APPENDIX 12

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I have carefully read the IRS "Report of Proposed Changes in the Internal Revenue Service's Computerized Data Processing and Accounting System," and the draft of the OTA "Investigation of a Request to Assess the IRS Tax Administration System." I am pleased to submit the following remarks.

I. Nature of the Proposed Tax Administration Syste (TAS)

It is difficult to tell from the scanty IRS report if, as IRS claims, they are simply building a better wheel, or as previous commentators suggest, they are re-building the entire transpiration system. Indeed the IRS report itself seems confused on this: great advantages are promised (along with great expenditure) but when objections are raised about its social impact, the report claims very little changes from existing practice will occur.

Some facts speak for themselves: the proposed system will cost nearly a billion dollars when complete, will involve the training of *50,000* employees in its use, and will be the largest, most complex, and sophisticated state-of-the-art system of its kind at completion in 1985. These facts alone argue for Congress and the public to make a thorough assessment of the system.

-Do we want to build a billion dollar system on the basis of an antiquated and unnecessarily complex tax structure?

-Will the building of the TAS simply permit the continuation of existing tax practices, obviating the need for simplification and reform?

-Could the same resources be better spent towards simplifying the tax laws?

II. Impact on the Quality of Life for Citizens

Previous commentators have argued that the TAS system may pose a threat to the quality of life for citizens by enfringing upon their privacy, threatening due process of law, and inhibiting exercise of constitutional rights by potential misuse of the system. These are very real threats which careful assessment and monitoring by outside observers may be able to avoid. But there are other aspects to the quality of life than constitutional rights.

(A) Degradation of Service

Observations by myself and others indicate that in both public and private sector applications there tends to be a decline in the quality and often quantity of services provided clients, supplicants and customers subsequent to the installation of management information systems. It appears that unless systems are specifically developed to deliver more and better service (such as the airline reservation system), they tend to do so only as an incidental by-product. Indeed a distinction ought to be made between service systems and management systems. Most systems development follows rather closely the management information systems design. The purpose of these systems is to make life more convenient for managers by orchestrating the flow of information from point of collection to senior management and to provide for closer surveillance over the client population and lower level workers.

While management information systems may lead to laudable advances in efficiency and effectiveness, the gains are often at the expense of service. Examples abound in universities, hospitals, government agencies, and private enterprise which illustrate that the quality of service to clients declines.

The proposed TAS system is a management system. IRS claims the average citizen will derive significant benefits in service from the new system (largely by having more immediate access to tax records). But several questions emerge:

-Has IRS done a survey of taxpayer needs for service?

-How will the TAS assist taxpayers in the preparation of returns?

-Will TAS make it easier for local IRS agents to serve the public with tax preparation assistance?

The current TAS plan appears to distort the balance between the goals of service to taxpayers and management effectiveness in surveillance and enforcement. One topic for consideration by any future assessment should be how

this billion dollar system can be used to deliver more high quality service to the average citizen.

(B) Taxpayers as Unpaid Labor

The decision by managers to build systems suited to their convenience and the need for organizational efficiency often leads to the seemingly bizarre result that the clientele and lower level workers have to do more work for no pay. The clientele in most cost-benefit studies of modern systems typically appear as unpaid components who need nevertheless to behave in a certain rigid way in order to make "the system" work efficiently -- that is, to assure benefits accrue to the organization and the convenience of management. Clients of social agencies are expected to travel further, wait in longer lines, sit in receiving rooms, all without pay so the system can operate efficiently. Similarly in hospitals which have developed hospital information systems, patients are still queued before diagnostic and treatment centers although individual appointments could be simply accomplished without stressing modern computer technology. Likewise with students who in automated registration systems must take class cards back and forth from one instructor to another for signatures which the computer cannot read anyway. It is precisely this redundant labor which "modern computer systems" were supposed to eliminate and which presumably they could eliminate.

