

Widening Horizons

By Dr. Lillian Gilbreth

A Presentation at The Ben S. Graham Paperwork Simplification Conference
Seigniory Club, Montebello, Quebec, Canada May, 1958

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Introduction by Ben S. Graham:

We always look forward to the time when Dr. Gilbreth will be with us and give us, from her wealth of experience something we can take away with us - and we're never disappointed. I am not going to dwell on it, but will let Dr. Gilbreth speak for herself. It's always a pleasure to have you with us.

Dr. Lillian Gilbreth:

Thank you very much. It's a great pleasure for me to be here. In the first place I am always delighted to come back to Canada. Of course, I enjoy being with the Grahams, and to meet you and see you in action exchanging experience and making, I am sure, the best possible use of the opportunity to be here with the Grahams and together.

I thought I'd talk a little today about widening horizons, because that would give me an opportunity to say a little about the history of the beginnings of work in this field. Something about what happened today, and also perhaps, a little bit about some of the problems which are challenging us for the future.

The beginnings of work in this field, you know, came about in a very practical way. The pioneers were all, as it happened, engineers, or all mechanical engineers. I sometimes think that was a good thing, because they did speak a common language and it brought them closer together. On the other hand, I sometimes think it was a poor thing, because it gave a good many people the idea that Management and all its divisions really belong in the field of mechanical engineering.

I think it's a special privilege to talk to you who are in Paperwork Simplification because, as I shall try to prove, you have certain direct responsibilities and certain possibilities of being useful in this field, that I think you wouldn't have if you weren't interested in this specialty.

The beginnings of the work were in the factory. The people who were working were all people who were on jobs. It wasn't a matter of developing a philosophy, which of course was the part of it that came later. It was primarily a group of men, who were faced with practical work problems, trying to increase production and at the same time keep people happy and satisfied, who get together to exchange experiences. They had certain assets from the very beginning that seem worth mentioning because their skilled assets today are developing the Management field. The first was a strong feeling for ethics and the necessity for a code of ethics.

Getting together as you do for a week of conferences, you don't have much time nor does there seem much need to develop or talk about codes of ethics. You take it for granted that everybody has them. You know that we could get nowhere without them and that if we do have them, and the groups in which they were, do accept them, then we have a background and support that we might otherwise not have. I think perhaps it is a delusion that you share with all the rest of us who are trying to work in this field, that people who are new to it, especially people in other countries, may feel that we have no great feeling or regard for the human element, or regard for spiritual values, or regard for ethical codes and so on. So we feel it is worthwhile to say we do have this code, a very simple code really, to utilize the resources of nature and of human nature for the benefit of mankind.

You in Canada, and your Engineering Group, have of course a unique, and a very valuable, addition to this field in the iron ring which you give to all your engineers when they have finished their work and before they get their diplomas. Where, in that beautiful ceremony which Rudyard Kipling wrote, they do pledge themselves to a code of standards of the profession, and the other obligations, which mean that they recognize their responsibility not only to accept a code but also to live a code. The fact that the iron ring, which each one wears on the small finger of his right hand, can tell anybody who is curious as to whether he is accepting of this code, and is a very direct evidence of this - and a great advantage. I think I am not wrong in saying that Dr. R. C. Wright, Secretary of this Society, and some of the officers who have been making a trip around the Commonwealth, plan to see if other countries might not like to share this, and in saying that my own country, I feel very sure, is not only happy to have a few members who belong to your iron ring, but also would be very happy if we might have it in our country so that our young people might gain this satisfaction.

The thing I think practically, and on our jobs, we can ask for, is that the Company for whom we work shall have a policy book which really shall state what the beliefs are because, after all, first of all you have beliefs which should be known and understood, and they expect to express themselves in principles, and the principles should express themselves in policy, and the policy should express itself in action. Like ourselves, I am sure, you have trained your young people as they go into business and industry no matter what their background, that it is not only their responsibility, but their privilege to ask of an industry, “do you have a policy book?” and “is it up to date and easily understood and available to everybody”, so that they can make perfectly sure that the things which are promised them will be carried out. Besides that, we have great difficulty when our people go out into a more general job or more specialized job such as Work Simplification in making sure that the promises which are given to them explicitly, or implicitly, when they take a job, are being carried out.

