Crisis? What Crisis?

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Abstract

Part I brings together material suggesting that the current financial “crisis” may well have been engineered to strengthen the hand of a relatively small group of people who use international financial institutions to manage the planet more generally. It is concluded that, behind the financial crisis lies a public management crisis. Part II discusses the interlinked crises in our habitat. It seems that we have to radically change the way we live if we are to survive as a species. In Part III it is suggested that these interlinked crises are even more deeply embedded in human societal organisation than has been suspected. The trend toward centralised command-and-control management of human societies appears to have been proceeding inexorably since time immemorial. This appears to require the invention of more and more useless work to create the divisions which compel people to participate in the destructive activities which pre-occupy most societies. The financial and management crises then appear as symptoms of dysfunctional social organisation, not as crises that can be addressed directly. Most of Part III is devoted to outlining ways in which the socio-cybernetic processes involved may be studied and the results used to design more appropriate socio-cybernetic (governance) systems.

Keywords
Financial Crisis; Ecological Crisis; Dysfunctional Social Arrangements; Bookchin; Systems Analysis; Socio-Cybernetics; Autopoiesis; Social Forces; World Bank; IMF; Money Creation; Friedman; Neo-classical economics; Reductionist science.

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Introduction and Overview

It was at one time commonly said that the current financial crisis should be attributed to such things as sub-prime mortgage lending. It quickly became apparent to many people that this was some kind of smoke screen concealing a deeper problem. A few went so far as to suggest that it might even have been deliberately crafted by a relatively small group of people in order to gain greater ownership and control over the resources of the planet.

There are many reasons why many people might find such a conclusion disturbing. But it will be argued in this paper that the truth is even more disturbing – because we actually need a real crisis to jolt us out of our way of life. It would seem that, if our planet is going to survive in anything approaching its current form, we actually need a collapse of, or at least to find ways of replacing, the financial system as we (half) know it, to replace our current systems of world and national government/management, to get rid of our current trading system, to radically change our agricultural system, to dismantle our transportation system, our “defence” system, our drugs-based healthcare systems, and our centralised manufacturing and distribution systems. And, as if these things were not enough, we also need a dramatic reduction in population.

Thus, the “real” crisis is much bigger than the so-called financial crisis and the global-warming about which the media and so many in our “governmental” structures chatter so incessantly. It has to do with the destruction of our habitat. What is more, the multiple interlinkages between the systems that have been mentioned – and the financial system in particular – are much deeper and pervasive than is commonly realised. “Information” – control pulses as in the control pulses of a computer – flows between those systems, but the information is not information in the sense in which the word is most commonly understood. The information flows between the components of the system in a manner analogous to the multiple ways it flows between the plants and animals inhabiting an ecological niche (and in the wider habitat) or between the parts of a body.

What is more, not only are all these components of our crisis interlinked in such a way that none of them can be tackled singly (or, at least, in the sense that if an attempt is made to tackle one component on its own it produces unanticipated reactions elsewhere), these components of the “real” crisis are not, as is generally thought, technical problems to be “solved” with the aid of financial, chemical, physical etc. interventions. These “technical” problems are but symptoms of dysfunctional social organisation. So, since the formal understanding of our social organisation and its interaction with habitat (Gaia) is so poor, it may be said that the “real” problem to which we need to direct our attention – and of which we need to generate a much better formal understanding – information – is to be located in a very different domain to that in which it is most commonly sought.

Unfortunately, to develop this argument, it is necessary to summarise a great deal of information about each of the component crises that generally fails to find its way into popular discussions. My experience is that one of our problems is, precisely, that specialists who build up an understanding of any one of the component problems tend to be unaware of the nature and seriousness of the others – and therefore have paid very little attention to the way in which the problem they have been studying is interlinked with what is happening in these other areas.
And so it becomes necessary to begin by saying something about each of these conceptually separable crises. But that “something” has to be sufficiently detailed to convince the reader that each of the problems, taken on its own, is extremely serious.

Unfortunately, I am not the polymath that Bertalanffy was and am therefore unable to paint the kind of comprehensive, or holistic, picture that is required. Authors such as Mulej et al. (2009), Chapman (2004), and Emery (1974) have suggested that the required levels of holism can be achieved through appropriately organised search groups. Unfortunately, since I do not have access to a “team” of the kind that contributed to Mulej et al.’s. (2009) publication, I will have to do what I can on my own. Unfortunately, again, many of the sources of the data on which many of the statements I will make are based are lost in the mists of time. So, since I would not be able to make the point that needs to be made without referring to these issues, I will have to proceed without providing detailed references.

Despite these disclaimers, the evidence supporting most of the claims made in Parts I and II of this article can be traced through Raven (1995), Klein (2007), Pettifor (2006), Grignon (2007), and the State of the World Reports published by Brown and co-workers between 1984 and 2010.

A Road Map

Step 1 will be to share some, until recently, relatively unknown information about the creation and management of money. This alone suggests that the current financial crisis is quite other than what it is generally taken to be. Step 2 will be to review the centralising effect of some more widely discussed controls over the uses to which money is put by organisations like the World Trade Organisation (WTO). Step 3 will be to summarise some information that has more recently come to light on the lengths to which those behind the International Monetary Fund (IMF) and WTO have been willing to go in order to impose these centralised command and control operations in the guise of promoting management via a “free market”. It emerges that the effect, if not the intention, of these interventions is to vest management of the world in the hands of those who control the Federal Reserve Bank. In the process of doing this, the work of Milton Friedman and the Chicago School “economists” is exposed in a new light. Step 4 links the requirement to control the dissemination of information embedded in international “trading” agreements with other steps that have been taken to control the generation and diffusion of information. In Step 5 these developments are linked in turn to creeping acceptance of totalitarian regulations to control more or less every aspect of behaviour and the introduction of invisible – electronic – walls (such as tagging) to control population movements and behaviour. Step 6 highlights the implications of the observations that have been made for new forms of governance.

In Part II we turn to what at first sight seems to be another crisis: The destruction of our habitat. Step 8 underlines the extent to which this crisis has been exacerbated by the arrangements discussed in Step 2. Step 9 then spells out the, by now obvious, conclusion that we have reached the end of the line: Either we radically change the way we live or we drown. There is no other choice. If we are to choose the former, we urgently need to find ways of managing the planet in the long-term public interest.

But Step 10 (constituting the first section of Part III) suggests a radical re-framing of “the problem”. It is suggested that the crises so far discussed be viewed, not as problems to be addressed, but as mere symptoms of a more basic underlying problem – namely a dysfunctional social system. Step 11 suggests that one way to understand the operation of a
social system may be via certain types of systems analysis of socio-cybernetic processes. Step 12 illustrates the results of applying such analyses to the educational system. In Step 13 it is suggested that what has been learned from our studies of the educational system may have wider application to resolving the sustainability problems discussed earlier. But such guarded optimism is seriously challenged in Step 14 which summarises the evidence which Bookchin has provided to suggest that the drift toward the centralised, hierarchical, command and control arrangements which can by now be seen to lie, in some way or another, at the heart of our problems have been continuing – despite endless protests – and, indeed, demonstrations of the viability of alternatives – has been going on since time immemorial. And so, in Step 15, we again re-locate the heart of the pervasive crisis documented earlier, this time pointing the finger at the failure of social scientists to address their minds to such issues.

PART I

Financial and Associated Crises

The Financial “Crisis” Itself

The first thing to understand is that the money lent by banks does not, on the whole, come from depositors. It is money largely created by the ledger entry made at the time the money is lent. To underline the meaningfulness of this apparently incomprehensible statement I have to repeat: The money did not exist before. It has not come from anywhere. It has not been withdrawn from any other productive use. [See Raven (1995) or Grignon (2007) for convenient descriptions of this almost inconceivable – un-imaginable – process.]

The process is grounded in “fractional reserve banking” and its origins, as a formal system, can be traced back to the 16th century. Until the end of the First World War, banks were nominally restricted to lending approximately 9 times their assets and deposits. Through a series of changes [documented by authors such as Roberts (1984) and, more recently, Pettifor (2006)], and especially an (until recently secret) arrangement drawn up by President Wilson of the US and Lord Rothschild, the reserve required for lending to governments was reduced to zero. Among other things, this means that the so-called “Third World Debt” in an important sense does not exist – all the money “lent” is entirely fictional, having been invented by the banks at the time of lending. But the banks still charge interest on it and demand that the “loans” be “secured” by, among other things, government bonds. In effect, this means that the banks both acquire a lien on vast amounts of public property and charge what amount to infinite interest rates (since anything divided by nothing equals infinity) on the “loans”. As if this were not enough, those who receive this “aid” are often required to demonstrate their commitment and goodwill by injecting matching funds of their own. Most of this capital – the loan plus the matching funds – quickly finds its way back to the West to purchase equipment (mostly armaments), favours from Western Public Servants and Politicians, and fund consultancies – eg from the World Bank [see, e.g., George (1988), Hancock (1991), Klein (2007)].

Actually, the requirement that banks actually “possess” assets and deposits amounting to about 10% of within-country loans did very little good. The recipient of the loan spent it on some goods or services. The vendor then deposited the receipts in a bank account. This “deposit” then immediately became security enabling the bank to generate a further round of
loans. It is easy to see how this system resulted in vast amounts of money flowing through the system.

In the early 1970s, President Nixon reduced the 10% to about 4% (Pettifor, 2006). Western banks were then flush with money which they promptly instructed their employees to lend – offering them huge bonuses for doing so. Not surprisingly, the employees hit upon the strategy of lending against fictional or highly over-valued securities. Note that it was the system which induced this behaviour, not the lack of moral scruples on the part of those involved. In any case, the longer term cumulative effect of what they were doing was not visible to most of those involved. What is more, the alternative jobs that were available to them – in manufacturing, marketing, and distributing junk foods, junk toys, junk education, junk insurance, junk security, junk defence, etc. – are equally hard to justify.

At the same time, Nixon withdrew the US from the Bretton-Woods Agreement – thus removing any semblance of a link to some kind of “gold standard” – and explicitly declared that no one should assume that the US would honour its vast debts (equal to 7 Eifel Towers built of solid gold).

And so it comes about that we have a situation in which there is approximately 100 times as much money circulating round the globe as there is total world annual production.

On the basis of this observation alone, one can hardly doubt that this house-of-cards must collapse. The only question is: When? So far, the system has survived very well by building up more and more fictitious assets to trade. Most recently, Klein (2007) argues, it has succeeded in privatising not merely the systems supplying and training soldiers, hospital services for military personnel, provision of housing and dormitories and military food supplies but the whole process of planning and executing military operations. The bills are then paid from public funds – which, of course, consist overwhelmingly of money borrowed from the banks. Those who own these corporations then make vast profits. And the corporations themselves can be traded as assets, thus providing a basis for further loans.

But this financial system is, in reality, only part of a world management system grounded in an interlinked network of mythologies based in part on the use of fictitious money and debts to manipulate the ownership of resources and the flow of goods and services. The nature of this system is even less widely understood – and, truth to tell, it is so extraordinary that few believe it even when they are told. As Marshall McLuhan put it: “Only small secrets need protection; Large secrets protect themselves because no one believes them”. It is to the explication of this system and the crisis it implies that we must now turn.

**An Interlinked Crisis: The Failure of Public Governance: Preliminary Discussion**

Control of the financial system and the associated trading system is linked to what amounts to a system of world governance or management which is, to all intents and purposes, controlled by the banking community. These arrangements almost completely undermine the apparent powers of national governments and individuals. As a certain Lord Rothschild’s put it: “Give me control of the Financial system and I care not who runs the Government”.

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* This statement is not technically strictly correct, but is accurate enough for current purposes.
† Actually, the process of, to all intents and purposes, inventing assets to secure borrowing is very deep-rooted since the huge assets used to secure commercial loans are highly inflated, having been achieved by a process whereby the financial institutions sell them from one to another at ever higher prices.
Although National governments nominally signed up to the Agreements which constitute this system on a voluntary basis, they, as we shall see, in reality, had little choice in the matter. And many – if not most – of the agreements were never publicly revealed until after the event, having been enacted as merely subsidiary administrative or technical arrangements necessary to support previously agreed arrangements.

The control begins with superficially justifiable protection of financial interests and regulation of borrowing arrangements but ends with carefully orchestrated coups installing military dictatorships who enact legislation putting in place a series of previously prepared measures – including “neoliberal” economic policies and the control of information and civil rights. If these fail, those concerned are not above utilising armed intervention.

Let us summarise the information provided by Klein (2007) about what happened in South Africa as it re-structured from Apartheid to illustrate the point.

Whilst public attention focussed on such things as the voting rights of minorities in the new governmental structure, in the background, virtually out of public view, there were a series of negotiations about key aspects of the economy – the nature of the central bank, trade policy (acceptance of the General Agreement on Tariffs and Trade – which meant, among other things, a ban on “subsidising” crucial development activities in South Africa), guaranteed interest payments on the international “debts” the previous government had incurred, and conformity to structural adjustment programmes to bring the economy into line with the neoclassical economic ideology being promoted by the World Bank (of which more later).

