Designing a Learning Society

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This paper is divided into three parts:

**Part I: Why is it Important to Design a "Learning Society"? What's the
Problem?**
   The answer has two components:
   (a) The imminent destruction of the planet.
   **(b) Common-sense does not provide an adequate basis on which to build
desired societal changes, and neither current forms of democracy
and bureaucracy nor the so-called "Market" process are able to
generate the necessary innovations.**

Part II: An Illuminating Case Study: The Educational System.

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   (a) in Public Management Arrangements.
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**Part I: Why is it Important to Design a "Learning Society"?
What's the Problem?**

(a) The imminent destruction of the planet.

Virtually all graphs of the consumption of resources, the extinction of species, and the destruction of the soils, the seas, and the atmosphere, show exponential growth, mostly growing much faster than the "population explosion". But the most striking single index of the need for radical change is that, for everyone on the planet to live as we live in the West, it would be necessary to have five back-up planets engaged in nothing but agriculture to support us and handle the pollution we produce[1]. Yet vast billions of people in China, India, and elsewhere have embarked on the quest to live as we live. It cannot be done.

There is no point in trying to tackle the problems singly: global warming is associated with greenhouse gasses which are associated with the consumption of fossil fuels … but the production of the machinery that creates them these pollutants

itself results in untold contamination of land, waterways, and seas. We are set for a disaster of immense proportions ... especially if one considers the nuclear radiation - nuclear winter - that could be unleashed as we fight over diminishing resources.

It is important to note that those economies that are most commonly thought of as the most efficient are, in reality, those that consume a wildly disproportionate share of the world's resources and contribute equally disproportionately to the destruction of the soils, the seas, and the atmosphere to achieve, at best, entirely marginal gains in quality of life. Although they are far offering such short and unpleasant life styles as places like Zimbabwe, the quality of life they offer generally does not match the images projected[2]. One observation may make the point. The largest single expenditure in the USA is on tranquillisers to ameliorate the stresses associated with the way work and living have come to be organized - ways which, it may be noted, involve the destruction of almost all family and community support networks as well as any security for one's own future, let alone that of one's children.

Gaia may recover from the disastrous attack we are in the process of wreaking upon her. (She has, after all, in the past, recovered from serious attacks [although these previously came from the outside rather than, like a cancer, from within].) But one thing is certain: Homo sapiens and the planet as we know it will not survive unless we radically change our ways.

But the necessary change in our way of life is of unimaginable proportions and there can be no blueprint for a sustainable society. Nor will the necessary changes stem from an accumulation of technological solutions to individual problems like reducing CO_2 emissions.

Although the problem is very obvious to very many[3], and many believe that we are beyond the point of no return, few have understood the difficulty of finding a way forward as follows: *The change that is needed is as great as the change from a hunter-gather to an agricultural society and, just as no one in a hunter-gatherer society could envisage what an agricultural society would look like, so no one in our society can envisage what a sustainable society will look like.* There can, therefore, be no blueprint of where we need to get to. Yet the problem is not beyond solution. Although no one in an agricultural society could envisage what our industrial society would look like, these changes occurred - and occurred without central direction. They emerged from an organic process in which there were many feedback loops and many dead ends, as in evolution itself.

The problem is, then, to devise - design - a societal learning, experimenting, management and innovation system which will work with Gaia to promote evolution … without relying on that ultimate sanction of evolution, the destruction of Gaia herself.

(b) Common-sense does not provide an adequate basis on which to build desired societal changes and neither current forms of democracy and bureaucracy nor the so-called "Market" process are able to generate the necessary innovations.

It is common observation that public policy rarely achieves its objectives. Indeed such action often has the opposite effects to those intended. In education, for

example, some 80% of the population want the system to nurture diversity, to help people develop and gain recognition for their own particular talents, and to nurture qualities like initiative and the ability to understand and intervene in socio-economic systems. Instead, it inculcates out-of-date, low-level, and quickly forgotten knowledge, stifles individuality and creativity, breeds trained incapacity, and arranges people in a single and misleading hierarchy of "ability" which serves to perpetuate the social order.

The situation in which politicians and public servants find themselves is analogous to that in which ships' captains found themselves prior to the time of Newton. Having arrived at their destinations they were then dependent on a favourable wind to blow them home again. They could not sail *into* the wind. And the conventional wisdom at the time, enunciated by huge networks of learned and dedicated bureaucrats (priests), told them exactly what they should do. They should pray to the Gods and sacrifice their children to them.

As is the case with our social policies today, they knew where they wanted to get to; their objectives. Currently we are told by hundreds of thousands self-styled economists, bureaucrats, and politicians (the priests of our time) to have faith in the marketplace and the goodwill and actions of ever more centralized leaders and bureaucrats.

But note what actually made it possible to develop relatively safe networks of sailing boats.

Before Newton, it was not even possible to conceptualize - think about - "force". There was just the wind and the waves. Whatever was "in" the wind had to be made visible, measurable, discussable. Newton did this by jumping first in the same direction as the wind and then into the wind and measuring the length of his jumps. The difference between the two gave him a measure of the strength of the wind. With Newton's work one now knew that there was a common, invisible, but measurable, property in the wind, the waves, falling apples, and between the planets. "Force" was real, visible, measurable.

Next he enunciated an even more absurd notion, namely that "To every force there is an equal and opposite reaction". OK. So there must be an equal and opposite reaction to the force of the wind on a sailing boat. If only one could find it! One would then have the philosopher's stone that would turn all to gold. More madness. That force was in the sea! And one could harness it by putting a keel on one's sailing boat. Madness compounded.