At one of the Universities where I taught, its alumni frequently wrote back or called back to the Dean of Engineering, and said, I was promised this, that, or the other thing, “I was promised a raise of salary at the end of six months, and another interview at the end of a year. I could bear waiting for the salary if necessary, but it seems to me it’s just not ethical for a company not to have the interviews where they could explain why or why they did not”. I am proud to say, the Dean immediately contacted the company and said, that if you do not keep your promises to our students, you need not come back and scout, because we will not welcome you as interviewers and we will not recommend your company. That is the kind of thing I think upon which we must base the kind of work we are doing in work simplification if we are going to have freedom to carry out the things we feel that we’re directed to do.

The second thing on which, from the beginning, we base what we’re doing is a costly universal scientific measure of questioning, and not only the obligation to question, but also the opportunity to question so that our people going out would themselves be able to question the Management, to question the people with whom they work, and the people who are working under them would have the same opportunity to constantly ask these questions. But, we have a nice little four line verse called Serving Men where it says,

I keep six honest serving men
They taught me all I know
Their names are what and why and when
An how and where and who

The necessity of asking these questions over and over again, and asking each one of them, and asking why, is, of course, the most important question of all. This is what the job is – why is it like this? Are they the people who are supposed to do the job? Why? And so on down the line, set by people in varying importance. I don't claim that the pioneers definitely expressed themselves in these terms and feeling, that these two things at least were things upon which they based. But, I do think that they practiced what these two things preached, and that you can now, as you go over the lives of the pioneers, see what has happened in the years down to the present time and that we hope will go on in the future. You will find that the thoughts they developed resulted in that kind of a framework. As to the technical work in this field, a great deal of the technical work still being used today was developed in that time. Take time studies, which you all know, take motion studies, which you all know, take skill studies, which you may not know, under that terminology, but where there were at least emphasis on the human side, and a beginning of utilizing all the psychology and the other sciences among social sciences had to offer.

A question was raised this morning as to how symbols were derived. I can answer at least what symbols were in the field of motion study because I was the first student perhaps, in that field, as my husband developed it, and I know that he was very anxious to invent symbols which would be easily remembered, which would be amusing if possible, and which would be flexible and always with the idea that when anybody did anything in this field he should not only be willing, but hoping, that what he did might be improved upon. I think that's terrifically important. I think we have to insist that ourselves and other people, that as we go along, and as the investigations take place, if everything in the past has proved itself not valid that the new changes have, that we should be willing to say, "well, they served their use, let us file them, and go on with what has been developed". With any innovation we want to be sure that the new is really an improvement.

Once in awhile we do away with the old so completely, that, if we are not especially satisfied with the new, it is not easy to go back and check through with the old to see what happened. Frank used to talk about inventing downward, which I suppose would be opposite of inventing upwards, which would make a change, but it was not for the better, but for the worse. Some of the changes that have been made perhaps might be in that category, but I really do feel, in looking back, that any change was to be welcomed and given every possible opportunity, or you wouldn't have the kind of progress we need.

When it came to the process jobs, they are the tasks that are very different from the ones which you are working on. Their charts consisted of a great large piece of brown paper and a pencil, and you just went around and you made the chart, and as you walked about you had a large number of symbols. There was a large circle for an operation, and a small circle for the move, and if you were doing quantity inspection you had a square, and if you were doing quality inspection you had a diamond, because the diamond stood for quality and it suggests quality, and so on. If you were doing an operation, and you were inspecting for quantity at the same time, if the operation was more important than the inspection, then you put the operation symbol large and put your inspection symbol on the inside, and, contrary, the other way. The advantage of that, of course, was that it immediately led you to see that you might have activity so fused when it came to an operation and a move going on at once, or when you came to an operation and inspection going on at once you see that. And if the inspection was done by looking at it, why then, Frank put an eye in the middle, and if you were doing it by ear, why it was an ear and if as you were doing it, and you thought of more symbols, why you put them in and you developed them that way. And if as you were making your charts you thought about improvements that could be made, then you wrote them all around on the chart and while later on you put it in the file when finished with it you might have a draftsman turn it into something that was useful.