The effect of these developments was to negate most of the things that Black South Africans had fought for. These had been itemised in the Freedom Charter in which the ANC had outlined what it would do if elected. However, when “the people” acquired the right to govern they found that the range of things over which they held dominion was very limited indeed. None of the promised nationalisation of key industries and services was possible. On the contrary they found that they had been signed up to privatise those that were already nationalised. There was to be no protection to facilitate the emergence of enterprises that were under-developed in South Africa. No legislation to protect the environment could be introduced without the agreement of all other signatories to GATT and GATS† to do the same. No barriers could be introduced to deter imports dumped at below cost or subsidised by e.g., the EU. Instead of a Central Bank able to support the activities of government, they found that it was to be run as an autonomous enterprise with its independence enshrined in the very constitution ... and run by the very same people it had always been run by.

The ANC had always insisted that a key feature of its programme would be to redistribute land away from those who had grabbed it a century earlier – but, no, it turned out that continuity of ownership was guaranteed by the constitution. Creating jobs for the employed: Out of the question: subsidising factories was illegal. Money for public housing was unavailable because the budget was being eaten up servicing the debts created by the previous government. Currency controls to deter speculation? Again precluded by the terms of a loan from the IMF.†

* General Agreement on Tariffs and Trade; General Agreement on Trade in Services: see discussion below.
† International Monetary Fund, of which more below.
‡ International Monetary Fund, of which more below.
As to public discussion of ways of actually achieving the aims of the Freedom Charter, the mere mention of any such thing was greeted by the threat or actuality of capital flight and devaluation of the currency. (We may note in passing that capital flight does not simply stem from the actions of the “big boys” who, in reality, own most of the national assets, but from the actions of millions of people who have been induced to invest what amount to pittances – often in attempts to secure their “savings” and find ways of paying off their debts – in the international financial system.)

The result of all this is that, in the 13 years after Mandela left prison, the average life expectancy for South Africans dropped by 13 years. Since the ANC came to “power”, the number of people living on less than $1 a day has doubled – from 2 to 4 million. Far from spreading the ownership of land, close to 1 million people were evicted from their farms. As of 2007, more than a quarter of South Africans still lived in shantytowns.

Note that, as in Poland and Chile, the new government quickly “forgot about” their previous commitment to pursue a “Third way” with re-distribution of land holdings and nationalisation of key sectors of the economy.

The Contributions of some Institutions and Agencies to these Interlinked Crises.

The role of some of the various institutions involved in this situation may now be explained in a little more detail. (Perhaps the most striking sources giving more detail are George, 2010 and Klein, 2007.)

The Federal Reserve Bank

The US Federal Reserve Bank is not, as commonly assumed, a public institution. It is owned by the 18 private banks.† These banks are, in turn, owned by not more than 300 individuals who all know each other. This results, not only in an enormous concentration of wealth (23 individuals, not corporations, own 41% of the world’s capital), but an enormous concentration of power – including the ability to generate agreed strategies and pursue them over long periods of time through organisations like the World Bank and IMF.

The World Bank

There is no need to review the structure of “The World Bank” in any detail here. It is actually a consortium of several linked organisations. Suffice it to say that the main power rests with the Federal Reserve Bank who are the main contributors to the money-creation process described earlier. The ostensible function of the Bank is to lend countries money for “economic development” purposes – i.e. for building dams and so on. However, it is also heavily involved in the so-called “rescue” packages orchestrated by the IMF and thus linked to “structural adjustment programmes”. It is important to note that, while, to all intents and purposes, the “loans” consist of fictional money, those receiving the loans are often required to inject matching funds in their own currency “to demonstrate seriousness of purpose”. As mentioned earlier, most of the money – including the matching funds – then comes back to the West.

The interest charged on these “loans” (which as we have seen, have largely been created out of thin air, so that the true rate of interest is “infinity”) is variable and can thus be increased in

† These are identified in Raven (1995) and elsewhere.
such a way as to place enormous burdens on countries who have borrowed – thereby causing them to raise taxes, reduce public sector activities, increase exports, and sell assets eg nationalised industries, land, hospitals, and health services.

Through a process seemingly orchestrated by the owners of the Federal Reserve Bank, and with effects shortly to be described, the senior staff of the World Bank are overwhelmingly recruited from the ranks of Chicago-School neo-classical economists.

The International Monetary Fund (IMF)

Among the arrangements, including the Bretton-Woods Agreement, set up after the Second World War in an effort to stave off another Great Depression or World War, the IMF was established to generate rescue packages and provide advice to countries which were getting into financial difficulties.

The problem is that, in the hands of the neo-classical economists who have come to dominate its staff, the “structural adjustment programmes” the IMF has imposed as a condition for loans (of fictitious money) ostensibly designed to rescue countries from difficulties – themselves often arising from problems associated with “debts” associated with the World Bank – typically exacerbate their difficulties.

Among other things, these “structural adjustment programmes” commonly require countries to:

- Abolish subsidies and “protectionist” legislation (in direct contrast, of course, to the policies of the US and EU).
- Reduce the price of exports.
- Privatise public productive capacity and services (including education and health care).
- Reduce public services via reductions in bureaucracy (and thus in their ability to provide and manage such services).

(More recently, these requirements have also been incorporated into the GATT, GATS, and WTO “Agreements” and, indeed, into the very “constitution” of the EU via the “Lisbon Treaty” [and that of Russia].)

The result is that Western corporations end up getting below cost commodities and owning, with subsidising grants,† most of the manufacturing capability and infrastructure of the countries concerned. Since most of these corporations are operating on loans secured against their assets, the banks then end up owning, or at least having a lien on, most of the world’s assets. These foreign owners are under a legal responsibility to focus solely on maximising earnings for their shareholders (viz., mainly, the banks) and thus take no responsibility for such things as destruction of soil quality, degradation in people’s lives, or environmental pollution.

Chicago School Economists – the So-Called Neo-Classical, Neo-Liberal, or Neo-Conservative Economists

* World Trade Organisation: see below.
† The countries concerned are told that, if they do not do that, the National plant will be closed and production moved to a cheaper “more efficient” location.
It is particularly important to review the activities of to this group of functionaries, not only because the senior staff of the World Bank and IMF are predominantly recruited from their ranks, but also because they constitute the bulk of senior staff of many National finance departments.

The key point is that, although ostensibly based on the free-market principles of Hayek (who was strongly opposed to the Keynesian policies embedded in the Bretton-Woods Agreement), the actual effect of their work is exactly the opposite. The effect is to legitimise and promote the ownership and control of the world by those who own the Federal Reserve Bank. And it has been the activities of the battalions unleashed by linked personnel in government departments of Intelligence and Defence, and not the intellectual merit of the economic theories, that have advanced and cemented the seeming influence of “neo-classical” economic theories.

The advance of neo-classical economics is popularly attributed to the economic writings of Milton Friedman. This has always been difficult to understand since these writings do not stand up to a moment’s critical examination. What has now emerged (see, especially, Klein, 2007) is that, alongside these writings, Friedman formulated a, highly Machiavellian, strategy to install, in country after country, economic and government systems which would benefit the owners of world capital – but legitimised by reference to “free market” ideology, or, more correctly “mythology”.

Before discussing the International scheme, it should be noted that the theories or viewpoints of neo-classical economics did not even spread through American universities as a result of their intellectual merit or as a consequence of any observation or study of what worked in practice. (Any such study, including those of Herman Daly – see Daly & Cobb, 1991 – quickly revealed exactly the opposite.) Instead, the “Ivy League” universities were actually required by their owners – who, surprise, surprise, turn out to be the same as the owners of the Federal Reserve Banks – to replace their classical economists by “neo-classical” personnel.

The Friedmanite strategy for promoting centralised government and corporate control in the name of market management did not flinch at such things as clandestine (and open) military intervention to install dictators and other totalitarian regimes who would enact the appropriate legislation – legislation which would, because of its resonance with the ideology of those running the IMF and WTO, remain in force long after they were gone.

Friedman’s scheme involved seizing every crisis, and each and every opportunity, to introduce legislation favourable to centralised, command and control-oriented, management, whenever it could be presented as something that would help to solve an immediate crisis or while people were, as in South Africa, preoccupied with other things – and especially their own day-to-day survival in the midst of coups and financial melt-downs.

When I wrote my New Wealth of Nations in 1995 there were still doubts about whether financial crises were sometimes created by the banking community so as have opportunities to pursue these policies. As a result of Klein’s (and others’) work, there is no longer any doubt about this.

To give one example, drawn from Canada. It turns out that it was the banks themselves – and not the IMF – who used the media to create fears of an imminent budgetary deficit. This
triggered fears of devaluation and thus currency flight. This in turn fed on itself to create the very devaluation and flight which the initial fear had provoked. These conditions led the Canadian government to dramatically reduce expenditure on education and health care – and to privatise still more services – which was, of course, exactly the result the banking community wanted”.

Disturbing though this process is – especially in the context of the current “crisis” – it pales into insignificance in comparison with activities commonly executed by the Chicago School network of “economists” and “advisors” (better viewed as a mafia) within the World Bank and the associated network of central banks and government finance departments, all linked to a capability for staging coups to install favourable governments and orchestrate military interventions.

Perkins (2006) and Klein (2007) discuss the cases of Chile, Bolivia, Argentina and a number of other countries in some detail. A common pattern emerges. Having failed to persuade the countries concerned to sign up to GATT Agreements, the next step is to try to persuade them to take “loans” to “assist” in “development” in the hope that these will lead, first, to willingness to sign up to GATT Agreements and thereafter to the “loan defaults” needed to impose “structural adjustment programmes”. If this fails, the next steps involve infiltrating National Finance Departments, banks and universities with neo-conservative economists who seek ways of using – or creating – emergent crises as a context in which to install one or other of a range of measures to promote “free market” ideology. These may be accompanied or followed by the use of the CIA and related organisations to engineer coups, “peaceful” or otherwise, and financial meltdowns. Then, having focussed everyone’s attention on their own basic survival, these resident economists and international advisors seize the opportunity to introduce draconian legislation – often justifying it as consisting of temporary emergency measures needed to deal with the immediate crisis. The legislation typically involves suspension of civil rights, installation of dictatorships, torture and imprisonment of protestors, measures to control dissemination of information and financial movements, establishment of conscript military forces (who are thus under government control), further devaluations, sequestering of corporate and private bank accounts, control of national central banks, sale of public assets at bargain prices, and the imposition of IMF “rescue” packages.

If all these strategies fail, the final step is to send in troops. Klein describes the process in a number of Central American countries and Iraq. What is most disturbing about the Iraq story is that there was, in the end, little attempt to create even a pretext of involving the local population. Rather, virtually all local industry was simply by-passed – with employees, food, housing, administration, etc. all being brought in from elsewhere. It was this ongoing destruction of employment, food supplies, housing etc. – and not the armed intervention itself – which, Klein argues, fuelled the final plunge into mass rebellion and civil strife.

It is important to recognise that the objectives and progression of the strategy outlined above has not been “accidental” but part of a deliberate and explicit strategy formulated by Friedman, honed in places like Chile, and explicitly recommended to such “leaders” as Mrs. Thatcher for use in the UK.

* For those who do not already know, this was also how Rothschild made his money in the first place: On learning, by carrier pigeon, that Britain had won the battle of Waterloo, Rothschild set about selling his shares. This created the general impression that Britain must have lost the battle and thus panic selling. Rothschild then secretly bought the shares – and eventually reaped huge gains.
The Bilderberg Group and Trilateral Commission

To assist in what appears to be their strategy for world domination, it would seem that the owners of the main banks operating the international banking system and trans-national corporations set up networks to select, “brainwash”, groom, and promote certain national leaders and executives for the Transnational Corporations.

One of these is the Bilderberg Group. Their activities are, of course, secret. But it is known that the group meets annually. Participants include the leaders of the top nations, the major TNCs, and the banks.*

What takes place at these meetings is confidential and, unlike the meetings of, for example, the G8 and G20, participants’ aides do not attended meetings and no minutes are kept. Nevertheless what has been discussed can often be inferred from events that happen shortly afterwards or sometimes from leaks. A somewhat controversial account from a long-time Bilderburg-watcher can be found in Estulin’s (2009) book. Dissemination of information about the workings of the group through the media and such things as the Wikipedia appears to be carefully monitored and censored. (Interestingly, it has, in some cases, been possible to trace those who have deleted material from the Wikipedia with results that are more than a little revealing.)

GATT, GATS, and WTO (General Agreement on Tariffs and Trade, General Agreement on Trade in Services; World Trade Organisation)†

The GATT and GATS essentially require countries to agree to much the same conditions as are demanded in connection with Structural Adjustment Programmes. Signatories, who include all members of the EU, agree to:

- Remove controls on their National Banks, exchange rates and international financial movements.
- Remove tariff barriers to trade (including measures designed to create a “breathing spaces” to allow National businesses to develop).
- Allow international companies to purchase locally owned businesses and land.
- Avoid arrangements designed to create jobs.
- Sell nationalised industries and publicly owned assets – e.g., water.‡
- Privatise public services – including health and education – to the maximum extent possible.
- Dismantle government bureaucratic machinery.
- Introduce legislation making it illegal to say anything that might damage the future profitability of a private company.