On the basis of this cumulated madness, otherwise known as the classic academic and scientific theory-building, it was possible to begin the process of designing boats that could sail into the wind.

But then, to get a safe network of sailing boats, one needed a whole host of other developments. One needed charts of the seas. One needed the concepts of latitude and longitude. One needed sextons and, most difficult to obtain, chronometers. Then ships captains would be able to work out where they were on the

high seas and what actions to take. One needed networks of lighthouses. And one needed networks of people to raise the funds required to pay the lighthouse keepers.

None of these developments could have been anticipated or called for, let alone designed, by politicians. A whole series of inter-related developments based on absurd theoretical science was required. No one of them, on its own, would have made much difference. There was no panacea.

We have no analogous way of thinking about the social forces that are driving our society against the rocks. We have only what are taken to be scheming capitalists and politicians. We conceptualize the forces which lead us to select and promote such people and the mythologies they use to subjugate and control as "human nature" - greed. We fail to realise that our leaders are no more able to respond effectively to our cries of alarm than were ships' captains and priests to respond to the pleas of sailors. We have no tools for taking stock of where we are. We have no charts of the rocks and the harbours. We have no lighthouse keepers. We have a system of taxes that could pay for them - yes - but the priests of our time do not see the need to commission their work or have much idea of how to manage them so that they work effectively. We know only that we have to get out of this mess we are in and that our priests - our politicians - are fraudsters. And our potential chartists and lighthouse keepers - our bureaucrats - take the money we give them without delivering the services they claim to offer.

So what is the first step? In a sense it is to fund academics. But not just any old academics: There are thousands, if not millions, of fraudulent academics around. They spend their time conveying non-knowledge to non-students. They do not nurture the competencies of their students. They publish millions, if not billions, of "research" papers which fail to advance understanding one iota.

So how to hold the Universities accountable for achieving their manifest - as distinct from latent, sociological - goals? Not by junk criteria like number of degrees granted or publications produced. But what *are* the goals of the University? Strangely, our so-called academics have proved remarkably unwilling to articulate their goals or how they could be held accountable for achieving them.

So now we have shifted step one somewhat. For now we see that the first step is to change our beliefs about how public sector activities should be managed. How is the relevant information to be collected, debated, and acted upon? One knows of thousands of reports on public policy that simply gather dust.

So our priests proffer the "market" solution.

But, like most priests, they have not understood what that proposal actually means or what lies behind it. Indeed, few of them have secured their jobs mainly with a view to acting in the long-term public interest.

Why was the "market" "solution" ever advocated? How was it supposed to work?

Like very many people in our own society, Adam Smith and John Stuart Mill had noticed that politico-bureaucratic "solutions" simply did not work. Both noted that government decisions were essentially decisions by "committees of ignoramuses".

Adam Smith and Fred Hayek took this observation one step further. They argued that there *could not be* any such thing as a wise man or wise woman, let alone a committee of wise men and wise women. The reason was simple. The most important information required to take wise decisions cannot be available. If A initiates a course of action in location X, and, unknown to him, B initiates a course of action in location Y, it is impossible to know what will happen as these two courses of action come together.

Worse still, the information on the basis of which action has to be taken is always grossly incomplete and widely dispersed in the hearts, hands, and heads of billions of people, all of whom possess unique expertise. (The information is in their hearts and hands as well as their heads because much of it is not articulated and is often skill-based rather than formulated in words.)

To solve this problem, Smith and Hayek proposed the "market mechanism". This was envisaged as *a societal experimentation learning and management system which would act on information which was necessarily incomplete, dependent for its implications and effects on other changing information, and widely dispersed in the hearts, heads, and hands of billions of people. It would not only initiate action on the basis of such information but also learn from the effects of that action and take such further (corrective) action as necessary.*

Note that, in the main, it was *the system* which learned, not the individuals within it.

What "the market" offered was a mechanism whereby, if people liked what A was doing, they could purchase his goods or services or invest in his enterprise. So, if they were doing the "right" things, the enterprises of both A and B would prosper and, as the results came together, previously unimaginable things would happen[4]. The public could then select or de-select these with their pennies.

Smith acknowledged that most of these experiments would fail in economic terms. However, he argued, what was to be learned from them would not be lost. A failed business (i.e. a failed experiment) is not really a failure at all - a lesson which many public servants and managers of science would do well to learn.

Note that the market mechanism as proposed was quintessentially a societal experimentation, learning, and management *system. It has no other raison d'être.* It does not endorse riches for riches sake[5]. It does not laud money. It does not endorse a divided society. It was a means of giving power to information. It was designed to create a ferment of innovation and provide a means of learning from the effects of the experiments which were initiated. As the outcomes of all these experiments merged, previously undreampt of goals - goals which could never ever have been realistically envisaged or even thought about beforehand - could be accomplished. What was offered was a design for a learning society - but a learning society quite different from

that which is most widely envisaged when the term is used today. It was a *society* which innovated, experimented, and learned *without anyone involved in it having to know anything very much*. It was decentralized, organic (with many feedback loops and potentialities), nonauthoritarian, and, like evolution itself, grossly *in*efficient in bureaucratic terms. It was the ultimate form of participative democracy: Everyone involved could "vote with their pennies" independently on a myriad of issues instead of voting every five years or so for a package of issues or "wise" governors. It did not depend on intellectuals or explicit verbal knowledge. People could attend to their feelings and vote accordingly.

So, if there is so much in its favour, what is the problem? I have spelt out numerous problems in my *New Wealth of Nations*[6]. Only a few can be mentioned here.

