Pins and hit-parades :

The information society's search for a new model

by Gordon Thompson

When France's Jean-Baptiste Colbert observed, two hundred years ago, that colonies existed for the good of the Mother Country, he was expressing his total, but limiting, belief in the mercantile economic system. England's Walpole expressed a similar thought, in that he knew not where England would be if it weren't for the colonies. Even as he spoke, the new economic system was already creating wealth in England. When Adam Smith spoke of making pins to describe that new system, he was using this process as a metaphor for essential aspects of the emerging industrial economic system.

Today, we are blinded by that system, and like Colbert and Walpole before us, we can see no further than its limits. We can't find a latterday Adam Smith with his metaphor for tomorrow's viable economic system, because we can't see beyond the limits of our past experience. When examining our situation today, we must begin by freeing ourselves of the constraints associated with the old industrial economic way of thinking, and look beyond for new processes that produce real increases in social synergy, the ultimate source of a society's wealth.

It is necessary to recognize that Adam Smith's pins are not a description of the "content" of an industrial society, if one can call the products of an industrial economy its "content." It was enough that Smith could recognize the vital process involved in the wealth creation of the new economic age. The fact that he didn't visualize the automobile and

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the extent to which it would dominate industrial economic activity did nothing to diminish the value of his insights. When looking at new opportunities, we, in all likelihood, will be as far off in identifying the really important content material as Smith was in using pins instead of automobiles.

We have at our disposal a whole new technology; for information technology is far more than a mere extension to industrial technology. Powerful new technologies pose challenges to the societies in which they emerge. The iron stirrup led to the feudal system in Europe. No one questioned the possible alternatives; they simply went along with the flow. Since that time, we have learned that there are opportunities for choice when these technologies appear. This is new. Information technology could be the first technology that mankind adopted in a rational way.

The main question we must face is this : is information technology something that merely fits inside our present socio-economic system, like porridge in a pot, and is no more interesting than porridge in a pot, or is it the basis for a whole new pot? To answer such a question we must step back and do some hard basic thinking. However, an example of the two ways of thinking about information technology is in order.

When accountants were faced with the computer they had two choices: they could adapt the computer to their ways – more porridge for their pot, or they could make accounting into something else with the new power at their disposal – redesign the pot. They chose the former route, and most computer accounting programs are simply record-keeping, report generators. The accountants ate the computer and prospered mightily. Their reports were thicker. Little else changed. It was left to a non-accountant to produce Visicalc, the electronic spreadsheet that revolution-

ized the way most of us really do our accounting.

As a society we face a similar choice. We can eat the computer, confine its use to increasing our productivity in the Western sense, or we can go far beyond. Unfortunately, unlike the accountants, we are unlikely to prosper mightily if we make the wrong choice. Our present industrial economy can't supply the roles, or jobs, we now need, and a further replacement of people with technology, which is the classical approach to increasing productivity, will exacerbate this employment crisis. Furthermore, the economy is hard-pressed to supply the social services we demand – the economy must be seen to expand in a benign fashion, but expand enough to meet our demands for jobs and social services without incurring massive public debt. The "eat the computer" road of applying the computer to merely do better what we are already doing holds no long-term cheer.

To succeed we must discover ways of using the technology that are seen to create new wealth. This goes far beyond merely manufacturing the hardware. It also goes beyond using the technology as a substitute for the printing-press or other conventional information distribution means. Treating information as some kind of tangible economic good simply because this is a viable option with the new technology is also an inadequate response. More simplistic industrial thinking. No, we must go beyond these models that are firmly rooted in our past experience with the exchange of hard goods within an industrial socio-economic system.

Perhaps the most difficult task facing a society is the assessment of its information. Was the neolithic hunter, returning with a prize, telling the truth or was he lying when he pointed in a particular direction? His information had to be assessed by the community. Military history is full of instances where

the accurate assessment of intelligence information was the central problem. One could argue that society's major role is the nurture, assessment and preservation of information. And of this threesome, assessment is the most vital and least understood.

Today, we tend to assess such information by means of the mass-media. We assess music that way, and even ideas on matters ranging from capital punishment to abortion. This means of information assessment, using a combination of broadcast media and polls, is clearly less than optimal. There are three reasons for this. Firstly, it is a terribly slow process. Secondly, it can't handle enough issues at a time. Thirdly, it is biased because of our appetite for the sensational.

One can think of these media and their polls as a sort of feedback loop that plays-back to society an image of what that society is doing. Our hifi sets use feedback to make them reproduce music faithfully. Feedback is also used to make automobile brakes that don't skid, and thermostats that keep a constant temperature inside our houses. Systems theory teaches that a regulator, or feedback controller, must have "requisite variety," which losely means that it must be as fast and as rich in variety as the thing it is controlling.

Clearly, the feedback function performed by media and polls doesn't meet this "requisite variety" criterion. It is too slow, has too few states, is too simple, and is distorted.