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* See Wikipedia entry.
† Elaboration of the terms of these agreements and strengthening the powers of corporations to fine governments for introducing legislation to, eg, protect their environments and citizens having been stalled for a number of years by the LDC members of the WTO, 2014 saw the introduction of hugely enhanced powers by agreements between sub-sets of countries. Under the terms of the Trans Pacific Partnership (TPP), Trade in Services Agreement (TISA), and Transatlantic Trade and Investment Partnership (TTIP), corporations can further evade their responsibilities for gross destruction of lives and environments and fine governments billions of dollars for introducing legislation designed to protect such things.
‡ It may interest readers to know that, in the case of water, this amounts to direct privatisation of the commons … the rain itself. Thus, it is obligatory for citizens to pay the water companies for collecting more than small quantities of rainwater from their own roofs (or from streams on islands with no public water supply). Similar requirements apply to arrangements to dispose of sewage privately.
• Enter into long-term binding agreements (which can not be revoked by any future government) with private contractors.

The EU “Constitution”, now “Lisbon Treaty”

The documentation for the proposed EU constitution is virtually unreadable by anyone unfamiliar with legal terminology and the endless agreements and documentation to which reference is made. Fortunately, George (2008) provided a convenient lay version. From this it emerges that the principal objective of the Constitution – re-named “treaty” to avoid the need for national referenda – is to cement arrangements like those just discussed even more securely into the structure, and in such a way ensure that no future government of an individual country could extract themselves from them.

Summary Statement about the Current Financial Crisis

Given the circumstantial evidence reviewed above, it looks for all the world as if the ostensible “financial crisis” confronting us, which is often presented as stemming from irresponsible behaviour on the part of bank clerks, was initiated at the highest level within the banking community. It would appear that the objective was to secure the release of vast amounts of fictional money created by the banks but presented as “public” money injected by governments to “rescue” the banks. Although not consisting of public funds at all, the public will indeed have to pay interest (the true rate being infinite) on that money at a variable rate to be determined in the future or hand over more public assets. The effect, so far as the banks are concerned, is to secure their own future and profitability whilst requiring the “rescuing” governments to sell assets and privatise services in order to “repay” the “loans”.

All of this has been done while the public – and, more importantly, social scientists – have been looking the other way.

Links to the Systematic Destruction of Civil Liberties and the Growth of Information Control

So far, we have discussed the use of one kind of force or another to impose world management behind a façade of free market economics. But, while this has been going on, other supporting developments have been taking place. These have included dramatic erosion of civil liberties in Western societies and controls over the ability to create or disseminate information. Some of these developments have been chronicled in the film Taking Liberties. However, that film fails to call attention to the erosion of the ability to publicise or generate information.

As we have seen, Agreements like the GATT and GATS, followed by the WTO, have required national governments to introduce legislation making it illegal – against the threat and actuality of huge fines – for anyone to say anything – even anything manifestly true – that might damage future profitability of a corporation. Few recognise the full implications of this prohibition. One of the better known cases concerns a petrol additive introduced to replace lead as an anti-knock ingredient in petrol. It has been established that both the manufacture and use of this compound is more damaging than the lead it replaced. The chemical is manufactured in Canada. Yet the company concerned was able to arrange for the WTO to sue the Canadian government for billions of dollars for publicising this information because it was likely to damage the future profitability of that company.
More generally, at least in the UK, it is now illegal – as a result of legislation introduced to prevent a recurrence of the “Ponting affair” in the course of which a civil servant (Ponting) published correct information about the sinking of the Belgrano during the Falklands War (information which was in fact known to all the world except British residents) which contradicted mis-information presented to Parliament by Mrs. Thatcher – for anyone who has any public money to say anything counter to government policy.* Since a great deal of the money spent by local governments, by privatised service companies (including the road, rail, and air services) – and the universities – comes from government, this covers a vast swathe of activities.

Even more intrusive arrangements have been set up to control independent observation and research. The contracts of researchers working in universities and research institutes have been changed so that no one working on government-sponsored research may say anything without the prior approval of the government department who sponsored their work. Worse, they may not enquire into issues not specified in their research contracts. Worst of all, government officials retain the right to, and do, change the actual figures (numbers) said to have been established in the course of the research.

These are not stand-alone arrangements but form part of a wider system designed to shackle enquirers. Most research is carried out by the staffs of corporations, research institutes, and the Universities.

Governments have demanded that the Universities and Research Institutes obtain corporate funding for much of their research. That makes it impossible to initiate research to enquire into a wide range of important issues. Beyond that, they have introduced “quality control” measures requiring staff to publish two or three articles each year in “peer reviewed” journals. To conduct this research, these researchers require grants – mostly from government. To get such grants, they have mostly to respond to government “Calls for (competitive) proposals” in which the terms of reference of the research are specified beforehand. Preparing these proposals takes a great deal of time – which has to be found within the time funded by their previous grant. The quality of proposals is largely assessed from the comprehensiveness of the list of references to previous research and not from the ingenuity of the researcher in finding new ways of thinking about and investigating a problem. After deduction of the time required to prepare the required publications, this leaves very little time for the actual research. And, finally, the “peers” reviewing the publications are also under time pressure and uninclined to familiarise themselves with unfamiliar points of view – and still less to welcome thinking which challenges the framework on which their own careers are based.

Hence the massive growth of non-information presented as the “information explosion”.

As is well known, extensive arrangements have been introduced to monitor internet trawls and emails using surveillance techniques focusing on key words and phrases.

It is easy to believe that all these arrangements are “new”. But the reality is that the “Royal Mail” was created as a monopoly precisely to give government the legal right to monitor all mail – my own international mail regularly arrived having been openly opened, read, and

* There was, and is, legislation allowing public servants to reveal secret information if it can be shown that it is in the public interest to do so. The difficulty is that, as a result of the Ponting affair, Mrs. Thatcher had the law modified so that the “public interest” is now defined in law as the interest of the government of the day!
delayed – and re-post-marked “Cheltenham Spa” – the site of the British government’s GCHQ – (Government Communications Head Quarters) – otherwise known as its “Spycatcher” agency.

And no newspaper reporters were allowed near the Front during the first world war – so, given that all mail was censored, nobody could find out what was going on.

In reality, the things mentioned above are but the tip of an iceberg. Alongside these developments there have been others more commonly associated with police states and totalitarian regimes: plain clothes secret police agencies have been set up to pursue children who truant from school and prosecute their parents; secret police monitor smoking in prohibited places; legislation has been introduced to prevent parents playing with their children in adventure playgrounds (lest they be paedophiles); highly intrusive, heavy handed and internet based, tax monitoring arrangements have been introduced; there has been a dramatic escalation of the right to arrest without trial; there are now well documented cases of the continued house arrest of individuals who have been acquitted of crimes they did not commit; there is extensive electronic tagging and monitoring of the movements of those who have been subject to Antisocial Behaviour Orders, and there has, of course, been the incorporation of extensive information – and links to data bases containing such information – into the electronic codes on Identity cards – the list is endless.*

It is hard, in the light of what we have seen earlier, to believe that this pervasive and intrusive destruction of civil rights is not part of some carefully organised and orchestrated set of activities designed to reinforce the role of centralised command-and-control government and, in particular, to give them the powers needed to cope with the crises which will inevitably arise as the effects of current “economic” policies come home to roost.

The trick may be even more subtle than that which has contributed to acceptance of the notion that we live in economies managed through the market process. It seems to me astounding that most people, including the producer of the film Taking Liberties, seem to believe that these developments have been introduced, one at a time, by well-intentioned “leaders”, in response to “public” “demand” that “something be done” to prevent the recurrence of a series of over-publicised, and often exaggerated, but apparently unrelated, tragedies.

Interestingly, Klein (2007) has documented that substantial corporate financial benefits have resulted from these tragedies. Once again, it is hard to believe that these are entirely incidental. A variety of not entirely unrelated activities (such as the flight of over one million Jews from the former Soviet Union to Israel to escape the consequences of the IMF/World

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* In connection with electronic monitoring there has been a very worrying development in the area of electronic monitoring of citizen behaviour. One expression of this concerns insurance companies. It is “well known” that US Health Insurance companies employ highly paid personnel to dig up reasons why they should not pay out on large claims from customers who have been contributing to the policies for many years. It has now come to light that one of the consequences of government stimulated growth in private insurance in the UK has been the acquisition of relatively small, ethical, insurers by large corporations. These large companies have subtly changed the small print relating to invalidation of the policies (relating to e.g. buildings and travel insurance) by “failure to declare material facts” at the time of renewal. A number of cases have come to light in which such things as failure to report a temporary arrest for participation in some demonstration – even in the distant past – have been used to deny such things as compensation for having one’s house destroyed by a storm. These “facts” have, of course, been brought to light by trawls of linked electronic data bases. A similar development has come to light in connection with the establishment of – and even use of well established – bank accounts. The clerk opening the account will rapidly read through a series of “technical” clauses. One of these goes something like this “I understand that the bank will, in connection with this account, make enquiries into my credit worthiness and that those contacted may keep copies of the enquiry. I further understand that the bank will contact fraud detection Agencies who may also keep copies of those enquiries, and that, if evidence of such behaviour comes to light the account I am requesting will not be opened. I further understand that this information will be shared with other organisations who may make similar enquiries”.

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Bank prescribed “shock therapy” introduced there) have contributed to the growth of insecurity and massive inequality both within and between nations. As Wilkinson and Pickett (2009) have shown, this inequality within and between nations has led to many of the crimes the previously mentioned heavy-handed legislation was ostensibly introduced to control. It has also led to violent protest, designated as “terrorism”. The fear of terrorism has combined with the sudden availability of information technology to fuel an unprecedented mushrooming of private “security” industries – surveillance activities going far beyond CCTV and the monitoring of internet activities to the ability, via the satellite system, to monitor individual face-to-face conversations taking place on the other side of the globe – and the development of security forces and “invisible (electronic) walls” designed to restrict the movements individuals deemed “less desirable” (e.g., those subject to ABOs mentioned above) or to keep vast numbers or out of areas protected by “electronic walls” and patrolled by pilotless planes with movements between the areas being controlled through multiple electronic checkpoints dependent on electronic ID cards (as well as chips embedded in the body) linked to extensive electronic data bases capable of integrating extensive information to produce “risk indices” for everyone. The production and implementation of these technologies and arrangements have, in turn, generated a whole new range of high tech companies on the one hand and corporations offering security guards on the other. These in turn have exacerbated the divisions between the “haves” and “have nots”. The process becomes cyclical. Terrorism is good for high tech and armaments business and business enhances division and “terrorism”. In some sense there is no need to posit any central intervention: corporations just seize emergent opportunities. But Bush’s repeated insistence that “everything that can be done by private corporations should be done by them” and Rumsfield’s forceful elaboration of that viewpoint hardly supports that view.

Some Perhaps Incidental Side Effects of the System

So far we have proceeded as if the advance of this management system has, at root, been driven by “economic” motivations. However, we have also hinted that we may all be in the grip of an interlinked network of mythologies linked to an unidentified network of sociological forces which lead everyone, despite their personal inclinations, to behave in ways which promote the development of a system which, as very many people have realised, is heading us toward extinction as a species carrying the planet as we know it with us.

We will develop this notion in more detail later. Here attention may be drawn to some, perhaps unintended, effects of the system that nevertheless help to perpetuate it.

One is that blame for the “financial crisis” – like blame for the deficits of the educational system – is shifted away from the leaders and managers of society to the functionaries working within it – to teachers, pupils, or parents in the one case and to bank employees (who are now blamed for making loans without security) and millions of people shifting their investments in response to “market signals” via the internet on the other.

Another is that “Globalisation” is generally presented as a sui-generous process - an economic necessity - when, in fact, as we have seen, it is driven by fraudulent (engineered) claims such as the asserted efficiency of the “free market” process and of centralised production and distribution arrangements and supported by centralised command and control activities of the most vicious kind – fines, torture, imprisonment, political coups, and military intervention. Again the question arises of to what extent these portrayals have been created at the behest of those behind the network of activities we have described and to what extent they, too, are “merely”, as Chomsky (1988-93) largely implies (and Susan George [2010]
specifically argues), the result of a network, or system, of forces which collectively results in the elimination of the institutional arrangements required to generate, alternative perspectives.

Another perhaps incidental benefit of the system is that, besides making huge profits for a few, privatisation, far from being a route to efficiency, precisely because it is the most inefficient way of doing anything, results in the creation of huge amounts of work. Thus the privatisation of insurance or education results in the creation of endless jobs for bureaucrats generating “standards” and prescribing and implementing “evaluation” techniques, the creation of endless jobs for firms generating glossy brochures to attract customers for the re-packaged products, the creation of an empire of personnel collecting fees and contributions, and a swathe of people offering advice to help people make “the best” choices. The work created also includes the work of forcing people to seek and apply for non-existent jobs and processing applications for “benefits” (which are dependent on submitting evidence of having engaged in these soul-destroying “job seeking” activities) as inefficiently and unpleasantly as possible, then sending people to work in far-away places dependent on transport, then installing “carers” in their homes, then getting them into debt, then prosecuting them for not paying and so on and so on.

