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Sect 2019 How Come about.doc
20,000 words

Deal with Appendix mentioned under "How has all this come about" and support article

Fundamental problems in, and with, policy-relevant research illustrated from research relating to "Closing the Gap".

Previously circulated title:

"Closing the Gap": Problems with its philosophy and research.

A keynote address to the BPS Education Section Conference, Autumn, 2019

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Abstract

In this paper, problems with the philosophy and research relating to various interpretations of "closing the gap" are used to open up a discussion of, and illustrate, the process whereby a narrow interpretation of "science" and neglect of systems thinking result in the generation of huge amounts of dangerous and misleading misinformation and thence the generation of draconian and destructive policies. The paper opens by returning to an unfinished debate arising out of a summary of the unanticipated and counterintuitive effects of interventions designed to close the "attainment" gap between more and less advantaged pupils. This is used to illustrate the importance of studying the unintended as well as intended outcomes of interventions and the importance of considering whether those outcomes are desirable. More of the problems facing those who seek to contribute to evidence-based policy are then illustrated via a discussion of an "illuminative" evaluation of competency-oriented, project-based, education carried out in environments around primary schools. The result is to highlight the need for *comprehensive* evaluation of educational projects and policies. "Comprehensive evaluation" implies the evaluation of *all* short and long term, personal and social, desired and desirable, and undesired and undesirable effects of the programmes and policies under investigation. When this criterion is applied, it emerges that most published evaluations of school effectiveness fall well short of the mark. Indeed, most of the conclusions that are drawn are seriously misleading. As a result, they contribute to the formulation and legitimisation of policies involving alarming levels of authoritarian state intervention in peoples' lives. The generation of such misleading information is much more widespread and serious than that exposed by the "replication crisis". It is argued that at the heart of this lies the pervasive deployment of reductionist science. Other serious deficits in

* I am deeply indebted to Steve Hughes for his many contributions over many years to the preparation of this article.

the thinking and methodology of psychologists and educational researchers are then discussed. It is vital for psychologists to do what they can to rectify the situation. The paper concludes with an extensive discussion of ways in which the BPS in general, and the Psychology of Education Section in particular, might contribute to this process.

KEYWORDS: Educational objectives; Evaluation; Comprehensive Evaluation; Reductionist Science; Ethical Dilemmas; Deficits in Logic; Professionalism; Competence; Project-based education; Counterintuitive effects of intervention; Counterintuitive effects of standards; Forrester's law; Abuses of Authority; Authoritarianism; Fascism; Hierarchy; Emergence; Climates of enterprise; Sociocybernetics; Social Forces; Dynamics; Recursive feedback loops; Teacher competence; Research Funding; Manufacture of Misinformation; Systems thinking; Critical Thinking; Psychometrics; Destruction of Gaia; Individualistic Psychology; Systemic Intervention; Social Darwinism; Developmental Environments; Teaching *versus* Education; Images of "science"; Symbiosis.

Background and Summary

This paper has ended up as a major critique of policy-relevant research in psychology and the steps which the British Psychological Society, and the Education Section in particular, might take to remedy the situation.

The background to this is as follows.

1. *Problems arising from earlier policy-evaluation studies.*

When *Educational and Child Psychology's* “call for papers” relating to “closing the attainment gap” arrived on my desk, I felt an urgent need to return to an unfinished debate conducted through the pages of *The American Psychologist* some 15 years earlier.

In 2005 Ceci and Papierno¹ published a (welcome) paper entitled ‘*The Rhetoric and Reality of Gap Closing: When the “have-nots” gain but the “haves” gain even more*’ in which they first showed that many interventions increased, rather than closed, the gap between the “haves” and “have nots”.

They went on to suggest that one could envisage circumstances in which this unintended and counterintuitive effect would be highly desirable ... for example if it resulted not only in higher levels of literacy all round but, also, more importantly, more excellent scientists and engineers on whom the future of society are thought to depend.

After reading their paper, I submitted a *Comment* entitled *More problems with Gap Closing Philosophy and Research* in which I said, among other things, that Ceci and Papierno’s paper was imbued with a Western ... and particularly American middle-class researchers’ ... single-factor, hierarchical, perspective on the educational system. This single-factor model essentially denied many pupils the opportunity to develop one or other of a wide range of socially important talents.

Papierno & Ceci responded in a paper entitled *Beyond the American Context* in which they kind-of claimed that the quest to use the “educational” system primarily to gain entry to high status jobs was not culturally limited.

I responded in a further paper entitled *Papierno & Ceci Miss the Point*² (which was not published) in which I pointed out that the quest to use the “educational” system in this way was not even universal within our own society, never mind cross-culturally, and that it was important to consider the implications.

There are several points to be drawn out of this exchange that are of considerable interest and form the basis of much that will be said later in this paper:

In drawing conclusions about the significance of the basic results Papierno & Ceci went well beyond that which was documented *in* their data to consider the long-term social implications.

This raised questions about the *desirability* of the outcomes for different groups of people.

In my response, I had drawn attention to possibly undesirable *systems* outcomes such as pupils getting embroiled in what is essentially a system organised around single-

factor concept of ability in such a way as to deny many the opportunity to develop their own particular talents.

One needed to consider the *sociological* functions of the system, namely the allocation of position in a social hierarchy, the differential importance of this to different sorts of people, and the relationship between *competence* (as in “outstanding scientist”) and success in acquiring academic qualifications. More than that, a consideration of the sociological functions raises the question of whether the labour market can absorb more “outstanding scientists” or whether raising educational qualifications will simply result in qualification inflation.

One thing that begins to emerge from this discussion is the importance of studying *all* the effects of a policy, desired and desirable, undesired and undesirable, short and long term, personal and social.

I have come to call evaluations which cover all such things *comprehensive* evaluations.

2. *Alarm associated with the Scottish Government’s “Named Persons” scheme*

Under this scheme³ a “named person” (with extraordinary powers of intervention) is to be appointed by the state to visit every family in which there are children aged minus 6 months to 22 years every few months to ensure that parents and children are complying with government directives about childrearing, education, and the nature of well-being.

The behavioural guidelines are informed by middle class values and are nominally supported by “research reviews” conducted by middle class, right-answer oriented, researchers⁴ working on contracts which limit free enquiry⁵ and implemented without concern for the values of the target groups of families, parents, and children or consideration of their implications for wider society.

3. *Initial reactions to the research literature.*

But, as I came to work toward an article precipitated by these reflections, it gradually dawned on me that, really, *the biggest gap requiring closure was that between the objectives of education as perceived by most parents, pupils, teachers and businessmen ...* (which have to do with helping pupils to develop and gain recognition for their own particular talents) *and*

(1) *those that actually get attention in schools*

(2) *what is usually studied in what are presented as “evaluations” of “educational effectiveness”.*

How could the studies in the last group possibly be considered to be evaluations of the relative effectiveness of educational programmes when they make no attempt to assess progress toward or away from what most people consider to be the main goals of education?

But, in the end, even this was not the most disturbing outcome of my attempt to review research in the area ... because I became increasingly appalled by:

- the quality of the available research,
- the extent to which most “evaluation” studies failed to look at undesired and undesirable effects of the policies they were claiming to evaluate,
- the pervasive failures in logic,

- the shocking interventions which the authorities had, on the basis of that turned out to be the flimsiest of evidence, commanded in what can best be viewed as an authoritarian, even fascist, manner.

These problems seemed much more serious than those which had come to light in the so-called “replicability crisis” with which so many people have become so concerned in the last few of years.

This raised the question of how all this could have come about.

The multiple components in the answer to that question in turn raised the question of what a professional association like the BPS should be trying to do to remedy the situation.

The result has been that the focus of this article has shifted heavily away from early childhood education toward an attempt to answer the above questions.

The largest gap in need of closure is that between the goals of education and what happens in schools and is studied by evaluators.

In order to open up a discussion of these things more fully, let me start by saying a little more about the failure to study and discuss what now seems to me to be the biggest “gap” in need of closure: that between the objectives of education and what happens in schools and gets studied by researchers.

Surveys among teachers, pupils, ex-pupils, parents and employers conducted in many countries over the past 50 years⁶ have shown that the vast majority think that the main goals of education are to nurture qualities like

- “the confidence and initiative required to introduce change” (actually, the most widely endorsed goal among our adolescent pupils),
- problem-solving ability,
- the ability to work with others,
- the ability to make one’s own observations,
- the ability to communicate,
- leadership ability, and
- the ability to understand how organisations and society work and play an active part in them.

But these studies also show that, more generally and more importantly, *the main goals include helping people to develop, and get recognition for, the diverse, often idiosyncratic, talents they possess.*

The objectives said to be very important did include helping people to acquire the credentials that appear to control entry to jobs.

But the significance to be attached to this has to be tempered by the fact that it was widely recognised that the formal knowledge on which such certificates are based is, in reality, *unimportant*. It is out of date when it is taught, quickly forgotten, and does not relate to peoples’ needs.

We confirmed the accuracy of all these opinions through studies of competence in the workplace and society⁷.

Yet, despite their acknowledged importance, few schools pay much attention to these wider character/talent-development goals, concentrating, instead, on helping pupils to gain certificates based on the ability to regurgitate temporary⁸ knowledge of snippets of-out-of-date information arbitrarily extracted from the vast pool of knowledge that is available – aspects of knowledge which is generally (and necessarily⁹) unrelated to their life or employment needs.

Some schools do achieve them

It may be thought that, in some sense, this is inevitable. Yet some schools do achieve the wider goals ... and it is important to discuss an example of a school which did so, not only because of its inherent interest, but also because it highlights many of the reasons why schools neglect them and raises a number of basic conceptual and methodological issues that psychologists need to address if the gap is to be closed.

The example comes from a study of a mixed age (8-11), mixed ability, class¹⁰ conducted some years ago¹¹.

Most of the pupils' education took place through a series of projects conducted in the environment around the school.

At the time we studied them, their project involved trying to do something about the pollution in the local river.

Some pupils decided that the first thing to do was to measure the pollution in the river. They set about collecting samples of the river water and trying to analyse it. This took them to the not-so-local university where they worked with lecturers trying to engage with this – apparently unexpectedly difficult – problem. Note that these pupils were developing the competencies of the scientist: The ability to identify problems, the ability to invent ways of investigating them, the ability to obtain help, the ability to familiarise themselves with a new field, and the ability to find ways of summarising information. Other pupils decided that more progress was to be made by studying the dead fish and plants along the river bank. Still others argued that all this was beside the point: The river was clearly polluted: the problem was to get something done about it. Some then set about drawing pictures of dead fish and plants from the river bank with a view to releasing community action. The objective was not to depict what was seen accurately, but to represent it in such a way as to evoke emotions that would lead to action.

While the “scientists” mentioned above sought to report the results of their work in what might be termed a classic academic format, other pupils argued that that was irrelevant as no action would be taken by the authorities. They set about generating slogans, prose, and poetry that would evoke emotions that would lead to outrage and action. Note that, in these cases, the criteria for what constituted effective reading and writing differed markedly from those which dominate most classrooms and they varied from pupil to pupil. Still other pupils argued that, if anything was to be done about the river, it was necessary to get the environmental standards officer to do his job. (It turned out that he knew all about the pollution but had done nothing about it.) This led some pupils to set up domino-like chains to influence politicians and public servants. This in turn led the factory that was causing the problem to get at the pupils' parents saying that, unless this teacher and her class was

stopped, they would all lose their jobs. Unabashed, some pupils set about examining the economic basis for the factory's claims.

