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NEW TECHNOLOGY IN INDIAN NEWSPAPER INDUSTRY -- A critical appraisal

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Abstract

This brief critical appraisal of modernization in Indian newspaper industry forms the background of study in labour response to the said modernization. After briefly outlining the technological developments in the wake of the introduction of microelectronics in graphic industry, I have tried to look into reasons behind the said introduction - ideological, political as well as economic. I have further argued that labour response itself is a very critical factor in the process of modernization. It is not surprising that the big press in India has been conscious of all these elements, as evident from the growth of newspaper industry from the period between Palekar and Bachawat awards. The connection between modernization and big capital is too important to be overlooked.

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I

Automated Technology in Newspaper Industry

The ongoing scientific and technological revolution has taken one important form - that of information revolution. With the new technological means to collect, store, process and disseminate news, no news is really today external, no news is really remote or late. With the development of novel means of mass communication, it is really the age of mass media.[1] No wonder, that the spectacular progress in the technology of automation has become really evident in newspaper industry, where the entire work process has been revolutionized within a decade or little more.

What is the precise character of modernization being introduced in the newspaper industry and has in fact already been introduced in almost all the big newspaper establishments? In India, it was not accidental that immediately after the publication of the Palekar Tribunal Report,[2] the Press barons started a concerted drive for adopting computerized technology in their industry. They chose to be mysteriously silent over the possible effect of the new technology on the labour force; they tried to allure the workers into accepting the new process in liew of some financial benefits, particularly when the workers were yet unaware of the total nature of the new technology being introduced; at some places again, they linked up the question of introducing modernization with their duty of implementing even the vary few benefits for the workers due to the Palekar Award.[3] Let us, however, see

in the first place, what the modern electronic process is - the phototypesetting system and new technique of printing. that is going to automise the entire newspaper industry. Th sudden leap from conventional linotypesetting to computerise phototypesetting is the essence of the introduction of elec- tronics in newspaper industry and a thorough examination of this leap will make clear how the socio-economic aspects and the technical aspects of automation are inextricably **inter-linked.**

The Old Method :

The hitherto existing method of production in print- ing, particularly in newspapers, required an extensive and elaborate process of work. The technical aspects of the production could be divided into four parts, which were (a) type setting and composing (b) block making (c) paper printing (d) distribution. In newspaper, predetermined and fixed measured metal type lines are cast out mechanically by linotype machine. By tapping keys, individual type matrices are set and are sent off mechanically into the machine to cast out the type-line, called a slug, which is made of molt lead, comprised of tin, antimony and lead. Thus series of hot metal slugs are gathered in galleys, while the matrices of head-line types are arranged manually into a strick and cast out by APL i.e. All Purpose Linotype or Ludlow machine This line casting output is then arranged as desired and proofs are pulled out of these solid made-up matter and read out with the manuscripts or copy matter. Corrections and instructions are marked on the proofsheets and carried out

by operatives and working hands. Where necessary, blocks of picture illustration etc. are inserted together with the set type lines. This arranged matter and hand-set titles and headlines are then made into page forms called chases. Page proofs are then taken for corrections and editing. Blocks of advertisement and news text matter are made in the process department through an elaborate method of manual and mechanical work, photographic and chemical process and treatment.

From composing, the process now reaches the stage of printing. The finished made-up newspaper page, called forms, is put into a matrix punching press. A heat resistant sheet, called a flong, is laid on the forme and compressed, thus creating raised types out of the imprints from great pressure and extreme heat. Two plates, cast out of these flongs and screwed opposite each other make up a rotary forme. Then starts printing after the formes are arranged, ink rolled and real papers are set in order. The continuous roll of paper is printed out by rotary machine, folded and cut into sizes. These are then automatically colated in correct order and leave the folding machine for despatch. For short run job and commercial work, flat bed letterpress machines are used. For printing in offset machine the method is to take a machine pull of the matter that is to be printed and then a film negative is taken of the same to expose light on the offset plate to be made. This plate is then set on to an offset machine for printing. The method of printing in offset is reverse printing method and for the letterpress it is direct printing method.

This has been the basic metal printing method, the principles of which were in fact discovered by Johannes

Gutenberg around 1445. And since the time of Ottman Mergenthaler in 1884, the march from hand setting metal types to mechanical setting was made. The Teletypesetter or the TTS is the latest development in speeding up the hot metal system of typesetting, where to do away with manual attention regarding justifications or splitting of words, TTS is made to operate on tape perforated by a computer already fed with the complete programme for splitting syllables.[4]

Cold Printing :

Electronics have revolutionized the entire method of printing system, with the introduction of phototype setting system. The entire revolution is with the help of computers - the automatic typesetting system. What then is phototypesetting ? How is it related to computers ? "The principle of phototype-setting is to generate characters i.e. types by photoset method. Phototypesetting produces no solid types. It produces photoset types on photosensitive papers - no relief or raised metal types, but printed images of characters on flats. No metal or metal matrices, moulds, casting, and blocks are now required to make up images. Under the new system newspaper pages are made up by pasting galley formats of photoset characters onto a transparent dummy sheet according to layout. Film negatives of paste up pages are then taken to produce plates for printing. Thus, it is at this initial stage of composing - preparatory to printing - that the most vital departure from the conventional method takes place and this departure produces the inevitable impact on the subsequent and interrelated stages of newspaper production".[5] This departure is of course technological - an

aspect which we have to briefly discuss, but the technological aspect is enmeshed in a web of socio-economic relations - the relation to labour to capital, the relation of capital owner-ship to the total structure of newspaper industry, the effect of and on news gathering and news distribution, the import of foreign capital etc.; and more interestingly the technological form is created or thrown up due to the complex web of econo-mic and political relations.

Let us move on to the technological aspect first. The integrated circuit along with the microprocessor has changed or done away with all the previous skill in hot metal process. Computerized phototypesetting, the first major breakthrough towards revolutionization of the entire industry, involves composing, correcting and editing text matter dis-played on a videoterminal and stored on a magnetic disk. These machines are typically 5 to 150 times faster than previ-out hot metal systems and can compose 150 to 4,500 words a minute. Further improvements have been towards digitised systems that dispense with photographic paper to engrave the text and illustrations directly on the printing plate. The laser scanner helps colour separations of colour photographs or illustrations. Typically, various models of scanners, operated by one or two trained technicians, take anywhere between 15 minutes to two hours to produce colour separated positives, a process that earlier involved many more skilled process technicians and took to 2/3 days to produce a set of acceptable colour separations. The transition from metal based printing to phototypesetting need not be very sudden. It can often pass through some intermediary stages, depending upon the investment capability of the employer, adaptability

to new technology, degree of union resistance, availability of foreign inputs etc. Thus, computerisation may first be introduced only to teletypesetting. Or, without resorting to offset printing press, photopolymer plastic plates may be used for adapting photo-composed text to letterpress rotaries. In case of a newspaper of more than one city editions, facsimile transmission can also be gradually modernized. Direct transport via airways, STD use, faster facsimile transmitters, can lead right up to the use of satellites. In India, while transmission methods are still very much backward,[6] in the developed west, use of satellites has become a common reality today.

The crucial point in this whole computerized system of newspaper publication and distribution is obviously the computerized composing, which is at the nerve centre of news collection, analysis, editing, disseminating and finally news preserving in most modern methods of archiving. There are two ways of generating characters by the photoset methods:

(1) The successive assembly of individual letters by photographic printing from film matrices instead of metal matrices.
(2) Cathode-ray tube generation of individual characters, individual lines of types or areas of text.

Though for activating photosetting devices manually operated film lettering 'enlargers' may be used or machines based on hot metal principles may be used, where photographic printing heads are substituted for metal pot and pump, the modern method is the computation of images or CRT (Cathode

Ray Tube) displays or the high speed assembly of individual characters by electronic computerized devices. So, the basics of photographic typesetting to obtain the image of a character on sensitive photographic paper or paper printing plate, require the existence of the character in a negative form on a master usually made out of film or treated glass through which light can be exposed to imprint the image on the paper. Thus, repeating the process, sets of images of characters may be obtained in required measures and the full text can be done in the same way.

However, to obtain characters by the keyboard operation, either rotating negative discs or movable lenses are used. One or several fonts (a set of character in one style) on a master and one or several masters may be loaded in the machine at one time. A slit opposite each character and each timing mark is counted by a special optical sensor. When the mark for the character selected comes under the sensor, the flash lamp is activated. The light from the flash lamp passes through the master image and enters a path that often takes the light through a lensing system. Lenses of various sizes in a rotating turret may be used for getting the required type size. By a mechanical device the light sensitive photomaterial moves with the speed of exposure and takes the image of the character. Increasingly, the movable mechanical parts have been reduced to enhance speed and now instead of imprinting images of characters directly, the method is to store the data of characters in magnetic type of sheet by the tapping of keys. As has been told, photoset characters can now be assembled at the rate of 200 to 600 characters per second by an electronic computerized device.

The first generation of machines was barely faster that metal typesetting. Its aim was not to improve the speed of setting, but rather to produce a printing base for the then new photoprinting offset process. The second generation of phototype setters of fifties and sixties was guided by a perforated tape and used glass discs by scanning or rotating negative discs with the letter produced by a flash. The real breakthrough came with the third generation machines, the Cathode-ray machines, where glass or film grids are not used, but the letter and symbol is data stored. These machines can therefore work without materials and at the speed of the flashing light with which the cathode-ray photosets line by line. The sole technical procedure that remains is inserting a magnetic film or a magnetic sheet like the size of a gramaphone record.

Today, all typesetting functions from original keyboarding, playing, editing to camera-ready reproduction are controlled by a computer brain attached to the heart of the machine. The required margins, alignments, size and points, justification and hyphenation, can be programme set for automatic functioning of the photocomposing system with a revolving magnetic disc or cassette. Any type size or seizes of types can be obtained by automatic lensing devices. The usual practice is to type blindly and continuously to record the information (data and symbol) onto some form of storage media- cassette, magnetic disc, or perforated tape. When required, the recorded jobs can be rerun and corrections, insertion, resetting and updating of the job can be done. As has been told, the justification and hyphenation would be automatic by computer programming.

Sometimes input devices use a video screen (cathode ray tube) to display the copy being typeset and edited. Letters are scanned by an electronic beam (according to symbol and data being programmed) which is generated at the back of the tube and is deflected by the deflection coil to various locations on the face of the tube (screen). The CRT characters are made up of groups of dots creating a visual pattern of the characters on the face of the tube. The number of dots within which characters are constructed is called a dot matrix. In a way this system is like displaying pictures on TV. From the data and symbol displaced on the screen, light sensitive photographic paper can receive the print. CRT computation extend upto the astronomical figure of more than 5 lakh characters per minute printed out in column formats. This output may be produced on film (bromide) or photo sensitive paper in long strips like galley proofs, developed through an automatic developing process, which are then cut and pasted on sheets of paper (or astrolon sheets) to make up the pages. A photograph is taken of the assembled sheet by placing it onto a flatbed machine and within a few seconds the whole negative comes out. From the negative either an offset plate is made for offset printing, a polymer plate is made for letterpress printing.

The photographic keyboards are designed so that two or more languages can be worked out by the same machine by shifting devices. Only the master disc needs be changed. In cathode ray machine, it is done by computer programming. With record and play back capability, most direct entry phototypesetters can accept input from off-line input devices, thus forming the nucleus of higher output system with

multiple-input sources. Depending on the ability of the PTS, six or even more input sources can often be accommodated, besides, a magnetic sheet can be erased or used several times.

The Work Flow :

For newspaper work, then the whole process - from keyboarding to photosetting work, is divided into four stages. The first is the key to magnetic disc or film. Then the disc is taken out and fitted on to a machine, called a 'dot-matrix printer' or 'solid matrix line printer'; which works as a proofing machine. From the magnetic code of the disc this machine gives a hard proof copy for correction purposes within 2 minutes which requires a PTS operator half an hour time to complete. In the third stage, the disc is fitted to an editing machine similar to the keyboard operating machine, except, that this machine has an attachment like that of a TV screen. On this machine corrections are done by reading the matter thorough the screen and operating the keyboard as necessary. After this, for the final output purpose, these discs are inserted to the photosetting machine having automatic devices for development also. A newspaper set-up generally requires 10 to 12 key to disc machines, one each of dot-printing machine, editing machine, and a typesetter machine.

