The Case Against Microfilming

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COUNTLESS articles and speeches have been delivered to the businessman glorifying, glamorizing, and justifying the virtues and "cure-all" properties of microfilming; but never to my knowledge, based on extensive research, has anything been written about the shortcomings of microfilming.

Two years ago I attended a two-part lecture in Los Angeles. The first part covered the usual ground, extolling the finer points of microfilming. The second part, a week later, drew a very large group together with the subject described as "The Case Against Microfilming" for lack of a better name. The subject was covered competently by a prominent Los Angeles attorney though it did not express his personal feelings. Rather, it was because of his extensive experience with filming that he was called on to discuss just this one aspect of filming regardless of his own opinions. He said that, in fact, he had had to make three very comprehensive surveys to determine whether to microfilm or to store records, and that in two of the three instances he had recommended filming. His talk was based on his experience with the third survey. It may also be added that the sponsoring group, if it could be called that, had no ax to grind either. It was merely arranging the lecture in response to wishes expressed by a group of record management people in a survey. The discussion took 2 hours and merely highlighted some of the limitations of filming, with practically no references to a cost comparison of filming with storage. Despite the fact that many in the audience were either microfilm representatives or officials that had been using filming, the rather extensive question-and-answer period that followed brought out practically nothing to refute or dispute any of the attorney's statements. His presentation and facts left no room for argument, and his qualifications were readily apparent. The talk launched me into a 2-year period of research, which enlarged on and confirmed his statements.

The microfilming of records has been so oversold and sold in so many wrong places that the salesmen have often become their own

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worst enemies. Its capabilities have been honestly and dishonestly misrepresented. Sometimes very important cost factors have been glossed over, treated as of no consequence, or ignored completely to the point where many firms, after a short and bitter experience with filming, have become thoroughly disillusioned. Filming is generally sold as an answer to the problem of space, which is often its least effective use, while its use as a tool in the accounting field, for instance, has been largely neglected. It is usually easier to sell filming for the popularly familiar need of saving space than to do the more complex job of selling it as a business technique for other purposes. I sincerely believe that the potential market for filming has not been scratched; and, if the opposition created by sales for wrong reasons continues to grow, it never will be.

One article of the type that I consider extremely misleading appeared in a business magazine of May 1954. It described how one eastern firm filmed records in a matter of weeks at a cost of approximately $1,500. It stated that the program could be continued at a cost of $250 per year. This article would have you believe that the microfilming program recovered 3,000 square feet of storage space occupied by files. A good retention program could recover 3,000 square feet certainly but not through microfilming. The amount of space recovered by $1,500 worth of microfilming would not even make a dent in 3,000 square feet of storage space. In fact, considering the cost of about $500 [2] for a reader and of some $600 for the three film cabinets illustrated in the article, you would already have spent $1,100 before you had touched a single piece of film.

What does the average businessman find wrong with filming records? To give a logical order to his objections would be almost impossible; so let's step right into the middle of the muddle, disregarding the occasions when filming is dictated by such necessities as governmental and contractual requirements.

First, take the filming of drawings of various types. One large manufacturing firm that specialized in big overhead cranes reported to me that they had stopped filming because of the loss of detail in both taking the film and reproducing it afterwards. Company after company has practically abandoned this type of filming because it simply doesn't develop a dependable finished product. The filming of drawings is a very specialized and exacting type of work that can rarely be done in your own plant. Even if satisfactory films could be obtained, the using of them presents enough difficulty to make

[2] [*Editor's note*: Most of the readers in the National Archives cost the Government about $340. A few are of a type that costs about $850.]

engineering personnel rebel against it. This may be a personnel problem, but it must be recognized because it actually exists on a large scale. If you choose to ignore it you are heading for the same trouble as at least two huge Los Angeles aircraft companies encountered. These companies have stopped filming almost completely, except where contracts have required it, and they have had no choice in the matter. A survey in one of these companies showed that $223,000 could be saved if a 12-year retention period could be placed on most of its records. Since 95% of all records have to be kept less than 10 years, this estimate is rather impressive. But I do not mean to suggest that records that are to be kept more than 12 years should be filmed; far from it.

