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Modelling the Network of Social Forces that have the future of Homo Sapiens and the Planet in their Grip

and

Designing a Dynamic Public Management System
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No of Crossrail projects required in all major cities to cope with population growth.
Financially and technically feasible, but, from ecological point of view, cannot be done.
Bill Rees and others have shown that it would require 3-5 back up planets engaged in nothing but agriculture for everyone alive today to live as we live in the West.
Similar conclusions from our own work and that of Clive Spash and this years’ report to the Club of Rome.

We have to radically change the way we live.
So many changes necessary that cannot be centrally specified.

Bookchin: Sustainable society will not even be recognisable as any political economy known to us.

“Blueprint” not possible:
Agricultural cf industrial society.
Problem is to devise a public management system which will promote evolution in those public management arrangements.
One which will innovate and learn without central direction.
Only *systemic* attempt to find way forward re the ecological issues was *Limits to Growth* based on Jay Forrester World Model. Others merely make ad-hoc suggestions.
Particularly important to look at this since Weizsacker and Wijkman’s 50th anniversary report to Club of Rome utterly fails to build on or extend that work.

Instead we get yet more ad-hoc demonstrations, assertions, and good ideas.
Fig. 1 This world model is a beginning basis for analyzing the effect of changing population and economic growth over the next 50 years. The model includes interrelationships of population, capital investment, natural resources, pollution, and agriculture.
Not at all obvious in *Limits to Growth.*
The systemic mapping behind the Limits to Growth Projections is not discussed.
Here are some.
These and other sub networks were brought together via the following network to generate projections of what would happen if one (governments) made a series of possible interventions.
All this structure is just a way to allows changes to the scenario number to be used to replicate each scenario. When the scenario number is 0 (or ... use custom is 1) the ...s values used match exactly the input constant (shown in magenta).
Fig 2 shows what application of the resulting model predicted would happen if things are left to go on pretty much as they are.
Fig. 2. Natural Resources; Population; Quality of Life; Capital Investment; Pollution.
One “obvious” solution to the problem is to find ways of using resources more efficiently.

But it turns out that this produces a pollution crisis which exterminates us even more quickly than just leaving things to evolve as they will.
Fig. 3. A pollution crisis is precipitated by lower usage of natural resources. In 1970, natural resource usage is reduced 75 per cent by more effective technology without affecting material standard of living. The Pollution crisis produces a dramatic drop in population.
The following slides (which I will skip over) illustrate the effects of alternative possible interventions
Fig. 4. In 1970, the rate of capital accumulation is increased 20 per cent in an effort to reverse the decline in quality of life. The pollution crisis occurs before natural resources are depleted. Again this produces an unprecedented drop in population.
Fig. 5. In 1970 the 20 per cent increase in capital accumulation of Figure 4 is retained and “normal” birth rate is reduced 50 per cent. Capital investment continues to grow until a pollution crisis develops. After an initial decline, population is again pushed up by the rapid rise in quality of life that precedes the collapse.
Fig. 6. The 20 per cent increase of capital investment from Figure 4 and the 75 per cent reduction of natural resource usage from Figure 3 are combined.
Fig. 7. Increased capital investment rate and reduced natural resource usage from Figure 6 are retained. In addition in 1970 the normal rate of pollution generation is reduced 50 per cent. The effect of pollution control is to allow population to grow 25 per cent further and to delay the pollution crisis by 20 years.
Fig. 8. One set of conditions that establishes a world equilibrium at a high quality of life. In 1970 normal capital investment rate is reduced 40 per cent, normal birth rate is reduced 50 per cent, normal pollution generation is reduced 50 per cent, normal natural resource usage rate is reduced 75 per cent, and normal food production reduced 20 per cent.
The effects of alternative possible interventions can be explored using the online version that is/was available on Vensim.
But note what we are doing here:

We are exploring the effects of single-variable interventions.

This negates one of Forrester’s most fundamental observations:

*Singe-factor intervention in complex system always produces counterintuitive, and usually counterproductive effects.*

The mental model behind their recommendations is highly centralised and authoritarian.
More importantly, their model fails to map social forces which determine the *inputs* to the system.

