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Printing Technology and Newspapers

with a case study on newspapers in Scotland

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Abstract

The scope of this study is to investigate printing technology in newspapers and to investigate the technology used in newspapers in Scotland.

The study is built on three main subjects: the first is to investigate printing technology in newspapers with historical background, which is expressed in the section on typesetting (hand-typesetting, Linotype, electronic and digital typesetting with advantages and disadvantages), printing technology and the current technology. The second is to find out newspaper technology used in Scotland, which is a case study, and it covers circulations, selling price, publication frequency, paper size, typesetting, printing methods and so on. The third and last section is to enlighten Turkish press and Turkish local newspapers' printing technology.

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Introduction

Introduction

Communication is done by using information channels that are called media, such as tv, radio, newspaper and book. The period of communication consists of four stages: a source, a message, a channel and a recipient. Without any one of the four, there is no communication. In the newspaper, communication periods can be like that: an event, a journalist (reporter), an editor, a message, a paper, a reader. Communication is applied to a formalised system for communicating. So that, a newspaper, a broadcasting organisation, a magazine is a communication system.

Communication is a very important device in the twentieth century. It is so easy to communicate with someone who lives thousands of miles away. Also, it is easy to prepare a newspaper's pages in London and to send these pages to any part of the world in a minute by wire or satellite. Human beings had spent thousands of years to invent printing, but had spent 400 years from the invention of movable type to the first Linotype machine, and from Linotype to digital typesetting has taken less than a century. Now, researchers are working on a printing system that will not be utilised from any camera proof or platemaking. These machines will operate directly from computer to printing machine. This has already been done by Heidelberg, which is the most famous printing manufacturer in the world. (This will be discussed in the next chapter under the heading of technology in future). Perhaps in a short time, printing will be done by using this technology, from computer to printing machine. Technology is improving every day, even every minute, hence today's latest technology becomes tomorrow's old-fashion.

Between the mid-fifteenth century to the late nineteenth century,

all printed materials were typeset by hand, and most of the books and almost all newspapers were printed on letterpress machines. In the newspapers, technical improvements after 1850 included the Linotype and the rotary press to speed production. The use of telegraphs, telephones and typewriters improved the collection and processing of news. The building of railroad networks and the use of wood pulp in papermaking affected the newspaper industry in the 1840s. Railroad networks ensured newspapers' circulation in a wide range of the country and newspapers reached the reader more quickly than previous systems. The reader who lived outside of London, could find national newspapers on the published day. Using wood pulp, paper manufacturing industry was established, making cheap and quality paper. Developments of paper manufacturing industry affected newspapers directly, because newspapers would get paper easily and in any amount.

Linotype and letterpress were widely used in newspaper printing until the 1970s. Meanwhile, today, most books, newspapers and magazines, and brochures are being printed on offset-litho machines. The development of photocomposition and computerisation in the printing industry affected the popularity of offset-litho printing. Computerisation in printing is really important, because almost all machines, that are typesetting machines, pagination systems, cameras, colour/B&W scanners, platemaking machines and printing machines are being designed on computer science. What does a computer do? A computer sets any text in any size whatever you want, hyphenates and justifies text, checks spelling; pastes-up the picture where you want, and fits it in the selected area on pagination (computerised page design) systems; calculates exposure and flash exposure times automatically; separates colour in the shortest time, and corrects the

colour according to original and printing ink balance; ensures the perfect colour registration on colour printing, etc. Nowadays we have another opportunity which is called DTP (desktop publishing). DTP consists of at least a PC (personal computer), a monitor screen, a keyboard, a hard disk, sometimes a disk drive, a laser printer which is suitable (one must have at least 300 dot per inch or higher), a flat-bed or handheld scanner. Using this system, text can be produced as near as typesetting quality, and text can also be laid-out on the screen. Using a scanner, illustrations in the layout can be placed, so that the finished page is all on the computer and does not need to be physically pasted up. This is the present technology. It saves time, labour, money; it gets nearly high-quality results that depends on the laser printer resolution quality (number of dots in per inch).

I believe that each typesetting or printing method has some advantages, and also some disadvantages. This will be discussed in the next chapter.

Problem: This study, basically covers three topics: first is newspaper technology from beginning to present days; second is to explore current newspapers' printing technology used in Scotland; and third is to compare Scottish and Turkish local newspapers in general.

This study is conceived to explore current printing technology and its usage in Scottish newspapers and a comparison with Turkish local newspapers. So that, the research will be based on these questions: "What is the technological enhancement in printing industry? How is the newspaper printing technology developed? What is the current printing technology in newspapers? Which technology is used in Scottish newspapers? Do they use hot-metal typesetting, or photocomposition, or desktop publishing; camera or scanner; letterpress, or offset-litho printing; sheet-fed or web-fed machine?

Papers are in colour or in black? How many people are employed? Publication frequency? etc."

Hypothesis: Human beings have spent thousands of years to reach today's technology. Communication history starts when man began to talk. There is no any particular evidence about how they communicated with each other. Then man had used such as clay tablets, papyrus and animal skins for writing down something. As it is shown in next chapter, the man had invented printing in the ninth century and it was developed each day till this time, and in fact it is still developing day by day. For that, it is intended to examine the newspaper technology from beginning to till now and to explore newspapers' technology in Scotland. So that, the hypothesis on which this work is built is: "Most newspapers are composed by computerised systems and printed on the web-offset machine in Scotland."

Definitions: 'Newspaper' can be described as: a printed, generally daily or weekly, publication containing news, advertisements, literary matter, and other matters of public interest. The basic function of a newspaper is the provision of news and information. Newspapers can be divided into three categories: national, provincial, and local newspapers.

> National newspapers are defined as such on the basis of having simultaneous distribution throughout the country; that is, they are available for purchase is all regions at about the same time. This is achieved in most cases by printing, and partially publishing, in more than one centre. Most national newspapers are published in both London and Manchester, at each of which a number of different editions may be produced... Subsequent editions may involve re-plating, for instance remaking entirely different pages. Thus, the appearance on a given day of a national paper could differ

substantially from one part of the country to another: the title will be the same but the front page may otherwise change significantly. Such differences will relate mainly to the news. Feature material generally will be constant.[1]

"The national press is concerned with publishing that which can be rated as news in the national sense; there is little or no space for news from any specific local area unless that news is of national interest."[2] National newspapers also divided into dailies or Sundays.

Another kind of paper is called provincial newspapers. Provincials are published outside London. They divide into mornings, evenings and weeklies. Circulations are generally much less than nationals, because they are more or less confined with regional news[3], except *The Herald* (was known as Glasgow Herald before January 1992) and *The Scotsman* that are published in Scotland. These two newspapers include regional, national news, and international news as well.

The third kind of newspapers are local papers. These newspapers are published for a region and circulated only in this region. These can be bought or acquired free. Circulation numbers are quite small, between 3,000 to 40,000. These papers cover just local news, maybe sometimes national news but not international news. Local newspapers are generally published by some groups of newspaper companies; the publishers and their newspapers is indicated in Appendix III.

Therefore, there is a special situation in Scotland, because Scotland has its own national dailies and weeklies. So that, Scottish newspapers can be investigated in different manner than McClelland description that is mentioned above. On this study, all newspapers are assumed as local newspapers in Scotland.

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[1] McClelland, W.D., *Printing and Publishing*, (Pergamon Press, 1987), pp. 14-15.

[2] Hornby, Robert, *The Press in Modern Society*, (London: Frederick Muller, 1965), p. 79.

[3] Based on a discussion McCelland, W.D., op.cit., p. 15.

According to *Benn's Media Directory 1991*, 177 newspapers are published daily or weekly in Scotland, of which there are 14 dailies and the rest weeklies. This will be discussed in chapter two in detail.

'Composition' or 'typesetting', mentioned frequently, refer to setting letters and other characters into lines, pages, displays and tabular forms prior to printing. 'Phototypesetting' implies that typesetting (or letter assembly) is done by photographically.

'Printing' refers to the creation of an image (text, illustration, etc.) on the paper or other printed material, such as plastic, and metal.

Assumptions: This work is not involved with some newspapers that have not responded the questionnaire paper. For that reason, the work covers only newspapers that duly replied to the questionnaire. The questionnaire paper answers are assumed to be correct, and achieved results are generalised on Scottish newspapers. And also, it is assumed that all newspapers in Scotland are local newspapers.

Limitations: This work is confined to Scottish newspapers; newspapers which responded to the questionnaire; and pre-press and press stages in newspaper production.

The method of this work is a survey. To achieve the result, the questionnaire (Appendix II) is sent to relevant newspaper companies (Appendix III). The obtained results are given in chapter two.

The aim of this work is to determine newspapers' technology with historical background and find-out technological positions of Scottish newspapers in January 1992. This study consists of three main parts which are: in the first part, chapter one, composing and printing methods are described in historical background; in the second part obtained results from the questionnaire's answers are given and commented on, that is covering chapter two; and in the chapter three, Scottish and Turkish local newspapers are compared in some ways.

Chapter one

Chapter one

Printing technology and newspapers with their historical background

From around 1450-1850, typesetting was done by hand, compositors assembled pages of individual metal characters. And then cold-metal machines were seen in newspapers for a couple of decades. It was a really big revolution when the first hot-metal Linotype appeared in the market, and Linotype spread over the newspapers very quickly. Linotype was used till the 1970s in newspapers. However, during the 1950s and 1960s, they began to replace Linotype with phototypesetting systems that produce text on light sensitive based -photographic- paper or film. From the mid-1980s, desktop publishing systems appeared and penetrated newspapers very quickly because these indigenous systems are very much cheaper than phototypesetting systems, and quality of production is enough for printing. DTP systems dominate the market and newspapers' production at this moment.

This chapter will trace the development of typesetting from hand-typesetting through to the present day's widespread use of photocomposition and DTP; the development of printing from letterpress through offset-litho; and newspaper production from Linotype to today's computer technology.

1.1. History of printing and newspapers:

History of printing, generally, starts with Johann Gutenberg in the mid-fifteenth century. However, "printing was an ancient art long before it was used to reproduce lettering or books. The Japanese were engraving wood-blocks, inking them, and impressing them on paper in the eighth century. A Chinese, Wang Chieh, printed a book in memory of his

parents in 869. The Chinese have invented the first movable type, by using small blocks each carved independently with one character to make them interchangeable"[4] in the eleventh century. Meanwhile, printing progressed by the use of movable letters by Gutenberg in 1450. The date of Gutenberg's invention is different in the sources, for instance, one author says 'in 1440' [5], one author says 'in 1445' [6], one says 'in 1450' [7], someone says 'in 1455' [8].

According to A. Frank May, "the oldest newspaper in the world appeared in China during the T'ang dynasty (618-906), and it was called *Ti-Pao.*"[9] This was a formal handwritten publication, which "disseminated the information collected through the message routes among the governing groups of society."[10]

Naturally, there were many other publications before this Chinese paper, but there are suspicions about whether they were newspapers or not. For example, thousands of years before the birth of Christ, the Egyptians had a sort of publication known as hieroglyphics or picture writing. In olden times people had used writing on clay tablets and then on prepared skins, papyrus and paper.

In Rome, the high priests daily wrote the most important occurrences on a board where those interested could read them. When Julius Caesar became a Roman consul in 60 B.C., he ordered that national achievements be recorded and published.

Printing was brought to England by William Caxton, and he began printing in Westminster in 1476.[11] In England newspapers appeared

[4] Wainwright, David, *Journalism,* (London: Heinemann, 1982), p. 27.

[5] May, A. Frank, *Journalism,* (Cape Town: The Lion's Head Publishers, 1967), p. 95.

[6] Croy, Peter, *Graphic Design and Reproduction Techniques,* 2nd edn, (London: Focal Press, 1975), p. 15.

[7] MacDonald, Myra, *Press Studies in Scotland,* (Glasgow: SCET, 1983), p. 21.

[8] *Introduction to Printing Technology,* (London: BPIF, 1986), p. 25.

[9] May, A. Frank, op.cit., p. 95.

[10] Smith, A., *The newspaper, An International History*, (London: Thames and Hudson,1979), p. 14.

[11] Based on a discussion Wainwright, David, op.cit., p.28.

later than in central Europe. One broadsheet was published in London in 1549 by Thomas Raynalde. In 1622, Nicholas Bourne and Thomas Archer started the *Weekly Newes* in London as a sort of combined pamphlet and news-sheet. In 1644, the English Parliament imposed a licensing rule onto newspapers. A fortnightly, the *Oxford Gazette,* appeared for the first time on 16 November 1665. It was the first British news-sheet to make a regular appearance in the standard newspaper format. *The London Gazette,* its new name, appeared twice weekly from 5 February 1666.[12]

The English Government imposed a strict censorship on newspapers and all printed matter towards the end of May 1695. "By 1695 licensing was finished for ever, and new forms of newspaper were to spring up, exploiting the skills which had accumulated in the seventeenth century but applying them to wholly new tasks."[13]

The first British daily paper, the *Daily Courant* of London, was established in 1702. It was a modest digest of extracts from European news-sheets, often out of date, and provided no comment.[14] The *Daily Post* become the second British daily in 1719.

From 1476 until the eighteenth century, printing was done on the wooden press that was hand-operated by screws, and these presses were inaccurate and time-consuming. During this period, all press machines were flat-bed (that will be explained later on). In the 1790s, the iron press came into use instead of wooden press. In 1790, William Nicholson took a patent for a cylinder presses in Britain. The first mechanical power (steam-driven) press was appeared in 1811, and three years later *The Times* started to use this press which was printing 1,100 papers an hour. In 1827, *The Times* was printed on both sides of

[12] Based on a discussion May, A. Frank, op.cit., pp. 95-101, and Smith, A., op.cit., pp. 13-25.
[13] Smith, A,, op.cit., p.45.
[14] Based on a discussion Wainwright, David, op.cit., p. 29.

paper simultaneously with 4,000 per hour.[15]

"The oldest newspaper still published today is *Berrow's Worchester Journal,* a regional paper which first appeared regularly in 1709."[16] Of the surviving national daily newspapers, *The Times* began publication in 1785, *The Daily Telegraph* appeared in 1885; and *Daily Mail* was launched in 1896. The oldest Sunday newspaper is *The Observer,* first issued in 1791. The oldest two Scottish newspapers still published are *Aberdeen Press and Journal* that was established in 1749, and *The Glasgow Herald* that was first issued in 1783. The classification of Scottish newspapers according of their establishment can be seen in the next chapter.

1.2. Composing

1.2.1. Hand typesetting

This starts with the invention of movable type which was first done by Gutenberg in the mid-fifteenth century. Until the last years of the nineteenth century most type was composed by hand. A compositor picked each piece of type from one of two cases arranged in front of him. The *upper case* contained capital letters, small capitals and other figures and symbols of equivalent size, while the *lower case* held small letters, and their matching figures and symbols. He arranged them in a composing stick, a sort of adjustable metal slide, letter by letter, line by line, inserting varying-sized spaces between each word to justify, or give the required length to each line.