Let us pursue this matter of filming drawings further. Have you ever seen an engineering group spread a series of past, present, and proposed drawings over a table together with accompanying pages of specifications in order to compare them? This is impossible when the drawings have been filmed, without considerable expense in finding and reproducing all the documents involved. On the film reader you can see only one picture at a time, and unless you go to the considerable expense of putting your related films on one card, you will have drawings and specifications on one subject, taken over a period of time, scattered over numerous rolls of film making the assembling of the various drawings impossible or, at least, very time consuming. How long do you think your engineers will stand for leaving their drawing boards to crowd around a viewer in an effort to decipher an obscure image, to say nothing of the time lost while they are waiting for films to be changed so that they can see other drawings that are on different reels of film? Engineers can be temperamental enough under normal conditions; but under these conditions they can become impossible. If the element of time is critical, as in some emergency, the explosion of feelings will be heard all over your plant. Without costly reproduction equipment, drawings on film cannot be taken back to the drawing board to be mulled over or be taken home to be worked on. Even with a large supply of readers, costing $500 to $750 apiece, this disadvantage can become a real problem, particularly in a large organization.

Another disadvantage is that drawings are usually filmed separately from their supporting documents. If you need the two together for an inspection, can you imagine the complications that may arise? It is not exaggerating in the least to say that 2 or 3 hours may be spent in finding the various rolls of film, threading them into a reader, finding the frames you want, and extracting the

tidbits of information you need. There are some much easier answers to all of this that will be discussed later.

Many of the situations I have described may arise where almost any type of business records is concerned. For instance, suppose you wish to make some changes or insert some additional papers in your files in relation to the material already on film. Do you put it on a fresh roll of film, cross index it and add one more item to the list of rolls to be consulted; or do you cut your film and splice your additions into the existing roll? Either method is expensive and, more important, time consuming and cumbersome. In defense industries where any one part of an assembly may be modified frequently, the problem can reach fantastic proportions, especially when you consider the ease of dropping all changes and correspondence into one file folder and having it all available in a matter of minutes to be referred to, carried to your desk, routed through interested hands, duplicated, and refiled. Incidentally, the chief engineer's "hen scratchings" are much easier to decipher in the original than they are on film.

Let us consider the physical operation for a moment. If you want a file in the original form, a record clerk walks to the file drawer, pulls the whole file, and hands it to you. A matter of minutes. If you want to see a film, you go to the index, find the number of the roll you want, go to the storage cabinet, find the film or films, and proceed to the reader with it. You open the carton, being careful not to get it mixed with other cartons all looking alike, take out the can, open the can, take out the film, thread the film on the reader and start looking. With 600 to 6,000 or more frames on a roll, all of which look alike to the naked eye, finding the proper frame, despite the best indexes yet devised, can be a time-consuming process, especially if your documents don't run in some easily followed sequence. If you have to refer to several rolls of film to get a complete picture, the time element can be very important regardless of the cost of such an operation.

When you are through with the film, it must be removed from the machine, replaced in the can, which is then replaced in its carton, which is then replaced in its proper spot. If several cartons of film are out at one time, the danger of putting the film in the wrong can or the can in the wrong carton is not to be treated lightly. Compare all of this with thumbing through a file, no matter how voluminous, to find the documents you want at a glance and then tossing it into your "out" basket to be refiled.

Some types of business raise other problems. For instance, con-

sider a legal firm whose files may include things that cannot be easily filmed, such as bound volumes (which can be filmed only with a flatbed camera equipped with a book cradle), exhibits, and sound recordings. The necessity of adding documents to a roll of film is especially recurrent in legal firms, and in some of the large firms I've seen using film this involves prohibitive cost.

Look at some other actual situations. A large aircraft parts company in Glendale bought one machine when it should have had possibly six. It was used for a month and now it gathers dust. Actually, as in many other cases, the company was generating paper faster than it could be filmed. This happens surprisingly often. An air-freight company in North Hollywood bought a filming machine and then tried to decide how it was going to be used. One problem after another arose and to date — 3 years later — not one sheet of film has been fed into it. This equipment is not cheap — $5,000 to $7,500 [3] apiece for a not too elaborate filmer. Other instances have come to light — one in which some executive became sold on filming and is keeping it going no matter what. The record people of his company film everything they can get their hands on, ignoring costs and serviceability rather than admitting to the rest of the company, though they did to me, that they had made a mistake in buying the program in the first place.