Note that this teacher was not so much concerned with enhancing pupils' specialist knowledge in each of these areas as to nurture a wide range of different competencies in her pupils. These competencies were not limited to substantive areas of investigation but also included the ability to contribute to group processes, including such things as the ability to put people at ease, the ability to de-fuse the intolerance which develops between people who contribute in very different ways to a group process (e.g., the intolerance of "artists" for "scientists"), the ability to publicise the observations of the quiet "ideas person", and the ability to "sell" the benefits of the unusual educational process to parents. The teacher in fact devoted considerable attention to highlighting the different types of contribution which different children were making to the group process. As a result, they stopped thinking of each other in terms of "smart vs. dumb" and instead noted what each was good at.

Note the "measurement" model implied here. The words I have used imply, as a background, some kind of *descriptive* framework of the kind used in biology. Pupils are not being rated on "scales". More specifically, the pupils are not being graded on a scale running from "high" to "low" "ability". All pupils are good at something; the question is: "What?"

Here we have the development of a wide variety of high-level competencies* the "existence" of each of which depends on tapping each individual's motives and creating situations in which they are able to develop and display their idiosyncratic talents and patterns of competence.

But that is not all. Without the context of others engaged in related tasks they *could not* have developed these competencies.

Indeed many of those talents could only *exist* in those contexts.

Outwith that context those concerned could not even be said to possess them.

They were *emergent* competencies.

Not only that, the *class as a whole displayed an emergent property* which might be described as "collective intelligence" or "a climate of enterprise".

Note that this emergent competence of the group, *qua* group, did not exist in anyone's head. Indeed it did not "exist" anywhere. It was a *systems* property¹². Yet it was a real emergent property just as the properties of copper sulphate are distinct from the properties of copper, sulphur, and oxygen.

Nevertheless, it was produced by, and reciprocally affected, the emergent individual competencies of the pupils in the group.

The "inputs": teacher competence.

And, what were the "inputs" which, in the eyes of the conventional research community, would need to be shown to be related to these outcomes? What were the teacher behaviours that enabled her¹³ to orchestrate this extraordinary developmental process¹⁴?

* I use the word competencies to refer to emotional predispositions to engage in fairly specific, but complex, activities having cognitive, affective, and conative components in effective ways in a variety of situations. As such, they involve much more than cognitive knowledge and mental or sensory-motor skills. Even the requisite "knowledge" is largely tacit, consisting of knowledge (often of ways of doing things) located in people's hearts and hands – such as emotionally-based predispositions to react to non-verbal feedback from motor activities and other people's body language. The crucial thing is that components of this feedback are sub-consciously selected and intensively engaged to produce effective action, mental or physical.

Just as the educational process described here largely took place in the environment outside the school so, too, did the work of the teacher.

The teacher spent a great deal of time with the parents of the children in order to legitimise the educational process she was implementing.

She spent time with school administrators and the heads of secondary schools undermining their faith in traditional tests as meaningful measures of such things as reading and mathematical ability ... and assuring them that the futures of these children in their schools and the schools themselves (via performance-based assessments) were not being jeopardised as a result of the activities in which they were engaged.

These components of competence deployed by these teachers as managers of pupil development can be brought together in Figure 1, which was developed by Lees (1996) as a basis for discussing managerial competence in other organisations.

What it shows is that:

- Effective teachers, and managers more generally, have first to develop a very different, if largely unverballed, image of the varieties of human talent and their nurturance from the conventional Human Resource Management view sketched in the central box.
- They have to think about the individual motives and talents of each of their pupils or subordinates and create situations in which those pupils or subordinates can work together to develop those talents on an individual and collective basis¹⁵.
- They have to abandon conventional notions of selection and reward¹⁶¹⁷.
- They have to think about the emergent properties of groups.

Note that what they need to do cannot be done for them by anyone else (such as a HR specialist). It is an integral component of their job.

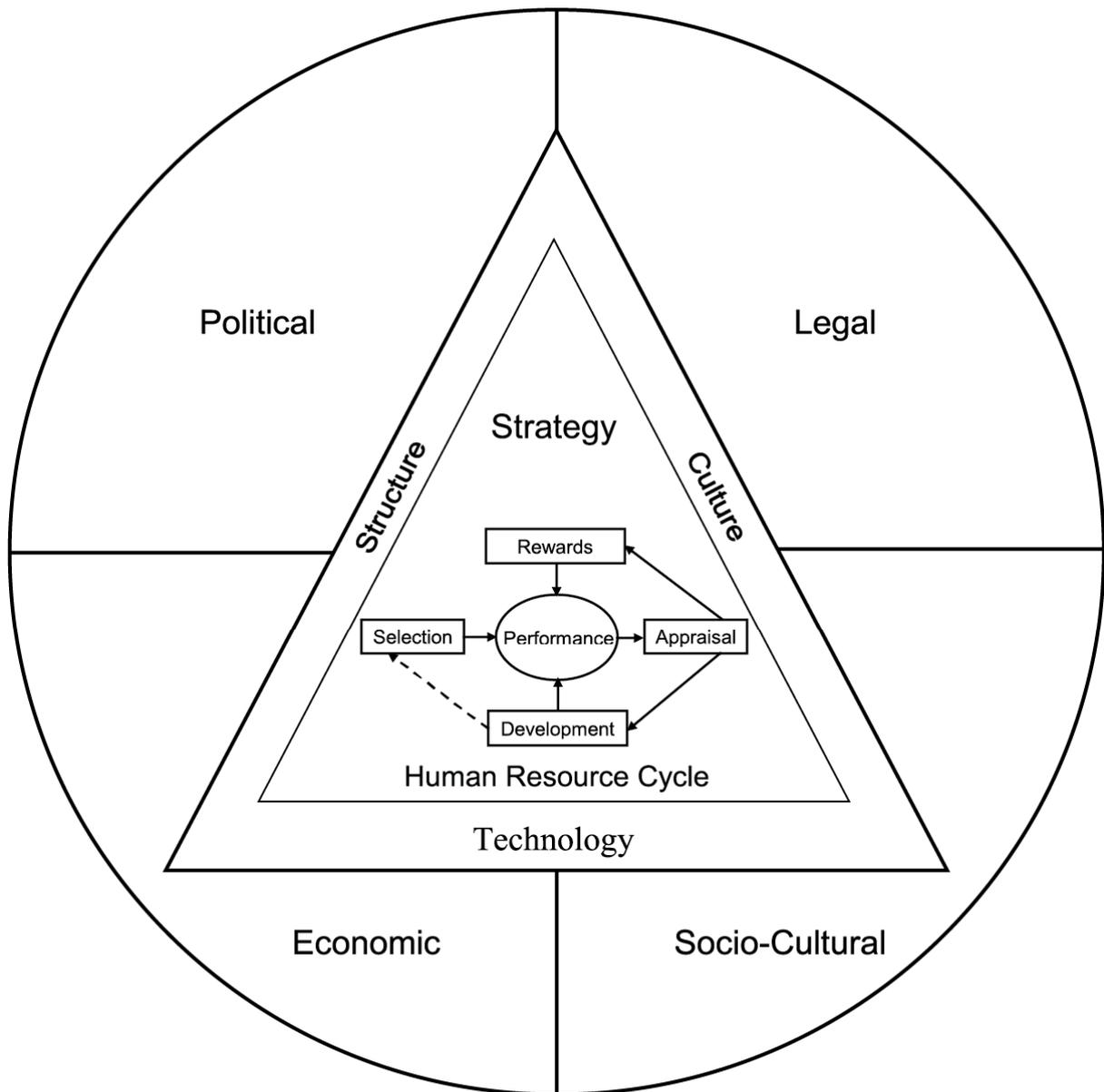


Figure 1
Domains of Managerial Competence
 (Reproduced, with permission, From Lees (1996))

Beyond that, they have to intervene in the technology, culture, and structures of the organisations within which they work.

Teachers have to intervene with parents, administrators, head teachers, and other teachers who do not share their objectives and their levels of commitment toward them.

They have somehow to ameliorate the effects of the constraints which institutionalised assessment and selection procedures place on their work¹⁸.

As if that were not enough, they have to intervene in wider civic and governance processes.

In business settings, managers have to do such things as arrange for what might be considered to be industrial espionage to find out what their competitors are doing and persuade governments to enact regulations requiring the use of their own products or services.

Note the *professionalism* of the work. It involves people going beyond, even protesting, their job descriptions.

If the kind of work the teachers whose work we have summarised here is to be more widely disseminated, teachers and others will need, through their professional organisations, to influence the wider social, legal, and political context within which they work¹⁹.

Note the implications for the conceptualisation and “measurement” of the “inputs” which would need to be related to the outcomes in any meaningful evaluation of the process: both are out of kilter with the conventional wisdom about how to conceptualise and measure these things and relate the inputs to the outcomes.

I could go on now to discuss a series of other vitally important reasons – all of which demand the urgent attention of psychologists – why schools neglect their main goals. But these are discussed in some detail in other places²⁰ while my aim here is to highlight more of the serious deficits in scientific research and logic ... and the behaviour of authorities ... which came to concern me more and more as I reviewed research and writing bearing on the “closing the gap” discussion and which, in sense, lie within a domain over which psychologists themselves would appear to have more control.

Problems with the philosophy and conduct of much educational research.

While I was shocked by evidence of the sort of thing on which the so-called replication crisis has focussed on – significance hunting, generalisation from small unrepresentative samples, and so on – it is not necessary to discuss these things here. They have been subject to a flood of soul-searching elsewhere (although my own impression is that they arise mainly from neglect of the recommendations of the APA Task Force on Statistical Inference).

Here I will present a case for believing that these things pale into insignificance in comparison with the manufacture of misinformation through our current research process.

The reality is that the majority of studies claiming to offer contributions to the evaluation of educational policies and programmes – and guidance on educational practice – are seriously misleading.

Contrary to the impression they seek to create, they cannot be considered to constitute good science.

And they often lead to, or support, policies which have many harmful consequences.

These studies, and the policies associated with them, must therefore be considered unethical.

Worse, the failure of the researchers concerned to draw attention to the limitations of their work, or challenge the policies based upon them, must itself be considered unprofessional and unethical.

I will summarise the observations supporting these claims under the following headings:

- **Reductionist Science**
- **Neglect of systems thinking**
- **Problems arising from the dominant psychometric model**
- **Problems with the conceptualisation and assessment of home and school environments**
- **Failure to engage in conceptual or critical thinking**
- **Deficits in logic**
- **More specific methodological deficits**
- **Professional failures**
- **Abuses of authority**
-

This is followed by a discussion of the question:

- **How has all this come about?**

Then, after drawing out some general **CONCLUSIONS**, I discuss

- **Implications for members of the BPS – and the BPS Psychology of Education Section in particular**

Reductionist Science

As will gradually emerge, *most* of the conclusions drawn from most of the studies I reviewed have been rendered invalid or seriously misleading because their authors failed to address the problems posed by reductionist science.

It is easiest to begin to illustrate this using one striking example.

Failure to include measures of progress toward, or away from, the main goals of education when generating what are presented as evaluations of educational policy to be used as a basis for “evidence-based” policy.

