elaborated new forms and extended old ones. In return, the new optical technologies relied upon the audiences and conventions of the older technologies. The printed text alluded to visual imagery and motifs of the new optical technologies, magic lantern or phantasmagoria show techniques of dissolves and fades found themselves in the literary texts of the time.

> Writers' intra-textual use of optical motifs was replicated by a more material crossover between optical recreations and the publishing industry. The success of the various optical shows led to many attempts to recreate the same aesthetic effect through games, books, prints and domestic devices. (Plunkett, 2005: 13)

Robert Barker, the17th-century inventor who patented the Panorama, saw his invention miniaturised in print for home use. However, the domestication of the medium had a variety of facets to it. Pictorial journalism was already changing traditional print media, and pre-cinematic technologies were also extending it. The first graphic-based weekly, The Illustrated London News, which began circulation in 1842, soon had competitors in the field, with its focus on engraved pictorial accounts of the weekly events of note, and overlapped with the mass interest in entertainments such as Barker's panorama by offering to its most loyal subscribers a print of the panorama of London (Plunkett, 2005). The transforming landscape of newspapers in England, which saw new forms emerging, such as illustrated newspapers,

also emerged alongside experiences of optical technologies that were producing audiences accustomed to a changed sense of their place in the world. The panorama itself being an example of a technology that transported its viewer.

Another facet of the overlap of print media and optical technologies was in the production of miniatures that were domesticised not only through their appearance in weekly periodicals such as newspapers but also in their miniaturisation as toys. Above, Bamforth and Co transformed the photographic images and magic lantern slides in the studio/factory set up to produce not only moving images but also postcards. Other early cinematic technologies such as the cinematograph, an early hand cranked film camera and projector influenced flickbooks, or flipbooks. They produced flipbooks in large numbers at the end of the 19th century and the beginning of the 20th century. The moving image picture book aped the effect of the cinematograph and similar optical technologies (Plunkett, 2005. These early moving image or motion picture books made use of early cinematic films, which elaborated specific qualities that emphasised what was novel about the technology, namely movement. The early film sequences that the flipbooks plundered for the most dramatic effect, were those that contained for example dance movements. The emerging flipbooks added various attachments, such as transparencies or coloured lenses, the aim of which was to combine print technology with the effects of cinematographic technology to give the illusion of motion (Plunkett, 2005).

The kinora was another early cinematic device, developed by the Lumiere's at the same time as they worked on the cinematograph. The kinora was a small mechanical hand cranked flipbook. The images were organised as a rotating reel and were displayed where the users could view the consecutive frames of the photographic prints through a small viewfinder. You could turn the handle with enough or as little force as necessary to control the images as they flicked through the device to give the illusion of movement. The kinora

was an apparatus devised for the home, not viewable by more than one or two people at a time. By re-photographing the popular motion pictures reels that were available in the public arena to a smaller format for use in the private, another purpose could be found for a medium that was still to find its standardised form as cinema.

The manufacturers of early moving image works could feed into the print media market by also creating derivations of their films to produce crossover products and technologies. Cognitive processes concerned early cinematic and pre-cinematic technologies, and the flipbook and kinora share these concerns along with those produced within the network of print media. The prevailing networks of technologies, such as print, locomotive, and optical technologies, also entangled and evolved early cinematic technologies such as flipbooks and kinoras. The concerns of this network of technologies were the implications of cognitive processes and imaginative appeals to audiences.

The above considerations of the interplay of paper and film outline the technological overlap. How print technologies could reproduce the moving image, but also how film derived images that extended the vistas of established print audiences. From postcards to panorama's not only were new sights being co-opted into existing print forms, but new motifs of the moving image were also being brought into literature and print culture. New techniques were being embedded in culture, that beyond metaphor were disciplining, the viewer as outlined in works such as Jonathan Crary's, Techniques of the Observer (Crary, 1992). The techniques of flipbooks and kinoras require hand and eye coordination to produce the illusion of the moving image through the pliable thumb or the hand-cranked machine. The choice of movement, such as dancing in the sequence of images chosen in these domestic reproductions of film technologies, materially embedded through tactile activity an immaterial aspect of the concept of the moving image, producing it as both metaphor and

actuality. This activity produces not only a concept of the technology but the subject who utilises the technology.