The working chart was always proposed to be so adaptable and adjustable to needs that you could work right on it. There is a little danger, as one gets the more stereotype, that one does not note the improvements at the side or put them on little pieces of paper or they become detached and one has to look back at the origin of the process chart and see not only some of the new things which have come into the process chart since then, but I am perfectly sure that the flexibility that was a part of it, is in the picture. Once in awhile a beautifully drawn and filled in chart is really a handicap, because you find it was done so well that the person who made it, or the person who changes it, just hates to touch it. I was so happy to see Ben go this morning up to the nice printed chart on the blackboard and draw all over it. That's exactly what should happen to charts, they are tools which should be used.

When I was in the Philippines we made a functional chart, and an organization chart, for a faculty at one of the Universities, and I said, "Please do not have this drawn up in finished form". "Please just have it a rough chart which we can put up and urge the various faculty men to make changes on it." You need to know the Philippine mind, it is a perfectionist mind, and so of course the chart came

back a thing of beauty. A classroom would like to put it up on the wall and keep it but that is just what I feared would happen. We would hand a pencil to a man who was looking a bit critical, and say, "will you just step up and redraw" – No, he would not touch the chart. So that one has to keep this idea of a certain amount of stability in the completed record which goes on the file but also a flexibility as the thing is developed.

The second technique, of course, which developed in this field, was the micro-motion technique – the taking and the analyzing of the film. And there again, with time, we have learned certain things which mean that while we look at some of the new procedures and find in certain cases its values, in other cases, perhaps, we lose something we had in the beginning. For example, we make a study of a plant, using the actual worker and the actual teacher because that is what the time study and motion study and skill study work simplification is. But, when it comes to making a film you think that perhaps, for the purposes of the film it would be just as well to get someone with acting experience, and instead of just letting the plant photographer or anybody who has a camera do the job, you want professionals to come in and take pictures with glamour and the Hollywood touch, so that when you get through you have something you can take to a meeting and be very proud of showing. Far be it from me to say that actors and the Hollywood touch don't have a great deal to offer in the field of taking motion pictures, of course they do. But from the standpoint of those who are working in this field, it's the actual people who are doing the job, and it is the actual people who make the recording who are members of the industry. Members of the cast, and the audience, are primarily the group within the plant or the group without the plant who are interested not only in what happened, or what the results were, but are interested in seeing the actual people on the actual job and what they did. To take these, when they are properly taken and the time is recorded, and when you really have the data you need for working out Work Simplification, and then put it painstakingly and carefully on the chart by studying one frame after another and recording it, so that you have the different times of the parts of the body here and the different down times, is a long painful procedure. But when you get all the way through, you have really had an experience in a technique which really is a part of you.

If you think about the time you spent on charts and films and possibly on simo graphs where you watch each pattern of motion, with the way each must work, and can from that get the learning process and get indications of skill and so forth. You might rebel against it, and it might be very well delegated to some nice girl who could spend her time taking it off and then you could go and use

the results in the end - you are only paralleling what really happened from the beginning. There is that same rebellion, and again and again the people, who are going to supervise Work Simplification, to teach it, and train them to be a part of the job, said, "The people I teach will never do all those things", and the answer was "that may be or it may not be, but nothing is going to give you the capacity of knowing all that can be used in this stipulation. Like you, step by step patiently going through what is done". And what do you get when you get all the way through is a fair question? Well, you get something that the people you teach even in a short course will get. You become motion-minded – you get to think in terms of how you can do Work Simplification. How can we get this thing so set up that we can eliminate the unnecessary, that we can work out methods which mean more production with more pay and more satisfaction. As a motion-minded person you see the kind of thing, not only on the job you are assigned to, but on every job, and that, of course, is the thing that you primarily want when you know how to transfer what you have, to people who are going on with getting on the job. When you come to the point that they themselves look at their job, and not only have a desire to simplify in every way they can, but have an idea how to go about it, and know where the resources are, then you really have gotten what you are aiming for. I think it is awfully important that we look about today and see what is happening, to make sure that that is the spirit, at which we go. Now from this, as already discussed this morning, come the various MTM, work factoring and other things which are becoming a part of the picture.