That a feedback system is involved in the assessment of our information, and that that system is technology-dependent is illustrated by a brief history of the pop-music hit-parade. Before radio, in the first quarter of this century, a hit-song was top for a year or so, and there weren't many at a given time. They could be sold by salesmen going from door-to-door. After radio, in the '30s, we had the national hit parade, the "top 10,"
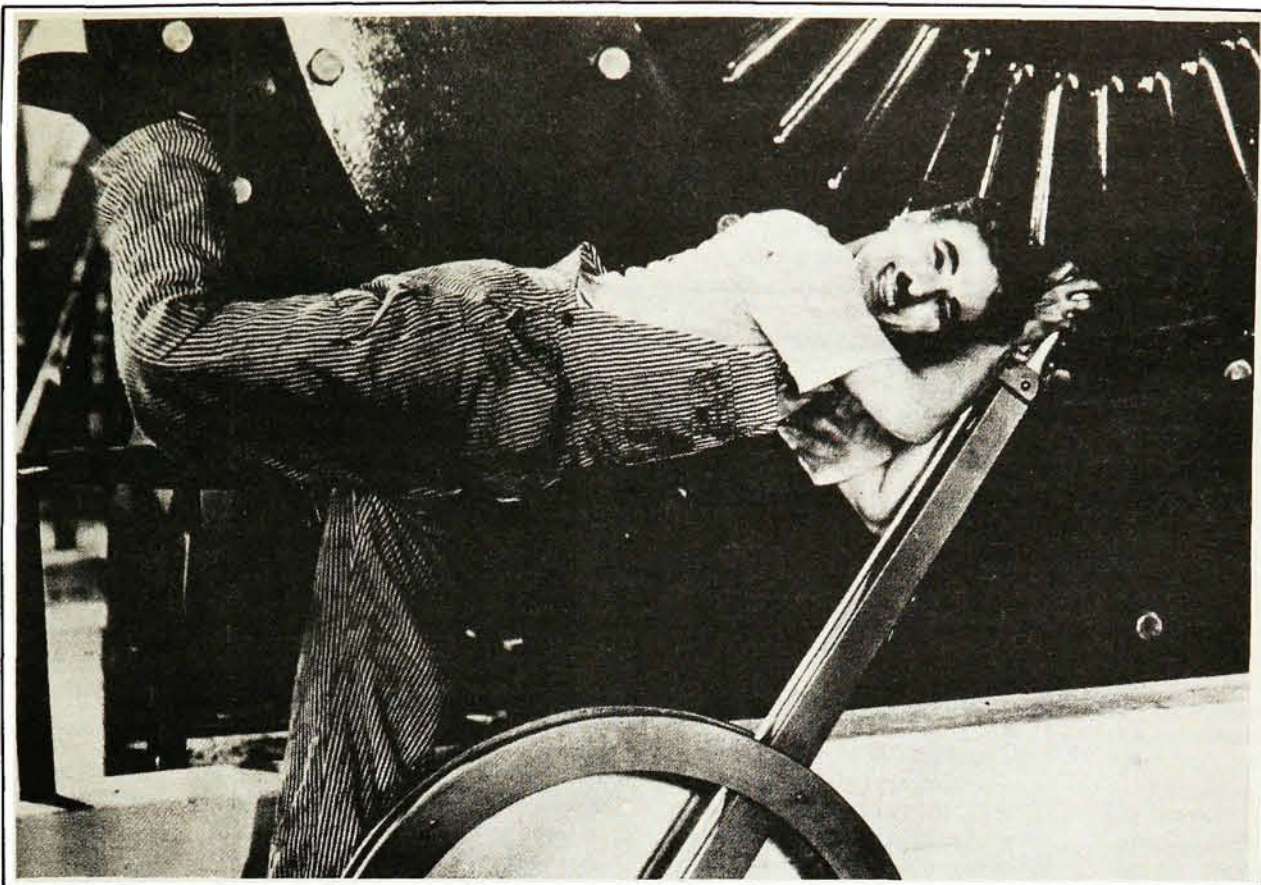
● Media play back to society an image of what that society is doing

and they would last only a few weeks. The entire continent acted as a whole, and all waited anxiously to hear the current week's pronouncements. The rate had been accelerated, and the variety increased. There were more hits on the go at a time, and we were able to process them quicker. Speedup and enrichment were the key.

When television usurped the national networks from American radio, radio went local. Disc jockeys phoned the record stores and asked what was selling. They phoned the next town and asked them for their sales data. In their programs, these disc jockeys told us what was popular; they prodded us into a consensus about the significance of the music they played. Together, listeners, stores and disc jockeys were a system for the assessment of that music. It wasn't designed as such. It simply came into existence. This system led to wealth creation — a lot of people found new jobs, and a lot of records were sold, more than during the "top 10" days.

