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## A Shift to the Production of Services

We in the United States are in transition to what some are calling the postindustrial society. One characteristic of the transition is a shift from the production of goods to the production of services. That shift is made possible only by the increasing effectiveness with which we have been able to produce goods. We now produce far more food with less than 5 percent of our work force than we did in 1890 with more than 40 percent. Further, the plenitude of industrial and consumer goods we now produce, plus all mining and construction, require about the same one-third of our work force as did the relatively much lower output of 1890. It therefore has been possible to increase the number of those working in the service sector from about 25 percent in 1890 to above 60 percent today. That shift has been made both because we could make it and because we wanted to do so. We wanted more health services and more people in education. We wanted to move to the cities, with all that implies in the way of government and governmental services.

The ever-increasing pay scales generated in industry, possible only because of steadily increasing productivity, have spread to all other work areas in our society, whether productivity could increase or was increasing there at an acceptable rate. This development was a reasonable one so long as the productivity gains in agriculture, industry, and the public utilities were sufficiently large to justify increasing rates of pay. Now that the services sector employs far more than half of the work force, we no longer can expect the rising productivity of agriculture, industry, and the public utilities to be sufficient to carry the burden for all of our society.

This shift in effort from goods production to services production results in a constantly increasing proportion of our total work force being engaged where, in general, we simply have not learned how to be as effective as we are in goods production. As a consequence, each year we have relatively less total effort available to apply to seizing new opportunities or solving national problems. I suggest that this shift is related to a large portion of the increasing frustration about our apparent inability to improve our institutions at the rate we think we should.

The work areas in which we have enjoyed high annual increases in productivity per person have been in the private sector, where the profit system automatically forces management to recognize increasing costs either by increasing prices or improving productivity, or both. In general, competition limits severely the ability to increase prices; consequently, a constant effort is exerted to improve productivity. The private sector has been reasonably successful in using innovation, capital, and management to improve effectiveness and reduce costs.

One of the most complex tasks we face in the United States and one that almost certainly will involve major overhaul in our institutions is satisfying the increasing demand for such services as education, health care, and many others, with improved effectiveness and markedly decreased costs. Probably, we need to find ways to provide a much larger proportion of these services through the private, profit-making sector. Where that is not possible, we must evolve effective substitute mechanisms in the public sector. The creation of the new U.S. Postal Service is one approach. I hope that the October 1971 symposium of the National Academy of Engineering, "Application of Technology to Improve Productivity in the Service Sector of the National Economy," will suggest others. We will need them all.—P. E. HAGGERTY, *Texas Instruments Incorporated, Dallas, Texas*