

Printing and typesetting in film

By Dr Rob Banham*

Abstract

This article demonstrates the significance of films showing the historical printing and typesetting technologies to both researchers and teachers in the field of history of graphic communication. This is an area in which there were enormous technological changes during the 20th century, many of which have never been documented in printed publications of any kind and are now entirely obsolete, leaving film as the only surviving record. It is one of the outcomes of a research project investigating films of printing and typesetting funded by the Arts & Humanities Research Council in the UK (the other is a handlist which catalogues the films themselves). The article also explains the genesis of the handlist and documents the major archives of such films.

Keywords: film, printing, typesetting, social history, archives

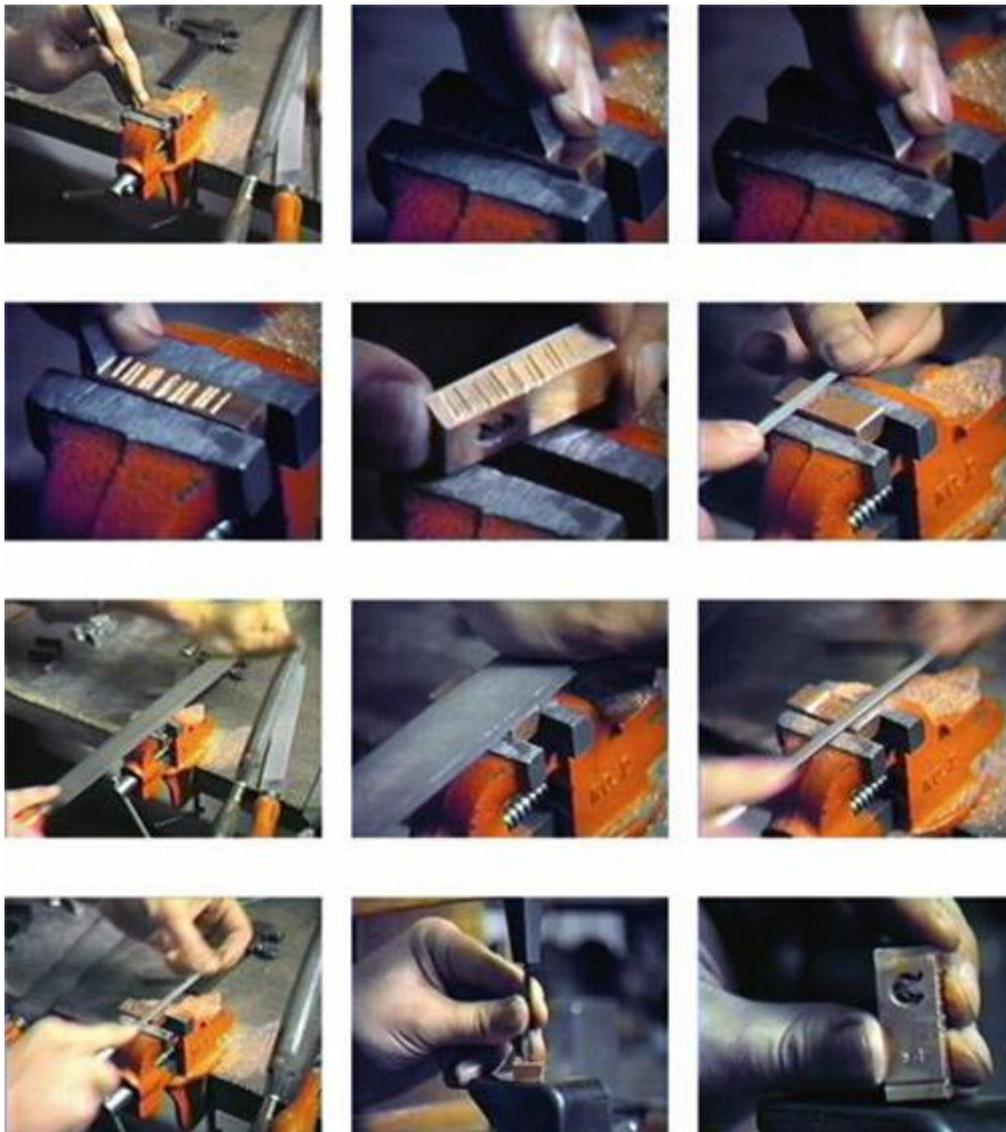
Printing and typesetting in film

In 2007 I began teaching history of graphic communication to undergraduate students in the Department of Typography & Graphic Communication at the University of Reading. This experience quickly confirmed that live demonstrations are much more effective than formal lectures when teaching students historical printing and typesetting processes. The Department is fortunate to be able to demonstrate a number of technologies to its students including hand typesetting, a Monotype keyboard and caster, hand presses (letterpress, intaglio, and lithography) and powered printing machines (letterpress and offset lithography). However, there are no facilities for casting type by hand, no Linotype or Intertype machines, no rotogravure, phototypesetting or flexography, and no material thing on related trades such as papermaking and binding. The machinery that we do have relies on specialist knowledge if we are to use it for practical demonstrations and this is not something that we can depend on having in the future – for example Mick Stocks, former head of the Department's Design & Print Unit who recently retired after 42 years of service, was the only member of staff who could run the Monotype caster.