Designed, deliberate, or not, it is clear that the “science” of economics largely consists of a network of mythologies that control what happens in modern society every bit as effectively as other mythologies control the operation of “primitive” societies. Designed or not, the sociological “function” of those mythologies is to subjugate the many for the benefit of a few – but the true irony is that the benefits to the few are much more illusory than many have assumed.

PART II

The “Environmental” Crisis: The Destruction of the Soils, the Seas, and the Atmosphere; The Destruction of our Habitat – Gaia

Having said a little about the financial crisis and the crisis in public management, it behoves us now to say something about what may be an even more vital crisis – itself pushed along by the financial and governance arrangements we have discussed – namely the galloping destruction of our habitat, perhaps even of Gaia herself. [Data supporting the claims made below have been brought together in many places. These include the Wikipedia entry on sustainability, the New Economics Foundation (2010) booklet Growth isn’t Possible, and my New Wealth of Nations (1995).]

The Soils

The destruction of the soils by chemical fertilisers, pesticides, and erosion resulting from heavy ploughing and the destruction of plant and forest cover has already reached crisis levels and is increasing exponentially along the same lines as the graphs below. There is also rampant growth in desertification. This now affects one quarter of India’s land area and subjects 400 million Chinese to dust storms in the spring and autumn of every year. Desertification results from the decline in water tables arising from diversion of rivers and underground aquifers to create water supplies for cities (and especially for manufacturing – to clean components, a single computer factory consumes and pollutes as much water as an average size city), pumping of ground water for irrigation, and melting of the snow cover that once fed the rivers themselves.
Beyond these things, lie issues of dumping, not only of nuclear waste but also of a wide range of products and by-products of production. Disposal of plastics – ranging from plastic bottles, through packaging, to components of cars and computers – and especially when combined with other materials – creates a much bigger problem than is commonly realised. So does disposal of many toxic liquid compounds – catalysts, cleaning materials, bleaches, dyes etc. used in manufacture – more than 65,000 in all and amounting to more than 250 million tonnes a year in the US alone. These leach into the soil and reach the surface. Disposal of heavy metals – cadmium, zinc, mercury – also poses a major problem.

Less widely recognised is the destruction of topsoil and water supplies by mining companies and “defence” systems. US mining companies alone bring to the surface 2 billion tons of waste, including many heavy metals and other destructive compounds, each year. It is not only through actual wars that so-called “defence” systems destroy land quality and land cover. Vast tracts of land are destroyed for bombing practice and other training activities.

The Seas

Huge quantities of solid waste are hauled out to sea and dumped. These include heavy metals and chemicals used in the course of production of e.g., cars. Britain discharges more than 5,000 tonnes of zinc, lead, cadmium and mercury into the sea each year. The seas are cluttered with fishing debris (nets etc.), tar balls composed of dirty oil discharged from ships (including factory ships and oil tankers), and scuppered ships.

Fish farming also generates significant pollution of the seas by chemicals used to control disease, dispersal of food intended for the fish, and effluent from the fish themselves. Fish stocks themselves are being destroyed by over-fishing, genetic contamination from farmed fish, and by being sucked into the cooling systems of nuclear and other plants.

Drinking Water

A majority of those alive today drink water which is seriously contaminated: it is the most common source of deadly diseases. Drinking water is increasingly tainted, not only by nitrogen run-off from the artificial fertilisers used in agriculture but also by pesticides and drugs used to treat human beings and most farm animals. Water reservoirs have become breeding grounds for salmonella and much spring water is seriously contaminated. Many of these things cannot be extracted by water treatment plants and have far reaching effects. But bottled water is no solution. If glass bottles are used it takes one ton of glass and one ton of truck to transport one ton of water. Chemicals from plastic bottles leach into the water making it almost as dangerous, if not more dangerous, than tap water – quite apart from the fact that it requires a quarter of a litre of oil to produce every plastic bottle. And vast amounts of diesel or aviation fuel are used (thereby contributing to atmospheric and rain pollution) to transport the bottled water around the world.

The Atmosphere

The attention paid to global warming seems to have forced the problems posed by acid rain for agriculture, forestry and buildings into the background. Those posed by particulate emissions have never received the attention they deserve but, for example, for every litre of petrol consumed by cars, half a gramme of fine lead particles are ejected – in total amounting to 450,000 tonnes per year.
The production of nuclear and other armaments – never mind biological weapons – is, through discharge of toxins, particularly destructive of the atmosphere.

Further from home, intergalactic debris is accumulating in the atmosphere in a similar manner to that in the seas.

So many things contribute to the destruction of the quality of the atmosphere – with such pervasive effects – that it is impossible to list them. Nevertheless, attention may be drawn to the huge contributions made by transportation – whether by car, plane, or ship. It is of more than passing interest to enquire why these have been neglected. No doubt part of the reason has to do with lobbying by those involved in manufacturing cars, planes and ships. But it does not take a genius to see the pervasive implications for world trade that would follow from a significant reduction in these activities.

In fact, it would seem that the current attention paid to global warming is, in some sense diversionary. It is a topic about which it is easy to generate a great deal of talk. But it is very difficult to envisage any effective action which would not have the most devastating effects on world trade, GDP, and our way of life. The result has been a swathe of new “green” products, greenwash, greenspeak, “green” regulations and agencies for their enforcement (all generating more employment but virtually no progress toward the objective). Meantime, expenditure on the development and transportation of such things as flat TV screens (which use four times as much energy to run, never mind manufacture, as conventional ones.) continues apace. Internet activity now uses more energy than the entire aviation industry or the entire economies of France and Germany combined.

Habitat More Generally

The massive, exponentially increasing, destruction of our habitat discussed above is brought about in part by an exponential population explosion to which few care to draw attention – see Figure 1 below.

Figure 1

![Graph of World Population Growth](http://en.wikipedia.org/wiki/World_population#Population_figures)
One way of underlining the magnitude of the increase is to say that it took just over 200 years – from 1600 to 1804 – for world population to double from .25 to .50 billion. It then took only 123 years – to 1927 – for it to double again – this time to 1 billion. And then only 47 years – to 1974 – for it to double again – to 2 billion. Although the *acceleration* in the rate of doubling appears to be slowing down, world population once more doubled from 1.5 billion to 3 billion in the 40 years between 1959 and 1999. Likewise, it doubled – from 2 to 4 billion – in the 50 years to 2005. Even if the *acceleration* in the rate of increase declines, how can we possibly expect the planet to support the further 4 billion people who will be added* over the next 50 years?

But “rising standards” represent an even more important problem than increasing population. Wackernagel and Rees (1996) have calculated that it would require five back-up planets engaged in nothing but agriculture for everyone alive today to live as we do in the West. There are not five back up planets. It cannot be done. Yet the huge – and rapidly increasing – populations of India and China are bent upon it. If they persist, it will be the end of us all.

These calculations are based on the concept of “ecological footprint” articulated by Rees. The “ecological footprint” of an area is the number of times its own area that is required to enable its population to live as it does. For example, Holland imports all the agricultural produce from an area of land 11 times its size just to feed its cattle. The US requires all the produce of an area of land 14 times its size to live as it does.

But all is not lost. Marks *et al.* (2006) have compared the ecological footprint of 178 countries with the quality of lives of their members. Even today, some countries offer long, high quality, lives using resources that are just about within their ecological footprints. Marks *et al.* draw attention to a number of island communities, but I myself am much more interested to see that a number of Central American countries just about manage it. In another context, Rees has observed that no back up planets would be required if we were all to live as Indians did only 25 years ago.

The true irony – and perhaps saving grace – in all this is that, as Lane (1991) and Marks have shown, above a basic minimum, “rising standards” in material resources of the kind just discussed confer little by way of improvements in quality of life.

Unfortunately, this observation simply shifts the problem – because quality of life depends mainly on things that are in the *public* domain, such as absence of plague and disease, absence of harassment, availability of time to spend with friends, or in other activities that are personally satisfying (which implies tolerance of diversity), and security for the future. Few of these things can be commoditised and bought and sold on an individual basis. One particular paradox is that quality of life in modern society depends heavily on quality of *working* life and, as Lane has shown, this is driven *down* by the competitive cost-conscious activities with which we are all too familiar. Many of the components of quality of life therefore elude valuation via the “market process” and do not show up in National financial accounts. One effect of this is that both husbands and wives are typically compelled to go to work, to work longer hours, and to spend more time travelling in order to enjoy the standards of living as they would have had 50 years ago. Families are broken up and high-quality child-care destroyed by the need to find work.

* Even if the birth rate falls (as it has done in many countries) the population will increase as a result of increasing longevity.
There is something else which needs to be introduced into this discussion of the destruction of habitat.

This is the destruction of biodiversity. More species have been eliminated in the last 20 years than in the mass extermination associated with the “disappearance” of the dinosaurs. It is not known in detail how the huge numbers of different species that inhabit the planet interact with each other. But it is known that they do interact in complex and unexpected ways. Perhaps most importantly, as Shiva (1998) has cogently argued, the loss of diversity, whether in biological species, agricultural products, human minds, or human culture restricts the opportunity for the experimentation on which evolution itself depends.

Before concluding this section we should note one more thing. It is widely believed that, if the environmental destruction we have described were miraculously to cease, the world would be able to support its current population. Not so. The problem is “overshoot”. As over-aggressive species consume more and more of the resources on which they are dependent they extend the range of resources they deplete. The result is that, when the crunch comes, their populations fall back to far below the level that their habitat could have supported if they had stopped at “the right time”. Often they are unable to recover from this position.

An Energy Crisis?

In most discussions, the “energy crisis” is hopelessly mixed up with a much wider crisis: the oil dependency crisis.

Energy is indeed required for the absurd transportation of water, agricultural products, goods, and people in around the world that is required to generate our trade and employment systems. It is required to power telephones, radio systems, computers and surveillance systems. The exponentially increasing global rate of fossil carbon emissions is shown in Figure 2, below.
It is possible that a reduction in demands of the kind mentioned in the last paragraph, combined with new ways of harnessing and packaging energy, might make it possible to continue at least some of these activities without oil.

However, the wider oil dependency problem is much more serious. In the first place, oil provides the basis for the fertilisers and pesticides that lie behind the “green revolution” that feeds us. But the range of activities that are dependent on oil-based products is huge. Plastics do not merely show up in plastic bottles, polythene bags and packaging. Most of the threads and films of which modern fabrics are composed consist of them. Furniture, building materials, pipes, tyres, cars, and planes are largely composed of them. They provide the basis on which computer circuits are printed, and the boxes in which they are installed. They insulate electrical cables. They form the basis of explosives. And so on ad infinitum.

No doubt, given time, substitutes for all these things could be found. But it would take time and involve unprecedented displacement.
But even if the energy and resource problems could be fixed there would still be the problem of disposal of the products and by-products of production.

**General Implications of the Processes We Have Described If Left Unchecked**

It seems abundantly clear from the material we have reviewed that there is no prospect of *homo sapiens*, as a species, going on pretty much as we do at present. Either, by taking thought, we radically change the way we live or we will be changed by forces beyond our control.

Some versions of the climate change scenario suggest that there will be a dramatic reduction in land area due to rising sea levels and massive unpredictable climate change stemming from alterations in ocean currents and weather patterns.

A collapse of our food supply is inevitable. When this is combined with the effects of the population explosion and “rising expectations”, mass starvation will follow. Even now, 40 million die from hunger and hunger-related diseases each year – equivalent to 300 jumbo jets crashing without survivors every day.

In all probability, the collapse of trade as we know it – and therefore our current economic system – will precede the advance of mass starvation.

Nations will fight, are fighting, to secure supplies of diminishing resources. Starvation, absence of trade, and control of population movements will lead to increasing terrorism by both governments themselves and other “terrorist” organisations. Available knowledge of viruses diseases and recombinant DNA – a product capable of permanently destroying the operation of cells at the most basic level – will be deployed by both groups. Armaments manufacturers will continue, in one way or another, selling to both groups – but more biological weapons will become more generally available.

One possible, indeed likely, scenario arising from these conflicts would be a nuclear winter

These conflicts will not necessarily be international or confined to the “Third World”. Klein (2007) has described the situation that has already emerged in Israel. Wilkinson and Pickett (2009) have shown how increasing inequality within and between societies is associated with a wide range of “anti-social” activities including homicide, “terrorist” attacks, mis-use of drugs and other anti-social behaviour. These things, combined with such things as the break up of families and community in the quest for gainful employment and social status, have created a situation in which 1% of the US population languishes in prison, 7% have criminal records, and 7% of those born in 2001 are expected to go to prison at some time in the course of their lives.

Many optimists believe that a new civilisation will arise, like a Phoenix, from the ashes. I do not share their optimism. My belief is that we are beyond the point of no return.

My conviction is that, precisely because the situation is so bleak and complicated, we are seduced by comfortable, appealing, and apparently individually actionable ideas (as distinct from the numbing thought of devising ways of e.g., changing the WTO) suggesting that we will be able to do such things as return to a network of small rural communities. Even so, there is little discussion of how to organise networks of small “organic”, anarchist, communities - let alone how the vast numbers currently living in cities (who, as Bookchin has
shown, know little about where their food comes from, let alone how to live in harmony with nature) are to be dispersed into the countryside. (There is, of course, even less discussion of how to intervene in the global management processes we have described in such a way that such dispersal becomes possible.)

