A Quest for Contributions (Time or Financial) to Research Aiming to:

(i) Make a socio-cybernetically-based (or, put another way, Dynamic System Model–based) contribution to our quest for a design for a governance (viz sociocybernetic) system which will better serve the needs of society than current forms of democracy and public management.

(This is taken to involve embracing Adam Smith’s quest for a design which would enable society to innovate, learn, and evolve without central direction, but also recognising that Smith’s “market” proposal does not, and cannot, work.)

(ii) Map (and find ways of harnessing or intervening in) the network of invisible social forces which have the future of mankind and the planet in their grip.

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The Problem.

The problem to be addressed in the first area has been highlighted by the Committee on the Political Economy of the Good Society (PEGS) in the formal statement below. Unfortunately, a worrying insight into why the situation is as it is comes from the fact that, in the quarter century the Committee have pursued this objective through their journal, The Good Society, virtually no progress has been made.

PEG’s statement reads:

(There is widespread recognition¹ that) many of the major problems facing today's societies reflect existing political and economic structures and cannot be resolved without significant changes to these underlying institutional arrangements. Such problems as increasing disparities in economic and political power, environmental damage, welfare dependency, growing bureaucratization, and political alienation can be seen as inherent features of existing institutional arrangements that the institutions themselves help to propagate.

¹ One indication of how widespread this realisation is is the fact that an initial, and major, objective of Learning Society Scotland (of which more below) was to establish a network of “Thought Leading Dinners” which would lead to the evolution of better public management arrangements.
Nevertheless, institutional analysis and reform currently receive little attention, and existing political and economic theories offer insufficient guidance on how alternative institutional arrangements might avoid or reduce these major social problems.

Cybernetics is concerned with the study and design of the guidance and control (governance) systems of animals and machines. One has to mention the animals to underline that cybernetics includes the study of complex organic systems having multiple feedback loops².

So socio cybernetics becomes the study of the, largely invisible, feedback systems which control the operation of society … and the design of better socio-cybernetic (governance) systems.

Through earlier research³ we have:
1. both (a) articulated some parameters which may be helpful in guiding the quest for more appropriate public management (sociocybernetic) arrangements, and (b) used those parameters to help us sketch out a basis on which alternative public management (socio-cybernetic) arrangements might be built⁴. And
2. highlighted the importance of, and generated a preliminary sketch (or systemogram) to depict, the network of social forces which seem to have continuously undermined the evolution of more appropriate arrangements in both large and small organisations … and which point to the need for unexpected developments.

Our aim here is to find ways of advancing work in these two areas.

As we see it, there are two ways in which this might be done.

One would be via the contribution of collaborators, including research students, in universities, research institutes, and elsewhere who are able to devote time and energy to either contributing directly to these two activities⁵ or who are able to help us secure the funding required to do so⁶.

The second involves raising the funds needed to implement the work either via the traditional funding arrangements or via “crowd funding”⁷.

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² Because he overlooked this, Bertalanffy argued that it is inappropriate to adopt a cybernetic model when seeking to understand the social forces which control the operation of society.
³ Managing Education for Effective Schooling. [http://eyeonsociety.co.uk/resources/fulllist.html#managing_education](http://eyeonsociety.co.uk/resources/fulllist.html#managing_education)
⁴ Managing Education for Effective Schooling (op. cit.) and The New Wealth of Nations: The Societal Learning Arrangements Required for a Sustainable Society [http://eyeonsociety.co.uk/resources/fulllist.html/new_wealth](http://eyeonsociety.co.uk/resources/fulllist.html/new_wealth)
A short, if somewhat inadequate, summary of this work will be found in the Journal of the Committee on the Political Economy of the Good Society [http://www.eyeonsociety.co.uk/resources/GS09.pdf](http://www.eyeonsociety.co.uk/resources/GS09.pdf)
⁵ Hornung ([http://eyeonsociety.co.uk/resources/InvitMC.pdf](http://eyeonsociety.co.uk/resources/InvitMC.pdf)) has initiated an internet-based quest for participants interested in contributing to the development of an alternative to the Weberian model to guide the management of complex organisations.
⁶ The process of securing funding is not limited to that of obtaining funding, from, eg, the ESRC, to progress a particular proposal but may also include progressing our work whilst contributing to research being undertaken for other reasons. In fact, virtually all the work I have been able to do in the past has been done in the second way.
⁷ An example of one project relying on the latter may be found at [http://www.kickstarter.com/projects/605480326/beyond-connecting-the-dots](http://www.kickstarter.com/projects/605480326/beyond-connecting-the-dots)
Background.