The numerous technologies that cannot be demonstrated to students, and the likelihood that this list would grow longer in the future, led me to investigate the possibility of using film as a teaching aid – clearly the next best option when a live demonstration is not possible. I soon discovered that such films are not easy to find and so, funded by a research grant from the Arts & Humanities Research Council (AHRC), set about locating, documenting, and acquiring copies of relevant films. In total I watched almost 250 different films, which varied enormously in quality of both content and recording. Many should be avoided by all but the most dedicated researcher either because they are too specialist to be of any use to the inexpert viewer or simply because not enough detail can be seen to make viewing worthwhile. For example, three films about how to maintain the Meihle vertical letterpress machine – a total of almost three hours of footage – are so specific as to only really be of use if you want to know how to run that particular machine. However, there are many films that provide highly informative records of historical methods of printing and typesetting. In many cases these films challenge the accepted views of the technologies that they document and, when gathered together, provide an alternative view of their history. Written accounts, perhaps inevitably, present the history of printing and typesetting technology in a linear fashion whereby each new method or machine replaces its predecessor in a logical, sequential order. The films reveal a much more complex narrative in which many variant technologies are developed at around the same time and often a seemingly nonsensical mix of old and new technologies are used in conjunction with one another. Films that show the working practices of specific companies reveal that, in many cases, different firms used radically different methods to achieve the same ends. This was particularly true during the 1950s and 1960s when there were myriad ways to produce photographic plates for printing by offset lithography, often using metal type rather than phototypesetting. Most authors of works on printing and typesetting have no practical knowledge of the technology about which they are writing and in some cases this results in misleading descriptions being published. Often films demonstrate that several stages of incredibly skillful hand-finishing were required for what are generally thought of as entirely mechanical processes, or that technologies which written accounts describe in very simple terms were actually much more complex. Many of these techniques are now long forgotten, or poorly documented, but footage of processes such as preparing a forme of type for reproduction using Bright Type or applying a Benday mechanical tint to a printing plate has preserved them for posterity [1]. Potentially these films can provide historians with a new insight into printing and typesetting technology but my experience proved

that locating such films is difficult and that watching the films was frustrating because there was no means of knowing whether or not a particular film would be of any interest.

1. The art and technique of photo-engraving (c.1950) University of Reading / Rare Book School



Applying a Benday tint to a plate: 1–2 stopping out areas not to have the tint applied; 3 selecting a Benday screen; 4–6 inking the screen; 7–8 fixing the screen to the shading machine; 9–12 transferring the Benday tint onto the plate using a burnisher.

The outcome of my research is A handlist of films showing printing & typesetting which lists 240 films that include relevant footage.¹ There are a number of ways that the Handlist can be used to help direct researchers to those films that are likely to be of interest to them. It is divided into categories and subcategories based on those used to catalogue books at

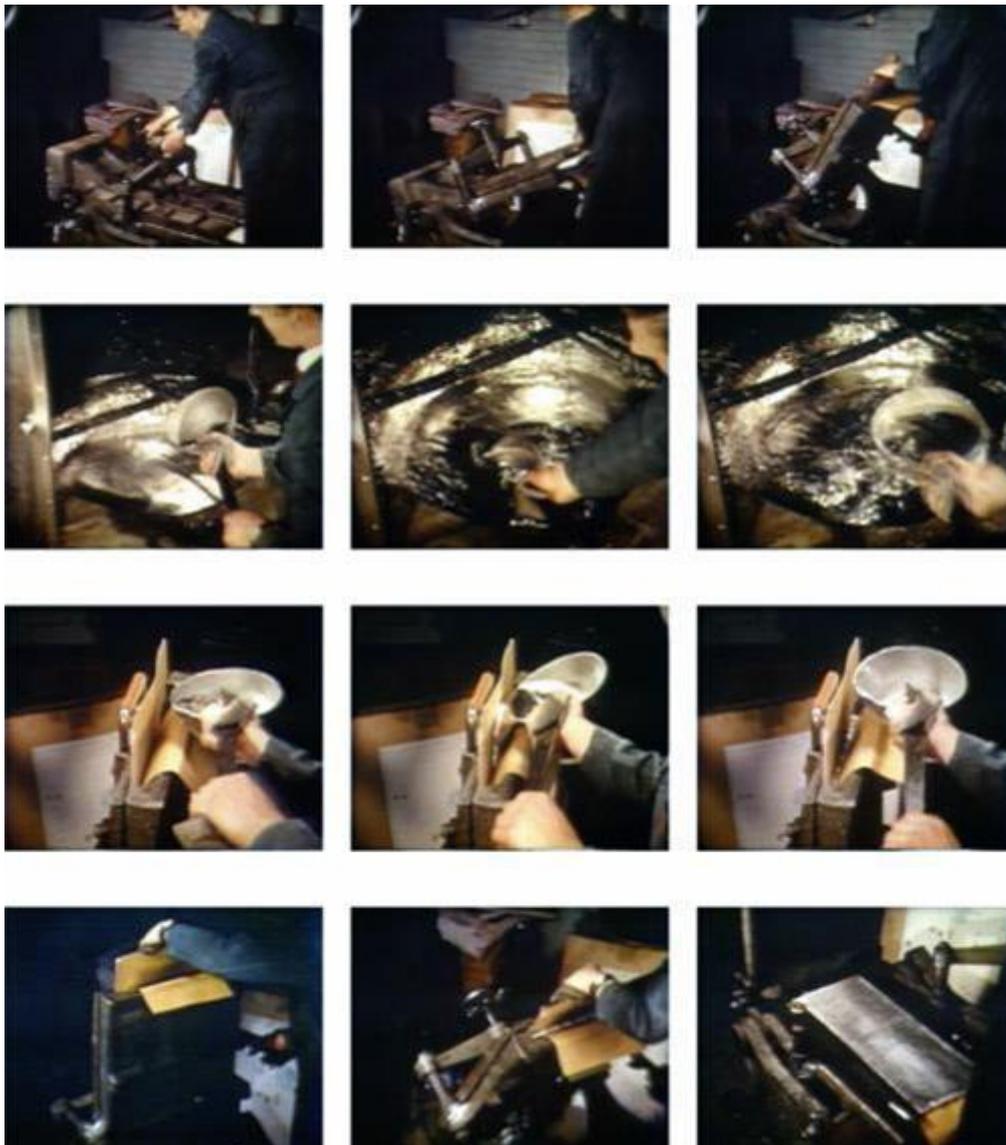
St Bride Library in London (the world's largest specialist library for printing, publishing and the graphic arts) but because many films could potentially be put into a number of different categories an index is also provided. More specific searching, or searches for technologies which may appear in several different categories, can be done electronically by searching the pdf for relevant terms. The location, date, format and length of film are also given. An overview of each film provides a short description and, for longer films, there is also a summary that provides more detailed, chronological information about what the film covers. The vast majority of films listed are in the collections at either the University of Virginia, the University of Reading or the British Film Institute, or are available online.

