Problems with "Closing the Gap" Philosophy and Research
Some Observations Derived from 60 Years in Educational Research[a]

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Abstract

In this essay I show that the main problems faced by the educational system (that is to say, closing the multiple gaps which critical scrutiny reveals) arise from causes that are far removed from the symptoms. The main faults of the system inhere in its inability to cater for, and cope with, diversity, not in the sense of ethnic or cultural diversity, but in relation to the extraordinary diversity of individual talents, interests, and competencies (latent or expressed) inherent in human nature. Addressing this problem would involve the creation of a pervasive climate of innovation. This in turn requires the evolution of a decentralised governance system which would experiment, innovate, and learn without central direction. Perhaps more importantly, and much to our surprise, it would also involve developing an understanding of, and finding ways to intervene in, the network of social forces which have, since time immemorial, succeeded in replacing Gaian organic evolutionary processes by destructive hierarchical arrangements. In the current context, it is these which compel those involved in the "educational" system to contribute to the cementation and legitimisation of hierarchical arrangements in society and organisations. Fulfilling this sociological role undermines nurturance of the diverse talents pupils possess – talents which not only contribute to the effective functioning of current organisations but which, more fundamentally, are urgently needed to evolve more sustainable social and living arrangements and thus the survival of our species. The way forward therefore lies, not only in clarifying ways of thinking about, nurturing, and assessing competence, important though these things are, but, above all, in conceptualising, mapping, and finding ways of harnessing, the social forces that have the future of mankind and the planet in their grip. From a psychological point of view, this involves turning psychology inside out – – in the sense in which Newton turned physics inside out by de-animating explanations of the movements of physical objects.

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[a] In many ways, this essay is a summary and update of my books *Education Values and Society* (1977) and *Managing Education for Effective Schooling: The Most Important Problem is to come to Terms with Values* (1994).

[b] I am deeply indebted to Steve Hughes for comments on a draft of this essay.

Introductory Comment

Most readers of this essay will gain most of what they need to know from reading the main text without delving into the Appendices or Endnotes. However, further insights will be gained from reading the Appendices. And still more by delving into some of the longer Endnotes.

Nevertheless, it is anticipated that many readers will have difficulty gaining what they might from the essay because it approaches most of the problems to be discussed from viewpoints with which they will not be familiar.

For a start, I question the assumption that the main function of the educational system as it stands is to educate. Rather it is, as a number of authors, perhaps starting with Christopher Jencks[1] and Basil Bernstein[2], have suggested to both to implement a process of rationing privilege and to legitimise that rationing. Prompted by the work of Murray Bookchin[3] I spell this process out more fully, show how it works, and end up arguing that, unless we map, measure, and harness the social forces involved, there is little hope of introducing a genuine *educational* system, let alone ameliorating any of the deprivations and discriminations that so many people are so concerned about in society and education.

In short, if they are to get what they might from this essay, it may be necessary for some readers to suspend disbelief for a while.

Background

I begin in what may seem an unlikely place.

Many years ago, when we were standardising the *Standard Progressive Matrices*[4] for the UK, we sought the assistance of the Office of Population Censuses and Surveys (OPCS) in selecting a cross section of areas which would yield a sample which would collectively be representative of all socio-economic groups in the UK. It emerged that OPCS had conducted a cluster analysis to identify the "types" of area that would need to be sampled. It then emerged, that, at whatever level of clustering one chose to halt the programme, the Monklands area of Scotland[5] came out on its own. It was unlike any other area in the UK, or, indeed, Europe. Most noticeable were the levels of socio-economic deprivation[6]. Not surprisingly, when our results came in[7], the Monklands scores were lower than those achieved in other areas.

Now. If one was inclined to do so, how would one set about fixing the situation in Monklands?

Well, for a start, one might begin to study the networks of interacting social processes which have contributed to, and perpetuate, the situation. One might study the recursive processes that contribute to migration into and out of the area. But – and this may seem like a strange leap at this point – it is unlikely that one would hit upon the Scottish government's conclusion that the most urgent and important thing to do is to mandate a government-appointed "named person"[8] armed with two 16-page tick-box questionnaires to repeatedly visit the homes of each and every "child" under 22 to ensure that the parents are engaging in child-rearing practices that have purportedly been shown to contribute to children's "cognitive development" and "well-being"[9].

Instead, one might reflect that at least one reasonable conclusion might be that, rather than the impoverished mothers caught up in punitive, demeaning, and destructive[10] "benefits" systems or their children, the source of this problem might lie in a competence or values deficit among the leaders and public servants who purport to manage the economy in the public interest. And, specifically, their failure to take into account, or address the networks of interacting social processes which have contributed to and perpetuate the situation. What in their background – and specifically their educational background – has been lacking, such that they are either unable or unwilling to engage in this kind of thinking? In that context, one might wonder whether pursuing the current Modern Studies curriculum in schools, with all its unexamined assumptions, would actually have helped these public sector managers to develop the competencies and understandings that would be needed if they were indeed to play an appropriate role in fixing the situation in Monklands[11].