In the field of administration too, the electronic technology has created a shattering impact. Accounting, ledgering, making bills, preparing paysheets, stocktaking of inventories - all such work will be shrinking drastically. Even non-productive hands like peons, orderlies, bearers, sweepers, durwans, and drivers - their need too shrinks as

production switches from one basic type to another. This happens more, for the vast area of possibilities opened up by photo composing affects the pattern of circulation as well, number of editions etc.[7]

With the advent of so much new technology in this field, one cannot be sure of contending what is the latest. However, one can be sure that typesetting method has already entered into Fifth Generation stage with laser Typesetter. The innovations in science and technology have eliminated the need for expensive silver halide filow processing units, dark room and petrochemicals. In future, we will see papers printed and assembled in remote plants, with instructions coming via satellite communications systems, computer providing electronic control and information processing, plateless imaging and variable data input producing packages of information in individual types, word processing and telephone hook-up, laser facsimile, with fibre optics and electronics page make-up providing speed and flexibility. The area of advertisement will be thus drastically affected, both display ads and classified columns. And finally, micro-computer will monitor and control the presses and distribution. Thus, in the main, composite job of writing, subbing and correcting is done onto the VDT - no paper or pen is required.

In short, as the intention of the whole process is to optimize, integrate, maximize and automate all the operations connected with the newspaper industry, the work flow is going to be hugely altered. Though, all innovations do not appear simultaneously, or may not be used simultaneously due to social, political or economic constraints, the fact

remains that these have to be used as a system for maximum utilization; and a distinct possibility remains of furthering the system. There is just no question of stopping midway. For, each system has its own logic and admitting all adaptations and modifications, all the components of the system both individually and as a whole move the industry towards the system.

Two examples of the system may be given. In United States, the SUN-TIMES has 10 computers, 5 for handling the materials from reporters and the other 5 for wire services and editor processing - all the 10 computers being controlled and coordinated with a 'Multi-Processor Bus' - a giant computer. Separate sets of electronic computers are used for classified and display advertisements which are also hooked up at one end to make-up terminals and on the other to typesetter. In India, at HINDU, the typesetter works on 24 videodisplay terminals, handled by editorial staff too. Any story to be printed, once fed into the terminal, is immediately transferred through electronic impulses to a central processing system capable of storing several million words. All such technical functions like altering the sequence of paragraphs, inserting or deleting a line somewhere, changing a word, correcting a spelling mistake can easily be performed with the push of a button - thus completely eliminating the manpower needed in various stages of production. The typed text is thus stored in a computer. On command by pressing a button, a lasercomp phototypesetter produces bromides of matter which are made into complete pages. Thus, each fully made-up page consisting of text, pictures, and advertisements is then photographed by an automatic computerised

camera to get the negative. The negative is printed by contact on to a thin plastic plate under high-intensity lights. Within minutes after etching, the plate is ready for printing the city based edition. And it now takes only 7/8 minutes to send each page by facsimile through telephone cable. So the far flung editions such as the Hindu's Bangalore, Hyderabad, Coimbatore and Madurai start printing simultaneously.

Discussion on work flow leads us to the question of job potentiality. A PTS keyboard operator has to type from copy - either blind or by visual display terminal like a TV set. This keyboard is just like a typewriter, with some additional keys. Once set for inputting, one need not have to look at or attend to the machine or need to handle any attachment. This is unlike a lino operator or a typist. The speed for a lino operator is as far as the machine can go i.e. 6/7 lines per minute, whereas the PTS is essentially as fast as the operator. The intake capacity of this machine are 20/30 character lines to 50/70 or more character lines per minute. Therefore, the input rate of a PTS keyboard operating can be anything a human being can attain.

Assuming that a PTS keyboard operator can, on an average, produce at least 2 columns of 7 point matter in an hour, he can produce a minimum of 8 columns (Statesman measure) of 7 point output per shift. However, a PTS operator obtains much higher production.

In short, two results follow : one, higher productivity and intensification of labour, where at the initial stages labour is puzzled, has to find his new moorings, has to cope suddenly with the intensity and pressure of work, has to

learn anew methods of adjusting himself to the rythm of work, has to find new ways of rest and relaxation during work, has to feel, estimate and conclude the intensity of his work, thus of exploitation. Second, the redundancy of an entire set of jobs, with the elimination of the previous necessity of arranging metal types and of previous speed. Thus, the elaborate chain of work from block making, type making, page making, to printing i.e. upto the stage of casting cylindrical rotary forme (page) - is abolished forthwith, abolishing at the same time all the grades of workmen involved in that elaborate system of solid set composing. The role of journalist too changes in the production method. Here also, the change is reflected in two ways.

First, the journalist becomes in a sense an operator. Though he or she may resist the function of keying-in, as in the 'Times' (London), yet imperceptibly his role changes and 'white' becomes a little 'blue'. Second, with the development of composing method, computerized assemblage and classification of data and sophistication of news gathering apparatus, journalism undergoes a change in role. It becomes more investigative, often the result of a team work. The journalist starts resisting conventions of news writing that seem to oblige the reporter to conduct himself compliantly to the point of complicity. The new journalism in the post-Gutenberg set up avidly grabs any opportunity for self expression, vividness of style, political purpose the absence of which had previously cut the reporter from the mainstream of national information.

The work flow can be further influenced by the introduction of robots. In manufacturing printing equipment, robots are increasingly employed. One such unit, controlled by dual microprocessors, has a 'sense of touch' to detect missing components or substandard parts. One such can lift varying size bundles, or shift pallets and place tham automatically where they are wanted. The computerized control of robot thus increases productivity, eliminating the producer with his all sorts of complaint, break from work or absence. In PRINT 80 exhibition in Chicago, the Womac Machinery Co. of Sweden demonstrated the above mentioned BA.100 Palrob Robot Palletizing system. It is presently available and being operated in conjunction with adhesive binders for book lines and the product from magazine and newspaper presses. At the newspaper industry's production management exhibition in Atlantic City, Womac again demonstrated the prowess of its system for use in palletizing newspaper bundles in brick piles, taking product from a conveyor belt and transferring it directly onto skids or to plastic wrappers. The ultimate system also bundles and wraps the completed newspaper and delivers them, addressed, to the trucks allocated to delivery in each zone. The very cutthroat competition for profit sets a general trend and becomes the very basis of this rapid development. The adverse effects on employment, resultant social discontent, working-class protests become universal and can never be harmoniously settled under the anarchic nature of competition and technological upgrading.

The unevenness in adopting and developing the new technology makes for the fact that there is no 'given', 'once for all' new system. Just like the hot metal system

development spanning over centuries, here too it proceeds over a period of time - only now the theatre of development in wider, from Japan across the entire globe to USA. In Japan, larger newspaper units like Ashai Shinbhum are using "Automated Newspaper Editing and Composing System" - a full page photocomposing system - for laying out pages. They have developed devices for automatically joining rolls of paper without having to stop printing, together with transistorized monitoring equipment to control the operation. Speeds of 140,000 papers an hour have become common. Techniques for preventing paper breaks, more important in Japan than in other societies, have been developed. As Anthony Smith has noted, the Japanese have successfully concentrated on the problem of longprint reems. Here, under such innovations, technicians more and more take the place of foreman and mechanics, the 'blue' becomes a little 'white'. In West Germany, new offset presses can be run by three men. In the USA, the latest PTS can produce 3000 or more newspaper lines per minute. In L.A.Times, an editor can request a listing from the computer of all stories in a particular category - for example all on the Lebanese hostage crisis and this list appear on his Vdt. It can furnish even synopsis of stories. A computer storage bank can receive wire services that are coming at a speed of 1.500 words per minute.

As have been told repeatedly even in advanced countries, all the processes have not been introduced in a single institution. But one must remember that at the back of the minds of all designers there is the idea of an ultimate system - an integrated whole. All the basic elements of this system already exist and are used in newspapers in

one part of the world or another. But the trend of newspaper magnates is towards adoption of such an all comprehensive system. As India is technologically and economically dependent on advanced countries, newspaper magnates here may not be able to put together all the elements of the new technology at a time. But here too, the same trend is asserting itself gradually. Electronic technology is ever developing and once adopted, one must keep pace. Thus, the use of laser and optical fiber, microcomputer, sensor etc. in PTS, has led to a chain of interrelated developments of far-reaching significance. Just like phototypesetting, there is word processing; modular system has also been developed; colour scanner, electronic page make-up- facsimile transmission system and automatic printing, binding and packing are the other related developments.

Word Processing :

Similar to phototypesetting, word-processing is also conversion of paper written texts to a coded format on magnetic disc or tape. In the former, manuscrips are converted into camera-ready copies. In word processing the copy is created suitable for editing, communication and other electronic manipulations. Like the development of PTS, its scanning ability too has advanced by using advanced Emitter Coupled Logic (ECL) technology. The most up-to-date word processor can scan and enter in 60 seconds or less, what a typesetter can perform in 7 to 12 minutes. The merger of word processing and PTS has enhanced further automisation of the fundamental work process of a newspaper.

Modular System : The modular composition system combines a key board and screen, controlled, disc storage, digital CRT typesetter. The Mcs can accept input from other commercial and newspaper front-end systems. A front-end system is a computerized one that files and stores all information fed into it and sends it to the typesetting machine with all typesetting commands after the information has been edited.

Wire Services : Direct linking of transmission of news from agencies and other sources - on teleprinters to computer banks installed in newspaper offices eliminates work in the composing room. The transmitted news may be directly or through front end system passed on to PTS.

Colour Scanner : Scanner technology has literally cut days out of the manufacturing process through computerized break-down of a piece of colour work and photographic transparency for coloured printing.

Electronomic Page make-up : This is achieved by assembling set-news, editorial, ad matters and pictures in an actual size VDT system. Of this, reference has been made earlier.

Facsimile Transmission System : With a special lightsource, the facsimile transmission device scans made-up pages and converts the resultant light reflection into electronic signal. These signals are conveyed via co-axial cables or micro-waves or satellite channels to a recorder at the receiving centre. The recorder is to signal back to light reflections which are exposed on a film, which is then processed to get a negative and used for printing. Thus, simultaneous publication of several editions has become

possible today and the circulation of big newspapers commanding the latest technology has gained leaps and bounds. The small ones face inevitable decline.

The Composite Set-Up Under the New Technologies : It is now time to draw a composite picture of the various innovations and see where the demarcation line operates between the old system and the new. To quote a Report :

> "Typesetting and presswork were the heart and lungs of the newspaper. Today the newsroom is finally coming to the fore, because it will more directly than in the past, command the production operation, in conjunction with the advertising department (another input department). Executive roles will also presumably change to take account of this fundamental power-shift".[8]

In other words, the subject starts dominating the object. How does newsroom come to the fore ?

The central point is the CPU or the Central Processing Unit. The PTS was initially meant for, as has been earlier said, off-set photoprinting process. But with increasing development of computerization, photocomposing has reached a very high technical stage. Now, with computerization it has been possible for a newspaper plant to have at the centre of its operations a central processing unit, which stores the copy digitally in its memory - where formerly trays of completed metal type covered a large floor area of composing room. The computer performs text corrections according to editorial instructions and dots the 'i' and 'j's which used to be done line by line by the fingers of typesetters.

The journalists and editors type their copy in a visual display terminal (vdt), correct the copy as needed, the vdt being attached to a CRT. Then the copy will be sent to CPU, from which it can be recalled when needed by anyone, whose logging in code permits him to receive it. The text can be displayed on one half of the screen, while another version of the same story is recalled from CPU for comparison, review and incorporation. Each vdt user has his own small electronic scratch pass for holding materials not ready for the main file. Thus, the more "intelligent" a terminal, the more dexterous the report can be. The journalist then becomes almost a 'typist' of metal days. In case of the ad taken, the vdt permits the operator, while taking down a telephone-dictated classified advertisement, to check the credit worthiness of the customer, plan for future insertions of the advertisement in subsequent editions, inform the customer of the exact cost and bill him automatically. For display advertisements, large vdts are used for complex designs and alignment operators with all possible manipulations -- a function that would have otherwise needed many hours of elaborate physical design and layout work as well as complex procedures of filing and checking.

For entry into CPU, Optical Character Reader or OCR may be used in place of Vdts or in addition to them. Here, what is typed on a fast electric typewriter is passed into CPU though electronic signals of the OCR. But here the copy must be near perfect, only the 'dots' will be done by CPU. In handling wire service copy, syndicated materials, the OCR is used, for the syndication agencies are able to supply scannable copy to their direct newspapers.

The laser technology goes further; with the help of laser, it is possible for the control processing unit not to take each character when required out of the file, but to have the whole thing in a design, thus making the operation a matter of seconds.

Once matters are into CPU, it starts to perform its second task (after that of memorizing the copy). It sends out a stream of text, offering back all the material it has been given - laid out in neat columns on strips of paper obeying all editing instructions. Whereas, formerly, there would be the laborious task of laying out trays of type and correcting them, today the matter comes out from CPU laid out, with spaces left for photographic materials. Only a few pieces of material like pictures or special headlines remain to be added. Through a highly intelligent terminal, the pasting process for making the page is eliminated and the whole page can be laid out.

In a sophisticated system, large pair of CPU units are combined with small pairs of computer units giving a wider scope for information processing, graphic printing, circulation, advertisement, accounts, administration - practically all jobs in connection with newspaper work.

Fundamental Trends : We now can see what are the fundamental trends associated with this process : reduction in human labour and intensification of its exploitation : secondly, monopolisation of the information media.