The 'Doc' Robert Leslie collection, Rare Book School, University of Virginia

Rare Book School has a collection of 175 films, videotapes and DVDs on graphic arts subjects and is the largest and most significant of its kind. It covers a wide range of subjects including bibliography, writing, manuscripts and letterforms, papermaking, book illustration, and bookbinding. I was fortunate to be able to visit Rare Book School to view those films that featured printing or typesetting and I am grateful to Terry Belanger and his team for their generous help and assistance. The catalogue of the collection modestly claims to be 'stubbornly full of out-of-date – and in some cases inaccurate – information' but I found it an indispensable aid to tracking down copies of many films. A small number of these are still publicly available including three useful films on lithography from the Tamarind Institute (www.unm.edu/~tamarind/) and four films can also be bought directly from the Book Arts Press (www.rarebookschool.com) including the excellent *From punch to printing type*. This is by far the most detailed film on punchcutting and handcasting type and is the only one to include steps such as dressing type and to show the various specialist tools and equipment required [2]. A shorter film explaining the basics is available from the University of Reading (*Making type by hand*). Sadly many of the most informative films in the Leslie collection are no longer available and have not yet been discovered in any other institution. These include *Basic reproduction processes in the graphic arts* and *Printmaking processes*, which are two of the only films in the Handlist to explain the basic principles of the major printing processes, and *Fine lines*, a film produced by the Department of Geography at the University of Edinburgh about the production of maps, which illustrates the process of printing maps from copper engravings. *Fine Lines* includes unique footage of making corrections to engraved plates and some

exceptional close-up shots of engraving the maps with punches and burins. However, the maps are actually printed using offset lithography; an excellent demonstration of printing copper-plates by hand is given in a recently produced film, *Photogravure: an archaeological research*.

2. Looking at litho (1950s?) University of Reading

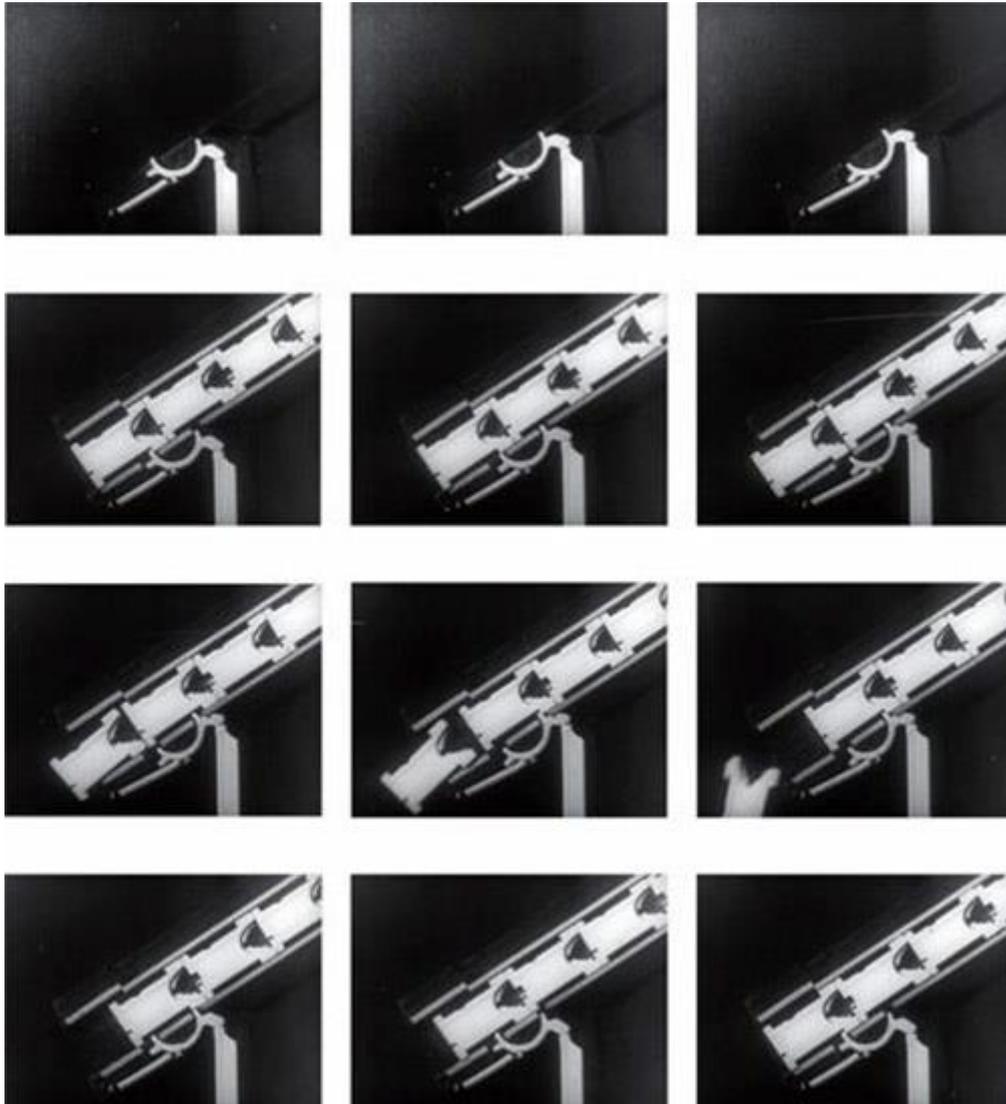


Casting a stereotype plate: 1–3 closing the casting box and moving it into a vertical position, ready for casting; 4–6 filling a ladle with molten type metal; 7–9 pouring type metal into the casting box; 10–12 the casting box is returned to a horizontal position and opened to reveal the cast metal plate.

