each individual report the computer can make literally thousands of tests to determine which figures are out of line and which specific items should be corrected. For some Federal agencies, the ability of the computer to make such consistency checks is very important. Thus the Internal Revenue Service uses computers to check the internal consistency of items contained in each individual tax form. Such an operation is basic to one of the major administrative functions of this agency, but before the introduction of the computer it was too expensive and time consuming to be feasible. In such uses, the computer is adding a new dimension to the work and increasing the overall efficiency of the agency.

Data reduction and tabulation

Even with quite sophisticated punchcard equipment the difficulty of handling large masses of information made it imperative to reduce the information as quickly as possible to a more manageable volume. In the past this generally led to the development of a given set of tabulations, which became the final form of the data and which were all that was available to prospective users. Under these cricumstances, the primary focus of attention by the producers of data was on the final published form of tabulation which was to result from the data processing. Once these tabulations were finished, there was little or no thought of utilizing the original reports for alternative analyses, since the cost and time required for additional data processing were too great. With the dramatic reduction in cost and time which the computer has yielded, however, the focus of attention is shifting to the basic information. It is now possible to use the same basic data again and again for different analytic purposes. From the point of view of analysis, the original unaggregated microinformation offer greater potential than tabulations of a more aggregative nature. Where relationships of data inherent in the basic reporting unit are important, aggregate tabulations often hide more than they illuminate.

New types of analysis

The ability of the computer to carry out detailed and complex computations on great numbers of individual cases at very high speeds has made it possible to make types of analysis which are not feasible without it. For example, prior to the introduction of the computer, aggregated tabulations of individual tax returns were used to estimate the impact which proposed changes in the tax law might have on total tax revenue and on particular classes of taxpayers. With the introduction of the computer, however, it became possible to develop a much more reliable method. A sample of 100,000 tax returns was obtained, and a computer program developed to recompute each tax return individually according to the proposed revision of the law, and thus show for the sample as a whole the exact impact of the change. This method not only provides a cumulative measurement in terms of total tax revenue, but also permits an analysis of which classes of taxpayers are affected, and by how much.

Cost of electronic data processing

Despite the very marked increase in the amount of data processing being done in Federal statistical agencies as a result of the introduction of the computer, the cost of data processing has become a smaller percentage of the total cost of obtaining information, and it represents a very small fraction of this total cost. In many cases the cost of the field survey may account for as much as 95 percent of the total cost, and processing the data less than 5 percent.

Data storage

The problem of storing basic statistical information has also been greatly reduced. A computer tape today will hold information equivalent to over 100,000 punchcards, so that a relatively small number of tapes may contain information which formerly would have occupied a great deal of space. Before the development of efficient tape storage, past data could not be kept for long periods by Government agencies, since room had to be made for the continuous inflow of new punchcards. For the first time it has now become feasible to keep the original information in machine readable form at very low cost.

Increased use of data

An important aspect following upon computer development has been the increasing use of basic computer tapes by others than the agency collecting and processing the original information. Prior to the computer, when the focus of data processing was the production of tabulations which would satisfy all users,