First, it has turned out to be extremely difficult to get the market mechanism to take account of, and respond to, huge amounts of vitally important information, particularly of a societal nature. People, including most capitalists, seldom behave in ways commensurate with their long-term interests, particularly when acting in those interests would involve persuading large numbers of other people to do likewise. Hardin's "*Tragedy of the Commons*"[7] has proved endemic and pervasive. Thus it has become virtually impossible through the market process to stem the destruction of our very habitat - Gaia[8] - or even to take appropriate action to deal with financial crises such as that which is now upon us [9], let alone to improve the quality of life of all.

Second, major costs … indeed *the* main costs … of goods and services do not figure in the prices which supposedly provide the basic blocks of information in the feedback system on which the whole operation depends. These costs are externalized to the future, the third world, or the general environment.

Third, these same prices turn out to be mainly determined by an accretion of decisions taken by public servants (for reasons of short-term expediency) relating to which costs to attribute to producers, distributors, and providers and which to spread over the whole community. As a result, prices are hardly at all determined, as many economists would have us believe, by the costs of land, labour, and capital.

Fourth, the strength of the money - the ball-bearings on which the operation of the whole system depends - has been eroded by the monetary explosion: There is now 80 times more money circulating around the globe than there is total annual world-wide production.

Fifth, market processes do not, in fact, deliver high quality of life (viz genuine wealth) because quality of life depends on things which cannot be commoditized and bought and sold. Thus it depends on security, on self-actualising work, and on networks of friends and support in one's workplace. It depends on living and working arrangements which are relatively free of stress. All of these are driven *down* by market processes[11].

In part because the quality of life depends primarily on *public* provision - on things which cannot be purchased individually - and on activities carried on *outside* the marketplace, the role of public management has continuously increased over the

years until, at the present time, the spending of something of the order of 75% of GNP is controlled by governments[12]. In other words, we do *not* live in market economies at all: We live in managed economies. This has many important implications. Among them is the impossibility of any small group of elected representatives directing or overseeing the workings of the governmental machine in an effective way. There is just too much going on. The "customers" who figure in contemporary discussions of "the market mechanism" are mostly not the individuals of classical economics voting with their pennies, dollars, or euros separately on a myriad of issues, but agents purchasing on behalf of government departments, international defence alliances, and corporations working on government contracts.

Instead, therefore, of having a marketplace which offers a self-organising societal management system, we live in a society in which the control of cash flows is used to orchestrate decisions which have been taken through the political-bureaucratic process (which happens to be mainly under the control of Trans-National Corporations -TNCs). And, although there is not space to demonstrate it here, prices are primarily determined by public servants, and not by the cost or efficiency of land, labour, management, or capital (which "costs" are all primarily determined by public servants). (The supposedly "basic economic law" asserting the efficiency of centralized production stems entirely from an accretion of the decisions made by public servants to spread major costs over the entire community instead of loading them onto the individual producers who create them.)

A related problem is the way in which many of the (managed) TNCs have grown bigger than all but the largest national economies and, aided and abetted by their agents the World Bank and the IMF, are thus in a position to control the activities of most governments and the markets within the societies over which they have jurisdiction.

It is therefore not true that we live in a society managed by market forces. We live in a society mainly driven by the decisions of international bankers, managers of the TNCs, and public servants, but, most importantly, controlled by mythologies which are every bit as real and important as those which we can so easily see bind together, and control the operation of, "primitive" societies. What generally passes unnoticed is that most public servants' decisions and the mythologies which control us are largely driven, generated, and, especially, perpetuated, by a handful of capitalists[13] who profit from them every bit as much as the leaders of the churches in the middle ages profited from the decisions they orchestrated and the mythologies they developed and perpetuated.

Despite the retention of market rhetoric, therefore, the world seems to have evolved into something very different from the kind of learning society which Smith and Hayek envisaged.

Instead of facilitating the dissemination of images of self-sufficient communities, experimentation, systems-learning, and self-organising systems, market mythology has been used to assist in the diffusion of authoritarian ideas: The "management" of science, forcing the world to be "free for democracy" (which, in practice, means the TNCs), the necessity of centralized decision taking and the rule of authorities, materialism, and the quest for domination over nature and other people.

If Smith and Hayek were right in their strictures on authority and wise men, but it is also true that the market process has failed to provide us with an effective methodology for tackling complex social problems, it seems clear that our fundamental need is for an alternative answer to their basic question about how to design a societal learning and management system which will innovate and learn without anyone having to know anything very much.

Part II: An Illuminating Case Study: The Educational System.

The research to be summarized comes from a research programme that we have been able to sustain through intermittent funding over the past half century. A short summary of this work will be found in *Managing Education for Effective Schooling*[14]. We began with a series of studies of what pupils, parents, ex-pupils, and employers wanted from the educational system. It emerged that their top priorities were for the system to nurture a wide range of different talents in different pupils (i.e. to nurture and cater for diversity) and especially to nurture qualities like initiative, the ability to work with others, problem-solving ability, and the ability to understand and influence the workings of organisations and society. These opinions were then confirmed in a range of studies of the qualities that are important in workplaces and in society from both individual, organisational, and societal points of view. Yet, by and large, schools neither promote and cater for diversity nor nurture important qualities like those mentioned.