The University of Reading

The Department of Typography & Graphic Communication had a very modest film collection before this project began but did hold a number of titles that have not yet been discovered elsewhere (including *The information industry: can you manage it?* starring a very young Rik Mayall and Dawn French which has to be seen to be believed). The most significant titles were the Department's own production *Making type by hand* and *Proofing: a bridge to quality* which for the most part is about as interesting as it sounds but is the only film discovered so far to include an explanation of how Cromalin proofs are made. The Department now has a collection of nearly 100 films² and I am extremely grateful to all those who helped to build it up; particularly Carl Schlesinger, who provided copies of the many films in his collection and Michael Passmore, who donated several films including two real gems – *Colour in print* and *Looking at litho*. The former includes an excellent explanation of the process of casting stereotype printing plates [3]. This comprises just a few minutes of film but is of enormous value because written descriptions of stereotyping technology are notoriously confusing and often in conflict with one another to the extent that one wonders if the authors have actually seen the process in action. Being able to watch it happen, together with a voice over explaining every stage of the process is refreshingly illuminating.

3. Typesetting (1960) www.archive.org



Sequence demonstrating how Linotype slugs are released from the magazine when a key is pressed.

British Film Institute

Films in the BFI collection can be viewed by appointment (viewers pay by length of film). Unfortunately there is no publicly available catalogue but all 27 films featuring printing and typesetting are included in the Handlist. Almost half of these films are about newspapers and together they provide an excellent overview of local and national newspaper production in the UK during the 20th century, particularly from the 1920s to the 1960s. Major newspapers covered include the Daily Mail, The Times, the Manchester Guardian, and the Daily Herald. The other strength of BFI's holdings is the number of films produced before WW². These

include *Three Linotype machines* (1900) which is the earliest known film of any hot-metal machine; *Die Fabrication von Briefmarken* (1910) filmed at Perkins & Bacon in London; *Gesamtansicht der Fabrik* (1911), a German film about book production; and *The production of a map* (1917) which shows the production of maps by offset lithography from copper-engraved originals.

Films online

There are a surprising number of films available online and obviously they have the advantage of being available to anyone with internet access and don't require a trip to London, Reading, or Charlottesville. As far as films of printing and typesetting are concerned there are two important online archives – the British Pathé News Archive and the Internet Archive.

The British Pathé News Archive (www.britishPathé.com) allows visitors to search over 3500 hours of British Pathé footage which includes over 90,000 individual items covering news, sport, social history, and entertainment from 1896 to 1970. Low quality versions of the films can be downloaded for free, higher quality versions currently cost £29.38 each, irrespective of the length of the film (most are around two minutes) or £587.50 to publish them on the web.³ The archive includes over 80 films that show printing or typesetting. Many of these are about newspapers, often stories about the production of army newspapers during WW2, and only include brief shots of presses running. However, others have unique footage of the production of ephemeral items such as maps, globes, tickets, greetings cards, and census papers.

The Internet Archive (www.archive.org) is a US charity that was founded to build an internet library in collaboration with major institutions such as the Library of Congress and the Smithsonian. Access to the site is completely free, as are downloads of the material which currently includes over 100,000 movies. Most can be downloaded in a variety of different levels of quality with the best being good enough to view at full screen. There are over 25 films relating to printing and typesetting currently available and the list continues to grow. Two of the most interesting are *Spot news*, which shows how pictures were scanned and sent by telephone in 1937 – long before the advent of email attachments – and *Typesetting* (1960) which is a brilliant, in-depth explanation of how the Linotype machine works [4]. Unfortunately there is no equivalent film for the Monotype, the nearest is Rich Hopkins' *Casting a font of metal type* (1986). In theory a historian interested in the technical details of how Monotype or Linotype machines worked could consult an instruction manual but often the manuals for these machines

are so poorly written as to be almost unintelligible, particularly to someone who does not already have intimate knowledge of the machine in question. Instructions for dismantling, assembling and adjusting the Monotype casting machine, published by the Lanston Monotype Machine Company in 1918 contains no less than 437 separate instructions without the aid of a single illustration or diagram. A typical instruction reads as follows: '63. With a suitable spanner loosen the Mold-blade-conecting-rod-ball-socket Nuts 46E1, 47E1, Plate E1. Note this Connecting-rod has right hand threads. Then with the pin wrench inserted in the hole in the Mold-blade Connecting-rod 45E, Plate E1, loosen the Mold-blade-connecting-rod Lock-nuts 45E1 and 45E2, Plate E1, and run them back on the Rod as far as they will go. The Mold-blade-connecting-rod-ball-socket Plugs 46E2 and 47E2 can now be run down on the Rod, permitting the Ball Sockets to be lifted off the Ball the Cam Lever 44E and the Mold-blade Bell Crank 41E.' Needless to say, watching someone do it is far more instructive.