My own connection has been very small with this type of activity. I have tried, wherever I was invited to become some kind of a member of the group who are working, just to show that somebody who has really lived all this time, since the pioneer days, is trying to do what she feels they would do and that is to say we open, we search, we welcome whatever you may do if it is going to make things better in the field in which we are all interested. I do wish that groups would get together, compare their findings, and be willing to say, "With all of us putting our fingers together, the outcome is of such a type". Especially if we look into the spreading of works in this whole field, and all the related fields of Management, geographically, in the different types of industry and in the other parts of the world. It doesn't seem at the present time possible that the MTM, which was mentioned this morning, as the methods engineering council uses it, is not an active factor in this research.

A research group as you know is at the University of Michigan. Mr. Schwab not only agrees with what Mr. Graham said this morning about MTM, but

sometimes there is not discretion in the way in which it is described, also is not active in that group. I think the very promising feature lies in the fact that, Walter Scott, who is the Chief Consultant in Australia, and has a large organization, and spends much time and has sent his men to work in every one of these, plans a research laboratory in Australia where everyone of these new developments will be analyzed, will be traced back to the techniques from which it grew, and where we may have a unified approach as we look at the future. Or perhaps that has been the subject to date, as to what we had, and what the problems are in the development.

Now, for the widening of the horizons. The first one of course is in the field of the geographical expansion. Starting pretty much as you know in this country, this type of work, the whole field of science of Management and Work Simplification, Paperwork Simplification as a part of it, went first to Europe and gradually now is spreading all through the world. You have a very fortunate place in all this because, of course, wherever Work Simplification is done, Paperwork Simplification is a vital part of it. Otherwise, how are you going to keep the records, and how are they going to be of such a type where they can be quickly made serviceable to other people.

From the very beginning, when as you know the work started in the factory, Paperwork Simplification started there too. Because, at that time, I remember when Frank was working in the New England Bus Company which, not only gave him an interesting project manufacture-wise, but gave him space for a laboratory, opportunity to make studies, part of which were done on the job and part in our own laboratory. The entire Taylor system, and all the paperwork involved in the Taylor system, was gone over in the light of time and motion economy, and findings and films, which are now in the library at Purdue University. As Paperwork Simplification which developed, as the Taylor system developed, and which then could be compared with the paperwork going on in other industries where no such work was going on so that wherever this work has gone from the factory, to the office, to the department store which became an enormous field, to agriculture, to the hospitals, the library and the home; wherever it has gone your paperwork has gone with it as a part of the record.

And as this has gone on through these last years all over the world of course the same situation is true. The amazing difference that there will be in some of the European countries, who have gone an enormous pace in this work, and the work in the so called underdeveloped countries where it's just starting, is a test in the usefulness of this work. Take a country for example like – well, take

Formosa for example. When the Japanese left the Island of Formosa they left beautiful buildings and beautiful roads, but absolutely nothing in the way of library equipment, text books or even staff who could take over the work. The time lag, at that time, in getting anything to these new countries so far as the Management work is concerned was very long. In these last years that has become a much shortened process, with many of our teams most of them that go to University, and your team also I know, many of them are able to use the purchasing department of the University from which they come, and that has been a tremendous shortening of the procedure. Only as you have serviced your Universities or we have serviced ours, and to see our paperwork is greatly simplified and that their desire is to move as rapidly as possible rather than to hold on to old procedures and not worry very much about the speed with which things are done. Only somebody who has been sent out from the University, as our people were, to a country like Formosa and tried to go to work without any facilities really can recognize what could have been done with a different approach than with having all these Management facilities available.

The only thing in the library was a large bulletin board and once a day a certain amount of material from newspapers is copied and hung up. The students queued up in line to march up and try to read what was happening. The faculty more or less wrote their own books or remembered (if they were the ones who spoke English) as much as they could and were dependent upon interpreters. When I was there, they had a young interpreter come in and I was to talk on Work Simplification and that type of thing and the interpreter having chatted with me reported back. He spoke perfect English but he didn't understand a word that I was talking about making it very evident that even the beginnings of anything like Work Simplification had not penetrated into thinking sufficient for intelligent young interpreters to know what had developed.