Briefly, our work on the educational system\(^8\) unexpectedly threw light on the topics identified in the title.

That work, and its implications for the two topics we are now seeking to progress, is briefly summarised in an article entitled *Advancing and defeating the PEGS agenda: Socio-Cybernetics and Murray Bookchin* in PEGS’ journal, *The Good Society*. A pre-publication version of this is available at [http://eyeonsociety.co.uk/resources/GS09.pdf](http://eyeonsociety.co.uk/resources/GS09.pdf)

That research showed that, while there are multiple reasons\(^9\) why the educational system fails to achieve its manifest goals\(^10\), (each of which, as with other problems which have been studied in systems terms, demand for their resolution major, targeted, research-based, systems-oriented, intervention [which is to be sharply distinguished from ideologically-based system-wide intervention]) *these various processes do not operate independently but form a mutually supporting, autopoietic, self-elaborating, and self-extending (viz organic) system.*

This system operates in such a way that it either negates well-intentioned, common-sense based, single-factor interventions or leads those interventions to have unintended, counterintuitive, and usually undesired and undesirable, consequences elsewhere in the system.

A systemogram mapping these interactions is shown in Figure 1.

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\(^8\) This is best summarised in my book *Managing Education for Effective Schooling*, several chapters from which can be found at [http://eyeonsociety.co.uk/resources/fulllist.html#managing_education](http://eyeonsociety.co.uk/resources/fulllist.html#managing_education)

\(^9\) See, for example, [http://eyeonsociety.co.uk/resources/fulllist.html#managing_education](http://eyeonsociety.co.uk/resources/fulllist.html#managing_education) or [http://eyeonsociety.co.uk/resources/CPDAPA_REVISIED_FULL_VERSION.pdf](http://eyeonsociety.co.uk/resources/CPDAPA_REVISIED_FULL_VERSION.pdf) for lists of these reasons.

\(^10\) So far as we can make out, it achieves its latent *sociological* goals (mainly legitimising and implementing hierarchy) very well. So well, in fact, that the second … and major … component of the research proposed here is to understand, and find ways of influencing, the social forces which irrevocably perpetuate a divided society.
FIGURE 1 (Previously Diagram 23.1).

Figure 1 makes it very clear that, while numerous developments are required (such as development of the understandings and tools required to nurture and credential multiple talents), two central problems are:

(i) To design an alternative management (socio-cybernetic) system to manage the educational system [and public provision more generally] more effectively. This will involve finding an alternative to that which lies behind the network of notions listed in the central box in Figure 1.

(ii) To understand, map, and find ways of intervening in, the network of (“sociological”) forces which primarily determine what happens both within the educational system and society more generally (right hand box in Figure 1).

Current position.

On the basis of the understandings we have built up in the course of our work, it seems that it is necessary to evolve a public management system which will, in the case of education:

1. Put in hand the research needed to intervene in the network of social forces which corrupt the widely agreed goals of education (ie to develop such qualities as initiative, self-confidence,
ability to problematize, ability to understand and intervene in networks of social forces) into a system which essentially pursues the sociological function of legitimising, and contributing to the entrenchment of, hierarchy.

2. Nurture the research needed to develop better ways of thinking about, nurturing, and credentialing the wide range of talents pupils possess.

3. Encourage teachers to experiment with a wide variety of educational programmes designed to nurture multiple talents and offer parents and pupils the opportunity to choose between those programmes.