Nevertheless there are a few grounds for optimism. As we have seen, without overshoot, the damage we have inflicted on our habitat, and WTO rules, it might have been possible for all of us to live as Indians did 25 years ago and as some Central American and island communities do even today. And, while we are at it, it is important to note that it follows from the works of Marks, Lane, and others that it is possible to live in a sustainable way without lowering quality of life. This means that two key questions to be addressed are: (a) ‘What are the social forces which persistently drive us away from appropriate arrangements and promote command and control arrangements which inflict poverty on so many and benefit so few?’ And, (b) ‘Is it possible to envisage an information-based public management process which will run the world in the long-term public interest instead of the short-term interests of dominators?’

We will discuss these issues in more detail later. But first let us review a number of the barriers that we have so far stumbled across.

**Some Barriers to Change**

One cluster of problems which confront us in a quest for ways forward derives from the fact that, as we have seen, both quality of life and the actions required to promote sustainability inhere in the public domain. The necessary developments cannot be commoditised and bought and sold in the marketplace. It follows that the need is for an explicitly – and effective – information-based management system – i.e. one based on indices which differ radically from financial indices. Actually, this is not so radical as may appear because a great deal of management is information-based – even if the indices leave much to be desired. Examples include the educational and the defence systems. (Note that this aside implies that it is not just in relation to sustainability and quality of life that we could do with new thinking about appropriate public management arrangements.)

In reality, very little management is left to the market. Extensive regulation pervades the system. For example, the regulations embedded in WTO Agreements make it illegal to market foodstuffs grown from seeds whose genetic coders have not been registered. (It is still legal to grow and exchange them, but not sell them.) The problem is that, the effects on ecological diversity and thus farmers’ ability to tailor the species and strains they grow to a detailed knowledge of habitat are undermined – not to mention the effects on natural evolution.

These observations return us to the question of how to promote comprehensive, or holistic, evaluation of the consequences of alternatives. Recall that “comprehensive” evaluation requires the assessment of all the short and long-term, desired and desirable, and undesired and undesirable consequences of a course of action for both individuals and society. Further that the result of a move toward such evaluations will not be a single and unarguable prescription for what should be done but only multiple possibilities between which people can be invited to choose on an experimental basis and in such a way as to facilitate evolution.
Observations like these call into question most of the assumptions on which centralised command and control structures are built. And they depend on faith in people’s ability to act in the long-term public interest.

Another cluster of problems stem from the fact that, so far as I can make out, command and control arrangements are not just imposed by dominators. Rather, support for them stems from a range of rather pervasive, and somewhat inexplicable, human traits. I am regularly amazed at the number of people who come from liberal backgrounds who seem to seek out and embrace authoritarian, fundamentalist, faiths and “strong” leaders. At the merest whiff of a suggestion, they will then engage in, and invent ways of elaborating, horrendous actions in an apparent effort to fulfil what they take to be the tenants of the ideology. Klein (2007) has, for example, documented the lengths to which believers in “free market” ideology have been keen to go to impose that ideology (in a manner indistinguishable from the behaviour elsewhere described as “fascist”) on regimes and cultures. The tactics employed have included brute force, torture, and mass extermination of non-believers. But, truth to tell, such behaviour is rampant. It emerges at every level from inventing better ways of torturing prisoners in concentration camps and parents torturing gay sons because they believe that some personally espoused religious beliefs prohibit such behaviour, to burning neighbours at the stake for not adhering to a particular set of political or religious creeds. The other side of this same coin seems to be a tendency to believe in the goodwill of leaders when it should surely be apparent that those leaders cannot be trusted one inch. Examples like Nixon and Bush readily spring to mind – but the continued faith in the goodwill of such people as Blair and Mandelson defies comprehension. Flamboyant aspiring “leaders” coming from nowhere seem to be able to ride up on white horses, tip out the king of the castle, install themselves, and then instantly command the adulation of those they are about to exploit.

One very serious practical consequence of this faith in the goodwill of leaders is the pervasive belief that, if enough people protest loudly enough, our “leaders” will “do something about” the problems. Thus there have been endless enormously well attended “Alternative” G8 and Social Forums addressed by numerous well informed and articulate speakers (in addition to more than a few aspiring demagogues!) calling attention to one international injustice or crime of government or the TNCs – or to one rampant social or environmental problem another – and expecting the “leaders” assembled at some G8, G20, World Climate Convention, or “Earth Summit” to do something about the problem. The truth is, first, that these leaders would not know how to begin to tackle these multiple, interlinked, systems problems even if they wanted to and, secondly, they do not actually want to do so – and are perhaps even unable to hear what is being said – because they have been selected and promoted for doing precisely the opposite (whilst, in a psychopathic way, telling the public what they want to hear and convincing them that they can indeed be trusted to act in the public interest).

General Conclusion to Parts I and I
The Truth is that We have Reached The End of the Line

Taken together, the trends we have observed point, both individually and collectively, to the conclusion that we have reached the end of the line

We have to radically change the way we live if our species and the planet as we know it are to survive.
Appealing “comfortable” solutions like local currencies and the development of small, sustainable, rural communities, or harnessing the wind are precluded by current population density (never mind the arrival of another four billion people within the next half century), the destruction of habitat, the ramifications of the oil dependency problem, and the demands of the IMF and WTO. However, more fundamentally, as we shall shortly see, they appear to be undermined by a long-standing trend toward hierarchical organisation supported – or defined – by work-creation for the masses. These forces have, over millennia, thwarted all previous attempts to stem the tide.

These observations indicate that the problems we face cannot be blamed on such things as inappropriate personal values or deficiencies in moral responsibility. Rather they point to systems problems. These systems problems can only be fixed by understanding how these systems work.

It is important to appreciate how fundamentally this observation undermines the widespread faith that the progressive solution of a series of glaring problems will lead to solution of the wider systems problem. Yes: the “solution” of a series of ad-hoc problems will change the system. But rarely in the intended way. The net result is that everything goes on much as before.

In short, one of the most fundamental problems we face is the absence of an appropriate design for public management arrangements which will provoke pervasive experimentation, learning, and the evolution of a better system.

A Coda

In his engaging book The Rational Optimist, Ridley (2010) has argued that many of the conclusions drawn above are just plain wrong because of societies’ capacity to innovate. Most of the projections made above are based on the assumption that current trends will continue. Ridley cites many trends crucial to forecasting which have not continued. He argues that regulation is the enemy of innovation. Well, not so much regulation, as the capacity of kings and bureaucrats to siphon off the economic benefits of innovation and create a good life for themselves while arguing that they are acting in the public interest. There is little doubt that much of what he says is true. Most innovation comes from capturing an idea, combining it with another idea, and creating what is, in some sense, a new, emergent, idea. Much devastation stems from failure to create conditions which will facilitate this process and fear of the possible consequences of doing so. Much stems from “leaders” who believe that they know what should be done and, with amazing guile and often endorsement from their fellows, impose those beliefs on others. He argues, as many others have argued, that the way forward lies in free trade … but without acknowledging the kinds of difficulty (discussed earlier) that are involved in such things as determining costs and consequences – not to mention the problems involved in commoditising some of the most important components of quality of life. But perhaps his most important oversight is his failure to say much about the conditions that are required to create a climate of innovation and learning. Interestingly, his exposure of the errors embedded in many reports - such as those of scientists investigating climate change, illustrate the point at a fairly basic level. Why have so few taken the trouble to check these calculations and assumptions? Still more interestingly: Why has he done so? And the answer he would give is more than a little interesting: It is because he has seen a way to make a buck out of it! No mention of such things as the amazing human need to have crusade to fight for. Or the seeming acceptance that the need to
make bucks is fundamental to human nature and to be harnessed to the task of social innovation.

**Popular Discussion: Centralisation, Decentralisation, and Democracy.**

At this point, it is important to make a few comments about popular beliefs about centralisation, devolution, and local government.

One set of comments has to do with faith in multi-purpose elected assemblies and perceptions of their role.

There is, in fact, widespread disaffection with current arrangements. On the one hand it is widely recognised that most of the problems which plague us cannot be solved at the local level. International intervention is required. This observation is commonly interpreted to mean that more centralised – world – government is required. Yet, at the same time, there is also widespread recognition that many of the problems we face are actually created by international action. (However, they are commonly blamed on the TNCs, while the role of the WTO, its associated institutions, and the Chicago mafia which hover over them in a somewhat ethereal background mostly passes unnoticed.)

Yet also, and again at the same time, there is widespread resentment at the regulation and control emanating from such centralised bodies as the EU. These, often absurd, regulations intrude into every aspect of our lives from the varieties of tomato available in the shops, through “safety” standards to be adhered to by workers, to monitoring of the contents of personal emails and prescriptions to check whether one has accessed some “prohibited” material – or disseminated some heretical information – on the internet.

As a result of these things, the strong feeling that we need more control over the big boys and international “economic” forces is accompanied by the seductive notion that things would be better if only we could get more control at the local level. Hence the quest to create more and more “self-governing” countries.

The result has been an outpouring of writings about “devolution” and appropriate levels of government. Note the italicised, give-away, word. This writing is grounded in hierarchical thinking when, as we shall shortly see, the need is for organic thinking. So the tendency is to set up more and more command and control structures – telling people and public servants what to do, commanding via draconian regulations (accompanied by blame and punishment, and checking procedures involving hidden fears) such things as enforced electronic tagging, truant officers, “smoking police”, sex spies, or, worse, unsuspected and secret internet trawls.

It is worthy of note that local governments are, by and large, left with control only over diversionary issues, such as how to spend pittances of tax money released for prescribed purposes by national governments, making regulations about the “racist” remarks that can be tolerated, making sex education compulsory in order “to reduce the number of teenage pregnancies” while ignoring the civil rights implications of seeking to standardise what is, in reality, a huge but poorly documented variety in sexual behaviour, drugs education (whilst ignoring a huge range of much more important social problems), appropriate sentencing arrangements for infringing one or other of a plethora of laws relating to what are, in reality, personal behaviours, legislation re sexual orientation, smoking, pornography, religion, politically correct speech, standards of content for BBC programmes, regulation of everything under the sun – and the generation of endless “education and training”
programmes linked to “qualifications” required before people can dig holes in the street (or bring them up-to-date on the latest “health and safety” regulations) and so on and so on.

It is perhaps revealing that, while some protest against regulations prohibiting smoking or parents playing with their children in school playgrounds or those requiring youth workers to undergo police vetting may be heard, there is little protest at the underlying, draconian, compulsive, applies-to all-without-exception, component of all these regulations as something to be resisted per se. The danger of inuring all to the implications of easy acceptance of such regulation seems to have escaped attention.

The bottom line to all this is that it would seem that there is a widespread, but relatively inarticulate, feeling that democracy is somehow a trick – a façade. There is a recognition of the need for an alternative public management system (portrayed, for example, in the film *Lions for Lambs*). Unfortunately there is currently no acceptable, articulate, vision of what an alternative might look like. Thus the absence of such a vision might be identified as an alternative candidate for being *the* crisis.

**PART III**

**Another Way of Looking at Things: Study of the Socio-Cybernetic System**

So far we have seen that “the” crisis is pervasive, that there are multiple crises, and that these crises are not merely interlinked but also interpenetrate and so cannot be fixed one at a time.

But we should now note something else. So far, we have discussed the almost endless problems facing us as if they were technical problems, to be fixed by developments in one kind of technology or another – by developments in the financial system, in governmental arrangements, in environmental management, and so on.

However, as just mentioned, we have also noted that the problems are interlinked – that, for example, one cannot fix the pollution problems without reducing the use of cars and planes. But one cannot do these things because it would lead to the collapse of our economy and our production and distribution arrangements. Billions of people would become “unemployed” – and, because livelihood (income) is currently linked to employment – all these people would become penniless. One cannot stem the plunge to an increasingly divided society and world – and thus the dangers of war and a nuclear winter – without intervening in the activities of the international banking community, the WTO, and the IMF. And so on. The comfortable notion that one can fix bits, one at a time, and that the effects will cumulate is simply naive.

But what happens if these components, or indices, of our plunge toward self-destruction (carrying the planet as we know it with us) are viewed as symptoms of some deeper problem – eg dysfunctional social arrangements – which it might be possible to understand and fix?

We will now explore this possibility. But, to give some kind of map of where we are going, it is worth anticipating the conclusion. The crises documented earlier appear to be the terminal symptoms of an anti-life evolutionary process that has been going on, seemingly inexorably, despite numerous trenchant criticisms, protests, and demonstrations of the viability of alternatives, over millennia. The trend is unmistakably toward entropy*.