We did find there was a faculty member who understood it, but there was another problem facing him. He would lose face if he became an interpreter and the interpreter feared he would lose his job. So, the faculty man suggested that he, the interpreter and I have a little session every morning in which I would speak and the faculty man would interpret to the interpreter and then in the afternoon the interpreter would interpret to the audience. It is to be hoped that I would remember what I had said in the morning, however, if the interpreter remembered what he was going to say, all the same. Then they approached me – how about having this also translated into Taiwanese as the Taiwanese do not understand Chinese, but I feared by the time we got two more people into the sphere that perhaps nothing that was said would penetrate.

Then a wonderful Chinese woman who had graduated at Cornell and wife of one of the Chief Generals in the Air Force came to visit. She kindly took over the job and I know she was good because I would say perhaps only a few words and she would go on and when I got through they would say to me very kindly you did very well Mrs. Gilbreth, but the interpreter was out of this world. That is exactly what one has to look for, so as to belong and have the background of the group itself who can take over and make the thing important and make it worthwhile.

I can cite you many examples of that sort where you happen to be working in the foreign field. All of these problems require such attention, such interest, such willingness to be flexible, such realization that, after all, it isn't the pattern you use in getting there, it's the fact that you do get there. It reminds me in a way of something that happens very frequently to these people who will say well I'm not a college graduate or, I'm not an engineer, or, I'm not a scientific person, or, I'm not this, that, or the other – I got there the hard way, I try constantly to say I don't think it makes very much difference how you got to the point where you can do this sort of thing except that the more you did yourself, and the less you did the easier way of getting it from other people and the easiest way in spending years at University where all you have to do is really to show the least bit of willingness to breath it in and somebody gives it to you. The important thing is – can you do it, and if you've gotten there the hard way probably your influence and example and sympathy and feeling show the many people in many countries in these days who get everything the hard way, is probably going to be an asset in the situation. The thing which I think we are concerning ourselves with now, very much, is that we think of our own applications as those that are going overseas. Are we really utilizing the applications in the diversified fields which have expanded since the early days as positively as we can? There was, I think, a feeling from the very beginning that what we had should be useful in any field and if the people know how to do it, it should be useful in trying to make the applications in any field. As a matter of fact as we have spread from one of these fields to another as I indicated and finally we have gone into hospitals and into homes and into libraries and into work with the physically disabled we have a fine opportunity from the very beginning. If we trace back, we can see the pioneer sort about that too, and they said, "Let's try this," or did try it but, in many, many cases the work was slowed down, because, it was not realized then that the productivity depended on something more than what we had done within the field of the factory or the office or what not.

There is concern every time with work if you want to look at it from the work standpoint. If it's Work Simplification it can go wherever work is going on, if its Paperwork Simplification, it can go wherever paperwork is going on. And there again, I think, is something that you in Paperwork Simplification can not only do as much as, but perhaps more than, the work which may not be in that field because paperwork on one type of job may be more like paperwork in another type of job that the activity may seem to be from the surface. If I say we have done a lot of work at laundries and so we were able to help you on your laundry in the hospital, the hospital people are very apt to say that we are a hospital and that means that our laundry work has to be done by hospital standards. It is very difficult for us to say "Well are you sure that your standards are any higher than are used outside". You can start in that way, and you are out of the club to begin with. The same thing is true with foods; you can say you have done a lot of handling the foods in other places, why can't we do something in the hospital. The answer is apt to be this is a hospital and you couldn't possibly do anything and yet, when you go to a hospital and you find what the layout is like, and where the food is prepared, so if you tried you couldn't make it any harder to get the food to where it is to be served hot, and so forth, and so on. You just begin to question a little bit whether the differences are not in our favor and not in the hospitals. I have a feeling they have been designed by tough hospital boards or old hospital secretaries who have been retired against their will, who have had suppressed desires all their lives and have said all of my life I have wanted a tower in the middle of the building, so the hospital will have a tower and anybody who goes anywhere will go through the tower. And then another one, who has always wanted a conveyor system very much and never had it as yet, will have a conveyor system right next to the tower and it happens to be between the tower and the food. We will have a conveyor system, and a wonderful conveyor system is there only built really to accommodate the canister which will hold the reports. Nobody ever speaks about changing the type of report; they don't have any Paperwork Simplification people apparently in this hospital. So there are all of the conveyor belts silent, nothing is happening with them and every bit of food comes all the way through in order to be served.

