

# **Techniques for Lightening the Load of Paperwork -Work Simplification and Integrated Systems**

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THE AREA THAT WE ARE GOING TO DISCUSS, that all of you are involved in, is paperwork. Work simplification is an approach to improving that area. Integrated systems properly mechanized should be our objective.

In approaching our subject I think it might be wise if we define paperwork, work simplification, and integrated data processing. A great deal of confusion has developed around these terms. Then, I will try to highlight several major problems involved in paperwork, and finally, see if I can suggest an approach that can be adapted to solving some of those problems.

## **A Few Clarifying Definitions**

*Paperwork* is the recording, storing, analysis, and reporting of information for really only one purpose; that is; to help somebody do his job, and, possibly, do it better. Of course, we are all conscious of the fact that there are government requirements to be met. In every business there is somebody charged with the responsibility of meeting those requirements, filing income tax reports, social security reports, and so on. Paperwork is to help them do their job so that the information will be available and flow to them properly. If the information does not flow properly to those people so that they can do their job, we are going to be in trouble.

In the broad sense, the only excuse for doing all the paperwork is to help somebody do his job, a job that is contributing to the objectives of the organization for which the individual is working. Unfortunately, we have let jobs grow up that do not contribute to that objective, and even improving those jobs, we make it easier to do what is not necessary and tend to perpetuate it.

*Work simplification* originated in 1937 through Allan H. Mogensen and his associates, Dr. Lillian Gilbreth, Professor Irwin Schell of M. I. T. and Professor David Porter of New York University. The phrase was coined by Professor Schell at that first summer conference. It included not only the techniques but, more important, a philosophy of management which recognized the importance and the dignity of the individual. Mogensen defines work simplification as the application of common sense to find better and easier ways of doing a job.

As a definition of work simplification I prefer "a logical, orderly approach to the solution of problems used by everyone to eliminate waste-waste in time, energy, space, equipment, materials, waste of any kind." We can involve the chairman of the board, the president, everybody else down the line in eliminating waste and truly make it a program of participation rather than one of

exploitation, which it becomes when we pattern it only for first line supervisors and workers improving jobs.

*Integrated data processing* is usually interpreted to mean the use of a punched tape generated as a by-product of writing information on a key driven machine, which then may be used to rewrite that information. The punched tape may also be used to generate other media, such as punched cards or magnetic tape, which in turn can actuate various types of machines.

“Common language” has been used to describe the punched tape. This can be misleading. There is no common language for data processing. There are several languages for mechanizing data processing. Today we have the ability to translate from one language to the other, which gives us flexibility that we did not have thirty years ago. We can now use the machines of various manufacturers in a common installation. But we must remember that every time we translate from one medium to another, it is expensive. We are prone to forget that. If we can afford the translation, then we can afford to mix the machines of various manufacturers. This may achieve a degree of flexibility that has not been available until the last few years.

The sound approach is to integrate our systems. Develop the basic systems that will do the job. Start with the recording of the basic information, then develop it progressively to the final reports, and, during the process, taking off the by-products that will be of service to various levels of management. Until we integrate our systems, I think it is costly and wasteful to mechanize it.

### **Paperwork--Means, Not Objective**

The purpose of paperwork should be properly understood. Too often the paperwork becomes the objective, the development of more and better paperwork for the glory of paperwork. Paperwork is only a tool to help accomplish the essential end results of the business organizations. Until we recognize that it should be considered only as a tool, we are going to build empires involved in paperwork which do not contribute to the end results.

First we have the steam shovel approach to improving our paperwork--a real steam shovel. If we look at the end results of a system, the product and the by-products along the way of a given system, and measure them in terms of whether or not they help anybody in any way do the job better, I am convinced we will find that thirty to fifty per cent of the paperwork we are doing today does not measure up.

