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JOB DESIGN IN THE FEDERAL ESTABLISHMENT: A CASE STUDY

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CENTER FOR QUALITY OF WORKING LIFE,
Institute of Industrial Relations (Los Angeles)
University of California,
Los Angeles, 90024
(213) 825-8862, 63

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by:

James C. Taylor

Center For Quality Of Working Life
Institute Of Industrial Relations
University of California
Los Angeles, CA 90024

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Summary

In the early months of 1973 the UCLA program for Quality of Working Life undertook to assist in the analysis and design of jobs and work in the San Francisco Program Center of the Social Security Administration's Bureau of Retirement and Survivor's Insurance. The process of obtaining sanction for this analysis and redesign project was clearly a most important activity of the early months of the project. Even as the analysis phase began, the sanctioning and ownership issues continued, and an inability to resolve them satisfactorily was eventually responsible for the termination of the project.

Background 1973

In general, the federal government wanted to encourage more activities to impact on productivity and the quality of working life within their own offices. However, there was little interest in the federal establishment in general concerning the issue of what to do in the event a given work redesign experiment succeeded. There was no interest in sponsoring a study of the diffusion of experiments which were being initiated mostly by outsiders. The federal agencies responsible for sponsoring such projects seemed to be saying that they could take care of the internal diffusion themselves.

The San Francisco Program Center had a productivity problem: they were unable to complete their work on time. Their relationship with their union was bad and was getting worse. They were also about to undertake a complicated physical move from downtown San Francisco to a new location in the suburbs. They also were aware of several important technical changes being contemplated by the Bureau in Baltimore (details on the organizational structure, personnel, and technology are described in Appendix A).

We, in turn, had no previous experience working with white-collar government organizations; we looked forward to the opportunity to implement and evaluate the methods of sociotechnical analysis in this setting. We were proposing an analysis and redesign project because we welcomed the opportunity to deal with a computer-oriented white-collar technology, so prominent in public sector service organizations. We felt that the agency's past experience with job enrichment and employee participation would serve as an unfreezing event for the analysis and redesign program we were proposing. We proposed that a small internal team of staff and line employees, trained in sociotechnical methods, undertake the analysis and design of the units doing the primary work of the Program Center -- the authorizing and entitlement approval of survivor, and retirement claims.

The authorization and entitlement work that is done in the Program Center, is classed by computer programs, designed and devised in Baltimore. The work done by the San Francisco Program Center represents only a fraction of the work for the Social Security numbers that were originally initiated in the 14 western states. Most or nearly all the routine work (75 percent of the total work) is now done by the computer. In spite of all of this, however, the central work of the Program Center is the authorization of claims, a skilled task, and the calculation of entitlement, a skilled to semiskilled task that is a career step to claims authorization.

Many of these skilled and semiskilled clerical employees had originally been hired with college degrees. As late as 1968, however, the turnover rate, especially for the post-entitlement group (the semiskilled employees), was as high as 50 percent. People were leaving the Social Security Administration rather than transferring internally. Many of those leaving were college

graduates: the jobs during the following five years were filled from within the Program Center. Using experience rather than education as placement criteria. By 1972, a large proportion of the employees in the Post-Entitlement Branch and, to a lesser extent, in the Authorization Branch were people with less education who had been hired originally for lower level, filing, typing and key-punching tasks, and who had progressed into their higher level jobs.

In late 1972 the Program Center in San Francisco undertook a change from an organization based on ten functional branches into six identical (parallel) units or "modules", each containing all of the necessary functions to complete the authorization and entitlement).

No distinction was made, however, between the products worked on in the six separate modules. Each module was assigned a particular set of Social Security case numbers. This change was introduced relatively painlessly and in a manner which made the change initially reversible.

The new modular structure introduced did not change any of the formal existing lines of authority, but it did necessitate improvising new managerial roles within the new context. This modification has the advantage of providing some flexibility while maintaining substantial stability. Although employees were located in a new organization, they were able to maintain their old supervisory-subordinate relationships intact.

Flexibility was essential to assure easy reversion back to the old functional divisions if the "modules" did not work. At the time our proposal was made, it was uncertain as to whether or not the new design would work. We knew the urgency of continuing the process of change and of developing the organizational redesign to be undertaken by the new modules as quickly as possible. The Program Center was also very aware of this need. We discovered later that top managers in the Program Center felt locked into existing Civil Service job descriptions and requirements. They also felt a sympathy for, if not an actual obligation to be loyal to, a group-work scheme which had been worked up and was being experimented with by the Bureau in the Philadelphia Program Center. This work-team design was subsequently installed in several program centers throughout the country (Ottina, 1975) and was also experimented within the Bureau of District Office Operations (Spencer, 1975; Bowers, Hausser, & Spencer, 1976). This idea involved the further reduction of work unit size and the inclusion of members holding all the jobs required for the process. The groups themselves were conceived as a more or less standard size of 10-15 and were expected to operate in the fixed-job assembly-line fashion of the modules, or the Program Centers themselves. Further, their work would be assigned to them by a centralized processing and dispersement unit. No consideration is given in this work group design to varying the size of the group on the basis of the work it does, or of redividing the work among its members based on either technical or psycho/social considerations.

The Present Study

The Boundaries Proposed. The aim of the present study was to go beyond such simple group designs, if possible, by assessing the requirements of the larger unit, the administration or social system most suited to meet those requirements, and the needs and wants of the employees as well. We, therefore, proposed that the entire structure of the organizational "modules" already in place be used as the starting point for the sociotechnical analysis. Those modules contained nearly all the functional elements necessary for the primary mission of the Program Center. Drawing system boundaries around the modules treats them each as open-sociotechnical systems. They are in commerce with their environment. They take in all raw materials (claims, exisiting records, and special information), utilize a conversion process (programs and procedures), and export the resulting products (payment orders) and services (updated records). Furthermore, the larger social system of managers, supervisors, and nonsupervisory technicians and clerks would be analyzed, using these boundaries, in a way ignored by the initial consideration of individual job or small work-teams. We proposed that designing an organization involves determination of what social system can best handle variances arising from the system inputs and from the technical characteristics of the process. We said that designing an adaptive organization required that the design of the technical system permit the existance of a viable social system. The objective should be to jointly optimize both the technical system and its requirements, and the social system and its requirements.

We proposed to train, to consult with, and to advise an internal group of managers and technical experts appointed by the head of the San Francisco Program Center to act as a sociotechnical design team. We recognized the Program Center's urgency in trying to maintain the temporary and flexible system it had devised for itself. All knew that some sort of permanent design needed to be established quickly. We therefore proposed that the full-time analysis and redesign effort should take no more than four months, and so it did. However, the proposal itself was delayed by at least a month, setting the whole process back and making the timing even more critical.

As described above, the design team, comprising two staff systems and procedures specialists and a line manager was appointed by the regional manager. Training of that team was undertaken by the UCLA Quality of Working Life Program, and the analysis begun. The analysis by the team itself lasted three months. The design phase, which included several additional management members, required an additional month.

General Outcomes of the Study. We learned in the course of this study that white-collar factories do indeed exist and that the Program Center in San Francisco was an archetypical white-collar factory. We also learned that sociotechnical analysis could be applied to white-collar office settings, and that sociotechnical concepts could be used by white-collar employees, particularly staff specialists and managers.

The analysis undertaken by the design team was of high quality and provided a good approach to administrative and organizational design. It was structured along the lines of other formal sociotechnical analyses (c.f. Taylor, 1975). In comparison with other organizational design programs undertaken by the Social Security Administration and by other white-collar firms, this work system design using sociotechnical principles provided a viable alternative to individual job design programs using work teams as a programmatic solution.

These conclusions, however, must remain as rational statements, for the empirical outcomes were never tested. The remainder of this paper reports the results of the sociotechnical analysis and of the design effort. It must conclude with that, since the design results were never implemented.

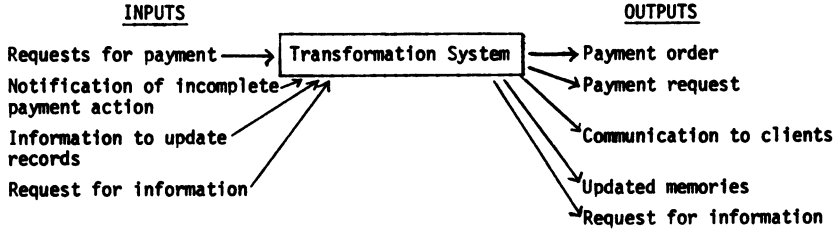
Results of the Analyses

Technical Analysis. The technical analysis revealed first of all, that in comparison with manufacturing and industrial organizations, the technology in the San Francisco Program Center was very simple. However, the bewildering complexity of such a technology is also a reality. This complexity is a function of a large number of specifications and procedures required to handle the variety of exceptions involved in the simple technical conversion process.

If, on the one hand, the Program Center can be seen as simply a means for converting a request for payment on the part of a retiree or survivor's beneficiary into an approved government check to that beneficiary from the Treasury Department, then the technology is a very simple one. If we ignore for a moment the technical processes themselves and concentrate first on the inputs and outputs to the technology, then much simplification is obtained. Figure 1 shows the inputs and outputs of the Program Center's technical system. Although the inputs shown in Figure 1 are somewhat more complex than were payment requests, these complexities are mainly involved in records maintenance. If, however, we consider the variety of legislation and the

Figure 1

The Technical System in the San Francisco Program Center, depicted in terms in Inputs and Outputs



variety of control procedures necessarily to make certain that a beneficiary received only what he or she is entitled to, then we could see a very complicated system.

The people inside that system describing that technology to outsiders tended to see their jobs as suboptimal. It was very difficult for an employee in the Program Center to describe his or her part in the whole process in a way that was clear to those outside.

Furthermore, we found, contrary to management opinion, the employees in the Program Center did not see themselves as primarily serving the beneficiary. Rather, they frequently saw their function to be the recovering of overpayments and incorrect payments to beneficiaries. Employees in the Program Center would like to see themselves as serving the public and helping beneficiaries; in reality they frequently saw themselves dunning their neighbors for overpayments.

Employees in this payment center tended to see the work they did as "for the computer", or "for the files", rather than for beneficiaries as people. The initial view of the technology was either of a confusing welter of rules, abbreviations, and acronymns, of people pushing paper and calling it something that could not be understood by itself; or of a picture of Charlie Chaplin's "Modern Times", with the employee being seen as a victim of the big machine, a part of a technical system set up for some higher purpose.

As mentioned above, prior to 1972, the organization was administratively structured into ten separate functions in three general systems. In 1972 the "modular" structure was introduced as a way of breaking the Program Center into six equal, and parallel parts. The modular organization design involved all ten of these functions in each large module of approximately 200 people each.

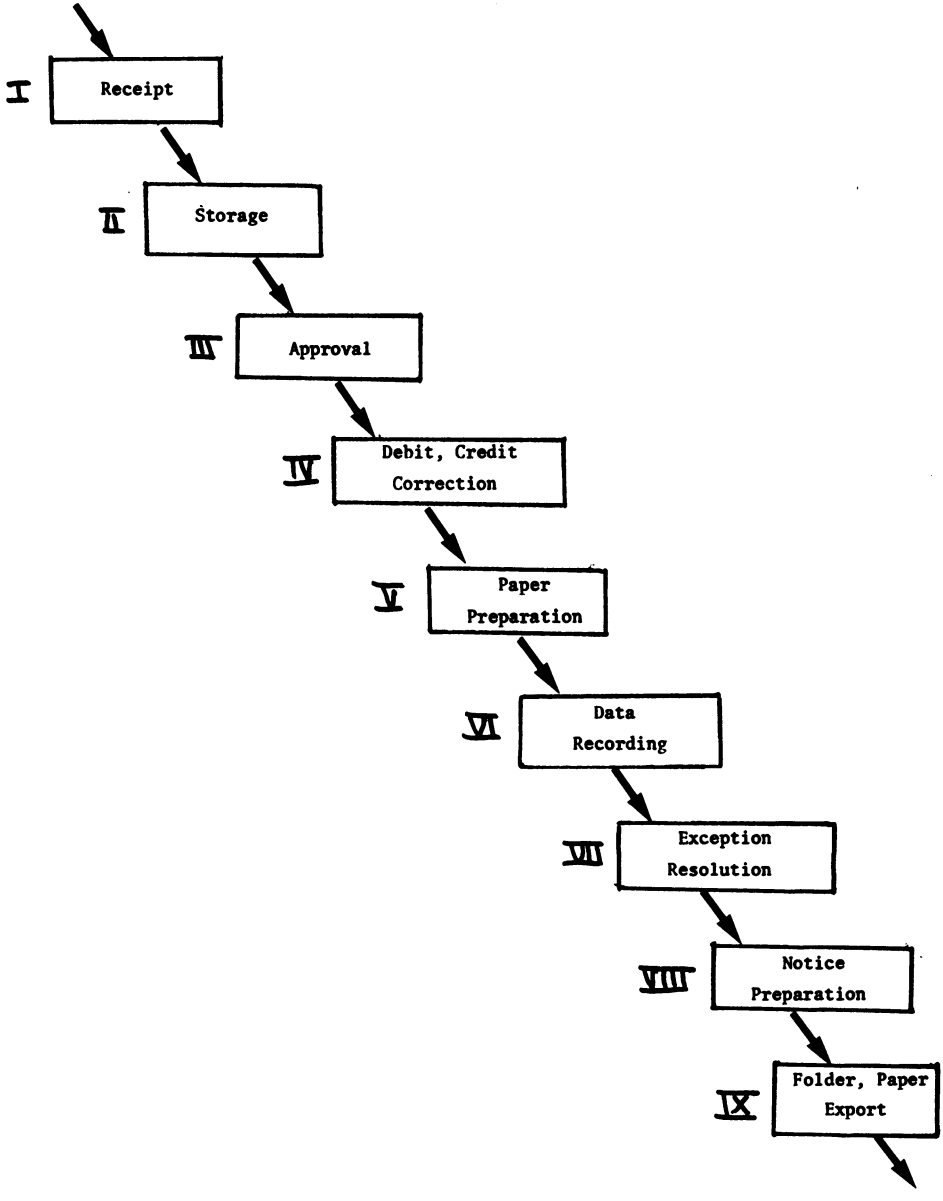
Having these ten functions and maintaining their identity within the module was a trap in which the organization, found itself when describing its technology in 1973. Instead of describing the conversion operations as changes in the input to become the product or output, the conversion operations tended to be described as one of the ten functions as activities undertaken by people. For example, "filing" (for "record maintenance") or "typing", or "post-entitlement activities", or "recovery activities".