There are many reasons why schools tend to neglect their manifest goals. Some of them will shortly be summarized. But what first needs to be noted is that most of the barriers which have been identified were not obvious until research was undertaken, and, even then, their discovery was usually "accidental" because little of the research was explicitly initiated with a view to identifying the forces which deflect the system from its manifest goals. Indeed, far from seeing the need for research, governments and administrators have tended to assume that it was sufficient to exhort teachers to attend to the goals they (the politicians) had identified: If the teachers did not do so, it "obviously" pointed to deficiencies in teacher training, commitment, or management.
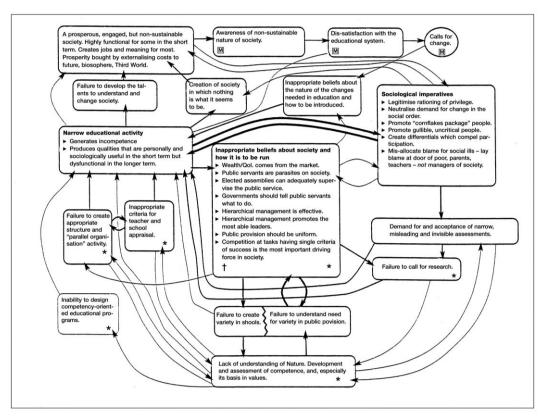
In reality, the problems are deep-seated and non-obvious. They include an absence of an understanding of how to nurture the desired qualities or how to find out whether one has done so, and, especially, an inability to identify and cater for variety. They include an inability to handle the value conflicts which surface as soon as one tries to engage in effective education. They include an inability to initiate multiple experiments and learn from the results of those experiments, especially about the systems processes that lead to failure. They include beliefs about the way the public sector should operate, and the absence of the tools needed to manage individualized, competency-oriented, educational programmes. More seriously, they stem from an inability to find ways of dealing with the fact that (as it emerges) the educational system is not primarily about education but about performing sociological functions (like legitimizing the rationing of privilege and promoting those who are *most* willing to echo authority - rather than take initiative and think for themselves - into influential positions) in such a way as to perpetuate the kind of society we have. A great deal of

further research and development activity - much of it of a fundamental nature - is required if such barriers are to be overcome.

But, most importantly, it emerged that, as shown in Figure 1, what happens is determined by an interlinked network of non-obvious *systems* forces and feedback loops. These either negate the effects of any isolated change that is introduced or result in its having entirely unanticipated (and usually undesirable) changes elsewhere.

Figure 1

Feedback loops driving down quality of eduction.

*Intervention in these cells would help change the nature of the qualities nurtured and rewarded in the system. Motives which could be harnessed to do this are marked Ⓜ.

†These need to be replaced by acceptance of the need to make managed economies work – to find way of giving effect to information concerning the public long-term interest, the need to explicitly create variety and information on the personal and social consequences of the options, and to find ways of holding public servants accountable for, and getting them to at in, the long-term public interest. This means systematic, broadly based, evaluation and participative democracy.

Creeping awareness of this need for systems change has led to the introduction of wave after wave of system-wide change based on ideology and central command. Our research shows that this is entirely inappropriate. The need is not for centrally-mandated system-wide changes dreamt up by some politician or public servant in his (or her) bath, but for widespread systems-targeted intervention monitored in such a way as to draw out lessons about the systems processes that determine what happens and the invention of ways of intervening in those processes. There is no hope of moving forward on the basis of common sense or established good practice. Pervasive experimentation in every nook and cranny of the system is what is required.

It is essential to note that it will be necessary to carefully monitor the effects of these experiments in a *comprehensive* way in order to distil off the lessons - and especially the *systems* lessons - that are to be learned - and thereafter to take action on the basis of those insights. To get this level of experimentation and learning it will be necessary for every teacher and educational administrator to set aside a substantial part of his or her time to work in what Kanter[15] has called "parallel organisation activity concerned with innovation". During that time they need to be supported by research units organized in such a way as to generate new understandings and tools rather producing numerous publications full of non-knowledge.

The reasons why the term "comprehensive" has been italicized in the previous paragraph merit discussion.

As Shiva[16] in particular has shown, the very network of social forces we are concerned with here has led most people to accept the premises of reductionist science. Scientists are encouraged to deal with single variables - to look, for example, at the effects of a pesticide on the short-term yields of wheat. Yet the need is to look at *all* the desired and undesired, desirable and undesirable, short and long-term effects on a whole series of outcomes fuelled by ecological feedback loops.

Far from bidding for contracts to provide administrators with the reductionist data they claim to need, the first responsibility of social scientists is to generate information on *all* the desired and undesired, desirable and undesirable, personal and social, short and long-term, consequences of an action. What is good for the individual may be bad for the society. What is beneficial in the short term may be disastrous in the long term. Yet what constitutes a "comprehensive" evaluation cannot be determined in advance. The components of what constitutes a comprehensive evaluation can only be discerned retrospectively as the results of research undertaken by cranks and mavericks who set about monitoring things which no one else thought it was important to look at become available. So it emerges that the arrangements made for the funding and evaluation of *innovative* research are of central importance. *Yet, then, further action needs to be initiated on the basis of those insights* and the results of those experiments monitored - especially for further insights into *systems* processes.

Part III A: The Developments in Public Management Arrangements that are Needed to Move Forward.

So what lessons can be extracted from this and related case studies summarized in the *New Wealth of Nations*?

Before we explore this topic it is useful to make a couple of other points.

First, it is clear that the public servants responsible for the development and implementation of educational policy have failed to: (a) monitor and attend to the needs and reactions of the clients of the educational system, (b) capitalize on the wide variety of different talents which can be fostered among pupils for their own and society's benefit, (c) harness the wide variety of motives which can be tapped to fuel enthusiasm for educational activities, (d) initiate the necessary research and development activity, and (e) act on such information as *was* available.

Put another way, here we have evidence - and much of it has been available for 40 years - of a vast misuse of public money, evidence of the need to provide variety within the public sector, and evidence of the need to hold public servants accountable against different criteria.