I was talking to one of the speakers who is going to talk about inventory this afternoon. I asked him: How about cutting out perpetual inventories on most of the things we maintain? He said that at one of their plants they keep records on only 2,000 of 7,000 items which they carry in stock. They have done a job of eliminating non-essential records, records that involve a tremendous amount of work and do not do anybody one bit of good.

Time after time I have worked in organizations where, when they get an order from a customer, they first tell shipping or stock room to ship the goods. Then they post a perpetual inventory record because they know the inventory is not right and they can't depend on it to ship. The record should be correct and used for filling orders or discontinued. With an incorrect record one has to take a physical inventory for asset purposes anyway, and might as well save the cost of keeping the incorrect record.

The profitable approach is to analyze the usage, and figure the cost of keeping the records. A comparison of the values derived from the records against their cost is likely to prove that the perpetual inventory record on many items is not justified. Of course, nobody can afford to run out of stock on items for sale to customers, items for production, maintenance or other service uses. That can be avoided by determining the quantity of the item required to cover a period sufficient to reorder and get delivery of new stock. By boxing, packaging or in any other way segregating that quantity until all other stock of that item has been used, we need never run out of stock. When we open or break into the quantity reserved for the reorder period that should be an automatic signal to purchasing to reorder the established quantity. If the minimum (reorder period quantity) and the maximum (the standard reorder quantity) are competently calculated to cover the demands that might be incurred in any given period, the items should not run out of stock, except for human error or a wide fluctuation in demand. It will happen in rare occasions regardless of the system used. However, for many low cost items, the savings to be derived from this approach to inventory control can be tremendous. The volume of record keeping can be reduced by half to three quarters of the total involved.

It is pretty difficult to figure out the cost of paperwork. It starts when the customer gives you an order and it goes all through your production activities, to research and development, sales accounting, to the general books of account and profit and loss. Paperwork goes from one end of the organization to the other. It is not limited to accounting, or the physical office. Have you any idea what it is costing us nationally? I have had occasion to try to estimate the cost. The best guess I can make is \$90 billion a year. And the best guess I can make as to the waste is at least thirty per cent. If we look at it critically, at least 30 per cent of our paperwork does not measure up as helping anybody to do any job one bit better. Thirty per cent is \$27 billion we are pouring down the drain to do paperwork that is not any good to anybody.

I have on occasion questioned many of the cost records that are kept to tell us by the middle of the next month how bad we did last month. Most of the cost records we keep are not worth the paper they are written on, as far as controlling costs is concerned. They are strictly historical or perhaps hysterical records. Productivity of people doing paperwork is another big element of waste. Studies indicate that they are working at about half their capacity. If they worked at seventy-five per cent, they would be busy, and thus a lot happier. This costs us

another third of the remainder of \$17 billion more waste, making a total of \$44 billion.

I recently heard from a friend who had been promoted to office manager of a branch of a general insurance company about two years ago. There were twenty-seven clerks in the branch when he went there. He worked with these people to improve their paperwork, eliminating what was not essential, improving what was left. They finally got down through normal attrition to sixteen employees handling the improved paperwork. A letter from his manager, who had visited his office, put it this way: In two years they have changed from twenty-seven unhappy employees to sixteen happy employees. When we are doing something worthwhile, when we are busy and accomplishing something, getting results, we get a "kick" out of it. Until we get our people interested and enthusiastic about doing a job, we are not going to get productivity.

People working on a report that they know is not being used have very little opportunity to be enthusiastic about or even have any interest in their job. There is certainly no challenge in producing a report when they know it is going to be filed by the boss' secretary and, apparently, never get to the boss. You can bet that the clerk who produces that report knows it is useless long before the boss realizes it.

Much of the waste in our paperwork consists of reports asked for by an executive years ago for a one-time use, that are still being prepared, distributed and filed indefinitely. I run into this time and again. Some had been going on for ten, even twenty, years before they were recognized as waste. There are other reports which have replaced an existing report, presenting information more effectively. But nobody stops the old report. More unadulterated waste.