When the stick is full, the justified lines are lifted out and placed in a metal tray called a galley. Type is assembled on the galley in this way until the setting has been completed and then a rough proof of the type on the galley is pulled on a proof press by the compositor.[17]

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[15] Based on a discussion Wainwright, David, op.cit., pp. 32-33.

[16] *The British Press*, (London: A Commonwealth Press Union Publication,1985), p. 8.

[17] Based on a discussion *Introduction to Printing Technology,* op.cit., pp.47-48.

Hand typesetting required experience and also patience. Because each letter is collected from the case individually by hand, it must be known which letter belongs to which room in the case. Another difficulty in hand typesetting is, if the stick is dropped down, all characters will be spread around. Another thing is, type in hand typesetting has a mirror image, it means that when a text is typesetted, it appears the wrong way for reading.

1.2.2. Mechanised composition systems

Mechanised composition refers to typesetting done by a machine such as Linotype and Intertype, instead of collecting each character from a case by hand. Typesetting speed is improved with mechanised machines, for instance, it is able to set 5 lines in a minute, while a hand compositor can set a line per minute (Table: 1.1.). "The advent of mechanical typesetting led to a reduction in the cost of setting and thus to an increase in the demand for printing."[18]

The traditional printing technology, perfected during the nineteenth century, was used by all newspapers until the late 1950s and was used in the 1980s by a few big circulation newspapers in Britain. This is referred to as 'hot metal' technology. Molten metal (an alloy of 4 per cent tin, 12 per cent antimony and the rest lead) is used to set the text and headlines in type, and to mould the final printing plates used to print the newspaper by the letterpress method.[19]

The basic hot metal typesetting machines are Linotype which produces lines of metal called *slugs*, and Monotype which produces each characters separately.

1.2.2.1. Cold-metal machines

The first composing machine was invented and patented by William

[18] *Introduction to Printing Technology*, op.cit., p. 64.

[19] Based on a discussion Hudgson, F.W., *Modern Newspaper Practice,* (London: Heinemann, 1986), p. 133.

Church in 1822. This composing machine was a cold-metal machine. After types were used in printing they were disseminated into magazine by operators.

> Ordinary type was stored in magazines at the top of the machine, and the operator used a keyboard to select and release the pieces of type one by one, which slid down a series of channels to a collecting tray, each line then being justified by hand. Cold-metal machines worked -skilled operators of the 1850s could set type at speed in the range 5,000-7,500 ens per hour- but, since the matter still had to be justified and eventually distributed, the saving in wages was not great; and there was besides vehement opposition to the machines from the hand compositors.[20]

Some of the newspapers used cold-metal machines, because speed of typesetting was higher than hand-compositors. This kind of machine had a disadvantage during this development period, which was the dissemination of the types into the magazine. Actually, it can be said that cold-metal machines were fathers of the Linotype. Meanwhile, the *Manchester Guardian* was using eighteen Thorne cold-metal machines around 1890 and composing speeds reached 10,000 ens per hour. This machine was patented by Thorne in 1880 and it operated in similar way with the other cold-metal machines.[21]

1.2.2.2. Linotype

In 1886, Ottmar Mergenthalers' line-casting machine that is called 'Linotype', was shown in the U.S. It was a very important innovation in typesetting of newspapers. Linotype machines came into the newspapers quickly and were commonly used until the 1970s.

The 'Linotype' is a one unit machine that incorporates both

[20] Gaskell, Philip, *A New Introduction to Bibliography*, (Oxford: Oxford University Press, 1972), p. 272.

[21] Based on a discussion Gaskell, Philip, op.cit., p. 272. Gaskell derived from Legros, L.A. and Grant, J.C., *Typographical Printing Surfaces,* (London, 1916), p. 370.

keyboard and caster in the same unit. It produces slugs --lines of metal. At the front of the machine, there is a keyboard that holds ninety keys. Each key is connected to the relative place in the magazine that is located above the keyboard. When a key is depressed the appropriate matrix is released from the magazine onto a moving band and is carried into the assembler. Between each word the depression of a key inserts a space band. When each line is completed a lever is depressed and the line is sent on its way to the mould, which will have been adjusted to give the required bodysize and length of line. Molten type metal is pumped into the mould which is then cooled by air and the line of type ejected on to a galley tray. The matrices and space band are then automatically distributed back into the magazine.[22]

As each line of type is a slug in one continuous piece it is possible to make alterations only by replacing the whole of it, and if any correction involves running one line over into the next it will have to be reset and recast completely.

There is another line-casting machine called Intertype which works and is operated by the same principle as Linotype. Intertype machines were used in newspaper composing as much as Linotype.

Advantages and limitations:[23]

1) Linotype and Intertype offer exceptionally rapid delivery of straight matter. The flow of matrices from assembly through casting and distribution can be constant and uninterrupted. A machine operator is capable of setting type five or six times faster than a hand compositor (Table: 1.1.). Duplicate slugs can be made simply by recasting. The machines can save the time required for leading (placing strips of metal between lines), for the operator can cast a face on a slug wider than

[22] Based on a discussion Clowes, William, *A Guide to Printing*, (London: Heinemann, 1963), pp. 20-23, and *Introduction to Printing Technology*, op.cit., pp.64-65.

[23] Based on a discussion Turnbull, Arthur and Baird Russell, *The Graphics of Communication*, (New York: Holt, Rinehart and Winston, 1964), pp. 85-87.

normal for the face.

2) The range of faces stocked by compositors varies widely. Basically a separate magazine is required for each font of type. Magazines are quickly interchangeable, and most machines carry four, some eight magazines.

These machines set faces as large as 36 point. There are definite limitations to combining two different faces in one line.

3) There are restrictions on the length of line that can be composed something like maximum 30 pica slugs.

4) Careful attention must be given to corrections or alterations made in Linotype or Intertype composition. Because each line is on one slug, in correcting a single error the operator can make another.

5) Composition other than straight matter is more expensive, because of the time factor. It is difficult to compose tabular matter on these line-casting machines.

6) Spacing between words set on the Linotype and Intertype is often typographically imperfect. Spacebands vary in the thicknesses, from thin to jumbo.

1.2.2.3. Monotype

Monotype is a single-type casting machine that was invented in 1895. It is the more versatile and the better suited for complicated composition, such as book composition. It is not suitable for newspaper composition.

Why is not Monotype convenient for newspaper composing? Because:

1) The Monotype machine sets each character separately. However Linotype or Intertype sets characters in a complete line that is called a slug. Newspapers compete with time, and for that reason each minute is very valuable in the production stage. Newspapers must be printed and distributed at the same time every day. If the particular

time is missed, it will fall into the market late, and for that reason it will lose some readers. Newspapers have preferred to compose the text in slugs instead of working thousands of individual small characters. In fact, it is true that for instance, a normal news story can consist of about 25 slugs, meanwhile if the same story is composed on Monotype, it can consist of thousands of metal pieces. And of course, to handle of thousands metal pieces is more difficult than to work with slugs. Also, it is not easy to drop setting, as it is with single character type.

2) Almost all newspapers use fixed column width. In Linotype, a column width can be adjusted once, and the same width can be used all the time easily. Actually, this can be done in Monotype, but in this point Linotype seems more practical than Monotype.

3) "Monotype was not so economical as the Linotype (the Monotype keyboard operator worked at much the same speed as the Linotype operator, but did only half the work, since the spool then had to be cast at another machine), and partly because the layout of the keyboard was at first very awkward."[24]

4) Monotype has two separate machines, the keyboard unit and the caster unit, and covers a larger area than Linotype that has keyboard and caster on the same unit. And also Monotype's keyboard and caster units were usually in different rooms.

5) "The huge capacity of the magazines and the speed of casting ensured the linecasting machine's popularity in magazine and newspaper setting; simpler variants of the design tended to be used for bookwork, but even these had a far greater flexibility than Monotype machines, and Linotype and Intertype casters proved particularly popular for this work in the U.S."[25]

There are, of course, other admirable systems of mechanical

[24] Gaskell, Philip, op.cit., p. 281.

[25] Barlow, Geoff, *Typesetting and Composition*, (London: Blueprint, 1987), p. 39.

composition, such as 'Ludlow', particularly suited for jobbing and display work. Actually it is not a typesetting machine as the Linotype or Intertype, but it casts type on a single slug from matrices assembled and distributed by hand. It sets type in sizes between 14 and 144 point. This machine was used to set headlines and sub-headlines in newspaper composing.

1.2.2.4. Teletypesetter

Before changing technology from hot metal to photocomposition, the Teletypesetter was used by newspapers especially national dailies and large circulation newspapers rather than regional or local newspapers. This is not a composing machine but rather an attachment that allows a Linotype or an Intertype to compose automatically, without an operator. A keyboard perforates a tape that is then fed through and activates an operating unit attached to the composing machine. The tape may be prepared locally on a keyboard perforator or impulses may be sent into the plant by wire service to an automatic telegraphic perforator.[26] Some newspapers, such as the *New York Times* and the *Wall Street Journal* in the U.S., transmitted their pages in to the different printing plants by telephone lines or wave signals using Teletypesetter tape. For example, "copy for the Paris edition of the *New York Times* was set in New York, signals transmitted by either radio or cable, and the type set automatically on Linotypes in France."[27]

In this system, editing can be done before the tapes are fed to the machine. The Teletypesetter was installed in newspapers in the 1950s. And then, computer-justified and hyphenated tapes were shown in the industry in the 1960s, raising line-casting speed to 14 lines per minute (Table: 1.1.).

[26] Based on a discussion Turnbull and Baird, op.cit., p.94.

[27] Woods, Allan, *Modern Newspaper Production*, (New York: Harper and Row, 1963), p. 175.

Table: 1.1. Typesetting speeds for newspapers

Year	Newspaper lines set/min.	Innovation
1454	1.0	Movable type
1886	4.9	Linotype
1932	5.6	Punch-paper tape driven Linotype
1960	14.0	Computer-hyphenated and justified paper tape driving Linotype
1964	80.0	Photocomposition
1966	1,800.0	RCA typesetter
1967	15,000.0	CBS-Mergenthaler Linotron for specialised publications

Source: Compaine, M. Benjamin, *The Newspaper Industry in the 1980s*, (New York: Knowledge Industry Publications, 1980), p. 115. Compaine derived this information from H.Bagdikian, *The Information Machines*, (New York: Harper and Row, Harper Torchbooks, 1971), p. 95.

1.2.2.5. Photocomposition

"In the mid-1930s, the first photocomposition experiments were made in producing photographic copy of the matter which could by-pass the use of a camera for making printing plates."[28] After the 1950s, photocomposition machines began to be replaced by phototypesetting systems which produce images of text on photographic paper. Since the 1960s, these machines have been controlled by specially designed computers.

The first commercially acceptable phototypesetting machines, based on hot metal principles, were the Monotype *Monophoto* and Intertype *Fotosetter*. These two systems were mechanical in operation, and because of the advent of computer technology and electronics, they were soon superseded. In more advanced machines the characters are generated electronically, rather than photo-mechanically, and projected by cathode ray tube (CRT), light emitting diodes (LEDs) or laser onto the film or paper. Type matter set on a phototypesetter is produced on either photographic film or paper.

[28] Hutchings, Ernest, *Survey of Printing Processes*, (London: Heinemann, 1970), p: 10.

Phototypesetting technology has developed in four main directions; these are:[29]

1) *Photo/optic*, a simple phototypesetting system based on a film negative. All the letters, numbers, punctuation and signs of the typeface are stored on a film negative, and each letter, as required, is exposed by a flashing lamp. The size of the letter can be changed using lenses, and its position on the photographic film or paper is achieved using a moving prism. It is a photo-mechanical system coordinated by computer.

2) *Photo/scan* stores the characters on film, but then scans them electronically. In this system the letters, or characters, are generated electronically and each letter or group of letters appears on the screen of the CRT, in the correct size and position. They are then focused on to film or paper and exposed. Having no moving parts, this method of setting can be extremely fast, and one setting unit can be fed by many different keyboards.

3) *Digital/scan* stores the characters digitally on tape and outputs them as wanted directly to a CRT for exposure. The subtlety of typefaces, and the number of characteristics which must be precisely defined for each face, mean that the memory has to be very large (and hence expensive) for quality typesetting.

4) *Laser/scan* stores the characters digitally, but using a computer controlled laser they can be output not only on to paper or film for montaging, but also directly on to the printing plate, electronically montaged.

The current photocomposition machines involve three components: the computer, which is a memory of data storage; the VDTs (video display terminals), by which text is keyboarded into the

[29] Based on a discussion Marshall, Alan, *Changing the word*, (Comedia Publishing, 1983), pp.66-68.

computer and controlled and edited; and the phototypesetters, which by electronic commands, produce finished size newspaper pages.[30]

The terminals are work stations consisting of a keyboard and a monitor screen. There are two main sorts of keyboards used in a newsroom: for editing and for writing.

On the writing keyboard, the reporter types the story, at the same time monitoring it as it appears line by line on the screen in front. Words and lines can be altered and deleted by pressing command keys, the spelling and typing accurately checked, and then the story is sent to the news editors' terminal.

The use of terminals by reporters and writers is what is meant by the term direct input. The advantage of this is that stories have to be keyboarded once only; once in the computer, copy can be processed through to the typesetting stage.

Working outside the office does not prevent the use of direct input to the newspaper's main computer. The reporter inputs the story on his personal computer, lap-top computers are now often used, anywhere in the world. The keyboarded story is then transmitted from the reporter's computer to the newspapers' computer via telephone lines or by satellite.

Editing terminals differ from the reporters' terminals in having extra command keys. By the use of commands, stories can be altered by deletion and insertion, the areas being worked on being defined by the cursor, or mouse. Grammar and accuracy can be checked and amended without difficulty on the screen and the piece can be cut to length. Headlines types and sizes are identified in this terminal, and finally copy is hyphenated and justified by command key.

The computer is the heart of the system, whose memory and

[30] Based on a discussion Hudgson, F.W., *Modern Newspaper Editing and Production*, (London: Heinemann, 1987), p. 4.

storage facility enables material for the newspaper to be gathered, stored, processed and turned into type. News agencies, wire and photo services can be connected to this computer. The editor can call these services at any time and check, amend and entitle their materials.

The modern computer allows work flow in newspaper departments to be organised, classified advertisements to be set, sorted, placed and invoiced, and cost to be worked out. The page dummy showing advert positions can be electronically generated, stocks of materials controlled and accounts automated.[31]

Phototypesetting. This is an output machine which provides bromide paper or film that has already been typed. There are three main methods of converting digitised information on typefaces into images on film or paper --the CRT, the laser and the LEDs. Current digital phototypesetters produce images of type and graphics at from about 1000 to 5300 line/inch (an image is created by tiny lines).

All typesetting systems launched since 1982 have been purely digital, in that the fonts are supplied in floppy discs. Since 1983, all typesetting machines launched have been laser or LED based.