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*Physicists argue that, since energy is required to maintain order, it is a law of nature that organization should be replaced by disorder – entropy.*
Let me first clarify my usage of two terms: “socio-cybernetics” and “system”. Both terms are used in many ways, often with their users unaware that others are using them to refer to something almost entirely different. Fortunately, on the one hand, the International Institute for General Systems Studies, based on the work of a series of researchers, has produced a convenient map of the “systems minefield”, otherwise known as the “systems genealogy”, (which is reproduced at www.eyeonsociety.co.uk/resources/SCiO%20Map%20of%20Systems%20Minefield.pdf) and François et al (2004) have compiled a 750-page International Encyclopaedia of Systems and Cybernetics.

Socio-Cybernetics

Cybernetics is concerned with the study and design of guidance and control systems in animals and machines. One has to mention the animals, otherwise people think only of the control systems of man-made artefacts like interplanetary missiles.

But as soon as animals are included, one realises that one must embrace non-hierarchical control systems. Even such simple things as the maintenance of body temperature are controlled by multiple feedback processes, some neural, some chemical, but most poorly understood. The growth and development of an organism is controlled by even more mysterious feedback systems. Even the development of a particular cell is controlled by extra-cellular processes – some local but many distal. The organ into which it will develop can, for example, be dramatically altered by interfering with a distal cell that would normally develop into a supporting organ.

There is a temptation in some quarters to sit back and say that such developments are “self organising”. But this is disingenuous. It is obviously necessary to understand the feedback processes involved.

At this point, one may raise the question of whether the flow of all this vital information is to be regarded as communication. I mean, we have earlier accepted that the flow of electrical pulses through the ether shifting electronic currency units is to be considered as a flow of information, a form of communication. But is it only communication because it can be understood and interpreted by some person or persons? Or is it communication because it is received by a system which acts upon it?

But, to come back to cybernetics – and here one is in danger of falling into an academic morass – as one moves from the control of machines to the control of animal behaviour one finds one is dealing with ever more complex systems – with more and more mutually contingent interactions both within the organism and with continuously changing habitats (comprised of other plants, animals, and the “physical” environment).

Once people realise these things, they are often inclined to give up, declaring that “It’s all too difficult”. We should note, however, that many important developments in science have come about as a result of changing the level of analysis. Certainly, at one level, it is too difficult to understand the complexities of meteorology and the relationships between a ship’s captain and his crew in such a way as to be able to predict what a sailing boat is going to do.
But, for certain purposes, it has proved very useful indeed to devise ways of thinking about, mapping, measuring, and harnessing the forces acting on a sailing boat (the wind, the waves, the rudder, etc.) and to pass over much else that is going on.

Before Newton, one had only the wind, the waves, and the Gods. There was no unifying concept of force – never mind ways of mapping its components in such a way as to be able to work out how to get the boat to sail into the wind.

My hope is, therefore, that some similar progress can be made toward developing useful ways of thinking about the interactions between the multiple processes heading us toward our own extinction.

What are the hidden socio-cybernetic feedback loops, processes, or forces, governing these developments?

System

As indicated, the terms “system” and “systems thinking” have multiple meanings, and these have usefully been summarised in the previously mentioned diagram entitled The Systems Genealogy.

Few of these usages relate directly to the way in which the term will be used here.

It is easiest to indicate this usage by means of an illustration. This comes from half a century’s research into the operation of the “educational” system (Raven, 1994). We began with a series of studies of what pupils, parents, ex-pupils, and employers wanted from it. It emerged that their top priorities were that the system should, on the one hand, nurture a wide range of different talents in different pupils (i.e. both cater for and nurture diversity) and, on the other, nurture generic, high-level, transferable, competencies like initiative, the ability to work with others, problem-solving ability, and the ability to understand and influence the workings of organisations and society. We then demonstrated that these opinions were essentially correct by studying their differential implications for individuals, workplaces and society (Raven, 1984/97). We also showed that most schools do little to either promote or cater for diversity or to nurture high-level competencies.

There are many reasons why schools tend to neglect these goals (Raven, 2001). They include the absence of a shared, formal, understanding of how to nurture the desired qualities or how to find out whether one has done so, and, especially, how to nurture and recognise multiple and alternative talents in a single classroom. They include an inability to handle the value conflicts which surface as soon as one tries to introduce educational programmes which actually set out to reach these goals. They include an inability to initiate a network of experiments aimed at different aspects of “the problem” and make appropriate arrangements to learn from those experiments.

But the most important lesson we learned from this work was that these contributors to systems failure do not operate independently but form a network, or system (using the word in the technical sense I set out to illustrate), of mutually supportive and recursive social forces. The net effect of this system is that it is more or less impossible to change any one

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*Readers unfamiliar with what this statement is saying may find Appendix A helpful*

† This usage of the term is again different: less technical
part of the formal system without simultaneously changing others. Common-sense, non-systems-oriented, single variable changes are either negated by the reactions of the rest of the system or produce counterintuitive, and usually counterproductive, effects elsewhere. This network of social forces, taken as a whole, perpetuates, even leads to the progressive elaboration of, the system itself.

This network of feedback loops is sketched in Figure 3.

**Figure 3**

*Feedback Loops Driving Down Quality of Education*

What the Figure shows is that:

A. The narrow educational activities that dominate schools are produced by (a) a series of sociological imperatives (e.g., that schools assist in the process of legitimising a divided society); (b) inappropriate beliefs about appropriate ways to manage both the educational system itself and public management more generally; (c) failure to initiate research which would yield useful insights into such things as the nature of competence, how its components are to be fostered, and how they are to be assessed; (d) the absence of (i) systematically generated variety in, and choice between, educational programmes which have demonstrably different consequences and (ii) information about the consequences of each of these alternatives; (e) failure to
introduce “parallel organisation activity” (Kanter, 1985) to produce innovation within schools; and (f) inadequate dissemination of the results of existing research into the nature, development, and assessment of generic high-level competencies, and, especially, the implications of the values basis of competence.

B. Widely shared beliefs about how public sector activities should be managed seriously undermine the operation of the system. These beliefs include the notion that it is the job of elected officials (described by John Stuart Mill and Adam Smith as “committees of ignoramuses”) to tell public servants … including teachers … what to do and to monitor achievement of the goals or targets thus prescribed using heavy-handed, command-and-control oriented, techniques.

C. The narrow educational process that is implemented in schools has a series of knock-on effects that finally contribute to its own perpetuation. The competencies and beliefs that are nurtured reinforce a social order which offers major benefits to “able” but rather self-interested people who do what is required of them without questioning that order. (In fact, that social order creates endless work that gives meaning to people’s lives but does not enhance the general quality of life, and creates wealth at the expense of the biosphere and future generations.) In addition, the educational system itself helps to teach a host of incorrect beliefs which, collectively, result in little being what it is popularly or authoritatively said to be. This double-talk makes it extremely difficult to conduct any rational discussion of the changes needed in the educational system or society. The sociological imperative that educational institutions help to legitimise a divided society contributes to a demand for, and acceptance of, narrow, invisible, and mislabelled assessments. Those predisposed to acquire these “qualifications” are not inclined to see the need for, or to commission, genuine enquiry-oriented research or notice other talents in their fellows. The lack of understanding of the nature of competence leads to a failure to underline the need for a variety of value-based educational programmes and thus to the perpetuation of narrow educational activity.

D. The main motives for change are: (a) widespread awareness that we have created a non-sustainable society but lack the competencies needed to change it and (b) that there is something seriously wrong with the educational system itself and, more specifically, awareness that it fails miserably in its manifest task of identifying, nurturing, recognising, and utilising most people’s motives and talents. (Unfortunately, the most commonly proposed solutions to this problem, based as they are on other misunderstandings, are, in reality, inappropriate.);

E. The points at which it should be possible to intervene in this network of feedback loops to create an upward spiral include: (a) changing some of the beliefs and procedures listed in the central box having to do with perceptions of society and the way it should be managed. Relevant changes might include promoting wider recognition that one cannot get value for human effort in modern society unless we introduce better means of monitoring and evaluating the long-term effects of what we are doing and better ways of giving effect to such information as is collected. This points to the need to change the way we run society, to the need to introduce more, and more appropriate, social research and evaluation activity, and to the need to find ways of holding public servants and politicians accountable for seeking out and acting on information in an innovative way in the long-term public interest; (b) introducing the “parallel organisation” activities that are required to promote innovation within educational institutions; (c) establishing a greater variety of distinctively different, value-based, educational programmes and providing information on the short and long-term, personal and social, consequences of each; (d) creating public debate about the forms of supervision – the nature of the democracy – needed to ensure that public
servants seek out and act on information in an innovative way in the long term public interest and; (e) disseminating what is already known about the nature, development, and assessment of competence and its implications.

Standing further back from the Figure what we see is that:

1. It is impossible to achieve significant benefits by changing any one part of the system (such as curriculum or examinations or teacher training) on its own, without simultaneously making other changes – otherwise the effects of the change will be negated by the reactions of the rest of the system. On the other hand, it is equally clear that command-and-control-based system-wide change based on uninformed opinion will achieve little.

2. Pervasive, *systems-oriented*, changes are required. But these changes, although collectively system-wide, cannot be centrally mandated because there are too many new things to be done.

3. What happens is not determined by the wishes of parents, teachers, ministers of education or anyone else but, both directly and indirectly, by the sociological functions the system performs for society – i.e. *by the system itself*. Clearly, the widespread tendency to single out and *blame* parents, pupils, teachers, public servants, or politicians is entirely inappropriate. *Their* behaviour is determined by the system. One needs to take these social forces seriously and ask how they can be harnessed in an analogous way to that in which marine engineers harness the potentially destructive forces of the wind: They will not go away!

4. It is vital to generalise the observation made in (3): We need to fundamentally reframe the way we think about the causation of behaviour in a way which parallels one of the transformations Newton introduced into physics. Before Newton, if objects moved or changed direction, it was because of their *internal* properties: they were *animated*. After Newton it was mainly because they were acted upon by a network of invisible *external* forces which could nevertheless be mapped, measured and harnessed. Observation (3) implies that we need a similar transformation in the way we think about the causes of human behaviour.

5. The network of forces depicted (a) drives common-sense-based attempts to reform the system ever more narrowly, and ineffectively, around the triangle at the top left of the Figure, and (b) diverts attention from the developments, indicated in the bottom part of the figure, that are so essential to move forward.

6. The *causes* of the symptoms (and thus the appropriate place to start reform) are far removed from those symptoms.

7. The system does not merely reproduce itself – it leads to the production of ever more elaborate versions of itself; it is self-elaborating; autopoietic.

In the foregoing, we have made continuous use of the term “force”. We must now take up the question of the nature, or status, of the “forces” depicted. At the most basic level, Figure 3 is analogous to a map of the interacting gravitational forces controlling the orbits of the planets. But the nature of the *social* forces involved has yet to be elucidated. What is clear is that the links in the figure are not flows of e.g., resources as in the models developed by Meadows, Meadows and Randers (2008). Nor are they flows of “information” as in networks of e-mails. Nor are they flows of e.g., people from one section of the “educational system” to another. The contents of the boxes are not people or stocks of food or components. Only if the feedback loops do really represent *forces* in some sense analogous to the physical forces represented in the diagrams of physics does it make sense to ask how they can be harnessed.
(as in the forces acting on a sailing boat) or amplified or damped down (as in electrical energy flowing through a radio). It is worthy of note, however, that, just as one can “feel” the force of gravity acting on an object held at arm’s length or the force of an electric current passing though that same arm, so can one “feel” social pressures. Note, too, that one does not have to fully “understand” the nature of these forces before one can set about measuring or harnessing them.

_Some Problems Posed by Reductionist Science_

We have earlier noted that much theory in effect requires us to say “There are many things going on here, but for certain purposes we can neglect most of them and concentrate on the this and this and this ...”

But not only does much depend on the “purposes”, the process has been carried to extremes. Thus it is felt to be perfectly OK to conduct an evaluation of e.g., the effects of a pesticide in agriculture or an educational innovation and focus only on certain outcomes – such as short-term yield in agriculture and test scores in education – and to neglect many important outcomes – such as effects on the food chain in agriculture and the stunting of most children’s most important talents and abilities in education.

Such an orientation has led researchers to believe that it is perfectly OK to accept research grants which require them to look at certain indices of productivity and forbid them to look at wider outcomes. It has also strongly reinforced the tendency to focus on that which is easily quantifiable and to abdicate responsibility for developing indices of a wider range of outcomes and processes.

It is important to reiterate that _comprehensive_, or holistic, evaluation of an educational process would require the assessment of all its short and long-term, personal and social, desired and desirable, and undesired and undesirable effects. It is necessary to evaluate both the personal and social outcomes because what is good for the individual may be bad for society. What is beneficial in the short term may be detrimental in the long term. What is in one way desirable may be associated with many undesirable effects.

It is quite clear that such a comprehensive picture cannot be generated via a single research study. So the issue has to do with establishing research arrangements which fund researchers with a wide range of different, indeed contradictory, orientations, and perspectives.

As Shiva (1998) has noted, reductionist science is linked to a much wider trend which includes a plunge to monocultures of _mind_ (a single ways of thinking about things), monocultures in agriculture (a focus on growing and marketing particular strains of fruit, vegetables etc. – which is associated with legislation making it illegal to sell products whose genetic codes have not been registered), and monocultures of culture (the destruction of ways of living that differ markedly from those emerging in the “West”).