The TAS proposal makes little or no mention of taxpayer and lower level employee workloads in the preparation of taxes or in the defense a taxpayer often has to mount when disagreements arise. Under the current accouting system where citizens can count on several weeks or months delay, the work of preparing taxes and defense thereof can be scheduled to accommodate the timing of other responsibilities. Will the new system with much faster response times impose more disruptive scheduling requirements upon taxpayers? other questions along these lines are:

-Will the proposed TAS system increase the case load of lower level workers and thus decrease the amount of time they can spend with individual taxpayers in face-to-face interaction?

-Is it conceivable that TAS be built in such a fashion that some of the benefit of modern systems would accrue to the citizen, e.g., through less redundant and unpaid labor?

-Has the IRS investigated existing workload requirements on taxpayers and considered how the TAS may affect them?

(c) Systems Take on a Life of Their Own:

Harassment and Svstem Error

It is a sanguine thought that computers only do what they are programed to do. There at least three reasons why this notion is untenable:

1) Dirty Data: The admittedly mundane consideration of how information comes to the computer and how it is put into the machine takes on real significance when dealing with large numbers and when important decisions affecting reputations and government action are involved. Public sector systems are notorious for basing decisions on erroneous input data. Recent studies have found State Criminal Justice Information systems operating with 20% of the files having substantial errors of fact and welfare systems with case errors of 24%. Private systems--from credit data reporting systems to insurance company medical files--may be just as unreliable.

In the case of IRS, basic data is supplied by individuals, financial institutions having transactions with individuals, and other government agencies. Even if we assume this information to be correct, actually putting it into the computer requires some keypunching. With the kind of data IRS works from, skilled keypunchers can be expected to make at least one error in a hundred strokes and probably more. With a 1:100 error rate, a reliability check can be used to reduce the probability of error to 1:10,000. If 100 million new returns are filed in a year, this works out to 10,000 cases where business returns, but includes only individual taxpayer returns. If we admit that other institutions which report to IRS also are subject to the same kinds of errors, the actual number of errors is probably a good deal larger than 10,000 returns. Several questions should be asked:

-What is the rate of error in the existing system attributable to erroneous input data, and keypuncher error?

-What steps have been taken in planning the TAS system to reduce this error rate?

-In planning TAS, has the IRS taken steps to increase the reliability of data supplied to them by employers and financial institutions?

2) Programming Error: The internal reality of a computer is a program, composed of thousands of hierarchically arranged and logically related statements which instruct the machine how to deal with information fed to it from outside. Unfortunately,

the internal systems reality often does not jibe with the reality most of us inhabit. This occurs for a variety of reasons. In translating manual information practices to machine form, important rules of thumb invoked by employees but not part of the official decisionmaking procedure are overlooked by programmers and systems designers. In New York City, for instance, the Traffic Violations Bureau built a traffic scofflaw system to increase compliance from violators. Unfortunately they failed to allow for the situation where a car is stolen, and then driven around town for several weeks by the thief before it is recovered. The computer was programmed to send threatening messages to the legitimate owner. In the most recent publicized case, the legitimate owner had to appear several times in court, and before several hearings where he was advised it would be better to pay up.

Moreover, it turns out to be very difficult to modify the Traffic Department's procedure. In the manual tub days it was possible to reach in and pull out a single file and expunge it. Not with computers. In this event the original programmers had moved on to other jobs or were deceased, and they left very poor documents on how the program worked (not untypical at all). As the Director of the Bureau pointed out, it was impossible to estimate how much it might cost to "patch" the program. A patch might work, but it might not, in which case the system would "crash." In this latter event, an entire new program costing a considerable amount of time and money would have to be developed.

To some extent these problems can be avoided by adequate documentation of programs, and the use of modular as opposed to global programming strategies which more readily permit changes (and which are more expensive in terms of machine efficiency).

-Has IRS adequately anticipated the inherent difficulties in re-arranging existing automated flows and the creation of new programs to serve entirely different functions that heretofore? What level of resources have been devoted to de-bugging the system?