1.3. Printing processes

Printing processes implies methods of printing, such as letterpress and offset-litho (as described below). Printing allows the production of any amount of copies of the original work. In newspaper production basically two printing methods are used: letterpress and offset-litho. Under the printing processes heading, these printing methods are traced.

1.3.1. Letterpress (relief) printing

This is the oldest printing method. It is known that printing was being done in China in the tenth century using blocks on which the image was

[31] Based on a discussion Hudgson, F.W., op.cit., pp. 4-7.

raised. Gutenberg's invention was a movable raised image surface which used the relief printing principle. We can say that relief printing, or as it is commonly called *letterpress*, is the traditional printing method.

The letterpress principle is that the image which contains letters, illustrations or halftone photographs, is raised over the non-image area. Hence when the printing plate surface is inked, only the raised surface holds ink, while the non-image surface is clear. The inked plate transfers ink on to paper or other printing material under the impression. Paper touches the raised surface and ink on the raised surface transfers to paper.

There are three main types of letterpress machine used:

1.3.1.1. The platen press is the simplest type, and maybe the oldest one. In the modern platen press, the forme is held vertically, and is inked by rollers when the hinged platen is opened. When the paper has been inserted, the platen closes and presses the paper against the type and opens again for removal of the printed sheet (Figure: 1). Machine-operated platens can print about 4,000 sheets an hour. This kind of machine is not suitable for newspapers because there is a certain limit to the size of paper printed. This kind of press machine is used only for sheets usually not larger than 15 x 20 inches, and also it is so slow for newspaper printing.

1.3.1.2. The cylinder presses. This is an improved type of the platen press, however the printing surface is still flat. The type forme is laid on a flat-bed which travels under the inking rollers and a rotating pressure cylinder. The paper is lifted off from a stack and paper is held using clips on the cylinder. The cylinder revolves and presses the paper against the printing plate as it moves by underneath (Figure: 2). This type of machine is in two groups: the *stop-cylinder* and the *two-revolution* press. In the stop-cylinder machine, the cylinder stops after

Figure: 1 Platen press

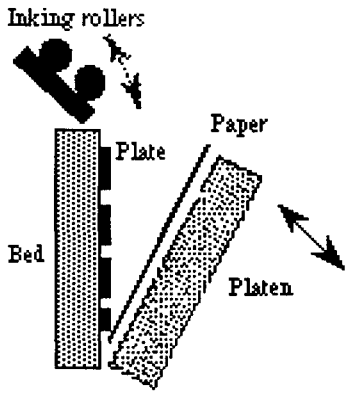


Figure: 2 Flat-bed cylinder machine

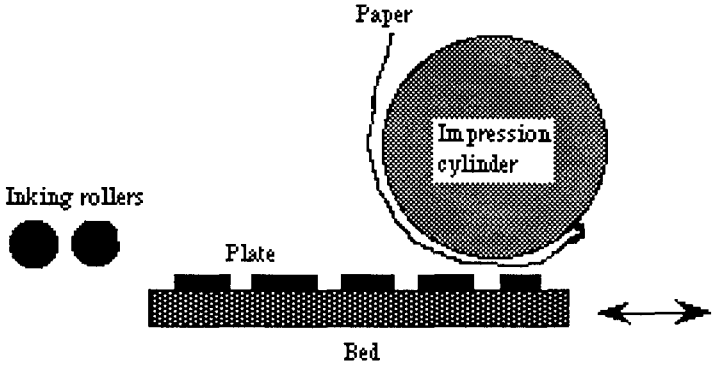
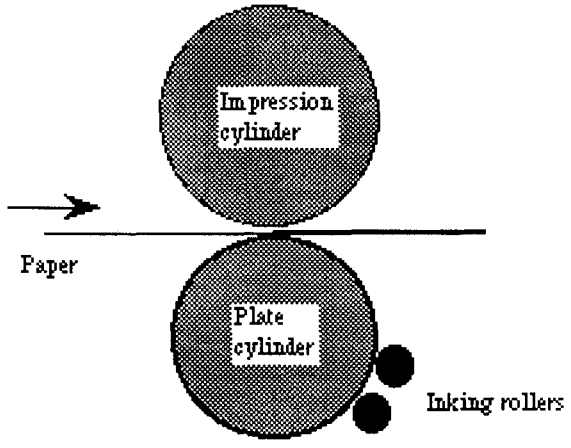


Figure: 3 Letterpress rotary machine



each impression to deliver the sheet and receives a blank paper for printing. In the two-revolution press, the cylinder revolves non-stop, rising a little after each impression to let the plate return. Stop-cylinder machines can print up to 3,000 sheets per hour, and two-revolution machines 3,000-5,000 sheets an hour. Both these machines can be used by newspapers which have a small circulation, say 2,000, but these are not used any more except by undeveloped or developing countries' newspapers.

1.3.1.3. Rotary press: Rotary machines print from a curved surface. Original plates are etched on the curve, and put on the plate cylinder on the printing machine. The curved printing surface is the main difference between the rotary press and platen and cylinder presses (Figure: 3). There are two kinds of rotary machines: the sheet-fed rotary, which prints single sheets up to 6,000 per hour, and can print sheets of different sizes; and the web-fed rotary, which prints paper direct from the roll and can accommodate only one format; after printing is done the paper is cut and folded in the cutting and folding unit. These machines can print up to 25,000 copies an hour, but up to 70,000 an hour on newspapers, depending on the quality of the paper being printed. Rotary presses are mainly used for newspapers which have circulations up to 10,000.[32]

1.3.1.4. Flexography: Flexography is a direct-relief printing process. Flexography plates are made of photopolymer plastic which gives flexibility and for that reason it is wrapped around the plate cylinder. Newsprint[33] poses no problem and the printing quality is better than letterpress, but not as good as offset-litho.

Some newspapers publishers who do not wish to spend money to

[32] Based on a discussion Croy, Peter, *Graphic Design and Reproduction Techniques*, (London: Focal Press, 1975), pp. 50-52.

[33] Newsprint refers cheap paper which is made mostly from mechanical pulp. It is used for printing newspapers; it turns yellow quickly in few days.

get a new offset-litho machine, have converted/re-built their old letterpress machines to flexography in the U.S.[34]

1.3.2. Offset-lithography (planographic printing)

Improvements in composition and camera techniques, the introduction of electronic colour or B&W scanners, improved lithographic printing plates, and the ability to print on poor stocks, together with the advantages of quicker make-ready and faster presses, have made offset-lithography the dominant process.

Planographic printing, in common use called 'litho', or 'offset-litho' or just 'offset' printing, is done by a flat surface; that is the image is not raised as in letterpress, nor recessed as in gravure-press. The offset-lithography printing principle is based on a water and ink combination in which the image area receives ink, and repels water; but the non-image area repels ink, and receives water.

The invention of the lithographic process is attributed to Alois Senefelder in 1798. In the first creation the designs were actually drawn directly onto the stones using a pigment with a grease content which would consequently reject water, but accept ink. It is this basic principle of the antipathy between grease and water that modern lithographic process are still based on. However today, *dry-offset machines* exist at the market which use only ink, eliminating water in the printing process. Dry-offset is a offset letterpress process, and it "uses either specially constructed presses or offset-litho presses with the dampers lifted. Thin photopolymer plates are normally used and fine detail is possible. With no ink/water balance to achieve, make ready is quicker than for litho. Less ink is consumed and very long runs are obtained."[35]

Litho machines can be either direct, printing from the plate onto

[34] Based on a discussion Willis, Jim, *Surviving in the newspaper Business*,(New York: Praeger, 1988), p. 114.
[35] *Introduction to Printing Technology*, op.cit., p. 141.

Figure: 4 Offset-litho printing

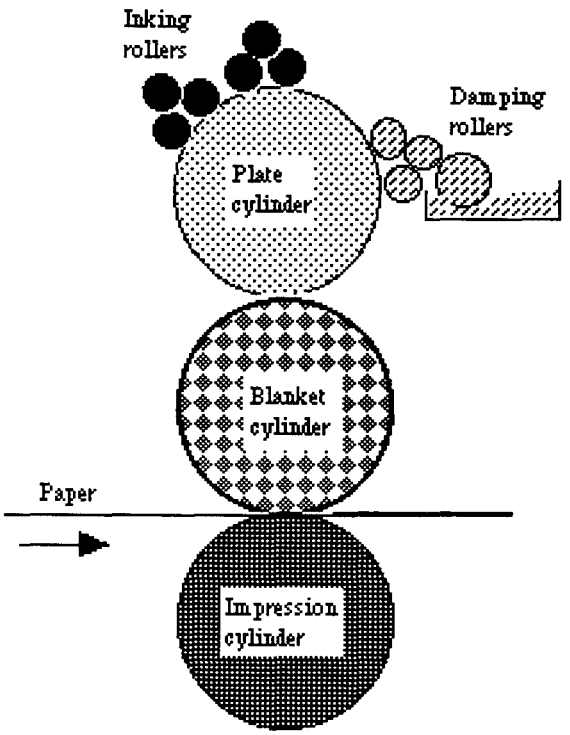
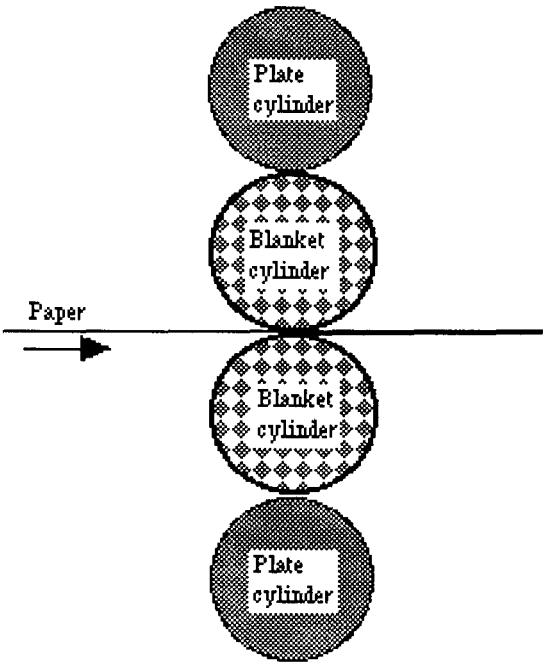


Figure: 5 Offset-litho blanket-to-blanket press



paper directly (there is no blanket cylinder on the machines) or indirect, called offset-litho, in which the image is transferred from the plate onto the blanket and then onto paper.

Offset-litho machines are designed in two groups which are sheet-fed or web-fed. And also litho machines can be rotary or flat-bed, positions that have similar principles as described above in letterpress. The sheet-fed press is more flexible and more numerous than the web-fed, but web-fed is commonly used in newspapers. The web-fed machines have a cutting and folding unit which, after printing, cuts the web into sheets of the cut-off size, and then folds the paper according to broadsheet or tabloid size etc. Web-offset machines are faster than sheet-fed machines, are more suited to long run work and have the advantage of being able to deliver folded sections. Some presses are built on the *blanket-to-impression* principle (Figure: 4), but perfectors and web-fed machines which print both sides of the paper at one go, may be built on the *blanket-to-blanket* principle (Figure: 5).

The principle of operation. On the sheet-fed machine, paper lies on the machine's feed board. When the sheet is moved forward by the feeder mechanism, its front edge is taken by the grippers which carry it round the cylinder for printing.

The printing plate is clamped round the plate cylinder and, as the cylinder revolves, is damped with water by the damping rollers and charged with ink by the inking rollers. The quality of printing depends upon the correct water and ink balance in this stage. During the printing process, the inked image is transferred from the plate to the blanket on the blanket cylinder and from the blanket to the paper held on the impression cylinder.

For small amounts of printing, small offset machines exist which are usually in single-colour, and either in A3 or A4 sizes.

There are, of course, other printing methods such as gravure and screen printing. But these methods are not suitable for newspapers printing, and for that reason only letterpress and offset-litho printing are emphasised in this study. In spite of this, it should be mentioned that gravure printing is used for magazines; for instance, colour supplements of national dailies are printed on gravure.

1.3.3. Comparison of letterpress and offset-litho printing; hot metal and phototypesetting: advantages and disadvantages:

1. *In principles*: Letterpress is done by a raised surface, which means that the image area is slightly higher than the non-image area; and when ink is applied to the surface, only the raised surface touches the inking roller, and this surface transfers ink on to paper. Offset-litho is done by a flat surface, that is image and non-image areas are on the same level. Both image and non-image areas are touched by both the inking rollers and the damping rollers. But only the image area accepts ink, and the non-image area receives water; actually the litho press is based on water and ink combinations. During the offset-litho printing process, the plate does not touch the paper directly; the plate transfers ink onto the blanket cylinder, and the blanket transfers ink on to paper.

Letterpress is a direct printing process; for that, the image is on the plate is reversed. Most of offset-litho presses, however, are indirect printing and the image on the plate shows right way. Offset-litho machines, for indirect printing, have an extra cylinder that is the blanket cylinder; and extra damping rollers are not needed on a letterpress machine.

2. *Materials*: In hot metal typesetting, type-metal can be used again and again, because it recycles. After printing, type can be melted for re-use. But in phototypesetting, type materials that is film or bromide paper, can be used just once, because phototypesetting

materials are not recyclable like hot metal.

In common sense, hot metal is used in letterpress, and phototypesetting is used in offset-litho printing. But this is not a certain rule; offset-litho plates can be prepared from photographs of hot metal typesetting, and letterpress plates can be made from the typesetting film via flexography or stereotype. Some newspapers that have large circulations, produce in this method.

3. *Ink*: In the letterpress machines, only ink is used, however offset-litho machines use both ink and water. Thus, offset-litho machines have extra rollers that are called damping rollers, for applying water on to the plate.

Letterpress inks are more solid-ink than offset-litho inks which are solvent-base. For that reason, letterpress machines have more inking rollers than offset-litho machines.

Letterpress inks are water-based and do not rub off on readers' hands. Offset printing materials leave a lot of ink on the hands of readers.

4. *Plates*: Letterpress plates are generally produced from the molten metal, except flexography plates which are made of photopolymer-plastic. Letterpress plates are very heavy because they use heavy metal such as lead and antimony. Offset-litho plates are lighter than letterpress plates, because offset-litho plates are made of aluminium or zinc, and also offset plates are thin and easily transportable.

Type for letterpress must be exactly 0.918 inches high, and all plates must be mounted at exactly the same high. This is a very essential process which affects the produced job. It is not important for offset to the type-high, because it has photographic based typesetting.

In offset-litho, to reprint a job does not involve typesetting,

because the original job can be reproduced easily. Letterpress, generally, requires resetting-up for a reprinted job. However, once an offset plate is mounted on the cylinder, no alterations can be made as with letterpress (except the plates which are produced in stereotype or flexographic principles). To make alterations or corrections the complete plate must be remade for offset-litho, flexography and stereotype.

The offset-litho plate can be stored easily for re-use, while the letterpress plate can not be stored easily, because it is made of heavy metal and needs a huge place to store it.