Reproduction and media documents

Within the cinematic context, copying film has developed through several technologies and practices. Duplication has been a significant factor in formalising what cinema is, particularly as a concern for pirating or duping of film. Delineating ownership of the content and artefact developed different elements in the network of technologies that latterly comprised cinema. Yet a history of the technologies of cinema as Elsaesser critiqued does not fully express how the uses of cinematic instruments becomes embedded culturally particularly considering the impact of digital practices. The legal copy or original document poses a question of who may copy and how they copy. Reproduction in this sense falls into the category of professional and amateur practices or domestic or commercial. Lisa Gitelman's and Bernhard Siegert insights into reproduction technologies offer a framework to articulate this concern as a chain of cultural and technological operations that interact, rather than a cause-and-effect model. These operations act to produce objects: artworks, documents and produce subjects: artists, designers, archivists, and historians.

Examples of reproduction in the history of art highlight the interplay of technologies and techniques that permeate artworks and art practices. Siegert's concern for what design is, aims to resist the notion of the artist as the centre of the creative impulse, but looks to how "technologies, materialities, codes, and visualization strategies" make permissible the notion of design (Siegert, 2015:123). The Renaissance workshop in Siegert's reading, like the photographic studio in the exposition of Bamforth and Co's utilisation of optical and print technologies to produce films and postcards highlights how technology and technique interweave.

Artists' in the Renaissance workshop used mechanical means of projection to copy drawings onto surfaces. Artists' would reproduce drawings by placing a velo (or veil) between the artist and the object. The artist could use the velo to trace the outline of objects on walls or windows, seeing that object and the world divided into a grid of horizontal and vertical vectors. Dürer, Alberti and Leonardo also constructed similar developments of the velo to produce images with perspective, techniques that used charcoal and powder, and the punctuation of holes on cloth to help produce guiding lines. These techniques, according to Siegert, were not just for reproduction, but disciplined the artist's eye and hand. These practices involved hosts of assistants working on frescos and paintings, and also included those who were specialists in drawing particular elements such as clouds, skies, or backgrounds. For Siegert this "trace of material culture" (Siegert, 2015:139) highlights how drawing as a medium, calls into existence spaces such as workshops, collaborators and specialists, becoming an instrument for disciplining the body by offering control and correction mechanisms in the act of drawing.

New cinematic technologies, as seen with the photographic studio of Bamforth and Co. similar to the Renaissance workshop drew in new collaborations, specialists, and techniques that spanned photographic, print and the new cinematic realms. To consider how the material culture also disciplined both hand and eye, a further look into the reproduction of paper documents, discloses both the co-production of subjects and technologies.

In paper reproduction, the photocopier is one of the most ubiquitous instruments of copying in the past century. In Gitelman's media history of the photocopier, "xeroxing" came into being as a co-production of user and technology. The photocopier was as an office device that sat between carbon paper and the Photostat, in that it would produce between five and twenty copies. It however went beyond those numbers, as users found an array of applications that far outweighed the initially proposed usage (Gitelman, 2014).

Photocopying until its digital convergence, that is its technological and conceptual shift, had been a singular operation. The Pentagon Papers exemplifies this concept. The Pentagon Papers being both the name for the US Department of Defence report into the Vietnam War and the case of the military analyst Daniel Ellsberg, who copied and leaked these documents. The New York Times published the documents in 1971 as part of the increasing resistance to the US's military activity. Ellsberg's role was to copy, edit, and curate his version of the Pentagon Papers through his use of the xeroxing machine in a friend's office, which was then leaked to the press (Gitelman, 2014) . The curated and edited version of the government documents, came about as Ellsberg and his helpers, used scissors and masks to remove, notes, page numbers, margins and "top secret" markings from their copies. The report they were re-versioning, had already been a process of collected copies and "photocopies of photocopies, photocopies of transcripts of cables, photocopies of mimeograph copies, and so on" (Gitelman, 2014:89). This making and remaking made the document a flexible copy that Ellsberg, archived, and copied again and again. Photocopying became a large part of US office life from the 60s, making documents, became a structuring practice of life, with copy shops proliferating high streets and office blocks. To read documents, such as the Pentagon Papers beyond the linguistic or literary study of their contents, is to understand them in their making, through photocopying, "the disciplinary structures of modern bureaucracy, including its media of documentary reproduction" (Gitelman, 2014:103).