It the context of the current zeitgeist, it is important to emphasize that the problem could not be solved by "returning" the activity to the marketplace. The reasons for this are: (a) If our society is to develop, many attitudes and skills - which it is the responsibility of the educational system to identify and nurture - need to be widely shared in society and not just possessed by an elite; (b) We need a wide variety of people who possess different combinations of specialist information the need for which cannot become clear until after the event; (c) Many people are in no position to pay for their children's education, and (d) The main benefits are not going to be derived by people *as individuals* but by them as members of a society which has developed *as a whole*. If *everyone* is going to benefit, everyone should pay. People would be most willing to pay, as individuals, for those "educational" programmes which were most likely to lead to credentials which would buy entry to protected occupations. But those credentials neither testify to the development of important competencies nor lead those who provide the courses to focus on such competencies. What is more, those who could pay and expect to recover the costs from increased personal income would be those who were most concerned about their own advancement and most willing to use the educational system to achieve it.

Although we have focussed on education, the general failure of public management is a much more widespread problem. The survival of our society is clearly something our public servants need to tackle in the long-term public interest.

In reality, wealth is largely and inevitably in the public domain; high quality of life cannot be purchased individually. Among other things, or a high quality of life depends on feelings of security for the future and for one's children, clean air, and the absence of plague and famine. It emerges that, whatever about their failures, public servants are the most important wealth-creators humankind has ever known.

At this point we may note that it is not only the proposed "market" solution that is inadequate. Neither can these problems be solved by "returning" to community-based decision taking because the information involved is of a complex and high-level nature and because what happens in any one community is critically determined by what happens on the other side of the globe. It is necessary to know what is going on there, to understand how their political economies work, and to be able to intervene in them.

Yet centralized institutions - such as the United Nations - are, as Smith and Hayek emphasized, incapable of knowing and understanding more than a fraction of what needs to be known to take wise decisions - which means knowing all the major implications and interactions of their decisions. Some new societal management process and structure is urgently required.

Several sets of developments therefore seem to be necessary: (a) We need to acknowledge that it is our public servants who play the main role in the management

of modern society and that our task must be to find ways of enabling them to both manage society more effectively and sift information for good ideas and act on them in an innovative way in the long-term public interest, (b) We will need to establish much better arrangements to study the effectiveness of public (and "private") provision, find out why things are not working better, and invent better ways of doing things, (c) We will need to set aside time for, and create a structure which will promote, "parallel organization activity"[14] to promote innovation within the public service, (d) We will need to systematically set out to generate variety and choice in public provision, collect information on the short and long-term, personal and social, consequences of each option and feed that information to the public instead of upward in a bureaucratic hierarchy to elected representatives, (e) We will need new job definitions and staff appraisal systems within the public service so that people can get credit for engaging in the difficult and demanding processes that are involved in innovation and dealing with the complex issues of acting in the long-term public interest and catering differentially for different subgroups, and (f) We will need to establish a new interface between the public service and the public so that it is easier to supervise the activities of public servants and ensure that they are doing all that is necessary to act in an innovative way in the public interest.

What would this mean in practice? As we have seen, the available evidence suggests that individual teachers (public servants) need to be held accountable for studying each of their pupil's talents and finding ways of nurturing them. To find out whether teachers are achieving this goal we need new, research-based, appraisal instruments. But it is also true that, if teachers are to monitor performance and take the initiative needed to find better ways of meeting their pupils' needs, they must devote a great deal of time and energy to the risky and frustrating activities that are involved in innovation. They need to be part of personal networks which encourage them not only to make contact with, and to work with, teachers in their own and other schools who are attempting to tackle similar problems, but also those engaged in other activities which bear on the educational system - those employed in test agencies, those who select employees or students from among their pupils, those responsible for managing economic and social development (and who therefore control the "demand" for educational "qualifications"). They need to find ways of collaborating with such people in ways that capitalize upon their own and each other's unique preoccupations, talents, and areas of idiosyncratic, specialist, knowledge and skill. They need a structure which provides support and encouragement when things go wrong, as they surely will. They need to be encouraged to band together to gain control over some of the wider social forces which otherwise prevent them doing their jobs - even when narrowly defined - effectively. And they need some means of getting credit for having contributed in very different ways to these processes.

But even all this is not enough. Those responsible for public provision need to set out to explicitly create a much greater variety of educational programmes which demonstrably and effectively nurture very different values and patterns of competence, establish that variety in each community, ensure that evidence on the personal and social, short and long-term, consequences of each option is collected, and feed that information outward to the public (to enable them to make their own decisions) instead of upward in a bureaucratic hierarchy to elected representatives. This process implies more than a new role for public servants and new criteria of

accountability. It involves nothing less than a redefinition of the key features of democracy, what is *meant* by democracy.

We will need to move away from our current monitoring mechanisms. These depend on long chains of authority to distant elected representatives meeting in multi-purpose assemblies. These chains of authority filter out key information relating to problems and suggestions. As both Adam Smith and John Stuart Mill noted, elected representatives are inevitably ignorant about most of the issues which bear on most of the decisions they are taking because they range over so many topics that no one person could possibly be well informed about more than a fraction of them. The idea that it is their job to decide what needs to be done and that public servants should then do it is unrealistic.

As Smith and Mill also noted, decision taking in representative assemblies is often subverted by powerful interest groups. One illustration of this will be found in the work of Janicke[18] who has shown that every attempt by the government of West Germany since the Second World War to enact legislation to protect the public from the TNCs was subverted by the TNCs.