4. Two millions a day: a tram ticket tale (1920s?) www.britishpathe.com



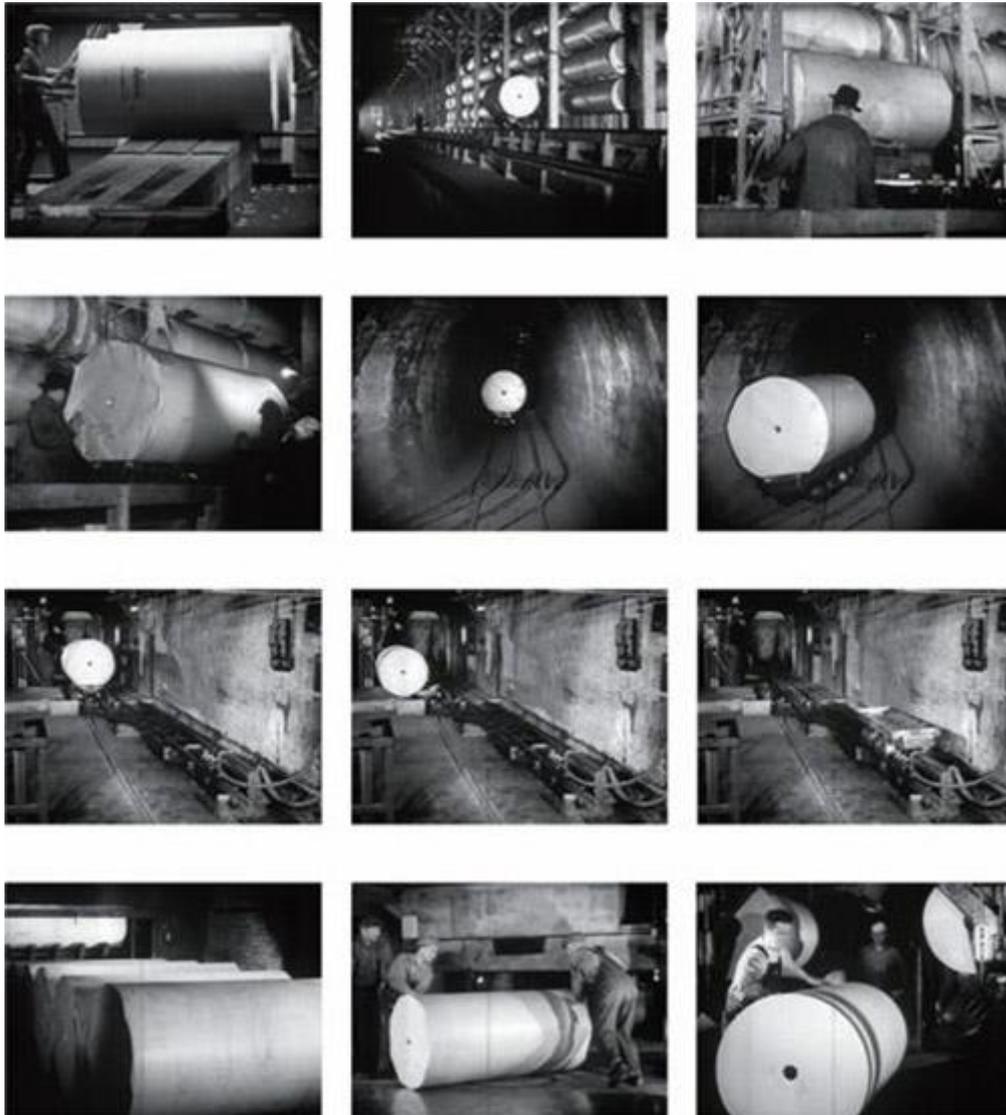
Short film showing tram tickets being produced: 1–3 a ream of paper is cut down into rolls, to which coloured dye is added; 4 the rolls are stacked ready for printing; 5–6 numbered tickets being printed with a special printing machine; 7–9 strips of tickets are sorted, wired, and then tied with string; 10–12 finally the tickets are guillotined, stacked, and stored on shelves before being delivered.

There are numerous smaller collections of films online⁴ and, of course, YouTube. The nature of YouTube means that the films available are continuously changing and for this reason, and the fact that a search for ‘printing’ returns over 80,000 hits, YouTube films were not included in the Handlist.

The films listed were originally produced for a variety of reasons. Some are contemporary with the technologies they record and were intended either for students or professionals in the field (as a form of education/training or to promote a particular product or company) or for a more general audience (news stories, advertising or recruitment). Others are attempts to document obsolete, or nearly obsolete technologies before they finally disappear; in some cases they are professionally produced documentaries made for television or as education titles, others are the work of enthusiasts who are still using old technology either professionally or as amateurs.

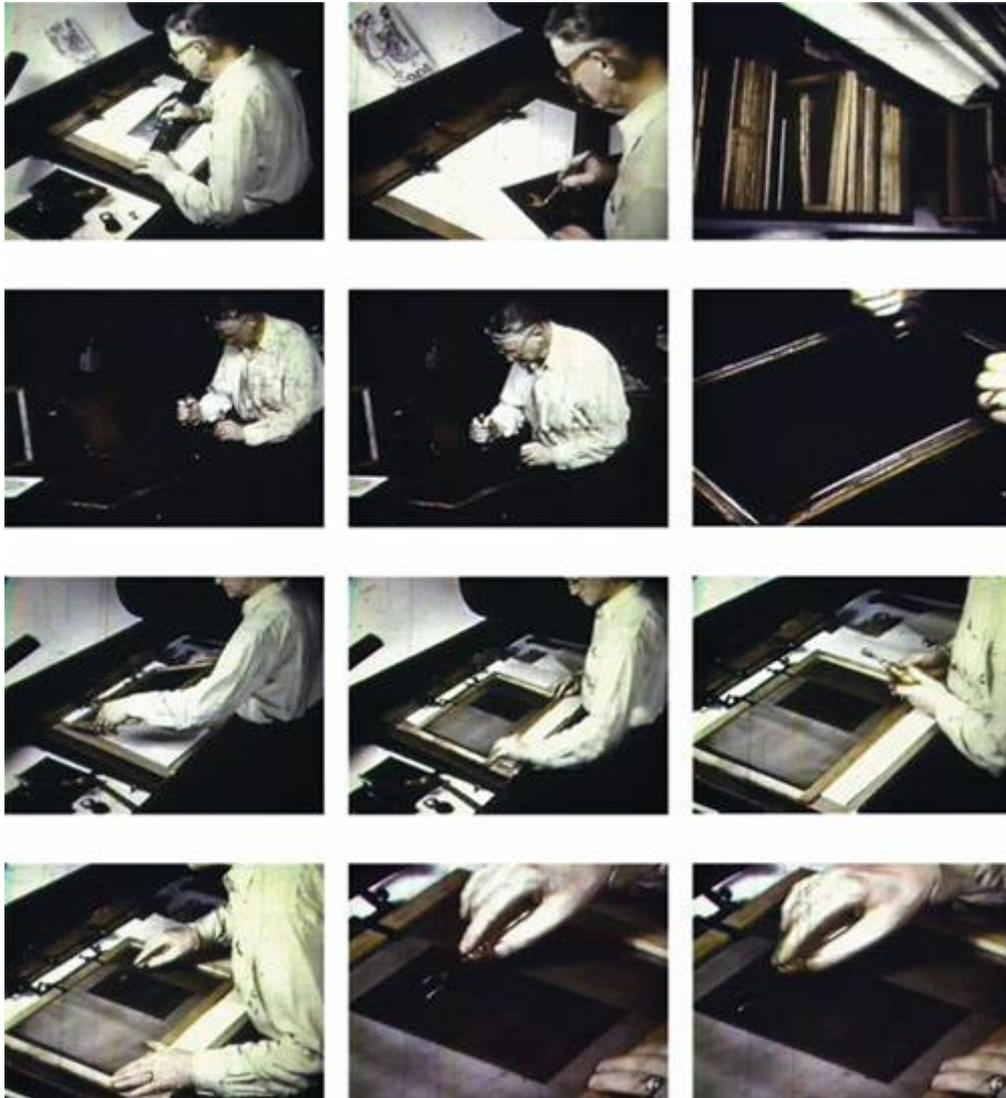
While films that were always intended as documentaries are inevitably the most informative it is the contemporary ones that are the most valuable to social historians and those interested in the history of printing and typesetting technology. They provide evocative first hand evidence of the working environments and conditions in the printing industry throughout the 20th century. Views of factory floors and workshops show not only the kind of machinery that was in use but also the number of people at work, how closely they worked together, the clothes they wore, whether they were male or female, how fast they worked, and in some cases the accompanying clatter of machines. Thus the viewer will learn that visors were popular attire for compositors and that in a factory producing tram tickets female workers (supervised by a well-dressed male overseer) tied strips of tickets together with string at incredible speed [5]. Films of newspaper production show banks of Linotype machines with their operators, lines of men assembling type into pages, and the ingenious mechanical systems that different news rooms used to deliver copy to those operators – and in one case to deliver paper to the presses [6].