That these functions were inventions by the original administrative designers of the system was something that the people within the system were both unaware of and unconcerned with. We, therefore, found that introducing the concept of "technical unit operations" (defined as identifiable state changes in the products being converted) was a useful aspect of the technical analysis.

Identification of Unit Operations. The technical system originally described in terms of ten functions was, following the technical analysis, perceived as a process involving nine unit operations. These unit operations

Figure 2

Processing Module Unit Operations



reflect the conversion operation of the module organization as defined. Figure 2 presents the unit operations determined by the design team. This technical analysis deals with the state changes in the four sorts of inputs (requests for payment, notification of incomplete payment, information to update records, and requests for information) either to the system of computer plus employees, or employees alone.

The first unit operation was "receipt" (see Figure 2). In the first unit operation, information of one of the four input types comes into the main control of the module. This operation included sorting by priority and location, assigning priority codes, and making the information ready for another unit operation either inside or outside of the module. Although the medium for this information are memos or files for the employees, they can also be cards or magnetic tape for the computer.

The second unit operation was "storage"; it may or may not involve every case coming into "receipt". This operation involved holding the information (folders or paper) in a temporary backlog, working, or holding file. The information coming into the module were associated with other information needed to process, and the complete job file was ready for the next unit operation, once again, either inside or outside the module.

The third unit operation was "approval". This unit operation was the central one in the module function. The computer, or a clerical employee, skilled or unskilled, had to approve or deny the input request.

If approval was not given, then this unit operation could result either in a denial, or in a request for additional information. If approval was a change undertaken in the input, then it could be a physical step, such as the completion of special forms, or signature required to authorize checks from the Treasury Department, or to initiate continuation of processing of the case through the computer system. It could be a mental step taken by a clerk or a benefit authorizer prior to calculating the actual amount of the award to be made. Further, it could also be an internal (mental) decision to correct any item of information in the file. Finally, this unit operation included the step required to notify the beneficiary of action taken. Following the approval unit operation, the request was ready for the next unit operation.

The fourth unit operation was "debit, credit, and correction". In this unit operation the requests for payment which had been approved were summarized to implement the approval decision made. This unit operation summarized and calculated entitlement (the amount of the award) for authorization decisions made in the module, decisions made in the routinized Claims Clearance Unit (located elsewhere in the Program Center), and some of the decisions made by the computer program. Once the fourth unit operation was completed, the request for payment could be processed back into the computer memory system.

These four unit operations (I-IV), plus a fifth (IX) cover all technical operations from the time a request is received from the district offices (the so-called ten functions), without recourse to specifying procedures or tools.

These five unit operations can be done by either the computer, the employees, or both. They describe state changes in the input as information without regard to a particular medium.

Since the Program Center itself was in part a control function for the computer, it handled exceptions to the computer programs as well as maintaining the physical paper files that were duplicated in computer memories. The additional unit operations (V-VIII) are distinguished by being treated by employees alone; U/O V, VI, VIII deal with hard copy media such as letters, memos and file folders, and U/O VII (exceptions to the computer process) which by definition is treated by employees.

The fifth unit operation, "paper preparation", was actually a part of the maintenance of the physical files. Paper preparation included stripping, batching, blocking, and routing of forms dispatched from the technical or clerical areas in the Program Center.

The sixth unit operation, "data recording", included the recording the authorization and entitlement decisions in the files, and the transfer of similar information from paper copies and forms to the computer itself by keyplex or key punch machines.

The seventh unit operation was "exception resolution". In this unit operation, all exceptions originating from "debits, credits, and corrections", whether introduced by modular or nonmodular components, were corrected and reentered into the computer. In this unit operation, computer rejects dealing with the calculation or summarization of awards to be made to beneficiaries were corrected.

The eighth unit operation was "notice preparation", preparing letters or memoranda to the requesting beneficiary.

The final and ninth unit operation was the "export" of information (including folders or papers) from the system.

Identification of Key Variances. After the unit operations were identified, the design team created a list of "variances" for each. Variances in this context followed conventional practice for sociotechnical analyses (Davis and Englestad, 1968; Taylor, 1975): they represented a manifestation of deviations from some norm or standard condition of the material being converted. These variances can be either deviations imported into the unit operation as a part of the input, or from a prior unit operation; or they can result from the normal operations of the conversion process of the unit operation at hand.

Although problems are usually variances, all variances need not be problems. All variances, however, if eliminated, controlled to a constant condition, or made totally predictable, would improve the technical process under examination.

The resulting list comprised 96 separate variances identified within the nine unit operations. Of these 96, however, a great many were determined to be either unimportant by themselves or were well-controlled by the system.

Three general types of important and interrelated variances could be summarized from this listing. The first was incorrect or absent routing of folders from one point in the technical process to another. Most frequently identified was the absence of routing from the "approval" unit operation (U/O III) to subsequent steps. This incorrect routing often resulted in real problems later on.

A second general type of variance was the absence of correct file information and up-to-date file information in the master beneficiary record files. This variance ranged from the absence of something unimportant for the purposes of the summary, to the absence of an item of information absolutely essential either for approving an award or calculating the entitlement approved.

The third general type of variance identified dealt with incorrect procedures, especially procedures which combined paragraphs for letters notifying beneficiaries of actions taken, or interface procedures involving direct clerical input of cases to the computer.

The design team felt that control of these three general types of variances were the most important ones in the module. However, they felt that these variances by themselves did not create a big problem and were not directly related to the problem of delays, low productivity and absenteeism the Program Center was experiencing at that time.

Productivity in the center was primarily a matter of moving the cases through the Program Center as quickly as possible. Initially, before the move to modular organization, there had been a single waiting line for all cases processed by the Program Center. The new modular organization divided the Program Center into six equal parts. Therefore, the waiting line for a request for payment would be only one-sixth the length of the previous single line. However, some four to six months following the introduction of the modular organization, productivity still lagged behind expectations. Completion time and waiting time were quite long. Instead of being processed in a matter of days, cases were waiting as long as several weeks to be processed. The analysis of the variances undertaken by the design team did not suggest that this long delay in case processing could be due to any of the technical variances identified.

Incorrect routing could stall a case, and in some cases create real delays. However, the other two variances (correctness and availability of current information in a file and improper procedures) largely assisted the quality of the processing; were later returned for reprocessing. However, these problems were not felt to be directly contributing to the delays.

One input variance was that of specialized cases outside the computer program capability which could not be worked by all employees. This variety was staggering and the direct effects on the service time were unknown. It was clear, however, as will be shown below, that the manner in which this variance was absorbed (controlled) by employees, affected not only those

doing the work at any point (but in particular in post entitlement), but also others who were touched only indirectly. Although some quarrel could be had with the design of the technical system, the basic productivity problem of delays in cases was not felt to be a technical problem.

In addition to being useful for describing the system, the technical analysis was also useful in identifying that the technology was not centrally involved in the productivity problems and that the control of variances identified would not result in productivity increases in the unit under investigation. The technical analysis did take a long time and was complicated and difficult for the design team to understand. Once they felt they had the idea of a unit operation and could use that concept for analyzing the system, there were still problems in identifying the variances and the underlying technology of the module as separate from the computer. It was only toward the end of the design process that everyone involved could agree that the module operation technology was more one of handling cases the computer could not handle, than of authorizing payments.

A bit of historical background will serve to penetrate this distinction between Program Center (module) and computer, subtly teased from the technical analysis. In 1950 the Program Center had manually and individually approved, authorized, summarized, and calculated the award to all the beneficiaries in their files; by 1970 the same number of employees was ostensibly responsible for a far greater number of files. However, the computer was automatically handling the payment authorization, calculation, summarization, and notification for 75 percent of the requests for payments. By 1970 the Program Center had become a service unit to its computer.

The Program Center could be seen either as using the computer to authorize and further handle the large number of requests for payment for an increasingly complex set of awards; or conversely, the Program Center could be seen as serving the computer by handling the complex cases the computer could not handle. Since the computer and its programmers remained in Baltimore, as a line organization, the San Francisco employees could hardly see the computer as a service to them. The social system analysis described in the following section casts additional light on this question. It is our conclusion, as it was the conclusion of the design team, that the Program Center actually filled that latter function. Rather than using the computer to serve its set of beneficiaries, the Program Center had become in fact the computer's manual exception-processing unit. It was in fact, a very small human piece of a very large automatic computerized processing system. The "ripple" effects of this sociotechnical relationship were widespread.

Social System Analysis

Following the technical system analysis and its report to the top management of the Program Center, the design team and Quality of Working Life program representatives from UCLA undertook a series of interviews with employees in

the Program Center. They attempted to determine individual employees' perceptions and feelings about the work itself, the Program Center and their place in it, and the social relationships among people undertaken in order to facilitate the work.

Seven interviewers conducted 150 interviews during the one-month period. Of these interviewers, six were from the UCLA Quality of Working Life program and one was a member of the design team.

The respondents for the interviews were selected to represent a cross-section of Program Center employees. There was no attempt to sample the entire staff organization. Employees in the modules themselves were especially selected for interviews. The operation or line organization, particularly that represented in the modular organizations, was clearly the current focus of concern and attention to the study at hand.

The sampling procedure was ad hoc, with specific hierarchical levels assigned to particular interviewers. The interviewers responsible for a particular level of the employees were free to interview as many of those employees as they could in the time allowed; within that time they were to make certain they obtained representation by payroll, grade, sex, race, job speciality, and module for whom the employee worked.

In general, the modular organization was divided into five levels: managers, technical supervisors, technicians, clerical supervisors and clerks. The samples achieved through the ad hoc process of selecting as many employees as time permitted resulted in 11 managers being interviewed, 21 technical supervisors, 47 technicians, 13 clerical supervisors, and 49 clerks and typists. The total number of refusals for interviews in this case was 15, representing about ten percent of the total number. This refusal rate was not considered too serious.

We also attempted to interview every employee, who, independent of the selection process, expressed an interest in being interviewed, either by contacting the design team directly, or by letting their supervisor know. In all, some 14 such request interviews were conducted. The volunteers seemed to be people who merely wanted to make certain they were not overlooked. Most of these interviews were similar in content to those otherwise selected. With a few major exceptions, the data from these request interviews were included with the total results.

There were qualitative differences in the general tenor of the interviews for at least three general classes. Managers and supervisors tended to limit their observations and concerns to the current changeover from the traditional functional organization to the modular organization. They were reasonably satisfied with their jobs and reasonably satisfied with the authority they had. They did feel that top management made many, if not too many, of the decisions required. But, in general, they were more concerned about getting on with the change at hand and helping it succeed.

The second group, technicians and lower level supervisors, were reasonably articulate and reasonably dissatisfied with the situation at hand. They were more dissatisfied with the promotional system and appraisal system. They were also more concerned and disenchanted with the nature of the work itself. They expressed a great deal of interest and many observations about the change to the modular organization, including the fact that most of them liked the aspect of getting all functions together in one (big) room for the first time. However, most felt that the change did not have the impact to produce a really satisfying work system and that there were many drawbacks with their jobs, work, and relations with others on which the module arrangement did not impact. Although they felt it was too large to have any sense of social identity, they did feel that the module was good because it provided the possibility to contact other employees in other sections. This was only true to a limited extent for clerical employees, who felt that they still had to contact the higher-grade technical employees through their supervisors.

The third major grouping, the clerical workers, were less articulate. Their complaints and views of the organizational climate were more ambiguous. They tended to respond about the Program Center in general, or perhaps even the Social Security system in general. A few of these clerical people voiced pride in working for the Social Security Administration because it did good things for beneficiaries. An overwhelming majority, however, did not identify with the agency in this way. Instead they saw the Social Security Administration as a good place to work because of the security, benefits, time off for working mothers, etc.

There seemed to be a lack of interest with work on the part of clerical people who saw themselves as high producers but were not recognized for it. They did not identify themselves much with the module but rather with other clerical workers. In physical terms, the modules themselves were set up in such a way that a wall separated the clerical side of the organization from the technical side. This unfortunate fire wall was a feature imposed by city safety requirements. These clerks, the file clerks in particular, sometimes spoke of themselves as outside the module because their efforts to help achieve a module goal were ignored and only the technical people were praised.

There were a variety of observations about the work in this organization. The sentiment was frequently expressed that Civil Service rules provided an uncomfortable paradox: the sort of people who selected jobs in the federal Civil Service were frequently people who wanted the job security of a civil service job; on the other hand, however, many if not most employees (clerks and managers alike) recognized that the Civil Service rules permitted the retention of people who disliked their work and did as little as possible.