To overcome these problems we will need, first, to acknowledge the true role of public servants in managing modern society and then find new ways of contributing to their effectiveness and exposing their work to the public gaze. Mill makes an observation which would seem to have the potential to help us overcome the difficulty: "Instead of the function of governing, for which it is radically unfit, the proper office of a representative assembly is to ... compel a full exposition and justification of all (acts) ... It should be apparent to all the world who did everything, and through whose default anything was left undone". Why, if the objective is to make visible to everyone who did everything, does the activity have to be channelled through a representative assembly? Why cannot we invent forms of direct democracy to expose the behaviour of the chief actors on the scene - our public servants - to the public gaze?

Teachers, for example, could be accountable to a network of monitoring groups that include people with very different interests and concerns: parents, researchers, employers, personnel from local and national education departments, economic planners, media personnel, those who know about developments in education and what is happening in other schools, those who have new insights into what is happening in their own societies and the competencies required to deal with the problems, and those who know what is happening on the other side of the globe. The process needs to be a mutual learning process which enables all concerned to learn from each other and develop new insights which none of them possessed before. The process needs to be reciprocal: All members of a group involved with any one teacher will be in other groups overseeing the work of personnel in quite different fields.

To make such a system function, it would be necessary to find ways of collecting and feeding relevant information on the performance of teachers, schools, officials, and systems to the monitoring groups. This might be done by employing the strategies of the "illuminative" evaluator or by developing formal instruments. "Illuminative" evaluation seeks to overcome some of the limitations of conventional

multivariate evaluation - such as the absence of appropriate measures of programme inputs and outcomes and the delay that can be expected before the effects show up.

Our conclusions about the nature of the public monitoring arrangements that are required may be summarized by saying that it is vital to focus on, formalize, and systematically extend, the concept of *Networks* developed by Schon[19] and others[20] and the concept of "civic culture" and citizen participation articulated by Almond and Verba[21] and Inkeles and Diamond[22].
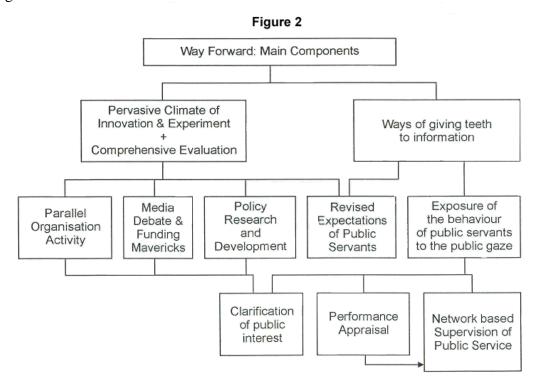
Whenever the ideas about the network-based supervisory democracy which emerge from this work have been discussed, people appear to have the greatest difficulty with the idea of decisions being taken without voting. It is therefore important to note, first, that Emery[23] has shown that the people elected to "representative" assemblies are typically anything but representative of those they claim to represent. They have different values, priorities, and agendas. What is more, if they are not already different, because they mix with different people and form new reference groups, they rapidly come to see things from perspectives which differ from those of the group that elected them. If, for any reason, it is really important that a subgroup or committee be made up of members who represent the views and priorities of some larger group it is essential to choose them at random from that larger group and avoid electing representatives.

More seriously, Toffler[24] has noted that our representative institutions were developed in the 18th century - at a time when government played a much less significant role in the management of society, when society was much more uniform, and when the main variance in need was geographical. Now governments deal with so many issues that not only, as we have seen, do we have government by the ignorant, the population itself is made up of subgroups with widely differing concerns and priorities with little interest in policies that are of great concern to sections of their fellows. Thus decisions taken by a vote of the entire population are rarely appropriate. If voting is involved it should ideally be based on those who are informed about, and have a direct or indirect interest in, a particular issue. The phrase "informed about" presents as many problems as the "interest in". The opinions of many of those who know a great deal - from direct experience - about the effects of a policy are often discounted because they are poorly researched and presented. The question of how to enable marginal groups to substantiate their knowledge, research their ideas, and present their case well opens up more roles for social scientists. But the real point is that our current voting mechanisms, based on representative assemblies, in no way come to terms with the problems. This conclusion has been underlined still more forcefully by Arrow[25] and Miller[26] who show that, where there are a variety of interested parties whose demands are mutually incompatible, and where what one group gets influences what others can get, the series of coalitions and compromises which have to be formed as subgroups conspire to coalesce to yield a majority block vote leads to outcomes which suit no one group and typically to decisions which no rational person - and certainly none of the individual participants - would support.

To summarize, then, it is clear that our current forms of public management - including the so-called market management systems - are entirely dysfunctional and inappropriate. What is needed is a system which breeds innovation and learning. What is needed is a new answer to Smith and Hayek's quest for a design for a societal

learning and management system which innovates and learns without anyone within it having to know anything very much. In the context of our current world view, it would seem that such a design can only be evolved by building on the strengths - and not the weaknesses - of our public service. Key components in moving forward include recognition that our public servants are the most important wealth creators the world has ever known (whilst also recognizing that they have also played a hugely important role in advancing the destruction of the planet). To get them to behave more appropriately we need to change the criteria against which they are held accountable: their role is to unleash the energies of others in a ferment of experimentation and learning; it is to promote a climate of research and comprehensive evaluation; it is to sift information for good ideas and arrange for action to be taken on the basis of those ideas in an innovative way in the long-term public interest. To hold them accountable for doing these things, not only are new staff-appraisal techniques required, we also need new forms of public supervision - new forms of democracy - to expose their doings to the public gaze and thus induce them to be more likely to act in the long-term public interest. Both the structures within which public servants work and the arrangements for supervising them need to move toward a more network based model. Social researchers have a key role to play in this process, but, again, both the arrangements made for the conduct of their work and the criteria against which they are held accountable need to change.