Although it might initially seem to be something of a digression, I would urge the reader, when thinking about this question, to consider the fact that studies following-up to age 95 pupils who had taken the "intelligence" tests administered to all 11 year olds in schools in Scotland (including those in Monklands) 70 to 90 years ago[12] show that two thirds of social mobility *both upward and downward* in Scotland is statistically accounted for by the 11-year olds' "cognitive ability" scores. Think about that. What does the extensive downward mobility among those who come from high status backgrounds (where they might be expected to have had every advantage) tell us about the kind of education that might have been best suited to the needs of a cross-section of pupils? And what do the facts that the status inequality between brothe[13]rs amounts to 83% of status inequality in general, and the variance in "IQ" scores between children *from the same family* amounts to about 60% of the total population variance in "IQ", tell us about those who believe that "home background is everything" and that we can "close the gap" in educational "attainments" by enriching the environments children encounter in homes and the early years at school? What do these things it tell us about those who believe that if we all get more education we'll all get jobs[14]?

And that is, in reality, only an opening foray into a longer discussion of the need to take diversity seriously. Because, as Kohn and I have shown[15], there is huge variation in the *values* of children who come from *the same homes* (as well as between socio-economic groups) and, as with IQ, that variance between pupils accords with the values of the *socioeconomic groups they will later enter (and in fact anticipate entering when they are still at school*[16]). (We may note in passing, first, that, along the way, these differences in values between parents and some of their children (yet another "gap") can cause serious conflict and provoke the intervention of social workers who may well end up taking the children away from their parents and subjecting them and their parents to (compulsory) remediation and re-education programmes. Second, that many pupils *want* to undertake manual and other "low status" work. This gives the lie to an assumption which seems to lie behind the writings of most of those who opine on educational matters[17] – namely that everyone wants, or should want, to enter high status jobs and thus be motivated to acquire the "academic" qualifications needed to get there.)

And so it emerges that the real question behind all of this is not how to increase the scores of the "less able" on the tests currently used in schools[18] but *how are schools to cope with, and cater for, the huge variety of abilities and values that exists between and among parents and between and among children?*

In reality, what we have seen so far is only the tip of an iceberg. This is because, given an appropriate developmental environment[c] – a kind of environment which parents and employers are much more likely to provide than schools – students have the potential to develop a vast range of high-level talents[19] … and society needs those talents[20].

How are *schools* to nurture this variety of talents and abilities and what prevents them doing so?

The problem was noted by Spearman (e.g. 1927) more than a century ago. He argued that neither the "attainment" tests from the correlations between which his "*g*" had emerged, nor measures of *g* itself, had any place in schools because they prevented parents, teachers, politicians and pupils focussing on the business of education – which is (as it's Latin root implies, and as most parents, teachers, pupils and employers agree[21]) to "draw out" (nurture) the diverse talents children have the capacity to develop.

Why has exactly the opposite happened?

Firstly, as Spearman observed, these diverse talents "cannot be identified using any of the psychometric procedures in current usage". More accurately, they cannot be identified without some kind of agreed classificatory framework to think about them and a paradigm shift in the way in which we set about "measuring" them. The measurement problem may be illustrated by considering the way we try to go about measuring qualities like creativity, persistence, and even thinking itself. These are all difficult and demanding activities which will only be developed and displayed in an appropriate environment *and in relation to an activity in which the individual is strongly motivated to engage* – 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* measurement procedure is therefore needed. *First* one has to find out what the individual is strongly motivated to do … and the possibilities are legion. 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 think[22]. And, as an aside, if we return to the *Raven Progressive Matrices* mentioned above, which is often thought to be a measure of "the ability to think", we learn from Spearman that "The question is not 'How well can they think?', but 'What do they tend to think *about*?" So, as the neuropsychologist Sperry[23] noted, what is being measured by the *Progressive Matrices* is not a generalised "ability to think" but the motivational predisposition to "think" about certain kinds of things deemed important in our society[24]. The same applies to initiative, persistence, etc. *In relation to what* is this person confident,

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[c] Understanding the nature of developmental environments is vital to moving forward. But it would be too much of a digression to launch into that discussion here. For this reason I devote a large section of Appendix A to the topic. Here it is perhaps sufficient to note that 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, through 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.

creative, persistent, and thoughtful? These are not *general* predispositions of the individual but characteristics which will only show up whilst he or she is undertaking activities he or she cares about. But an important question remains: If we create a developmental environment[25] in a home, a school, or a workplace in which someone is able to develop the components of competence needed to be creative in connection with some activity they care about at that time, will they then be able to transfer these components of competence to carrying out some other activity? We will return in Appendix A to the question of how to operationalise this measurement model.

Another reason why we have not progressed toward an educational system which nurtures the diversity of talents available is that, as we have seen, "intelligence" – or more specifically *g* – plays a vital role in legitimising and perpetuating the (destructive[26]) hierarchical society in which we live with the result that there are enormous pressures on schools to force them to concentrate on manufacturing, legitimising, and reinforcing this. Rendering other talents invisible plays a vital role in this process[27].

Robinson & Aronica[28], Sahlberg[29] and Mortimore & Whitty[30] have observed that the mythology of liberalism – identified as "neo-liberalism – with its emphasis on individual choice via market processes when combined with the centrally commanded (note the true face of "neoliberalism") restriction of the "variety" offered by schools to single-factor "standards"[31] (exemplified in league tables) further reinforced by the manualisation (AKA de-professionalisation[32]) of teaching and curricula, the setting of narrowly defined targets, and high-stakes, centrally decreed, inspections oriented to those targets has had precisely the opposite effect to that "intended" … or at least proclaimed. Schools themselves, and pupils within them, have become ever more hierarchically, divisively, organised. In this context, Au[33] has offered a Bernsteinian analysis of the role this process plays in maintaining the social order.