The tens of thousands of evaluations of educational policy which are brought together in Hattie’s²¹ meta-analysis of 800 meta-analyses of the relative importance of a variety of factors possibly contributing to educational “achievement” hardly ever report the relative merits and demerits of those programmes from the point of view of recognising and nurturing the huge range of diverse talents pupils possess (which, as we have seen, is widely believed to be the *main* goal of the system and is in fact implied by the term “education” itself) ... diverse talents which are crucial to creating the climates of innovation on which our future as a species depends.

Thus there is no way in which the benefits of such programmes can figure in discussions of policy options which follow from publication of these reports.

And no way in which teachers and schools which do achieve the main goals of education can get credit for their efforts.

Worse, by not reporting on these things, these evaluations, (i) render these outcomes invisible, (ii) actively *discredit* those educational programmes which do nurture them by, in effect, viewing them as distractions from “time on task”, and (iii) fail to reveal that about one third of pupils are seriously damaged by the current system²².

The wider consequences are horrific. They contribute to the process whereby the educational system fails to nurture the talents needed to transform society in such a way as to enable our species to have any chance of surviving into the future.

Among other things, these gross deficiencies in these studies reinforce the tendency of the “educational” system to concentrate on *teaching* (putting in) instead of *educating* (drawing out the diverse talent of the pupils) and, in this way, contribute enormously to the process whereby the system’s sociological function of legitimising hierarchy and a divided society comes to dominate over its educational function.

In technical terms, what happens offers one illustration of Campbell’s law²³.

This asserts that the introduction of any quantitative measure, or standard, into the evaluation of any activity has the effect, not only of leading those concerned to focus only on gaining high scores on those measures by whatever (underhand) means possible and to neglect the main goals of the system, but to the corruption of the very measures themselves.

One factor contributing to this situation is that *there are no accepted “measures” of the huge range of talents pupils have the capacity to develop.*

Asking why this should be itself actually raises an important question about the way in which measurement is understood by most of those involved in the work because, in reality, a *descriptive* framework, akin to that used in the biological classification of plants and animals, would be required to record pupils’ diverse talents and an ecological framework grounded in such things as symbiosis would be required to discuss their nurturance and functioning.

But a more important observation to be highlighted here is the counterintuitive, but devastating, insight that *the seemingly laudable requirement that “only reliable and valid measures shall be used in programme evaluation” results in evaluations which are anything but scientific or objective.*

More generally, we have to ask “*on what basis can the thousands of studies of ‘school effectiveness’ which contributed to Hattie’s meta-analysis claim to be offering ‘objective’ evaluations of educational policy and school effectiveness?*”

Yet objectivity is widely considered to be the hallmark of science.

Comprehensive Evaluation

In practical terms, what we see here is a *failure to mount comprehensive evaluations of the activities under review.*

Comprehensive evaluation would require that an attempt be made to document ***all*** the

- personal and social,
- short and long term,

- intended and unintended,
- desired and desirable,
and
- undesired and undesirable effects of the activity.

What is good for some of the individuals involved may be bad for others; what is good for the individuals may be bad for society; what is good in the short term may be bad in the long term.

Undesired and undesirable outcomes may outweigh desired and desirable ones.

And the criteria for attributing the labels “good” or “bad” will vary from person to person.

So another base-line conclusion to be drawn out of this discussion it is that

*the quality of an evaluation is to be judged more in terms of its **comprehensiveness** – ie the extent to which it yields a rough fix on **all** important inputs and outcomes – than in terms of the accuracy of its assessments of any one variable.*

This has major implications for the assessment of research reports.

The role played by Entrallment with Reductionist Science

The failure to even attempt such evaluations stems, at least in part²⁴, from an attachment to the notion that science is best progressed – even primarily about – studying the relationship between one experimental and one dependent variable at a time in order to establish causal relationships.

Unfortunately, this basic assumption results in conclusions which are often seriously misleading, unscientific, and dangerous.

Just how dangerous such studies are may be illustrated by reference to some agricultural research. Endless studies have been conducted to assess the relative benefits of various pesticides and fertilisers from the point of view of increasing crop yields²⁵.

What these studies generally fail to do is to reveal their effects on such things as:

- the future fertility of the soil (itself an emergent property stemming from the complex interactions between multiple complex organisms since plants are unable to absorb nutrients directly from the soil),
- the effects via the food chain on a wide range of species (including ourselves),
- the diversity of species living in complex symbiotic relationships with human beings.

I would go so far as to argue that, cumulatively, such studies *constitute the greatest threat to Gaia that has ever existed* ... worse than the destruction inflicted by largest meteorite.

Among other things, the overall effect of studies which fail to report outcomes like those just mentioned has been to justify and facilitate the mining and release of the CO² which had been salted away to facilitate the evolution of life and the plunder of the planet’s resources in such a way as to result in the destruction of the soils, seas, and atmosphere, that is to say, our habitat.

Had the studies, and the policy discussions associated with them been more comprehensive, the outcomes of the activities concerned would have been viewed as unconscionable.

Many would claim that these oversights merely reflect failure to behave ethically – ie failure to consider the long term effects of one's actions – (which is bad enough).

But my own claim is that they stem from the application of a distorted form of science in which one is encouraged to study the relationship between one independent and one dependent variable at a time and neglect the many other, mainly systemic, processes involved.

The overall result is to legitimise de-contextualisation of the issues – a kind-of extreme form of thinking in silos: It is someone else's job to consider the wider implications of implementing simplistic interpretations of one's results and tracing the effects as they interact with other social processes to produce a wide range of desirable and undesirable outcomes.

Individualistic psychology

In psychology and society this reductionist approach shows up as a focus on the individual and the neglect of context.

Among other things, it turns up, as focus on “highly able people”, “innovators”, “leaders”, “people with learning deficits”.

But what we saw at Laneton* was that the apparent talents of the individual were largely determined by the context in which they worked and that they reciprocally affected that context.

Had our discussion been more complete, we would also have seen that the requisite change in the operation of the factory polluting the river was introduced, not as a result of a single intervention from an outstanding leader, but by *multiple interventions at multiple points in a social system emerging from a climate of enterprise which was itself an emergent property of group activity*.

More generally, the attribution of social problems to individual “cognitive deficits” has led to extraordinary state intervention in family affairs instead of to study of, and intervention into, the wider social processes associated with the existence and perpetuation of “areas of multiple deprivation”.

Although it may seem something of a digression, it is actually important to note that this preoccupation with individual talents and dispositions in human beings shows up in our perceptions of the animal kingdom.

Popular television is pervaded by images of the benefits of competition in the wild without noting that such competition, taken to extremes, results in destruction of habitat and extinction of the group or species.

* A collective name given to the schools in which the project work described earlier was carried out.

Instead of focussing on individual abilities and competition, those who made the programmes could have focussed on such things as meadows populated by hundreds of species of grass all living in symbiotic relationships with tens of thousands of species of plants, animals, and other organisms. Or, as Darwin put it, to a bank in which “a thousand flowers bloom”.

This preoccupation with the individual has led many people to interpret Darwin’s work as demonstrating the “survival of the fittest”.

When what it actually implies is the survival of the **fitting**: survival of the species who adapt best to the changing situation in which they find themselves.

Yet this notion of the “survival of the fittest” emerges in society as pervasive brutal imposition of Social Darwinism on schools, “benefits” systems, and organisations.

It emerges as “educational Olympics” within and between schools: Olympics which have few winners but thousands of losers.

In organisations and society it results in the promotion of hierarchical, as distinct from organic, forms of management which are destructive of most of those who live and work in them and the environments in which they are situated.

In society it emerges as the manufacture of dehumanisation and destitution (and even death) via the conditionalities of the “benefits” and “welfare” systems²⁶.

These things must, at least in part, be viewed as arising from, and amounting to, the criminal misapplication of “science”.

And so we come to the conclusion that *we urgently need to embrace, and guide our work by reference to, an alternative image of the nature of “science”*.

Neglect of systems thinking.

We have seen how the adoption of the traditional model of science – in which it is deemed legitimate to study one variable at a time and fail to study or report related and long term issues – has led to misleading conclusions and unacceptable policies.

We turn now to the even more serious problems ... and methodological problems in particular ... which stem from failure to study the mutually interdependent and recursive processes involved in social behaviour.

Parents’ behaviour, for example, affects their children. But the children’s reactions recursively affect their parents, thus setting up a never ending cycle. What is more, these processes mutually interact with, and recursively affect, other processes in schools and the community.

These recursive and interacting interactions cannot meaningfully be studied using conventional “scales” to measure “variables” and then applying multiple regression techniques in the hope of illuminating their interactions.

In fact, a whole new domain of studies has grown up to explore them.

The field as a whole has become known as *Systems Studies* and encompasses such sub-domains such as Sociocybernetics²⁷ and Systems Dynamics.

Parents, Teachers, and Children

So, to return to my canter through the literature relating to closing one kind gap or another, I have to report that I found few broadly-based studies of the ways in which parents and children recursively affect each other and in turn interact with the differential “demands” created by living with different kinds of peers in different types of community²⁸.

I have to admit that I myself was sensitised to this issue by what we had found in the course of evaluating what was intended to be a pre-school educational home visiting project designed to enhance the role which parents played in their children’s cognitive development²⁹.

In the course of what we described as an “illuminative”³⁰ evaluation ... which I elsewhere ironically characterised as “an evaluation which did not come up to standard”³¹ ... we explored mothers’ perceptions of the situation in which they found themselves and their goals and philosophy in child rearing in what might loosely be termed an open-ended sort of a way.

Well. That was a step in the right direction. But note this: To explore this “obvious” issue more thoroughly it would be necessary to get inside people’s homes and heads to explore what was going on.

It would be necessary to largely abandon those rating “scales” of home environment the construction of which has largely been tailored to the preoccupation with, and conventional wisdom about, “cognitive development”.

We found mothers tailored their activities differentially to their different children and responded differently to differential feedback from those children. They facilitated the development of diverse competencies in their children by harnessing those children’s particular motives. Many “working class” mothers were not preoccupied in the way middle class children were with the so-called “cognitive abilities” of their children – indeed in many cases they were actively opposed to them. And they related what they were doing to the demands of the conditions of life and areas in which they lived. (Being “strong and tough” and obeying parental commands without question was, for example, more important in “areas of multiple deprivation” than in “middle class” communities.)

So, although the conclusions to be drawn out of this example for the dominant image of “science” and its methodology are pretty obvious, it is worth again drawing attention to just how out of kilter they are with the dominant image of science as a process dominated by “measurement” “scales” and multiple-regression equations.

The case of illiteracy

Turning now to another illustration of the problems which arise from embracing reductionist science, I will now argue that *the problems associated with illiteracy are largely generated by the system in which children live – and adults work – and not by deficits in the individual.*

“Dyslexia” is a rag bag category encompassing a whole range of very different problems which might possibly need to be remediated and which, if they do need to be remediated, remediated in different ways³².

But, more importantly, “it” mainly only becomes a “problem” in need of remediation because the educational system as a whole fails to nurture and recognise the wide variety of talents pupils possess and nurture those talents in such a way that the “reading” problems pale into insignificance.

Although in some sense it trivialises the issue I am trying to raise here, we may note in passing that “reading ability” is itself mainly assessed in particular specified (and largely invalid) ways³³ which fail to recognise the value of a wide variety of types of reading.