A formal outline of possible new management arrangements is shown in Figure 2.

Figure 2

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A socio-cybernetic[*] specification for a more appropriate societal management system (so far as we have been able to discern it) is shown in Figure 3.

DIAGRAM 3   NEW SOCIETAL MANAGEMENT ARRANGEMENTS

CREATION OF A SUSTAINABLE SOCIETY ie
One which offers more, more satisfying, less energy–consuming work.
One which develops, utilises and rewards all available talents.

Wider awareness of non-sustainable nature of modern society and what needs to be done to change it

Less need to legitimise and run a hierarchical / divided society.

(with the aid of better tools to assess outcomes)
PROMOTION OF MORE COMPETENT AND MORE SOCIALLY COMMITTED PEOPLE into influential position in society.

Invention of better ways of thinking about how society is to be run
– ie more effective performance of a wider variety of roles.

NEW FORMS OF DEMOCRACY AND BUREAUCRACY
involving new
• institutional arrangements
• definition of role of public servant and central government
• arrangements for recognising contributions

DEVELOPMENT OF COMPETENCE

CREATION OF DEVELOPMENTAL ENVIRONMENTS IN SCHOOLS

ie activities which will nurture diverse hi-level talents and especially those required to analyse the way society works, challenge mythologies, and play a more active role in it. (Embodying a non-authoritarian concept of science and portraying non-authoritarian models of training and management.)

NEW BELIEFS ABOUT HOW SOCIETY SHOULD WORK

Recognition of the major role to be played by public servants in the management of society: their job is to make *unpopular* decisions in the long term public interest. It is to *manage*. It is to create a pervasive climate of innovation. It is to initiate experiments targeted at systems processes, to arrange to monitor those experiments and monitoring the effects and to take corrective action as necessary. It is to release public energy into multiple, contractory, but evaluated, experiments.

Recognition of the need for pervasive "Parallel Organisation" activity – *everyone* needs to be involved, in different ways, in the process of innovation. Recognition of the need for network working and for appropriate types of research.

Recognition of the need for network-based and media-based supervision of both the public service and so-called 'private' organisations – ie new forms of 'democracy' and 'citizenship'.

Emphasis on variety, experimentation, evaluation and public contribution to the definition, implementation and evaluation of contradictory experiments.

Emphasis on genuine public debate and recognition of the implications.

CREATION OF INNOVATIVE CLIMATE IN SCHOOLS AND SCHOOL SYSTEMS
ie
Teacher involvement in "parallel organisation" activity to generate innovation.
Creation of developmental environments *for teachers.*
Pervasive climate of concern with innovation in the school system.
Introduction of a staff appraisal system to recognise the diverse talents and contributions of teachers.

New understandings of how research is to be managed.

Recognition of the need for research.

DISSEMINATION of what we already know about:
• The nature of competence and its development and assessment.
• The roles to be performed by managers – to:
  – create pervasive climates of innovation
  – create developmental environments and think about, place, develop and utilise the talents of subordinates
  – seek out information and take good discretionary decisions about what is in the long-term general interest
  – monitor the effects of their actions and change appropriately
  – initiate evaluation studies
  – study and seek to influence "external" social and economic forces.
• The nature and workings of society.
• The forms of public management required.
• Developmental environments.
• Climates conducive to innovation – parallel organised activity.
• The processes which advance scientific understanding.

RESEARCH to develop:
• A better understanding of the necessary organisational/managerial arrangements.
• The tools required to hold public servants and other managers accountable for exercising high level talents and especially for doing such things as creating hives of innovation, initiating systems-oriented experiments and monitoring the effects of and learning from the effects of their actions.
• A better understanding of the hidden sociological systems processes which determine the direction in which society moves.
• Generate the information public servants need to decide how to act in the long term public interest.
• The tools that are required to take stock of organisational/community climate from the point of view of its conduciveness to innovation and decide what to do.
• The tools required to assess costs and benefits and thus mount cost-effectiveness studies.
• create a variety of different forms of provision and document, in a comprehensive way, their short and long term benefits and costs.

MOTIVES TO DISSEMINATION
• Recognition of collapse of environment and the future.
• Awareness of non-sustainability.

Recognition of failures of current:
  – economic system
  – governmental system
  – local management of schools initiative

Recognition of role of TNCs (and fear of them)
(But the problem is that most of these fizzle out into "The government should" and disengagement. The question, then, is: "How can we harness these motives?")

Ver: 25 June 1995

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[*] This term will be defined in the next section.

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Careful study of Figure 3 will reveal that there are endless points at which people could choose to intervene in the system to promote the necessary changes. They could promote recognition of the role of public servants in society; they could promote and participate in network-based supervision of the public service; they could articulate the fundamental reasons why centralised "democratic" control is useless; they could promote research to develop the tools that are required to hold public servants accountable for performing their newly defined roles; they could promote research to map the socio-cybernetic forces which are driving out society and our planet against the rocks; they could advocate greater efforts to promote variety, experimentation and learning; they could promote a less reductionist, more "ecological", image of science; they could draw attention to the changes needed in the way research is commissioned and organised and the criteria and tools required to hold the universities and research institutes accountable for their role … and so on and so on. There is no shortage of things to do. But hardly any of them are the things that "common sense" would have suggested that people should focus on in the past.

Part III B: The Scientific Developments Required to Move Forward.