Nurturing and Recognising the Diversity of Talents Available

In order to move toward a discussion of ways of closing the gap between espoused educational objectives and what happens in schools, let me begin with an example of what *can* be done. It comes from a study of a mixed age (8-11), mixed ability, class[34] conducted some years ago[35]. The pupils were engaged in what was mostly an out-of-school, environmentally-based, educational process. At the time we studied them, their project involved trying to do something about the pollution in the local river. Some had taken on the role of scientists and were trying to measure the levels of pollution. In the process they were developing the competencies of the scientist as distinct from a knowledge of tiny snippets of largely out of date "scientific" knowledge. Others took the line that everyone already knew the river was polluted and that the problem was to get something done about it. They set about making poster-sized drawings of the dead fish and plants with a view to evoking emotions and action as distinct from the competencies traditionally focussed upon in lessons on "art". Others set about generating captions to accompany the posters – again writing in such a way as to evoke emotions which would generate action rather than to meet teacher- or government-generated criteria of "good writing". Another got engaged in devious strategies to motivate politicians to put pressure on the local environmental standards officer. Others specialised in soothing the conflicts which developed between the scientist types and artist types. And so on.

Here we have the development of a wide variety of high-level competencies[d] 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* property[36]. 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. Note, too, that the *system itself* was able to learn in ways not represented in anyone's head but in exactly the same pervasive way as human beings, as organic systems, learn.

And, what of the competence of the teacher[37] to orchestrate this extraordinary developmental process[38]?

If the educational process described here largely took place in the environment outside the school, so, too did the exercise of crucial components of teacher competence.

The teacher spent a great deal of time with the parents of the children 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 measures of such things as reading or 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 teachers deployed as managers of pupil development can be brought together in Figure 1 which Lees[39] developed as a basis for discussing managerial competence in general.

What it shows is that effective teachers, and managers more generally, have first to develop a very different, if unverbalised, image of the varieties of human talent and their development from the conventional view shown in the central box. They have to think about the individual motives and talents of each of their pupils and subordinates and create situations in which those pupils or subordinates can work together to develop those talents on an individual and collective basis[40]. They have to abandon conventional notions of selection and reward[41]. They have to think about the emergent properties of groups. Note that what they need to do cannot

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[d] 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.

be done for them by anyone else (such as a HR specialist). It is an integral component of their job.
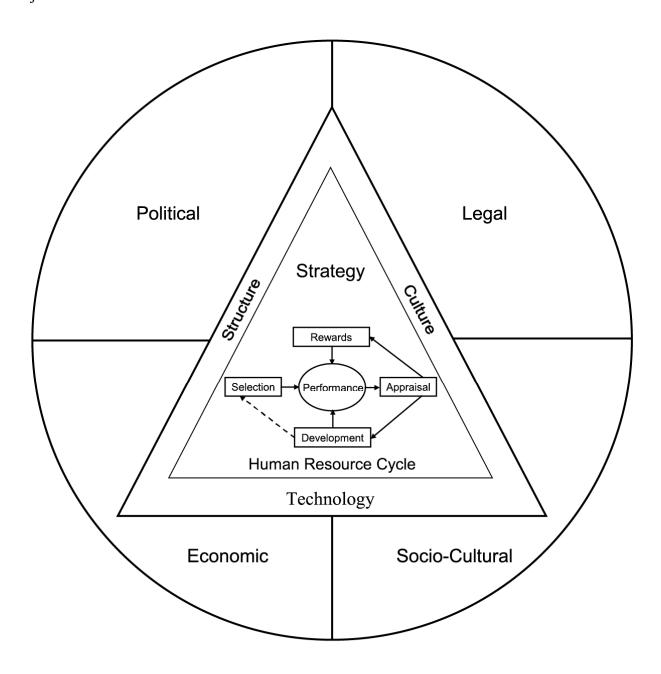

Figure 1
Domains of Managerial Competence
(Reproduced, with permission, From Lees (1996)

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 work[42].

As if that were not enough, they have to intervene in wider civic processes. In business settings, managers have to do such things as engage in 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.

If the kind of work the teachers whose work we have summarised here is to be more widely disseminated, they too will need, through their professional organisations, to influence the wider social, legal, and political context within which they work[43]. Disturbing though some people may find it, society needs some people like some of the pupils involved in the river project who are able to create political turbulence to do things like getting the local environment officer to do something about the factories that are polluting the river.

Not surprisingly, teachers who worked, who would have worked, in these ways and were able to intervene in a bureaucratic system set up to define, monitor, and control the work of schools have mostly been removed, or deterred from entering the profession, via ever more prescriptive manualisation of teaching and assessment drafted by bureaucrats more concerned to avoid trivial, but legally actionable, errors than to find ways of achieving the manifest goals of the system … or even remediate the gross errors of the system.

At this point it would be extremely desirable to say a little more about how to think about, nurture, and assess high level competencies. Such developments are vital if parents, teachers, and managers are to nurture and harness such qualities, pupils and adult members of society are to be given credit for possessing them, and teachers and managers credit for having nurtured them. But to do so here would disrupt the flow of this essay. Relevant material has therefore been taken to Appendix A.