As regards the first, the scientific reason for such a reduction is amply made clear by the above description. With regard to intensification of labour, the crucial thing again is the speed of computer aided typesetting. A hand-compositor would take 22 hours to produce a single page of a text, in the black and white section of a large size newspaper; a machine compositor 5.5 hours; a teletypesetter 1.3 hours. Once the text is available in machine readable form, it takes the electronically controlled film setting machine exactly 15 seconds.

As regards monopolisation associated with computerisation, the issue is no less clear. The system, logic and equipments now come from giant companies like IBM, RCA etc., in addition to old giants of printing and composing machinery. Computerisation spreads further as news agency reports are directly fed into the computer as finished type matter, ready to go tc print. To overcome the obstacle of a large number of characters in a certain language, a new system can store them in digital form in computer memory, as has been recently developed in Japan. Thus, had it been merely a question of introducting one new machine to an old set up, the question of command over the entire gamut of production would not have arisen. But inexorably, it is a new system introducing new aggrangements. It is not that it cannot be adopted half way, singly or casually, but to gain optimum utilization, and bringing into full play the whole potentiality of phototypesetting, big capital in newspaper ownership in the present market based economy is a must. Technically, it may mean a proliferation of production centres, guided by a system or allied arrangement of systems. But financially and command-

wise, the whole thing is poised for a oligopolistic control under a competitive set-up. Thus, all the technological innovations and development in the four main sectors of industry: typesetting, data input, graphic reproduction and platemaking, printing, and binding-finishing have to be combined and when done, they effect a revolutionary leap from Gutenberg day of technology. Information medium comes under a monopolistic command increasingly with the taking of a shape of a system that combines the innovations of four sectors.

It must be realised that this technological transformation is a part of the worldwide leap in electronic technology and the particular case of newspapers helps us to understand the basic features of this universal phenomenon. The experience of industrial revolution is here always a ready reference. There is now a similar shift in all aspects, a rapidity of change, a remorseless dynamism, and that terrible shrinkage in employment, a shock which the existent order in industrial relations cannot withstand, a momentous portent the coming of which only "the gallantly misguided Luddites had any glimmering of insight".[9]

In a sense, the electronic revolution, particularly in information industry, is bringing in the death of the printed world. Newspaper, as one of the most vital part of information industry, is no more today only an arrangement of printed words, but rather an arrangement of instant news and views, a gamut connected with the whole electronic media. True, thus "it has a tendency to stress the short-term, if not the immediate".[10] With the above technology, newspaper becomes more photographic, instant, display oriented. With

a rise in technology in newspapers, there is an occasionally accompanying collapse of general magazines.[11] The newspaper is turned into half-magazine, full of special supplements and sectional displays, of special interest to different sections of readers, a development of zonal advertisements. Reality and public opinion get very much inter-twined. Instability is ever maintained with instant news. Politicians are in search of cameras. Bosses are the communicators, the consumer of information now at the mercy of the media giants. This is one particular feature of the transmission explosion.

The other feature is, even the news, which the consumer buys - retail or wholesale - is today so much the subject of monopoly control, that one should ponder how much the freedom of press is a reality, whether only the rich are really informed, or what reforms wait in the agenda of information. Though, technically, as one author suggests,[12] the transmission explosion turns into news wherever it happens, whenever it happens, whatever may happen, wherever it is wanted and whenever it is wanted, it is this universality of the potentiality of new technology that makes it the victim of the bosses of media; accurately, only the big bosses can command such technology and resources as make available this universality. The more the command over all the possible sources of information which are merged in newspaper, the more opinionated the latter becomes; paradoxically, more news leads to more commitment to opinionating. Thus, comes the trend towards newspaper acquiring features of a magazine. With sophisticated consumer and reader research, there is more and more market segmentation. The miscellaneous newspaper is broken into sections. The tendency

towards zoning and supplementing helps the profitability of the paper.[13] Thus, the new techniques of printing and distribution make feasible a new role for the newspaper as a "hold all" for information products, whether these are offshoots of the main paper or foreign products altogether. Calcutta's The Telegraph is a growing example of that.

One of the most rapidly developing techniques of newspaper advertising has been the preprint, sheets of carefully zoned advertising slotted into the daily or Sunday edition just prior to delivery and printed by the newspaper's own plant or by some other local printing houses. Thus, a newspaper is sliced into component parts, repackaged, redesigned, and "Zoned".

To sum up : The computerized newspaper is simply not a labour or cost saving one (which it is undoubtedly so, where for example, in USA tape-setting means a saving of 40% of setting labour or where new technology signifies more columns per page and lighter weights of paper thus reducing the amount of newsprint to be used), but it is a new medium with new purposes. This has arisen from a series of technologies that arose from the space and missile programmes and has later on infiltrated or has been made use of in a range of industries that had become crisis ridden and technically obsolete. The whole new organization in a newspaper reveals certain features about the nature of reading public itself, about its assumed attention span, about its preferences for kinds of materials, about its homogeneously shared interests as well as the contrast ones. More accurately, the newspaper moulds the public ever more into its own preferred

design. Since, today's newspaper has to be a completely new one, the real problem in applying computer science to newspaper industry is that of breaking down habitual attitudes, methods and relationships within the newspaper organization itself. The problem further is the market structure. The newer problem is the monopoly over news as well as readership. For example, computers help a paper to embark upon its own programme of consumer trend analysis. The editorial department uses the same service to learn more about its readers and conduct opinion surveys for feature page. The same logic leads to computerization of circulation department, even for small newspapers thus raising the survival level in the market. More and more departments are thus being supplied with video display terminals to operate the computer on line. All the new inventions in the main function of a newspaper and its ancillary wings help to confirm the newspaper as a medium of zonal control and zonal monopolies. As the market goes through a general boom, the advertisement revenue increases; in a depression too, its shock absorber is stronger again, because/ its capacity to fall back upon advertisement revenue/ as it presides over the spending power of the community. Establishing total command over its universe of households, a newspaper can bring into full play the total range of its extra functions and services and vice versa. For instance, it may become a localized general research institute with its morgue of back copies and clippings. It may bring increasing expertise in the field of librarianship with "deep classification" techniques.

Finally, behind all this, lies the idea of an ultimate system.[14] Introducing computers to newspapers is no longer experimental to the supplying company or the recepient one. But, as computerisation proceeds not one at a time, but according to needs, improvisation, ongoing technological improvements competition etc., we.can say, the newspaper does not buy "the system off the peg" and get the whole staff in the right frame of mind. But the ultimate system of cold type printing is emerging - an on line computerization from newsroom to loading lock. The vdts of newsroom and ad staff lead to the main computer, where pages are automatically made; then the laser beams are functioned by the plate maker for creating necessary printing plate, which goes to offset print. Then the bundling, wrapping, delivery to the designated trucks, all are computer directed. The auxiliary functions relating to administration and finance are similarly computerized. Finally, the newspaper becomes a giant database. But very few employees remain to make the whole system work and tick.

This is not a far fetched scenario. According to a story by William E. Brooks Jr., editor of Sun-Commercial, filed in Presstime, two U.S. small daily newspapers have reached plate making stage almost entirely through the use of PCs. Editorial matter, display ads, fullpage ads all are handled by network systems. The services of Associated Press, Datastream, Datafeatures, Laserphoto, Access for Graphics are linked to computers. The sun Commercial's daily circulation is 14, 518 for weekdays and for Sunday 15, 939. Nearly two dozen Apple Macintosh plus personal computers in networks connected to Monotype Blaser typesetters comprise a front end system that produces the Vincennes Sun-commercial. The key to making the complete editorial conversion to Macs

was to find a software package to process wire copy. The answer has come from Lorenz Management Systems Inc. of Ann Arbor, Michigan which sells a Mac package embracing both wire and local editorial copy. The people who developed desktop publishing had not seriously considered the daily newspaper as a potential user of the technology. Weekly newspapers picked it up because of the fact that the cost of a sophisticated, computer driven system was suddenly with in their reach. Producing a newspaper with networked personal computers, off the shelf software and laser typesetters is, for the small newspaper, as exciting as converting to offset presses and cold type was almost a generation ago.[15] Who knows the desktop technology will not soon capture the big press too ?

The newspaper has become multidimensional. It stores and disseminates information in totally new ways and has the capacity to give a person only what he wants and relieve him of the necessity of paying for what does not. Thus, edition, distribution, economy of scale - all are involved in reorganization. Conversely, one could notice in this process a growing proletarianization of the working people, a reassertion of Marx - the exemplary evolution of journalist into an information technician.

The motive of this giant change were certainly there, of which we shall now speak. But here the point is that the emerging "ultimate system" changes the whole medium. As Anthony Smith exclaims : "This was also in the earlier days of printing, when the Gutenbergian principle was introduced to reduce the labour of copying text, but stayed to change the nature of text itself and its role in society".[16]

II

Why Automation Comes In Newspaper Industry

The reasons that brought the age of electronics, were both political and economic in character. Briefly they could be told : the post-second world war era demanded a new technical and structural basis of capitalism and this was most suitably supplied by the scientific development of electronics. There was a 'science centred' thinking too, that a technological solution to the inherent contradictions of capitalism was possible and the accentuated troubles due to the devastation of wars could also be tackled forthwith. Furthermore, the development of electronics coped with the tremendous demand for information, needed for corporate planning of economy. This brings us to monopolies and monopolistic competition - the most vital clue to the development of electronics. In the field of research, it has been a science-monopoly-state combine. In application it is state and the monopolies both - for defence, capital goods as well as consumption sectors. Monopolies brought in automation to solve all the major problems associated with monopoly capital. In turn, it increased all of them. This includes the rivalry amongst international monopolies too of different countries. But, finally, it has been a development, that has laid down the material basis for a higher stage of social progress too.

Monopolies and the Newspaper In The Market-Place :

Now, let us see, how far these factors operate in newspaper industry and if so, in what way. We shall first present a general picture, an advanced picture really and then pass on to India. As has been shown in the preceding section, computerised printing is an international development and it is a process that is continually coming up out of the developments and experiments spanning over a huge region covering from United States to Japan. Thus, let us first look at the theoretical factors here at work.

Anthony Smith writes, "the computers came into rescue of the newspaper at the end of the 1960's when demographic changes with regard to the newspaper audience had started to undermine the financial nexus through which the medium worked".[17] A naturally competitive industry, founded in the market of 19th & 20th century city, turned into a naturally monopolistic medium based upon the late 20th century megalopolis. Further with the development of communication facilities, newspapers started growing in a chainownership. Tastes developed and varied among the audience, needs developed, printing technology boomed and the newspaper, in the course of this changeover that itself entailed a complete financial and dynastic restructuring of the industry, began to acquire too high a quantity of text for existing technology to cope with. "Industrial relations problems, rising newsprint costs, escalating distribution costs all took their toll and computerization - like a deus ex machina- represented an important part of the answer to the newspapers' mounting problems".[18] The computer reduced the setting costs, but at the same time, introduced the

possibility of a further series of changes, still continuing that would in the long run, change the whole nature of the medium. As was earlier mentioned, it was the same with the earlier days of printing too, when the Gutenbergian principle was introduced to reduce the labour of copying text, but stayed to change the nature of text itself and its role in society.

The crucial factor here is the fact that the newspaper is in the market place. This determines the intrinsic logic towards monopolistic development, the correlation of news and advertisement, the structural relationship between newspaper industry and other industries and finally the zonal character of its hold over its constituency - which includes the lay public as well as business of that area, the existence of different social movements too that clamour for attention.

There are basically two factors that continuously fuel newspaper economy in acquiring a monopolistic character; or more appropriately, why monopolies acquire a newspaper; First, post tax profits here are near the double average rate for Fortune 500. Secondly, it is the advertising base and not total circulation that determines the profitability of a newspaper. In a society, where most big newspapers have local monopoly distribution zones, it means that a newspaper is able to preside over total spending power of a whole community without any comparable medium threatening to undercut the rate at which space is sold (though, t.v. poses far deep challenges to the newspaper by a similar sway over the time-sale). But here too, the main competition is over editorial content and time of audience, for the newspaper can get its advertisements into the vast majority of homes within a given

geographical area and can thus hold great power over every enterprise attempting to sell goods within that region. The relevance of new technology is here most clear, for this is the tool by which the hold over the region can be accomplished deep and fast. In a general boom condition, newspaper grows as ad expenditures go up of every enterprise active in the market. More significant, in a sluggish condition, a monopoly newspaper can reduce its size and losses and make use of its greater cushion capacity to perhaps make even profit in a time of general slump. Its manoeuverability of a greater nature comes then to rescue.