5. *Printing*: Offset-litho plates have shorter print-run-life than letterpress plates. A litho plate can print about max. 50,000 copies, after that it must be replaced by a newly reproduced plate. Letterpress plates can print about 100,000 copies.

Offset-litho machines waste more paper in a print-run than letterpress. Paper-wastage is higher in colour work than single colour work because of the colour registration and colour ink balance.

Offset-litho printing gives more reasonable qualities of colour and photographs. The range of tones reproduced by offset is more than by letterpress. Fine lettering, fine drawings and engraved originals print sharply in offset. This can be seen in maps printed by offset-litho.

Offset-litho machines can print on almost all kinds of paper, from newsprint to fine-art paper. Letterpress machine cannot print on as wide a variety of paper as offset-litho.

In offset machines, damping of the plate can cause paper to stretch with moisture. This can give register difficulties; for that reason paper humidity is more important than in letterpress. In offset-litho machines, ink and water balance should be done perfectly, as this affects the quality of printed work. The litho printing process needs a

smaller work-force than letterpress.

6. *Photographs' quality on press:* The main advantages of offset-litho presses are to print fine-screen halftone photographs. Fine-screen halftone photographs (e.g. 133 dots per inch) gives better quality work than letterpress. Letterpress machines have a limit to produce fine-screen halftone photographs. There is no doubt that picture quality on offset-litho machines is much better than letterpress. Another advantage of offset-litho is that printed full colour work quality is greater than letterpress, because in letterpress, colour registration[36] difficulties remain.

7. *Material consumption:* Offset-litho consumes more material such as bromide paper, copy-proof paper, and film for montage, because offset-litho printing is based on photographic principles.

8. *Printing plants.* Letterpress printing plants have noise and dirt, the heat of molten lead and the odour of lead vapour. Offset-litho plants are in quiet, bright lighting, cool, breathable air, fewer and less highly skilled workers, and substantially higher productivity.

1.4. Producing of a newspaper

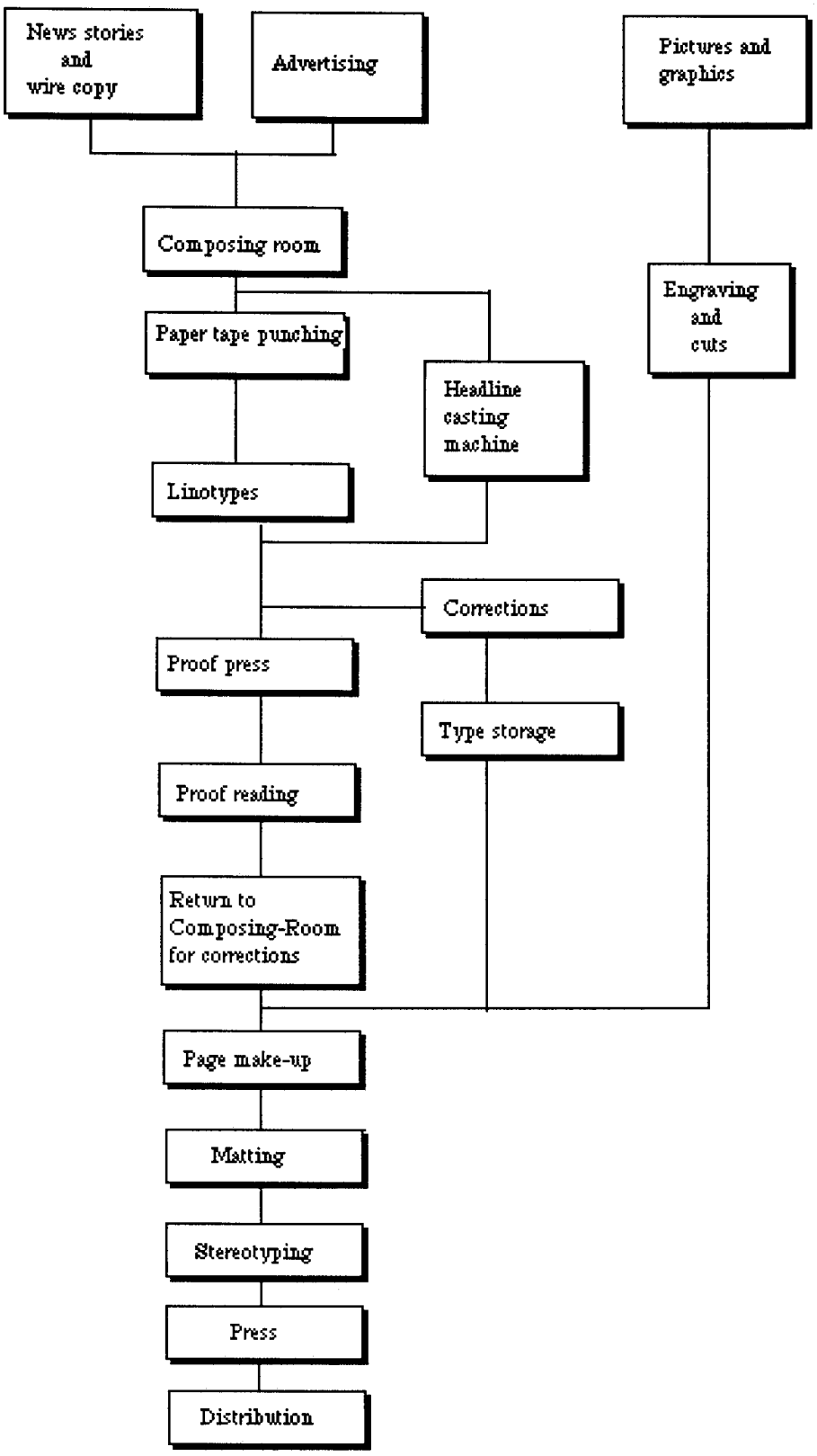
Many changes have occurred in newspaper production over the past three decades. Newspapers have adopted to the developed technology very quickly. Linotype or hot metal was superseded and phototypesetting machines were replaced and now DTP is popular in the newspapers.

1.4.1. Linotype era. From beginning of the this century and until the 1970s, most newspaper production was something like this: reporters and writers typed their copy on manual typewriters and editors had to scrawl editing marks and instructions, such as point size, typeface, and picas, to typesetters on the copy. The edited copy was

[36] Registration refers that superimposing two or more images correctly, the colours are printed one on top of the other correctly.

Diagram: 1

The old newspaper production process



Source: Compaine, M. Benjamin. The Newspaper Industry in the 1980s. Knowledge Industry Publications: New York, 1980, p. 117.

passed through the composing division, where either it would be set into the Linotype machine, or it would go to a typesetter machine that produces perforated tape and drives the copy into the Linotype. Produced metal slugs have to be collected in a chase, and this chase has to be rolled to a page-casting machine where a papier-maché matrix of the page would be cast. This matrix has to be converted into a semi-circular lead plate where the image would stand out in relief.[37]

1.4.2. Electronic typesetting era. Development of photo-typesetting systems and also offset machines seemed attractive and glamorous to the newspapers. The first victim of the technological change in newspaper production was the Linotype machine. Production would have been done something like this: prepared and edited copy (as described above) was sent to a typesetter, who produced a perforated tape that was for an electronic typesetting machine. It produces justified and hyphenated text according to the described width. Then, this copy is pasted-down on a dummy page, and exposed on the camera to get a negative film. The negative page is assembled with negative halftone photographs. Both the completed page negative and a light-sensitive aluminium offset plate are exposed under an intensive light. The aluminium plate is rubbed down with a developing solution to produce a positive image. The processed plate is then put on an offset machine.

1.4.3. Optical character reader (OCR) era. In this era, electronic typewriters featuring removable typing balls replaced manual typewriters in the newsroom. Reporters and writers typed their copy on their electronic typewriters onto clean paper. The typed copy has to be edited with corrections marks which are put between the lines. The

[37] Based on a discussion Hudgson,F.W., op.cit., pp. 8-9 and
Smith, Anthony, ed., *Newspaper and Democracy*, (Cambridge, Massachusetts: The Massachusetts Institute of Technology Press, 1980), p. 19.

completed copy was scanned into the optical character reader (OCR) machine or scanner which was connected to an output unit producing bromide paper. There was no retyping of the copy. After that, paste-up, montage, platemaking and press stages are as described above.

1.4.4. The current technology. The OCR process became only a short, intermediate step before the introduction of total electronic editing and word processing. This era is the current technology at this moment. In this period, the newsroom is replaced with video display terminal (VDTs), often called terminals, on which the copy is typed by the reporter or writer and is transferred to sub-editor to check the copy. The sub-editor controls each view of news on his own editing-terminal that is slightly different from the reporter's terminal; the sub-editor is able to check spelling by just pressing a key on the keyboard. The checked copy is sent by the sub-editor to the page designer, who makes the newspaper's page on the special design-monitors, and puts the copy or scanned photographs to the related area. Text, photographs, and illustrations can be assembled using this system that is generally called a pagination system (electronic page designing). The finished page on the pagination system is transferred to an output unit to get a bromide paper or film, or offset plate.

1.5. Technology in future:

Nowadays, all presses (letterpress, lithography, gravure and screen printing) have remained mechanical-chemical processes. The images from photo-typesetting systems have to be physically output to a photographic intermediary material before printing plates could be produced for printing.

Therefore, a new printing technology that is called *direct imaging printing*, is being developed in these days. Perhaps in the near-future, it will be possible to print from newspapers' computers directly,

eliminating auxiliary stages, such as paste-up, montage and platemaking.

In this process, the pages will be set and designed on the screen and then the finished pages will be transferred to the printing machine. This technology is introduced by *XYZ, December 1991*: [38]

> Heidelberg has now developed a model called GTO-DI, that takes full advantage of the electronic pre-press. GTO-DI is a revolutionary press that for the first time ever can accept images directly from electronic publishing systems, cutting out any need for image-setters and platemakers. This goes well beyond the "filmless platemakers" which have just started to become viable. The DI suffix stands for Direct Imaging: there is no need for film, no plate exposure units, no chemicals. Page images files are sent to plate production devices mounted on the colour units of the press itself. Once the images are created the press is ready to run, in register from the start, with virtually no paper wastage.

This technology is now at the beginning point. But it is being installed in repro houses. Whether this technology can alter newspaper printing or not, this will be seen in future.

[38] *XYZ Magazine, December 1991*, (London: Haymarket Magazines, December 1991), p.38.

Diagram: 2

Current technology

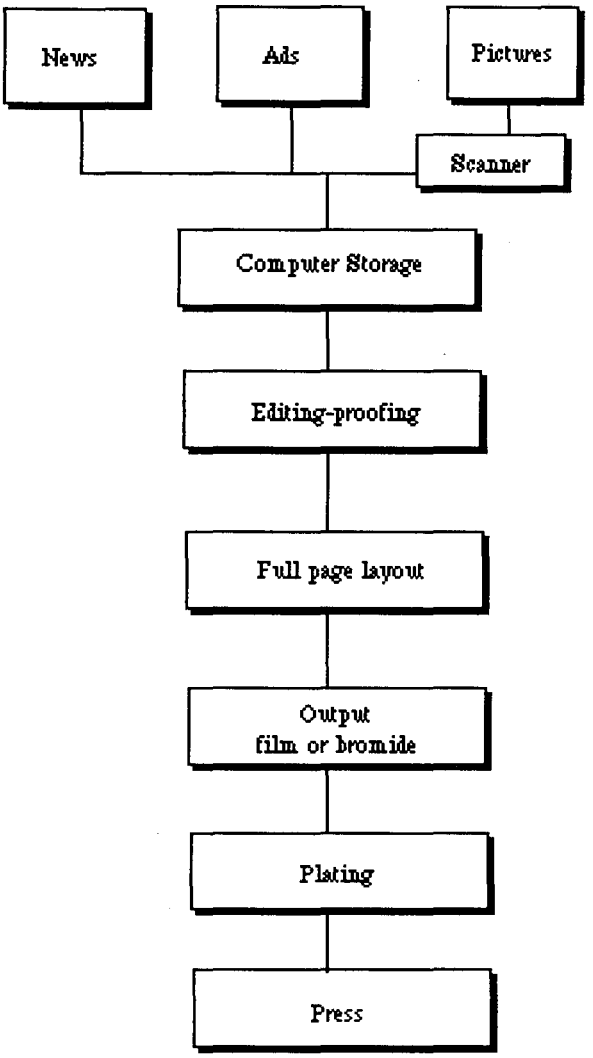
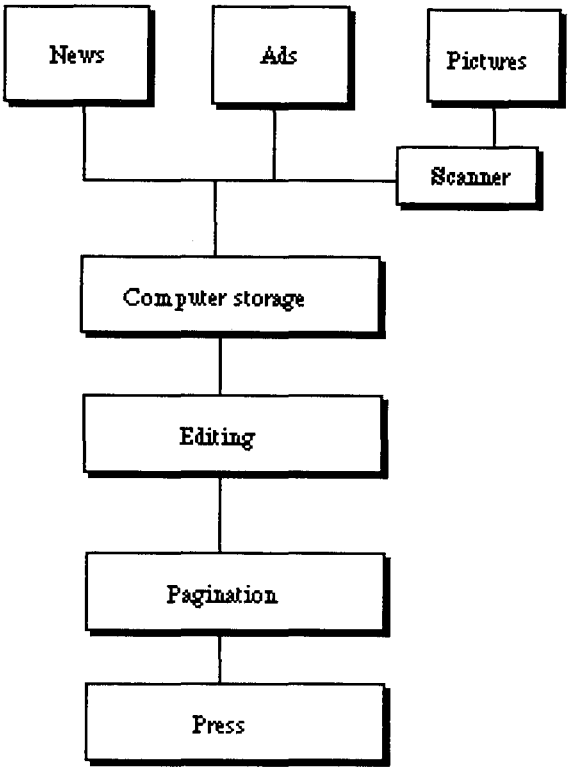


Diagram: 3

Coming technology



Chapter two

Chapter two

Scottish newspapers, a case study

This chapter consists of two parts. The first part is essentially concerned with specifics of Scottish newspapers' ownership, circulation, selling price, publishing frequency and established years. The data of this part was derived from *Benn's Media Directory 1991* and *ABC Circulation Review January-June 1991.*

The second part relates to paper size, colour in printing, employed people, typesetting, camera, scanner, platemaking, and printing methods and machines used in Scottish newspapers. The data of this part was obtained from the questionnaire (Appendices: I and II) which was sent all newspaper publishers in Scotland. Detailed information of the names, circulation, selling price, and publication dates of newspapers published in Scotland is given in Appendix III; and newspapers' typesetting and printing systems can be seen in Appendix: IV.