The analysis of how the photocopier makes documents through the case of the Pentagon Papers goes beyond media histories that see only stories of innovation to diffusion of a technology. The technology, as before with the Renaissance workshop or Bamforth and Co. used new spaces, interactions and techniques. Photocopying understood within its bureaucratic and legalistic frameworks, the sets of operations and techniques chained

together allows us to understand the Pentagon Papers as a co-creation. It is a history that produces a "subject" who pushes the button, crops the page, and reconfigures pages in the context office workflows. The Pentagon Papers gained its validity as a document, created through the process of duplication and editing. In this reading of a media technology there is a twofold concept of the subject. Gitelman's subject is one that comes out of the bureaucratic world of office work. Technology and the subject are filters, through which the document passes. It is the material cultural trace evidenced in such documents as the Pentagon Papers, and the immaterial in Ellsberg the xeroxing whistle-blower. In the account of the velo we find the trace of the workshops, through the artistic practices, that produce the material documents in the drafts and designs and the immaterial artist, the subject who has their vision and hand disciplined through the technique. The immateriality here becomes the performative and gestural practices, of the button pushing, redrafting and editing through masking with the photocopier, or the use of light and cloth, punctuation and charcoal powder with the Renaissance workshop and the velo. The approach here lends itself to Bamforth and Co. and how the new cinematic technologies produced new subjects and practices, not only in optical technologies, but in their overlap with print technologies such as postcards and newspapers. Moving further into film archival practice, this approach opens up ways of considering the impact of the digital shift in reproduction in film practice.

Archival film, paper and printers

Early in the development of film as a business, it was necessary to produce a duplicate of a negative of a film (original film) to screen a film for an audience. The two earliest forms of reproduction were contact printing and optical printing. Contact printers' work by exposing the original negative on to raw stock by bringing the emulsions of both films together through contact. The other form of duplication is optical printing, where the

negative film is duplicated on the raw stock by the image being focused onto it via an intervening lens system (Read and Meyer, 2000). Much like the aforementioned velo, the optical printer acts as both a projector system that duplicates the image, but rather than drawing by hand, the added camera records a copy.

The other significant use of the optical printer beyond special effects and standard copying is by the film archivist, where "duplication" is a necessary step in the restoration and preservation process, facilitated by a range of printers (Read and Meyer, 2000). As previously mentioned, there are two main types of printer developed for duplication, the contact and the optical. The optical printer offers advantages over the contact printer in its ability to allow for the duplication of damaged films, the ability to enlarge and reduce the image, to reframe horizontally and vertically. The aim of the archivist is to produce a print from a film that due to wear and tear, improper storage or for numerous other reasons needs to be preserved via its printing onto another role of film. The process of re-photographing rather than a simple contact print offers options to the archivist to overcome challenges such as the shrinking of film, damaged perforations, scratches and deterioration of the original film negative. Film archives and this differs between contexts of national archives to local niche archives, are not only concerned with the duplication of a film. For a faithful reproduction of a film in their collections, there is an awareness of a creative dimension to the process. The archivist in this sense does not hold to the notion that it merely pragmatically reproduces and duplicates, there is always a concern for what is changed, the difference engendered by the new photographic process, there are intangibles that can't immediately be pointed at by only being concerned with a mirror of the original film. The creativity involved in restoration, begs further questions similar to those raised by Siegert in relation to design and the velo, and by Gitelman in relation to photocopying and the document. What is at stake in the duplication of the film image? ne consideration is the historiography of film.