This continuous stability of a newspaper thus helps or urges a monopoly medium to go ahead for a drastic or revolutionary technical change and adopt a new technological base. Its increasing immunity to the cyclical performance (of course relative) of surrounding industry helps it to look forward to a long stretch of continuous technical improvement for reducing cost and increasing sources of revenue. Moreover, while more and more load of information forces the owner of a newspaper to search for a new technology so as to survive in the market, it becomes then a vested interest of the owner to dish out more and more information through this medium, so that it can become a 'hold all' of all information products of its constituency. Its monopoly position is thus asserted and strengthened, through hegemony over the products not only at a material level, but at an ideational level too, where the newspaper industry coupled with its literary supplements extends its domination over the ideational products too. This cultural domination is an urge, that can hardly be overestimated in assessing the trend towards monopoly. How the newspaper

barons comprehend their tasks is thus a very crucial question though facts may not always correspond to their comprehension. For example, they always perceive the introduction of automation as effectively labour-cost saving. But exactly how much, nobody can say, for even in the previous system much was superfluous. Here, it is their perception of the problem, that matters and sets the pace of change. Most publishers, again, are keenly aware of the amount that new system costs them. They are more hazy about how much it saves them. There are plenty of out of context figures available for the number of typesetters removed from the composition room and the number of pressman "saved" in the press room. Several overall calculations end up with figures around 15 per cent as the amount of reduction in total costs effected by the introduction of a modern frontend system with full photocomposition in an existing hot metal newspaper. Most analysts claim that the recessary investment can be paid for within two years from the savings in wage bill, although that figure, too, is uncomfortable, as an examination of the dozens of variables that must be entered into the ledger will show. Due to inefficiency in previous operation, much superfluous expenditure already remained and a saving of that could hardly be asserted as the cost saving capacity of the new system. Since, it is the perception of the bosses that counts, plus the haggling with the union, we cannot make any evaluation per se; all the changes in the organization can be phased in and out - a firm calculation is thus almost impossible.

Nonetheless, monopolies do think it is cost effective and the introduction of new technology offers them a scope to use the "broom-stick" for revitalising the organization. Above all, there is the economics of new information technology, in the background of which the modernization of New York Times, Los Angeles Times or Ashai Sinbhum assumes significance. As we have shown in the earlier section, a modern newspaper is very much connected with a new information network as well as it must possess the suitable modern information technologies and techniques. Thus, the technical base of a modern newspaper is influenced and controlled by information monopolies like IBM, AT & T, etc.

In fifteenth century Europe, Johann Gutenberg began the print revolution by printing Bibles and other religious works. Today, a new print revolution connects the newspaper with electronic data banks, dispensing with paper, printing or binding, with the terminals bringing in news on the cathode-ray screens. This electronic publication means information monopolies dishing out home computers, word processors, telephone and satellite transmissions, silicon chips at an unbelievable low cost per unit. There is then the large scale use of holography - an electronically squeezed-in information storage process that can fit the equivalent of large libraries of data into the space of a table top. Holography uses lasers to record and retrieve information. Its ability to compress prodigious amounts of data into small spaces makes it useful for archival tasks. Then there is the photocopier and mimeograph, the intelligent copiers. Whoever might be the actual user of these in an information establishment, the domination will be of one of the top information monopolies - Xerox

Corporation.[19] Thus, no doubt monopoly capitalism correctly grasps the significance of the basic relevance and domination of information technology and system; as an OECD report of 1979 describes it as the "pole around the productive structure."[20]

The market place of information industry dictates that a fourth of all jobs in USA will depend at the end of eighties on computers. Professionals and managers now hold there one out of four jobs. In a 1979 report, two sectors showed gains in productivity survey of eleven industries from 1973-78 period -- banking and communications. In 1979, AT & T System handled 185 billion telephone calls with million employees - 185 thousand calls per employee. The economic hold of the information giants revealed itself in studies on information sector by Fritz Machlup & Uri Porat (1962 & 1977). There is intense competition now, with the profit of IBM dropping from the first time since fifties and its share of U.S. shipments of computer hardwares dropping from 61% in 1974 to 50% in 1980. New names with innovations make break-throughs in information system like ITEL, Racal, MCI etc. Monopolies are rooted very deep; in information sector commenting on AT & T, one has remarked, "economics dictate a monopoly since a universal system cannot be built without cross subsidization between high density profitable and low-density unprofitable services."[21] Newspapers are the customers to most information gadgets, thus it is the most hybrid information system. How will it be called : Communiputers ? Computercations ? Compunication ? So many giants are involved in this hybrid besides IBM & AT & T - Xerox, Comsat, RCA, I.T.T. Hewlett & Packard etc. The hybrid is the most integrated, thus excluding from the outset any haphazard economic orientation. The Satellite Business

System of IBM transmits to small earth terminals through its own satellites, all the Fortune 500 corporations being its clients. The GTE, another giant, conducts electronic mail system - whose worth in 1987 would be $122 billion. Xerox Corporation makes computerised photocopying products. The General Electric provides centralized storage and data bank services. There are newcomers like Exxon, an oil monopoly. They dominate the means of production in newspaper industry where the tools today are word processing machines, terminals, longdistance fascimile equipment, phototypesetting machines, high speed printers and related communications gear.

There are novel branch-outs of new technology. The New York Times runs 'information bank", that serves on terminals to customers throughout the country. There may be such specialized banks like Middle East data section of N.Y. Times. Other firms are also in this business like Reader's Digest or Dow Jones. Another newspaper, Columbia Despatch transmits its entire editorial content to home terminals. This starts a new challenge to regular T.V. viewing - a "real" electronic newspaper. Formerly, there were several media operating at different levels within an urban conglomerate. Now, wholescale urban systems are sought to be built up by communication conglomerates, dominating all the levels - the cities are important prizes. The several media are to be coordinated in a single system that becomes the medium. Such is the result of monopolization in information business.

Political Factor in Modernization of Newspaper Industry :

It is pertinent here to note that the very political-economic nature of a newspaper is such that it has always been so to say, almost a sitting duck for monopolies ever in search of effective instruments of political-economic control. Automation in newspaper industry has not created the information giants; rather the latter preceded the former. For example, the clash between editorial staff and owners of a newspaper is a frequent occurrence in the post war era, when the economic potential of a newspaper was revealed in an unprecedented way. The big talks of Bryce (who said, "It is the newspaper press that has made democracy possible"), of Laski ("A people without reliable news is, sooner or latter, a people without a basis of freedom"), of Victor Hugo ("The greatest invention of all times"), or of Locke ("Freedom is inconceivable without free speech", which was quoted with relish by the Press Secy. of President Johnson, Mr. George E. Reedy to speak of the attitude of American politics towards freedom of press- a politics that within a few years was going to create the Watergate Scandal and Pentagon Papers Scandal) are today realized in a dialectically opposite manner, where in a big paper like New York Times, over 400 journalists have been on the roll of C.I.A. for over past 25 years ! The famous journalist Salburger also kept regular liaison with C.I.A. The syndicated columns now increasingly rule the roost - for example, the column of Jack Anderson is published in 700 daily papers. A conservative newsbaron of West Germany P. Goete admitted, newsfreedom is only for 200 moneybags who can command the media to express their opinions. One of the dinosaurs of press, which became a victim to modern electronic propaganda,

the American journal Life found its ex-editor Thomas Griffith admitting that newspaper is purely business, dishing out paper notes instead of paper news. He moaned the decline in the role of editor, a point supported by the Director of International Press Institute, Mr. Peter Galliner, who also commented on the decline of democracy in Press.[22] The bourgeoisie of course exclaims that only a new type of editor is required, other press freedoms remain unimpaired. In fact, this is a roundabout way of admitting that newspaper is a full fledged part of business economy and the editor himself has to adapt himself to that. The domination of business economy over journalism is the point over which the Press Commission in India too moaned during Nehru days. A newspaper under monopoly domination, is thus a misfit for old doyens like Ramananda Chattopadhyaya, Satyendra Narain Mazumder or the old editors of New Statesman.

But it would be wrong to surmise that the essence of monopolistic control over modern press, particularly a computerised press, has only been economic. Besides economic reasons, there is politics too in it. A little has already been said about structural changes in a city, about the problems of a modern urban society that necessitated the transition of a "Gutenberg newspaper" to an electronic one.

The twin factors from reverse directions active in the drive towards computerisation are the drive of monopolies for greater and greater technological control over society - a stricter command based on detailed information of all social facets; and second, the drive from a reverse direction, i.e. from the democratic aspect. It is embodied in the demand for

more information, a decentralization of decision making sources, and the demand for an end to discrepancy over access to information. Both of these trends - from the angle of the monopoly bourgeoisie as well as from the broad masses of people - have made computerization a reality at all social levels. And both go to make up the dialectical unity of the information order of a capitalist society of which the newspaper is an integral part.

Take, for example, some random cases of overlapping trends. Modern society is so complicated with new social issues like ecology, health, education, women's liberation etc, that public decisions at grassroots level have become imperative; at least, the decisions at top must reach the grassroots public level. As one commentator remarked : "In the thirties, the great dams of the Tennessee Valley Authority were the prototype for future technocratic success. In the sixties, the model was the Apollo space programme and its systems - analysis path to the moon. The new computer-based age would bring similar analytic efficiency to such earthbound problems as education, poverty, foreign policy, transportation, and the cities. Writing in March 1967, a team of researchers studying inner city problems in Detroit declared, "We feel that, in a very real sense, the age of the computer has ushered in a new age of urban planning."

Four months later, Detroit went up in flames, urban renewal projects included. The smoky pall that hung over the city for days was a pungent reminder that stubborn social problems were not amenable to computer printout solutions.

Civil disorder was followed by escalation of war/in Vietnam, economic setbacks, and the public setbacks that culminated in Watergate. The experience with new information technologies during the first computer decade, however overblown, had its usefulness in defining limits of computerized shortcuts. The result has been a more realistic view of the role of communications and information - as important but not cure-all resource in reducing economic and social problems.[23] It is clear that the monopoly bourgeoisie tried for a 'science' centred solution to social problems of a capitalist order, which was reflected among other things in a technological system of more news, quicker news, greater storage of news, further dissemination of news and wider variety in collection and distribution of news - in short the essence of an automised newspaper. But it is not equally clear if the bourgeoisie has forsaken such a solution, as the above commentator has thought. For the basic issue to the monopoly bourgeoisie still today is more effective management of society with the help of control and contribution of power, enhancement of the ability to manage through the new technologies that permit massive centralization and manipulation of a wider range of information resources than ever before. It is thus not a pure spontaneous development of electronic technology spilling into different communications media; it has been a policy consideration. One former AT & T board chairman, John debutts (AT & T, one of the transnational information giants) frankly admitted : "It is not technology that will shape the future of telecommunications in this country. Nor is it the market. It is policy."[24] In this policy consideration, the State is heavily involved. For example, in USA, the country of most developed electronic communications, we find so many state agencies immersed in

developing telecommunications - Dept.of Transportation handling air and maritime communications, State Dept negotiating into agreements, Intl. Communications Agency operating Voice of America, NASA handling satellite communications, CIA analysing telecommunications developments abroad or the National Security Agency engaged in highly secret monitoring of foreign communications, the social security administration controlling and handling millions of separate files of information relating to jobs and social security. There are thus all sorts of data banks, formerly autonomous but gradually being interrelated, that find a reflection of their technology in the post Gutenberg newspaper. Since this system of interrelated information networks involves massive start-up costs, it is only a certain structure of business that can undertake such costs to reap the economic and social gains inherent in the productivity increase and seek a fluent flow of information. There is thus a political-social motive that urges the conglomerates to go for high-capacity communications circuitry and data banks.

But, ironically, and conversely, the avenues for rapid dissemination of information, create information-seekers below. Though exaggerated, Alvin Toffler's image of a democracy in communications is a possibility, increasingly contradictory to the centralized ownership and control above. Newspapers may effectively come from small and medium towns, may have instant access to all information sources; data banks may be situated at a decentralised form too; there may be local community interest channels; finally, decision making too may become possible at a local level. Finally, there is another intermingling trend of exporting information society too, an urge of the conglomerates to export capital in form of

information - that engenders the telecom revolution abroad; once again this creates an offshoot in shape of revolution in information media in other countries, including some areas of third world too. A newspaper must send matter/facsimile through satellite to its chain publications, must receive the same too for a quick publication. Automation, as was explained is a system. It may start from any vantage point depending upon local specificities, but will finish as a front-end one, which will become an integral part of telecom revolution based on electronics. Thus, though satellites do not by themselves destroy Gutenberg, they facilitate the way for its destruction. There is motive to amplify the westernized ideas and values too abroad - certainly an ideological motive, helped by the 105 nation Intelsat satellite network providing high-grade communications, whereever there is earth terminal. Again, there are vital interests at stake here: AT & T, the U.S. link in the massive spurt in world telephone traffic; Xerox, the exporter of PTS machines; RCA, Global Communications, ITT controlling telex business and other text and data traffic even from high speed terminal to computer. A report indicated a 16% annual growth of such services in early eightie with total revenues reaching £14 billion by 1985. The economic stakes plus the political motives are thus, really, high. The Telenet specialized data network, thus, has access to New York Time's Information Bank. There is stiff competition in the high stake international field where Japanese firms compete with American ones, and European firms too are steadily registering their presence. As the Economist noted, patenting has almost collapsed, a technological lead survives usually for only 18 months.[25] Governments hence back up their communication firms for the scramble for bigger shares. IBM remains

the leader in this field by its research, innovation and main-line servicing, and others too use the IBM systems at least for economy : but others are also fast coming up. The worldwide development of photocomposed printing is a direct result of this international development where the technology pushers remain system builders like IBM, or information storage managers like Control Data, Xerox Lockhead, Systems Development Corpn, Honeywell etc. Take for example, the sale of information by the TNCS like Associated Press. Literally millions of people being its captive audience - one can now understand how the communication networks are crucial to these media agencies. There is a veritable cry on behalf the victims of this monopoly for "information sovereignty". But apart from political curbs, it is hard to see, how the victims, particularly the third world nations, can go ahead without a Reuters, U.P.I., or or even Reader's Digest, Time, Newsweek etc. The elites of the third world, cannot do without the National Geographic type exoticas. Thus, a separate information system for the third world may remain more a rhetoric, lacking the capital and expertise for achieving it. Even if a "New World Information Order" is a slogan worth rallying for, it can come not by dispensing with the technological progress, but on the basis of that; an "open information system" free of monopoly-control.