The first part of this chapter was spread over 177 newspapers in Scotland. These newspapers were obtained from *Benn's Media Directory 1991* and *ABC Circulation Review January-June 1991*. The data of these sources was decoded and then classified. In reality, there could be more newspapers than 177, however we have found out this number of newspapers in the country (Scotland). In the first part, 177 newspapers are examined and the achieved result is expressed by percentages. Percentages are obtained using this method: e.g. we are willing to find out the percentage of 85 newspapers against 177, thus:

$$x = \frac{85 \times 100}{177} = 48\ \%$$

The second part of the survey is based on 77 newspapers, published by 26 companies and groups, which have responded to the relative questionnaire. The questionnaire was sent 59 publishers who publish 129 newspapers in the country, and also six newspaper groups which publish 48 newspapers. I wanted to visit the groups: Scottish and Universal Newspapers Ltd, D.C. Thomson and Co Ltd, Johnston (Falkirk) Co Ltd, Alloa Printing and Publishing Co, Aberdeen Journals Ltd and The Scotsman Publications Ltd. Unfortunately, only 19 publishers have responded to the questionnaire out of 59 publishers, and my visiting request has not been replied to by five newspapers, and D.C. Thomson and Co could not manage a visit "due to numerous request of this nature".

At the next stage, the same questionnaire was sent to 20 publishers a second time. Seven publishers that publish 20 newspapers have responded to it when it was sent second time. The achieved information is given in Appendix IV.

In the second part, the data is shown in number and percentage. Percentage is achieved as shown above. However, the calculation is based on 77 newspapers, not 177; because only 77 newspapers' information is acquired. Meanwhile, the achieved results are generalised onto Scottish newspapers from 77 newspapers. In this part, I examine each newspaper individually instead of examining under the companies or groups. For that, it seems that some newspapers use exactly same system because these newspapers' owner is the same company.

2.1. Specifics of Scottish Newspapers

2.1.1. Ownership

"The provincials cover a very wide and varied field. Some proprietors concentrate on newspapers alone, others publish newspapers in

addition doing general printing."[39] "Newspaper publishing is a volatile industry with many births, closures and changes of ownership."[40]

In 177 newspapers being published with different frequency in Scotland, most of the newspapers are owned by some particular newspaper groups or can be said to be a 'monopoly'. Actually, two newspaper groups dominate the market which are Scottish and Universal Newspapers Group (S.&U.N.) and F. Johnston Group. S.&U.N. Group publishes 26 different title newspapers under this name; total weekly circulations of these papers is about 600,000, and several free newspapers' whose total circulations are about 300,000. F. Johnston Group has 28[41] different title newspapers which are published in West, East and Central Scotland under different company names: Gutrie Newspapers Group, Strachan and Livingston Ltd and Johnston Ltd[42] ; the Group's total circulation is about 300,000. In this study these companies of F. Johnston Group are mentioned individually.

Newspaper ownership in Scotland was described in 1977[43] as below, however this situation seems similar today:

> In the 1974, Scottish and Universal Investments (SUITS) had 26 per cent of weekly newspaper circulation in Scotland. In 1961, George Outram and Company, which has been a SUITS subsidiary since 1964, owned about 5 per cent. SUITS publishes the Glasgow Herald, and the Glasgow and Paisley evening newspapers. In 1974, it was also the leading weekly publisher in Strathclyde with over 35 per cent of circulation. In Dumfries and Galloway, SUITS had over 50 per cent of circulation in 1974 and it had over 20 per cent of circulation in the other Scottish regions in which it owns

[39] *Royal Commission on the Press, 1961-1962 Report*, (London: H.M.S.O., 1962), p. 42.

[40] McClelland, W.D., op.cit., p.18.

[41] According to *The British Press*, op.cit., p.45.

[42] These companies names are obtained in *Benn's Media Directory 1991.*

[43] Hartley, Nicholas and others, *Concentration of Ownership in the Provincial Press*, Royal Commission on the Press, (London: HMSO, 1977), pp.57-58.

weekly newspapers (Tayside, Lothian, Central and Borders). The largest weekly newspaper publisher in Scotland after SUITS is F. Johnston and Company which had 17 per cent of weekly circulation in Scotland.

D.C. Thomson and Company controls morning and evening papers in Dundee and it is the third big newspaper company in Scotland.[44]

2.1.2. Establishments

155 newspapers' establishment years have been obtained out of 177 newspapers. The oldest two newspapers still published are the (Aberdeen) *Press and Journal* that was established in 1749 and the *Glasgow Herald* that was established in 1782.

In the nineteenth century, 79 newspapers were established which are still published today (this figure, of course, does not cover the closed newspapers). Between 1801 and 1825, six newspapers were established, and this figure doubled during 1826-1850 when 13 newspapers were launched to publication. The highest ratio of the establishing of newspapers in the nineteenth century is found between 1851 and 1875, so that, during this period, 39 newspapers appeared in the market. In the last 25 years of the nineteenth century, the number decreased to 21 newspapers.

Between 1901 and 1925, 12 newspapers were established, but between 1926 and 1950, only three newspapers were launched. This shows how newspapers were affected by the World War II. However, It seems that the Scottish press was not affected very much from the World War I.

For some time after the end of the Second World War the number of pages continued to be limited because of continuing newsprint rationing due to import restrictions. In fact, the restrictions were

[44] Based on a discussion *The British Press*, op.cit., p. 44.

Diagram: 4

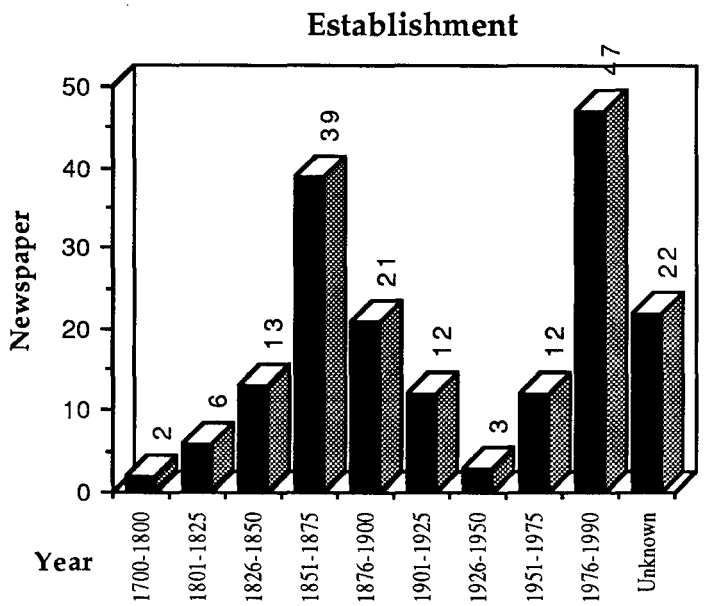
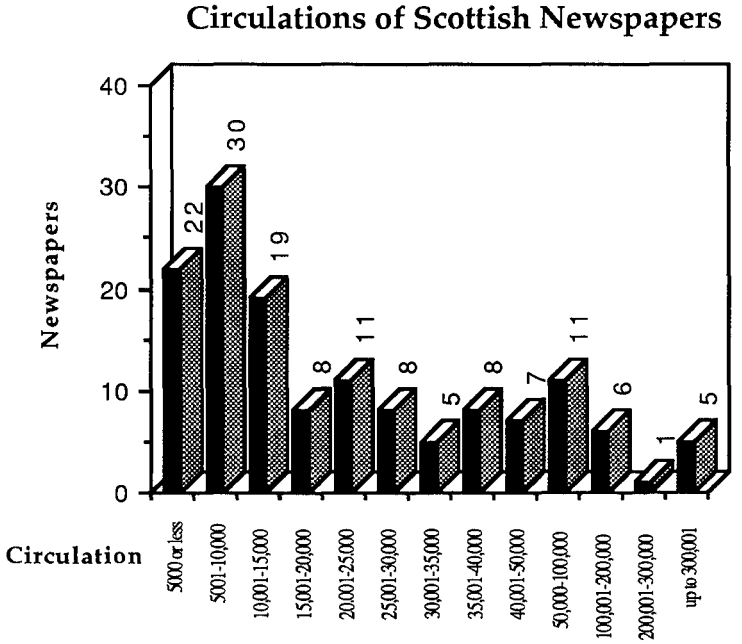


Diagram: 5



not finally relaxed until 1956, eleven years after the ending of the war, when competition returned and the more successful papers were able to give better value to their readers than their weaker rivals. An economic recession in 1951 resulted in a general increase in the cover price of newspapers.[45]

Between 1951 to 1975, the figure increased to 12 newspapers. Surprisingly after 1976 and till 1990, the number of newspapers launched rises to the highest level: in this period 47 newspapers appeared in the market (Table: 2.1).

Scottish newspapers seem quite old press life, for instance, 45 per cent of Scottish newspapers (79 newspapers) were established in the nineteenth century; but in the twentieth century, the ratio is just 42 per cent.

Table: 2.1. Establishments

1700-1800	2	1%
1801-1825	6	3%
1826-1850	13	7%
1851-1875	39	22%
1876-1900	21	12%
1901-1925	12	7%
1926-1950	3	2%
1951-1975	12	7%
1976-1990	47	27%
Unknown	22	12%
Total	*177*	*100%*

2.1.3. Circulations

'Circulation' refers that "the number of copies of a newspaper sold."[46] Circulation is vital for all newspapers; because, a newspaper company gets profit with each sold copy.

It is very difficult to give exact circulation figures because the market is not stable enough. Newspapers' selling ratio can be different each week or even each day. But the Scottish newspaper market does

[45] Bainbridge, Cyril, ed., *One Hundred Years of Journalism*, (London: Macmillan, 1984), p. 117.
[46] Hudgson, F.W., op.cit., p.257.

not indicate such a big difference. For example; (Aberdeen) *Press and Journal*'s circulation in 1982 was 110,000, and in 1991 it was 105,000. The *Daily Record* sold 740,000 copies in 1982, and increased to 762,000 in 1991. While for *The Scotsman* circulation was 90,000 in 1982, it slightly reduced to 86,000 in 1991.[47]

In 1982, the total Scottish dailies circulation was 1,450,000, while it was 1,600,000 in 1992.[48] There is 150,000 difference in nine years. We think that this is normal, because population increased, people needed more information about government, societies, local authority, etc., and for that reason more people started to buy one or more newspapers permanently.

In Scotland, there are 22 newspapers (12%) out of 177 which have circulations of less than 5,000 copies each issue. 30 newspapers (17%) are circulated around 5,000-10,000 copies; and 19 newspapers are circulated around 10,001-15,000 copies of each issue. There are 70 newspapers (40%) which are circulated up to 15,001 copies per issues (Table: 2.2.).

Table: 2.2. Circulation

5,000 or less	22	12%
5001-10,000	30	17%
10,001-15,000	19	11%
15.001-20,000	8	5%
20,001-25,000	11	6%
25,000-30,000	8	5%
30,001-50,000	20	11%
50,001-100,000	11	6%
100,001 or more	12	7%
Unknown	36	20%
Total	*177*	*100%*

2.1.4. Selling price

The price of newspapers and periodicals is not formally regulated by any price fixing aggrements. Proprietors are free to act

[47] *ABC Circulation Review*, July-Dec. 1982, Serial 102;
ABC Circulation Review, Jan.-June 1991, Serial 119.

[48] ibid.

independently but, since the factors which raise costs in one newspaper tend to raise costs in all comparable newspapers, the need to increase price arises for all members of a class roughly simultaneously, and there is a degree of consultation between the various proprietors. Consultation is directed primarily to the timing of increases and, particularly among national newspapers, often results in prices being raised on the same day and distribution discounts being adjusted accordingly.[49]

Newspapers are commercial firms which are published for making profit, except charity newspapers. Newspapers mainly get profit from the sold copies and advertisements.

In Scotland, 56 newspapers (32%) are disseminated free (without charge). Five newspapers are sold for 20 pence or less. 60 newspapers are sold from between 21 and 30 pence, of which there are 23 newspapers (13%) which are sold between 21 and 25 pence, and 37 newspapers exist in the market which they are sold between 26 and 30 pence (Table: 2.3.).

Table: 2.3. Selling price

Free	56	32%
20 p. or less	5	3%
21-25 p.	23	13%
26-30 p.	37	21%
31-35 p.	8	4%
36 p. or more	6	3%
Unknown	42	24%
Total	*177*	*100%*

2.1.5. Publishing frequency

There are 135 weekly newspapers (including twice weeklies), 14 dailies (including Sunday papers) and six monthlies published in Scotland. It means that 76 per cent of Scottish newspapers are published weekly, 8 per cent are daily and just 3 per cent are monthly.

[49] *Royal Commission on The Press*, op.cit., p. 60.

Diagram: 6

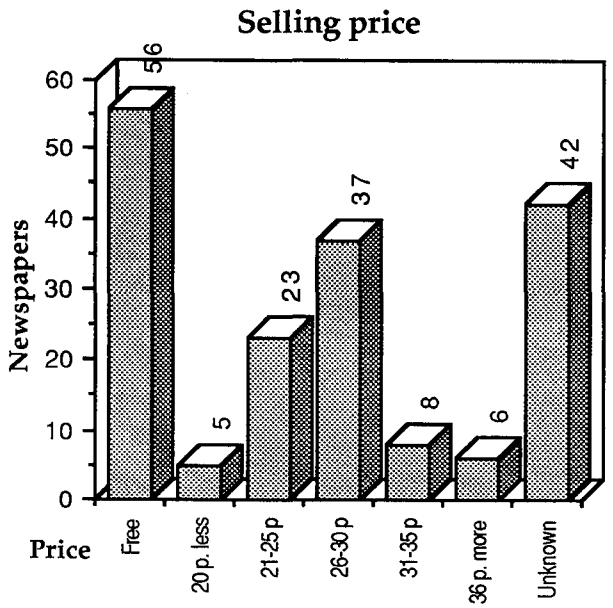
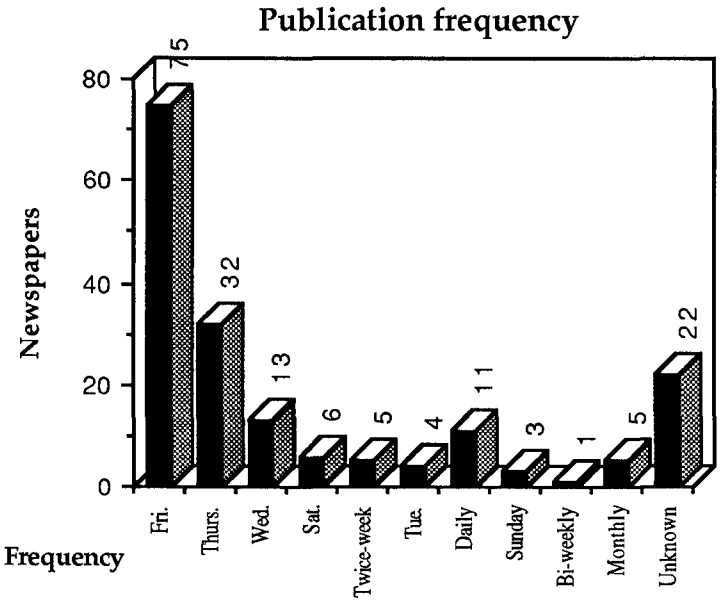


Diagram: 7



Most of the weeklies are published on Friday, there are 75 newspapers in this category, and ratio is 43 per cent. 32 newspapers are dropped in the market every Thursday; and there are 13 Wednesday papers (Table: 2.4.).