Another Gap

It may well be expected that I will turn now to research relating to closing the gap between the achievement test scores of pupils who come from "disadvantaged" and those who come from more advantaged backgrounds.

But research in this area is vast and much of it deeply flawed. Because reviewing it here would further disrupt the flow of this essay I have taken it to Appendix B.

But here is a kind-of a summary.

It turns out that things are not at all as they are commonly thought to be.

The fundamental problem again arises from attributing a causal relationship to a correlation and thereafter basing massive intervention programmes on incorrect explanations of that relationship.

In the first place, the conspicuous correlation between young children's scores and their subsequent educational success is taken to mean that the first is responsible for the second (rather than both being an effect of something else or some other things).

Secondly, the relationship between children's scores and their parents' child-rearing strategies is again taken to mean that that the parents' behaviour is responsible for the variance in the children's' scores when it could mean, and (surprisingly does mean) that the variance between children induces (at least some of) the variance in parents' behaviour[44].

So, the argument goes, we should both induce (educate or constrain) parents to behave in what are believed to be more appropriate ways or insist that they send their children to "early intervention" programmes in schools.

Unfortunately, given researchers' preoccupation with (narrowly conceptualised and measured) "cognitive development" on the one hand and "educational success" (as conventionally measured) on the other,[45] very few researchers have actually studied parental childrearing behaviour let alone components of that behaviour that have other (and potentially more serious) effects.

And they have failed adequately to examine what Bronfenbrenner[46] has called the ecological sources of multiple variances in parental behaviour.

Finally, the policy evaluation studies that have been conducted have been bedevilled by their lack of comprehensiveness[47]. They have, in general, failed to assess the logic on which the activities being evaluated are based, they have documented very few of the processes going on in homes and schools, and they have looked at only a tiny fraction of the personal and social outcomes of these processes and their interactions… including, particularly, their individual and collective disbenefits[48].

And so, with these cursory comments behind us, I turn to another gap which is, in any case, more closely related to the theme of this essay.

The Gap Between Pupils Who Have Positive and Those Who Have Negative Experiences at School

Numerous studies have shown that many pupils have negative experiences at school and that they do not change these evaluations as they grow up and get jobs. Perhaps the neatest summary of the results is that prepared by Andersson & Strander (2004)[49][50]. Through a neat cluster analysis they showed that in general, but surprisingly accurate, terms, about one third of pupils like and benefit from school, another third just about tolerate it, and one third are seriously damaged by it. (Interestingly, the estimate of 1/3rd damaged by current forms of education is the exact same figure as we had come up with 25 years earlier[51] and the "1/3rd seriously engaged" recurs in Dunleavy et al., 2012[52][53][54]).

The third of pupils who are seriously damaged by schools are continuously harassed by school attendance officers (who have been given ever-increasing powers to persecute and prosecute both the pupils and their parents), continuously and repetitively punished by being required to do things they basically cannot do, have little interest in doing, and are unlikely to be of use in their lives, and given additional homework assignments for "underperformance". They are continuously[55] forced to take knowledge-based, norm-referenced, tests (which actually lack construct and predictive validity[56]) which necessarily define and confirm them as "failures". Among politicians and administrators these tests are justified on the grounds that they will (on the basis of the so-called neo-liberal theory that competition drives all) motivate pupils and enhance performance. But, in actuality, they continuously confirm that the pupils we are talking about here are failures. Because the tests are norm-referenced, they, *as a necessary outcome of assumptions embedded in the procedures used to develop them*, define 50% of those taking them as failures. Thus those in, say, the bottom 25% learn that, however hard they try, they cannot escape this designation: "I am so far down I might as well be in a submarine". Harder work on the part of all concerned simply raises the bar. Many are designated as children with "special needs" and required to attend "remedial" classes (which

mostly don't work[57]). This makes their "inadequacy" visible to all. They are denied the opportunity to develop, display, and get recognition for the talents they actually possess. They learn that they are just scum and that they will be unable to get, let alone perform, any but the most menial of jobs. They learn to be suspicious of public servants with their talk of "respect" and "inclusiveness". They learn to distrust those who set out to "help" them wielding an armoury of intrusive questions and access to "benefits" which bring with them ever more destructive conditionalities[58]. As Mrs. Thatcher put it, they (rightly, in her terms) "learn to know their place".

It may well be that many of these "underperforming" and denigrated students are those who, as we saw earlier, will (as they suspect) either be downwardly mobile or unable to escape from low level positions. They are also likely to be the ones who value such things as toughness and strength and the ability to stick up for themselves rather than, for example, competitive success at examinations or self-expression in such things as art and creative writing.

These are the students who, in the words of one of those who, 50 years ago, commissioned the studies on which much of my lifetime's work has been built described them as "delinquent" and defined our task as being to find out "how to keep the blighters happy". (We commuted this brief into being to study their perceptions of education, their schools, their lives, their values … and how these perceptions changed after they had left school[59]).

The thought at the time was that, if we clarified the objectives of secondary education, it would be possible to design educational programmes which would cater for a cross section of pupils. And, indeed, for a while there were experimental programmes and examination reforms which appeared to strengthen the possibility of doing just that. But they all got closed down. In their place came reforms of the examination system (which, on behalf of the hierarchical society of which it forms a part, controls what teachers teach and what students learn) which further strengthened the assessment of certain kinds of knowledge-based "ability" … albeit in a wider range of curriculum areas (which are, however, themselves clearly differentiated in terms of the "ability" levels of the students who are expected to take them).