Most employees felt that supervision was a matter of treating people as children rather than as adults. Technical employees expressed distress with the individual evaluation system of counting completed cases, especially since the modular system was introduced "in order to build a sense of community."

We discovered in the course of these interviews that this organization has no history of using social relationships to facilitate the work. Since the introduction of the computer in the 1950s, the specialization and fractionization of work in this center has resulted in people working in parallel rather than in a reticular, cooperative fashion. Work was passed forward by clerks who moved from desk to desk carrying the folders from one desk to or from a holding pile to another desk. Merely bringing the employees representing various functions together in modules on the same floor or in the same work space did not guarantee that they would work together. In fact, there was suspicion among some in the design team that the more important relations should be with the programmers in Baltimore, with whom San Francisco employees had no contact at all.

Responses of those who worked in the modules indicated that they did not see the modules as social organizations, that is, organizations which provided them with social support or friendship, etc. Frequently, this was discussed in terms of the modules being too large, too noisy, etc. These were ways of saying that administrative structure and social structure did not match in this case. The modules were seen as places where no one had authority to do anything. People said they stuck their necks out occasionally, and doing so sometimes worked, but these people in the federal agency were not adventurous and did not tend to do this very frequently.

We found that employees and managers alike in the San Francisco Program Center had gone about as far as they could be expected to go alone. The creation of modules did help employees see and understand a larger part of the work process, but without some form of social support mechanism, without some form of organizational goals that people could relate to, and without units that were small enough to actually be a part of, the modules as administrative devices for social support had been used to their fullest within the first several months of their existence.

Few formal work groups had ever been established for the express purpose of jointly doing a job in the Program Center. With the introduction of the modular organization, clusters of employees began to form within the modules. These clusters frequently included the two major types of technical employees, separated perhaps by one pay grade. Work-related contacts between lower graded and higher graded people within the process were also beginning, because of close proximity and the absence of physical barriers between them.

As mentioned above, physical barriers in the form of a firewall between clerical and technical employees did create a considerable inertial force against contact in the modules. However, contact was greater than it had been in the system prior to 1972, with clerical employees being located in one building and technical employees being located in several other buildings scattered throughout San Francisco. Contacts among employees in the new modules were seen as at least neutral and frequently as positive by the individuals involved.

Although the Program Center and its employees had a tradition of arranging individual jobs so that people did not work together, people were not necessarily social isolates in an informal sense. In fact, functional organization before the change to the modular system had provided a good deal of social support for employees within their own work units. The introduction of the modular organizations broke up those friendship relations among people.

Little regard was given to maintaining friendship groups when employees were transferred from their original functional departments to the modules. Although some concern was directly expressed about the dissolution of these extant social systems with the introduction of the module organization, more employees simply expressed a more deep seated distress with their current social isolation. Many of them described their modules as big and lonely places. They referred to themselves as being lonely and in having no friends. They were, in effect, cut adrift and were operating not only as individuals in their job setting but also in regard to supervision and to the appraisal system of the organization itself.

While the functional departments had provided some sense of social support in an informal sense, at least with regard to the appraisal system and to supervision, the experience of employees in the work modules was one of feeling cut adrift. The reaction, as we saw it, was a combination of this social isolation and the emergence of a strong union president, resulting in employees seeking informal social support through the union rather than through their own work system. The union, alone as an institution within the Program Center, was never described in negative terms.

Employees felt that supervision was primarily used for pushing employees toward greater productivity rather for serving or supporting the employees. Many of the physical space arrangements used in the former functional branches had been brought over and were being used in the modular organizations. All of the desks were arranged in long rows, with the supervisor's desk at the back of the room.

Attitudes were reasonably positive toward the managers of the modules. Statements were made that these process managers were in general "nice people", but were seen as reasonably distant and not directly involved in the employees' jobs. Clerical supervisors were seen by their subordinates as not exercising their authority as much as they should. This is a paradox, since the supervisors definitely saw themselves tending more towards managing the personnel parts of the job rather than supervising or having authority over the technical side.

In general, employees reported that supervisors should be resource persons to whom workers could go about complaints, leave, and overtime issues; also supervisors should go to their subordinates to exercise discipline. Employees felt that supervisors unable to solve a subordinate's problem should help the subordinate to find someone else who could. Employees felt, however, that supervisors should not act like parents or treat subordinates like children.

Concern was expressed for more technical competence on the part of supervisors. The employees felt the supervisors should be able to maintain a technical competence commensurate with their own experience and the needs of their subordinates. Except in a few situations where technical employees had clustered together within the modules, the supervisors did not seem to have done anything towards working more with their employees. In general, supervisors were not seen by subordinates in a very positive way.

The technical assistant role was much like that of a working foreman or straw boss. This role was seen by subordinate technicians as providing the technical help and advice which they felt that supervisors ought to exercise. The assistants were seen as the primary source for answering questions and disseminating technical information, as well as for reviewing technicians' work and providing training. We found that the job identification of these technical assistants was usually much stronger than the technicians' identification with the job.

The technical employees did not see themselves as members of a community. In the interviews with technicians we noted an absence of a sense of a home team or of a place to rely on as a social base. We also noticed the absence of any comments or behaviors that would suggest the exercise of peer pressure or peer support. We found that technicians did not perceive themselves as having influence in the organization. In fact, there was a pervasive sense of powerlessness. These employees did not see many effective ways of cushioning the impact of what seemed to be a monolithic organization.

The Analysis of Individual Reactions to the Jobs

In addition to information regarding the social interactions required at work in the Program Center, the interviews also obtained respondent information regarding the jobs and work. Each respondent was asked by the interviewer to describe the day-to-day activities that made up the job. The respondent was also encouraged to elaborate on details, complaints, and satisfactions with those work day activities.

The work itself, in both the clerical and technical areas, was frequently characterized as repetition of tedious and monotonous detail. This was especially true of the work of the post-entitlement authorizers (or "benefit authorizers"), who calculated the actual amount of the reward approved by the claim's authorizer. It was at the level of benefit authorizer that the work was particularly characterized as at once too monotonous in its sameness, and too complicated because of minor but critical differences among the cases, as well as ever-changing details in the procedures and regulations. These technical variances were absorbed by employees' ability to shift from one case to another without supervision.

The computer had gradually become responsible for handling more and more simple cases, leaving the Program Center employees only the most difficult

cases. The complexity, however, lay in the identification and application of a vast number of continually changing procedures, in the number of calculations to be made, and in the details of the forms completion itself. This complexity for benefit authorizers (and to a smaller extent for claims authorizers) resulted in two different reactions. To a relatively small number of technical people, the work was satisfying. If they were able to do it right, they could obtain satisfaction from doing so. For a vast majority on the other hand, the reaction was frustration. These were people who said that they did not know if they were right or wrong. The absence of feedback was something they continually mentioned. They did not fully understand the rules, procedures, and regulations. They did not feel that the the training was adequate, and they felt that in general the nature of the work was just not the sort that they were good at. There was also comment that no independent thinking was allowed with work like this.

Thus, for a small number of people there was satisfaction from knowing these complicated jobs and doing them well. For the others there was frustration with the particular demands of complexity, together with the tedium and monotony from the sameness of the cases.

There were also comments that the paternal type of supervision in the modules was not suitable. A frequent comment was that the only way to know if one was doing a good job was to have a high case count. Employees knew that there were a variety of reasons for having a high number of cases or a low number. They volunteered that the monotonous sameness of the work was a real feature, but that the cases would differ one from another in terms of the amount of time they took to determine which particular rule or regulation would apply. The reaction of most employees to the work was "We have to get it out." They saw quality as sacrificed to quantity, and they were given little reason to be interested in high-quality performance.

The primary organizational orientation to the quantity of work produced was sustained by at least two concurrent aspects of the work life in the Program Center.

First there was a remarkable absence of identification with an end product, or outcome. The typical employee performed a limited set of the total actions necessary to process a case. In addition, he or she was not aware of the final result of those actions: a check was sent by the Treasury Department; the evidence of completed action was filed away by another small group of employees; and the beneficiary was remote from the Program Center. Organizational or modular measures of effectiveness according to clear and specific criteria were definitely lacking.

Second, the isolation of the Program Center from the beneficiary facilitated the sacrifice of quality to quantity in work. Because of the number of cases processed by each employee and the allocation of activities among employees, there was little possibility for the association of any employee with a given set of beneficiaries. One of the employees interviewed expressed this as

follows: "I am often tempted to say, when I write a letter, 'Dear folder and social security number:'" The influence that the lack of knowledge of the beneficiary had on Program Center activities should not be underestimated. Indeed, it was commonly said that there was a great possibility of errors because of the complexity of the Social Security laws and regulations, and that most often only gross errors were detected and reported by the beneficiaries to the Program Center. Internally, most of the errors detected and rejected by the computer were procedural errors; therefore the question could be raised, which is the "client" -- the beneficiary, or the computer? In fact, some of those interviewed referred to the computer as the taskmaster.

The foregoing discussion highlights the general problem of lack of feedback information on work performance. Furthermore, interviewees said, what feedback there was was usually negative. Clerical and technical employees indicated that only errors or problems were put in their personnel folders; supervisors interviewed tended to confirm this observation. It is significant in this regard that those managers and supervisors who were perceived most positively by employees were also recognized as maintaining active communications with employees.

Frequent mention was made that the good pay and security in the Social Security Administration was one reason for staying. It was also a reason to be angry with other employees who were seen as not working. The comment was made that a lot of people hated their work but did nothing to leave the federal agency. There were complaints that supervisors knew this condition existed but usually did not do anything about it because they felt they would not get the backing of top management.

Promotion and Management. Although most employees were satisfied with the pay and with the security, few were satisfied with the career paths or promotional opportunities in the Program Center. This problem had two very different aspects. In the first place, lower-level people in the organization, although they saw promotional opportunities, saw those opportunities being channeled through the single quite unattractive GS-7 position -- "benefit authorizer". In order to advance to 7 or higher, everyone had to become a "benefit authorizer". The "benefit authorizer", had the job of calculating the actual amount of the award and how it was to be dispersed over a series of monthly payments. This post-entitlement or benefit authorizer's job (GS-7 or 8) was the one most frequently characterized as both overly complicated, and monotonous. The second major problem concerned the subjectivity of the appraisal and promotion system as seen by employees in the agency. These two aspects will be handled separately below.

The "spindle-shaped" promotion path meant that lower-level employees, grades GS-2, 3, 4, 5, and 6, had a reasonably large number of job alternatives. For example, a file clerk, a control clerk, and a pool typist would all be a 2. Unit secretaries, special clerks, and so forth, could be 4,

while clerical supervisors could be 6. Grades GS-3 and 4, of course, could be combinations of these and there were a wide variety of jobs available to employees of these lower levels.

An employee could enter the Program Center at a relatively low level and practice and learn a variety of simple clerical skills. One could even be promoted to be a supervisor of people working with these clerical skills. Opportunities therefore existed either to work alone in a reasonably simple but straightforward task, or to work with others in a supervisory-, training-, or team member role -- up to GS-7.

The job of "benefit authorizer" was characterized, as were several others, as being just a production job, a job that involved only getting the work out and not being concerned with quality. These were jobs for which the employee received little feedback, usually negative. As noted above, these technical jobs were liked by some (but few) employees, and were disliked by most employees; yet these were the same jobs that form the narrow center portion of the promotion channel, the point of constricting or funneling in the spindle-shaped promotional system.

Thus, most employees at lower levels in the organization, had a sort of ordeal to look forward to if they were to progress beyond GS-6. This was especially noticed in the poignant statements of clerical supervisors (people who enjoyed supervising and helping others) who had nothing to look forward to in the next promotional step except a purely technical job where working with people was of much less importance. These were the jobs for which they could see no model of close social action and for which they knew the work was not only demanding in a production sense, but frustrating in the sense of either identification or psychological reward. Thus, these people could say "yes, there are promotional opportunities, I can't fault the promotion in this organization, but I'm sure not looking forward to being promoted, at least not for the next step."

With regard to the promotion system itself -- the appraisal and evaluation system -- most employees said that they wanted to know more about how the rating was done, and many seemed to question the objectivity of this rating. They cited lack of objective measures and they alluded to the supervisor's reliance on surreptitious visits to their outbaskets to obtain case counts, and to the fact that supervisors seem to differ in their individual rating styles. When we considered these factors in the context of appraisal as a feedback "opportunity" we sensed a deterioration of the feedback process and a consequent reduction in the quality of relationships between supervisors and employees.

Supervisors were seen as sneaking around collecting information on employees. If this collection came back to the employee in the form of a formal appraisal at periodic intervals, the chances of the employee knowing how well he or she is doing was certainly reduced.

A variety of other questionable promotional practices in the Program Center were mentioned by the very active grapevine system. It would appear, for example, that the numbers and types of positions were manipulated by top management in the Program Center. Whether or not this was true is less important than the fact that the rumors to this effect were very widespread. For example, during the time we were interviewing, claims authorizers noticed with concern that a number of GS-11 positions were eliminated. This left a gap between their own position of GS-10 and the supervisor's position of GS-12 which reduced their career alternatives one more degree.

Another area of concern centered on the actual mechanisms of proportion selection in the Program Center. We discovered that folklore was building up about what was perceived as the unique and arbitrary selection process used by the Director of Operations, (The second in command who was responsible for final approval of promotions). There was general agreement that bright newcomers and vocal insiders had the best chance for promotion. Less frequent, but sill evident, was the opinion that the best are not always promoted and that many of the best and the brightest left to work in other governmental agencies. The clerical and technical employees' perception that the promotional system was unrelated to the work actually done affected their view of existing opportunities.

