The series constitute ‘ideas in progress’ after the notion described by I.J. Good in ‘The Scientist Speculates.’ Good also describes ideas about ideas as ‘partly baked ideas’ believing that “... it is often better to be stimulating and wrong than boring and right.” While these papers do not take this tenet as an excuse for licence at the expense of rigour, they are exploratory and the ideas may change as a theme is developed over time.
Authors note

The following note embodies an idea I put forward during a heated internal debate in 1981 about the future way in which the company I then worked for might manage its business and its essential information in the coming decades. To my knowledge no network (this does not mean that one does not exist somewhere) embodies these principles, least of all the Internet and the WWW. The principles still apply while the need for strong encryption still applies. To my certain knowledge solutions to the latter are available, but remain to be exploited. These ideas are simply put forward now as a matter of interest.

Why information “nowhere but everywhere”? 

Imagine, if you will, the time a few years hence when all company information of merit is stored electronically and in one or, at the most, two mainframe machines. While this situation may be less likely than at one time, the vulnerability of the way information is stored by such a system is obvious. Industrial action, a fire, espionage, theft, eaves dropping, or just a plain accident, could immobilise all the company's information or a large part of it. In case you should feel there would be no danger to the company, let me remind you that by this time all the company's cash transactions, contracts, orders, etc. are handled electronically and that the capability of returning to a paper based system has vanished. The only people capable of returning, even temporarily, to a paper based system retired some years ago. You see information ceased to be confused with data some time before these events.

There are perhaps three concepts needed to overcome the kind of vulnerability outlined; these may be described as:

- Informing, rather than information
- The need for information to be located nowhere in particular
- For informing, and where necessary information, to be available everywhere it is needed.

Informing, rather than information

Few people really know how to search for information and subsequently use it to inform themselves about a situation. Frequently, because obtaining information is perceived to require a considerable investment of time and money, both of which may be scarce, relatively crude sources of information (a TV programme, newspapers, or a favoured prestige journal - HBR, Fortune, Forbes, Management Today, New Scientist, etc. [and now in 2000 - the WWW - authors note]) are relied upon extensively. The idea that informing, based on a very much wider spectrum of general and special information sources, is barely perceived. If it (informing) is based on access to a computer then, for a generation at least, there will be a sharp diminution of interest by those for whom informing is intended. The relatively crude analysis will be preferred, but not by the coming generation who will be far more familiar with computers; they will use the process of informing and will wonder why their elders don't [Authors note - twenty years later in 2000 there is little sign of this happening!].

What is this process of informing? At root, it is a process of learning about a situation from a series of building blocks of digested information. The knowledge provided is framed in such a
way as to display measures or indicators of the uncertainties that are associated with the original information and data, and with the future of the combination of topics described by the building blocks. It will be equally important for the “building blocks” to have three other characteristics:

(i) To provide a feeling of “I know where I am starting from” [Authors note in 2000 - Stafford Beer created elements of this in his ill-fated experiment in Chile for the Allende regime]
(ii) Some indication of what other related building blocks might be consulted
(iii) Helping to make the decisions, not to take any decisions

An informing ring main or network?

The informing process is of relatively low value unless it is very easily accessible; without that condition the existing and cruder means of learning about a situation will be preferred. From the users point of view using the informing process must be as simple as possible. Since computers are bound to be involved, the way the process is entered and used, must be based on the needs of a non-computer literate, all else will fail. Equally important, the process must be available anywhere, with no more than a long distance (say 2-300 miles) telephone call. Finally, to reduce vulnerability the informing building blocks and the basic information on which they are based, must be continually flowing, with no more than a small fraction of it stationary at one location at any time. At first these concepts lead to an informing (and information) ring main, but this too is not robust to breaks in the ring. The step beyond the ring main is the informing network, where immobilisation of several nodes only partially impedes the operation of the network as a whole (the CEGB’s grid is organized on similar principles). Both the informing ring main and informing network meet the needs of the second and third concepts outlined earlier, with a network scoring on robustness.