Let alone ask how these can be harnessed.
My claim is that this is precisely what needs to be done to move forward.
I know of only one author who has attempted this: Harich
Note: The model image contains an error. "causes" should be "intermediate causes".
To illustrate what I mean by mapping social forces, let me say something about our work on education.
Goals: diversity
But neglected
Indeed the opposite imposed:
Ofsted: *Bold beginnings*. 
There are many reasons for this (give egs).

But, most importantly, they form self-reinforcing self-extending SYSTEM
Figure 1: Feedback loops driving down quality of education

A prosperous, engaged, but non-sustainable society. Highly functional for some in the short term. Creates jobs and meaning for most. Prosperity bought by externalising costs to future, biosphere, Third World.

Failure to develop the talents to understand and change society.

Awareness of non-sustainable nature of society.

Inappropriate beliefs about the nature of the changes needed in education and how to be introduced.

Creation of society in which nothing is what it seems to be.

Desatisfaction with the educational system.

Calls for change.

Sociological imperatives
- Legitimise rationing of privilege.
- Neutralise demand for change in the social order.
- Promote "cornflakes package" people.
- Promote guiltible, uncritical people.
- Create differentials which compel participation.
- Mis-allocate blame for social ills – lay blame at door of poor, parents, teachers – not managers of society.

Narrow educational activity
- Generates incompetence
- Produces qualities that are personally and sociologically useful in the short term but dysfunctional in the longer term.

Inappropriate beliefs about society and how it is to be run
- Wealth/QoL comes from the market.
- Public servants are parasites on society.
- Elected assemblies can adequately supervise the public service.
- Governments should tell public servants what to do.
- Hierarchical management is effective.
- Hierarchical management promotes the most able leaders.
- Public provision should be uniform.
- Competition for tasks having single criteria of success is the most important driving force in society.

Demand for and acceptance of narrow, misleading and invisible assessments.

Failure to call for research.

Inability to design competency-oriented educational programs.

Inappropriate criteria for teacher and school appraisal.

Failure to create appropriate structure and "parallel organisation" activity.

Failure to create variety in schools.

Failure to understand need for variety in public provision.

Lack of understanding of Nature. Development and assessment of competence, and, especially its basis in values.

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

†These need to be replaced by acceptance of the need to make managed economies work – to find way of giving effect to information concerning the public long-term interest, the need to explicitly create variety and information on the personal and social consequences of the options, and to find ways of holding public servants accountable for, and getting them to act in, the long-term public interest. This means systematic, broadly based, evaluation and participative democracy.
The “causes” of the problem are pervasive, inter-related, and far removed from the symptoms.
People’s behaviour is overwhelmingly determined by the system not, eg, personal knowledge and competence.

There is little to be gained from shouting at teachers (or politicians).
Pervasive change in every nook and cranny is required to move forward: It cannot possibly be centrally decreed.
Trying to fix things one at a time not only will not, but cannot, work.
a) the desired effects will not be achieved because of the reactions of the rest of the system.
b) the intervention will itself have counterintuitive, and usually counterproductive, effects.
Requires multiple Systems-oriented Interventions.
Two key areas:

Governance

Perpetuation of Hierarchy
Let us focus on the governance box

Authoritarian

Informed by neo-liberal agenda: brutal imposition of Social Darwinism (Ofsted: *Bold Beginnings*.)

Experimentation and learning loops too gross, centralised, delayed and replaced by decree by unexamined alternatives.

From the point of view of evolution no emphasis on generating diversity or emergent social benefits.
More basic problems with our image of governance

Smith/Hayek

Committees of Ignoramuses

Key information needed to make wise decisions cannot be available.

Need to harness the expertise in hearts, heads, and hands of billions of people.
ADAM SMITH’s management through the market: a dynamic self-managing system *par excellence*

- Multiple feedback loops
- Automatically responds to innovation and change
- Promotes diversity, evaluation, and evolution
- Relies on multi-function sensors (people) who vote on basis of feelings as well as things that can be formulated in words.