The mix-up of political, ideological and economic factors has been clearly observed by those, who are not supposed to be sufficiently pedantic to grasp it, but who obviously experience it most in practice. For example, the Confederation of different agencies of newspaper employees in India says in its report :

"Monopoly over an industry enables industrialists to dictate prices. Moreover, monopoly in newspaper industry is capable of refashioning readers' ideas and tastes and diverting their attention from people's agony and sufferings under the existing exploitative system - the very basis of their existence. It is not accidental that the number of glossy Indian magazines-catering to base instincts like sex-perversions and crime - has increased in the recent past. The latest technology in printing has come handy to Indian employers as well. Such being their philosophy and practice, all this talk of progress is rubbish. In view of the increasing trend towards monopoly and concentration of newspaper production in fewer and fewer hands, the situation will go from bad to worse. The economy in production resulting from computerisation will in no way benefit employees in general or the readers. Real wages will not go up. Newspapers will not become cheaper. Even the few receiving comparatively high wages will, in reality be duped. Under the present set up increased productivity of labour means more intensive exploitation from which there is no escape even for workers drawing relatively high wages. The workers' alienation from the instruments and processes of production as well as the products will increase. There will be greater monopoly of work".[26]

This report further admits the high possibilities opened up by the new technology, but clearly states :

"We demand modernisation for social progress as a whole, social ownership, social control, social planning and social benefits of and from all technological progress. The new technology in the printing industry cannot be excluded".[27]

This perhaps adequately sums up the counterveiling tendencies in the process of automisation in newspaper industry. Thus, we may see there are differences in comprehending the reasons as to why automation comes in newspaper industry and differences arise because of differences in the social nature of those comprehending the objective pehnomenon - in short, class differences, ideological differences generating perceptional differences.

Here is a rub: how are we to look at the various levels of interaction between the objective reality (i.e. automation in newspaper industry) and the act of perceiving the reality (i.e. the forces forcing forward, pushing back, amending, stalling)? As it will be shown in concrete illustrations of India, soon to follow, these levels are indeed very complicated and the latter definitely influencing the former.

Illusions are certainly there. Think of the dreams of Alvin Toffler (undeniably there were seeds of a correct perception of new technology), who spoke of the "Third Wave" - the decentralization of production, the arrival of home-office, customized production, a switch over from "series production" to "tailor-made" production, a transition from "cartesian" system (products broken into pieces to be painstakingly reassembled) to "holistic" one, a "presto effect" in manufacturing by intervening at the molecular level, by using computer aided designs, by integrating more and more functions into fewer and fewer parts, substituting "wholes" for many discrete components.[28] It is true that at the concrete level of a newspaper we can note the following appearances: a vdt combining the tasks of a newswriter and sub-editor and a proof reader, a multi processor bus combining so many functions of composing,

archiving, proof reading, news gathering etc. Then again, we find the increasing integration of photography in journalism, due to modern forms of printing; again a whole scale variety in classification of advertising and zoning - thus a more "customized production" - due to electronic technology.

But still the futurology of Toffler's remains an illusion, for inspite of so compelling reasons and effects of automation, newspaper continuously remains under the operation of market laws and without a concomitant socio-political change the above changes both at a general and particular level only reinforce the capitalist working of the general economy, newspaper economy inclusive of it.

Role of the State :

There is another point in a theoretical discussion as to why automation comes in newspaper industry. Here we have to locate the crucial role of the state in the "electronic development" of the economy as well as any branch of industry. In India at the concrete level of newspapers, the government liberally permitted the import of PTS machines under OGL (Open General License); the periodic revision of wages led the owners to pursue methods of rationalization; the use of satellites for dissemination of news and the lending out P & T facilities for facsimile transmission etc. The general S & T policy of the government acts as the overall backdrop against which this transformation proceeds. The semi conductor industry and computers could not have developed at all in the capitalist world without state aid and the consequent information-revolution world not have become a reality. We need not

repeat the well known story of semi conductor and computer giants like IBM getting their fillip as a continuous process from the state. Suffice to note here that public policy plays here an unexaggerably important part. There is public procurement of semiconductor devices like military spending. When military specifications fail, these are sold to private sector customers at discount prices. We can have a guess on state share of total shipments of semi-conductor devices in form of government purchases in USA :

Table I

1955-75

1955	38%
1960	48%
1965	28%
1970	21%
1975	8%

Source : Richard C. Levin : "The Semi-conductor Industry" in Richard A. Nelson (ed); "Government and Technical Progress : A Cross-Industry Analysis" (Pergamon Press, New York, 1982).

The silicon transistor and integrated circuits are things consistently demanded by military and hence are continually under research. The National Science Foundation & National Bureau of Standards help the Bell Labs in USA. Miniaturization is encouraged by military specification. There is then Public Support of higher education, by means of which a technological climate of a certain orientation can be built up in a country and it may outcompete another in development of electronics and other areas of frontier - technology. It was found in a survey of semi-conductor industry

of USA, that of the related patent-holders, government institutions were prominent like Navy (11), Army (15), NASA (21), Dept of Energy (56). Probability of survival among top 10 firm has decreased; one could say, electronics has been the ideal case of Schumpeterian competition, but for the fact that inspit of innovations by newer companies, those of the big league stil roost the way. Thus, the vertically integrated electronic firm producing both soft and hardwares like IBM or RCA have impressive patent statistics, though they have contributed only a modest share of major innovations. In producing and shipping semi-conductors largest companies hold the sway in USA; in integrated circuits eight largest companies like GEC, Philco RCA, Sylvania etc. This is natural, for basic production in electronics is capital intensive. In integrated circuit manufacture requirement of precision requires huge capital. Wefers may break, electrical testing may reject some more, there may be loss due to improper assembly, even packaged chips are subjected to electrical testing. The hold of vertically integrated firms like IBM over electronic application to industry is important.

In computer industry, of more direct relevance to the newspaper industry, the role of state is more apparent. Here too, assured defence orders made assembly line products possible for commercial use and early losses were amply compensated. The M.I.T. recommended IBM to government to work with Lincoln labs in the design of SAGE system for Air Force. The IBM 701 computer arose out of Defence Calculator Project, whereby it required the coordination of several computers in real-time calculations - "if alien aircraft were detected, the system was to select the appropriate interceptor aircraft

and determine anti-aircraft missile trajectories".[29] This ultimately resulted in IBM 704, 705. The story of Remington Rand and LARC is also the same, so very crucial for the development of solid state technology - again a factor which made the application of electronics to a wide area of industry possible. The state provided the captive market. Government R & D contracts, purchase and sponsored conferences enabled the application of transistors in computers, pioneered by Bell Labs. The first generation computers of IBM performed in terms of commercial operations per second; the second generation performed thousands of commercial computations. In 1957 it started with Honeywell 1455-0; it developed into Honeywell 800.

What made possible the "electronic transformation" of an intellectual industry like newspaper was the fact that from 1964-65 on, distributed processing, time-sharing and real-time applications of computers were important aspects of the continuing development process in the industry. With this, there were vast improvements in memory, control and input-output perepherals. Partly, as a result of various governmental interests in miniaturization, increased speed and improved process-control techniques, an increasing number of "mini-computers" and "intelligent terminals" appeared. The "old transistor" developed into monolithic "chips". Random-access memory gave rise to "virtual memory" computers that ostensibly operate as though there were no bounds to memory capacity. Microprocessors with advanced chip technology appeared. Computer technology changed so rapidly that in a very short period of time a VLSI (very large scale integrated) circuit hardly larger than a fingernail had more logic than the IBM 701 or Univac I i.e. the first generation computers.

Three Questions :

When one remembers the technological innovations in newspaper industry briefly described in the preceding section, the theoretical importance of these developments will become abundantly clear. But, in the process some interesting questions also do arise. These are :

a) What is the precise role of an exogenously driven technology in shaping an endogenously determined structure ?

b) Is the growth of electronics in newspaper industry and also magazines a case of Schumpeterian enterprise ? Or, is it again the same old story of predominance of monopolies ?

c) Can we standardize the computerization process in newspaper industry as one of having two stages : government-university-research (1st stage) and commercial use (2nd stage) ? In other words, how is a "near technology" transformed into a "becoming technology" ?

These are indeed the questions that this whole enquiry is about and while winding up the various threads of discussion, these are the issues to be concluded upon. The newspaper industry was till the mid sixties in a hot house - which, so to say, was an endogenously determined structure. It had monopoly control, over itself as well as over the newshungry public. There were also, archetypal writings and a narrow advertising base. Then electronic technology - an exogenously driven one - came like a hurricane and changed or initiated the change in a total way. Competition stiffened with television

and magazine boom. The trade union response was haphazard and scattered. The workers felt that a technological change was coming and could not be resisted, yet the change was coming at their cost. How then could they properly respond to the crisis ? Would they obstruct ? If obstruction was the only way out, could they do it at a trade level, or still bigger at a national level, or whereever possible i.e. at a unit level - plant level ? It was this lack of decisiveness, that helped the Press barons in pushing through automation everywhere - from United States to India. It was this complexity that speeded up automation, that engulfed the workers with torrential changes in technology set up, work-flow and management. They were virtually left with a fait accompli.

Then again competition was certainly an augmenting factor. Old dinosaurs like "Life" in USA died. The basic technology was being enriched in innovations from medium sized firms which were later eaten up by big firms like IBM. Little magazines and newspapers, information bulletins were emerging in towns leaving the megalopolises to big newspapers. Then again it showed that like the field of basic technology, here too the vertically integrated firms in publication were having an intrinsic advantage i.e. the ones who combine newspaper, magazines, information service, job work can reap the advantage of new technology best.[30] It is they who pushed automation most rapidly, be they the New York Times or L.A. Times or Dow-Jones etc in USA or the Times or Express Group in India. It was again a new management strategy that made automation a reality in the industry. Compared to earlier rationalizations, this was far more fundamental and total - far more revolutionary, far more at cost of life and livlihood of workers. Yet, it was achieved with far less friction.

Why ? One reason was new management strategy, which tamed the union into accepting automation or rather involved the latter as an official partner in the whole process.[31] The earlier excessive "sectional politics" had given birth as a reaction to it what has been termed as "new syndicalism" among the organized working class that facilitated the new style of management. Scandinavian management gained belated recognition thus. In short, the above referred questions show how technology in a given situation is not mere technology - but politics and economics as well. A technical issue is in its entirety a social issue.

Press in India and New Technology :

Now to come down to the concrete example of our country; let us see how this mix up of various dimensions was active in the automization process in newspaper industry.

In Great Britain, the journalists, who were opposing attempts by newspaper managements to get them to "key-in" their own copy directly into a photo-type setter (thus dispensing with a separate composing department) asserted in a booklet published by the National Union of Journalists named "Journalists and the New Technology" that,

> "The reasons why managements seek to introduce new technology may be broken down into five main areas; a) rationalisation and reequipment; b) manpower savings; c) deskilling; d) undermining the power of the trade unions and e) assertion of management control".

Availability of machinary :

In India, while deskilling is not such an important factor given the generally low level of wages, outdating of technology, given the external source of the basic printing technology, is here a very much motivating factor for automi-zation in newspaper industry. As the Executive Director of the Printers (Mysore) Ltd, publishers of the Deccan Harald and the Kannada newspaper, Prajavani, Sri K.N. Harikumar told the correspondent of Business India, their linotypes and letterpress rotaries were 30 to 40 years old and needed replacement. The foreign suppliers, mostly American or German, now no longer manufactured these, so they had to shift to phototypesetting and offset printing. Even if any new letterpress rotaries are imported, for example from USSR, where high speed letter-press rotaries are still manufactured, the management cannot be sure if spare parts would be available ten years hence - while the said machines were to last for at least 30 years.[32]

Tax planing :

Different tax rebates are also an important factor. Depreciation allowance, import liberalization speeded up by the IMF conditionalities, (corporate) income tax rebates have turned the trickle of imports by large Indian printing firms of microprocessors or computer controlled printing machinery into a flood.