How did this happen?

For a start, there was, as we have seen, little formal understanding of how to nurture such laudable qualities as "problem-solving ability", "the ability to work with others", and "the ability to contribute to society" or give pupils or teachers credit for achieving such outcomes. And virtually no research into the conceptualisation and assessment of the range of competencies teachers would need to achieve such objectives as helping pupils to develop and get recognition for their own particular talents and abilities.

Secondly, the notion of closing the gap via differentiation had become deeply unpopular and replaced by notions of equality of opportunity to compete for high status jobs and the spoils thereby available[60][61]. This eventuated in commands to introduce "comprehensive" schools in place of a system in which at least a few "secondary modern" schools were able to experiment with alternative educational processes (albeit whilst leaving behind the others as appalling dumps).

The notion that the problems faced by the educational system are to be resolved, not through differentiation of outcomes in terms of a wide range of talents and abilities or respect for a wide range of values, but via equal access to a common curriculum was incorporated into Mrs. Thatcher's GERBIL. But the basis for that viewpoint is to be found in a meme having to do with competition and testing which had spread across national boundaries like a virus …

which is to say like other simplistic religious faiths (including "communism" and "neo liberalism") … the spread of which are likewise backed by somehow applauded authorities wielding swords, inquisitions, disenfranchisement, imprisonment, and compulsory "re-education".

At a practical level, this way of thinking was embedded in the "Educational Olympics" orchestrated (on the basis of fraudulent claims[62] and with tests of little construct or predictive validity[63]) by such organisations as the IEA[64], and the OECD (PISA[65]), and embedded in the tens of thousands of studies of "what works in education" that lie behind Hattie's meta-analysis of 800 meta-analyses of such studies[66].
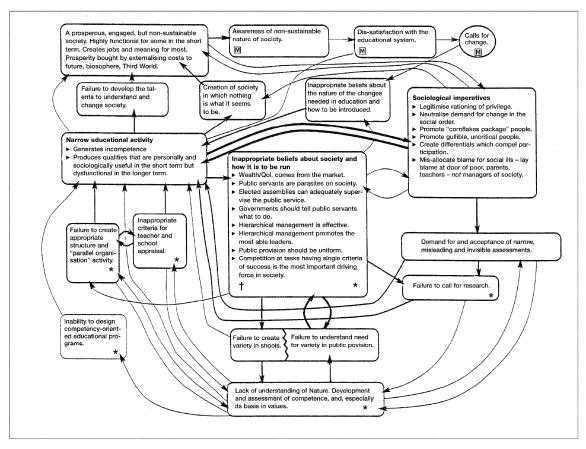
One more step

But all of these are, in reality, superficial explanations of how schools come to lose sight of their educational objectives.

In fact there are multiple causes that interact and support each other and serve to eliminate any step by step attempts at reform.

In technical terms, these "causes" form a network, or *system*, of recursive, and mutually supportive, feedback loops. This network makes it becomes virtually impossible to change any one part without changing others. Isolated changes are either negated by the reactions of the rest of the system or produce unanticipated, counterintuitive, and often unwanted, changes elsewhere. What is more, the network seems to have a capacity to perpetuate, even extend and elaborate, itself.

The 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.

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

Awareness of non-sustainable nature of society. [M]

Dis-satisfaction with the educational system. [M]

Calls for change. [M]

Failure to develop the talents to understand and change society.

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

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

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

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

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

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

Inappropriate criteria for teacher and school appraisal.
*

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

Failure to call for research.
*

Inability to design competency-oriented educational programs.
*

Failure to create variety in shools. Failure to understand need for variety in public povision.

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

*Intervention in these cells would help change the nature of the qualities nurtured and rewarded in the system. Motives which could be harnessed to do this are marked [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 in, 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 most of which cannot be discussed here[67].

Nevertheless, just to get a feel for how it works, it is worth following round the triangle of links in the top left hand corner. The activities that dominate schools today, while helping a few pupils to acquire certificates which contribute to their personal advancement, fail to nurture the talents of most pupils; indeed they generate "trained incapacity". These processes collectively result in a societal competence deficit in which a few accumulate material wealth whilst destroying the habitat of all and a society which is characterised by deep divisions between the rich and the poor. Awareness of the non-sustainable nature of these arrangements leads to widespread dis-satisfaction with the way society is working and the educational system in particular. This leads people to call on politicians to improve things. Unfortunately current beliefs about how society should be run (shown in the central box) lead those politicians and their associated bureaucrats to do such things as generate prescriptions for what every teacher must be doing during every ten minutes of the day and impose regular standardised testing to monitor their performance. Unfortunately, as we have seen, the tests employed lack both construct and predictive validity. They are unable to recognise important competence based outcomes which some variants of the system achieve or the serious disbenefits conferred by the current system. These processes then help to perpetuate both the

destructive nature of schooling and acceptance of the senseless work into which one is pushed about by forces beyond ones control.

Another loop to which it is important to draw attention is the recursive, self-reinforcing, loop drawn right across the centre of the Figure between the roles schools play in generating, and reinforcing belief in, hierarchy and the sociological imperative that they do exactly that.