What about the social consequences?

There are social consequences of using an informing process, based on a ring main or a network, for both the individual and the “organization”; these cannot be separated since they starkly present the dilemma of freedom versus control. In what follows the introduction of an informing ring main or network is assumed. An individual's freedom to enter the informing process, will enable him or her to reach any point in the network. While the network may at first appear to him or her as a “black” box, this will not be so for long, at least for a proportion of the users. Soon they will begin to partially comprehend the true extent of the informing process, turning it into a “muddy” rather than a “black” box. The variety of ways in which the user then delves into the informing process can then expand beyond the level at which conventional, hierarchical control can work. I shall refer to this as the “hierarchical crisis.”

Given that hierarchical control doesn't, and never has worked as intended, it has nevertheless placed significant bars to the availability of information and constrained the freedom of the individual to do as he pleases. Informing processes have the capability to dissolve both of these hierarchical controls; existing centres of control can be by-passed without their knowing

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In current parlance (April 2000) this would be no more than a local call and at some future date would be free or virtually so.
it, while entry to the informing process will be so diffuse that it will be virtually impossible to bar any individual from it for long, if at all.

The introduction of the informing process for many reasons will be a “culture breaker.” For example, equal opportunity to enter it means that “boss” and “subordinate” roles can change and both can be equally well informed, which is not typical of the hierarchy or many power structures. It will ultimately demand an end to essentially crude analysis, based on the presumption that it is all that can be afforded in terms of managerial time and resources. But that demand will be predicated on a change in the capability of people to comprehend, manipulate and control the variety of the concepts the informing process offers them, while accepting their complexity and uncertainty.

**Education for informing, before learning by informing?**

Earlier I advanced the hypothesis that few people really know how to search for information and subsequently use it to inform themselves about a situation. What I have said subsequently points to the need for a change in the capability of the people the company employs, if the informing process is to be used to advance the strength and profitability of the company. In a sense we are on the point of a significant social innovation, one of the few or perhaps many, that may significantly affect, not only the company’s strength as an international business. It may also signal the start of a new long wave in the cycle of human affairs, economic, social and political. We cannot, at present, look to the educational institutions to provide specific courses to create the new capability. In the UK, one of the first among the desirable form of course, has been rejected by one, and probably the most likely, source of funding. The situation may not be much better anywhere else in the world. However, there is a dispersed body of knowledge in various parts of the “free world” that we shall need to draw upon in our own education programmes, to initiate the process of education for informing, before expecting too much learning from the informing process itself. The best that we can expect from the educational institutions for some while is the development of people with a specialism based on breadth. Allied with this needs to be a lasting appreciation of the dynamic inter-relatedness, what I have elsewhere called the process of relating, of all forms of knowledge or, if preferred, an appreciation of the ecology of knowledge and its application. At present this too is done badly. For these reasons it seems likely that we, and many industries, will be on our own and may be out in front when it comes to creating people capable of using the informing process and exploiting it in business.

**Where is the technology for the informing process?**

Mostly in existence or broadly known now, but this does not mean it is all in place with sufficient reliability and in sufficient quantity. The transmission, storage, recall and analytical technologies are already known. The basic transmission networks are growing in size and capability, as both broadband (satellite) and narrow-band (cable and soon optical fibre) facilities grow. The basic impediment here will be political. The advent of the cheap 5 foot antennae\(^2\), for use with geosynchronous satellites, will soon make access to these networks much more widely spread. What is not available is software for the processes of information synthesis and relational presentation that are at the heart of the informing process. The interactive, learning oriented software needed will require great creativity, particularly as it has

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\(^2\) Now in April 2000 antennae are around 1 foot in diameter
to perform many different functions all suitable for use by a non-computer literate; their development should not be expected quickly. It is also unlikely that much of this work will fall under the skills of the conventional “systems analyst.”

Denis Loveridge
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