Another difficulty to be considered, which is usually not even mentioned but which is rather prevalent in some industries, is the need for a constant, even supply of current to the machine. Filming leaves very little room for error, and a weakening of the current or a surge of it during the filming can make an image useless. In some localities or in large manufacturing plants you should consider this problem seriously.

Often the records you desire to film are in such constant use that the people involved refuse to part with them long enough to get them filmed. Don't pass over this lightly. It takes time to assemble the documents, arrange them in proper order for filming, extract staples, repair tears, code colors, film the papers, and return them in usable order to their source. You are going to be intruding on someone else's sacred domain. Taking the camera to the records rather than bringing the records to the camera is often impossible.

An interesting group of cases was that of several small companies that turned to outside service companies for their filming. They did this to save the cost of buying their own equipment; or,

[3] [*Editor's note*: The price here given probably is for a 70 mm. or larger flat-bed camera. The 35 mm. flatbed cameras in the National Archives cost about $2,400.]

more commonly, they planned to do so until the thought tardily occurred to them that they would have to spend $500 to $750 for a reader.

One irate chief engineer showed me a sizable amount of film on which his drawings had been copied as part of a vital record program. Another obvious factor had been overlooked. It developed that his drawings were in many colors, each color having its separate significance. Now there is a very time-consuming process of coding the colors for filming; this is necessary since everything on film shows up in black and white or different shades of grey. In this case, no one thought of it, and the film salesman hadn't touched on it. In any event, the drawings were meaningless without the colors.

There are perhaps many other situations in which some essential details will not show on film. One good example is the case of embossed legal seals. A somewhat sloppy and rarely satisfactory method of showing such seals is to rub the broad side of a pencil back and forth across them to highlight them for filming.

The mechanical problems involved in preparing records for filming make considerable work for your already shorthanded staff. Costs have often been calculated on the basis of so many dollars per 1,000 frames. Here again, something is almost always passed over lightly as inconsequential and as something you can do in your "spare time." You first have to be sure your files are in complete and proper order. The file folders will then be taken individually, sometimes a considerable distance, to the filming location. Then someone, usually a girl, will open each folder and remove staples, clips, metal fasteners, and pins. Each piece of paper must be checked to smooth out the dog ears and folded sheets, torn places must be repaired with transparent tape, and important colors must be coded. It is generally accepted that the cost of these preliminary steps usually *at least* equals the cost of the filming and the film combined.

Some documents, such as time cards, lend themselves to filming rather easily. But generally speaking, the average file consists of an assortment of documents. Some need to be filmed on both sides. If all of them do, this is easily provided for, but if only an occasional one does, the process is very time consuming. When you have a variety of materials to photograph, including papers of different reflective qualities, different colored inks or the like, the operator must make constant simple adjustments that slow down the operation until the operator gets bored and suddenly the filming speeds up. The result is no joke.

After being filmed, the files are generally stacked away rather haphazardly to await the return of the film. When it arrives, it must be inspected by a competent official of the firm. This close, thorough scrutiny is very important, very slow, and very boring so that eventually the inspection receives progressively less attention until it is neglected entirely or turned over to some junior clerk. The result is that many companies aren't in a position to state positively that they have honest, legible copies of their records. Suppose you consider the experience of one Los Angeles financial firm that filmed 2,300,000 documents and carefully inspected the finished product. As a result they had to find and retake 35,000 documents. This finding and retaking cost more than the original run. When one considers the task of incorporating the reruns into the original film rolls, one may well become discouraged.

On the basis of the knowledge and, in some cases, just a "feeling" that some officials have, many companies refuse to discard the source documents and keep both film and paper. This situation may change when and if more persons acquire confidence in microfilming.

The legality of microfilm is pretty well established, though actually to date no major case has been tried where the authenticity of the film has been challenged. One good classic case may upset this legal acceptance completely. Some judges retain their prerogative to decide just what they will accept as evidence before their particular courts. If you encounter one who has had a bad experience with film, he may reject it as primary evidence.

Another danger, at least, can be obviated at little extra expense; that is the danger of losing the microfilm through some accident. When a consulting firm was called in to reconstruct the records of the city of Detroit after a serious fire, they were able to reconstruct all the original paper documents, but all the microfilm was destroyed completely. Copies of the film should have been stored at another and distant location.