5. From trees to Tribunes (1937) www.archive.org



Paper delivery to the Chicago Tribune: 1–2 Paper is delivered straight from the ship into a warehouse; 2–9 Reams of paper are then loaded onto a dolley; 4–7 The dolley travels on to Tribune Tower on train tracks in an underground tunnel before being unloaded onto a ramp at the other end by a mechanical tipping device; 8 The empty trolley returns to the warehouse automatically; 10–12 Reams of paper are then lifted up to the press room and taken to the presses.

6. From punch to printing type (1985) www.rarebookschool.org



The final stages of justifying a matrix: 1–5 Botching the matrix (widening it in order to correct the positioning of the character on the body of the matrix); 6–8 Filing a notch on the back of the matrix; 9–10 Filing leather grooves on the back and then the front of the matrix; 11 Punching identifying marks into the matrix; 12 The finished matrix ready for casting.

As visual records of both the working methods and the working conditions of specific companies films can add a huge amount to the existing written and oral history of printing and typesetting in the 20th century. They have the advantage of showing things as they really were whereas written accounts or interviews with workers, particularly those produced many years later, are often coloured by personal views and a tendency to view the past through rose-tinted glasses. This is a useful reminder that films should not be taken entirely at face value – factory floors may be tidier than normal, with workers better dressed, and perhaps more productive, than they would have been in the absence of a camera. In The creation of a printing type

Frederic Goudy is shown wearing a smock while at work in his studio drawing and cutting a letter Q for his Saks typeface. One of the inter-titles explains that Goudy does not normally wear a smock and has only done so for the film – without this explanation the viewer would be left with a totally false impression of how Goudy dressed for work. However, for information such as the number and type of printing presses or typesetting machines in operation films can provide an invaluable, often unique, record.

In some cases the very existence of the film is interesting and says something about the state of the industry at that particular time – for example in the 1970s the International Typographic Union felt it necessary to produce *New World of ITU* which explained to their members the benefits of introducing computers into the composing room; clearly these workers were worried about their skills as Linotype or Monotype operators becoming redundant and were resistant to these changes.

Newspaper production is by far the most prevalent subject – around 40 of the films listed are related to newspaper printing and these tend to be extremely repetitive. Many are from the British Pathé Archive and only show a few seconds of newspapers being printed without any explanation of what is shown. The rest generally show newspaper production from the collection and editing of news stories to printing from curved stereotype plates via Linotype typesetting. The only one which focuses entirely on typesetting and printing is *Farewell ETAOIN SHRDLU: an age-old printing process gives way to modern technology*, which documents the last day of Linotype production at the *New York Times* in 1978 and the changeover to phototypesetting.⁵ Similarly, two films about production of the *World book encyclopedia* at Lakeside Press in the US document the change over from rotary letterpress in the first film to offset-lithography in the second (in both cases using Monotype hot-metal typesetting). There are numerous other films on book production, which in general are much more varied than the newspaper films, reflecting the more disparate nature of the industry. They cover a range of different printing and typesetting technologies from the use of hand presses or vertical letterpress machines to large rotary presses and some even document the production of specialist kinds of books such as telephone directories. Letterpress printing by hand features in a large proportion of the films although often very briefly as part of a historical overview. Of those films that focus on manually operated letterpress machines the most informative are a series of films, three on the iron press and one on the common press, produced in the early 1970s by the Institute of Bibliography at the University of Leeds. A much shorter and less slow-moving explanation of printing using a common press was produced by Stan Nelson and

John Paulson in 1996 – this is also the only film to show the beater and puller working in tandem. There is also the excellent Stephen Fry documentary *The machine that made us*, which features Alan May's reconstruction of a Gutenberg press. The best explanation of foot-operated treadle presses is an amateur production, *Ten presses and how they work*, by Duane C. Scott which despite obvious flaws, such as the voice over being drowned out by the noise of the presses, is the only film to show treadle presses in any detail.