Another peculiarity of the promotional system was expressed in the employees' concern about the issue of discrimination. It was frequently commented that those who were left out with little chance of promotion were the middle-aged white male employees. Some employees who did recognize that there are opportunities for promotion mentioned that members of minorities had better-than-average chances for advancement. In almost no instance did minority members mention feeling discriminated against. Finally, in this case we found that there were few if any references to the personnel department as being the source of information about promotion or corrective action in the promotion system. In general, we observed that the union was perceived as an ombudsman in this regard and was usually seen in a favorable light.

The Design Proposal

Background. Following the technical and social systems analyses the original three members of the design team were joined by two of the "process managers" who were responsible for the management of two of the modules. These five constituted the "design team for redesign", and worked together for a month's time. The original three members first acquainted the two managers with the detailed results of the analyses and the total then worked to jointly optimize the requirements identified in both the technical and the social systems. This concluding section of the case contains the products of that design team for its month's work, (a facsimile copy of the document presented to the management of the San Francisco Program Center is included in Appendix

B. The design team summarized the purpose of the exercise and some design criteria we at UCLA introduced to them. They then proceeded to present two alternative proposals -- one of which represented a departure from the structural arrangement of jobs and work roles in the Program Center and one did not.

Management response to this proposal was unenthusiastic. On the one hand it was criticized for including one design alternative which represented no departure from the given Bureau model of "work teams" already in place in Philadelphia. On the other hand the proposal was criticized for including an alternative which required substantial changes in job description, payment criteria, and flexibility in civil service regulations; but one which had not had a "feasibility assessment," or the appropriate specialist staff work to spell out all the practical details for implementation. The design team had purposefully refrained from trying to work out those details precisely because of the urgency involved in putting an innovative alternative before the Program Center management. Management in turn asked that three practical questions be answered in advance of any commitment or endorsement of the proposal: 1) would present work load permit the work arrangement as proposed? 2) would cyclical work loads affect the design? 3) would restructuring the jobs as proposed affect the existing classification distribution? The design team had hoped that if the ideas were acceptable in theory, then a team of personnel experts and civil service consultants could iron out the details. This was not to be. The "catch 22" of not having done the "staff work" was used as "the reason" for not accepting the ideas in the more innovative alternative. The final act involved the top manager in the Program Center forwarding the proposal to Baltimore Bureau Headquarters without endorsement, where it was ostensibly rejected because of a lack of enthusiastic support in the part of the Program Center.

The Requirements. The analysis of the technical system revealed several important variances.

1. The variety of routing points in the information and media flow was a variance that in the module was absorbed by files routing. Through an elaborate system of automated files control a misplaced file could be located, pretty quickly, but they still frequently, were not where they needed to be when they were needed.

2. The variety of procedures and rules for clerical employees interfacing with technical employees and the computer was a variance absorbed by the clerical workers and their supervisors, as well as, by training programs for clerks.

3. The variety of cases the system worked was the primary variance the system controlled. This variance was handled by the automated system by passing certain types of cases to the program centers for human processing. The variances among those cases diverted to the Program Center were absorbed

first by the authorizers in their treatment of the case, frequently at some cost in worker stress and frustration in the vigilance required in a monotonous job. Vigilance is required for quality although the Program Center emphasized quantity. If, however, the authorizer attends to quality and did not supply enough or correct information to insure adequate processing at the next step, the value of whatever energy they had expended on absorbing the variance of case variety was diminished by that case being subsequently unworkable or delayed.

The requirements of the social system included the horizontal relationships, among employees working the cases. 1) The inadequate understanding of most technicals and clericals of the total work process and product kept employees from understanding one anothers problems, and their place in the process. In spite of the fact that the modular organization began to address this, the communication especially between technicals and clericals was severely limited. 2) Vertical relationships between employees and their supervisors were marked by a lack of appreciation and mutual respect. Supervisors did not provide the technical help employees said they wanted from their supervisors, and they felt they treated them like children. Supervisors for their part felt employees did not work as hard as they should to meet service time objectives, and they had to oversee and police the work to assume even minimum levels of service. 3) Social support was not provided to any great degree. The understanding and sympathy that could have existed by one set of employees for another, or of superiors for subordinates was limited. The introduction of modular organization had broken up prior friendship groups and in many cases those informal relationships had not been renewed or replaced by the time of our study several months later.

The individual requirements on the job were carefully reviewed by the design team in addition to the technical and social requirements. They identified issues of personal control of work activities and participation in decision making as key elements. They asserted that the employees in the San Francisco Program Center, as elsewhere in the Federal Service, were demanding more participation in decisions affecting them and their work. They operated on the assumption that any solution or design proposed would increase the discretionary activities of all employees, while changing the nature of first line supervisors duties to go beyond the inner workings of their work groups to seek to manage or control forces outside that group. The design team identified the feelings of frustration that the technical employees felt with the unnecessary complexity of individual jobs, and the emphasis on quantitative productivity. They also acknowledged the indirect and subtle, but no less important impact these frustrating technical jobs had on the negative career perspectives of employees lower down the hierarchy.

The Design. Two design alternatives were prepared for presentation to the Program Center management. Providing alternatives is not unusual and, in fact, we had suggested to the design team that providing more than one design

would give management a choice rather than merely an acceptance-rejection decision. As it turned out, however, the preparation of alternatives permitted one member of the team to voice reservations with the majority view. This minority opinion resulted in the design option called the "generalist approach" and permitted the majority option, the "product approach" to be presented without compromise or accommodation. Since the two alternatives represent different philosophical views of how employees view the nature of their work, compromise would have been difficult to achieve while retaining an internally consistent model.

The Generalist Approach. This alternative is similar to the "work team" design experiment in place in the Philadelphia Program Center. This proposal ignores job changes while addressing the issue of large organizational size. It attacks the problem that the module is too large to relate to by miniaturizing the module by providing smaller social units of about 40 employees. This grouping would foster team spirit since the group size would be smaller and the unit has permanent responsibility of a particular segment of the work load (through the assignment of certain account members). This plan would maintain current technical jobs. Since it was not based on relieving the complexity of technical jobs as they currently were, the generalist approach actually increased complexity of individual jobs in some cases. It did, however, also offer technicians the opportunity to specialize in a particular area, thereby reducing for an individual technician the wide variety of cases worked within the Program Center.

Problems of incorrect or absent rounting of files would be reduced since that routing would be more direct. Instructions from technicians to clericals would be lessened through the use of oral as well as written communication.

Finally, the generalist approach was based on the notion that employees need to be trained on all types of actions before either working the full range of actions, or before specializing in a particular type of action even for short periods. Thus the choice of specializing in order to limit the variety and complexity of cases is permitted only for the most senior, and most highly trained technicians.

The Product Approach. The "product work group approach" was based on the premise that it would be possible to train employees incrementally in a particular type of specialty or "product line". That is to say, one would first learn about the simpler tasks related to a particular set of actions and then progress to more complicated and judgmental tasks in the same set of actions: In other words, one can be a specialist and function effectively without first receiving generalized training in how to work all types of actions.

This approach proposed the formation of "product" oriented work groups. Each work group would have all the skills necessary to process a case from beginning to end. Work groups to process all types of work would be located

in each module. Grade level ladders from GS-3 through GS-11 or 12 would be in each type of product group. The product oriented work group would be designed to bring together into one unit all of the necessary skills required to complete the designated product. This would include not only clerical and technical skills, but supervisory, managerial, and analytical skills as well. In the long run the groups would include not only the types of functions in the modules, but also any other currently non-modular functions necessary for product service.

Mastery of skills at one job level would point to a natural progression into the next higher level within the same product group. Employees would be able to demonstrate their suitability for the next step in the career ladder reducing the consultative portion of their job. That is, as the employee became more experienced at his job, he would become more competent and less dependent on consultation with higher graded group members. At this point he would in fact be ready for advancement to the next higher level job. This progression through the job ladder would be natural because skills mastered at one job level would groom one for the next higher level job. In effect, the "upper" component of a job would be a link to the "basic" level of the next higher level job. There would be a degree of skills transference in all progressions from one level to the next.

Comparison Between the Two Design Alternatives. Differences in the outcome behaviors between the Product Group approach and the Generalist approach can be noted. Jobs in the product group approach have closure or completion in a way that the other alternative did not provide; for instead of merely doing one task and handing it on, each employee in the group was permitted to take as much responsibility as they could for doing as much to each case as possible. In each case an employee could extend his/her ability by consulting with a more highly skilled member of the group. This would result in employees deriving closure from learning a new element, teaching another employee, or eventually working a whole case from beginning to end if they wished. Jobs in the product group approach would provide feedback to the employees through this consulting-training relationship among themselves, and such jobs would require that employees share the work load, as well as the assignment of separate tasks among themselves.

The problems of the "spindle-shaped" promotion path described earlier were attacked directly by the "product group" approach in that within each group there existed a wide variety of ways an individual employee could be qualified for a given pay grade, and a number of paths through which one could progress upward. This would mean in particular that there would be more than the tasks of "entitlement authorization" for GS-7, 8 position. In part this was in the nature of the jobs, for skills learned in the upper level of any "job" (or GS level) in the group would be the "basic" activity

for the next GS level. In part also this career aspect was treated in the interaction between individual employee needs and the groups requirements for individual choice in what tasks to do would be permitted within the context of other's personal needs, and the requirements of the group's task mission and work load.

The group structure of the "product group" approach differed considerably from the "generalist" approach in that cooperative behavior was built in; it was expected, and achievement of the groups mission would be difficult without it. This group structure would also provide all employees with a sense of identification with the outcome of their work to a degree only possible in the "generalist" approach for those high skilled technicians who were able to "specialize" and concentrate on one product or outcome.

Both design alternatives provided a group structure that could develop identification with a group of people because of geographical proximity, small size, and shared case load. Both also provided a group structure where social support could be obtained because competition and isolation were reduced, if in fact they were not eliminated. Even on these indicators, however, the "product group" approach would probably provide for marginally more identification and support because the enhancing effects of shared work and required cooperation in training and promotion opportunities for individual members described above.

Conclusion

It should be obvious from the foregoing that we favored the "product group" approach. We felt that because it dealt directly with the nature of work -- an element of major importance to most technical employees and many clerical employees in the Program Center -- it offered the greatest potential for improving organizational performance together with enhancing quality of working life. We were pleased that the Program Center design team majority had developed the "product group" approach and we felt that the one dissenting member provided a good balance and a comparison position in the "generalist" design. We felt this strongly enough to write a letter of endorsement (see Appendix B) for attachment to the design team's report to Program Center management, which not only applauded the efforts of the team in general but which also unequivocally expressed this preference.

The lessons from this case were clear:

- White collar technologies can be usefully addressed using sociotechnical analysis and design procedures.
- Internal organizational members can effectively undertake sociotechnical analysis and design with only minimal training and counseling by outsiders.

- Expression of production technology in terms of "unit operations" facilitates employees understanding of organizational mission and their organizational unit's place in it.
- Key variance analysis facilitates identification of technical requirements to be attended to in design, even when the manner of absorbing those variances is more important to achieving organizational objectives than is added control over those variances.
- Automation of technical/clerical functions can result in jobs which are at once too complicated and too monotonous, and are therefore frustrating to a majority of employees.
- Open promotion opportunities (such as those in the Federal Service) are not always enough to satisfy the career expecatations of most employees -- who seek such things as control, competence and challenge at every step in that promotion chain.

Appendix A

Organizational Structure. The Social Security Administration is one of the four agencies of the Department of Health, Education and Welfare (see Figure 3). The Social Security Administration itself has 11 functional Bureaus and offices (see Figure 4), one of which is the Bureau of Retirement and Survivors Insurance. The Central office of the Bureau of Retirement and Survivors Insurance in Baltimore provides direction and technical guidance for nationwide administration of the Retirement and Survivors Insurance Program. This responsibility includes the direction and supervision of the six regional Program Centers.

The Program Centers are formally responsible for review and authorization of retirement and survivors claims, health insurance entitlement, health insurance premium collection, certification of benefit payment and maintenance of retirement and survivors insurance beneficiary rolls. The Program Centers are not responsible for direct contact with the client.

The nationwide network of branch and district offices serve as the interface between Social Security Administration and the public. As can be seen from Figure 4, the Social Security Administration includes a number of "offices" for the administration of the variety of programs across the various line "bureaus".

To be noted is the fact that data processing is considered a line function in the Social Security Administration, as is evidenced in the title: Bureau of Data Processing, while control and planning of the computer system is taken care of in the Office of Program Evaluation and Planning. Thus, the organization and planning in the Social Security Administration is in general quite centralized with the responsibility for line operations being located in bureaus, some of which have regional offices.

Although the San Francisco Program Center does represent a regional responsibility and thus a decentralization of the activities of the Bureau of Retirement and Survivors Insurance, the structure of the Program Center itself in 1972-73 was going from a centralized to a decentralized arrangement as seen in Figure 5. Of interest in Figure 5 is the dual arrangement of centralization and decentralization in the six major line functions of the Program Center itself. These line functions are represented by the six branches with vertical relationships on the chart.

The dotted line running horizontally across the bottom of the chart represents the decentralization in the Program Centers. This is not a traditional organizational arrangement and, in fact, represents the transitional system in place in the Program Center when we began our design efforts. In a way, however, this combination of centralization and decentralization is characteristic of the Social Security Administration itself.