And the *kind* of reading that is assessed is that favoured and used by the middle classes in society.

And this leads to a circular *systems* problem.

Middle class bureaucrats occupy themselves writing manuals and prescriptions to determine what everyone from those who dig holes in the street through teachers and social workers to nurses and doctors shall do. (We may note in passing that, in this way they destroy the very professionalism that is most needed in these groups.)

And then they require everyone to take written tests to determine their knowledge of these prescriptions and regulations even though these contribute little to the competence of those concerned.

So those who do not read in the standard way are made to suffer for it by being forced to attend “remedial”³⁴ programmes which don’t work but do prevent them engaging in activities which would help them to gain recognition for, develop, and utilise other important talents.

Systemic problems in the overall operation of the “educational” system.

I return now to investigations into the workings of the educational system as a whole to illustrate that

the multiple “causes” of problems often do not operate independently but form self-reinforcing and self-extending systems which operate to negate the effects of single-factor interventions.

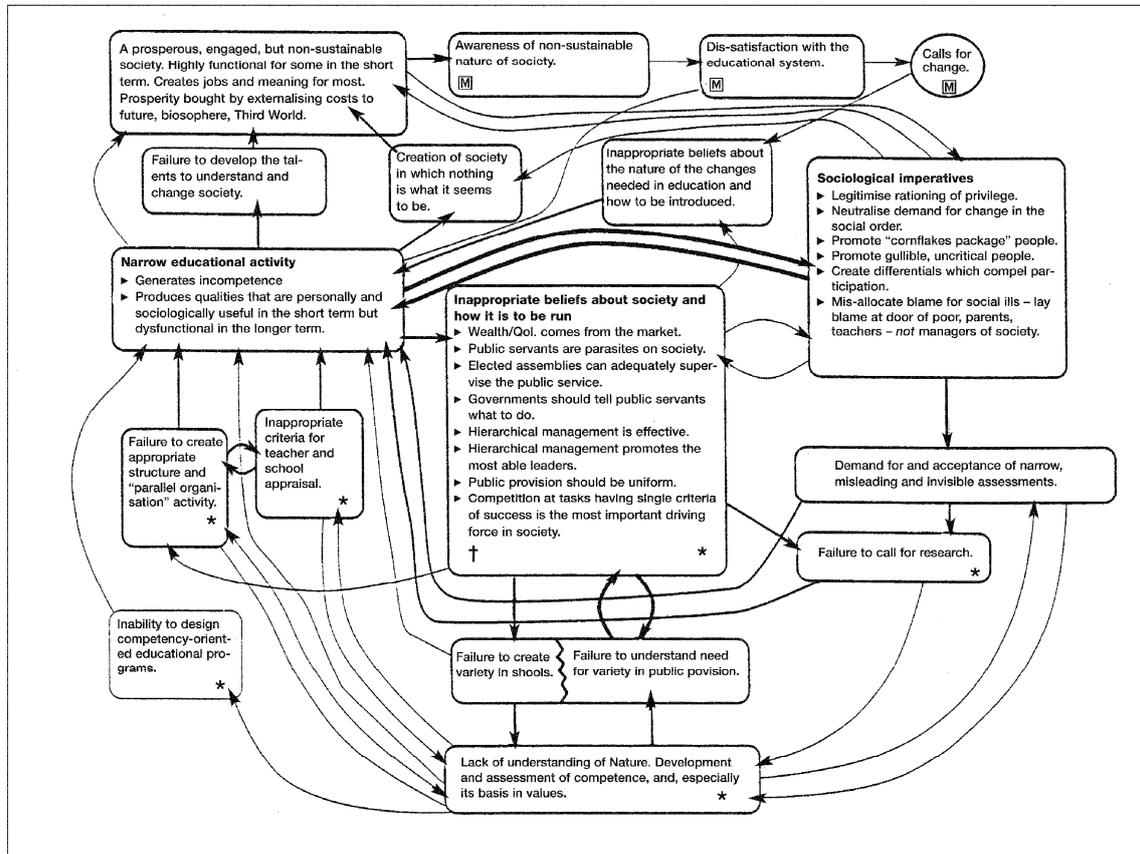
There are many reasons why schools neglect their main goals which include:

- the fact that the main function of the system is not to educate but to legitimise, and assign position within, a hierarchical society;
- there is little understanding of how to nurture multiple talents; and
- there are no generally agreed ways of giving teachers or pupils credit for having achieved the *main* goals of the system.

However, these “causes” do not act independently but form a network, or system, of recursive, and mutually supportive, feedback loops which collectively serve to negate the effects of single-factor, well-intentioned, attempts to fix problems one by one³⁵.

What is more, the network seems to have a capacity to perpetuate, even extend and elaborate, itself.

This overall network is sketched in the following systemogram, an enlargeable version of which is available at: <http://eyeonsociety.co.uk/resources/Figure%201%20%28formerly%2023.1%29%20rev.pdf>.



*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 M.

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

Figure 1
Feedback Loops Driving Down Quality of Education

This systemogram actually illustrates very many important things which cannot be discussed here³⁶.

Here, it is sufficient to use the diagram to hint at the way in which multiple social processes interact with, and support, each other.

Few of the studies in the literature, still less policy pronouncements, give any hint of an awareness of such processes although they are, in reality, extremely common in the biological and social world.

As a result, most studies purporting to investigate causal relationships are superficial.

Any sensitivity to them immediately calls into question the blind application of multiple regression techniques in an attempt to investigate relationships and reveal a hidden causal world³⁷.

The need to turn psychology inside out.

But there is one more, extremely disturbing, new insight to be drawn out of the diagram: *It is necessary to de-individualise explanations of human behaviour; indeed, it is necessary to turn psychology inside out.*

The diagram makes clear is that what happens is not mainly determined by the wishes of any particular group of people but *by the operation of the system itself*. It follows that the widespread tendency to single out and *blame* parents, pupils, teachers, public servants, or politicians is inappropriate. *Their* behaviour is mainly determined by the system.

It is vital to generalise this observation: We need to fundamentally re-frame 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. We need a similar transformation in the way we think about the causes of human behaviour.

In short, we now need *to turn psychology inside-out in the way in which Newton turned physics inside out*

Problems arising from the dominant psychometric model

The failure to attend to systemic problems was far from the only thing that came to trouble me as I reviewed the literature relating to closing the attainment gap.

Another set stemmed from the failure to recognise the problems posed by the dominant psychometric model and the failure to seek an alternative.

We have seen that absence of agreed measures of progress toward, or away from, the main goals of education – the nurturance of self-confidence, creativity, critical thinking, and the ability to understand and intervene in the workings of organisations and society – contributes to the processes driving education out of schools and results in misleading, lopsided, and unethical “evaluations” of educational programmes and policies.

But the resolution of this problem is not simple.

Such qualities cannot be assessed via the type of scale favoured by most psychometricians.

The problem is that creativity, persistence, and the ability to build up an understanding of organisations are all difficult and demanding activities which no one is going to engage in unless they are strongly motivated to engage in the activity.

So, if one wishes to “assess” them, one first has to find out what those motives might be. Unfortunately, our research suggests that possible motives are legion. Thus, as Spearman

pointed out more than a century ago, they cannot be identified using any of the psychometric procedures or frameworks of thought in current use.

Then there is a second problem. Success in carrying out these activities is dependent on bringing to bear a number of cumulative and substitutable components of competence – such as the ability to anticipate obstacles, persuade other people to help, and persist – which themselves will not be engaged in except in relation to a task which the individual concerned is strongly motivated to undertake (whether that be inventing and producing a new product, putting people at ease, creating political mayhem, or gaining control of an organisation).

A two-*stage* (not a two-*factor*) measurement procedure is needed.

First one has to find out what the individual is strongly motivated to do.

And then, and only then, whether, *in relation to that*, the individual demonstrates such things as self-confidence, creativity, persistence, the ability to persuade others to help, and the ability to think³⁸.

We have outlined this model in more detail in several places³⁹.

But the most important thing that it is essential to note here is this way of thinking is at loggerheads with the way of thinking which lies behind traditional psychometric procedures.

But the formal *measurement* of such qualities is not actually the main psychometric problem posed by educational activities like those observed at Laneton.

The problem there was to recognise each and every one of the huge range of idiosyncratic talents the pupils displayed.

And it was not just recognising the variance between the pupils and its dependence on context that posed a problem. What was “there” to be seen depended on whatever it was that the observer was attuned to see⁴⁰.

Problems with the conceptualisation and assessment of home and school environments

It is immediately obvious that community, home, school, and classroom environments have a dramatic effect on children’s behaviour and the attitudes and values and the talents they develop.

But the way in which these environments and the processes through which they are to be related to individuals are to be conceptualised and studied has left a great deal to be desired.

As we have seen, most parents are concerned about the development in their children of a much wider range of abilities and dispositions than those with which most psychologists and educational researchers have been preoccupied.

Yet, as a result of researchers’ preoccupations, the range of scales used to assess home and school environments has become largely restricted to those presumed to be related to such things as school attainment and (constricted notions of) “cognitive development”.

At classroom level one finds scales relating to such things as the number of times teachers ask pupils questions and the amount of homework set.

At a school level they become even more constricted, emerging as questions about what are best described as “administrative” variables – class sizes, setting, streaming, and so on.

These measures seem unlikely to be related to the capacity of parents or teachers to release and nurture the range of high-level competencies which are widely believed to constitute the main goals of education, never mind the capacity to nurture and recognise different talents in different children.

In this context it may be useful to introduce a concept we ourselves have found useful when thinking about, and organising material relating to, facilitating the development of competence in homes, schools, and workplaces.

This is the notion of a “*developmental environment*.”

Key features of developmental environments include a tendency on the part of the parents, teachers, or managers concerned to recognise and nurture the diverse talents of their children or subordinates instead of, for example, introducing hierarchical selection procedures, trying to motivate those concerned with external reinforcements, and trying to teach prescribed content.

In developmental environments people are encouraged to do things they like doing and are good at ... whatever those things may be ... including things that are often considered anti-social... and, whilst doing these things, develop important components of competence like the ability to find the information one needs, learn from the effects of one’s actions, persist, and gain the cooperation of others ... and experience the satisfactions of so doing⁴¹.

Be that as it may, the main point to be made here is that there is little trace in the literature of effort having been made to conceptualise and investigate the processes which facilitate *education* ... the development and recognition of multiple talents.

When one comes to enquire into the ways in which such processes have been assumed to relate to outcomes one encounters what can only be described as an appalling mess.

There is virtually no discussion of the recursive processes whereby, for example, the way in which the characteristics of parents and children recursively determine the way they treat each other. Still less of the way in which parents anticipate that the demands of the environments in which they expect their children to have to survive and prosper determine the way they treat their children. And still less how the children’s own insights into these matters determines their relationship with parents, schools, peers, and authorities.

I will return to this later.

But first it is important to highlight another defect in many of the studies I reviewed in the course of preparing my original essay.

Failure to engage in conceptual or critical thinking

We have seen that there seems to have been a widespread uncritical acceptance of mainstream ways of thinking in the research that has been conducted.

To me, this seems to reflect very badly on the competence of researchers and the educational system that has produced them.

Here I will pick out a few topics for specific mention.