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

1. It is impossible to achieve significant benefits by changing any one part of the system … such as curriculum or examinations or teacher training on its own … without simultaneously making other changes elsewhere – otherwise, as we have seen, the effects of the change will either be negated by the reactions of the rest of the system or produce counterintuitive, and usually counterproductive, changes elsewhere. On the other hand, it is equally clear that command-and-control-based system-wide change based on uninformed opinion will achieve little.
2. Pervasive, *systems-oriented,* changes are required to move forward. But these changes, although collectively system-wide, cannot be centrally mandated because there are too many new things to be done.
3. Since what happens is not determined by the wishes of any particular group of people but *by the operation of the system itself* the widespread tendency to single out and *blame* parents, pupils, teachers, public servants, or politicians is entirely inappropriate. *Their* behaviour is mainly determined by the system. One needs to take these systemic forces seriously and ask how they can be harnessed in an analogous way to that in which the designers of sailing boats harness the potentially destructive forces of the wind: They will not go away!
4. It is vital to generalise the observation made in (3): We need to fundamentally 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. Observation (3) implies that we need a similar transformation in the way we think about the causes of human behaviour.
5. The *causes* of the symptoms (and thus the appropriate place to start reform) are far removed from those symptoms.
6. The system not only reproduces itself – it generates ever more elaborate versions of itself; it is self-elaborating; autopoietic[68].

Focussing attention on the governance box in the centre of the systemogram we may note something else. We may recall that, while the reasons why schools tend to neglect their main goals include the absence of a shared, formal, understanding of how to nurture the desired qualities and how to find out whether one has done so, they also include an inability to handle the diversity of values that exist in our society. Conflicts surface as soon as one tries to introduce educational programmes which will nurture high-level competencies or promote diversity.

Many parents simply do not want their children asking more questions or developing competencies which, they believe, will lead their children to "put on airs" or grow away from them.

So far as I can see, handling these values conflicts involves the creation of a variety of distinctively different educational programmes which actually do (as distinct from merely promise to) nurture different talents, documenting the differential consequences of these *in a comprehensive* way, and feeding that information to the public so that they can make informed choices between them. This stands in stark contrast to the notion that (very limited) information deemed relevant to such decisions should be fed upward in a bureaucratic hierarchy to politicians to take decisions binding on all.

Comprehensive evaluation and its implications.

At this point I need to go on what may seem to be a digression.

Comprehensive evaluation requires us to document *all* the short- and long-term, personal and social, desired and desired, undesired and undesirable consequences of different components of an intervention for different kinds of people in different social situations: What is good for the individual may be bad for society; what is good in the short-term may be bad in the long-term; what is good in one way may be harmful in another.

This may seem obvious enough. But it has not *been* obvious in the past. On the contrary, "decision takers" – politicians – tend to focus on single issues, thereby overlooking the fact that, as we have seen*, single-factor intervention in poorly understood systems almost always has counterintuitive, and usually counterproductive, effects*. Even more disturbingly, this stance is supported by the most widely accepted, even promoted, image of "science". This kind of science is best designated as "reductionist science"[69]. It argues that it is entirely appropriate to study and report only selected, single factor, outcomes of an experiment or intervention and to ignore others. The practice is justified as "testing hypotheses". This facilitates evaluations which report such things as the short-term increases in crop yields resulting from applying a pesticide whilst failing to study or report the long-term effects, never mind the much more serious effects on habitat and the food chain[70][71].

So: To pick up from where we left off before we embarked on this "digression", it would seem that documenting the consequences of educational programme options in a comprehensive way and feeding that information to the public to enable them to make informed choices involves nothing less than the evolution of new concepts of science on the one hand and bureaucracy and democracy as components in a learning society on the other.

Implications for Bureaucracy and Democracy

Now to say a little more about the implications for concepts of bureaucracy and democracy.

Whose job is it going to be to carry out the activities mentioned before our "digression"? As far as I can see, it has to be the job of public servants. I mean that it has to be their job to arrange for the creation a variety of options in every community, to ensure that they are comprehensively evaluated[72][73], and to feed this information to the public so that they can make informed choices between them. More fundamentally, it becomes their job to promote a ferment of innovation and learning. This means encouraging everyone in the system to experiment in their own areas and to support those trying to do so in related areas. It means facilitating the evolution of comprehensive evaluations. It means facilitating a move away from "scientific" methodologies grounded in reductionist thinking and promoting the

evolution of other ways of advancing understanding. It means examining the results of any experiments that are initiated to draw out their implications for understanding the currently invisible *systems* processes that are preventing those activities reaching their goals. Creating a ferment of innovation also means acting on the information which becomes available in an innovative way – i.e. as part of a recursive cycle of experimentation, learning, and further experimentation.

But, then, how to ensure that our public servants perform these newly identified duties?

At the heart of the answer to this question lies John Stuart Mill's observation[74] that the way to get people to act in the long-term public interest (as distinct from their own short-term interests) is to expose their behaviour to the public gaze: "*Instead of the function of governing, for which it is radically unfit, the proper office of a representative assembly is to ... compel a full exposition and justification of all (acts) ... It should be apparent to all the world who did everything, and through whose default anything was left undone*". In the current context this points to a need for networks of open and overlapping supervisory groups, not a hierarchical structure[75]. In short, it implies a new concept of democracy.