4. Arrange for comprehensive\(^{11}\) evaluation of those experiments and feed that information back into the experimental programmes so that they can be improved. (Formative evaluation).

5. Document the short and long term, personal and social, consequences of each of those programmes for a cross section of pupils having different talents and values and feed that information outward to parents and pupils so that they can make informed choices between them. (This is to be sharply contrasted with arrangements to feed such evaluation upward in a bureaucratic hierarchy to elected representatives who, guided by personal motives and values and political ideologies, make decisions binding on all.)

6. Change the criteria against which teachers are evaluated in such a way as to make it possible for them to get credit for engaging in the difficult, demanding, and often personally threatening (eg from colleagues’ reactions to “failed” experiments), activities that are required if they are to creatively seek to act to further the long term public interest and that of each of their pupils.

7. Find ways of ensuring that action is taken on the basis of such information instead of accumulating in the drawers of filing cabinets. (John Stuart Mill suggested that this is to be done by exposing peoples' behaviour to the public gaze. As he put it, the function of citizen assemblies is, not to govern, but to make visible to everyone who did everything and by whose default anything was left undone. Yet there is no way in which modern elected assemblies, responsible for the spending of some 70% of GNP\(^{12}\) could do this. It might, however, be possible to do it via networks of overlapping open supervisory groups.

Note that many of these recommendations involve the evolution of new understandings of democracy, bureaucracy, and citizenship.

Attention may also be drawn to the similarities and differences between these recommendations and Smith’s suggestion that the way to promote a society which innovates, learns, and evolves without central direction is by embracing the market mechanism\(^{13}\).

This is not the place to go into the problems with Smith’s proposal. Those who are interested will find a discussion in my *New Wealth of Nations*, especially Chapter 8\(^{14}\). Suffice it to say that it is now everyone’s every day experience (as the committee on the PEGS observed) that neither current forms of market management nor current forms of democratic-bureaucratic management serve the public interest even moderately well.

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\(^{11}\) “Comprehensive” because what is good for the individual in the short term may be bad for him or her in the longer term and what is good for the individual may be bad for society.

\(^{12}\) See my *New Wealth of Nations* for the calculation.

\(^{13}\) Smith’s reasons for making this proposal are rarely understood. Suffice it to say that making people financially well off was *not* one of them. His aim was to design an *organic* societal management system with multiple feedback loops between widely dispersed, incomplete, constantly changing, and mutually interacting, bits of information. One of our fundamental problems now is that his proposal, like so much else in modern society, has been corrupted into its opposite by the very social forces we are seeking to understand and map here.

\(^{14}\) [http://eyeonsociety.co.uk/resources/NWNChap8.pdf](http://eyeonsociety.co.uk/resources/NWNChap8.pdf)
Our more detailed proposals based on the observations summarised above were condensed into the systemogram shown in Figure 2.
Figure 2 (previously Diagram 20.5)

**DIAGRAM 20.5** NEW SOCIETAL MANAGEMENT ARRANGEMENTS

- **Creation of a sustainable society** is one which offers more, more satisfying, less energy-consuming work.
- **New forms of democracy and bureaucracy**:
  - Institutional arrangements
  - Definition of role of public servant and central government
  - Arrangements for recognising contributions

**New beliefs about how society should work**
- Recognition of the need to be played by public servants in the management of society: New roles to make unpopular decisions in the long-term public interest. It is to manage the issue to create an effective background to what is in the public interest. It is to make contracts.
- Recognition of the need to develop para-organisations - everyone needs to be involved, in different ways, in the process of innovation. Recognition of the need for network working and appropriate types of research.
- Recognition of the need for network-based and media-based expansion of both the public service and social capital which could lead to new forms of 'democracy' and citizenship.
- Emphasis on variety, experimentation, evaluation and public contribution to the definition, implementation and evaluation of contradictory experiments.
- Emphasis on genuine public debate and recognition of the implications.

**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
  - develop entrepreneurial environments and think about, plan, develop and utilise diverse talents of subordinates.
  - seek out information and take good discretionary decisions about what is in the long-term interest.
  - monitor the efficacy 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 process which advances scientific understanding.