Hits travelled like a wave across the country, and we got the top 40 in one of four categories instead of just the top 10. Again, speedup and increased variety. The principal impetus came not from a technology directly involved with recording, but rather from the deployment of television. Fiddling with the recording technology did little compared to forcing radio to go local by launching television.

Today's somewhat moribund recording industry could perhaps use another technological jolt to once again induce speedup and enrichment. One could envisage a system where an individual's musical requests are delivered down a wire for a fee. Now this isn't new; it dates back to the mid-'20s in Hungary, and was called the "Pleasure Machine." In our latterday version, the hit parade would be calculated moment by moment, and one would win a prize if one choose a song that would be number one an hour later. The technology would

be chosen not for its ability to deliver crystal-clear songs, but instead to handle the usage data, rapid "on line" hit-parade computation and display. The keys would be: speedup, variety enrichment and usage stimulation through feedback, with requisite variety.

When Beethoven died in poverty, his genius was not widely recognized. In Vienna, today, there are many houses bearing a plaque denoting that Beethoven lived there: he moved so often because he simply couldn't pay the rent. At the time, the communications technology necessary to build a consensus about the value of his work simply did not exist. On the other hand, John Lennon was shot because today's technology did the job perhaps too well and too fast.

Technology, feedback loops and social systems are all tied together in the processes used in assessing information. By themselves, each of these is fairly well understood, but little known in combination. Yet it is this combination that is the likely basis for the new wealth creation process in an information society.

Overnight the value of *Chariots of Fire* increased when the assessment of the Academy of Motion Picture Arts an Sciences was announced. Had we all disagreed with the Academy, if theirs had been a totally unpopular decision, that value would have evaporated. In the final analysis, it is we who vote with our dollars spent on tickets or records that validate the predictions and assessments made by the pundits. But today's processes are too slow to support enough activity to really impact the economy. They need a shot in the arm. Can we learn from the hit parade cited earlier?

One would think so, but the sad truth is otherwise. No high-tech experiments at present incorporate a "hit parade", which is to my argument what pins were to Adam Smith's. No Telidon system features an on-line, real-time hit-parade for its content, or makes available

to those about to make a choice the usage-data associated with the things they are considering. It is unfortunate that Telidon has been used as some kind of extension to the printing press, and no attempt was made to capture, process and use usage-data as a stimulant; for that is what hit parades also do: they stimulate use.

While Teletext, pay-TV and other broadcast media constrain their content into behaving as a public economic good, Videotex systems allow their content to act as a private economic good. This is a unique and new property, for now reliable usage data can be collected by such systems. But it is the *assessment* aspect of usage data that is the principal benefit of collecting this data, *not* author-reward. Limiting the benefits of the private economic good way of handling information goods to mere author-rewards denies the assessment aspect and the attendent usage stimulation inherent in the hit-parade process. Without such stimulation and the higher levels of usage, there is little point in being an author.

Of course, hit-parades are simplistic, just as the manufacture of pins was simplistic in Adam Smith's day. In spite of its simplicity, the hit-parade is probably a very good metaphor for the information assessment means that underlie the new wealth-creation processes of a viable information society. Hit-parades are positive feedback; they tend to build the comers, and crush the downers. They speed up assessment. When that process is speeded-up, the quantity that can be processed increases, until the system bogs down. Within limits, assessment speedup appears to result in more material being produced.

Usage data is vital. An intelligent system that knows who is using what, and also knows something about each users' demographics, can not only provide overall assessment information, but can also help a given user find

quickly the content that satisfies him. This is a vital point, for a system that helps its users with selection, be it as simple as the hit-parade idea, makes the user think the content is better than it might actually be. If the help process improves as the user exercises it, as it might well, then the user's perception of the value of the content will climb continually.

The technology allows some very rich opportunities beyond the simplistic hit-parade. In the field of bibliometrics, usage data (eg. citations) is recognized as a basis for content assessment. The interesting thing to note is that this requires very large computers. A recent experiment, where only a portion of the scientific journal population was analysed, needed to be run on one of our largest computers. The problem is as complex as computing the weather.

Usage data is the new metric of the information society. The new good that corresponds to that metric is the ethereal good, unembodied information; information essentially free of any physical carrier. The ethereal good, like all intangible goods, is very difficult to evaluate. That's why assessment is so crucial. Furthermore, the ethereal good can be copied for less than the cost of a *bona-fide* version. A book doesn't meet this criterion, for it is generally cheaper to buy a proper copy in a bookstore than to Xerox one.

A tremendous amount of research is required before we really know all the pitfalls in generating significant amounts of social synergy through the use of the new information technology. We probably have all the high-tech we need, but are dismally short of the social-science knowledge needed to design the very large systems that will be required to pull off an information society that really produces wealth. To go beyond the limitations of simplistic industrial-type thinking, we must learn to trade our pins for hit parades. ●