As was noted in Figure 4, most functions are centralized but their regional representations are decentralized units throughout the United States.

Figure 3

Organizational Setting

Department of Health, Education, and Welfare (H.E.W.)
and the Social Security Administration (S.S.A.)

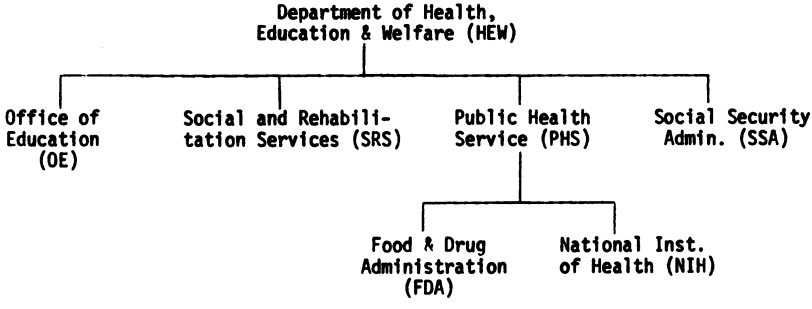
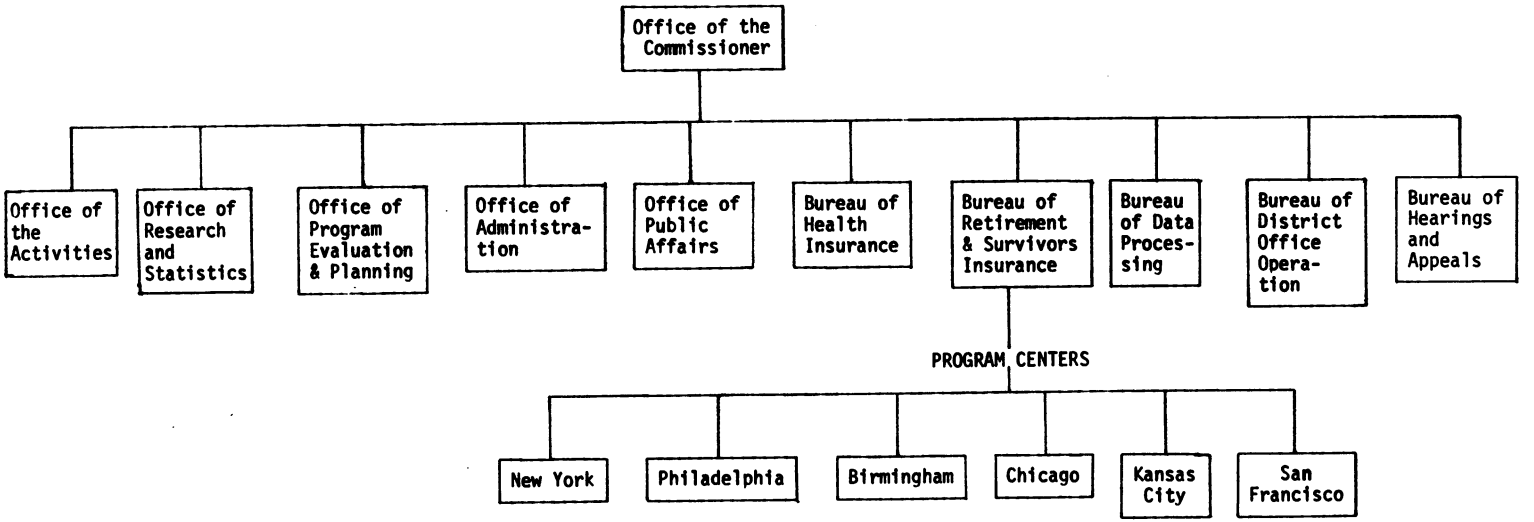


Figure 4

Internal Structure of the Social Security Administration

1973



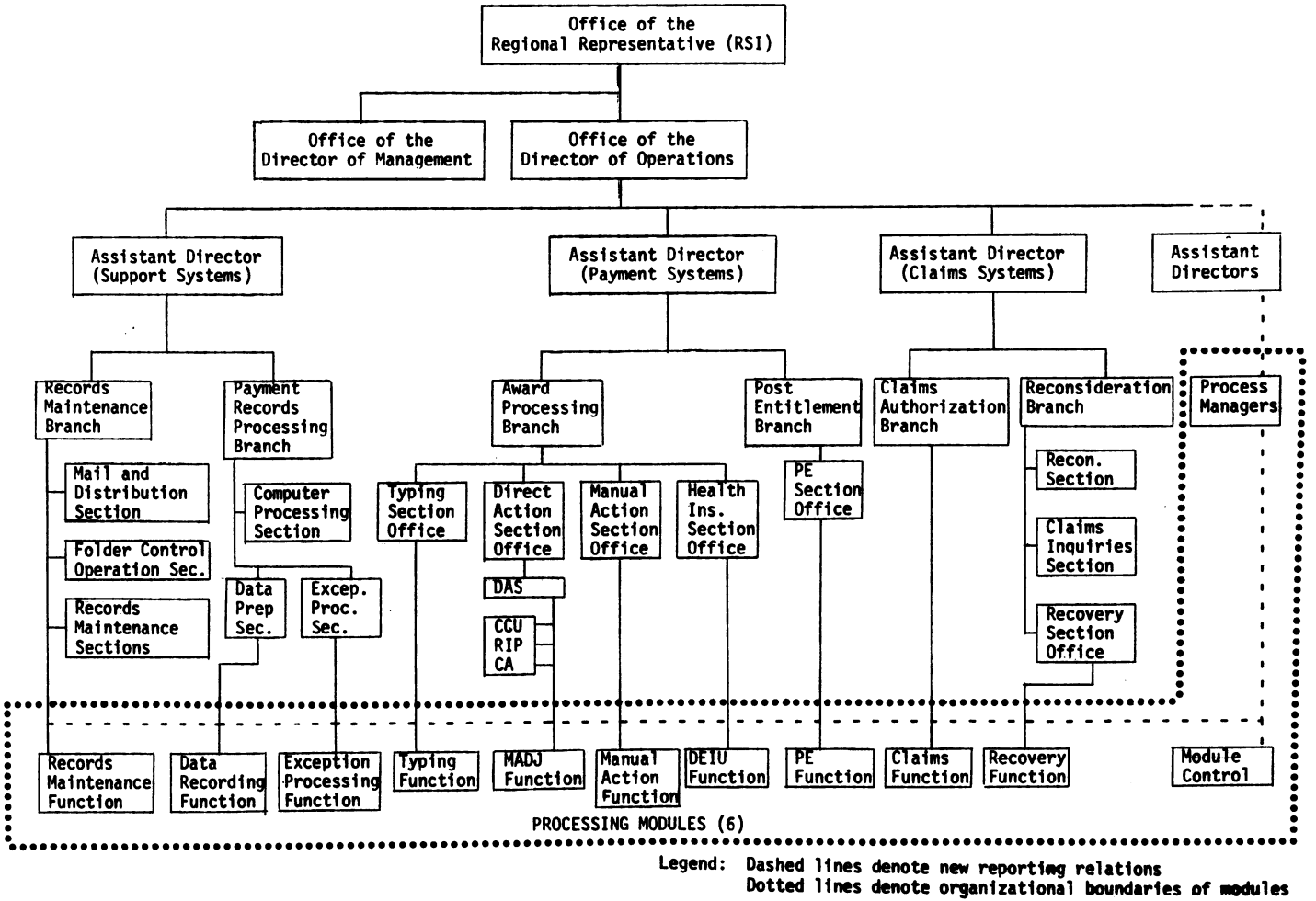


Figure 5

Legend: Dashed lines denote new reporting relations
Dotted lines denote organizational boundaries of modules

In the case of the San Francisco Program Center mentioned earlier, this internal decentralization of control for the six major line functions into six modules represents an attempt to change the production flow from a single queue through the six line functions to six separate queues through the six modules, each containing elements of the six functions.

The dual structure, centralization and decentralization which appears in Figure 5 was recognized at the time of the study as a purely temporary arrangement. However, the unusual combination of centralization and decentralization was planned in order to provide an orderly transition from a single production process to six parallel processes with decentralization, while at the same time insuring an easy return to the centralized system if circumstances warranted it. Essentially the San Francisco Program Center was undertaking a decentralization process at an organizational level within the Social Security Administration System where little precedent for such a step existed; consequently, there was much concern and uncertainty about the move.

Skill Level. The skilled background or educational level of the organizational members is divided into two groups. First, there is a heavy concentration of low skill, high school educational background among the approximately 1,600 total personnel in the Program Center. However, in the units we were looking at (which amounted to some 60 percent of the total number of employees in the center) fully half were of quite high educational and skilled background.

The organization is quite labor intensive: the center works on those cases that the computer system has either rejected or cannot work on because of the complexity of the cases. Thus, this Program Center represents the handwork component of an otherwise highly automated and computerized payment authorization system.

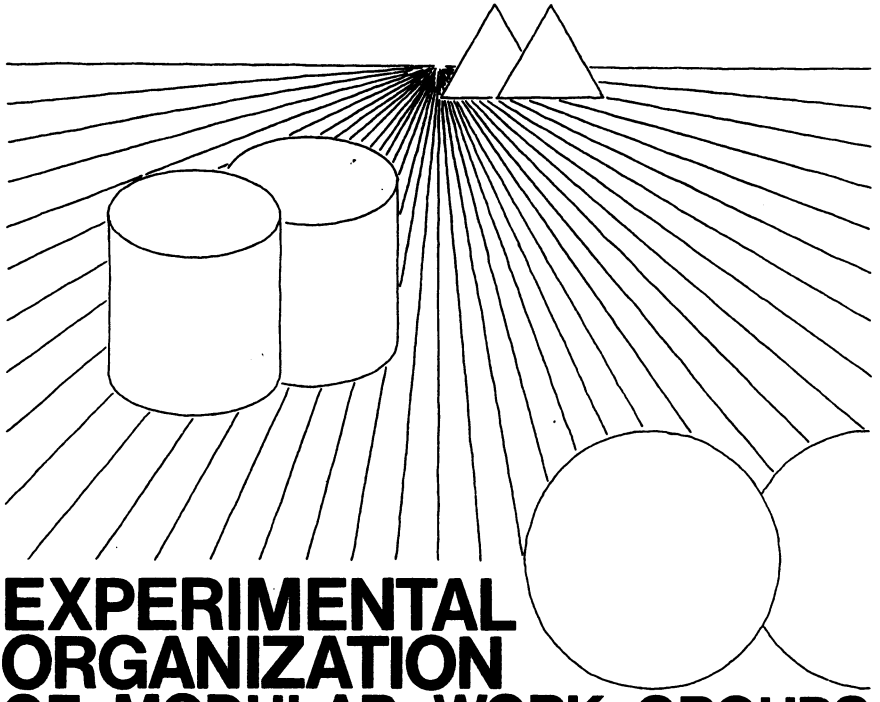
The Technology. The basic inputs to the transformation system are: request for payment (as well as notification of incomplete or incorrect payment action), information to update records, and requests for information. The transformation system outputs payment orders (which are the primary purpose of the payment system), payment requests, communications to clients, updated memories, and requests for payment originate with a client through the district offices and result in a payment order from the Program Centers. This process is highly automated: over 75 percent of the decisions on payment requests from clients are taken directly by the human members of the Program Center.

The primary capital-intensive artifact in the technical system is, of course, the computer and its software or programs, located in Baltimore. The same computer and computer programs serve all six of the regional Program Centers located throughout the United States. Each Program Center is responsible for updating the permanent paper files for every beneficiary in their regional district. Each Program Center is also responsible for processing those cases which are exceptions to the automatic computer system.

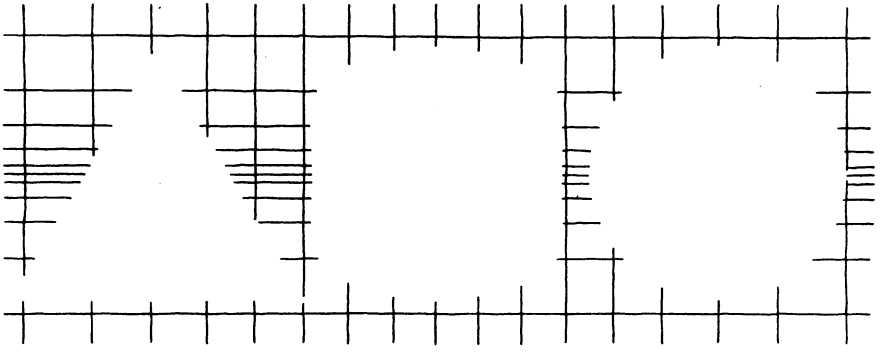
The technology employed by the human members of the center focuses on processing and approving claims and requests for payments, and authorizing payments to be made through the Treasury Department. Originally, the entire authorization and claims processing function was done by humans. Increasingly, the computer and its programs have become more and more sophisticated so that they can automatically undertake the majority of these claims.

The primary technical roles in the Program Center system are the claims authorization role and the post entitlement role. Claims authorization is undertaken by the relatively highly rated professional clerical employees who consider the merits of the case and the facts and authorize that payment be made. The post-entitlement role calculates the total amount of authorized benefits to be paid either over a period of time, or in a lump sum, to the beneficiary.