The film archive has played an important role as mentioned in the introduction in our understanding of film history. Elsaesser's "new film history" developed from the re-evaluation of early cinema that deconstructed the teleological myths of film origins (Elsaesser, 1990). One area of interest in film history has been the paper print collection. This collection of over 3000 films preserved on paper came about at first as part of Edison's attempts to copyright the film technology that he developed along with his assistants such as W.K.L. Dickson in the latter part of the 19th Century. By registering their first experiments in film as a series of photographic images, a contact copy of a film on card paper, they could secure the copyright of their efforts. They protected films in the US between 1894 until 1912 as paper versions through this process (Op den Kamp, 2018, Grimm, 1999, Loughney, 1988). The process on paper was later redundant after this point as the US library of Congress could store films as nitrate copies. However, this early enterprise, long after the early examples of these films had deteriorated through decay or the film material reused for other purposes, emerged as a resource for a history of the earliest experiments in film history.

In the 1940s, attempts began by the Library of Congress to bring these paper prints back to the screen. One innovator of the optical printer, engineer Carl Gregory, repurposed a printer in order that it could manage the paper prints, which were in a variety of material conditions (Gregory, 1944). Much like the archival practices of today, the optical printer could cope with sprocket hole displacement or wear, shrinkage, and different film standards. This project to reanimate the paper prints is one that has occurred many times in the lifespan of the prints. Each effort has seen the development of film technologies applied to the problem of the reproduction of viewable prints. Duplication of the paper prints onto 16mm film occurred between 1953 and 1967 and in the 1980s printed they were printed onto 35mm film. It was in 2003 that the US Library of Congress sought a digital alternative. Computers were being used to automate processes where possible and the Kinetta film scanner was an

option that shifted the process from frame-by-frame registration of the image, to one that utilised a continuous film movement to capture the image in 2K resolution (Kreines, J, 2009). The optical printer like the photocopier proliferates within its oeuvre of the film industry. It brings with it the development of specific skills and techniques for producing its output. The development of such technologies, mirror those of the aforementioned velo, a process of bespoke elaboration before the process becomes more standardised and industrialised. The user at this stage is an artist engineer, developing techniques that connect the technology to both new affordances and older regimes of operation. This is discernible with the optical printer as the technology shifts towards a digital framework with the move to scanners.

Scanners and pixels

The history of the paper print collections, returning them to projectable film, is also a history of the shifting technologies of film duplication. The move to scanning allowed for a gentler treatment of the paper prints, while still being able to output to 35mm. Scanning works differently to the process of the contact and optical printer because it creates a digital file. With a scanner the source of light that illuminates the film is "refracted by an optical system to be focused on a sensor that is composed by a set of independent photosensitive elements, which correspond to the pixels of the digital representation" (Flueckiger et al.,2018). The digital scanner stores colour information with three values, for example RGB or YUV. It gains correct colour through three digital images that correspond to specific spectral regions of the visible range. The aim of digitization of film in this way is to have the most accurate reproduction of a film's colours translated digitally to the image projected on screen. It is this translation that highlights the major difference to the optical and contact forms of reproduction of the film image.

The current range of scanners in use in the digitization and restoration process of archival films were surveyed by the DIASTOR project. It was apparent that most commercial scanners performed well in scanning subtractive 3-colour processes as these represented the dominant technology since the 50s in film production, matching the reflection that the bulk of film heritage fit this parameter. This observation, that the technology once it is at a diffusion stage of development, tends towards a more generic broad standardisation, also means it obscures the wider range of techniques, gestures and collaborations that are necessary to trace the interconnections that brought the technology into being. The standardised scanners pose a problem for historical films that share a different colour profile, for example, in using tinting. For archival processes, the standard film scanner cannot capture and render variation, the elements of film practice akin to the drafts of the assistants and associates working with the velo in the Renaissance workshop, or the cropping and masking with the photocopier in the example of the Pentagon Papers are not its concern. The standard scanner flattens out the technical experience from the detail and gesture needed in contemplating the archival print. It obscures the collaborations and overlaps of disciplines that are brought together to produce the technology.