Further Insights into What is Needed to Create an educational System – and a Society – Which Innovates and Learns Without Central Direction

Parallel Organisation Activity

While many people have contributed to our understanding of how to create innovative, self-managing, organisational learning systems, the contribution of Rosabeth Moss Kanter[76] is perhaps of particular significance. Kanter distinguished between those features of an organisation that best facilitate its day-to-day operation and those that facilitate innovation (although the two remain crucially interlinked).

The features that facilitate innovation she called "parallel organization" activity"[77].

Kanter first noted that most innovation does not come from separate cadres of R&D specialists but from those who undertake the day-to-day work of the organization: It is *an integral and pervasive part of* the system involving everyone from lavatory attendants to managing directors.

The main requirements for effective "parallel organization" activity are that:

1. Time and resources are set aside for activities intended to result in innovation and improvement.
2. During that time people work in a non-hierarchical relationships. Innovation requires fluid networks of *ad hoc* working groups, forming and disbanding as needs change. These groups bring together a wide variety of people, and thereby facilitate the identification, development, and utilisation of normally unrecognized talents to create emergent climates of enterprise or innovation which harness a wide range of generally unrecognised talents. Whereas novel, potentially risky, ideas tend to be filtered out in hierarchies, flat, non-hierarchical, arrangements bring those with such ideas into direct contact with those capable of releasing resources. The arrangements make it possible for the organisation to capitalize on the insights of "coal face" workers instead of relying on "management" or an R&D department "to initiate new developments".

3. Managers and staff recognise the wide range of contributions that are necessary to carry out any kind of innovative activity effectively and assemble teams of people who contribute in very different ways to the exercise.
4. Managers and other staff identify those best able to undertake effective innovative activity, and channel the necessary resources to them. (Note that people's ability to succeed in such demanding, "risky", and adventurous activity is often unrelated to their ability to produce the formal paper "plans" so cherished by bureaucrats.)
5. There are opportunities to work with people engaged with similar problems, both within the organisation and outside it. Such collaboration generates new ideas and establishes and maintains a network of contacts to provide help and support when difficulties arise.
6. Staff are encouraged to form "political coalitions" with others outside their own organisation in order to find ways of influencing external constraints. In education, these include parental expectations, the sociological functions the educational system performs for society, the expectations of those who currently manage education, and the assessment procedures available.
7. There is access to R&D laboratories developing the required concepts, understandings, and tools, but in such a way that those concerned are able to initiate and take part in the research and development process.

We could well do with such developments within our "educational" system!

The Manufacture, Maintenance, and Pervasive Implications of, Hierarchy

In the work which followed the preparation of Figure 1 we focussed (as we have so far done here) mainly on the on the governance box in the centre of the diagram. More recently we have come to focus more on the right hand box which deals with the manufacture, maintenance, and role of hierarchy in society and the educational system in particular.

We have seen that one of the major functions of the "educational" system is to contribute to the manufacture and legitimation of hierarchy and that the need to perform that role drives out developmental activity.

But why is this so difficult to change?

Although we are still a long way from having an answer to this question it is important to summarise where we have got to and its implications for further work.

Bookchin[78] noted that many people, over endless millennia, had observed that hierarchical organisations are inefficient and unnecessarily destructive of both the lives of those who live and work in them and their habitats. Many of these people had also proposed, and in many cases introduced, and are still introducing[79] alternative arrangements and shown them to be viable.

He noted that a common feature of all these arrangements was, and is, that they are more "organic" in the sense that they have multiple and interacting feedback loops.

Organic systems – such as those that control the operation of the human body and those of other animals – have multiple, interacting, non-hierarchically organised, feedback loops. In the context of the whole, very little is organised via any kind of central organ such as a brain. And even the brain-nervous-system-system is dependent on millions of interacting experimenting and learning loops. What is more, these organic cybernetic[80] systems are *an integral part of the organism,* not something external to it in the sense in which modern

societal governance systems are, in some sense, added on to an already functioning system which has evolved or emerged "on its own".

But Bookchin observed that, at every choice point in history, societies had "chosen" to implement the more destructive hierarchical arrangements.

How does it come about that, currently, most people can see that the course on which our "civilization" has embarked is going to lead to our extinction as a species and, probably, the destruction of the planet as we know it. Yet we collectively continuously embark on ever more destructive arrangements.

At a surface level this is grounded in the need to create work which will afford an income which will grant access to what are most often deemed to be the good things in life (such as material possessions)… although it has repeatedly been shown[81] that quality of life is not dependent on these things.

This is justified by all sorts of myths such as "those who do not labour shall not eat". But most of the disbenefits which drive people to work have, as in the "benefits" system[82], been deliberately manufactured.

The work itself is senseless. It consists in mining the materials for, manufacturing, distributing, and disposing of material goods and services which contribute little to quality of life either directly (via employment) or indirectly via consumption[83] [84].

But the work is not only senseless it is also unethical because, as we have seen, it is destroying our habitat … which will in turn destroy us as a species … at an exponentially increasing rate.

So our social system has somehow created structures which operate to compel people to participate in that system even against their own better judgment. Thus those driven off the land by the enclosure of common land still did not choose to work in factories. On the contrary, it was necessary to create a further network of workhouses and legislation to compel the homeless to live and work in them.