The unexamined use of word “education”

The word *education* means, and is perceived by most parents, teachers, pupils, and employers to involve, *drawing out* pupils’ individual and particular talents.

Yet schools are mainly, as the word *teaching* implies, concerned with “putting in”.

Put like that, it seems obvious that *teaching and education are essentially incompatible processes!*

WOW

The evaluation of “education” as “putting in” implies assessment of how effectively whatever it was intended to inculcate has stuck.

Education as “drawing out” implies the recognition, release, and development of diverse forms of competence – ie the enhancement of diversity. So its evaluation should imply finding out how effectively this has been done.

As we saw at Laneton, education as drawing out not only means facilitating the development of emergent competencies which can sometimes only be said to exist in the context of other people possessed of other emergent talents but also creating emergent climates of intelligence or enterprise which again recursively engage and nurture emergent talents in individuals.

The unexamined use of word “learning”

Not unrelated to the above, “learning” is mainly conceptualised as absorbing content.

As the word is typically used, it does not encompass such things as learning to adventure into the unknown, learning to lead, learning to create political turbulence, etc. and the perception and evaluation of programmes which do attempt to do these things (such as Revan’s “action learning”⁴² and the few varieties of “progressive” or “project-based” education which do set out to achieve these goals⁴³) are rapidly corrupted in such a way that they come to be perceived as alternative ways of enabling people to learn stuff (master content)⁴⁴.

How to promote “learning” narrowly conceptualised is the question with which most researchers have been preoccupied.

If an alternative is acknowledged at all it tends to be conceptualised as “learning to do” – and further degraded into acquiring “technical skills”.

More specifically, the notion of *competence* which we initially introduced to emphasise the importance of the pro-active motivational component of effective behaviour has⁴⁵ been corrupted back into knowledge of the knowledge, skills and attitudes that some authority believes are required to perform some designated activity rather than the release of the components of competence required to undertake some activity which the individual concerned is somehow intrinsically motivated to carry out.

Failure to examine the construct validity of the tests and measures used.

As I reviewed the literature on which my original article was based, I was surprised how rare it was to find anyone questioning whether the tests or indices that were used really measured the construct they were said to measure.

Thus scores on school attainment tests were regularly misleadingly said to be, and treated as if they were, measures of “cognitive ability” – which is to say “the ability to think” – which they conspicuously are not and which is itself a notion in need of further conceptual analysis.

Likewise, tests said to measure “reading ability”, “scientific ability”, and “mathematical ability” could rarely, if ever, be said to have construct validity in these terms⁴⁶.

To take one example, most tests of “*reading ability*” measure, at best, only one form of “reading” ability ... the ability to decode a string of words dealing with a topic of minimal interest to most readers and answer authorities’ questions about its content.

They do not reflect such things as:

- the ability to understand written material without being able to de-code and articulate the words
- the capacity to allow strings of poorly articulated words to evoke imagery in which one can delight or which provoke emotion and action
- the capacity to skim material to find things that relate to one’s purposes and skip the remainder
- the capacity to allow the material, without necessarily understanding it, to evoke new thoughts
- the ability to use it find material that does relate to one’s purposes even though the present material does not by, for example, following up on thoughts provoked by the material.

Yet, those who do not do well on the procrustean tests currently in use become widely known by teachers, parents, and peers alike as “failures” and subjected to what are often experienced as demeaning, degrading, and punitive “remedial” treatments.

Measures of “scientific ability” fail to measure the ability to problematize, find new material, invent alternative ways of thinking about things, collect evidence etc.

The conceptualisation, nurturance, and assessment of “mathematical” ability is, perhaps, the most horrifying of all, but I quail to embark on a discussion of this topic here.

At a different level, the tests that are presented as measures of such things as self-confidence, resilience, creativity and so on sent shudders down my spine for the simple reason that they take no account of the fact that all of these things are always *in relation to something*. Self-

confidence in relation to putting people at ease, in relation to passing school exams, in relation to creating social turbulence? Creativity *in relation to what*? Creating chaos in the classroom? Using writing to evoke emotions? And so on.

This is not the place to discuss the problems with such tests and offer possible solutions.

My point is that most researchers seemed to accept the notion that the tests they used were somehow valid measures of the constructs they bandied about so freely.

More importantly, they did not seem to see themselves as having a scientific responsibility to examine such basic issues.

Deficits in logic

If failure to discuss many of the issues I have raised here was disturbing, the effects of basic failures in logic (and therefore my assessment of the competence of researchers, public servants, and politicians involved) were frightening.

Here are a few examples.

The classical error of reasoning from correlation to cause.

The literature is permeated with examples of the classical logical error of leaping from the observation of a correlation to the belief that the relationship is causal.

And then to the prescription of some intervention.

Example 1

If everyone gets more education, everyone will get jobs

This is based on the observed correlation between educational attainment and whether or not people get jobs.

The illogical nature of the conclusion – essentially that if everyone gets more education everyone will get jobs (although it is rarely stated so baldly) – stems from failure to recognise that both are norm-referenced variables.

If one person's scores go up another's must go down. Unless the structure of society changes, if one person gets a job another does not.

That is the way norm referencing works. By definition.

The relationship persists even if everyone gets more education.

What then happens is that everyone stays in the system longer (admittedly thereby lowering national levels of unemployment by keeping people out of the job market and creating jobs in the educational system [taken as a whole to include publishers and evaluators] itself) and employers raise entry requirements regardless of whether there is any change in the competencies actually required to do the jobs (which there usually is not).

Yet belief that the relationship is causal has a whole series of systemic consequences:

Expressed as a belief that it is “vital to get those test scores up”⁴⁷ it results in

- horrendous narrowing of the curriculum,
- consignment of many to punitive remedial programmes which deprive people of leisure and opportunities to develop their other talents,
- gross interference in homes to compel parents to follow procedures prescribed for, and by, schools and believed to promote “cognitive development” and “academic” achievement,
- the introduction of armies of inspectors with extraordinary powers to intervene in homes and schools and punish (even via punitive “remediation” and compulsory re-education programmes) pupils, parents, teachers and head teachers alike,
- academic Olympics within and between schools and countries – Olympics which result in such things as
 - invention of ways of excluding low ability students from testing programmes as schools seek high ratings,
 - geographical migration of parents,
 - cheating on tests
 - falsification of statistics by head teachers, bureaucrats and politicians.

Because of the norm-referenced nature of these tests, these Olympics necessarily have few winners but millions of losers.

The process is best described and understood as the brutal imposition of Social Darwinism

It is the first step in a process whereby the favoured few are showered with accolades while the losers are left to rot in backwaters of the educational system and in disadvantaged communities where they are subjected to punitive inquisitions and demands if they are to obtain “benefits” or health care and destructive sanctions if they do not.

Example 2: Parental behaviour determines both their children’s cognitive development and the problems their children pose for schools and the community

Tens of thousands of studies have reported relationships between aspects of parental behaviour and aspects of child behaviour, especially “cognitive ability”.

For many years it was assumed that the former caused the latter. What could be more obvious?

But when Rich Harris⁴⁸ and others set out to investigate the way the observed relationships come about it emerged that it is mainly the variance in children’s behaviour which led to the variance in parents’ behaviour.

But even such a statement is grossly misleading because the relationship actually stems from recursive interactions between parents, children, peers, schools, and community.

And even that is a gross over-simplification dependent on singling out particular variables and behaviour for attention: Why is failure to attend schools that are often destructive of the

particular student's talents and the problems stemming from its punitive remediation viewed as an issue demanding so much attention?

Re-focussing the discussion would require a dramatic change in many people's preoccupations and research methodology.

Example 3: The effects of "remedial" intervention

Many researchers have demonstrated that "remedial" programmes targeted at "those with special needs" (marginally) improve their scores on norm-referenced tests and, as a result, enable some pupils to move out of special needs classes and into classes where they are taught the regular curriculum.

What these researchers have failed to notice is, in effect, that the seats those pupils occupied were not left empty but were filled by other students.

Yet that is the way norm-referenced systems work.

Apart from any genuine gains in competence that may have been achieved (which are hard to measure and, as a number of researchers have shown, few in number) when all children are included in the evaluation the overall benefits are zero⁴⁹.

Example 4 Test scores at Time 1 predict scores at Time 2. Therefore intervention at Time 1 will collapse variance at Time 2.

Researcher after researcher has been satisfied to interpret the correlation between children's test scores early in life with those same children's scores five or more years later to mean that the first causes the second and concluded that intervention early in life – especially with the "less able" or those from certain backgrounds – will collapse the variance and reduce the correlation.

Quite apart from the fact that there is not only no evidence to support these assertions but plenty of evidence to the contrary, what we should be most concerned about here is the widespread failure to question the *logic* of such assertions; the failure to demand an elucidation of the ways in which the observed correlation may come about⁵⁰.

More specific methodological deficits

Failure to investigate what else may have been (unintentionally) varied alongside the "experimental" variable the effects of which were supposedly being investigated.

Again this is a recurrent error.

For example, in experimental studies:

The schools and teachers involved may somehow have been selected on the basis of some non-specified criterion or led to believe that they are somehow special.

The experimental variations on which attention has focussed may bring with them seemingly extraneous things like visits from interested researchers or inspectors.

Components of the interventions may be experienced differently in different types of home or community – sometimes being experienced by some as very intrusive.

Failure to recognise that different people may react in different ways which cannot be picked up using off-the-shelf tests.

Then again, interventions may have different effects on different people in different social contexts. Some people may react in one way, others in another. Such differential reactions are well documented in some studies of the effects of psychotherapy where people react to “the same” intervention in very different ways, many of which are unlikely to be picked up using an arbitrary selection of off-the shelf tests. To document them one may need to tailor the measures used to the particular individuals on the basis of a prior comprehensive understanding of the workings of the system.

In cross-cultural studies aspects of the culture other than, for example, the curriculum processes under investigation may differ.

All of these things have major implications for methodology and the conduct of science.

They mean that it is necessary to have built up an understanding of the whole process *before* embarking on any kind of “statistical” study.

Yet it is rare to find time or resources budgeted for such work: It is assumed that the nature of the problem and the methodology to be used to investigate it are already well understood by those in authority and all that is required is to carry out the work.

Failure to develop a more appropriate guiding conceptual framework.

Most the research in the area seems to have been guided by a way of thinking derived from a nodding acquaintance with the prestigious field of physics, which is interpreted to mean that “science” has primarily to do with capturing the relationships between “variables” (x and y) in some kind of formula (hence the proliferation of studies based on multiple regression models).

Yet this way of thinking is not, in fact, the dominant model in science.

It may be contrasted with the use of biological descriptions of plants and animals using a branching set of descriptors and ecological descriptions of the interactions between these species and their habitats via endless symbiotic arrangements. (As has been mentioned, a single meadow contains thousands of different species of grass living in symbiotic relationships with other plants and animals.)

Failure to challenge the attempt to capture individual differences via scores on general traits

Creativity, “executive functions” (ability stay focused on the task, ability to organise etc.), persistence, and most other important qualities are conceptualised as *general* dispositions instead of characteristics which, as we have seen, in a sense, only exist when people are engaged in personally motivating activities.

The implications of this error are not limited to the measurement field. It also has dramatic effects on *teaching* itself.

For example,

“*Critical thinking*” is seen as something which can be taught and measured independently of context.