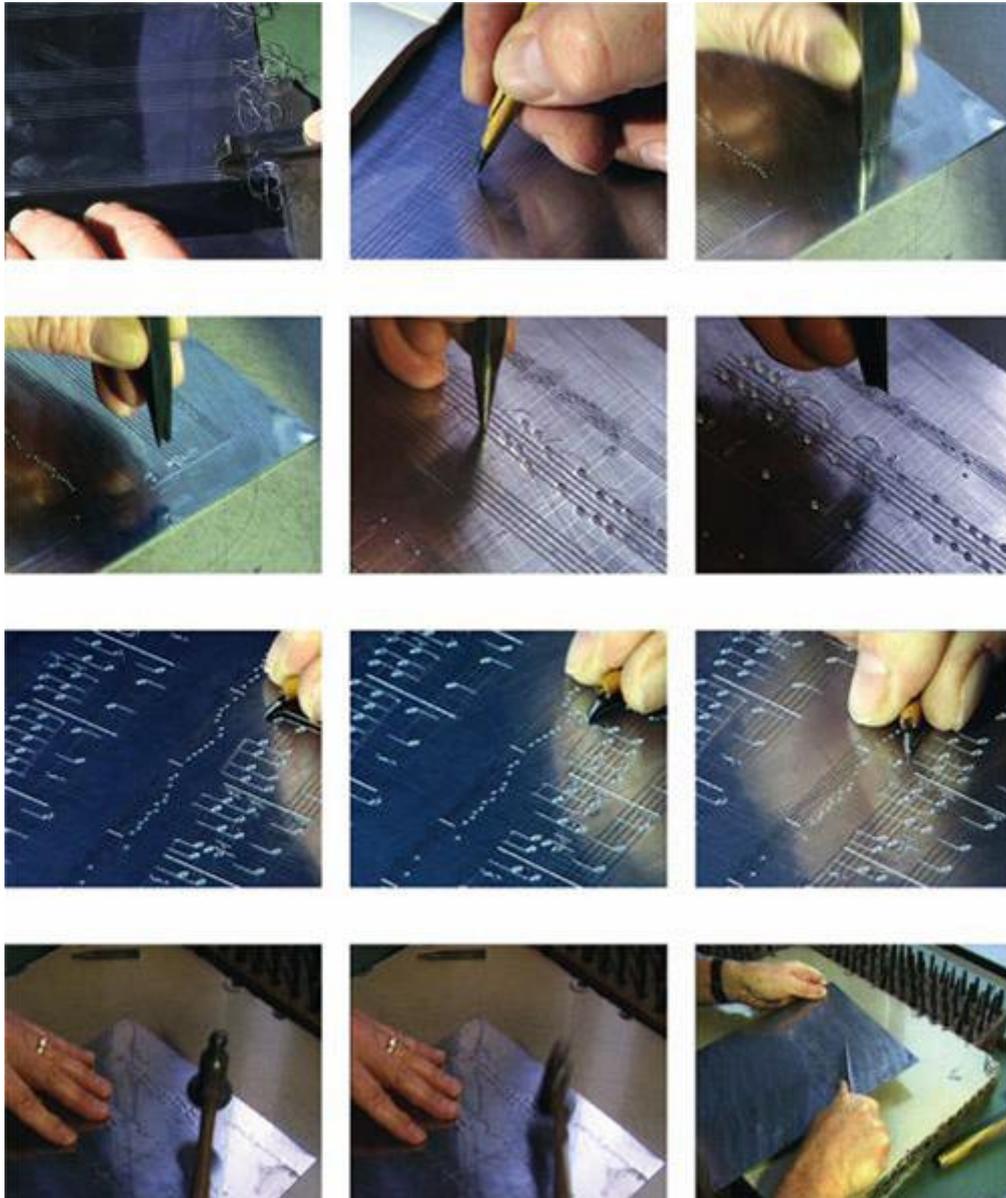
7. The World is Round (1935) www.britishpathe.com



Globes being assembled after printing.

