

# CENTERFOLD

News and Information from the Center for Quality of Working Life

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HAPPY NEW YEAR everyone! This issue of the Centerfold will feature a special report on the Center's November guest speaker, Christian Schumacher. Mr. Schumacher is Project Coordinator for the Industrial Relations Department of British Steel Corporation, and has responsibility for new plant design and for restructuring work at existing plants. Schumacher, son of the late E.F. Schumacher of Small is Beautiful fame, has lectured widely to professional societies, management centers, and universities. In his presentation at UCLA, Schumacher focused on the work restructuring activities currently underway at British Steel Corporation.

As the biggest manufacturing unit in Europe, British Steel currently employs about 1 percent of the total working population in England. Schumacher was asked to conduct his studies to help alleviate serious operating problems at the company, including absenteeism that averages twenty-five days per worker per year, and financial losses of several million dollars per DAY! Schumacher is presently applying a sociotechnical approach to work restructuring, based on the following seven fundamental principles of work design:

I. The basic organizational unit should be the primary workgroup, 4-20 people. Schumacher's discussion of this principle stressed the fact that larger groups spontaneously divide themselves into groups of this size anyway; that the primary workgroup is the maximum size that can be managed efficiently; and that flexibility and communication is greatest WITHIN and least BETWEEN primary workgroups.

II. All workgroup members should be placed in the same payments system and the same broad conditions of employment. Schumacher listed factors that have been shown to adversely affect group cohesion and cooperation, including: different bosses, shifts, trade union memberships, promotion lines, geographical areas, payment systems, blue vs. white collar status, and individualized job descriptions.

III. Flexible working arrangements between members of the same workgroup should be maximized. Adherence to this principle results in reduction of manpower bottlenecks; better backup from multiple skills; less fatiguing jobs, because of greater variety; ability to tailor jobs to individual skills to maximize individual contributions; and encouragement of informal cooperation between team members.

IV. Each primary workgroup should be led by a designated supervisor. In this way, the supervisor has the authority to determine priorities for the group as a whole, and to coordinate efforts toward a common goal. Supervisors can allocate the relocation of work between group members to achieve optimum flexibility, and, by providing leadership and discipline, the supervisor ensures effective group working and high productivity. Note that an authoritarian supervisor is not to be inferred from the above recommendation; Schumacher simply believes that some one person within the group should be designated as the supervisor. Principle IV can be more clearly understood by taking it in context with its companion, Principle V:

V. Each workgroup should, as far as possible, be responsible, through its supervisor, for planning its own work. According to Schumacher, this self-responsibility stimulates initiative and hence increases productivity. This discretion must exist before the employees have the freedom to interchange jobs in a flexible manner, as circumstances demand it. This local discretion gives workers the opportunity to adapt quickly and intelligently to changing requirements. Group planning for production, for machinery, supplies, and transportation, and for personnel can be done through the supervisor.

VI. Each workgroup should have the opportunity to evaluate the results of its performance and to compare these results with standards. Adherence to this principle helps to improve communication and information flow, and to achieve targets and results.

VII. Each workgroup should perform a relatively independent and significant set of activities which cluster together to form a whole task.

In summary, Schumacher's principles recommend that work should be organized so that supervised, cohesive primary workgroups, as far as possible, plan, do and evaluate whole tasks. Schumacher believes that this is the formula for getting good labor productivity, and the precondition for quality of working life, because it is the way to meet workers' nonmonetary needs. Work structured in any other fashion not only does not meet these nonmonetary needs, but actually inhibits meeting them. What British Steel is trying to achieve with its method of work structuring is to create the best environment for its workers' personal growth and development, as well as the best environment for increasing productivity.

Fitting these principles into the technical system of steelmaking is quite difficult. Schumacher and his colleagues have developed a method of analyzing the activities of the technical system into five categories, depending on the amount of change in the product: At the lowest level, storage, there is no change in the product except a change in time. At the next level, transportation, there is a geographical change in the product only. In the third level, ancillary operations, there are peripheral, cosmetic changes in the product. In the second highest level, supplementary transformations, there are significant but not essential changes to the internal constitution of the product. Finally, at the highest level, basic transformations, we find the key points at which the major chemical or physical changes take place in the product. Profiles of the degrees of change in production in differing technologies, such as steel, paper, adhesive tape, and porcelain, have been graphically set down by the researchers working with Schumacher.

Some consequences of differing degrees of change in production include:  
We move from a minimum to a maximum degree of change as:

1. The flow of information in a system becomes faster, more comprehensive, more frequent, simultaneous, and specific;
2. The finance function becomes more highly paid, with high value added and high error costs;
3. Production becomes more unstable, with critical variances, uncertainty, and process rather than production control;
4. Technology becomes more highly interdependent and more complex, with tighter time constraints and more centralized control.

Technical and informational links in a process are GREATEST between activities surrounding a basic transformation and LEAST between storage activities. A production system smaller than the cluster of activities surrounding a basic transformation cannot be operated independently; to operate a production system, the workers must plan it; do it; and evaluate it against standards. Work should be organized so that supervised, cohesive primary workgroups, as far as possible, plan, do, and evaluate the clusters of activities surrounding basic transformations.

Schumacher feels it is necessary to design new technology which matches the needs of the social and technical systems. He sees his long-term task at British Steel as continuing to ask the basic questions about the technology of steel works. Ideally, technology and organization should match the process of the industry. Technological constraints on group task design, such as excessive scale, functional specialization, machine intrusion, bottlenecks, automation, geographical isolation, and assembly lines tend to cause a mismatch between the social and technical systems.

Schumacher concluded by emphasizing that the work structural approach is only the tip of the iceberg. The total strategy for change is three or four levels deep, with the outward level the structural one and the most inward level the personal one, i.e., a personal model of achieving change by increasing people's awareness of other people and of themselves. Between the innermost, personal level and the outermost, structural level is the level of disciplinary procedures. On this level, issues such as management style, promotion, retirement, selection, training, and meaningful work should be the same for everyone, but the way each individual person is treated should be tailored to meet the individual's needs.

Mr. Schumacher's presentation was followed by a brief question and answer period, and appeared to be thoroughly enjoyed by the audience, and by Center staff.

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READERS PLEASE NOTE: As of January 1, 1978, I will be leaving the Center to explore other employment opportunities. I will, however, continue to maintain my affiliation with the Center as Newsletter Editor, so if you have any requests for information or materials, please continue to contact me at the usual Center address.  
See you next issue--BMW

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