Appendix B



EXPERIMENTAL ORGANIZATION OF MODULAR WORK GROUPS



WESTERN PROGRAM CENTER
FEBRUARY 1, 1974

E X P E R I M E N T A L O R G A N I Z A T I O N
O F M O D U L A R W O R K G R O U P S
W E S T E R N P R O G R A M C E N T E R

PROJECT STAFF

WNPC Design Team

UCLA Project Team

Louis E. Davis
James C. Taylor

Bureau of Retirement and Survivors Insurance
Western Program Center
February 1, 1974

UNIVERSITY OF CALIFORNIA, LOS ANGELES

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO

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QUALITY OF WORKING LIFE PROGRAM

INSTITUTE OF INDUSTRIAL RELATIONS
LOS ANGELES, CALIFORNIA 90024

February 1, 1974

The attached report makes two proposals directed to satisfying the needs that were uncovered in the predesign analysis. The first, the "Generalist Approach" is easily implementable for it requires little redoing of jobs. What it does is to reduce organizational size as far as the individual is concerned by providing a smaller social system with which to relate.

The second proposal, the "Product Approach" will require further planning since it calls for the design of new jobs and will require testing. In this sense the first proposal can be viewed as short-term since its implementation will not impede the later testing of the second proposal. The Product Approach develops both a method of group working and jobs that have the following features:

- Jobs that have closure or completion
- Jobs that provide feedback
- Jobs that require shared working
- Jobs that provide for progress upward in the organization
- Group structure where social support is provided for individual members
- Group structure where cooperative behavior is built
- Group structure that develops identification with a group of people
- Group structure and jobs that provide identification with product or outcome of work done

The nature of work done was revealed as a factor of extreme importance in consideration of organization design in WNPC, now as well as in the future. Although the analysis dealt with a number of issues described in the attached report, this issue of job design is the key to differences between the two alternatives. This issue of job redesign raises some of the most difficult problems of organizational change in the Federal Government--far more problems in fact than any other contemplated changes we have seen in the public sector. In light of this considerable obstacle, we note the similarity of the first proposed alternative to the recent organizational design work undertaken by Mid-Atlantic Program Center. This "Generalist" design leaves jobs alone while addressing the issue of large organizational size. We do not believe that it has the same potential as the "Product" approach for enhancing Quality of working life, or for improving organizational performance. This Product

Group approach is riskier insofar as it demands that problems in job design be attacked directly. We feel that it is not only possible, but feasible; although a commitment to experiment with the general framework must be based on a shared perception that one of the greatest problems facing the Western Program Center (as well as other American organizations) is the quality of the current jobs within them.

We find the process of the project to have been very stimulating and are pleased with the results so far. Following widespread agreement to further develop and test the "Product Approach," we look forward to the development of its ultimate design and testing. The final design will be more easily implemented and will likely be of higher quality after the contributions made by all during the testing.

Louis E. Davis
Director

James C. Taylor
Project Director

PREFACE: THE DESIGN PROCESS

The proposals in this report were developed by a "Design Team" consisting of five members of the Western Program Center with the advice and consulting aid of outside advisors. These advisors initially provided training in methods and concepts of analysis and design. The design team, through their usual and normal connections in the organization, were able to obtain advice from many areas of the organization. The proposals therefore are internally developed, based on analysis and concepts described in the following section. The proposals are also evolutionary since as insiders the design team is very concerned with the implementation of the proposals and as such with contributions from others and acceptance by managers.

BACKGROUND TO SOCIO-TECHNICAL JOB DESIGN

There are several basics involved in the concept of socio-technical job design. One is that both the social and the technical structures must be examined and altered in conjunction with one another. Another is that, given certain restraints required by the technical system, jobs should be structured so as to satisfy psychological job requirements, and meet certain task postulates which have, through various experiments in organization design, been shown to be both desirable and ultimately productive. These requirements and postulates are listed below.

Psychological Job Requirements [1]

1. The need for the content of a job to be reasonably demanding in terms other than sheer endurance, yet providing a minimum of variety (not necessarily novelty).
2. The need for being able to learn on the job (which implies standards and knowledge of results) and go on learning. Again, it is a question of neither too much nor too little.
3. The need for some minimum area of decision-making that the individual can call his own.
4. The need for some minimum degree of social support and recognition in the work place.
5. The need to be able to relate what one does and what one produces to one's social life.
6. The need to feel that the job leads to some sort of desirable future.

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[1] "Socio-Technical Approach to Problems of Process Control," Per H. E. Engelstad, DESIGN OF JOBS, L. E. DAVIS & JAMES C. TAYLOR, ED., Penguin Books Ltd., 1972.

Postulates for Job Design [2]

1. Optimum variety of tasks within the job. Too much variety can be inefficient for training and production as well as frustrating for the worker. However, too little can be conducive to boredom or fatigue. The optimum amount would be that which allows the operator to take a rest from the high level of attention or effort in a demanding activity while working at another and, conversely, allows him to stretch himself and his capacities after a period of routine activity.

2. A meaningful pattern of tasks that gives to each job the semblance of a single overall task. The tasks should be such that, although involving different levels of attention, degrees of effort, or kinds of skill, they are interdependent. That is, carrying out one task makes it easier to get on with the next or gives a better end-result to the overall task. Given such a pattern, the worker can help to find a method of working suitable to his requirements and can more easily relate his job to those of others.

3. Optimum length of work cycle. Too short a cycle means too much finishing and starting; too long a cycle makes it difficult to build up a rhythm of work.

4. Some scope for setting standards of quantity and quality of production and a suitable feedback of knowledge of results. Minimum standards generally have to be set by management to determine whether a worker is sufficiently trained, skilled, or careful to hold the job. Workers are more likely to accept responsibility for higher standards if they have some freedom in setting them and are more likely to learn from the job if there is feedback. They can neither effectively set standards nor learn if there is not a quick enough feedback of knowledge of results.

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[2] "Job Design in the Wider Context," Einor Thorsrud, DESIGN OF JOBS, L. E. DAVIS & JAMES C. TAYLOR, ED., Penguin Books Ltd., 1972.

5. The inclusion in the job of the auxiliary and preparatory tasks. The worker cannot and will not accept responsibility for matters outside his control. Insofar as the preceding criteria are met, the inclusion of such 'boundary tasks' will extend the scope of the worker's responsibility for and involvement in the job.

6. The tasks included in the job should entail some degree of care, skill, knowledge, or effort that is worthy of respect in the community.

7. The job should make some perceivable contribution to the utility of the product for the consumer.

8. Provision for 'interlocking' tasks, job rotation, or physical proximity where there is a necessary interdependence of jobs. At a minimum this helps to sustain communication and to create mutual understanding between workers whose tasks are interdependent, and thus lessens friction, recriminations, and 'scapegoating.' At best this procedure will help to create work groups that enforce standards of cooperation and mutual help.

9. Provision for interlocking tasks, job rotation, or physical proximity where the individual jobs entail a relatively high degree of stress.

10. Provision for interlocking tasks, job rotation, or physical proximity where the individual jobs do not make an obvious perceivable contribution to the utility of the end-product.

11. Where a number of jobs are linked together by interlocking tasks or job rotation they should as a group:

    (a) have some semblance of an overall task which makes a contribution to the utility of the product;

    (b) have some scope for setting standards and receiving knowledge of results;

    (c) have some control over the 'boundary tasks.'

12. Provision of channels of communication so that the minimum requirements of the workers can be fed into the design of new jobs at an early stage.

13. Provision of channels of promotion to foreman (supervisor) rank, which are sanctioned by the workers.

The above requirements make it possible for the employees to make many of the decisions traditionally made by supervisors. This does not lessen the supervisor's importance but shifts emphasis to "regulation of boundary conditions." This means that the supervisor spends most of his time seeking to control outside forces which, if they were allowed to impinge on the employees themselves, would be beyond their ability to manage. Thus the supervisor, in large part, would be "protecting" the employees from the outside problems they would be unable to deal with. This in turn allows the employees to spend their time and effort in solving the wide variety of internal problems they are equipped to manage.

While keeping the above requirements in mind, as well as remembering that it is necessary to expand supervisors' control of boundaries as we enlarge employees' boundaries, an analysis of the technical and social systems of WNPC was undertaken.

The first effort consisted of a careful analysis of the technical system. This resulted in the identification of a number of variances [3], which were further explored in an effort to determine which of these were key variances.[4]

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[3] Variances - A variance is any deviation from a norm, and yields a range of potential outcomes. In a "problem" sense, in any given technical system, certain actions or processes should produce an expected action or result. Whenever the expected result does not occur and the cause of the failure is other than human error, a "variance" is said to exist.

[4] Key Variances - A key variance is one which creates a situation which, either because of importance or volume, significantly affects the product of the technical system, or significantly impacts upon the social structure of the system.

The three key variances which the technical analysis revealed and which the design efforts attempted to resolve were problems concerning incorrect or absent routing, incomplete or mis-matching procedures for different types of workers, and situations where the deciding technician fails to give sufficient information to insure adequate processing at the next step.

The social analysis revealed a number of widely-voiced sentiments. Those which the design efforts attempted to resolve are listed below.

There is inadequate understanding by most technicians and clericals of the total work process and/or product. There is also a (probably) related sense of isolation felt by the employees of being "alone with their jobs."

There was also a feeling, expressed by many of the journeymen, that the job they were asked to do was, by and of itself, too complex. Furthermore, the burden of this complexity did nothing to alleviate the "boredom" seen surrounding these jobs.

The two design concepts address themselves to these problems in varying degrees and with varying impact. The individual proposals outline this in particular.

INTRODUCTION TO DESIGN RECOMMENDATIONS

This report offers two design alternatives which stem from the socio-technical approach described in the preceding section. Because of this approach, our designs do address themselves to the resolution of technical and social problems as identified, but do not address other equally important considerations.

For one thing, we have made no mention of the traditional branch functional organization as opposed to the modular concept of organization. This is because we accepted from the beginning that the modular concept was in harmony with our approach and that the functional concept was not. This was because the modular concept and the precepts of socio-technical design both agree that as many as possible of the functions necessary to produce a complete product should be brought together in close proximity.

The result is designs which would order the internal structure of the existing modules. This does not mean that components which are not included in the current Experimental Process Organization (EXPO) modules should or would be excluded from either of the approaches on a long-term basis. On the contrary, we would anticipate that many of the functions performed currently in non-modular components would prove to be logical additions to the modules. But for design purposes, we felt it wiser to put forth the basic concepts in terms of what is now in our modules.

These designs also make no mention of two other key problem areas we have been able to identify in the Western Program Center based on our total modularization. First, there is the problem of residual branch functions. These miscellaneous functions still would need to be completely analyzed prior to placement in the modules under any design alternative (either proposed by this report or any other). The other problem is that of staff support for the process manager. We take this opportunity to state that these support positions are necessary for the proper functioning of the module.

The two design alternatives that follow represent two different philosophical and conceptual approaches to meeting our objectives. These two approaches differ primarily in terms of assumptions of job occupants regarding the nature of their work. One is the traditionally held approach. The other approach operates on an assumption which is a departure from the current position.

The first, the "Generalist Approach," is based on the idea that employees need to be trained in how to work all types of actions before either (1) working the full range of actions, or (2) specializing in a particular type of action for short periods. In other words, the approach presumes that one cannot become a specialist until he has first become a generalist; this reflects the current position.

The "Product Work Group Approach" is based on the premise that it would be possible to train employees incrementally in a particular type of specialty or "product line." That is to say, one would first learn about the simpler tasks related to a particular set of actions and then progress to more complicated and judgmental tasks in the same set of actions. In other words, one can be a specialist and function effectively without first receiving generalized training in how to work all types of actions.

These two approaches also respond differently to the employee's feeling that the "module is too large to relate to." The "Generalist Approach" would attack the problem by miniaturizing the module, thus providing smaller social units. The "Product Work Group Approach" would create smaller social groupings by identifying work along "product lines."

GENERALIST APPROACH

I. RATIONALE

As mentioned earlier in this report, there were a number of specific problems highlighted by both the technical and the social analyses. The Generalist Approach addresses itself to, and resolves, a number of these technical problems quite well. Problems concerning incorrect or absent routing will virtually disappear within the module, since all routing will be done by hand in each mini-module. Likewise, the problems that arise when a technician fails to write out adequate or understandable instructions will be greatly lessened, since instructions, for the most part, will be oral and most misunderstandings can be immediately clarified. To a slightly lesser degree, this approach will permit the discovery of incorrect and/or mismatching procedure to be made, or rectified, more quickly, since only one, or at best two groups, will be involved in solving the problem.

The Generalist Approach also is well suited to resolve specific problems highlighted in the social survey. The sense of unity and the team building each mini-module will foster should greatly help to relieve the "sense of isolation" and the feeling of being "alone with their job" felt by many employees. This approach should also help to alleviate the "lack of understanding of the total work process" in several ways; cross-training among the clerical groups will give them breadth of knowledge; cross-training of technicians within specialty groups will give them a total picture, and overall, by dint of the very proximity of performance of actions, increase, at least conceptually, most mini-module employees' ideas of the total product.

This approach, unlike the Product Approach, is least suited to relieving the "complexity" of the jobs as presently structured.

Indeed, in some cases, it increases them. It does, however, when offering technicians the opportunity to specialize in a particular area, yield some diminution of this complexity by excluding a wide range of functions.

This plan basically maintains the current technical jobs, and slightly expands certain clerical jobs, but in a different format. A certain number of varied technicians and clericals are contained in one group. The group consists of both a technical family and a clerical family, each with its own supervisor, reporting directly to the process manager.

This grouping is designed to foster a team building spirit, since the entire group is responsible for a particular segment of the work, governed by terminal digit.