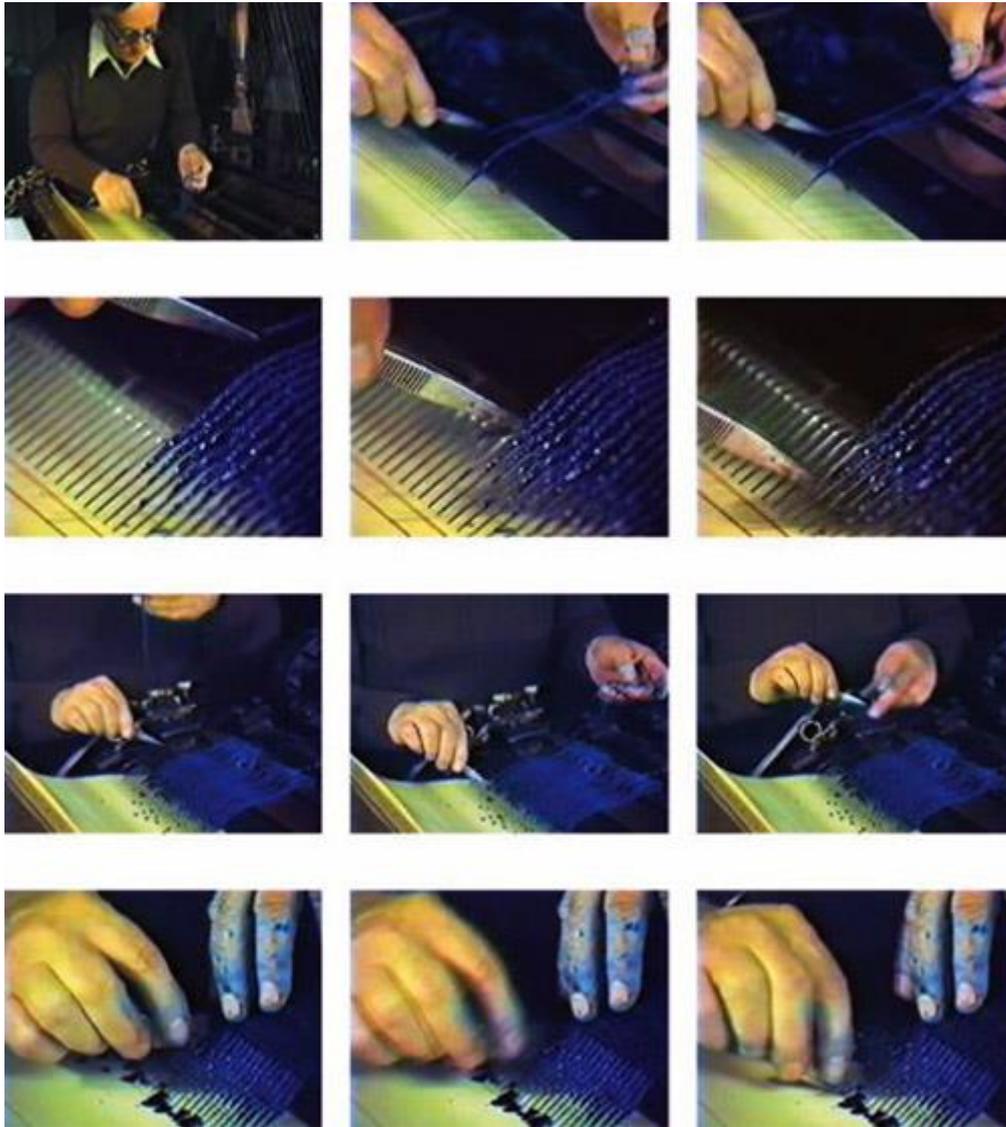
Arguably the most valuable films are not those that show the relatively everyday production of books and newspapers but those featuring the production of more unusual printed items which often required specialist equipment or machinery: maps and globes; stamps, money, and bonds; tickets and ledgers; postcards and greeting cards [7]. Such footage is rare and is even more valuable given that most written research also tends to focus on book and newspaper production. Unfortunately films on these subjects tend to be short and give little or no explanation of what is taking place. Two exceptions are *Sharp as a tack*, a film about how sheet music is made by hand using special punches and engraving tools, which includes excellent footage of an engraver at work (available online from www.henle.de) and *Pen-ruling*: a vanishing craft which shows the production of multi-coloured ledgers using a pen-ruling machine [8–9].

8. Sharp as a Tack: music engraving an art and a craft (1997) www.henle.de



Engraving sheet music: 1–2 Preparing the plate – staves being cut with a five-pronged rule and sketching out the notation with a steel nib; 3–6 Using steel punches to add notation into the plate; 7–9 Cutting a slur into the plate freehand; 10–11 Smoothing the reverse side to reduce the tension in the plate; 12 Marking a sign for correction with a pincer.

9. Pen-ruling: a vanishing craft (1985) University of Reading / Rare Book School



Preparing the press for printing: 1–9 loading the pens with ink-soaked strands of yarn; 10–12 cleaning the pens.

Many printing and typesetting technologies are not adequately covered by the films discovered to date. Stereotyping, rotogravure, offset-lithography, phototypesetting, and early digital typesetting and production are shown in numerous films but usually without a satisfactory explanation. It would be well worth recording these technologies before it is too late and indeed to make new films of those that have already been covered – many of the existing films are of extremely poor quality, often being many generations removed from the original 16mm or 35mm film, or were made using equipment that cannot compare to modern digital video technology. This is not to say that the existing films are not of great value and, where

possible, it would be highly beneficial to track down the original recordings and obtain good quality copies. In other cases there are films that attempt to explain their subject but which do so poorly. For example there are several films that show wood-engraving but this is an area that is desperately short of good material. The best two films are only available in the 'Doc' Robert Leslie collection at the University of Virginia. Barry Moser: a workshop in wood-engraving shows Moser giving a demonstration to a group of students and is useful but under-edited. Xylography or the era of wood engraving is actually about the era of woodcutting but has footage of wood-engraver Robert Blanchett at the beginning and the end – the French version of this film is still available from www.libraprim.com. The single film on the subject found in the UK to date, The art of wood engraving, is notable only for that reason. The Leslie collection also has two films on woodcut printmaking: Japanese woodcut workshop: a course in four sections by Izumi Kuroiwa (available from www.imclains.com) and Woodcuts by Rigby Graham but these are recent films about the making of artistic prints and do not cover either the history of woodcut or wood-engraving or their application in the world of commercial printing.

There are clearly many more films out there and as they come to light the Handlist will continue to grow. The duration of the research project was short and aimed to catalogue specific collections of films – the British Film Institute, the University of Virginia, the University of Reading and those available online. There are many other avenues to pursue – companies such as Monotype, Linotype, Heidelberg, Apple, and Microsoft may have relevant material and there are numerous libraries and archives to investigate including the Wessex film & sound archive and Oxford University Press in the UK, and UCLA and Murray State University in the US. St Bride Library in London has a collection which have not yet been documented because they do not have a viewing facility (most of their films are on 16mm or 35mm film) and it is hoped that by the time this article has been published that these films will have been converted and added to the list. I would be delighted to hear from readers who know of other collections or could contribute entries on films not in the English language. Please contact r.e.banham@reading.ac.uk.

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¹ Feature films were not included in the study. Alastair Johnston at the Poltroon Press has compiled a list of feature films and television programmes which show printing: www.poltroonpress.com. Eventually I hope to produce a fully searchable database but for now A handlist of films showing printing & typesetting is available to download in pdf format from <http://stbride.org/library/collections/films>. If there any readers with specialist knowledge who have seen any of the films listed and can add to, or correct, the information in the list I would be most grateful.

² All of the films in the Department's collection can be made available to visiting researchers by appointment.

³The higher quality versions are available free for classroom use in UK Maintained Schools

⁴see www.typeculture.com, www.katranpress.com, www.metatype.co.uk

⁵ETAOIN SHRDLU are the first two vertical rows of keys on a Linotype keyboard, equivalent to 1QAZ 2WSX on an English qwerty keyboard.