3) Inter-Dependency of Systems: With the discovery that computers could talk to one another, a new problem arose: it is possible for one system to take incorrect output from another system and treat that output as if it were correct. I was recently asked by the State of New York, for instance, to pay taxes on a capital gains made in a previous year. Soon letters arrived from the City Income Tax Bureau. Several letters to both jurisdictions protesting that I never made a capital gains in that year were to no avail. I was able to obtain copies of my federal returns from the IRS, and

fortunately was able to show both the State and City at a hearing that there exist no physical records of such a capital gains despite the fact that computer records supplied by the IRS indicated such a gain.

The actual source of the error in federal computer tapes will no doubt remain obscure. But this illustrates the kind of organizational ping-pong to which citizens are subject as very complex systems socialize with one another. There seem to be no mechanisms developed to allow one system to check on the reliability of incoming data from another system. No doubt these mechanisms would be expensive. But I am concerned that as the speed of transactions among federal and state systems increases, and as the volume increases, states and cities will devote few if any resources to checking the reliability of incoming data from the IRS. It is much more efficient to accept the system reality as the only reality.

Most commentators point to the danger that the TAS could be used intentionally to harass groups of citizens. The point of rTW remarks on system errors is to suggest that a good deal of harassment generated by any large system is unintentional. This kind of harassment can be reduced to a minimum, technologically feasible level only with careful planning and the expenditure of resources.

(D) Obfuscation of Authority

As large systems centralize into larger and larger operations, as dependencies grow among systems, it becomes increasingly difficult to find responsible individuals who can change the action of the systems involved. The computer scientist !1. Minsky has written that major programs of large systems involving millions of transactions "can no longer be understood by any single person or by a small team of individuals. " Joseph Weizenbaum, another computer scientist, suggests that we are placing great reliance on huge systems in the hope of being able to rationally control and analyze society but which have surpassed the understanding of their users and become indispensable to them.

When eminent computer scientists begin raising red flags, suggesting that some large systems may be beyond the control of even those who build them, I think society should pause at least one moment and take stock. These statements are not just idle musings as the following incident in New York illustrates.

In 1968 New York State completed conversion of its criminal records (arrests, rap sheets, finger print file) from manual to computer files. Shortly thereafter it began routinely

sending all new arrest records to the F.B.I. to check for potential outstanding warrants in other jurisdictions. In establishing the computer programs to govern this exchange, programmers simply forgot about the 1944 Youthful Offender Law which barred government agencies, banks, and other institutions from access to criminal files for persons judged to be youthful offenders. The F.B.I. criminal offender system accepted what was essentially illegal output from New York, and made it available to all agencies which typically have access to its files. And since 196? the F.B.I. has collected over 100,000 computerized youthful offender records. In 1973 the Director of Data Systems for the State Division of Criminal Justice Services informed the FBI it was releasing information which according to State law should be sealed. The F.B.I. responded that it was not its responsibility to verify the accuracy or legality of data submitted by the state, and moreover that the State would have to submit the names on a purge list (and bear the cost of programming.) By 1977 there remained 67,000 illegal files from New York State in the F.B.I. system.

It is important to note that the facts in the example became available only after the threat of legal action by a man who had lost two jobs with banks because of improperly sealed files.

The above example illustrates how important features of social reality, in this case State laws, can be easily overlooked by programmers. It also illustrates the problem of responsibility; to argue the FBI not responsible for, illegal information in its files supplied by another agency is like arguing a fence is not responsible for selling property he knows is stolen.

Who Will Oversee These Systems?

The example above also illustrates the problem of oversight with these mammoth systems. I am optimistic that these systems can be effectively monitored if sufficient resources are devoted to the task. The question is will the society actually develop mechanisms for effective oversight and guidance? With respect to TAS:

Is there an agency of Congress with sufficient resources and skill to provide effective oversight?

What are the costs of an oversight mechanism sufficient to the task? Should these costs be added to the overall TAS system costs?

The **question of whether the TAS system should be built as planned seems ultimately to depend on an assessment of society's ability to guide and monitor this system.** Without this social assessment we **are liable to find the rockets we** shoot up coming down on our heads.