Some companies have opted for an intermediate process to use photo composed text on existing letterpress rotaries

by using photopolymer plates. This is no doubt expensive, each plate costing around Rs. 70 (after import and other duties). Thus it works out around Rs. 15 lakhs a year for 64 plates needed every day for a 16 page newspaper. Still this is lower than the interest payable for a high speed web offset printing press. This is how the Bombay Samachar has effected the transition; The Statesman too is doing it. There is facsimile transmission in Hindu, scanner in Times of India.

It is clear that modernization and tax planning go side by side. Tax planning induced both by government policy and the company's own budget and accounting has acted as a catalyst.[33] As the Hindu Executive admitted, "Between 1978 and 1982 we have spent Rs.3.5 crores. In the next three years we intend to another Rs. 7 crores towards modernization."[34]

Labour Saving :

Job shedding is no less an important factor. The unions being understandably perturbed and strongly opposing any direct cut, there may not be direct retrenchment. But gradually through retirement and premature voluntary retirement, the management will push towards eventual cuts in labour force. As has been pointed out already, while the Palekar Award hiked up wages, the management sought the way out backdoor. The Statesman Employees Union Study estimates that the proposed changeover to photo composition and offset printing will result in reduction in the press work force from 706 at present to only 192 people after modernization.[35]

An ILO report observed a cut of 50 to 70% of manpower requirements as a result of new printing technologies. Though new technology may help large establishments bring out new editions from other, particularly, smaller centres, or newer papers may come out, yet it is universally acknowledged that additional manpower requirements would then be restricted to additional editorial staff for local news coupled with a small complement of composing room and print shop workers. The addition in other words, cannot compensate the reduction. The newspaper and magazine revolution, however, will be a revolution on the tip of the iceberg only, for as the "Report on A Survey of Printing In India", carried out by the ORG (Operational Research Group) pointed out, the 188 newspaper presses and elite presses like Thomson (bringing out India Today) or Tata Press form only a miniscule proportion of 43,000 printing presses in the country, though the former handle large quantities of print. As the Survey pointed out, nearly 88% of the printing presses are letterpress with hand composing facilities, nearly 70% employ less than 10 people and around 80% have an annual turnover of less than 42 lakhs. The printing industry employs 5.33 lakhs, of this, some 69% is accounted for by those presses of less than 10 workmen. Thus, it is clear that printing in India is largely a small scale industry, depending on obsolete technology. And the computer revolution will modernize only the top. It is difficult to see any percolating effect; though with the top cornering as much job work as possible, it is conceivable that many below in the business may go red. It is clear that the basic new printing technology is not cheap by Indian standard, nor are the products therefrom coming on the basis of a low scale of operation; thus both

the possibilities remain - while one section below may be ruined as in Bengal, another section may yet survive by incredibly low cost of production, with almost no depreciation cost and low wages. Computers, thus, have come, but not that much; not to that degree.

Low wages too act as a damper the average pressman/compositor earns Rs.300/350 a month - a mere pittance. Of the 1.1 lakh printing machines, 90% are letterpress tradles, platens or cylinder machines. Of the rest, some 7000 are sheet fed offset printing machines, 116 webfed offset machines. The above said Survey put the total investment in machinery in the industry in 1977 at Rs.450 crores or 12 employees per every one lakh rupees of investment. At this level, it seems another few hundred crores of rupees would be required to modernise the entire industry. Some 600 phototype setters and 20 direct screening scanners have been imported, according to one estimate, within last four years. Offset printing units are fast expanding in small scale sector, thus setting a standard for vernacular press coming out of small/medium towns. But, vernacular press based on PTS is costwise 50% higher than English.

There are snags too in the race for computerization among the top. Going for photocomposing means opting for quality improvement thus becoming unwilling victim for high pressure salesmanship. There is then dumping of equipment, for technological obsolescence is faster. Unlike hot metal machines which have a lifetime of 30/40 years and fetch a high resale value, the normal life of a PTS machine, in the sense of keeping abreast with technological development is much shorter. Sometimes, the reorganization within a news-

paper set up is not done in such a way as to take full advantage of phototype setting. Computers which can take on many keyboards are not fully utilised, perhaps either due to trade union resistance, or due to insufficient infrastructural facilities or may be even due to lack of sufficient fund to fully computerise the entire set-up; it may even be the management wishes to rush in computerisation to score victory in the constant tug-of-war against the union without overall planning and arrangement. This is the story of The Statesman, Jugantar or even Amrita Bazar Patrika.

The home market being narrow in case of (non newspaper) big printers even, they think of export of phototypesetting prints. For example, MacMillan India Ltd, armed with an unit of 4 monotype film setters, 20 key boards, and 5 editing terminals worth Rs. one crore, does publishing work for jobs from abroad. Others like Tata Press or Printwel also aim for such market.[36]

One thing that can be said is that, as long as costs remain higher than traditional presses, there is no large spread of literacy, there is no adequate supply of cheap paper - in other words, a lowering of printing costs that bring the printed word within the reach of a majority of the country's population, we cannot expect the real boom in photocomposed printing. Apart from some notable national and vernacular newspapers and more particularly glossy magazines like India Today, Debanoir etc, there will be not be much percolation below, however much Arun Mehta, the president of All India Federation of Masters Printers (AIFMP) might expect and suggest.[37]

Competition from Magazines and growth of middleclass :

Kicking the newspapers upwards, i.e. forcing them to adopt new technology is the magazine boom of the last decade, 1977-87. Magazines fight tooth and nail for the quality conscious limited market and the result is worth studying. The market that the select English national dailies and the magazines aim for is a select market - the middle and the upper middle class are quality conscious. The magazine boom and the consequent or accompanying modernization of newspapers is a direct result of that marketing effort. Colour print has become cheap, there is advertising gloss and packaging punches and all this "serves a function that is similar to slick chromeglass shops, fast food restaurants, videos and packaged foreign tours".

There are several factors behind the magazine boom; the growth in number of literates, fast urbanization or growth of urban population, development in communications, investigative reporting are some of these. As one of the prime magazine "India Today" remarked in almost autobiographical tone, the emergency and the post emergency liberal atmosphere gave rise to investigative writing and the flood-gate of saucy story writing mixed with Anderson's "All The President's Men" style reporting opened with magazines quickly cashing on it.[38] In circulation they started competing with dailies. Delhi Press prints 17 lakh magazines a month and this accounts for an overwhelming proportion of their Rs.4.5 crore turnover. In-house magazine printing of Sarita (fortnight, 300,000) Grihashobha (2.25 lakhs) etc accounts for 92% of capacity. Another press, Thomson Press, has shown how printing as a precision technology can help magazines like India Today,

Readers Digest etc. The recent poster campaign for "hot shot" camera in the pages of these magazines has exhibited the potentiality of the new combine. By modernizing the entire printing equipment and cashing on magazine boom throughout the seventies, Thomson Press increased its assets by 11.46% in 1980, 21.07% in 1981 and 38.61% in 1982. The net assets stood at the end of 1982 Rs.8.68 crores. Along with printing has come packaging modernization. Corporate consciousness of status and the corresponding emphasis given to image building activity have imparted emphasis on production of increasingly voluminous corporate literature like brochures, balance sheets, diaries, calenders. Design of labels and packages of home appliances like mixers, toasters, irons, cooking ranges etc. are now an expert field. "As a rule of thumb", as explains one businessman," the cost of packaging should work out to between 5 and 10 per cent of the retail price for necessities such as tea, oil, foods and detergents.[39]

But even if retail prices have increased, the demand for quality printing and packaging has not lessened. The price of off set machine has soared. A two colour offset machine was Rs.6 lakhs in 1976, 40 lakhs in 1987-88. In the year 1982-83, when printing equipment could be imported under OGL, more than 500 printing machines were ordered by printers in Delhi region alone. There is a mushrooming of small printing units reminding almost of Schumpeterian growth, perhaps in a closed circle ! Aside packaging, there is processing too, helping the magazine growth. Scanners have been introduced. The artwork, from the printer or ad agency, consisting of design and transparencies are scanned quickly. An earlier

requirement of two hours on an enlarger is now reduced to 10 to 15 minutes on a Magnascan two module scanner. The recent generation of scanners provides for electronic retouching facilities with automatic colour correction. Once transparency has been analysed according to the intensity of its colours, it is loaded on cylinders, sized and exposed by laser light. The exposed film is developed, fixed, washed and dried. Then type is photoset, screen tints are provided and the automatic camera exposes various components in the format indicated by the layout. The printers receive either the plate or chromolia depending on capacity. Thus, at a process speed of 35 transparencies a shift (say, of IPP - International Print-O-Pac), small printers can have the photographic work done cheap. Again, here the opposite face of Schumpeterian growth is the growth of monopoly hold over processing. Big business in processing will ironically help small printing.

To go back to the story of "India Today". The magazine India Today had started with 5000 circulation in December 1975 to 370,000 at the end of 1985 and it openly claimed that this jump in a decade was mainly due to "new freshness, a new breed of journalists breaking new ground, new technologies such as the word-processor and the computer terminal, a broad basing of mass media ownership following a new entrepreneurship in journalism, increasing advertising support and much more". The magazine, within a decade, expanded its staff, invested in a national teleprinter network and "acquired the most advanced computer system that any publication has in the country, so that all staff in New Delhi now write, rewrite and make-up pages on computer terminals, all of which make for shorter lead-times and more up-to-date coverage".

This is the magazine, which along with Sunday of Calcutta, initiated a new kind of journalism, which ultimately exercised a decisive impact upon dailies, which the old lady of weekly journalism The Illustrated Weekly would have been put hard to find even during the haydays of Khushwant Singh. The human stories, incidents of violations of human rights, inside corruption, caste and communal riots, scientific breakthroughs, public interest litigation - all these became the lead stories. The India Today even instituted an award together with PUCL-PUDR on best human rights story of the year. During election-time, the fortnightly gave prominence to psephologists, a word virtually unknown before and ran a forecast that started a whole new trend in journalism. This again needed a sophisticated computerized system, just as without computerized processing, we would not have enjoyed the work of Raghu Rai, India's best known photographer, - the picture editor of the magazine. This was the signal for a now established running battle between photographers and writers over visual space of a paper. Cartoons flourished, business section became one of the major features and today, it is not individual writing that is the hallmark of the magazine, but superb team work in writing and consequent editing. This is of course the line long before popularised by the U.S. Weekly Time - and which, would have been impossible without the editing terminals. Story writing is more thus a production-line and the outcome is the symbol of a collective style of operation. This too has caught on with the newspapers, with Telegraph or Hindu taking the lead. Today, visual format, photofeatures, collective reportage, business reporting - all have become inseparable parts of modern day newspaper.

But then if we ascribe all the reasons behind this technically modernised new vintage of journalism, pioneered by the weeklies and fortnightlies only to a technological source, the whole gamut of perspective may not be comprehended. For, aside the technical reason, the social reason that encouraged the technical changes was the rise of the middle class in seventies and early eighties. Education spread among the rural gentry; electronic consumption goods like t.v., camera or electrical goods became increasingly popular among the middle class; the services industry absorbed many in banking or insurance; technical education gained prominence in sharp contrast to a weak primary base; cooperative housing went into a boom in cities; prosperous farmers sent their offsprings to towns like Meerut, Pune, Varanasi, Cochin, Patna etc; synthetic clothings pushed cotton and handloom out of the middle class market; this was again the time when urbanisation resulted in colonisation of vast tracts of land in different areas like Delhi-Meerut corridor, Bombay-Pune corridor, Trivandrum-Cochin corridor etc; middle class started buying shares and stock market received a boom and the Annual General Meeting of the shareholders of a company like Reliance Industries looked like a public meeting, actually held in Brabourne Stadium in Bombay; two wheelers and cars rapidly proliferated; fashion garments came into their own and perfumeries started business in an unprecedented way; along with this, personal income tax was continually slashed down; import was liberalised; in short the middle class world was pervaded by the "quick buck" culture. It was this milieu which encouraged the new glossy publications based on photocomposed offset printing. This milieu resulted in a new type of political culture of the middle class. It acted less, but desired to know much. It

devoured mystified representations, grew cynical and became fond of a strong-arm but debonair political management. We must keep in mind this, albeit narrow, middle class market and culture, which gave birth to a new media boom. This was in the last analysis, a constricted expansion of capitalism in India and the cultural reflection of this phenomenon. A few figures may be cited :

Table II

(a) number of investors in 1975 : 1.5 million
" " " 1985 : 7 million

(b) Every fourth Indian now lives in towns.