“*Systems thinking*” is conceptualised as a generalizable disposition which can, and should, be “taught” independently of context despite the fact that (i) most people engage in it in relation to some aspects of their daily lives and (ii) if effectively nurtured, it presents a direct challenge to both reductionist science and the authoritarian organisation of schools.

In reality, as we have seen, all of these qualities, like the “ability to think”, are difficult and demanding activities which require the individual concerned to bring to bear numerous components of competence and thus demand the engagement of the individual’s specific motivational dispositions before one can even begin to make any meaningful statement about the individual’s capacity to engage in them.

Actually one may conclude from these observations that, rather than seeking to “assess” them, it is more important to ask

- What does this person they tend to think *about*?
- In relation to what kinds of activity is he or she creative?
- In relation to what *kinds* of activity can he or she be said to be “conscientious”?
- In relation to what kinds of activity does he or she tend to engage in systems thinking?
... and so on.

And then, perhaps, “how can he or she be helped to think more creatively or systemically about those things ... or other things?”

Failure to move beyond the preoccupations in the literature.

Not only have the problems investigated been mainly determined by whatever it has been fashionable to talk and write about at the time, the way of thinking about those problems has been typically overwhelmingly determined by what is in the literature. There has been little attempt to introduce fresh perspectives.

The problem is that to do these things in a meaningful or systematic way it would be necessary to channel funds to mavericks; to fund adventurers the outcome of whose work cannot be specified in advance.

This, in turn, would make it necessary, to use a non-PC, but catchy, phrase to “fund the man and not the plan”; to channel funds to people who are likely to come up with some new insights even if those insights were not envisaged at the start and not to people who are able to generate proposals which hit all the right notes among those with a stake in the existing thinking.

Such a way of thinking is at log gerheads with the dominant framework of thinking about how research should be funded.

Professional failures

So far, I have focussed mainly on the scientific errors which have contributed to the accumulation of this mountain of misleading, and often destructive, information.

I turn now to what may be considered to be professional failures to take action to stem this process. I am afraid there is rather a long list of these.

Failure to initiate discussion of the ethical – ie the unintended, multiple, and social – implications of implementing policies based on what has been presented as objective and value-free science.

Failure to challenge sponsors' framing and definitions of the problems to be investigated.

More specifically, failure to recognise, and intervene in, the circular process whereby the "political" framing of problems leads to unprofessional studies which support that definition ie failure to recognise, and intervene in, the process whereby one gets policy-based evidence in place of evidence-based policy.

Failure to challenge Conceptual Slippage/enlargement – the ever widening operational definitions of "harm", "adverse experiences", "abuse", "hate", etc.

Failure to persistently ask "Who is the 'Customer'?" in relation to government-funded research conducted on a "customer-contractor" basis.

Failure to challenge the limitations of job descriptions issued by "authorities".

More specifically, failure to insist that behaving as a professional implies going beyond those job descriptions.

More specifically still, failure to insist that requirements not to engage in public discussion of the wider social implications of policy actions as they interact with other social processes (a discussion going far beyond what is considered to be a scientific remit) means that it is essentially no-one's responsibility to do this ... and the task can be left to a few "champions".

Failure to discuss what it means to be a professional⁵¹.

Failure to challenge politicians' implementation of policies based on their own interpretations of the implications of whatever studies they can lay their hands on to support their viewpoints.

Failure to call attention to, and challenge, the pervasive implicit assumption that the objective of much policy-based research is to generate "teacher-proof" – or "idiot-proof" – (manualised) prescriptions for how teachers (and others involved in providing services) should behave. (The alternative would be to nurture the professionalism of teachers and others providing services and their ability to respond in different ways to different situations⁵².)

Failure to appreciate, and promote recognition of, the fact that the incorporation of single-factor thinking into policy-making inhibits any tendency to set up a variety of experiments to

cater for people who have different priorities to one's own and to assess the effects of those alternative policies.

Failure to challenge the notion that competition between those tendering to provide services yields the most cost effective services. Following through with the “dyslexia” example, prospective providers are asked to tender for providing services that will nominally fix the rag bag set of problems that are so categorised⁵³. For this process to work, it has to be assumed that all will require approximately “the same” treatment – otherwise it would not make sense to compare tenders. Nothing could be further than the truth – and the most effective “treatments” would require reform of the “educational” system itself.

The problem is even clearer in the Health service where commissioners require prospective providers to tender for providing pre-specified (and unevaluated) services at a series of points as patients move along pre-specified “paths”. As Seddon⁵⁴ has shown, precisely because they are not tailored to the patient's particular needs, these rarely work. The result is that patients re-present with the same symptoms and complaints as they had at the beginning of the process. This greatly inflates the apparent demand for the ineffective service ... Seddon calls it “Failure demand”.

Failure to challenge and resist the pervasive tendency to seek to impose (by force if necessary) that which one believes to be good and right on others “for their own good and society as a whole” regardless of its multiple consequences for those concerned and society as a whole -- ie failure to resist what appears to be a pervasive disposition to fascism⁵⁵. The problem is in some ways most obvious at the political level, but it penetrates the networks of people charged with the delivery of “services” and the social media more generally. As Roberts⁵⁶ and I⁵⁷ have shown, this process is glaringly obvious to those who have eyes to see in the social media, the imposition of notions associated with Political Correctness, the workings of such things as the Parliamentary enquiry into the effects of the ever-more-inclusive concepts of adverse childhood experiences (ACEs)⁵⁸ and the ever-widening concept of “vulnerability” – all of which bring with them an apparent “need” for authoritarian intervention everywhere, and in everything to restrain others from Politically Incorrect behaviours.

More specifically, *failure to recognise and resist the temptation to impose espoused thoughtways and middle class values on others in the belief that these are the only reasonable ways of thinking.* Or, put another way, failure to insist that other people with other values and in other circumstances be allowed to lead their own lives in their own ways

Failure to offer practical (eg legal and financial) support to mavericks and whistle-blowers who call attention to unwelcome implications of some studies, deficits in others, and deficits and unwelcome implications of current arrangements in provision.

Abuses of authority.

As I see it, what is in effect the criminal misuse of authority occurs in the:

- Constriction of university research funding (acquisition of which is almost a prerequisite to advancement in academe) mainly to that available by responding to government “calls for proposals” to undertake tightly prescribed and monitored research under contractual arrangements which, among other things, prohibit enquiry

into issues *not* specified in the call for proposals (thereby eliminating the traditional role of the university – which was to engage in free-ranging enquiry^{59 60}).

- Insistence that any publications, or, indeed, verbal statements, arising from research conducted on a “customer-contractor” basis should first be approved by government agencies.
- Inclusion of a right to actually alter figures in the reported results of such research.
- The elimination of academics’ time to think via pressures generated through Research Assessment Exercises (Research Excellence Frameworks).
- Elimination of challenge to narrow and conventional perspectives via a mandatory peer-review process (which operates to eliminate challenge to the conventional wisdom) as required for publication in “high impact” journals to satisfy the requirements of the Research Excellence Framework.
- Enforcement of commands to attend school (even though that process may be highly destructive) via an army of enforcement officers targeting both pupils directly and their parents.
- Introduction of mandatory curricula concentrating on imparting and testing narrow snippets of irrelevant knowledge and thereby enforcing the neglect of the wider competence goals educators could potentially pursue ... and following through into imposing this framework even on Home Educators.
- Imposition of mandatory national testing programmes at regular intervals (to reinforce pupils’ knowledge of their true status in the pecking order⁶¹) using norm-referenced tests constructed according to principles of dubious merit.
- Using the results of these tests to orchestrate Educational Olympics within classrooms, between schools, and between countries ... Olympics which, as in Social Darwinism more generally, have few winners but millions of individual and collective losers.
- Introduction of armies of inspectors with extraordinary powers to intervene in homes and schools and punish (even via punitive “remediation” often involving giving up otherwise free time) pupils, parents, teachers and head teachers alike.
- Mandatory bureaucratic generation of rules and manuals of procedure to control and prescribe the behaviour of children, parents, teachers, and social workers ... all coupled with the generation of training programmes to teach all concerned the rules embedded in the Manuals. In short, mandatory destruction of professionalism.
- Requirements to seek tenders for providing centrally-specified, assumed to be routine, services – a process known as “commissioning” in the Health Service – when, as discussed above, what is required is a range professionally-generated client- and situation- specific services tailored to those needs and situations.
- Mandatory infringements of human rights via data sharing (health, crime, income, home environment assessments) among armies of inquisitors.
- Removal of children and parents from homes and replacement by regimes of care (personal or institutional) which often turn out to be anything but caring⁶².
- Corruption of *rights* (eg to education, life, leisure and happiness [well-being]) into *requirements* (eg to attend schools [however bad], to provide specific types of home environment supposedly nurturant of cognitive development and well being; to display “appropriate attitudes toward own sexuality”; etc.) accompanied by heavy-handed monitoring followed by punitive sanctions for failure to comply.

At this point, it is perhaps appropriate to, once again, underline the pervasive influence of neo-liberal thoughtways – ie the belief that what is important for social survival is

competitive success at tasks defined by some authority and thus a moral duty of compliance. (Tasks often defined in this way include gaining an income, doing well in school, and avoiding dependence on the health and “welfare” services.)

The source of the belief that one has the right to impose on others, by force if necessary, thoughts and behaviours that one believes to be good and right regardless of the consequences for those individuals and society, and the implied denial of the right and the ability of individuals to take decisions for themselves – ie fascism (spelt with a lower-case “f”) – merits the most urgent and serious investigation⁶³.

How has all this come about?

Given that we have now seen that the field is permeated by unscientific, unjustifiable, and misleading studies, many of which have seriously destructive consequences, and a widespread failure to behave in a professional manner, one must ask how all this comes about.

I found that I had written a long (4-page) section on this topic.

Unfortunately, on reading it over, I found that, while it offered a more detailed explanation of how governments, especially via the customer-contractor principle, come to exert such control over educational research, it gave little insight into the processes whereby reductionist science has become so embedded in our thoughtways or how it comes about that the hierarchical authoritarian thoughtways of Social Darwinism have come to be imposed on society under the guise of “Neo-Liberalism”.

I have therefore relegated this material to an Appendix⁶⁴ which should become available on my eyeonsociety website.

Generating an explanation of the more basic issues mentioned at the end of the penultimate paragraph would involve a major research effort.

I have to confess that I myself flip between explanations grounded in terms of “psychological” characteristics of the kind brought together in my note entitled *Undesirable Human Traits?*⁶⁵ and explanations grounded in situational constraints, such as likelihood of loss of job and the operation of wider networks of social forces.

Nevertheless, despite the possibility of finding a socio-cybernetic explanation, it does, as previously indicated, seem to me, from the evidence currently available, that, behind many of our problems lies a pervasive human predisposition, of the kind perhaps made most visible by Stanley Milgram⁶⁶, whereby many people in public service hierarchies – and indeed elsewhere – seem only too willing to go along with enforcing, and, indeed, elaborating, already authoritarian legal prescriptions⁶⁷.

The effects of this predisposition not only show up in government policy but also in a PC-oriented social media where one regularly finds a frightening willingness to condemn and ostracise people who do not share one’s values and wish to lead their lives in other ways. It seems to me that this parallels a historical willingness to persecute, even burn at stake, those who hold “inappropriate” political or religious beliefs and not merely acquiesce in government regulations to assign “disapproved” people to concentration camps but even to

elaborate more effective ways of tracking them down (widening the definition in the process) and persecuting and torturing them.