You will be told that film is very durable and could last for 500 years. At the same time, the film producers will furnish a set of specifications for film storage that will scare you. For instance, an excess of moisture will ruin the film by sweating or mold, whereas a very cold or dry atmosphere will cause the film to become brittle. If the film is kept in a safe or vault of variable temperature, a slight distortion will occur and ruin the film completely. There are also enough instances of film being mislaid or stolen to make this a problem worthy of consideration. The answer to most of these problems is merely to have another copy of the film stored elsewhere. This

is an additional but minor expense. If you want to film for security purposes and keep the originals to work with, they should be kept at widely separated points, not in the same plant. The National Fire Protection Association has published a fairly complete and authoritative pamphlet entitled "Protection of Records" (Boston, 1947), which describes the disastrous effect of fire and heat on acetate film.

The filming equipment companies are reaping a rich harvest as a result of the possibility of atomic bombs destroying local records. They have also developed very expensive duplicating equipment to be kept at remote inland points in case of a major catastrophe. The telephone company has an excellent program along these lines; and in an operation such as theirs, which is company owned and operated, it will probably work nicely. Some facts, however, were developed on this subject in a meeting held a little while ago in San Francisco. The speaker was one of the owners of an elaborate hole in the ground for the storage of film and valuable documents. He said they were in the process of installing an $80,000 reproduction machine for the benefit of their clients. A representative of one of the country's largest insurance companies pointed out that the capability of the machine, if it worked 24 hours a day for 434 days would barely suffice to duplicate his own company's film. Where would that leave the other clients? Then too, there is the obvious possibility that in the event of a great catastrophe, the Government might commandeer the equipment.

Filming at best should be tightly controlled and strictly supervised to prevent indiscriminate reproduction. If one hasn't a firm and well developed record management program, this is rather difficult. And, frankly, in my wanderings, I find that comparatively few concerns have really complete record management programs. This is not a reflection on them because record management is still too new a field, and management has to take first things first — the production of goods and services. With the prevalent shortage of competent junior executives, the record program has often to be postponed.

Let us look at your problem as it now stands. You want record controls, vital record programs, and space and equipment recovery. You will have several requirements — low cost, flexibility, ability to find what you want and read it when you get it, ease of duplication, rapid reference service, security, privacy, and protection from fire and water damage. Let us see how you can get all of these requirements immediately, in most cases completely, and at little expense.

The Federal Government has been the real pioneer in the field of developing low cost record centers. These have resulted in fantastic savings to the taxpayers. Many large firms such as U. S. Steel, Ford, DuPont, Richfield Oil, Lockheed Aircraft, Hughes Aircraft, Pacific Telephone & Telegraph, to name a very few, have developed similar low cost centers. What is good for these firms is readily available to the smallest operator, no matter how limited his holdings, and with comparable savings.

Irving Zitmore of Washington, D. C., who is probably the leading record management consultant in the country, once ran a survey of the microfilming operation of the Federal Government and produced some drastic cutbacks in its filming programs with tremendous resultant savings. He showed quite conclusively that the Federal record centers could handle original documents, with all their advantages over microfilm, for a period up to 70 years for no more than it would cost to film them. Many record officers have shown me that they could use either commercial record center facilities or their own for at least 36 years for what filming would cost. Considering the fact that 95% of your records have a life of less than 10 years, you should investigate these commercial record centers if they are available or give thought to developing them yourself if they are not.

The policy of the Public Records Commission of the State of Vermont, as early as 1954 at least, was to microfilm only permanent records for the purpose of space saving alone. Records to be kept less than 70 years are more economically stored in low-cost record centers.

When I learned of this new policy in Vermont, I went out to investigate and found only one company in all the major cities west of the Mississippi that has developed anything worthy of the name of record centers. This was the Bekins Van and Storage Co. in Los Angeles, which has converted one entire building of 125,000 square feet into a center for over 400 local business firms including a 10,000 square foot record center for the Richfield Oil Co. I understand that the company has started two other similar depositories in Los Angeles and San Francisco and yet others in smaller cities. But so far as I know, it has the only worthwhile operation of its kind in the record management field in the West. Its staff is eager to help anyone interested in record management. It will explain to you how you can throw away files by means of proper retention schedules, or it will help you organize a record center of your own. It apparently does not believe in keeping its trade secrets.