(c) beauty business : Shampoos : 50 kinds
Lipsticks : 500 shades } (1985)
total business : 150 crores

(d) In the decade 1975-85 :

production and sale of refrigerators increased 4 times to six lakhs annually;

production and sale of cars increased in the years of eighties to around 90,000;

per capita consumption of synthetic clothing increased 150 per cent

production and sale of two wheelers increased 5.8 times to 10 lakhs annually.

(e) In 1985, number of T.V. sets in the country 5.5 million.

Source : India Today, Tenth Anniversary Issue, Jan.31, 1985, New Delhi.

It was this sort of economic scenario, which gave rise to business literature also in an unprecedented scale. Arun Shourie, the freelance journalist, remarked, "The Emergency affected the politicisation of the Indian middle class with the result that they wanted to know more and more about the people ruling them". M.J. Akbar, editor of The Telegraph, said that the new situation demanded from the editors and reporters "to take the cobwebs out of reporting". Some magazines like Society, Stardust, Sunday Observer, Sunday, Debonair "made a religion out of irreverance". Personality ethos wafted into the newsrooms of the largest selling business periodical too, "Business India". With this, several senior journalists have quit cradle-to-grave secure positions to strike out on their own as syndicated columnists. The result of all this was a dramatic rise in circulation. In 1975 there were about 225 publication-newspapers and magazines -- with a combined circulation of just over 14 million. In 1985 total number of publications shot up to 300 with a combined circulation of more than 26 million. ~~This means, one significant periodical with a circulation of 12,000 has appeared on the newsstands every month a life during last 10 years.~~ By any standard this has been a phenomenal growth, considering that prices of newsprint as well as of newspapers and magazines rose. In fact, in the first case, price rose three fold. This comsumer demand for the media product is definitely connected with the rise of India's 70 million strong middle class. The Express group commands a combined net circulation of 2 million and is engaged in a Rs.4 crore revamping and expansion programme. In Andhra Pradesh Ramoji Rao's Telugu Eenadu is pushing 400,000. Thus, vernaculars

are not at all lagging behind, in fact with the growth of regional bourgeoisie in India and the fast expansion of petty bourgeoisie, the "revolution in the language press will continue for some time", for due to above two factors there will be both capital for vernacular press, as well as a readership.

Big Capital and Modernization in Indian Press

Yet we must look at the monopoly structure, too, in the newspaper industry. "While associations of individual newspapers are not unknown in press circles, very little effort has so far been made to determine the ownership and control structure of the Indian press as a whole," this has been the opinion of the two authors of IIPA (Indian Institute of Public Administration) Report of 1981 on India Press, S.K. Goyal and Challapathi Rao.[40] While the Annual Reports of the Registrar of Newspaper of India (RNI) provide a large volume of data and information on the Indian Press -- the analysis undertaken is a limited one. For example, the RNI treats each newspaper edition as an entity by itself, even when the editor, printer, and publisher happen to be the same. Then again, while the names of Trustees, and Directors and shareholders of the newspaper establishments is published regularly, no attempt is made to determine the identity of the individuals or the corporate bodies involved in the ownership and control of the newspaper establishments. Similarly, the RNI reports make a distinction between 'news interest' and 'non-news interest' publications, while there was need to have an overall perspective to determine the significance of a unit in the press as a whole. To understand the relative strength of a newspaper

or any one unit in the industry, one has to take note of the overall assets and other resources within the reach of the press units. To put simply, commercial printing i.e. 'job work' has to be seen as an effective limb of overall printing business of a newspaper house. Then again, it has not yet been quantified as to the phenomenon of press reporters and senior staff of a newspaper being employed to promote non-newspaper interests of their managements. While use of press for promotion of House interest is known, it is not very often realised that newspaper managements exercise their choice to ignore or build up public images of chosen political personalities, official or private decisions, and commodities. In other words, this is once/big capital in newspaper industry. /again a manifestation o

There is one more aspect of it. As has been mentioned earlier, newspaper monopoly houses are more often than not, a part of larger establishments. This is a position, which secures them a constant revenue and an investment source also. There is an uninterrupted bulk supply of advertisements and 'job' work. And its economics is better managed in the overall framework of ownership and control structure and other linkages of total establishment.

It is not our intention here to analyse the monopoly structure as such in the newspaper industry, but to find out the linkage between monopoly and modernisation, if any, in the Indian scenario. Here one thing is immediately noticeable. It is the monopolies, i.e. the common ownership units (COU),[42] which have first opted for modernisation. The examples are The Hindu, The Times of India, The ABP group etc, though meanwhile single ones too have opted for the same technology

like The Patriot, Bartaman, Aajkal. In fact, the last two were born with new technology. The importance of COUS can be seen from the following table.

Table - III

Share of COUS in the circulation of significant newspapers (1979)

Circulation Range	Total Circulation	COU circulation ('000)	% share of COUS in the total circulation in the Range
1 lakh and above	5415 (50.53)	5190 (58.06)	95.84
50,000 to 99,999	2074 (19.35)	1471 (16.45)	70.93
15,001 to 50,000	3227 (30.12)	2279 (25.49)	70.62
	10716 (100.00)	8940 (100.00)	83.43

Source : Registrar of Newspapers for India, Delhi, 1979.

Note : Significant newspaper is one with more than 15,000 circulation.

It is clear from this table, the higher the circulation range, the greater the dominance of COUS, now virtually run by PTS technology. The Express chain has 10.68 share in national circulation of all languages, Bennett Coleman 8.79%; Hindus-than Times and Allied Publication 4.37%. The combined share of the top 9 newspaper establishments in 1980 41.61% of national circulation. Of the total 82 COUS identified by the Registrar of Newspapers, publishing 218 newspapers out of the total of 645, thus the top 9 form the big league, the rest 73 COUS share 30.93% of national circulation.[42] Here, the mono-polistic trend is evident even among the top i.e. the COUS. This can be found out from another angle.

Table - IV

The Big COUS and their relation to average circulation

Express Group	13.92 lakhs	59 times	average circulation
Bennett Coleman		48 "	"
Hindustan Times		24 "	"
Amrita Bazar Patrika		21 "	"
Malayala Manorama		20 "	"

(Total number of newspaper establishments being 561 with an overall circulation of 132.29 lakhs, the average circulation per unit comes to 23,581).

Source : IIPA Report, p. 238, New Delhi.

In regional languages too, monopolisation is evident. Malayala Manorama commands 37% of the Malayalam circulation; Thantri Trust 42% of Tamil Press, ABP more than 50% Bengal press. In New Delhi, India's capital, a single newspaper, Hindusthan Times, a Birla paper, commands 40% of English circulation; its sister paper Hindustan commands 33% of Hindi circulation. Again, out of 81 COU, the Express Group publishes newspapers in 6 different languages. Bennett Coleman, Hindusthan Times, Tribune, Indian National Press and Associated journals, Amrita Bazar Patrika publish in 3 languages each.[43] Even the geographical coverage is largest with Express, followed by Bennett Coleman. The dominance of still the greater monopolies among the monopolistic 81 COUS can be ascertained from another angle.

Table - V

Distribution of 81 COUS according to their share in national circulation

Sl.No.	No. of Units	Percentage Range	Share in National Circulation
1	2	More than 5%	19.47
2	1	4 - 5%	4.37
3	3	3 - 4%	10.68
4	3	2 - 3%	7.09
5	13	1 - 2%	18.22
6	59	Less than 1%	12.71
7	81		72.54

Source : ibid.

Apart from COUS, even plainly speaking, the phenomenon is easily discernible. The late seventies was the period, when the big newspapers seemed poised for a technological jump, possibly because even in hot-metal period, enough capital had been accumulated, funding sources secured, market expanded and possibly because competition had reached such a stage even among the big fish, that the introduction of new technology was the only answer out as a greater market-capturing and cost-cutting device. Let us look at, hence, a comparative picture.

Table - VI

Number of Newspapers According to Circulation Groups

(percentage in bracket)

Size Group	1979		1969	
	Number	Circulation ('000)	Number	Circulati ('000)
Above 1,00,000	30(4.3)	5415(40.9)	16(3.3)	2239(28.7
50,00 to 1,00,000	31(4.5)	2074(15.7)	24(5.0)	1708(21.9
15000to 50,000	115(16.7)	3227(24.5)	80(16.7)	2240(28.8
5001 to 15,000	212(30.7)	1899(14.3)	134(27.9)	1181(15.2
Upto 5000	302(43.8)	614(4.6)	226(47.1)	422(5.4)
Total	690(100.0)	13229(100.0)	480(100.0)	7790(100.0

Source : Ibid.

The following things can be noted. The high degree of concentration has still got higher. In 1969 3% newspapers commanded 28.7% of circulation. Today, 4% commands (i.e. in 1979) 40.9% circulation. But alongside that there is a certain entrepreneurial growth among the top league, the number has increased from 16 to 30; among the small too the jump is from 134 to 212. In fact, the total number in every category has increased alongside circulation increase. But within this growth, in which technology is playing a very vital role, hidden is the phenomenon of monopolies. In the above table, only the growth at the top is evident. But the fact remains that out of 30 at the top, 28 belong to COU category, controlling 96% of their circulation. The share of COUS in the 15,001 to 1,00,000 circulation, is 70%. It was found in 1979, nearly 16% of the newspaper establishments in India controlled more than 72% of the national circulation. Whereas in 1969, small newspapers consisted of 47.1% of total newspapers, in 1979, it went down to 43.8%. In circulation too, the reduction was from 5.4% to 4.6%.

An upgraded technology implies upgraded circulation. For that what is primarily needed is more newsprint. We have to remember, newspaper industry is such an area where most of the inputs are imported : aside labour, newsprint to machinery is overwhelmingly brought from abroad. Here too monopolies are at the gaining end.

Then, again, we have witnessed the widening of the advertising base of newspaper economics - yet one more instance of the league between big industry and big press. We may from the following tables/the present financial position of big/follow press in all major aspects : circulation revenue, ad revenue etc.

Table VII

Before the Bachawat Wage Boards the employers' organizations have filed financial data for the past few years relating to 60 newspaper establishments, accounting for 95% circulation of newspapers.

Consolidated Position

(Rs. in lakhs)

		1979	1985	Percentage Rise
1.	Gross Block	5725	14909	190.91
2.	Net Worth	2354	5068	115.29
3.	Borrowings	3494	11391	226.01
4.	Total Finance	5850	16457	181.31
5.	Gross Revenue	16884	47580	181.80
6.	Newsprint Cost	7949	25368	219.13
7.	Revenue net of newsprint cost	8933	22209	148.61
8.	Interest	472	1708	261.86
9.	Depreciation	244	1433	487.29
10.	Gross Profit	1401	3319	136.90

Source : AINEF's submission To Wage Board, February 27, 1989, p.26.

Table VIII

Gross Profit of 60 Newspaper Establishments (class wise)
(Rs. in lakhs)

No.	Class	1979	1985	Percentage Rise
1	ID	514	670	30.35
2	IA	224	632	182.14
3	I	415	1179	184.09
4	II	89	304	241.57
5	III	112	412	267.85
6	IV	20	74	270
7	V	15	16	6.66
8	VI	12	27	125
9	VII	0	5	500

Source : Ibid, pp. 52-59.

Since the Palekar Award, there have been no less than 4-5 times hike in selling price of the newspapers and also an increase in the advertisement tariff. Yet newspaper circulation has grown and also the circulation and advertisement revenue.

Table IX

Circulation Revenue of 60 Newspaper Establishments

Year	(Rs. in lakhs)
1979	9,076
1980	10,889
1981	13,055
1982	13,702
1983	17,678
1984	19,842
1985	23,640

Source : AINEF Submission to Wage Board, January 23, 1989, p.41.

Table X

Advertisement Revenue of 60 Newspaper Establishments

Year	(Rs. in lakhs)
1979	8,274
1980	9,890
1981	12,790
1982	16,610
1983	20,235
1984	21,009
1985	24,657

Source : Ibid, p.42.

Table XI, XII show that between 1986 and 1988 newspaper prices and advertisement tariff rose more in relation to the rise in newsprint price from 1986 to 1988.

Table XI

Newsprint Price Rise

(Rs. per tonne)

	1986 (July-September)	1988 (July-September)	Percentage Rise
1. Imported	6,135	9,555	49.41
2. NEPA	7,860	8,934	14
3. Mysore(1983)	9,319	10,360	11
4. Kerala(1983)	8,660	10,360	20

Table XII

Price Rise of Nine Newspapers and Their Advertisement Tariff Rise

		Price Rise		Ad. Tariff Rise (Rs.per			Col.c
No.	Newspaper	1986	1988	Percentage	1986	1988	Perce
1	T.O.I. Bombay	1.00	1.20	20	125	290	132
2	" Delhi	1.00	1.40	40	95	165	74
3	Hindusthan Times	1.00	1.40	40	125	180	44
4	Amrit Bazar Patrika	0.90	1.00	11	70	75	7
5	ABP	1.00	1.40	40	125	160	28
6	Deccan Herald	1.00	1.50	30	55	75	36
7	Free Press Journal	0.90	1.00	11	32	40	25
8	Statesman, Calcutta	0.90	1.25	38	102	115	13
9	Sandesh, Ahmedabad	0.75	1.00	33	65	80	23

Sources : Ibid, pp.67-68.