There are 14 dailies of which 11 are daily and three are Sundays[50]. The dailies are: Aberdeen Evening Express, Aberdeen Press and Journal, Daily Record, Dundee Courier and Advertiser, Dundee Evening Telegraph, Edinburgh Evening News, Glasgow Evening Times, Glasgow Herald, Greenock Telegraph, Paisley Daily Express and The Scotsman. The Sundays are: Scotland on Sunday, Sunday Mail and Sunday Post.

Table: 2.4. Publishing frequency

Weeklies	135	76%
Tuesday	4	2%
Wednesday	13	7%
Thursday	32	18%
Friday	75	43%
Saturday	6	3%
Twice-weekly	5	3%
Dailies	14	8%
Daily	11	6%
Sunday	3	2%
Monthly	6	4%
Biweekly	1	1%
Monthly	5	3%
Unknown	22	12%
Total	*177*	*100%*

2.2. The survey on newspapers printing technology in Scotland

As expressed to the beginning of this chapter, in this second part I attempt to find out and examine the printing technology of 77 newspapers published in Scotland.

2.2.1. Paper size

Most newspapers are printed on either tabloid size or broadsheet size

[50] Sunday papers are grouped in dailies, because Sunday papers are published by the dailies companies. The reports of the Royal Commission on the Press are grouped in this way.

paper. Broadsheet size paper's dimension is about 57 cm long on a page. Some newspapers such as The Times, The Daily Telegraph, The Guardian, Glasgow Herald and The Scotsman, are printed on broadsheet; some newspapers such as Daily Mail, Sun, Mirror and most of the evening papers are printed on tabloid size paper. Tabloid papers are smaller than broadsheets, and are about 35 cm long, some tabloids are exactly half size of broadsheet.

> There are large and small broadsheet papers and large and small tabloids. In recent years the tendency has been towards an increase in the number of tabloids.... Provincials divide similarly into tabloid and broadsheet, the vast majority being tabloid.[51]

According to the breakdown of the questionnaire (which is replied by 77 newspapers and the calculation is based on 77 newspapers, not 177 as mentioned the beginning of this chapter), it is found out, 50 newspapers[52] are tabloid and 27 newspapers are broadsheet out of 77 in Scotland. It means that 65 per cent Scottish newspapers are tabloids, and 35 per cent are broadsheets. So that, it can be said that most newspapers in Scotland are published tabloid size (Table: 2.5.).

Table: 2.5. Paper size

Tabloid	50	65%
Broadsheet	27	35%
Total	*77*	*100%*

2.2.2. Colour in printing

Printing processes can be done by using a single colour ink or various colour inks. In the letterpress era, most newspapers were printed with black ink only, and a logo[53], was printed in a second colour that was

[51] McCelland, W.D., op.cit., p. 16.

[52] Two newspaper groups have not shown exactly their published papers whether tabloid or broadsheet. Both tabloid and broadsheet sections were marked by these groups. Meanwhile, we assumed that these groups publish 50-50 both tabloid and broadsheet.

[53] 'Logo' indicates a newspaper's name and initials on the front page of the newspaper.

generally red or blue by some newspapers. In fact, this is still in progress in offset-litho printing. Offset-litho gives a more colourful image as explained in chapter one; meanwhile the newspapers in the country alter to full colour day by day.

A breakdown of the results obtained by the questionnaire shows that are 41 newspapers (54%) are printed in two colours. In these newspapers, text is probably in black; the logo and maybe some headlines, spots are printed in a colour ink such as red or blue. In this printing way, photographs can be printed in two colours that is called duotone (=duplex halftone). 16 newspapers (21%) are printed in full colour, what means that it is produced using four process colours (cyan, magenta, yellow and black).

11 newspapers have emphasised that advertisements are printed in colour; however text and photographs are printed with black ink in these newspapers. The ratio of these newspapers is 14 per cent. Eight newspapers (10%) are printed only with black ink.(Table: 2.6.).

'Colour' implies that printing processes are normally done by using cyan, magenta, yellow and black printing ink, but some other colour ink can be added such as pink and brown during printing. Cyan looks like light-blue, and magenta is kind of pink colour. All colours that human eyes can see, can be achieved by different mixtures of these four colours in printing.

Table: 2.6. Colour

Two colours	41	54%
Four colours	16	21%
Ads in colour, rest black	11	14%
Only black	8	10%
Unknown	1	1%
Total	*77*	*100%*

2.2.3. Employment

The achieved figure from the breakdown of the questionnaire shows

that more people are employed in production stage. 1224 workers are employed in production, while there are 855 workers in the editorial department. (These numbers are total number of employees in newspapers; each newspaper's situation can be seen in Appendix: III). IV The production stage covers typesetting, montaging, camera, platemaking and press. 59 per cent of workers are working in production while 41 per cent of workers are in editorial (Table: 2.7.).

Table: 2.7. Employment

Production	1224 workers	59%
Editorial	855 workers	41%
Total	*2079 workers*	*100%*

2.2.4. Typesetting

The survey indicated that all newspapers have their own typesetting system either DTP or phototypesetting. DTP can be used individually with a laser printer; meanwhile it can be linked to an phototypesetting out-put unit such as a Monotype Lasercomp instead of connecting to a laser printer, and this is used by some newspapers.

Apple computers that are generally classified as DTP, dominate Scottish newspapers which Apple being used by 29 newspapers (38%). Five newspapers use an Apple and Monotype combination and five use an Apple+PCs+Linotype combination. So that, it can be said that 48 per cent of Scottish newspapers use Apple computers. Two newspapers (4%) are using IBM compatible DTP systems. Linotype+G.B.Techniques are used by six newspapers (8%), and the Miles 33 phototypesetting system is used by 16 newspapers (21%). Compugraphic is used by four, Monotype by two, and Linotronic by one newspaper. Seven newspapers are composed on the Miles 33+Compugraphic+Lobal typesetting systems combination(Table: 2.8).

Table: 2.8. Typesetting

Apple	29	38%
Miles 33	16	21%
Miles 33+Compugraph.+Lobal	7	9%
Linotype+G.B. Techniques	6	8%
Apple+Monotype	4	5%
Apple+PCS+Linotype	4	5%
IBM compatible DTP	2	3%
Monotype	2	3%
Linotronic	1	1%
Compugraphic	4	5%
Agfa+Compugraphic	1	1%
Unknown	1	1%
Total	*77*	*100%*

According to the answers of the questionnaire, 28 newspapers (36%) out of 77 began to use phototypesetting systems in the 1970s. In the 1980s, 44 newspapers began to compose on either photo-typesetting or DTP systems. Today, all Scottish newspapers are being composed on either phototypesetting or DTP systems (Table: 2.9.).

Table: 2.9. Typesetting systems instalment

1973	7	9%
1976	5	6%
1977	6	8%
1979	10	13%
1980	3	4%
1982	1	1%
1983	4	5%
1984	7	9%
1985	6	8%
1987	7	9%
1988	2	3%
1989	14	18%
1990	2	3%
1991	2	3%
Unknown	1	1%
Total	*77*	*100%*

2.2.5. Previous typesetting system

The survey showed us that 31 newspapers (40%) have used hot metal typesetting technology before beginning to use phototypesetting or DTP systems. 32 newspapers (42%) have emphasised that previously phototypesetting systems were used. These newspapers have probably

modernised or replaced with new systems.

An interesting obtained point is that two newspapers have been composed in contract which means that in these two newspaper headlines, spots, text, captions etc. were composed by another firm probably by another newspaper.

One newspaper has mentioned that they have not used a typesetting system before. This newspaper (West Highland Free Press), probably, was composed for four years in contract and their system might be installed in 1976.

11 newspapers have not answered the related question, so that nothing can be said about their previous typesetting systems (Table: 2.10).

Table: 2.10. Previous typesetting systems

Linotype/Intertype/hot metal	31	40%
Phototypesetting	32	42%
In contract	2	3%
None	1	1%
Unknown	11	14%
Total	*77*	*100%*

2.2.6. Reprographic camera

Reprographic camera is used to make a halftone from a photograph. In printing all photographs must be converted to various dot sizes which achieves highlight, mid-tone and shadow detail on a halftone photograph. If we look carefully at a photograph in a newspaper, the photograph is in dots. All photographs must be screened which means to produce a photograph in dots in a newspaper. Screen processes are done by using either a reprographic camera or scanner. Generally 65 or 85 screen that means 65 dots in an inch, is used in newspaper photographs.

The survey shows that 47 newspapers out of 77 have Agfa repro camera. Agfa cameras, generally, are vertical. Reprographic cameras can

be either vertical or horizontal. Horizontal cameras need larger space than vertical cameras. And also most vertical cameras are operated in a darkroom and as called darkroom cameras. Why do lots of newspapers (62%) prefer the Agfa camera rather than the others? I think the Agfa camera can operated easily; Agfa is the most famous company in this field and supply many kinds of darkroom materials such as copyproof paper or film and copyproof developer and developments, and these materials can be acquired easily.

Eight newspapers are using Littlejohn's cameras, five newspapers have the other model cameras. Six newspapers use Dainippon camera, but I am not sure whether the Dainippon is a scanner or a camera, because Dainippon is a scanner manufacturer. Meanwhile four newspapers use Autokon scanner instead of camera; and four newspapers have Page master model camera. Three newspapers have emphasised that they have not got a camera, therefore they probably have photographs made in contract because they have not got a scanner as well (Table: 2.11).

Table: 2.11. Repro-camera

Agfa	47	62%
Littlejohn	8	10%
Pictorial Machinery	1	1%
Skyecopy	1	1%
Dainippon	6	8%
Autokon scanner	4	5%
Pagemaster	4	5%
Name unknown	3	4%
Not owned	3	4%
Total	*77*	*100%*

2.2.7. Scanner

There are three kinds of scanners: drum scanner, flat-bed scanner and handheld scanner. The drum scanner gives the best result and these are generally used in colour separations. There are four main drum-cylinder scanner manufacturers which are Crossfield, Hell, Dainippon and Itek.

Itek and Crossfield are British companies, Hell is German and Dainippon is Japanese. These machines are the most expensive scanners and cost about up to £150,000. These scanners can produce either single colour (e.g. black printer) or multi colour (e.g. four colour printers).

Flat-bed scanners are generally more convenient in DTP systems. These scanners can be black and white or colour. The quality of reproduction depends on the resolution of scanners. Resolution depends on the number of dots or lines in an inch when an image is created. The image quality depends on the number of dots in an inch, e.g. 300 dots per inch (dpi) implies that an image is created by 300 dots in an inch. Laser printers create an image with dots, however digitised phototypesetting systems and drum scanners produce an image not with dots but with lines which creates an image on to the film or bromide line by line, e.g. 2400 lines per inch (lpi) implies that an image is created by 2400 lines in an inch. The highest amount of dots or lines gives the best quality reproduction.

Flat-bed scanners' quality is not as good as drum scanners' quality, but they generally give a quite reliable result. The last group of scanners called handheld scanners are not very convenient for reproduction or printing. These scanners are the cheapest scanners in the market and can be purchased from a couple of hundreds pounds.

From the survey, it is obtained that 42 newspapers out of 77 have not got a scanner which means 55 per cent or half of the newspapers in Scotland. However 35 newspapers (45%) have different name and model scanners, and 24 newspapers (31%) out of 35 are using Agfa scanners in Scotland. These Agfa scanners, might be flat-bed scanners. Two newspapers have Apple Mac scanners, one newspaper is using Autokon, and only one newspaper has a handheld scanner. One

newspaper has a Dainippon scanner, but it was not mentioned that it is Drum scanner or flat-bed scanner. Two newspaper companies which publish four different newspapers each are using both flat-bed and drum scanners simultaneously; however two newspapers have a drum scanner only (Table: 2.12.).

Table: 2.12. Scanner

Agfa scanner	20	26%
Itek and Agfa	4	5%
Hell and Autokon	4	5%
Apple Mac scanner	2	3%
Itek scanner	2	3%
Autokon 1000	1	1%
Handheld	1	1%
Dainippon	1	1%
No scanners	42	55%
Total	*77*	*100 %*

2.2.8. Platemaking

Platemaking describes the making of plates for printing. "Printing plates are usually made from metal (sometimes plastic or paper), and can be flat or curved to fit round the cylinder. Photographic plates are now used mainly in high quality, large-format professional cameras while the most popular backing material is still acetate film."[54]

The survey asked a question about their platemaking systems on the questionnaire. 68 newspapers out of 77 have platemaking machines, only nine have not. 25 newspapers have not mentioned the names of their platemaking machines. 19 newspapers (25%) use Parker machines; seven have Browne, six newspapers have Fuji, four have Litx Pozer and four have Dupont, two have Misomex, and one newspaper has Horsell-Jupiter model platemaking machine (Table: 2.13.).

[54] Collin, P.H., *Dictionary of Printing and Publishing*, (Middlesex: Peter Collin Publishing, 1989), p.177.

Table: 2.13. Platemaking

Parker	19	25%
Browne	7	9%
Fuji	6	8%
Lithx Pozer-3	4	5%
Dupont	4	5%
Misomex	2	3%
Horsell-Jupiter	1	1%
Models unknown	25	32%
No machines	9	12%
Total	*77*	*100%*

2.2.9. Printing methods and machines

Lastly, some questions were asked to the newspapers in Scotland about their printing technology and their printing plants on the questionnaire. According to their replies, all newspapers are printed on offset-litho except one newspaper which is still being printed on letterpress machines. 76 newspapers out of 77 which is 99% are using offset-litho machines in their newspapers printing (Table: 2.14.). This result shows that the hypothesis of this study which is shown in chapter one is correct.

Table: 2.14. Printing methods

Printed on offset-litho machines	76	99%
Printed on Letterpress machines	1	1%
Total	*77*	*100%*

The survey also showed that 68 newspapers (88%) are printed in their own plants. Just nine newspapers (12%) are printed in contract (Table: 2.15.).

Table: 2.15. Printing plant

Printed in own plant	68	88%
Printed in contract	9	12%
Total	*77*	*100%*

68 newspapers have different model printing machines in their own plants. 40 newspapers (52%) have Rockwell web-offset machines, nine newspapers (12%) have Linotype web-offset machines, seven have

Linonews, four have the Goss Metro web printing machine, three have News Kins (Sulna), two have Hunter&Koenig&Bauner, and one each has a Baker-Perkins, a Heidelberg web-offset a Heidelberg letterpress machine (Table: 2.16.).

Table: 2.16. Printing machines

Rockwell	40	52%
Linotype	9	12%
Linonews	7	9%
Goss Metro	4	5%
News Kins (Sulna)	3	4%
Hunter-Koenig&Baur	2	3%
Baker-Perkins	1	1%
Heidelberg(offset)	1	1%
Heidelberg(letterp.)	1	1%
Total	*68*	*88%*
Contract	9	12%
Total	*77*	*100%*

66 newspapers are using web-fed machines, and the only letterpress printed newspaper in the country has a sheet-fed machine (Table: 2.17.).