**Most importantly** (like the internal governance of organisms) is embedded in the system itself rather than standing outside it and controlling it.
NB: not a money-making system:

An information-based management system with money using a term Neil Smith introduced me to at an earlier meeting, as an “information marker” analogous to electronic or chemical pulses in internal management of organisms.
UNFORTUNATELY THERE ARE A LOT OF PROBLEMS

• Cannot handle externalities
• Public goods: health cannot be commoditised and bought and sold
• Prices determined by public servants: accumulation of expedient decisions
• No money no voting: disproportionate distribution of tokens & hoarding of stocks
• Huge mountains of fiat/fictitious money floating about
• Most customers not individuals voting with their pennies but vast corporations and government departments
So the task is to design an alternative public management system which capitalises on its benefits, overcomes its limitations, and, most importantly, overcomes the gross problems of current public management arrangements.

Any such proposal must also indicate how to build on from where we are now.

Have proposed one answer in *The New Wealth of Nations* (next slide)
KEY FEATURES

- Pervasive climate of innovation
- Creation of multiple options with documented consequences
- Comprehensive evaluation
- Generation and use of research
- Public servants as wealth creators
- New job descriptions
- New means of holding accountable
- Network supervision: expose to public gaze: not tell what to do.
- Informed public choice to provide feedback
To get these things we need radical change in the way we think about (public) management.
It emerges that the primary task of a manager (public servant) is to create a pervasive climate of innovation and learning. I mean a climate of adventurous experimentation into the unknown, comprehensive evaluation, and appropriate follow through learning, action.
It is the job of public servants to:

- Create variety.
- Arrange for comprehensive evaluation of the short and long-term, personal and social, desired and undesirable consequences of each of the options (expand each).
- Feed that information to the public so that they can make informed choices between them.
- Make arrangements to involve many more people (especially marginalised groups) in generating the options.
- Create a climate of innovation and systems learning and action.
How to hold them accountable for doing these things?
By exposing their behaviour to the public gaze!
The function of a representative assembly is not to govern, a task for which it is eminently unsuited, but to make visible to everyone who did everything and by whose default anything was left undone.
And there we have it.

The key function of public participation in government is to oversee the management process being performed by public servants; not more.
This cannot be done by any form of centralised, multi-purpose, assembly.

It *can* be done via networks of open supervisory groups having overlapping membership.
And so we have a new understanding of “Democracy”.
In my *New Wealth of Nations* I bring these things together in a systemogram.
But, before closing, I must just underline the problems posed by what were termed “Sociological Functions” in our systemogram of the educational system.
Bookchin has termed these “The inexorable onward march of hierarchy”.
The forces behind this have, over endless millennia, undermined all moves toward organic management arrangements of the kind I have discussed.
And, perhaps more importantly, all moves to stem the destruction of the planet along lines suggested by Weizsacker and others involved in the degrowth movement.
It is therefore vital to conceptualise, map, measure, and find ways of harnessing, the social forces which lie behind this.
I bring these observations together in next two slides
Way forward: main components

Pervasive Climate of Innovation & Experiment + Comprehensive Evaluation

Ways of giving teeth to information

Parallel Organisation Activity

Media Debate & Funding Mavericks

Policy Research and Development

Revised Expectations of Public Servants

Exposure of the behaviour of public servants to the public gaze

Clarification of Public Interest

Performance Appraisal

Network based Supervision of Public Servants

Diagram 25.1
But note the research box
Research includes:

• Understanding the Social forces which undermine well-intentioned public action and alternative management arrangements – and have done so for many millennia (despite endless demonstrations of the viability of alternatives).

• Challenging notions of reductionist science

• (In the cases of education) developing meaningful measures of educational outcomes, curriculum processes etc.
Services Output

- Service Capital
  - Initial service capital
  - Service capital investment
  - Service capital depreciation

- Service output
  - Service output per capita
  - Service capital output ratio
  - Average life of service capital

- Fraction of industrial output allocated to services
  - Fraction of industrial output allocated to services table 1
  - Fraction of industrial output allocated to services 1
  - Fraction of industrial output allocated to services table 2

- Services output per capita
  - Indicated services output per capita 1
  - Indicated services output per capita 2

- Industrial output
  - Industrial output per capita

- Policy Years
  - Service capital output ratio 1
  - Service capital output ratio 2
  - Average life of service capital 1
  - Average life of service capital 2