More than three fourths of the newsprints is obtained from abroad, just as the new technology is almost wholly foreign obtained. This obviously implies experditure in foreign exchange. And it is out of the foreign exchange e.g. foreign capital, that the technological revolution in newspaper industry is being financed today. As it can be gathered, in 1973, 83% of the total newsprint consumed in India was imported e.g. out of 180,000 tonnes, 140,000 tones came from abroad.[44] Even here, in this scarce resource too, the big have the lion's share, for they are the main beneficiaries of newsprint allocation. As in the appendix X-2, the authors of the IIPA report observed :

"The share of small newspapers (overwhelming number of which consisted of individual or family based regional language newspapers catering to local readers) in circulation was 23.1% but these papers received only 5.9% of newsprint in 1976. On the other hand, the big newspapers accounting for about 50% of the circulation received 67.6% of the overall newsprint. Thus, the big business controlled press was not only the main beneficiary, it also received a more favourable treatment from Government in matter of newsprint allocation."[45]

Talking about monopolies in newspaper industry, it is worthwhile to recall the Report of the Vivian Leigh Commission, which laid bare the takeover of the Times of India Group, formerly run by Bennett & Coleman Company, by Dalmia-Jain Group. To briefly narrate the story, Bennett & Coleman Company was a private limited company, whose paid up capital by the end of 1945 was Rs.39 lakhs and reserve some more Rs.30 lakhs. They had Govt. securities worth Rs.30 lakhs and bank balance of more than Rs.14 lakhs. That was the time of the great

rush of purchase of shares of British enterprises by Indian capitalists. In 1946, an enterprise of Dalmia Jain Groups, Dalmia Cement and Paper Marketing Company suddenly started buying shares of Bennett & Coleman. They took an overdraft of Rs.80 lakhs from Bank of India and bought shares of Rs.1 crore. The Bank of India itself bought shares worth Rs.84 lakhs and sold them to another Dalmia Jain concern Gwalior Bank at Rs.3 lakh less. The Gwalior Bank wound up subsequently and its assets and liabilities were taken over by another Dalmia Jain concern, Delhi Glass Works Ltd. Sometime later, Dalmia Cement and Paper Marketing Company sold its own stock to Indian Insurance, Indian Fire & General Insurance etc. and repurchased it. Many of these companies subsequently closed down, and thousands of small and medium shareholders were ruined. The Vivian Leigh Commission indicted that the robbery was to the amount of Rs.3 crores; thus Dalmia Jain Company bought over Bennett Coleman with totally others money.

Similarly Birla took over Hindusthan Times, Searchlight, Leader - the three papers whom it supported financially for essentially, anti-British political resons. The Free Press of India, a nationalist news agency of Bombay, started by an eminent journalist, S. Sadanand, was taken over by Ramnath Goenka, who pocketted two of its concerns, Indian Express and Dinamani of Tamil language. After the death of Sadanand, the owner of the chief patronising ad-agency of Free Press, Publicity Society of India -- the Karnani Group of Bombay, took over the Bombay paper Free Press Journal as well as a Gujarati and Marathi newspaper, also run by Free Press.

These are little examples to show how monopolisation took firm control over Indian/industry and it is now the mono-/Newspapers polies who have the requisite scale of production, capital, technical know-how, as well as an advertising base to opt for a new technological base.[46]

But this growth of monopolies in newspaper industry is not surprising, nor is their undertaking of new technology, if we keep in mind the overall monopolistic trend in our economy as well as the 'modernisation wave' among the big business in India.

We know that from 1972 to 1979, the total assets of MRTP enlisted companies doubled from Rs.5597.74 crores to Rs.12456.79 crores. The top twenty were worth Rs.3058.87 crores in 1972; in 1979 the figure shot up to Rs.6618.69 crores. According to Reserve Bank Report, in 1964, the monopolies controlled 46% of total industrial assets; in 1972 they controlled 70% in 1978 83%.

It is again these monopolies, whose scope has been allowed to be expanded in regard to assets, imports, technical collaborations and field of production by the Government now and consequently, they are going for modernisation of production technology, especially in engineering, textiles, metallurgy, electronics. We have to view the monopolisation and modernisation of newspaper industry against this overall perspective.

But then, as we stated earlier in the discussion, this is not a phenomenon specific to India. The country, where from modernisation of printing technology originated, viz. United States, has witnessed the same phenomenon. We

know the famous U.S. newspaper tycoon, William Randolph Hurst, had tried to instigate the U.S. Govt. to declare war upon Mexico, through a three month long incessant campaign in his paper not to create or augment news, but simply to save his mining business in Mexico, which the Mexican Government had ordered to be confiscated. In 1979, Senator Morgan had cried out in the Congress - "We are losing independent newspapers to chains at the rate of one a week". One professor of journalism in California University, Ben Bagdikian made a famous comment, which subsequently has been often quoted : "Half to three quarters of all media are owned by corporations run by 100 executives and these 100 executives constitute a private Ministry of Information and Culture". "Today there is a greater potential for the use of journalism as a by product by large conglomerates which have an explicit desire to influence public opinion and Government policy in their favour".

Limits to Modernization :

However, there is no doubt about it, that this modernisation of newspaper industry, aided and abetted by the magazine revolution, has its own limitations too. First, the type of journalism that is growing is obviously more story oriented, investigative, clamouring for headlines, and less analytical. But with a rising public demand for more facts and analysis thereof, even journalistic coups may fast become a banality. Human stories are already becoming dreary. Just we may look at the falling circulation of "Sunday" reportedly below a lakh; the "Herald Review" of Bangalore's Deccan Herald has been a disastrous flop; the Hindu group's "Frontline" - a glossy newsmagazine with splendidly reproduced colour pictures - has slowed down after an initial spurt.

Second, as has been repeatedly stressed earlier, this modernisation and expansion was eventually a response to the rise in the middle class market. And given its overall limited nature, this modernisation too was bound to be limited. As long as the costs remain higher than in the traditional letter-presses the new print technology is going to merely serve, entertain and reduce the rich and the affluent sections of the middle class. The real boom in printing still awaits the further spread of literacy, an adequate supply of cheap paper and newsprint, and a lowering of printing costs that would bring the printed word within the reach of a majority of the country's population.

Finally, with the growing organization and unionisation of newspaper employees, retrenchment of employees is getting more and more difficult. Unless workhands are reduced in number, the main purpose of automation is lost. Thus, a continuous union awareness to modernisation is bound to act as a brake upon the speed of modernisation and indications are there that labour is not going to take it easy. With a concurrent rise in wages, social security benefits like pension, shorter working hours etc, the game is back to square one, where the initial economisation as a result of rationalisation of production process is lost or neutralised again.

To speak of this is to speak of the absolute limits of the growth of Indian capitalism. And it is this point which must be grasped while concluding this issue.

Earlier a question germane to the topic of the introduction of automation in newspaper industry was raised. The question is, what is the precise role of an exogenously driven

technology in shaping an endogenously determined structure ? Has this technology harmed the monopoly character of the ownership or otherwise ? Finally, can we say that this technology is going to be the dominant technology or will it remain for the time being on the border ?

We have seen that letterpress technology, or better the hotmetal technology is still in vogue, though computerised technology is fast expanding. We have seen further that it is the big shots who have introduced PTS technology and the COUS (Common Ownership Units) are the base of this technology since the more the matter is printed, the optimum the utilisation of new technology. We have seen yet again, there is a range of political, social and economic factors which together determine how far the new technology will advance to a dominant position from its initial borderline existence. We have seen how the international background was prepared for the advent of photo computerisation, how the basic technological breakthroughs were utilised by the communication giants, the initial entrepreneurship was gobbled up and how thus a 'near' technology became a 'becoming' technology. But, here, concretely in our country, it can be safely predicted that the small will survive by the side of big in two senses -- ownership and technology. For, fundamentally, capitalism is proceeding here on a weak basis, moreover it is daily witnessing the tenacious survival of small and medium capital -- which together set the limits of the technologies in India.

Concluding Remarks

It is time now to wind up the various treads of discussion. We find that the new technology arrived on the scene, when the industry as a whole was monopolistically built. The technology though gave a spurt to the growth of enterprises was inherently suited to monopolistic structure. It is the monopolies, who gained most from the computerisation of newspaper technology.

Very naturally, what is called the National Press, was the first taker of the new technology, though we have seen that the vernacular press and small press too have proliferated and the latter might too have somewhat gained. Yet we must remember the overwhelming presence of COUS and understand that vernacular press need not always be small press.

The presence of Big Business is a further boosting factor, for in our country, newspaper industry though may form its own big business; yet in the top league it is often an arm of overall big capital.

We have seen again the helping role of state in this newspaper revolution pioneered and led by monopolies, in two clear ways : allowing import of computers and PTS machines under OGL and second allowing foreign exchange consumption for raw materials like newsprint. This technological revolution has altered newspaper content, and has given a new shape to the reader's taste.

Finally, we have noticed that the magazine and newspaper revolution was a product of the growth of Indian capitalism, particularly the growth in consumption goods.

As such it signified the rise of the middle class. And, again as such, the limitations of the burgeoning phenomenon of middle class growth determined the overall limitations of the photo-composing technology's growth -- in other words, the extent of electronic revolution in the newspaper industry -- one form of mass media.

Basically, as anybody can see, there is staggering overall illiteracy; hence circulation cannot widen much. Still, the cost of technological switch-over is staggering; hence the small publications will remain with letter and lino press; finally, still the cost of newsprint is prohibitive and there can hardly be that amount of output so as to satisfy the news hungry literates and illiterates in remote areas of the country.

So, if this is a revolution, it is still a limited revolution. A revolution, aborted from within. Originating from abroad, catapulted to the top, thriving on sensational news presentation, and depending on state largesse -- how far can such revolution go ? It is a revolution, to which the doors of small capital today in India is naturally shut off. As all revolutions, this too is extracting price -- the price of reducing employment; hence a revolution opposed by workers in its present form. A technological revolution cannot but be partisan in the dominant struggle between capital and labour, that is ongoing today. Hence, we have to now shift our attention to the resistance against a partisan revolution. But that remains a separate study.

Notes & References

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15. RIND Survey, the Monthly Bulletin of the Research Institute for Newspaper Development, December, 1988, No IX/12 (Madras).

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17. Ibid.

18. Ibid.

19. Wilson P. Dizard, Jr. - "The Coming Information Age", ch.3 : Information Machines, p.81 (Longman, London, 1982); Indeed, even developed Western Europe too is dominated by the American firms like IBM, UNIVAC etc., without whose information machines West Europe would become lame duck within a day and who continue to hold over 70% of the market (over 90%, if one figures computers licensed from U.S. firms). In W. Europe only four firms can be mentioned : British International Computers, French Campagnie Internationale, Siemens and AEG-Telefunken in Germany, and Philips, a Dutch firm. See Kinter & Sicherman : "Technology and International Politics", pp.86-87 (Lexington Books, Massachusetts, 1975); then about holography, see for example, Ostrovsky: "Holography and Its Application" (Mir Publishers, Moscow, 1977).

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31. O.K. Timashkova: "Scandinavian Social Democracy Today", ch. 4, Topic 3 -- "The Scandinavian Model of Industrial Relations" (Progress Publishers, Moscow, 1981).

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33. Tax rebate was the reason cited by The Statesman management when asked by The Employees Union on the need for hurrying up modernisation -- talk on 8.1.86.

34. Business India; op. cit.

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36. Business India: op. cit.

37. AIFMP Report, 1983, New Delhi.

38. "India Today" -- Tenth Anniversary Issue, Jan.31, 1985; see particularly "The Inside Story" p.6 (New Delhi).

39. All the above figures, Business India, op. cit.

40. IIPA Report, Vol.2 of the 2nd Press Commission Report, p.233 (New Delhi 1981).

41. A COU is defined as a newspaper establishment owning two or more 'news interest' newspapers, at least one of which is a daily - p.237 of IIPA Report, footnote.

42. IIPA Report, p.238, op. cit.

43. Ibid, p.238.

44. Section on Newsprint: Report of the Fact Finding Committee on Newspaper Economics, 1975.

45. IIPA Report, op. cit.; p.305, ch. IV conclusion.

46. While Govt. stipulation is that in a newspaper, advertising may occupy at most 40% of total newspaper space, the rest being news, at least 6 newspapers are grossly violating the rule to the extent of more than 60% space being occupied by advertisements. Of 6, three are monopolies: Rathin Chakraborty: "Ekchetia Punji O Sangbadpatrer Bhabishyat", p.219 in Rathin Chakraborty's ed "Gana Andolan O Sangbadpatrar" (Lakmat, Calcutta, 1984).