Table: 2.17. Kinds of machines

Printed on web-fed machine	66	86%
Printed on sheet-fed machine	1	1%
Unknown	1	1%
Total	*68*	*88%*
Contract	9	12%
Total	*77*	*100%*

54 newspapers (70%) have 5 or more printing units on web machines, nine newspapers (12%) have 4 units printing machines and one has 3 units machines (Table: 2.18.).

Unit refers that a colour, say black, is printed onto both sides of paper at the same time. Four-unit machines can print four colours on the same sheet or four-unit can print eight different pages onto four sheets in a single colour, e.g. black.

Table: 2.18. Number of units on the machine

5 or more printing units	54	70%
4 printing units	9	12%
3 printing units	1	1%
Unknown	4	5%
Total	*68*	*88%*
Contract	9	12%
Total	*77*	*100%*

Chapter three

Chapter three

Turkish local newspapers with a basic comparison to Scottish newspapers

This chapter will attempt firstly to give some brief idea about the structures of British and Turkish newspapers in comparison; and then it will briefly describe Turkish local newspapers and their printing technology.

The data for Scottish newspapers has been derived from the previous chapter. The data for Turkish local newspapers has been derived from the "*Printing Techniques in Turkish Local Newspapers*"[55], which was done with the breakdown of information in "*Anatolia Press 1989*"[56] in 1990; and for that reason, the data shows the 1989's figure; in fact, it may be just slightly different today, but not a very deep difference. These figures are assumed to be almost same figure today.

3.1. A brief comparison of British and Turkish press

First of all, I think it should be mentioned similarity or differences in some cases between Turkey and Britain in relation of the press life.

"Britain has a free press. There is no censor and no licensing, and anyone can publish a newspaper provided he/she does not break the law in doing so."[57] Turkey has almost the same situation. Turkish Press Law gives freedom to the publication of newspapers, periodicals, and books, unless it: to break the law (same as the British condition); to destroy or abolish the style of Government (that is republic) replacing it with a communist regime or shariat; to encourage rebellion against the Government or any part of the land. Turkish Press Law says: "There is no censorship --that refers to a control mechanism before publishing--

[55] Gürcan, Halil I., *Kurgu Dergisi,Vol.9,* (Eskisehir: Anadolu Üniversitesi Yayini, 1991), pp.120-137.
[56] *Anadolu Basini 1989*, (Ankara: Basın Yayın ve Enformasyon Genel Müdürlügü, 1990).
[57] Hudgson, F.W., op.cit., p. 168.

on any publication", however there is a control mechanism which is done by a local court or by a public prosecutor after publication. Publishers must ensure to be submitted a couple of printed copies of either a newspaper or a magazine or a book to the local authority and the local court before disseminating or publishing it.

The freedom of the press exists by consensus, not in the constitution in Britain. However in Turkey, the freedom of the press and its limitations are defined in the Press Law and the other related laws.

"There is a Press Council that is the voluntary regulating body for the industry."[58] This Council controls the press in Britain. There is a Press Council that was set up in 1987, but it is not very effective on the press yet in Turkey.

In Britain, "the press is in private hands. There is no government controlled newspaper, no Government shareholding in a newspaper, and the press gets no form of Government help other than exemption from VAT."[59] In Turkey, the press is also in private hands except for two things: first, there is an official paper that is published daily and it does not cover any news, but it includes Government and parliament decisions, newly issued or altered laws, appoinments of some civil servant such as a governor of a province, and some directors. Second, there is a semi-official news agency called Anatolia Agency.

In Britain, the Government does not subsidies the press very much except by exemption from VAT. Meanwhile, the Turkish Government givessubsidies to the press in the same way, such as reduced rates for phone, plane and train as expressed later on. These helps are very important for the Turkish press especially for local newspapers. The VAT ratio on newspapers, periodicals and books is five

[58] ibid., p. 168.
[59] ibid.

per cent while for other thing it is 12 per cent. Unfortunately there is no exemption from VAT on published works.

3.2. General structures of Turkish and Scottish local newspapers

There were 739 local newspapers published daily, twice a week, weekly or biweekly in Turkey in 1989. In Turkey, the local administrations were divided into 71 provinces in 1989. Each province is governed by an individual governor under the Government and parliament. Each province has also been split into towns and villages. There are more than 800 towns and about 50,000 villages in the country.

Some local newspapers are published in the provinces and some are published in the towns, but no newspapers are published in villages in Turkey. The 739 published newspapers' total circulation is about 680,000. There are many newspapers published in 100-150 copies only. If someone has got a printing machine and publishes a newspaper regularly, he has some advantages in Turkey. Some of the advantages are: Government supplies cheap paper to the newspapers; almost all newspapers take the Government advertisements[60] or local announcements from the Organisation of Press Advertisements which is called *Basın İlan Kurumu*, a Government organisation which disseminates all advertisements that are paid by the relative Government organisations and local announcements to the registered newspapers. For registration into this Organisation, a newspaper should be published regularly at least one year, and should have particular printing area[61] in each issue, and so on. Lots of newspapers survive with the Government advertisements or local announcements. In fact, some newspapers that circulate 100-150 only, are just published for taking the Government advertisements or local announcements. These newspapers contain about 80 per cent advertisements or

[60] Such as some companies, some banks, PTT and Turkish Airlines that are owned by government.

[61] Minimum 0,68 m^2.

announcements and the rest is news. The third advantage is that the newspaper owners, editors and some reporters can get an official press identity card, called *Yellow Press Card*, and holder of this card have these advantages: 60 per cent off of PTT (mail, telephone, telex, fax) services, 50 per cent off of plane and train travel, free travel on local bus services, free entry in to the football, handball, basketball, etc. matches and some cinemas, theatres and so on.

If the Turkish Government does not support press and local newspapers, lots of newspapers would give up publishing. However, in Scotland, local newspapers have not got the same or similar advantages given by Government. Because most of the companies such as British Telecom or local bus services are private companies they do not offer any special rate for journalists in the U.K.

There are no big newspaper companies or groups as in Scottish newspapers in Turkey. As mentioned above, there are many newspapers which circulate 100-150 copies per issue. Most of the local papers are family firms and published individually; there are no more than 3-4 employed people in these firms. However in Scotland, a couple of groups or companies dominate the market as shown in a previous chapter.

In Turkey, all newspapers are sold to readers, which means there is no newspaper that disseminates free. Meanwhile 56 newspapers (32%) out of 177 are disseminated free in Scotland.

3.3. Printing technology in Turkish local newspapers

In 1989, 739 local newspapers were published in Turkey. Total circulation of these newspapers was 680,000, while national newspapers circulation was 3,200,000. There were 13 national newspapers published during this time in Turkey. This shows that national papers dominate the Turkish press. All of the 71 provinces,

have a different number of published newspapers.

Turkey has been divided into seven geographical regions according to the geographical and climate features. Unfortunately, the eastern regions of the country are poor, and have not been industrialised. This feature can be seen in the number of newspapers published in these regions. For instance, there are 66 newspapers published in East Anatolia Region, while 52 newspapers are published in South East Anatolia Region (Table: 3.1.).

Table: 3.1.Turkish local newspapers features according to regions

Geographical region	*No. of provinces*	*No. of published newspapers*	*Dailies*	*Letterpress printed newspapers*	*Offset printed newsps.*	*Number of provinces have offset printed newsps.*
MARMARA	10	115	49	98	17	6
AEGEAN SEA	8	97	23	83	13	6
MID-ANATOLIA	13	112	52	94	17	6
MEDITERRANEAN	7	131	69	117	13	4
BLACK SEA	15	166	54	150	15	4
EAST ANATOLIA	12	66	41	59	7	4
SOUTH EAST ANATOLIA	6	52	25	48	2	2
Total	***71***	***739***	***313***	***649***	***84***	***32***

* On the table, number of dailies indicated only, and the rest of the numbers of newspaper (weeklies, twice a week, etc.) was not indicated.
* Unknown is not reckoned on this table.

Letterpress has been widely used in local newspapers and as indicated above on the table, 649 newspapers out of 739 are printed on letterpress, while 84 newspapers are printed on offset-litho machines. It means that while 89 per cent of newspapers use letterpress machines, 11 per cent newspapers are printed on offset-litho machines only.

The letterpress machines still being used in the local newspapers are very old --up to 20-year-old--, but most of these machines run and

print very well. Before the 1960s, most of the newspapers used hand-feed letterpress machines, however in the 1950s, the local newspapers introduced the automatic-feed letterpress. During these periods lots of newspapers have bought Heidelberg either platen-press or cylinder press, not rotary press because of their small circulations. The reason for choosing Heidelberg was this: Heidelberg has given some option to buy with instalment in low interest, and easy payment opportunity. The printing machines which were bought during this period are still being used today by some newspapers.

However in the 1970s, the alteration to offset-litho from letterpress was begun in the local papers. Some of the offset-litho machines were taken into Turkey by some Turkish workers who work in Germany, with and the Government permission and without paying any tax. Most of the printing machines which have been taken into Turkey by workers were second hand, but these machines were much cheaper than the new printing machines. It should particularly be mentioned that about 90 per cent of local newspapers printed on offset-litho are in colour, some pictures are in duplex (in black and additionally a second colour, such as magenta or cyan) but not in full colour, because colour scanners are really very expensive for these papers.

In 39 provinces out of 71, there are no newspapers printed on offset-litho, another way to say is 55 per cent of provinces have not got any newspapers printed on offset-litho.

Conclusion

Newspapers have been a main news and communication medium since the first appeared in the market in the 1550s in the U.K. They keep the same situation, although to some extent superseded by radio since the 1930s and by television since the 1960s in Europe. Radio and television could not remove newspapers from the market, but there is big competition between the mass-media. Television showed its advantages during the Gulf War in 1991 and billions of people watched the real war at the same time on the screen, but it does not mean that television won the competition. Each communication medium gives to audiences different taste, different information and also each medium caters for different cultural demands.

Newspaper publishing is a business, like others, but it is an intellectual business. A newspaper mainly earns money from two different ways: advertisements and sales. A local paper can be produced by a couple of men, while a large circulated newspaper or a national daily employs hundreds of workers. So, newspaper publishing is team work, and all workers who are reporters, editors, printers must work in coordination.

Newspapers are a printed material, for that reason it must be printed somewhere either in own printing plant or in contract. Publishers who use a contract printing house, do not need to worry about paper, ink, plate, and some other stuff, because the contracted printing house will have all of these things. Contract printing is suitable for weekly papers but not for dailies. In fact, the best thing for a newspaper's publisher is to have his own printing house; because the printing plant is used not for newspapers printing only, but for commercial printing purposes as well; actually a newspaper can be

printed in a couple of hours depending on the number of copies produced and the speed of the printing machine.

In this study, I wanted to indicate printing technology from past till today relating to the Scottish press mainly, and the Turkish local press basically. It is known that most of the newspapers in Scotland are printed in offset-litho machines, but the printing situation of the Scottish papers is examined in this study whether they use the offset-litho technology or not. The hypothesis of this study is concerned with the usage of phototypesetting and DTP systems, and offset-litho technology in Scottish newspapers. As a result of the survey, I described that all Scottish newspapers that responded to the questionnaire use either phototypesetting or DTP systems and 99 per cent of them use offset-litho machines. Eventually, the following basic points are achieved from the survey:

* 27 per cent of Scottish papers were established between 1976 and 1990,
* 40 per cent of newspapers are circulated up to 15,000 copies per issue,
* 32 per cent are disseminated free while 68 per cent are sold,
* 76 per cent of Scottish papers are weekly, and just 8 per cent are daily,
* 54 per cent are printed in two colours,
* 59 per cent of workers work in the production stage,
* 38 per cent of newspapers use the Apple Mac computers in composing stage,
* 40 per cent have used to hot metal typesetting before installing phototypesetting or DTP, while 42 per cent used phototypesetting before they began to use current technology,
* 62 per cent use the Agfa reprographic cameras in several models,

* 55 per cent have not got a scanner, while 26 per cent use the Agfa flat-bed scanners,
* 25 per cent use the Parker platemaking machines, however 12 per cent have not got a platemaking machine,
* 88 per cent have got their own printing plant, while 12 per cent use a contract printing house,
* 52 per cent have got the Rockwell offset-litho printing machines,
* 86 per cent are printed on web-fed machines,
* 70 per cent have five or more units printing machines.

It is not discussed about which machine is good or which machine is convenient for newspapers in this study; because it is aimed to show the used technology and machines in Scottish newspapers, and the technology used in the Turkish local press; but not to investigate their technological advantages or disadvantages. I think that the achieved result will be helpful for someone who is a newspaper publisher or interested in this field.

I have never intended to say this technology is useless, or this technology is useful, because I believe that each printing technique has some advantages and disadvantages as well. But if 100-150 copies are printed on an offset-litho machine either sheet-fed or web-fed that is just waste of money. If web-fed is used for a very low circulated paper, it is a total disaster, because a web-fed machine wastes a high amount of paper when it is running for printing. So, for Turkish condition, it is admirable to use letterpress because some local papers are circulated just 100-150 copies only. Meanwhile, it should be particularly emphasised that the Turkish local newspapers have very old model printing machines.

Linotype and Monotype hot metal typesetting machines are not used anymore in the newspapers or even in the others printing houses

in Britain; perhaps a couple of hot metal typesetting machines are used for special purposes or nostalgically. However, in Turkey, some local newspapers still use hand typesetting or Linotype, but all national newspapers are printed on web-offset and most of them are in full colour. There are different approaches to the use of colour in the newspapers, but I think the reason for choosing colour in the Turkish press is to compete with rival newspapers and to get more money from the small market, because about 4 million national newspapers are sold each day in Turkey, 13 national dailies share this small market, and local newspapers' circulations are about 800,000 which 739 local newspapers share this amount of circulation. There are about 15 million newspapers' readers each day despite of 4.8 million sold copies. It is very common to read newspapers in the coffee houses or to borrow it for just reading from someone who has it. Most of the read newspapers are used for covering/packaging something and some people buy or collect the read newspapers for re-making paper purposes in the country.

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Appendixes

Appendix I.

Halil Gurcan

University of Stirling
Centre For Publishing Studies
Stirling-Scotland
FK9 4 LA

3.2.1992

Dear Sir/Madam,

I am a full-time Master of Philosophy (M.Phil.) in Publishing Studies student at the University of Stirling, and engaged in a dissertation "**Newspapers Printing Technology in Scotland**".

The purpose of the dissertation is to find out the technological position which is now being used commonly in Scottish Newspapers.

It would be very helpful, if you could spare two minutes to complete **the enclosed questionnaire** and early reply (by **28 February 1992**) would be very much appreciated.

I look forward to your favourable reply.

Yours sincerely,

Halil Gurcan

Appendix II.

The survey of "Newspapers printing technology in Scotland"

The Questionnaire

****

Newspaper : .....

Publisher : .....