There are other areas of waste that are worse than that. They are insidious, because they hide under the guise of legitimacy. One company--a large one--illustrates this point. They had been collecting from their vendors shipping charges that should have been paid by the vendors which the vendors failed to pay. For years they had collected from vendors about \$200,000 a year. Two years ago they decided to find out what it cost them to collect that \$200,000. The analysis showed they were spending two million dollars--ten dollars to save a buck.

United Airlines ran an experiment with T W A and Northwest a couple of years ago. It was reported in the *Journal for Quality Control*. One of the big problems in railroads has always been inter-line settlement of fares, freight charges, claims, etc. The airlines had the same problem. United conceived the idea that sampling ticket sales to determine the inter-line settlement percentages could be faster, cheaper and perhaps more accurate. They conducted an experiment for one year with T W A and Northwest continuing the hundred-percent analysis of tickets and carrying on the sampling procedures simultaneously. At the end of the year they found that the sampling basis produced a savings in cost of the sampling as compared with the hundred-percent analysis was over

\$100,000. The sampling method produced a more useful answer than the hundred-per-cent check.

I have seen so many situations like this that I have almost come to believe it is standard practice in setting up control systems to call them good if they do not cost more than ten dollars to save one. That is an insidious form of waste. We think we are doing well, but we are pouring profits down the drain. We must do something about that.

Another form of insidious waste was in a sales analysis that went to the sales vice president of a large company. It was a 14-inch report on a sheet 10 inches long. Every month the sales manager got 92 pages, tabulated six lines to the inch, a total of 5,500 lines. It was called to my attention to illustrate a comprehensive report.

Later I was talking to the tabulating supervisor. His attitude was that if the sales manager took the time to dig a couple of hundred significant lines out of that report, he did not have time to run the sales department. If he did not dig out the significant lines, then it was a total loss. Either way it was waste. Of course, it was not the tabulating supervisor's job to tell the vice president how to conduct his affairs. And there was no incentive in it anyhow. If the tab supervisor succeeded in cutting out that report and others like it, he would cut down on the equipment he needed, the number of people he supervised, and ultimately on his own importance and pay. While we like to criticise civil service about it, industry still measures the importance of supervisor to a large degree by the number of people supervised, not by the efficiency with which they supervise. When people are producing valueless results like that, how can they be enthusiastic and interested in their jobs, and who can be blamed for lack of interest in the job or lack of production when the brass tolerated that sort of nonsense?

### **Get Rid of Waste, Then Integrate Systems**

We have developed habits of accounting, habits for record keeping, and habits of paperwork. Some office people have developed the habit of trying to solve their paperwork problems through mechanization. They have seen production improved through mechanization. They decide mechanization will solve their problems so they blithely buy the machines that are offered. Many of them fail to realize the extent of the studies made in production to determine the needs and develop the equipment to meet those needs. Production people have been doing this for many years.

Today we have fantastic equipment coming, some of it available, for purpose of data processing. It goes from simple mechanization of an operation through punched tape for mechanically rewriting information to electronic mechanization of whole systems. Today I could type my code number assigned by a vendor, the part number and the quantity that I wanted, send them by wire

to the vendor on the Pacific Coast, and have that impulse automatically move the material off the shelf onto a conveyor which would take it to a shipping point. At the same time that impulse of my number could bring out of memory my name and address and shipping instructions to make a label, automatically attach it to the goods I wanted, and have it ready for the carrier to pick it up. Simultaneously my number could pull out my name and address and billing instructions; the part number would bring out the description of the part, the price, discount, if any, calculate the total, the net, write the invoice, fold it, put it in an envelope, seal it, and have it ready for Uncle Sam to pick up. Simultaneously these impulses could post the inventory, check credit, post accounts receivable and if any went out of limits, start the machinery to correct it.