This company has had to compete with microfilming on a cost basis many times and has had to stand some pretty close scrutiny. Actually, the low cost of storage it offers as compared with the cost of microfilming is one of the least important considerations. In addition to solving space problems, the company provides a reference service of great value. When you desire a file or information, you merely telephone the center; and the file will be pulled immediately, read to you over the phone, mailed to you, or forwarded by messenger if time is pressing; or documents will be copied and forwarded — all for less than it would cost you to do it for yourself. If you wish to work directly with the files, as when audits are necessary, you will find convenient desk space and telephone service — all at no cost.

A large aircraft company has leased 12,000 square feet of space in a Bekins record center building, and it was packed solid when I saw it. About 11 girls were working there full time, and the supervisor told me that they had never handled less than 2,500 references a month, together with a phenomenal amount of other record center work. The list of companies who have turned to Bekins for the answer to their needs reads like a Who's Who of California business.

The Bekins people also have some suggestions to offer on the matter of security copies of essential records. They cite several actual cases. In one engineering company, whenever a new drawing, specification, or other vital paper affecting its operation is developed, a copy is mailed in a numbered envelope to the record center, where it is filed in numerical order. This method of security storage has the advantage of keeping a copy of your most essential files immediately available if a disaster occurs, such as your plant burning down. Most filming operations provide only for periodic filming, which means that the protection program always lags behind the creation of important papers. The document storage method, on the other hand, fulfills every need you may have at the lowest possible cost and with the maximum of flexibility.

Another instance is that of a Railway Clerks Federal Credit Union, which instead of microfilming all its essential records, decided merely to mail a summary of its daily activities to the Bekins record center in Phoenix every night. The cost was $1 per month plus the postage, which was negligible. A monthly summary would permit the discarding of the daily reports so that they really would not have to keep more than one month's reports on hand in addition to assorted other vital documents with varying retention periods.

Consider also the case of accounts receivable, whose loss by fire is always a source of concern. How much do you suppose it would cost to mail each day one copy of your invoices to a record center to be kept for say 6 months (which is probably much longer than necessary for most businesses) and then discarded. Most companies could follow the practice of discarding after only a month because their latest invoices cover everything that has gone before, such as part payments or balances unpaid for one reason or another. I was shown the account of one very large company doing just this; its cost was $3 per month. Compare this with what you would pay for accounts receivable insurance, which has some shortcomings though it is excellent coverage.

Many business men of experience have given their opinions on the subject of microfilming. A steel company executive commented:

> It may be much cheaper and easier to store the original record. The cost of preparing, filming, inspecting, and indexing the contents of a four drawer cabinet runs to $80 or more. For $80, the company could store the contents of one cabinet in low cost storage equipment for 53 years in space renting for $1 per square foot.[4]

Another steel company executive was quoted, "It does not pay to microfilm business records when you are concerned only with saving space and equipment. It is cheaper to store the original material in a record center." And an oil company executive said:

> We have discontinued entirely the use of microfilm as a tool in our records control problem, although until a few months ago we microfilmed canceled checks. After extensive cost studies covering records of uniform size and comingled records of various sizes, we found that we could provide the space required for a longer retention period of the original document for less than the cost of microfilming. The original records are easier to locate and use in reference work than the film, which requires the use of a reader, or the expensive re-creation of the documents by use of sensitized paper. Microfilm does offer protection from fire and great savings in space; but, from a cost standpoint based on our own experience, it is not a magic solution for the record problem.

William Benedon of Lockheed Aircraft said "Record maintenance based upon the principles of record center operations provide the best method for keeping records required under a record program. . . . Using microfilm as a space saving device is no longer the cheapest method to accomplish this goal."

An article in a leading business magazine recently described how Monsanto Chemical had improved its record keeping program and,

among other things, how it had abolished a $30,000 microfilming program. And when Wayne County, Michigan, found that some of its microfilm projects were not worth their cost, it cut them back by discontinuing the filming of nine types of records at an annual saving of $2,100. It also saved $6,000 that was going to be spent on filming by merely shortening the retention period of certain records.

[4][*Editor's note*: A point that has not been explicitly made in this paper is that when we compare the relative economy of microfilming and storage we must not leave out of account the interest on the initial investment for microfilming. Interest is a real charge whether we pay it directly on the specific investment or not.]