**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 welfare initiatives
- Recognition of role of those (and fear of them)
(But the problem is that most of these little into "The government should" and disorganisation. The question then, is: "How can we harness these motives?"

**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 the tools required to monitor and control efficacy of systems-oriented experiments and monitoring the effects of and learning from the effects of their actions.
- A better understanding of the hidden sociological processes which determine the direction in which society moves.
- Generate the information public servants need to collaborate 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, benefits and to identify best-effectiveness studies.
- Create a variety of different forms of provision, and document, in a comprehensive way, their short and long-term benefits, and costs.

New understandings of how research is to be managed.

Recognition of the need for research.

Version: 23 June 1990

7
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).

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 hospitals15 and British Telecom … never mind the management of health, communication, and financial services more generally.

What is being suggested here is that a collective attempt to generate dynamic systems maps of the operation of the “management” systems currently employed by a variety of such organisations/networks and the problems they encounter (such as mutually incompatible “targets” being set [on the basis of command-and-control {Weberian} images of “good” management] for different sub-systems) will, even without recourse to strict, quantified, systems models, lead to greater clarity about the problems and hence to the creation of alternative learning and management arrangements.

Mapping, measuring, and harnessing the social forces which have the future of mankind and the planet in their grip.

I turn to what might be regarded as the second of my proposals: viz the need to generate a dynamic systems map of the forces perpetuating and elaborating a hierarchical society which has the effect of compelling everyone (often against their better judgment) to participate in the endless senseless work16 of which modern society is so largely composed. (This despite the fact that such work contributes little to human health and happiness while nevertheless destroying our habitat, thereby contributing to our extinction as a species, at an exponentially accelerating rate.)

It is this network of forces which, in essence, forces the “educational” system to concentrate on activities which not only legitimise social hierarchy but also actually operate to arrange pupils in an apparently unarguable hierarchy of “ability” which feeds directly into the operation of a competitive hierarchical society.

It is perhaps useful to elaborate on the importance of the topic a little more.

The Deming Learning Network (Scotland) set up a loose network entitled Learning Society (Scotland) with the objective of trying to create a pervasive climate of innovation in Scotland.

Without realising the minefield17 into which it was walking, one component of this was seen to involve persuading more people to recognise the importance of, and themselves more often engage in, “systems thinking”.

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15 Hornung [http://eyeonsociety.co.uk/resources/InvitMC.pdf] provides a number of links to his papers describing the problems encountered in hospital systems.


17 See the map of the “Systems Minefield” available at [http://www.eyeonsociety.co.uk/resources/systemsGenealogy.pdf](http://www.eyeonsociety.co.uk/resources/systemsGenealogy.pdf)
More specifically, their objective was taken to involve (among other things) disseminating what could be learned from a number of organisations that were seen to be organised on a more “organic” than hierarchical, command-and-control, basis.

But, as the Society reviewed these “more organic” organisations and what they had achieved, one question became ever more intrusive: If there were so many good examples of the effectiveness of what was deemed good practice, why did those practices not percolate through the rest of society - and why, if one adopted a longer time perspective, were they invariably eliminated?

This question intruded a fortiori with the (re) publication of Bookchin’s *Ecology of Freedom: The Emergence and Dissolution of Hierarchy*\(^\text{18}\).

What Bookchin shows is that, while many so-called “primitive” societies were, and are, organised on an “organic” basis, these have mostly irrevocably drifted toward centralised, hierarchical, organisation at every choice point in their evolution … or else they have been eliminated by the advance of more destructive, command and control, arrangements dependent on unsustainable exploitation of their manpower and habitats.

Endless thoughtful people have, over the millennia, pointed to the short- and long-term disbenefits of hierarchical organisation, including lowered quality of life, inefficiency, and destruction of habitat. And there have been endless demonstrations, some dealing with more delimited organisations (such as workplaces) and others with whole communities, of the effectiveness, benefits, and viability of more organic arrangements. But one after another they have been eliminated.