Ownership : .....

Circulation (average): .....

Selling price: .....

Circulates in: .....

Frequency : ❑ daily ❑ morning ❑ evening

❑ weekly (.....) ❑ Sunday

❑ twice a week (.....)

****

1. Paper size: ❑ tabloid ❑ broadsheet
2. Colour : ❑ in colour
   ❑ in black&white
   ❑ two colours(logo in colour, rest B&W)
   ❑ only advertisements in colour, rest B&W.
3. Employed people numbers: a) Editorial: ..... , b) Production: .....
4. Do you have typesetting machine? ❑ yes
   ❑ no (if no, where is composition done?)
   .....
5. Which typesetting method do you use? ❑ phototypesetting
   ❑ desk top publishing
   ❑ hot-metal
   ❑ hand-typesetting
6. What is the name of the used system? (eg. Apple, Monotype, Linotype etc.)
   .....
7. When did you begin to use this kind of typesetting? .....
8. What was the previous used typesetting machine in the newspaper?
   .....
9. Do you have a repro-camera? ❑ no
   ❑ yes (name & model:.....)
10. Do you have a scanner? ❑ no
    ❑ yes (name&model: .....)

➥

11. Do you have a platemaking machine? ❑ yes (name&model:.....)
❑ no

12. Your newspaper is being printed on, ❑ Letterpress machine
❑ Litho-offset machine
❑ Other: .....

13. Your newspaper is being printed in, ❑ contract
❑ own printing plant
❑ other: .....

14. If your newspaper has own printing plant, which machine is being used in newspaper printing?

❑ Heidelberg (model:.....)
❑ Roland (model:.....)
❑ Harris (model:.....)
❑ Kamaitsu (model:.....)
❑ Rockwell (model:.....)
❑ Other: .....

- ❑ web-fed
- ❑ sheet-fed
  - ❑ one unit
  - ❑ two units
  - ❑ four units
  - ❑ five and more

15. Do you have any technological or some other kind of problem?

.....

.....

.....

Appendix III

Publisher / Newspaper	Established	Selling	Circulation	Publ. date
Scottish & Universal Newspapers Ltd				
* Ayrshire Post	1880	32 p.	27.000	Fri.
* Ayrshire World	1980	Free	50.000	Fri.
* Irvine Herald	1871	24 p.	5.500	Fri.
* Kilmarnock Standard	1892	32 p.	20.000	Fri.
* Dumfries-Galloway News	1859	28 p.	9.500	Wed-Fri
* Dumfries-Galloway Standard	1843	27 p.	32.000	Fri.
* Dumbarton Lennox Herald	1861	26 p.	13.500	Fri.
* Airdrie & Coatbridge Advertiser	1855	30 p.	25.000	Fri.
* Airdrie & Coatbridge World	?	Free	25.500	?
* East Kilbride News	1952	30 p.	15.500	Fri.
* East Kilbridge World	?	Free	22.000	Fri.
* Hamilton Advertiser	1856	30 p.	33.500	Fri.
* Hamilton World	?	Free	30.000	Fri.
* Lanarkshire World	1981	Free	?	Fri.
* Rutherglen Reformer	1874	24 p.	6.600	Fri.
* Wishaw Press	1870	30 p.	14.500	Fri.
* Wishaw World	?	Free	13.000	Fri.
* Blairgowrie Advertiser	1855	19 p.	3.400	Thurs.
* Perth Shopper	1985	Free	21.000	Sat.
* Perthshire Advertiser	1829	33 p.	33.000	Tue-Fri
* Paisley Daily Express	1874	?	11.000	daily
* Renfrewshire World	1981	Free	57.000	Fri.
* Stirling/Alloa Shopper	1979	Free	39.000	Thurs.
* Stirling Observer	1836	33 p.	21.000	Wed-Fri
* Lothian Courier	1872	30 p.	24.000	Fri.
* Lothian World	1985	Free	42.000	Wed.
D. C. Thomson & Co. Ltd				
* Courier & Advertiser	1926	24 p.	117.000	daily
* Dundonian Extra	1986	Free	72.500	Sat.
* Evening Telegraph & Post	1905	22 p.	43.000	?
* Sporting Post	1905	?	17.500	Sat.
* Weekly News	1855	?	512.000	Fri.
* Sunday Post	1920	40 p.	1.200.000	Sun
Angus County Press				
* Inverurie Herald	?	?	?	Fri.
* Carnoustie Leader	1989	Free	?	?
* Forfar Dispatch	1884	?	?	Thurs
* Kirriemuir Herald	1949	?	?	Thurs
* Deeside Piper	1985	?	?	Fri.

Aberdeen Journals Ltd				
* Aberdeen Herald & Post	1982	Free	85.000	Wed.
* Evening Express	1879	22 p.	72.000	evening
* Press & Journal	1748	27 p.	105.000	daily
* East Ross Post	1989	Free	?	Wed.
Mid-Grampian Journals Ltd				
* Huntly Express	1863	25 p.	35.000	Fri.
* Banffshire Herald	1892	25 p.	3.000	Sat.
* Banffshire Advertiser	1881	?	4.000	Tue
W. Peter & Son Ltd				
* Ellon & District Advertiser	1957	?	?	Fri.
* Inverurie & District Advertiser	1952	?	?	Fri.
* Turriff & District Advertiser	1936	?	?	Fri.
Highland Printing And Publishing Group				
* Caithness Courier	1866	30 p.	5.500	Wed.
* John O'Groat Journal	1836	30 p.	9.000	Fri.
* Inverness & Highland News	1883	28 p.	12.000	Thurs.
* Lochaber News	?	28 p.	3.500	Fri.
* Inverness & Nairnshire Herald	1980	Free	20.000	Fri.
* Ross-shire Herald	?	Free	12.500	Fri.
* North Star	?	?	?	Thurs.
* Ross-shire Journal	1875	28 p.	11.200	Thurs.
P. Scrogie Ltd				
* Fraserburgh Herald	1884	?	?	Fri.
* Buchan Observer	1862	?	?	Fri.
* The Ellon Times & East Gordon Advertiser	1990	Free	5.000	Thurs.
Paton-Cook Ltd				
* Barrhead News	1894	26 p.	4.000	Fri.
* Eastwood Mercury	1953	Free	42.500	Fri.
* Johnstone & Linwood Gazette	1966	26 p.	4.000	Fri.
* Paisley Post	1987	Free	27.500	Fri.
* Paisley & Renfrewshire Gazette	1864	26 p.	4.000	Fri.
* Renfrewshire Post	1987	Free	36.000	Fri.
* Glasgow Post	1986	Free	42.500	Fri.
Arbroath Herald Ltd				
* Arbroath Herald	1838	?	?	Fri.
* Broughty Ferry Guide & Cornoustie Gazette	1887	?	?	Sat.

Dumfriesshire Newspaper Group				
* Annandale Observer	1857	28 p.	4.000	Fri.
* Dumfries Courier	1977	Free	25.000	Fri.
* Annandale Herald & Record	1862	30 p.	4.000	Thurs
* Moffat News	1862	28 p.	4.000	Thurs
Scottish County Press Ltd				
* Lothian Times	1986	Free	61.000	Fri.
* Dalkeith Advertiser	1853	?	14.000	Thurs
* South Midlothian Advertiser	1853	?	4.000	Fri.
* East Lothian News	1971	?	8.000	Fri.
* Musselburgh News	1908	?	5.000	Fri.
* Peebles Times	1986	Free	4.500	Fri.
Johnston (Falkirk) Ltd				
* Carluke Gazette	1906	20 p.	6.500	Fri.
* Cumbernauld Advertiser	1987	Free	18.500	Fri.
* Cumbernauld News & Kilsyth Chronicle	1966	22 p.	13.500	Wed
* Lanark Gazette	1906	20 p.	6.000	Fri
* Falkirk & Grangemouth Advertiser	1978	Free	63.000	Wed
* Falkirk Herald	1845	27 p.	35.500	Thurs
* Linlithgowshire Journal & Gazette	1952	20 p.	8.300	Fri.
Gutrie Newspaper Group				
* Ardrossan & Saltcoats Herald	1853	28 p.	16.500	Fri.
* Ayr Advertiser	1803	26 p.	4.000	Thurs
* Ayr, Prestwich & Troon Extra	1985	Free	?	Fri.
* Ayrshire Extra	1985	Free	?	Fri.
* Cumnock Chronicle	1901	26 p.	8.000	Fri.
* Carrick Herald	1904	26 p.	4.000	Thurs
* Irvine Times	1873	28 p.	10.000	Fri.
* Kilmarnock & District Extra	1988	Free	?	Fri.
* Largs & Millport Weekly News	1877	28 p.	6.300	Fri.
* Troon Times	1893	26 p.	4.000	Thurs
Strachan & Livingston Ltd				
* Fife Herald	1822	22 p.	6.500	Fri.
* Glenrothes Gazette Leslie & Markinch News	1962	22 p.	7.000	Thurs
* Fife Free Press	1871	27 p.	22.000	Fri.
* Fife Leader	1981	Free	50.000	Tue
* East Fife Mail	1966	22 p.	12.000	?
* St Andrews Citizen	1870	22 p.	6.500	Fri.
* Fife Advertiser	?	Free	26.000	?
Brechin Advertiser	1848	22 p.	3.600	Thurs

The Montrose Review Press Ltd				
* Montrose Review	1811	29 p.	6.000	Thurs
* Kincardineshire Observer	1902	?	?	Fri.
* Mearns Leader	1912	?	?	Fri.
The Oban Times Ltd				
* Campbeltown Courier & Argyllshire Adv.	1873	?	7.300	Fri.
* Oban Times & West Highland Times	1861	?	20.500	Thurs
* Fort William Extra	1984	Free	4.000	Tue
Dunoon Observer & Argyllshire Standard	1871	?	?	Fri.
The Scotsman Publications Ltd				
* Scotland on Sunday	1988	50 p.	73.000	Sun
* Evening News	1873	22 p.	102.000	eveni.
* The Scotsman	1817	35p	86.000	daily
Three Towns Trader	1983	Free	14.000	month
Scotsman Communications Ltd				
* Ayrshire Leader	1988	Free	39.000	?
* Edinburgh Herald & Post	1978	Free	221.000	Thurs
* West Lothian Herald & Post	1988	Free	51.000	Thurs
East Lothian Courier	1859	?	14.000	Fri.
Community Media Ltd				
* Glasgow South & Eastwood Extra	?	Free	40.000	Thurs
* Lanarkshire People	1981	Free	35.000	Fri.
Galloway Gazette Ltd				
* Carrick Gazette	1870	?	5.000	Thurs
* Galloway Gazette	1890	28 p.	10.000	Fri.
* Stornoway Gazette	1917	38 p.	13.500	Thurs
Moray & Nairn Newspaper Ltd				
* Banffshire Journal	1845	?	5.000	?
* Northern Scot	1880	?	21.000	Fri.
* Northern Scot & Midweek Extra	1980	Free	30.000	Wed
* Forres & Nairn Gazette	1837	?	3.200	Wed
* Strathspey & Badenoch Herald	1907	?	4.500	Thurs

The Tweeddale Press Group	(group)	25/35 p.	37.000	Thurs
* Berwickshire News & East Lothian Herald	1869			
* Southern Reporter	1855	33 p.	17.500	
* Alnwick Advertiser	1979			
* Berwick Advertiser	1808			
* Morpeth Herald	1854			
The Buteman	1854	?	?	Fri.
Alloa Printing & Publishing Co				
* Alloa & Hillfoots Advertiser-Journal	1841	30 p.	15.500	Wed-Fri
* Stirling News	1987	Free	27.000	Fri.
Eskdale & Liddesdale Advertiser	1848	?	?	?
Courier				
* Clydebank Leader	1989	Free	39.000	Fri.
* Bearsden, Milngavie & West Glasgow Cou.	1986	Free	41.000	Fri.
Craig Jeffy Ltd				
* Clydebank Post	?	26 p.	8.000	Fri.
* Dumbarton & Vale of Leven Reporter	1964	22 p.	7.000	Wed
* Helensburgh Advertiser	1957	24 p.	8.000	Fri.
The Dunfermline Press				
* Central Fife Times & Advertiser	1892	13 p.	8.200	Thurs
* Dunfermline Press & West of Fife Adv.	1859	27 p.	22.000	Wed
* Fife & Kinross Extra	1981	Free	57.500	Wed
Ad on Friday	?	Free	?	Fri.
Inverness Courier	1817	30 p.	35.000	Tue-Fri
Arran Banner	1974	?	3.300	Sat
West Highland Free Press	1972	35 p.	9.500	Fri.
The Orcadian	1854	34 p.	11.000	Thurs
D. Macleod Ltd				
* Motherwell Times	1883	22 p.	8.500	Thurs
* Bellshill Speaker	1892	19 p.	7.300	Thurs
* Kirkintilloch & Bishopbriggs Herald	1883	22 p.	12.000	Wed
* Milngavie & Bearsden Herald	1901	22 p.	8.500	Fri.
East End Independent	1990	Free	?	Fri.

George Outram & Co Ltd				
* Evening Times	1876	25 p.	170.000	eveni.
* Glasgow Herald	1782	40 p.	125.000	daily
Scottish Daily Record & Sunday Mail Ltd				
* Daily Record	1855	27 p.	762.000	daily
* Sunday Mail	1919	40 p.	882.000	Sun
* The Glaswegian	1989	Free	336.000	Wed
* Edinburgh & Lothians Post	1988	Free	197.000	Wed
Glasgow Guardian	1986	Free	60.500	Thurs
Gorgie/Dalry Gazette	1985	Free	17.500	Month
Leith Leader	1987	Free	30.000	Month
North Edinburgh News	1979	Free	12.500	Month
Tollcross Times	1986	Free	10.000	Month
Wester Hailes Sentinel	1976	Free	10.000	Bi-week
Nairnshire Telegraph	1841	?	?	Tue
Strathearn Herald	1856	?	?	Sat
Orr, Pollock & Co Ltd				
* Clyde Post	1987	Free	37.500	?
* Greenock Telegraph	1857	24 p.	22.000	Eveni.
Paisley, Renfrewshire & Gryffe Weekly News	?	Free	59.000	Wed.
Hawick News & Scottish Border Chronicle	1882	?	7.500	Fri.
The Shetland Times	1872	38 p.	11.000	Fri.
Northern Times	1899	40 p.	6.000	Fri.
Wigtown Free Press & Stranraer Advertiser	1843	Free	?	Wed.

Appendix IV

Newspaper	Paper Size	Colour	Employed		Typesetting			Camera	Scanner	Platemaking	Printing				
			Edit.	Product.	Model	When launched	Previous				Method	Contract/own	Machine	Web/Sheet fed	Number of units
Greenock Telegraph	Tab	Ads in color rest B&W	16	23	Apple	1990	Linotrom	Pictorial Machinery	Autokon 1000	Parker	Litho	own	Baker-Perkins Halley-Aller Junior	Web	up to 5
Banffshire Advertiser															
Banffshire Herald															