In one of the cities in this country, all of the special diets are being sent out and they are being prepared in a commercial restaurant. One top flight dietician, a hospital dietician, somebody representing the commercial organization and some research people are working on the project. When you talk to the Doctor they say, the quicker we can get away from the bother of having food prepared within the hospital, the happier we'll be. The superintendents, many of them feel the same way. Some of the superintendents feel this is just another conspiracy to get

something away from the superintendent, and we are having difficulty here. But isn't it going to be interesting if, in a comparatively short time, the foods are not going to be prepared, any of it, in hospitals anymore. They may then flatter themselves a little bit perhaps that scientific Management, Work Simplification, and what not, have demonstrated their value. But it seemed to occur to them that they might have taken all these resources within the hospital and perhaps cut out the delivery, and I don't know what, isn't the cause of the situation. But at any rate, I think it very interesting to see how, in many of these fields, what is being done out in the business and industrial world rather than being disregarded as not related to the situation is being incorporated-in, in such a way, that there was more time for the various activities to do the sort of thing which they of course can do better than anything else.

The field of agriculture, strange as it may seem, made a very good start back in 1924, when it had the first management congress. But through the years, both the farm and the home had more or less dropped out of the management picture and even of the Work Simplification picture, until farm and home both had come back to the studies being made of the physically disabled worker. One of the most interesting things about the physically disabled worker and what Work Simplification has done, and I almost hesitate to start this topic because for me it is the greatest interest of anything which has happened in this field. One of the interesting things about it is, that so many of the techniques of the past are being used, but that the very newest techniques, some of which have not yet had a trial period, in business and industry, are being used also. You will remember, of course, that from the early days motion study concerned itself with energy to the extent that revealed the motions of the worker as you studied them, which really were the outward picture of the energy with what was being spent on the work and the time was simply a check through. Incidentally, nor did it expend so much energy. This is the time that was spent and this is what happened. Now, in recent years, the energy expended on the job was human energy has been a matter of increasing attention not only in the design which has been worked on very carefully in a certain Institution in Germany, and some of the institutes in France, and in England, and in the U.S. the Navy has done work, and the Air Corps has done work. But, in the last few years, which you doubtless know, the fatigue laboratory at the DuPont Company in Wilmington has been working on this platform where the worker works and expends energy and where the energy which he spends is being measured and charted as you can see what has happened to the heart and the circulation. The Doctor who heads up the project has spoken to both the mechanical engineers and the Society for the advancement of Management. He and his partner are generously sharing what

they have, and the platform which is some ways like this, but some ways different, has been developed at Purdue University where Dr. Harding of the Agriculture Department is studying the problems of the farmer who has a heart disability. That's very typical of what is happening with the work of the handicapped. The fact is very apparent the damage that can be done by over-exertion, the fact that people who do have physical disability are possessed of a very sympathetic nature and are extremely co-operative, both in willingness to use anything suggested, and to share what they have used with other people. With the result that a field that we could not get much done about has become a field of very rich and stimulating applications when it comes to Work Simplification. Starting, perhaps you know, with the heart group and ever since then the heart association has been most generous in its support of all types of study so that has led to the other groups being formed.

And even working at the University of Connecticut now for several years is a group of homemakers. The first projects were not new but they were new in the fact that they were financed by Mary Switzer of our Department of Health and Welfare, and that every group in the state of Connecticut who had anything to do with people who had physical handicaps were invited to be a part of the planning and all a part of the planning and the way its carried through. And now we have a small research project which is for young mothers of young children most of whom have had polio, but some are accident cases with artificial arms or legs or other accident disablements where they may come in and have their bodies discussed to see what the University is trying to do or where the people in home economics, the extension division, the nurses, the therapy people and the people to whom a person who has had that experience with the field can go right in to their own homes and have better working conditions.