That can all be done today. We cannot yet afford it. Some of the Armed Services are working with phases of it and making real progress. Industry is approaching the data processing portion primarily. The components are available to do all these things. If we use these fantastic developments for the kind of record keeping we have been doing in the past, we will destroy the value of the equipment, continue a great deal of present waste and likely never get rid of it. I think it is ridiculous to mechanize with this excellent new equipment many of things that are being done in most companies.

What to do about it? First let us get the waste, the water, out of our present systems. That takes an organized approach. We should generate interest among all our people, particularly top management, to eliminate waste, and then integrate our systems. There is not anything new about it. We set up an integrated system for life insurance accounting thirty years ago. We were limited to one manufacturer's equipment, but we put the information in holes in cards when it was generated, and we then had the machines produce the data for every insurance purpose all the way down the line—persistency, mortality, agency compensation, valuations, and so forth. There is nothing new about integrating systems and properly mechanizing them.

We have got to break down the artificial lines in business, recognize that the paperwork goes across the company, disregards department and division lines. To be effective, we must integrate the whole system, not a departmental segment of it. (Departmental improvements have frequently been made to eliminate waste in one area but added much more waste in other areas not considered.) Looking at the whole system is not a revolution, as some people say, but rather a growing up to a realization that each department is part of the company whole and serves best only in relation to the whole.

A central unit into which all information flows and from which all reports emanate in proper form to be used is a first step. If we integrate our systems, we will make eighty per cent of the savings that have been made in the successful computer installations. In almost every situation the analysis indicates that only twenty percent was saved through mechanization.

Second, we should get rid of this massive processing of data reports. Starting with top management, we should plan our work and then report significant deviations. Carrying management report figures to four decimal places is nonsense. When we are dealing with millions of dollars, the pennies, the dollars and even the hundreds are not significant. Of course, in a bank account a sum of a thousand dollars is important to you and me, but for management controls, for trends, we need only significant differences. Sometimes I think an analog computer reading four digits (one tenth of one per cent) would be better for management reports than the digital computer. For manual workers this could be substituting a slide rule for an adding machine. The starting of trends is the important thing, not pennies that have been lost. If in control activities management considers significant deviations and trend indicators, we will save fantastic amounts in the time of top management people that is now wasted wading through the voluminous reports they get, trying to find something significant. This is, perhaps, the biggest waste we have in connection with our present paperwork. We will have to learn how to develop signals which will tell us when things are beginning to go wrong, instead of reports which tell us how bad they were for the last period. We can record the basic data, store it and make the detailed analysis only when it is indicated that it is needed to find out why the signals come up, why something is going wrong. At least half of our data processing can be eliminated in that way.

Third, use the work simplification approach properly developed, not as so frequently aborted. I have written a booklet on the techniques of work simplification, a series of articles that I will be glad to make available, if you would like to have it. I know some of you have used it.

When we recognize that people are important, let them know we recognize it, and they will improve production. The result will be the elimination of waste and improved productivity, with savings—and this should jolt some management people into action—with savings equal to from twenty-five to fifty per cent of the annual profit.

That is available in most companies. I could give you instances where it has been achieved in a matter of two or three years. The situation today is critical. Foreign competition is getting rough in many lines. Automation will not solve our problems. We have been trying that since the war. It has increased costs that helped price us out of markets. The only way we are going to lick the problem is to get our people interested in doing a fair day's work on jobs that are worth doing. Enthusiastic workers will meet any foreign or local competition that can develop.

*U.S. News* some years quoted a trend behind the elections, one particularly significant to me. They asked a mass production worker in Detroit, "Whom did you vote for and why"? The answer was, "All the bosses around here vote Republican, so naturally us guys voted Democrat." It is a fine commentary on American business leadership that the workers should feel they must vote

against the boss. Until we do something about that, develop mutual understanding and confidence, we will continue to be in trouble.

It is not a one-way street. It has got to be give and take between management and labor. Each must earn the understanding and confidence of the other. I think there is a real challenge for each of us to do what we can to help.