It is tempting to believe that these last things are things of the past. But one sees the same process at work in the willingness to support, participate in implementing, and even personally elaborate, destructive components of “educational” and, particularly, “welfare” policy – where the end result may be not only dehumanisation and destitution but even death^{68 69} .

It also extends to pervasive acceptance of the notion that it is appropriate in a democracy to take decisions which are binding on all despite the variation in opinion and the inappropriateness of the proposed actions⁷⁰. Indeed the essence of “democracy” is largely seen as inhering in the voting process which enables the values of those who shout loudest to be imposed on others rather than in a process which would lead to decisions which would enable people who have different priorities to lead their lives in their own way.

While it is true that so-called neo-liberal policies are usually, perhaps invariably, backed by force ... meaning, in the case of economic policies⁷¹, the army, and, in the case of schooling, threats of having children taken away, consignment to remedial re-education programmes, and imprisonment ... the hegemony of neo-liberal thoughtways perhaps plays a much more important role⁷². These inform policy in almost every domain.

If there is any truth in my suggestion that many of these things are to be attributed to what one might call a series of undesirable human traits⁷³ it raises serious questions for psychological research⁷⁴ into the nature of these dispositions, their effects, and what can be done about them.

CONCLUSIONS

At this point it seems desirable to attempt to draw out some of the insights which have emerged in the course of this essay as a basis for a discussion of how to move forward.

Here is a bulleted list.

- The mountain of misleading and destructive misinformation that has emerged from the “scientific” community is vastly greater than that brought to light by the “replication crisis”.
- The blind pursuit of reductionist science has brought the planet as we know it to the brink of collapse. It is vital to halt the process.
- It is essential to question the application of the word “objective” to most of the studies that are presented as “scientific” and objective research which can be used as a basis for “evidence-based” policy.
- It is urgent to publicise the fact that, as a result of the way most current research is funded, most of what is presented as contributions to “evidence-based policy” is to be understood as “policy-based evidence” and to be treated with profound scepticism

- It is necessary to further clarify and expose the network of social forces which lead to the publication of hundreds of thousands of studies which do not replicate and drive the conduct of major studies in such a way that they generate unscientific and misleading information.
- It is essential to break the stranglehold which the “customer-contractor” principle exerts over the issues which get researched, the way they are investigated, and the ways in which they are reported.
- There is an urgent need to insist upon *comprehensive* evaluation in studies which are intended to contribute to policy formulation.
Comprehensive evaluation implies an attempt to document *all* short and long term, personal and social, desired and desirable, and undesired and undesirable effects of whatever is being evaluated for different sorts of people and in different contexts.
- It is necessary to promote a radical change in the background image of “science” which guides most research in psychology from what might be called a “physics-based” an image informed by of the workings of biology and ecology.
- Put another way, it is necessary to “de-individualise” the image of science as a process which is primarily concerned with seeking to document the relationship between one dependent and one independent variable at a time and replace it by one in which the guiding philosophy is to seek out, and study, the multiple and recursive feedback loops that are involved in any relationship.
- It is necessary to focus the attention of educators’ and psychologists’ on the objectives of *education* (viz to “draw out” all pupils’ individual talents) instead of on the objective of *teaching* – which is to “put information into” the heads of pupils.
- It is necessary to de-individualise psychology ... to move from a preoccupation with the individual toward a greater concern with emergent group characteristics and the role which external social forces and social context play in the determination of behaviour.
- It is necessary to respect, and appreciate the value of, diversity in society instead of appearing to value mainly “gifted”, “talented”, or in other ways “outstanding”, individuals.
- In that context, there is an urgent need to generate ways of indexing a wider range of human talents.
- There is an urgent need for those who study the relationships which exist between parents, children, teachers, schools, and community to embrace a wider range of issues and adopt more appropriate methodologies.
- In that context, there is an urgent need to develop alternative ways of thinking about home, school, workplace, and societal environments.

- It is necessary to resist the, seemingly pervasive, (fascist) temptation, especially among politicians, to seek to impose what one believes to be good and right on others without regard for the values and wishes of those concerned or the wider and long-term effects on society.
- It is necessary to clarify the processes that lie behind the manufacture of hierarchy, including the brutal imposition of Social Darwinism on the one hand and the manufacture of degradation and destitution on the other, internationally, within nations, within educational systems, within schools, within classrooms, within in health services, within “benefits” systems, and within communities.

Implications for the British Psychological Society – and the BPS Psychology of Education Section in particular

In the light of these conclusions, it would seem that it is vital for British Psychological Society as a whole – and members of the Psychology of Education Section in particular – to take an active role in promoting the kinds of change noted above.

It is unethical and unprofessional *not* to do so.

Unfortunately, as previously noted, there is not merely a widespread reluctance to protest – claiming, not without reason⁷⁵, that it is “more than one’s jobs worth” to do so – but, also, as noted a little earlier, a pervasive tendency for many people at all levels in a wide range of “professions” from doctors through social workers and “benefits” administrators to managers in private sector organisations⁷⁶ to go along with, and even personally elaborate, simplistic decrees which involve imposing others that which is deemed to be good and right regardless of the wishes of those at the receiving end or the wider consequences for those concerned and society ... with the inevitable recursive repercussions for the administering agent him or herself.

Promote Professionalism.

My most basic recommendation must be to do more **to act as professionals**.

This will involve elaborating what it *means* to be a professional⁷⁷

Among other things, this means going beyond job descriptions and challenging abuses and misrepresentations⁷⁸.

It means engaging in activities going well beyond job descriptions defined in terms of “certified areas of competence”.

It means contributing to a climate or culture in which it is seen as not only normal but important to challenge the thinking of administrators and politicians and challenge abuses and misrepresentations.

It means contributing to a wider social process which involves calling attention to the ways in which particular interpretations of the implications of research feed into multiple social processes to result in a wide range of desirable and undesirable social consequences instead of relying on a few champions to do these things.

It means supporting others who do step out of line to do these things.

Challenge the claims of those working with the reductionist science paradigm to actually be scientists at all.

Challenge the presentation of the results of research conducted within the reductionist paradigm to be either “scientific” or “objective”.

Seriously challenge policies ostensibly supported by such research.

Highlight the need for more systems thinking (asking “what is actually going on here?” and study of recursive loops).

Disseminate awareness of requisite research.

The most basic thing to do is to disseminate awareness of the huge range of topics that have been neglected and the failings in much existing research – but perhaps especially, the need to initiate research into the nature of the psychological and social processes which enable people to participate in the socially destructive processes associated with the manufacture of hierarchy, the brutal imposition of social darwinism, and the manufacture of de-humanisation, degradation and destitution.

Challenge funding arrangements.

The fact is that the necessary developments cannot be introduced in the context of current arrangements for the funding, conduct, and evaluation of research.

Funding research via competitive responses to government “calls for proposals” to conduct research on a customer-contractor basis is particularly damaging.

It is vital that we make more effort, as a Society, to challenge these⁷⁹.

Review the perceived role of the APPG

One specific recommendation must be to do everything possible to change the perceived role of, and terms of reference of, the All-Party Parliamentary Group on Psychology (APPG).

At least so far as I can judge from the information that has been published in *The Psychologist*, this at present operates to seek ways of bringing psychology to bear on problems as framed by politicians and bureaucrats.

The task is to change this so as to place more emphasis on challenging the way politicians and the public (and, indeed, many psychologists) frame issues, isolate “problems” from their contexts, and discuss their causes and remediation in terms of single variables. *Systemic* intervention is often required.

More specifically, it is to find ways of inducing politicians and public servants to seek ways of funding the kinds of research indicated above - especially adventurous research the outcomes of which cannot be pre-specified.

Promote alternative images of Governance.

But, behind this, actually lies a fundamental need not only to influence beliefs about how the processes of governance should work but also to promote the Research and Development activities required to evolve alternative forms of governance.

The need is to create a pervasive process of experimentation and evaluation especially in relation to generating a variety of provision and thus the evolution of different ways of living and working⁸⁰.

Unfortunately, as I have shown elsewhere⁸¹ there is a network of process which operate to inhibit such developments. Ironically, therefore, it will be necessary to incorporate study of such processes into any arrangements that might be established with a view to evolving alternative forms of governance – ie the societal learning arrangements that are required to evolve a sustainable society.

Security for whistleblowers

Going back a few steps, we have seen that many people are reluctant to publicise, and protest against, activities which are not in the best interests of their clients and the public in general on the grounds that so doing would not only put their jobs at risk from the anticipated reactions of their employers but also expose them to professional censorship for acting outside their formal area of competence.

This suggests that, as a professional Society we at need at least to provide security for whistle-blowers and mavericks.

In saying this I mean to imply such things as creating a fund which will enable people's salaries etc to be paid should they lose their jobs and their prospects.

Intervene in the network of processes contributing to the pervasive commitment of atrocities

I have elsewhere⁸² made a number of suggestions relating to how it might be possible to intervene in the network of forces encouraging public servants and others to commit what can only be described as atrocities against their fellow citizens.

Among these is a recommendation to insist on naming those, at all levels, who have been involved in the sequences of decisions which leading to these outcomes.

As John Stuart Mill⁸³ emphasised, the best way to get people to act in the long term public interest is to make their behaviour visible to others.

Promote legislation requiring open accountability

So far, so good, but it would require changes in the law to force those involved to accept that their names will be associated with their actions and the consequences of those actions.

It follows that it is important for the BPS to propose and promote such legislative changes.

Support those involved in activities designed to promote open accountability

But, even so, it would still be necessary to support, financially and in other ways, those who will be exposed to serious pressures as they seek to expose those involved

This reinforces the idea that it would be extremely desirable for the BPS to establish a financial fund for this purposes and set up a network of support groups.

Traditional Union-type activity.

Beyond that, there is the desirability of traditional union-type activity to encourage and enable members to refuse to work under contractual conditions which contribute to the production of misleading research and to the implementation of destructive policies.

Create a fund to support adventurous research.

One might even go further and ourselves set about creating a fund to support more adventurous research and, perhaps more specifically, research to understand the processes which lie behind the pervasive disposition to fascism and the brutal imposition of social Darwinism⁸⁴.

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ENDNOTES

¹ Ceci, S. J. & Papierno, P.B (2005).

² Raven, J. (2006)

³ Under this scheme, a “named person” holding some position in the administrative structure (eg head teacher or social worker) has to be appointed for every “child” (aged minus 6 months to 22 years of age) to visit their homes on a regular basis.

These “named persons” are armed with two sets of 60-item tick-box questionnaires named, in an Orwellian manner, “Getting it Right for Every Child”, and have access to all the family health, social, and criminal records (access which the parents themselves do not have).

And they have the right to, for example, require the parents and children to, among other things, attend “remedial” programmes (including “remedial” parent-education programmes) and, in the event of failure to comply, have the children taken into (uncaring) care.

⁴ Plomin (2018) characterises them as having a “Head Girl” mentality.

⁵ I will have much more to say about this later

⁶ See Raven (1994) for a summary.

⁷ These are summarised in Raven (1995) and Raven & Stephenson (2001).

⁸ Formal knowledge has a half-life of a year, i.e. people forget 50% after 1 year, 75% after 2, 82.5% after 3 ... and so on.