We have been very fortunate in the co-operation we have had with our people who are working in the Work Simplification field. An organization took a beautiful colored film for us, which shows these young homemakers on their outside activities, their community activities, their work with girl scouts and camp fire girls and other groups so eager to read and help. And when we see a woman who is a wheelchair person and we see her troupe of young girls wheel her out to the car and push her into the car and drive her to the beach and pull out the rugs and put her on the rug and dump her in the river so to speak and help to manage all of these things without any feeling of not being a part of the group or being a burden to the group it's a very precious thing. The other film was taken on the campus by the visual aid people and shows these women on

their home jobs. That's a very moving experience to watch that too. It's not a Hollywood film, these are by no means Hollywood actors, but you see at the beginning a young woman who has no disablements. You hear the baby cry and she jumps up and starts the day for the baby, and then you switch over to a young woman who has to wear braces on both legs and her baby cries, screams louder and louder while she has to put on both of her appliances before she can start the day. And then you go from one job to another, from child care to cooking, to laundry, to this, that, and the other thing, and you see with your own eyes what the problems are, and you see with your own eyes what we can do to help them. The clothing people turning out a whole lot of new clothes for young children that they can zip themselves and can be altered very easily. In child care people who have a little room filled with all kinds of nursery equipment and the young men in the industrial engineering department and the men in the management society in Work Simplification come in and use their free time to see how the equipment can be altered and changed so it can be more easily used.

I do not want you to think that I am taking you into some of these developments in order to create your sympathy or even your interest, but what I really try to do is show you how wide the field of application and how useful the work into which you are going is. Of course we all believe we have five areas of interest in our lives – the first one, not always easily remembered, the fact that we have to try to be as decent individuals as we know how to be and that includes trying to improve things for other people. By the way, I don't believe anybody, who doesn't like Work Simplification and thinks it is worthwhile, can go out and say everything there is to say but if he doesn't himself evidence a warm interest, and a desire, and a willingness to use it in his own life he's not going to get very far, and I use "warm interest" to indicate also a warm personality which means that he really wants to share what he has. And the second of course is home and family, and while the needs of the home and the homemaker may not especially appreciate your "wading in" and improving "everything that goes on", if it isn't done very tactfully, there isn't any question that there is an enormous field that can be done right there. Often we say too, something which is a real asset on one's paid job, if one is making everything that has to do with the home of the family, and after all there is very little we do need that isn't tied in in some way to the "tire out" or the intangibles and what you get before you are through.

And then, of course, we believe in the citizenship job and just as engineers may go out and be willing to review the engineer's books in the library or study the town government and so on, so Work Simplification, proving paperwork use, of course, can very often do a wonderful job in their town. As a matter of fact there

is such a group in the town of Bridgeport that went over every activity being done in the city government in the matter of not only money expenditure, energy expenditure but what were the end results done. Then the volunteer job which was already talked about, and then the paid job, and that paid job too, interestingly enough, is developing in the field which started in to be primarily volunteer, because, now we can't get enough people in these fields to take on paid jobs in the hospitals. I am sure that is going to be true of these other new activities as soon as they develop.

As for the future one can more or less predict in this one word "automation" and the challenge that is to us. It is we, after all, who are going to belong to the group who are going to try to see that this wonderful force achieves for the benefit of mankind, and that is both the resources of nature and of human nature. Many in your field will be a part of this activity in many ways I am sure. You carry into that, I am sure also, this feeling that there is something very definite we can do to see that the use that comes on is constructive. After all we're all citizens and we have that responsibility to try to see that the right people get into office, and the right policies are there, to read our papers, and to listen to various radios, look at television get everything we can as citizens. And our own special group, it's not only our opportunity, but it's our responsibility, to look at this and to try to think where we come into the picture. It's complex, it's difficult, it's challenging and it challenges not something that you can put aside, but something that you have to accept. We in this field have to accept our responsibility to do the best we can. I think it will be a stimulating experience and let us hope it will be a successful thing also.

Thank you.