We have seen that the evolution of a network of sailing boats that could reliably get people to their destinations depended on two linked activities: First a paradigm shift in scientific thinking; Second a pervasive climate of innovation. The first depends on the second, which is why we dealt with the second first.

It is time to revert to the first.

We have seen that what happens in the educational system is mainly determined by a network of social forces and not by the priorities of teachers, pupils, parents, ministers of education, or anyone else.

The task of mapping such networks of social forces belongs to the domain of socio-cybernetics.

Cybernetics involves the study of guidance and control systems in animals and machines. One has to mention animals, otherwise people think only of man-made systems, like missiles. But, as soon as one includes animals in the definition, it is clear that cybernetics is concerned with understanding guidance systems which depend on multiple, non-hierarchical, feedback loops.

So *socio*-cybernetics is concerned with understanding, mapping, measuring, and harnessing the social forces which control the behaviour of people in society (and regularly undermine well intentioned social action) and designing better socio-cybernetic (guidance) systems for the management of society.

We have seen that designing sailing boats that could sail into the wind depended, among other things, on finding better ways of conceptualising, measuring and harnessing physical forces. Working out how to harness those forces depended on being able to map the various forces (vectors) acting on a sailing boat and being able to calculate the effect of alternative possible design modifications on the behaviour of the boat.

A related development, grounded in the same network of concepts and ideas, was the ability to map the multiple interacting gravitational forces operating between the planets - and thus account for their orbits (and later designing control systems for missiles).

Now, the network of social forces depicted in Figure 1 (dealing with the educational system) is analogous to this map of the interacting forces controlling the movements of the planets.

What we lack is a parallel way of conceptualising and measuring social forces so that we can assess their relative importance and decide where best to intervene.

Interestingly, Forrester (1971) and Meadows et al (1972-2004) (See Raven, 2010, for a summary) have prepared such maps of the (recursive) links between the economic and resource factors controlling such things as world quality of life, population, and pollution.

The graphics showing the results of introducing a number of alternative possible changes (such as legislation to reduce resource consumption) into the system are more than a little revealing – and mostly disturbing … strongly confirming our earlier observation that common-sense based intervention in systems tends to produce counterintuitive and often counterproductive results.

So, the problem that remains for us is to generate parallel diagrams, or models, relating to social forces … that is to say in the domain of socio-cybernetics.

It is relatively easy to generate systemogrammes like those shown in Figure 1[27]. The problem is to assess the relative strength or importance of the links that are depicted. Only if we are able to do this will it be possible to predict the effects of alternative possible interventions.

Currently, in trying to do this, I find myself up against a brick wall with no glimmer of a way of getting through, round, or over it.

But I have stumbled on a finding which terrifyingly underlines the importance of finding a way of doing so.

Bookchin (2005) has shown that virtually every "development" in society over endless millennia has been toward the centralised, command and control oriented, hierarchical society which so many people have shown to be so destructive at the levels of both organisations and society. This trend has proceeded inexorably despite repeated demonstrations of the effectiveness and viability of alternative, more organic, arrangements with multiple feedback loops.

This trend is anything but benign. The creation and cementation of hierarchy depends on the creation of vast amounts of senseless work which, contrary to widespread belief, does not deliver high quality of life – but *does* contribute enormously to the destruction of our habitat, not only through the consumption of huge quantities of renewable and non-renewable resources, but also in the course of

disposing of the by-products of production and use of artefacts ranging from "defence" systems though pyramids and palaces to cars and junk foods.

In short, it now appears that finding a way forward is even more dependent than was previously claimed on developments in scientific thinking, and, more precisely, in the area of socio-cybernetics. Finding a way of intervening in this recursive loop between undevelopments in society and beliefs about how such institutions as the universities should be funded, organised, managed, and held accountable is crucial to moving forward.

Notes

1. Rees (1992)
2. Marks et al (2008)
3. eg Yankelovitch & Immerwahr (1983); Yankelovitch, Zetterberg, Strumpel, Shanks, et al. (1983)
4. Ridley (2010) has re-formulated the core of this process as being one in which ideas which have evolved in widely differing ecological niches can have sex with each other and generate a broad variety of previously unimaginable offspring many of which are sterile but some of which are unbelievably viable.
5. Smith inveighs repeatedly against those who are simply out to make money saying things like "'All for ourselves and nothing for other people' seems in every age of the world to have been the vile maxim of the masters of mankind".
6. Raven (1995b)
7. Hardin (1968)
8. See Lovelock (1979).
9. This article was originally written before the current so-called "financial crisis" engulfed us. At that time the phrase in the text which preceded this *note* number read: "or even to take appropriate action to stave off the imminent collapse of the financial system." This *note* itself then read "However the imminence of this collapse is widely sensed. The grounds for believing that those feelings are entirely justified are spelt out in *The New Wealth of Nations* (Raven, 1995b)." "Unfortunately" the "crisis" which is upon us is not the crisis which is coming but is better understood as a device which has been created as part of a highly effective Machiavellian strategy for manipulating – managing- the world economic system.
10. The bases for this statement are to be found Raven (1995b).
11. See Lane (1991).
12. The evidence for this is summarised in Raven (1995b).
13. Raven (1995a)
14. Raven (1994)
15. Kanter (1985)
16. Shiva (1998)
17. Kanter (1985)
18. Janicke (1990)
19. Schon (1973)
20. Ferguson (1980); Toffler (1980); Kanter (1985)
21. Almond and Verba (1963)
22. Inkeles and Diamond (1980)
23. Emery (1974 a&b)
24. Toffler (1980)
25. Arrow (1963)
26. Miller (1992)
27. Morgan (1986) contains a number.

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