Within the clerical groups, wherein the brunt of the change takes place, all clericals would be expected to learn to perform the full range of functions, except typing. (Only the actual "typists" would be required to type.) The entrance levels for these jobs would be GS-3 typist and GS-3 control clerk. As soon as certain other skills were learned (MADJ, blocking, coding), promotion to GS-4/5 would be automatic. This would provide initiative to lower graded clericals, variety to the GS-4/5's and greater manpower flexibility to the manager, as well as a sense of total responsibility to the clerical family as a whole. It would also eliminate the problem of one-of-a-kind jobs.

Within the technical group, persons may opt to work together as a particular specialist group, thus alleviating the cries of "too much complexity" by allowing an in-depth specialization in a particular field. Within the technical groups which opt for specialization, cross-training would be provided (on-the-job-training and formal), in an attempt to both stimulate continued employee interest in the

process, as well as to afford them an ultimate sense of 'whole' responsibility. All of the above objectives - i.e., team building, awareness, sense of responsibility, are aimed in one direction - that of providing well-informed employees with a measure of understandable work, which they will do more quickly and more accurately than they do presently.

II. EXTENT OF EXPERIMENT

A. Short-Range Implementation

It is recommended that the experiment (possibly duplicated in more than one module) utilize roughly half of a module. It would not include any components not currently in the operating module, nor would it exclude any. For the time being, however, the data recorders attached to the clerical family groups would physically remain in the Data Recording Unit, although they would be responsible for the work of their own particular family.

The most startling necessity foreseen in the short-term picture would be a new clerical position description, covering an automatic GS-3/4/5 grade, based upon acquired skills.

Another item concerns those people in the technical family group who had opted to specialize. The preparation for certain formal training to be offered to these specialists, once certain patterns of production had been established, must be done. (Much training would, of course, be on-the-job training.)

B. Long-Range Plan

It is recommended that each module, assuming maintenance of current size, would be divided into four mini-modules. Each would have its own independent control and also would include reader boxes, Keyplex machines, and probably SSADARS machines as well. Only a terminal digit sort would be on a modular basis; all other backlog (WIPs), Holding Files, technical areas would be located in the Family Group.

The GS-3/4/5 position would become a recognized career ladder type of position, based on ability, performance, and acquisition of skills.

Cross-training among technicals in various work specialties, such as Annual Reports, AERO, Work Notices, etc., would have been developed into an organized program of on-the-job/classroom training. The result would be generalists who had rotated into, and become proficient in, all aspects of several specialties.

The theory here is that, once having gained experience in the short range experiment with ways to cross-train "specialists" in depth (i.e., how to teach a PE authorizer in the AERO specialist group to establish a new PIA), a formal package would be produced for future use in these situations. It is envisioned that the technicians working in these specialist groups would both do the training, as well as assist in the effort to coordinate the various experimental attempts into a formal training package.

III. PERSONNEL INVOLVEMENT

A. Short-Range Implementation

It is recommended that the experiment be tried in at least one module - no more than two. It would only utilize one-half the personnel of the module.

The experimental group would be divided into two mini-modules. Each mini-module will consist of the following family groups located in the same work area:

Technical Family Group

1	GS-12	*Supervisor
1	GS-11	*CA Team Leader
1	GS-9/10	*Team Leader for PE, PEI, EPS
9	GS-7/9/10	Claims authorizers - journeymen & trainees
14	GS-5/7/8	Benefit authorizers- journeymen & trainees
1	GS-9	Recovery Reviewer
2	GS-6/7	*EPS/PEI Technicians
1	GS-5	Recovery Clerks
30	Total	

Clerical Family Group

1	GS-7/9	*Supervisor
1	GS-6	*Specialist/TA
2	GS-3/4/5	*Typist
2	GS-3/4/5	*Control Clerk
1	GS-4/5	*Typist Reviewer
1	GS-4/5	*Blocker
1	GS-4/5	*Coder
1	GS-4/5	*MADJ Clerk
2	GS-4/5	*Data Recorders
12	Total	

42 Grand Total

* All new jobs are marked with an asterisk, indicating two things: 1) position descriptions necessary; 2) grades are estimates only.

The experimental mini-modules would be staffed from a pool of volunteers from within the module itself. If an insufficient number of volunteers is available, certain assignments could be made, based on a lottery. Likewise, in the event of an excess of volunteers, assignments would be made based on a draw.

(This structure will not necessitate immediate replacement of the GS-10 Recovery Technical Assistant, as two recovery reviewers will remain in the regular module. However, reassignments for these people at an appropriate grade level will eventually have to be made.)

The GS-6/7 combination EPS/PEI technician will permit back-filling of what would otherwise be a one-of-a-kind job. It may prove necessary to designate a benefit authorizer to serve as a back-up as well.

Certainly, in the clerical area, various combinations of back-ups must be experimented with.

The short-term, half-module experiment will leave one GS-11 PE supervisor without a unit to supervise. Our normal attrition rate, plus our need for staff assistants, analysts, etc., should facilitate an appropriate placement of such an individual.

One additional clerical supervisor is required. The supervisory training pool should be able to satisfy this requirement.

B. Long-Range Plan

Each module would consist of four mini-modules. Staffing for these groups would require the personnel shown below. Next to this list is a column showing current number of positions, and column 3 shows loss or gain.

NOTE: Not included in this chart are those non-modular supervisory positions which would be absorbed by this proposal, such as the Recovery, PEI and EPS supervisors. Therefore the number of supervisors reflected in the "Gain" column are not accurate as far as the total picture of the program center is concerned.

Module	Proposed Required Staffing		Today	Loss/Gain
*GS-12	Supervisors	4	2	+2
*GS-11	CA Team Leaders	4	5	-1 (PE Supvr)
GS-10		0	1 (Recov T/L)	-1
*GS-9	Senior Post-Adjudicative authorizer	4	0	+4
*GS-9/10	Team leaders: PE, PEI, EPS	4	5	-1
GS-9	Recovery Reviewers	4	4	0
*GS-6/7	EPS/PEI Technicians	8	9	-1
GS-5	Recovery Clerks	4	2	+2
	TOTALS	32	28	+4

THE NUMBER OF CLAIMS AND PE AUTHORIZERS IN EACH MODULE REMAINS THE SAME.

*GS-7/9	Control/Cleric./ DR Supervisors	4	3	+1
*GS-6	Specialist/TA	4	2	+2
*GS-4/5	Typist Reviewer	4	2	+2
*GS-4/5	Blockers	4	4	0
*GS-4/5	Coders	4	4	0
*GS-4/5	MADJ Clerks	4	2	+2
*GS-4/5	Data Recorders	8	8	0
*GS-3/4/5	Typists	8	9	-1
*GS-3/4/5	Control Clerks	11	11	0
*GS-5	Control Spec.	1	2	-1
	TOTALS	52	47	+5

(Note: 1 GS-5 Control Specialist and 3 GS-3 Control Clerk in Main Control.)

* All new jobs are marked with an asterisk, indicating two things: 1) position descriptions necessary; 2) grades are estimates only.

As mentioned before, appropriate reassignments of the GS-10 Recovery Team Leaders must be accomplished.

The job of the GS-9 Senior Post-Adjudicative Authorizer would accomplish two things. It would provide a niche for those extremely good technicians who lack either skills or interest

in supervision and/or workload management. It would also provide a person to do the actual case work currently being done by the GS-9's in EPS and PEI. This senior authorizer would be quite distinct from the PE Team Leader; the team leader serves as a technical assistant to the benefit authorizer and the GS-6/7 PEI/EPS technicians. The senior authorizer performs the case work of the GS-9 EPS and PEI technicians, as well as answering questions from any technicians in the work group when the GS-9 TA is absent or occupied. The senior authorizer also works regular PE cases when not otherwise busy.

The PEI/EPS GS-6/7 technicians will need backfill; this could come from a variety of places as well as from each other. Most likely, the GS-5 Recovery Clerk could serve as an EPS/PEI trainee in limited areas.

The GS-6 Specialist/TA in the clerical group will provide the technical expertise and quality control to the clerical group as a whole.

Prior to experimentation on a module-wide (or office-wide) basis, position descriptions for the GS-3/4/5 clerical position will need to be written. These descriptions must outline the new tasks encompassed by the job, permitting absorption of all our current clerical job descriptions in the module.

IV. CASE CONTROL SYSTEM CONSIDERATIONS

A. Short-Range Implementation

Very little change would evolve in case control set-up. As is presently done, receipts would arrive in central control. They would then be broken down by terminal digit. The regular (as opposed to family group) module control will be responsible for reading in to the experimental group. The experimental group will only have three reads: mini-module backlog (WIP), mini-module technical, and mini-module clerical. Each mini-module

will have its own read for each. The holding files will not be broken away from main control.

ACTION NOTE: Clear use of these six reads with MAB/MIS Coordinator. Per MAB, all we have available are 6 (Special Program Center) reads, plus two special locations per module.

These reads, however, will not give us viable reports; any evaluating statistics will need to be gathered manually.

B. Long-Range Plan

Again, little change would occur in basic set-up. Each mini-module would have its own three reads - WIP, Technical, Clerical. (This would reduce current, comparable module locations by three per module, or a saving of 18 locations.) Holding files would continue to be handled centrally by the central control unit, as would the initial, terminal digit breakout.

Eventually, depending upon how close we were to moving to Richmond, after/if the experiment were adopted module-wide, we should consider moving the reader boxes into the mini-module areas since the files will all be physically contiguous to the work area.

V. TRAINING

A. Short-Range Implementation

There are various sorts of training which must be done. Rather than an outline of a detailed training plan, what is presented below is a listing of the particular skills particular people will need to acquire before embarking on the experiment. Following that is a listing of on-the-job-type skills expected to be acquired during the experiment.

Skills Needed Prior to Implementation	By Whom Needed
1. Correct approach to managing large group of multi-skilled people; how to delegate workload management to team leaders.	GS-12 Supvr: abbreviated version for GS-7/9 supervisor
2. Workflow (in all disciplines) in and out of module.	GS-12 Supvr., GS-11 T/L, GS-9/10 T/L, GS-7/9 Supvr.
3. Report reading and analysis - all disciplines.	GS-12 Supvr., GS-11 T/L, GS-9/10 T/L, GS-7/9 Supvr., (abbreviated)
4. Brush-up on technical "problem" aspects of PEI/EPS work (GS-9 level).	GS-9/10 Team Leader
5. Brush-up on technical "problem" aspects of Recovery work.	GS-11 Team Leader
6. Brush-up on, or initial basics in, PEI and EPS GS-6/7 work.	To be determined. See Part II of report.
7. Basic workflow in module and in mini-module.	All technicians.
8. Basic cross-training, of each, in at least one additional discipline.	Typist reviewer, blocker, coder, MADJ clerk.

OJT-Type Skills to be Acquired During Experiment	By Whom Required
1. Analytical, possible workload management skills, in particular specialties.	Technicians who choose to specialize.
2. Knowledge of full-range EPS/PEI GS-6/7 skills.	Designated back-up.
3. Almost total cross-training of clericals - not all would learn to type or be data recorders, but all would learn all other jobs.	Clerical group.

B. Long-Range Plan

Simply stated, long range training needs should only be more of the same, with the exception of training a GS-5 control specialist in the art of managing central control to the satisfaction of both a Module Process Manager and four GS-12 supervisors.

PRODUCT WORK GROUP APPROACH

I. RATIONALE

The approach proposed in the following pages addresses itself to what the Design Team felt were a set of key problems. The first is that of employees not understanding the work they do. This is currently evidenced by the unsatisfactory national levels of accuracy reflected in the end-of-line studies and by the exception rates. This inadequacy of understanding was echoed by many of the technicians when they stated their jobs were so complex that they could not adequately cope with them (at least to their own satisfaction).

Another key concern was the concept that the employees are, for the most part, "alone with their jobs." The current jobs were designed with little need for personal interaction between employees. Although seating people together in modules does allow and encourage personal interaction, the jobs themselves do not create much of a need to do so.

When addressing ourselves specifically to these problems we determined that the jobs themselves needed to be restructured to reduce the complexity and to create groups of tasks that could be done effectively by groups of employees working together as teams. That is, rather than expecting each individual to have the skills to do all types of work, the group as a whole would reflect these necessary skills. There would be task-related interdependence among the group members which would give them the feeling that they were part of a team that depended on one another to get the work done and to resolve any problems connected with it.

This approach envisions the formation of "product" oriented work groups. Each work group would have all the skills necessary to process a case from beginning to end. Work groups to process all

types of work would be located in each module. Grade level ladders from GS-3 through GS-11 or 12 would be in each type of product group. Some examples of natural product lines might be: work factors (annual reports, TE), student factors, termination and conversion factors, recalculation and recomputation factors (AERO, ARF, DRC), claims adjudication factors (101's, 201's), health insurance factors, etc. There would also be a mixed factors group to handle the minority of cases involving several "product lines" or products that couldn't be worked in another group. (See figure 1.) The exact number, types, and size of the work groups would depend in large part on the cyclical nature of our work. Needless to say, we would design each group to have a relatively constant body of work throughout the year.

The product oriented work group would be designed to bring together into one unit all of the necessary skills required to complete the designated product. This would include not only clerical and technical skills, but supervisory, managerial, and analytical skills as well. In the long run we would see the groups including not only the types of functions now in the EXPO modules, but also any other currently non-modular functions that are necessary for the product work group to have complete responsibility for the effective processing of an identifiable product. This would include the obligation of answering and resolving <u>all</u> inquiries and complaints related to their product.