It therefore behoves us to enquire into the social forces that have led to these developments and we will shortly return to this task.
Emergent Insights into the Developments Needed to Run Society in the Long-Term Public Interest

It follows from what has been said that current forms of democracy and bureaucracy are unable to deliver what they are generally thought to have been set up to do – i.e. to run society in the long-term public interest.

As we have seen, the information summarised in Parts I and II of this article points to the conclusion that, if we are to survive as a species, we will have to radically change the way we live. Yet so many things need to be done that there can be no blueprint for how to move forward. Put another way, to be sustainable, the way we live will have to differ as much from the way we live now as life in an agricultural society differed from that in a hunter-gatherer 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.

Then, although we glossed over the issue rather lightly, we went on to show that developing an effective educational system is dependent on creating a pervasive climate of innovation: endless experiments in all aspects of curriculum, ways of assessing outcomes, administrative arrangement (different programmes for different children linked to different goals etc. etc.) all associated to comprehensive evaluation of the outcomes, public debate, and informed choice between radically different options by parents and pupils.

One of our central questions therefore has to be “How can we release this ferment of innovation and learning?” In the end, as we shall see, it will be necessary to move toward arrangements which, as Bookchin (1992) has put it, will not even be recognisable as a political economy – at least in the way that term is generally understood. But we have to start from where we are now – with our current forms of bureaucracy and democracy. How could these be modified to help us to move forward?

Let us again return to the educational system for some insights. And let us focus for the time being on the objective of nurturing and catering for a wide variety of different talents. And let us skip over the problems involved in developing a conceptual framework for thinking about diversity in the context of the insistent demand that the system provide a single and unarguable criterion of merit to implement and legitimise both hierarchy and a divided society that compels all, despite their better judgment, to participate in the destructive activities of which modern society is so largely composed (Raven; 2008). And let us skip over the task of clarifying the curriculum processes that are to be used to nurture diversity (Raven, Johnstone, & Varley, 1985).

We will focus on the nature of, and how to create, the climate of innovation, experiment and learning that is required to tackle the endless problems involved in releasing, recognising, nurturing, and catering for, diversity. Given that we have to start from where we are now – i.e. with our extensive bureaucracy – we may ask “Whose job is it to release multiple experiments explicitly trying to nurture different types of talent?” “Whose job is it to arrange for comprehensive evaluation of each of these options?” (Remember that this involves engaging a wide range of researchers with contradictory perspectives.) And “Whose job is it to arrange for a variety of options (and information on the differential consequences of each) to be available within and between schools in every community, and to feed the relevant information outward to the public so that they can make informed choices between them
(instead of feeding it upward in a bureaucratic hierarchy to “committees of ignoramuses” to make decisions binding on all)?"

Well, yes, it is clearly a job for everyone in a community and perhaps especially for those who have found their way into niches from which they have time to engage in relevant activities. But are not our public servants currently charged with the task of managing sectors of society in the long-term public interest? Is there not scope to generate new job descriptions for them and new staff-appraisal arrangements to hold them accountable for such things as creating a ferment of innovation and evaluation, sifting information for good ideas, and acting on information in an innovative way in the long-term public interest? Clearly, under such circumstances, we cannot hold them accountable for the accuracy or otherwise of their decisions – for many of those decisions are going to turn out to have been wrong. We can only hold them accountable for following procedures that are likely to lead to social innovation and learning. So, to get the new thinking that is required to generate these arrangements, it seems that we have to press for institutional arrangements that promote innovation and research that is problem-driven and adventurous instead of literature-driven. Perhaps surprisingly, then, one of our immediate priorities has to be to influence the criteria and arrangements for funding, conducting, and publishing research and, most importantly, to shift toward arrangements in which research is embedded in what Kanter (1985) calls “parallel organisation activity” within the educational system itself.

How are we to give teeth to information emerging from new staff and organisational appraisal exercises? (We all know of endless reports that simply gather dust.)

At the heart of the answer to this question lies John Stuart Mill’s (1859/1962) observation that the way to get people to act in the long-term public interest instead of their own short-term interest is to expose their behaviour to the public gaze: “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”. In the current context this points to a need for networks of open and overlapping supervisory groups, not a hierarchical structure.

Clearly, it should be possible to use what we have learned about systems processes to design a cybernetic – governance – system which would help us to answer these questions.

Our proposals based on these observations were elaborated at some length in chapters 19 to 25 of The New Wealth of Nations* and condensed into the diagrams shown in Figures 4 and 5.

Figure 4 shows the main components of such a system.

As we have seen, the most important requirements are to create a pervasive climate of innovation and to ensure that ways are found to act on information in an innovative way in the long term public interest.

The main components involved in creating a pervasive climate of innovation are to promote what Kanter calls “parallel organisation activity” to ensure that action is taken on the basis of observations by people at all levels in society, to create media and scientific debate particularly around the observations of people who challenge the conventional wisdom, and

* These are available at: http://eyeonsociety.co.uk/resources/fulllist.html#new_wealth
to promote fundamental policy-relevant research development and evaluation of a kind which is currently strongly discouraged through current governance and funding arrangements.

**Figure 4, previously Diagram 25.1**  
**Diagram 25.1**

As we have seen, one of the responsibilities of public servants is to promote such climates of innovation and another to give teeth to that information via a variety of comprehensively evaluated experiments. And we have suggested that one way of helping to ensure that their behaviour matches this job description is to expose their behaviour to the public gaze via networks of overlapping supervisory groups.

In Figure 5, I have tried to both expand on these observations and condense them into a systemogram.

First, the link to Adam Smith’s *Wealth of Nations* should be highlighted. The basic question Smith sought to answer was how to design a society which would innovate and learn without central direction, that is, without, as he and Mill put it, “committees of ignoramuses”. His answer relied centrally on “market” processes. However, as we have now seen, that solution does not, and can not, work. What we have tried to come up with is, therefore, an alternative answer to that question.

The arrangements outlined in the central box relate to the need to devise (evolve) more appropriate arrangements for social innovation, learning, and further action. Since these have been discussed above in some detail we can skip over them here.

For the same reason we can skip over many of the research questions listed in the bottom right hand box. But it cannot be too strongly emphasised how vital such adventurous research is to finding a way forward.
Figure 5
New Societal Managements Arrangements

CREATION OF A SUSTAINABLE SOCIETY
- One which offers more, more satisfying, less energy-consuming work.
- One which develops, utilizes 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.

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 – is 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 new developmental environments in schools
- Activities which will nurture diverse high level talents and especially those required to analyse the way society works, challenge mythologies, and take a more active role in it. (Embodied in a non-authoritarian concept of science and portraying non-autocratic models of training and management.)

Creation of innovative climate in schools and school systems
- 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 recognize the diverse talents and contributions of teachers.

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 climates 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?")

New understandings of how research is to be managed.

Recognition of the need for research.
What now needs to be done is for a number of people to come up with alternative designs, grounded in socio-cybernetic thinking which would meet the parameters identified above (together with others not listed here) in order to promote the requisite public debate.

The task is of inestimable importance. The problems of which we have spoken are by no means limited to the educational system and virtually all government activity but plague the management of all complex organisations … such as hospitals and Telecom companies … never mind the management of health, communication, and financial services more generally.

Nevertheless, despite the importance of this task I turn now to something else, the importance of which I was not fully aware of at the time – that is to an even more basic set of socio-cybernetic processes which seem not only to have been undermining all previous attempts to move toward more “organic” (ie multiple-feedback based, less hierarchical) ways of running organisations and society but also, above all, heading us, despite many people’s better judgment, inexorably toward our extinction as a species, carrying the planet as we know it with us.

**Systems heading us to self-destruction**

The difficulty is this: Over the centuries there have been numerous attempts to devise and implement more appropriate public (and organisational) management systems. Many of these have been shown to be viable and have survived for a period of time. But, in the end, all have been eliminated. So, if we are to move forward, it is necessary to understand the socio-cybernetic forces which have been responsible for undermining them. In a book republished in 2005, Bookchin has shown that the trend toward hierarchical, command and control, organisation has continued inexorably over millennia despite the trenchant criticisms and protests of many thoughtful people and, indeed, numerous practical demonstrations of the viability of alternatives.

To clarify what is at the core of this trend Bookchin begins by suggesting that the social organisation of so-called “primitive” societies may be best characterised as “organic”. By this he means that these societies function in a manner analogous to the way in which animal bodies are (internally) organised.

The cells of an organism are differentiated. But that differentiation can also, to a remarkable extent, be changed if the body as a whole requires it. Coordination between the cells is not brought about through a hierarchical structure but through a network of interacting feedback processes. The behaviour of the cells is not mainly determined by their chromosomes but by all sorts of inter-related, local and distal, internal and external processes and the role they (the cells) play in the (developing) organism.

However, it would appear that, at every stage in societal “development” from time immemorial (and not just over recent millennia), this organic, network-based, social structure has been replaced by increasingly hierarchical arrangements. The legitimisation and maintenance of these hierarchical structures is dependent on the continuous creation of more and more work which, despite a mythology which asserts the contrary, contributes little to quality of life. It is this – largely useless – work that contributes most to the destruction of our habitat.

This senseless work has not merely been created to occupy the idle hands that might otherwise have done the devil’s work or as a means whereby elites can exert control over the
masses. It, like the so-called educational system, has seemingly been produced as part of a sui-generous mechanism for compelling people to participate in the destructive process.

*Mapping the Socio-Cybernetic Processes Behind History (and Evolution Itself)*

Why is it that this destructive process has developed so inexorably in the same direction?

Bookchin himself proceeds, after the manner of Braudel (e.g., 2002), to identify the specific constellation of factors which were operative at each “choice point” in history. But this hardly accounts for the amazing continuity in the direction of (un)development.

Remarkably and disturbingly, the growth of this destructive process has itself many of the features of the organic. It appears to be an endlessly self-producing, self-extending, and self-elaborating autopoietic process.

I need to underline the significance of that statement.

The term “autopoietic” was coined to draw attention to the ability of “self-organising” systems (an oxymoron if ever there was one) to do more than re-produce themselves. They produce—i.e. extend and elaborate—themselves.*

Note that it is precisely these autopoietic, organic, systems processes that have enabled “life” to overcome entropy.†

Instead of descending into chaos and disorder—as the laws of physics ordain—these processes have created order—life—even Gaia herself—out of chaos.

How are we to represent this life force in our diagrams mapping the socio-cybernetic forces that control the operation of autopoietic sub-systems?

To underline the paradox that confronts us, let me repeat something said a few paragraphs earlier: *The network of feedback loops—the autopoietic system—heading us to extinction itself has many of the features of the organic in that it continually reproduces and extends itself.* So, paradoxically and ironically, it seems that it is an inexorable organic process which is driving us away from organic social organisation toward the hierarchical arrangements that are going to be our undoing … and validating the second law of thermodynamics in the process.

Starting from the material indexed in the right hand box, labelled *Sociological Imperatives*, in Figure 3 we generated a tentative model/systemogram of the network of social forces and feedback loops which appear to be perpetuating this process in modern society (Fig 6).

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* I am not the first to encourage socio-cybernetricians to address this problem. For example, Gerard de Zeeuw organised a whole symposium (in 2001) to address the problems of emergence. (My own contribution to that symposium can be found via [http://www.eyesonsociety.co.uk/resources/100UA.pdf](http://www.eyesonsociety.co.uk/resources/100UA.pdf))

† Authors such as Lovelock (1979) drew attention to the fact that life … and Gaia herself … depend on such things as salting away carbon so as to create an atmosphere in which other forms of life can survive. Robb (1989) heavily underlined the conflict between these processes and the entropy predicted by the laws of physics.
An enlargeable version of this diagram is available at: http://www.eyeonsociety.co.uk/resources/diagram%2020.6.pdf
Although, from our present vantage point, it is clear that Figure 6 is pitched at the wrong level, it is vital to undertake the Herculean* task of translating this and related systemograms into socio-cybernetic diagrams analogous to the diagrams (or dynamic systems models) of the cybernetic systems which control the operation of computers, the multiple feedback networks which control the functioning of animals, and the movements of the planets†.

Why go to the bother of transforming systemograms into formal socio-cybernetic models?

Problems with systemograms include their failure to: (i) give any indication of the relative strength of the various forces involved; (ii) highlight nodes at which intervention could most profitably be made; and (iii) make it possible to assess the probable effects (both desired and desirable and undesired and undesirable) of any particular intervention.

One illustration of the kind of dynamic systems map or model that might be envisaged is given in Figure 7‡

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* The task is of similar magnitude to that which Newton undertook by conceptualising the invisible forces that control the operation of sailing boats and the planets and showing how they could be mapped, measured, and harnessed. (See Raven & Gallon http://www.eyeonsociety.co.uk/resources/scio_unpublished.pdf for a fuller discussion.)

† See Raven & Gallon http://www.eyeonsociety.co.uk/resources/scio_unpublished.pdf for more detail.

‡ Readers may find it helpful to know that a standard convention for representation of the symbols in this and subsequent figures seems to be emerging.

A circle is a representation of an amplifier/signal damper (AKA “Converter”) [I am not entirely sure how this differs from a valve] but in some cases seems to be used as a representation of a dial; a meter. a measure of current rate of flow/strength of signal.