To judge a set of properties across the range of archival film scanners, including the Kinetta film scanner, the DIASTOR study (Flueckiger, et al., 2018) elaborated a set of properties. These included the scanners' ability to handle different film formats to their type of framing options and the quality of the light source and sensor. The DIASTOR approach to film scanning, considered subjective and objective factors in that it could rate the qualities of the various scanners through objective tests, and could through a group of "qualified" individuals make subjective decisions on the quality of the final projected image through this combination of material properties and industry workflows (Flueckiger, et al., 2018: 82). Their analysis points in part to an acknowledgement that the scanner acts as with the

velo or the photocopier, in its operational traces as set of operations that give rise to subjects. One subject highlighted by the DIASTOR project is the filmic document. The outputted file represents the ingested knowledge and scanner operator know how. Colour depth, sprocket hole distances, marks on the border of frames, and damaged film register both material concerns and cultural questions.

The other subject that arises in the archival film digitisation process is that of the archivist/scanner operator as the technology disciplines and structures activity. The commercial workflows of scanning echo the office workspaces and Renaissance workshop that produced their own specific techniques of identity. The workflows of the scanner operator are disciplining, through the technologies of colour depth and frame positioning, aligning and adjusting utilising the scanners user interface and moveable parts to correct and adjust, in the velo's fashion. They do not need these techniques in the standardised machine, mass production obscures these gestures through ready-made scripts and user interface design. We can consider amateur gestures as a partial corrective of the disciplined professional subject. In the archivist lab, however, the document only comes into being through the interplay of the two subjects document and user. The performative technological exchange in the practices of duplication produces both the document itself and the archivist.

Conclusion

This chapter has traced a media history of archival film duplication through the interweaving of film and paper, starting through the wider applications of paper and early cinematic technologies, through to a narrower conception of filmic practices within the archive. Elsaesser’s request to rethink the mapping of the audio-visual culture, presents an opportunity to readjust our thinking from linear narratives of films’ history, or technological determinations of the relationship between subject and object, between film technology and

user. Rather tracing the materiality of our film culture can help expose how in differing contexts, we can link various techniques to gain a different insight into what film is. The approach taken throughout this chapter has been to build upon approaches to media history and cultural techniques that elaborate how certain film practices of duplication and the concern for the archival film document can help us understand more about film culture.

Examples of the photocopier or velo illustrate an important concept of double subject making. Siegert's historical exploration of Renaissance design practices has a wealth of chains of operation that that demarcate the varying notions of design. In Gitelman's exposition of the photocopier, it renders a more discreet reading of subject formation. It offers a way to disentangle more deterministic analysis of techniques that produce documents. In building upon their approach, this chapter has sought to consider the shift to the digital in film practice, regarding Elsaesser's instruction to think anew the relationships of technology to practice.

The shift from a broad history of paper and film, elaborates why media archaeological approaches can seem to broaden out our understanding of medium specificity beyond convergence only theories. Rather, a reading that sees the flow of exchange between networks such as print and optical helps us discern the performative and technological, or the material or immaterial aspects of a medium. The always already interwoven relationship of paper and film, illustrated by looking at print media technologies and their overlap with early cinematic technologies, brings together practices of making documents. A focus on duplication allows us to understand what types of operations it permits in the flows of culture and technology in the process of digitisation, specifically when considering the process in archival film.

How we come to understand the archivist as scanner operator and how the filmic document comes into being is through the demarcation and elaboration of prior and evolving

practices, they substantiate themselves through doing, standardised machines and practices formalise them. Paper, scanners, optical printers implicated in practices of duplication and reproduction produce always interlinked documents and subjects, the shift to the digital may represent an opportunity to trace past techniques, by developing new gestures. It will be necessary to draw out these same gestures again through new practices when future standardisation renders them invisible.

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