Bookchin was content to attribute this irrevocable drift to centralisation and hierarchy to a “self organising” process.

But this is clearly inadequate as an explanation … especially if one wishes to intervene in the network of forces responsible before it reaches its limits and destroys us as a species carrying the planet as we know it with us.

So, arising out of our work on the educational system and our reflections on the nature of the governance/management/sociocybernetic system required if we are to create a more sustainable society\(^\text{19}\), we generated a tentative model/systemogram of the network of social forces and feedback loops which appear to perpetuate this process (Fig 3).

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\(^{18}\) Opus. Cit. But see [http://eyeonsociety.co.uk/resources/Bookchin.pdf](http://eyeonsociety.co.uk/resources/Bookchin.pdf) for a summary.

\(^{19}\) See my *New Wealth of Nations* (opus cit.)
Figure 3 (Previously Diagram 20.6)

Feedback loops perpetuating non-sustainable society

An enlargeable version of this diagram is available at:
http://www.eyeonsociety.co.uk/resources/diagram%2020.6.pdf
The task now is to undertake the Herculean\(^{20}\) task of translating these 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 and animals, and the movements of the planets\(^{21}\).

**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 4\(^{22}\).

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\(^{20}\) 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](http://www.eyeonsociety.co.uk/resources/scio_unpublished.pdf) for a fuller discussion.)

\(^{21}\) See Raven & Gallon [http://www.eyeonsociety.co.uk/resources/scio_unpublished.pdf](http://www.eyeonsociety.co.uk/resources/scio_unpublished.pdf) for more detail.

\(^{22}\) 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. 4 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.
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/sample\WRLD3-O03\World3_03_Scenarios.wmfView.\(^{23}\)

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 are concerned here and how they interact with the points in the model at which “exogenous intervention” occurs and further intervention might be possible.

As a result the authors of *Limits to Growth* weakly conclude that we “lack the political will” to enact the policies to which their research points.

As an aside, we may note three more things. One is that the 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 systems operation is that it does little good to, for example, shout at teachers or the managers of the educational 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 the points at which exogenous intervention can be seen to be possible. These are actually designated with appropriate symbols in the Forrester diagram but are more clearly visible in the STELLA diagram which follows.

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\(^{23}\) 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!
Figure 5
STELLA World Model

STELLA Flow Diagram of SDSIM Version 1.0
RECTANGLES are LEVELS (cumulatives), VALVES are RATES (flows),
CIRCLES are variables or constants used to formulate the RATES as functions of the LEVELS
at TIME = t for the iteration t+dt, where t=1950, 1951, ..., 2199, 2200 and dt=1
Harich\textsuperscript{24} 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 drawing attention to very different things. For example, we have ourselves\textsuperscript{25} 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 here is not to produce a complete, last word, map but to produce something usable.

**Last major leap forward.**

The transformation in our thinking (which stemmed from Luciano Gallon’s inducement to embark on this adventure) is more fully discussed in Raven and Gallon\textsuperscript{26}

The procedures required to take the work forward have been outlined by Albin\textsuperscript{27}.

Our own attempt to use them resulted in a felt need to break down many of the large chunks in the diagram in Figure 3. This resulted in a sinking feeling as we realised the enormity of the task. My current assumption is that one of the key tasks involved in moving forward is to come up with concepts at an appropriate level of analysis … as in the distinction between the two “education” diagrams. We are seeking here neither to produce a comprehensive map nor to make accurate predictions. Merely to produce something which is useful.

At which point it is, perhaps, appropriate to mention that drawing Fig. 3 did not advance our thinking as much as had been hoped … although it did highlight the importance of thinking through the recursive (co-creative) process (represented as an induction coil in the diagram) whereby myth alters reality and reality selects appropriate myths.

I would love to hear from anyone interested in progressing this work and would greatly appreciate it if they would contact me at jraven@ednet.co.uk.


\textsuperscript{25} 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

\textsuperscript{26} Raven & Gallon http://eyeonsociety.co.uk/resources/scio.pdf