A rectangle is a representation of a cumulative level (often referred to as “stock”) that has been built up over time: eg extent of environmental degradation or innovative capacity of a workforce or society. Such stocks or cumulative levels may be increased or diminished via an inflow or outflow.

A double sided triangle is a flow (signal) control mechanism (AKA a “valve”). The flow in question should have a name and the exogenous and endogenous variables which determine the setting of the control mechanism are indicated by the arrows entering the triangles from either side. (Actually, I am not sure why the arrows can enter from either side.)

Endogenous variables are those entering from other parts of the system map and determined by whatever happens in the system … which may itself be influenced by exogenous variables at some other control valve indicated in the system. Exogenous variables are those not documented in the system diagram … and may include such things as legal arrangements.

A cloud or turbine represents some kind of exogenous input not documented on the diagram or some kind of output with which those drawing the map are not concerned at the present time.
Fig. 7 Simplified World Model Forrester constructed to analyse the effects of changing population and economic growth over the next 50 years. The model includes interrelationships of population, capital investment, natural resources, pollution, and agriculture and background variables which influence, and are influenced, by them.

* As an aside, it is possible to see in real time the effects of any intervention that it may be proposed to make in the above “Club of Rome” network by going to www.Vensim/models\sampleWRLD3-O03\World3_03_Scenarios.wmf\View

* Unfortunately, this link does not always seem to work. If it fails, it is necessary to go to the basic link and work through the network of options. The online, interactive, version of the model is there!
The problem with the Forrester/Meadows *Limits to Growth* map of the network of relevant feedback loops is its failure to identify the very networks of social forces with which we have been concerned in this paper and the way they interact with the processes depicted in the Forrester world model.

The authors of *Limits to Growth* say that we “lack the political will” to enact the policies to which their research points.

But the comments above indicate that their basic map simply does not give any indication of the network of social forces which control the operation of the network they do map.

Worse, the very way their conclusion is phrased assumes that someone … some authority … will implement their recommendations. In other words it is assumed that the way forward is via the very hierarchical command and control based interventions that are a major source of the problem. No central group could possibly envisage all the actions and experiments that are needed … still less monitor the effects of those actions and follow through with further (corrective?) action. (Hence the need for a new image, or vision, to guide the development of more appropriate public management arrangements.)

If my observation about the implied assumption about the perceived way forward is correct, it prompts a related observation. A fundamental conclusion derived from studies of the operation of social systems (such as that which controls what happens in education) is that it does little good to, for example, shout at the managers of the system. Their behaviour is primarily determined by the operation of the system itself. It would seem to follow that even some of those most deeply involved in systems thinking seem to have been trapped into common-sense thoughtways when it comes to making recommendations.

By the same token, it seems that the authors of *Limits to Growth* have failed take on board another central observation about systems: Single interventions rarely produce the desired results. Instead one requires multiple systems-oriented interventions targeted at dysfunctional feedback loops within the system.

Possible foci for “exogenous intervention” are actually designated with appropriate symbols in Forrester’s diagram but are more clearly visible in the STELLA diagram below.
Harich (2010) provides another diagram which at least makes a (somewhat minimalist) attempt to represent the kinds of social forces and feedback loops we are concerned with here and how they interact with the possibilities of intervention in the biological/economic system.
It is perhaps important to introduce a caveat at this point. These models are not carved in stone. They can always be drawn in different ways, and the different representations often end up highlighting very different aspects of the system. For example, we have ourselves developed a much fuller diagram of the workings of the educational system and its role in society … but we rarely use it because it does not so neatly illustrate the points made above. The objective of the work proposed here would not be to produce a complete, last word, map but to produce something usable.

“The” Crisis

So now it looks as if “the” crisis we face is quite other than what most people have taken it to be. It has to do with the survival of life itself. Our fundamental task as social scientists has therefore to be to persuade the scientific community to address questions they have persistently avoided.

The crisis is a crisis in scientific understanding; indeed in understanding of what science is all about.

How are we going to contribute to understanding the life force promoting the evolution of Gaia, represent it in our diagrams, and come up with viable suggestions for how it – and the social forces subverting it – which can perhaps best be characterised as Thanatosian – can be harnessed to reverse the Thanatosian process?

By the second half of this sentence I mean to reactivate interest in my earlier question: How are we to design a socio-cybernetic (governance) system which will enable us to survive as a species?

The Most Fundamental Questions Requiring Resolution

What are the research questions which seem from this discussion to have priority? Let me highlight three that we have stumbled upon in the last part of this article.

1. How are we to represent the life force contributing to the progressive emergence of societal arrangements with new emergent properties within diagrams of the socio-cybernetic forces governing the operation of autopoietic social systems?
2. More specifically, how are we to represent the anti-life, Thanatosian, forces which seem to be leading, in an “organic” manner, to the evolution of hierarchical societal arrangements which seem likely, in the end, to defeat life – the organic – that ultimate expression of autopoietic systems having emergent properties – itself?
3. How can we use our knowledge of the socio-cybernetic system governing the operation and evolution of society to devise – design – a socio-cybernetic – governance – system which will enable our species and our habitat – the autopoietic system known as Gaia – to survive – i.e. to continue to defeat entropy?

Raven and Navrotsky http://eyeonsociety.co.uk/resources/RVNAVSC%20landscape.pdf To obtain the whole article it is unfortunately necessary also to open the supporting PDFs listed in the entry in the “Full List” at www.eyeonsociety.co.uk
To Do List

As I have lectured and written on these topics over the past 25 years, I have repeatedly been asked “But what can I do?”

Actually, it follows from what has been said that there are endless things that need to be done. But, because most of them are not immediately obvious, I have been asked to spell them out. Although I have done this elsewhere (Raven, 1994, 1995 and, most comprehensively and concisely, Raven 2006), I am reluctant to do so here because so many of them follow directly from the observations we have made.

Here is an example. We have seen that, to move forward, we need a paradigm shift as profound as that which Newton introduced into physics – that is, we need new ways of thinking about, mapping, measuring, and harnessing social forces. Now, most of us are well aware that we are not geniuses of the stature of Newton. So the observation paralyses us: we think we need a champion, but do not know where to find “him”. But it should not. For what it means is that we have to press for a vision of research and research arrangements which will facilitate the emergence of such a transformation in thinking. What is more, those arrangements are also required to conduct the huge range of lesser research projects that we have seen to be so important. So there are hundreds of things we can do. We can press for a change in the public image of research and the role it can play in the public service. We can press for a change in the popular image of science (reductionist science) to what may be called ecological science and evaluation. We can challenge a great deal of the research which is presented as evidence supporting current educational, health care, and social policies. We can seek ways of engaging in any one of the hundreds of specific research projects that are required.

Similar things follow from what we have seen about requisite forms of bureaucracy and democracy. We need arrangements which are, to all intents and purposes, the exact opposite of those we have at the moment. Although I have also indicated the enormous barriers to such a change, part of what I have said is that we need a ferment of innovation to which everyone needs to contribute. So, in reality, everyone now can begin to behave differently. Everyone has some freedom of movement. Once again, the things to be done are legion and not those suggested by “common sense”. Rather, they follow from an altered vision of what the world is like and how it should be. Hence we can argue the case on a general basis. And/or we can begin to relate to our teachers, schools, and local authority administrators differently. We do not have to wait for central direction to set up network arrangements to supervise such officials and change our own and other people’s expectations of them. Once again, there are endless formal research projects to be undertaken: to find better ways of thinking about, assessing, and nurturing multiple talents; to formalise arrangements for implementing procedural (as distinct from outcome-) accountability: What are the things managers need to do to create a ferment of innovation, experiment, evaluation, and learning? How are we to overcome the tendency of self-presentational strategies to undermine the evaluation of such activities? Perhaps above all we can press for, and contribute to, actual experimentation with alternative arrangements in educational, health care, and other systems.

There is no shortage of things that can and must be done. What is needed is imagination on the one hand and a willingness to commit oneself to actually doing one of the things that need to be done on the other. And there is the rub. For a commitment to doing only one of these
things depends on confidence that someone else will do some of the others. And that depends on a vision of society and its potential operation that currently seems to be almost entirely lacking.

If there is anything that can be said to lie at the heart of a pervasive systems-generated crisis, this may be it.

Summary

Each of the crises we have discussed, taken individually, is made up of a network of interlinked crises. Yet each of these networks is inextricably interlinked with the networks constituting the other crises. So, in one sense, it can be said that the public management crisis is the most important. But that is precisely because the need is to manage the interlinked financial and environmental crises that threaten our very existence as a species. And the failure to devise a more effective socio-cybernetic, governance, system for society is down to a failure of social science. But then things took an unexpected twist. It became clear that the problems so far discussed cannot be fixed at that level at all. This is because they are all merely symptoms of a much deeper problem, namely a dysfunctional social system. It then emerged that the most important failure of social science has been a failure to notice, and account for, the trend toward the dysfunctional centralised, command-and-control-oriented system which is hastening a self-destructive process that has been going on since time immemorial. Understanding and intervening in that system seemed to require a radically new approach.

References

Emery, F. E. et al. (1974). Futures We're In. Canberra: Australian National University, Centre for Continuing Education.
Appendix A
Mapping and Summing Physical Forces

It has emerged that some readers are not as familiar with the procedures involved in mapping, measuring, and summating physical forces as had been assumed. The following note has therefore been prepared with the help of Luciano Gallon, to whom heartfelt thanks are due.

The most basic illustration we can think of is predicting in which direction, and with what force, a group made up of two boys pulling on ropes attached to a goat’s collar will move – see Figure 9.

![Figure 9](image1.png)

Figure 9
Two Boys and a Goat

To progress the analysis, both the direction and strengths the three forces can be represented as in Figure 10, where the lengths of the lines (vectors) shows how strongly each is pulling in the direction shown.

![Figure 10](image2.png)

Figure 10
The Struggle Between the Boys and the Goat Expressed in Vectors
The direction and strength of the outcome of this struggle can be calculated by dropping perpendiculars onto any two dimensions (or orthogonal axes) inserted into diagram 2 at random (Figure 11). Summing these intersects, or coordinates, (i.e. $A_x + B_x + G_x$ and $A_y + B_y + G_y$) (treating coordinates to the left of the origin on the X axis and below the origin on the Y axis as negative) gives the coordinates ($R_x$ and $R_y$) of the final vector resulting from the struggle ($R$ in Figure 11). This shows the strength and direction of the outcome. (In this case, the goat wins!)

![Diagram](image)

**Figure 11**
Calculating the Outcome of the Struggle with the Goat

Mapping and summating the forces acting on a sailing boat is more complicated, but the process is the same. Even an oversimplified diagram has to include the force of the wind on the sails, the resulting thrust on the mast and, via the ropes attached to the outer corner of the sail, toward the stern of the boat, the effect of the rudder, and, most importantly from the point of view of our discussion here, the force of the sea on the keel (see Figure 12).
Why is the keel so important to us?

Prior to Newton, not only had the concept of “force” – so obvious to us now – not been articulated, the movement of sailing boats was to a much greater extent than later in the lap of the Gods. Boats could only sail with the wind. If their captains wanted to reach a destination upwind, they had to hove-to and pray for a favourable wind.

The first thing Newton did was show that what he hypothesised to be a “force” in this invisible wind could be measured. He did this by first jumping with the wind and measuring how far he could jump and then jumping into the wind and making a similar measurement. The difference between the two gave him the strength of the wind.

(In the context of this discussion it is worth noting that a key thing Franklin did in order to substantiate the concept of “electricity” was to show that its strength could be assessed – “measured” – from the relative strengths of the electric shocks he experienced in his arms.)

Back to Newton and sailing boats.

Among other things, Newton also formulated a number of “laws of motion”.

Among these, was the law that “To every force there is an equal and opposite reaction”.

Now. Where is the equal and opposite reaction to the force of the wind on the sailing boat?

In the sea?

OK. If so, how can it be harnessed?
Answer “By adding a keel to the sailing boat”. And that is precisely what is shown in Figure 8. Harnessing the invisible force in the sea is key to getting the boat to sail into the wind.

It is important to note that none of the above is “common sense” … indeed, from the common sense perspective that preceded Newton, it is just madness … I mean, its just crazy to suggest that there is a force in the sea! The necessary developments could not have been taken unless Newton had articulated the concept of force and shown that it was measurable and behaved in predictable – law-like – ways.

Newton went on to do something else which is even closer to what we are trying to do here – namely to map the forces determining the orbits of the planets and compute their cumulative strengths.

First, he needed the concept of “gravity”. Then he had again to demonstrate that it could be measured. And then that the results were consistent. Indeed they were. Indeed they were. And very surprising: bags of coal and desert spoons if dropped from the top of a tower, reached the ground at the same time. (Actually, this last discovery had been made earlier, but we do not need to concern ourselves with this here.)

And then he had to find a way of integrating all the interacting pulls of every planet on every other.

To perform that task he had to invent calculus.

We do not have to do that.

But my thesis is that we do have to embrace an exactly parallel series of problems if we wish to develop better ways of thinking about the nature, measurement, and harnessing of social forces.