⁹ Few students enter employment in their area of speciality and, in any case, the jobs change all the time. More basically, the knowledge that is required is unique combinations of up-to-date, largely tacit, knowledge not snippets of general knowledge from the past.

¹⁰ Actually, there was more than one class but a composite picture has been generated for presentational purposes.

¹¹ Raven, Johnstone and Varley (1985) or Raven (1994, 2012).

¹² The notion that a system can have emergent properties of its own, not possessed by any of the individuals within it and, as such, have effects which no one within it intended will become a recurrent theme in this essay. Thus, as we shall see, a system can not only induce actions which run contrary to the espoused goals of those within it but even “feel”

threatened, and take action to counter, moves to get it to perform its espoused, as distinct from latent, functions.

¹³ Again this is a composite picture generated for presentational purposes.

¹⁴ See also Raven (1980 and 2012) for a description of the processes many parents employ in fostering competence in their children and Klemp, Munger and Spencer (1977) for a description of the way in which some naval officers managed the development of individual and group competence in the US navy. Robinson's (2015) accounts of the transformations which some teachers have been able to effect in a number of schools also reflect this process.

¹⁵ One sees the exact same processes summarised here in the accounts of the way in which a number of dedicated and creative teachers were able to transform the work of some schools in the writings of Robinson and Aronica (2015), in the studies my colleagues and I conducted in homes (Raven, 1980 PT&C), in secondary as well as primary schools (unpublished observations), in colleges (O'Reilly et al.; 1999; Stephenson, 2001; Winter et al. 1981), and workplaces (Klemp et al. 1977) - and, more generally, in among the "change masters" studied by Kanter (1985). As an aside we may note that, although Robinson focuses on the way in which the creative and confident teachers he describes were able to create environments in which multiple, high-level, talents were nurtured, he does not draw attention to the competencies possessed by these outstanding change masters themselves. (In actual fact, he does little to clarify the components of the developmental environments they created in a form that would enable other would be change masters to do likewise).

¹⁶ "Reward" often consists of an opportunity to do more of the same.

¹⁷ See also the processes that take place in what Kanter has termed "parallel organisation activity" in organisations and briefly discussed below.

¹⁸ There is no real contradiction between the competencies they are trying to nurture and those required in workplaces and society (see Raven, 1997 CIMS and Raven & Stephenson, 2001) but there *is* a serious conflict between these and the assessment and selection procedures most widely employed in modern society – which are in turn associated with huge SES differences.

¹⁹ It is of more than passing interest to note that, in accounting for the achievements of the Finnish educational system, albeit largely measured in traditional terms, Sahlberg devotes most of his book to discussing changes in the wider social socio-economic-bureaucratic system within which the teachers worked.

²⁰ Eg Raven (1994, 2012, 2017)

²¹ Hattie (2009)

²² Raven (1994), Andersson (2001)

²³ Campbell (1979)

²⁴ Also important were the very same processes as those that have driven the production of hundreds of thousands of trivial and non-replicable "research" reports. Thus we find a dramatic drop in the number of studies which *did* attempt such evaluations (such as Goodlad's (1983) study *A Place called School*) with the arrival of Mrs. Thatcher and the "customer-contractor" which was deliberately designed to frustrate wide-ranging fundamental research in the universities and research institutes.

²⁵ Shiva (1998)

²⁶ Webster (2014), Butler (2015)

²⁷ Cybernetics is the study of the, largely invisible, guidance and feedback processes which control the behaviour of animals and machines. So *sociocybernetics* becomes the study of the hidden feedback loops that control the behaviour of organisations and society.

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- ²⁸ That there were any at all is largely attributable to Harris's (2006) reversal of the previously widely accepted belief that parenting style overwhelmingly determines their children's "cognitive development".
- ²⁹ Raven (1980)
- ³⁰ Hamilton et al (1977)
- ³¹ Raven (1984)
- ³² Elliott, J. G., & Grigorenko, E. L. (2014), Raven (2014)
- ³³ Raven (1997, 2014).
- ³⁴ Raven (2014)
- ³⁵ This is actually an illustration of Forrester's (1971/1995) law which asserts that single factor intervention in poorly understood networks of social forces always has counterintuitive, and usually counterproductive, effects.
- ³⁶ But see e.g. Raven (1994, 2012)
- ³⁷ Two, related, branches of science have sprung up in an attempt to deal with this problem: "socio-cybernetics" and Dynamic Systems Modelling. See <http://scio.org.uk/> for an organisation devoted to the former and <http://systemdynamics.org.uk/> for the latter.
- ³⁸ As an aside we may note that, instead of trying to assess an individual's level of creativity, internal locus of control, etc. in a generic way – across all possible motives, it makes more sense to reverse the question and ask *in relation to what* is this person confident, creative, persistent, thoughtful, and so on?
- ³⁹ Raven (1984, 2014), Raven & Stephenson, (Eds.). (2001)
- ⁴⁰ Limited experience with the 2-stage competency model briefly described above shows that it works for both pupils and teacher-observers. But it is entirely too cumbersome for routine use in the course of the kind of project-based education observed at "Laneton"
- ⁴¹ For a fuller discussion of the nature of developmental environments see Raven (2017) [main paper] or Raven (2001b)
- ⁴² Revans (1977)
- ⁴³ See Note 6.19 in *Managing Education* (Raven, 1994) for a bleak review of the ways in which proponents of project-based education have presented their work.
- ⁴⁴ Most of the teachers Bennett (1976) asked to talk about "progressive education" saw it as an alternative way of achieving the standard goals, not as a process directed toward *different* goals.
- ⁴⁵ As a glance at the chapters making up Mulder et al's (2017) book will quickly reveal.
- ⁴⁶ See Raven (1991) for a fuller discussion of these issues.
- ⁴⁷ Ofsted (2017)
- ⁴⁸ Harris (2006)
- ⁴⁹ Maxwell (1969), Hope (1984), Wolf (1987)
- ⁵⁰ Bailey *et al* (2018) have devoted a whole article to evidence supporting this claim.
- ⁵¹ See Schon (2001) for an important discussion of this issue.
- ⁵² While I have used the material brought together in Hattie's meta-analysis to illustrate the mis-use of science, Hattie's own conclusions are remarkably different from those usually drawn: he demonstrates that it is teachers' ability to identify and invent ways of dealing with students' problems ... and *show students how to do this* – ie how to engage in the cyclical process of studying the effects of one's actions and take remedial action that constitutes the most important component of teacher competence. (Hence the sub-title "visible learning")
- ⁵³ Elliott and Grigorenko (2014)
- ⁵⁴ Seddon (2008)

⁵⁵ (Political) banding together to promote a cause as represented in the symbol of a bound band of otherwise weak sticks – *fascio* in Italian – is only the last step in a process based on a particular agreement about what it is that should be imposed on others. In political terms this is usually agreement to impose a hierarchical “pure”, clean, culture defined in moralistic or religious terms on others.

⁵⁶ Roberts, R. (2018 a & b)

⁵⁷ Raven (2018, 1980)

⁵⁸ Parliamentary enquiry into effects of adverse childhood experiences (ACE) (2018)
<https://www.parliamentlive.tv/Event/Index/730b9508-5ff6-4464-a7b8-2bbb6f709ef5>

⁵⁹ See Weerts (2018).

⁶⁰ It is of more than passing interest to note that, in response to Mrs Thatcher’s request that he write a report which would help her to close the Social Science Research Council, lord Rothschild (1982), while promoting the customer-contractor principle, both noted that social scientists were their own worst enemies because they embraced narrow academic studies and avoided wider and more socially important issues, also called for the budgeting of commissioned research to add 5% of the research *and development* costs for *scientist initiated* research. Given that the development costs of many educational projects are huge, this would amount to an enormous sum of money.

⁶¹ Far from enhancing motivation to do “well”, the effect of repeated testing on norm-referenced tests which, *as an inevitable outcome of the scaling process used*, define 50% of the population as failures is to precisely confirm many pupils’ impression that they are indeed failures and in a position from which they cannot escape no matter how hard they try.

⁶² See eg McKnight (1995).

⁶³ In this context attention may be drawn to the work of Fink (2016) and Roberts (2018b)

⁶⁴ Extended discussion of the ways in which government sponsored research leads to the generation of misinformation. Eyesociety...

⁶⁵ Raven (2006)

⁶⁶ Milgram (1974), Roberts (2018 a & b)

⁶⁷ This is not to say that there are not, as some of those interviewed by Graeber (2018) reveal, many others who personally resent the role into which they have been cast... and, indeed, come to leave their jobs as a result. (This is also true of many who enter teaching.)

⁶⁸ Roberts (2018b) has argued that these play a major role in formulating the destructive and death-promoting policies which lie behind “benefits” sanctions, in support for those policies, and in the pervasive elaboration of those policies by those charged with enacting them. Webster (2014 {see also Raven (2016)}) had earlier documented the pervasiveness of the deeply destructive activities engendered by the benefits sanctions policy, and Butler (2015) had produced statistics on the number of actual deaths resulting from these policies. In the first 11 months of 2011, 1300 people deemed fit for work had died along with a further 7,100 who had been allocated to support groups. And between December 2011 and February 2014 another 2380 died after having their claims for support rejected because they had been deemed fit to work. Many more had been driven to suicide because they were simultaneously deemed fit to work by one set of officials and denied job seekers allowance because they were unfit to work by another. The government has blocked access to later statistics.

⁶⁹ See Raven (2018b) for links to many examples of activities designed to suppress human rights.

⁷⁰ Raven (1980)

⁷¹ Klein (2007).

⁷² In extreme form these express themselves as brutally social Darwinistic See note xxiv

⁷³ Raven (2006)

⁷⁴ Roberts (2018b) and a great deal of earlier, unfortunately seriously flawed, work relating to the disposition to authoritarianism and fascism.

⁷⁵ See Nutt (2012) and letter from Narinda Kapur in the October 2018 issue of *The Psychologist* (Kapur, 2018)

⁷⁶ There is a brief discussion of the ways in which a single firm – Unum – organised to make money out of the DWPs “work or die” benefits programme in Roberts (2018b)

⁷⁷ Schon (2001), Flynn (2000)

⁷⁸ Although the BPS (2018) has called for thorough reform of the “welfare support” programme, it has done little to protest the basic philosophy behind it, still less to draw attention to the problem posed by the pervasive willingness to support such policies and participate, not only in their implementation, but even in elaborating them to make them as destructive as possible.

⁷⁹ Weerts (2016) has suggested that an alternative image to funding by contract would be funding by covenant, ie a system through which the universities and research institutes are held accountable for exercising their own judgment as to what is in the long term interests of society.

⁸⁰ For a fuller discussion of these issues and an outline of possible alternative societal learning and management arrangements arising out of our current public service arrangements see Raven (1994 & 1995)

⁸¹ Raven (1980)

⁸² Raven (2018)

⁸³ Mill (1859)

⁸⁴ As a student, 60 years ago, I studied the work of Adorno and Frenkel-Brunswik on their “F” scale, but was shocked by the conflation of prejudice with statistically verifiable information on group differences. I am aware that there have been major developments in work on “authoritarianism” in the interim, but have not followed them in any detail. Nevertheless such work as I did read did not seem to engage very effectively with the issues I have been concerned with here.