Each team would have the capability of monitoring itself and the resources to correct variances and optimize effectiveness. This would mean that much of the short-range and long-range operational and quality analysis now done by non-modular components would become part of the jobs of the various product group members. Since these and all other functions necessary to the product would be present in the work group, complete control of workload management, immediate feedback and necessary corrective action could be shared naturally with all members of the work team. Since these integrated work

groups would have knowledge of and responsibility for all aspects of the product, the members would be ideally situated to deal directly with the district offices on inquiries and problem cases.

We feel this approach will specifically attack the problem of "too much complexity and boredom" by giving each employee an understandable portion of the workload to work with. That is, each employee would have a greater depth of knowledge, but in fewer "product lines." Mastery of the skills of one job level within a product work group would then point toward a natural progression into the next higher level job within the same group. This progression would be based on each group member's demonstrated abilities in each level. We expect that given the usual turnover rate and the native capabilities of most employees, advancement potential for the average person would be at least as good as at present.

In many ways progression into the next level job would be easier. In the present system "bridge" jobs between grade levels are usually lacking. Where there is a progression of grade levels, the employee often is not aware of the nature of other jobs because of physical isolation (even in modules). In the product work group approach, a member would always be exposed to the whole process within his product work group. This in and of itself would tend to make advancement along the proposed career ladders a natural path for most group members.

How would this exposure take place? All incoming work would be sorted and assigned to the group member of the appropriate grade level. It would proceed from these initial points by a filtering, consulting, and referring system which would work as follows. Each employee's work could be visualized as falling into three groupings. (See figure 2.) The first would be work that the group member would recognize as being unworkable by him at his level. This work would be referred to the appropriate co-worker. The second group would be work that would require consultation with a higher level co-worker

before the original group member could proceed to work on the action himself. The third grouping would be work that the group member could recognize as workable by him at his level. In addition he would serve as the consultant to his colleagues on this type of work. This consultative function is a formalized version of what many employees instinctively and informally tend to do already. We therefore believe it would be favorably received, and would not reduce the rate of speed at which the work now flows.

Employees would be able to demonstrate their suitability for the next step in the career ladder reducing the consultative portion of their job. That is, as the employee became more experienced at his job, he would become more competent and less dependent on consultation with higher graded group members. At this point he would in fact be ready for advancement to the next higher level job. This progression through the job ladder would be natural because skills mastered at one job level would groom one for the next higher level job. In effect, the "upper" component of a job would be a link to the "basic" level of the next higher level job. There would be a degree of skills transference in all progressions from one level to the next.

This would have significant implications on scheduling of formal training. Under the present training arrangements, a claims or benefit authorizer receives all formalized training for the journeyman position upon entry into the job. He then has about two years, in most cases, to practice and master all of the subjects presented in class. At the end of this period he is presumably fully trained in all types of work.

The product approach would take this same amount of training time, break it down into several smaller increments, present the first increment to the group member, give him the type of work related to that increment, and then, once he's mastered it, promote him and

present a new increment. The idea here is step-by-step presentation of challenging increments of knowledge and work. In this manner there is mastery of each increment before proceeding to the next. The employee will meet a series of small challenges, overcome them one by one, and have his confidence in his abilities and his knowledge gradually increase over a period of time. This would be much different than trying to apply everything learned in one training class over several years.

Although most employees would probably continue within one product oriented group, a certain amount of horizontal broadening would occur at certain levels. For instance, summarization is a skill which would be common to all product work groups. Even though summarizers would be summarizing different types of actions, the basic skill would be the same. A similar type of horizontal broadening could be expected at the GS-10 level, where quasi-legal type decisions are made. Because of this, lateral movement between product groups would be relatively easy for employees wishing to change product work groups. The normal vertical progression within a product group and the horizontal broadening would create a flexible work force with a fund of general knowledge which could be drawn on to form new product work groups if the changing nature of our work were to make it necessary.

Some employees could be expected to exhibit an interest and demonstrate a high level of skill in several different product lines just as they do now. These employees would continue to be extremely valuable members of the module. Many would probably gravitate into the "mixed factors group" which would handle complicated cases involving several product line factors. Nevertheless, based on employee comments about "too much complexity," we would expect most employees to advance through particular product work group.

A lot of thought and study should naturally be given to grade levels under this concept. It would be advisable to write up sample position

descriptions for the new types of jobs and submit them for expert scrutiny so as to assure ourselves that consultant grade structures would be compatible with recruitment needs of the organization and career expectations of employees. Otherwise, many persons might fear that the product work group approach would lead to some down grading. We do not find this likely at all. Given that the current grade levels are necessary to produce the work we now do, we would anticipate the continuing need for these same grade levels. We fully anticipate that the average grade level will be significantly the same as it now is and that the distribution of jobs across the various grade levels will also stay approximately the same as it now is. This is not to say that all persons in the existing grades would be doing exactly what they are now doing; we would be seeking, however, to put more appropriate tasks at that grade level into the jobs. This is to say, we envision enhancing and supporting the jobs with more higher level tasks. Also, we would want to be able to guarantee to present incumbents their current grade and promotional potential prior to proceeding with any implementation plans.

This might lead one to wonder about the jobs at the top of the product work group hierarchy. How would we add more higher level tasks into their jobs? We anticipate that many of the managerial and analytical tasks now performed outside the technical ranks would be handled by the senior technicians in the work groups. This would enable the product work groups, the people in the closest touch with the actual work, to analyze and manage the work they do. (We feel this would have a significant impact on the key variance of the technical system "incorrect or absent procedures.") Although this would tend to reduce the number of GS-11 and 12 analysts and managers in the current organizations, it would add substantially the same number of GS-11 and 12 technical positions with managerial and analytical skills to the product work groups in the modules. (See figure 3.)

We would expect that all of the product work groups would probably have a GS-11 or GS-12 supervisor depending on the type of work done

by the group and the grade levels of the group members. However, the supervisor's role would be somewhat different than at present. As explained in the introduction, the supervisor would eventually spend the majority of his time "regulating boundary conditions" rather than directing all internal workings of the group itself. The skills present among the group members should enable them to perform many of the tasks traditionally performed by a supervisor.

II. DESCRIPTION OF PROTOTYPE PRODUCT WORK GROUPS

In the preceding section we hypothecated an approach designed to solve a particular set of problems. We also anticipated the need to study the grade implications and perhaps draft position descriptions prior to any experimental implementation of the approach. However, we would like to set forth how two prototype work groups might be formulated out of the existing mix of jobs in the program center to test the concept. One would be a "work factors group" where the majority of workers would be benefit authorizers and the other could be "claims adjudication group" where the majority of workers would be claims authorizers.

Other employees of different types and grade levels would be included in each of the groups as necessary. Since we cannot predict the exact nature of the jobs needed in the work groups, the experimental period would hopefully accomplish several ends. First, it would show us whether the product work group approach is a viable organizational alternative. Second, it would begin to show us what types of skills will be needed in the work groups. Third, it would give us experience in forming work groups out of the existing mix of jobs. We believe that the experience gained during such an experimental phase would point the way towards formulation of new groups within the module. The experimental phase would also enable us to perfect the techniques necessary to bring in any non-modular components that might be necessary.

one of our goals of an experiment would be to determine what kind of "bridge" jobs could be developed between the GS-3 and the GS-7 levels. Another would be to try and determine how best to ease the higher level technicians into managerial and analytical type activities.

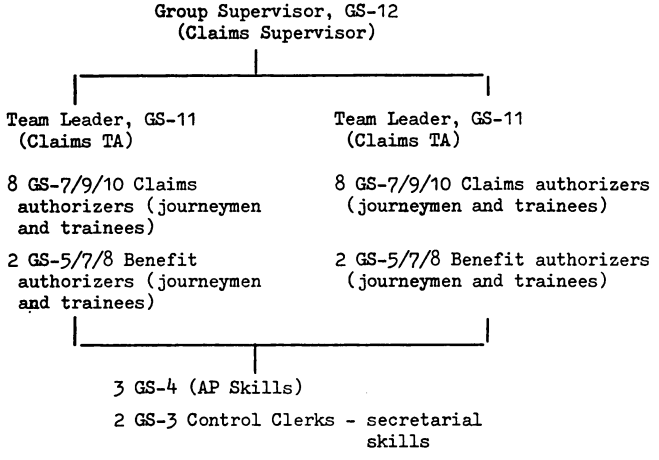
III. PERSONNEL INVOLVEMENT

Composition of Prototype Work Factors Group. (Total 19)

Group Supervisor, GS-11
(PE Supervisor)

2 GS-7/9/10	Claims authorizers (journeymen and trainees)
1 GS-9	PE Technical Assistants
12 GS-5/7/8	Benefit authorizers (journeymen and trainees)
2 GS-4	(AP Skills)
1 GS-3	Control Clerk - secretarial skills

Composition of Prototype Claims Adjudication Group
(Total 27)



Although the prototype work groups should be composed of personnel in existing jobs, we do not envision any wholesale conversion of our current workers into the new product work groups. Instead we believe that a gradual organizational metamorphosis should take place over a period of several years. That is, as workers are hired from the outside or are promoted to new jobs, they would be placed in newly formed product work groups. During the conversion stage we would have a gradually decreasing number of "traditional" positions.

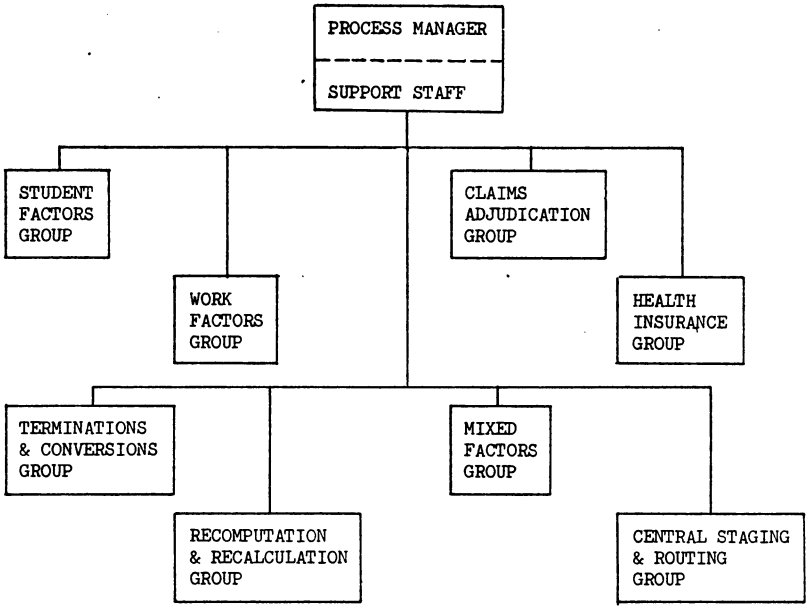
There would be various sorts of training which would need to be done prior to any experiment. Rather than an outline of a detailed training plan, what is presented below is a tentative listing of some of the skills group members would need to acquire.

1. Correct approach to managing large group of multi-skilled people; how to delegate workload management to team leaders.

2. Workflow (in all disciplines) in and out of module.
3. Report reading and analysis - all disciplines.
4. Brush-up on technical "problem" aspects of Recovery work.
5. Basic cross-training, of each, in at least one additional discipline.

Figure 1

PROSPECTIVE MODULAR STRUCTURE (PARTIAL)



Each work product group would have all the skills necessary to complete a product. (Grades GS-3 through GS-11 or 12) groups would include current non-modular functions as necessary.

Figure 2

WORKING CASES BY DIFFICULTY

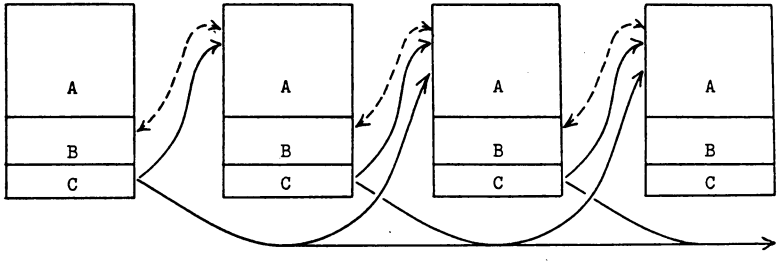
<----------> = Consultation

————————> = Passing work on

A = Recognize as workable - also able to advise another group member

B = Recognize, consult, work

C = Recognize he cannot work it himself



A GS-W level group member

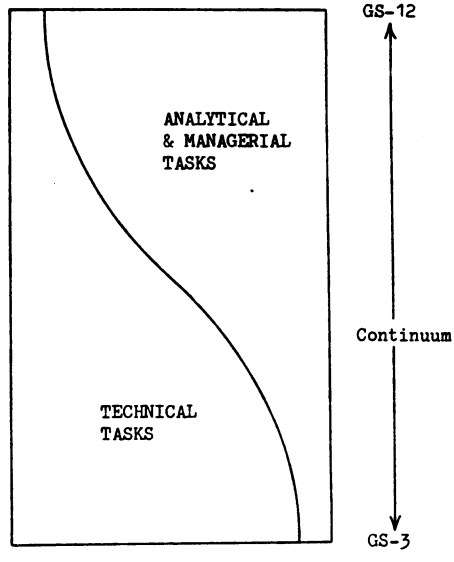
A GS-X level group member

A GS-Y level group member

A GS-Z level group member

Figure 3

TASK-TYPE COMPOSITION OF JOBS



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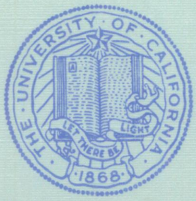

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