This trend was well established many generations ago, and can be seen in the hierarchical organisations required to build pyramids but, in fact, it existed long before that. A few had somehow acquired the right to command the few[85]. This was generally justified using the fraudulent claim that they had special powers to intervene with the gods or the workings of nature for the common good.
How to understand this?

Most common-sense "explanations" are in terms of "human nature". Human nature is implicitly taken to include and a tendency trust and eulogise "authorities" …which turns out to mean those who have already asserted their authority in one way or another and exerted claims to be able to intervene with the gods and other natural processes.

But consider this. It is not so long ago that the fact that sailing boats crashed against the rocks was also attributed to the gods and people believed that the remedy was to be found by making sacrifices to those gods in ways ordained by priests.

This changed when Newton articulated the concept "force" and showed that it could be mapped, measured, and harnessed. Moving objects were no longer seen to be self-motivated ("animated") but pushed along by external forces. The forces acting on sailing boats could be identified, mapped, and harnessed to avoid the rocks and tack *against* the wind.

My claim is this: It is that the feedback loops … that is to say the social forces … portrayed in Figure 1 could be conceptualised, mapped, measured and harnessed in an analogous way. Nodes at which one could most profitably intervene could be identified.

Generalising, the network of forces which collectively comprise those operating within the box labelled "Sociological imperatives" (which we have now designated as having to do with hierarchy and, perhaps more accurately, "the forces of Thanatos"[86]) in Figure 1 could be mapped, measured, and harnessed. In reality, saying that they "*could* be" mapped, measured, and harnessed is altogether too weak. As I see it, it is vital to our survival as a species and the planet as we know it to do so.

In connection with "understanding the forces of Thanatos" it is vital to note that we have, in this very essay, offered three powerful illustrations[87] of the operation of what can be characterised as "Bookchin's Law"[88] operating as an extension of the operation of Parkinson's law[89] to the social domain. Bookchin's law may be formulated as follows:

> In any situation in which there is a surplus of labour, society is somehow compelled to generate huge systems, or networks, of hierarchically-organised senseless work. This both stigmatises and punishes (renders destitute) those at the bottom of the hierarchy (thereby compelling them to undertake the most degrading and menial tasks on which the system depends) and confers enormous benefits on those at the top. These systems are legitimised by a network of mythologies which support the high-sounding (moral) claim that they are specifically designed to improve the quality of life of the poor.

Lest the idea of mapping, measuring, and harnessing these forces sound preposterous. let me add that the preparation of systemograms like those discussed earlier … and their more developed brothers "dynamic systems models" … has already led to the demonstration, for example, that 94% of the variance in performance of individuals operating in designated roles in organisations stems, not from variance in the psychological characteristics of those concerned, but from variance in the systems context[90].

In short, sociocyberneticians have, at least partially, undertaken, in the social area, the Newtonion task of de-animating explanations of behaviour … this time in relation to explanations of human behaviour as distinct from the movements of inanimate objects.

They have contributed to the task of "turning psychology inside out".

Summary – and Some Conclusions

The basic thesis of this essay has been that both the formulation of "the problem" itself (ie to close one or another of the gaps that so many people are concerned about) and the "solutions" which appear to follow from such formulations are inappropriate.

In one sense, the basic problem is not to "close gaps" but to nurture, recognise, and utilise the wide range of talents that are available in the population. To do this it would be necessary to generate a paradigm shift in the way we think about the nature, development, and assessment of competence.

But, in another sense, this is *not* the most basic problem.

If we wish to significantly ameliorate some of the disparities, discriminations and degradations so many people are concerned about we need to begin somewhere else.

While it would be possible to ameliorate many of these problems a little by changing regulations (many of the problems were, after all, created or exacerbated by regulations re

e.g., national curricula and examinations, continuous inspection of schools etc.) such changes would, by and large, fail to address the pervasive and inter-related nature of the problems we have discussed in any significant way.

To generate the necessary network of changes it would be necessary to create a pervasive climate of innovation. To do this we would need to evolve new forms of governance … new forms of democracy and bureaucracy.

But this still would not engage with the most basic set of issues that have emerged in this essay.

The most important point that has emerged has been that what happens in the educational system is determined by a relatively invisible network of social forces which are primarily concerned with generating hierarchically-organised senseless work.

In other words, what happens is mainly determined by sociological, as distinct from man-made, laws. Indeed, the laws that "men" make are largely determined by these deeper laws.

Unless we map, measure, and harness the social forces involved we are doomed. They will not go away … any more than the physical forces of nature - e.g. the wind - will go away. Our only hope is to harness them.

Thus it is even more important to develop new thinking in this (sociocybernetic) area than it is to evolve new forms of governance, let alone new thinking about the nature, development and assessment of competence.

Pervasive, illogical, and unscientific thinking

But, if these are the main messages to be derived from this essay, they are not the only ones.

It emerges that, at every level*, the field is permeated by three fundamental scientific and logical errors.*

The first *is to interpret a correlation as evidence of a causal relationship.*

This is followed by a second, and in some ways more important error, which is to *use this interpretation as a basis for prescribing a single factor system-wide interventions.* All such prescriptions overlook the fact *that **single factor interventions in complex systems <u>always</u> have counterintuitive, and usually counterproductive, effects.***

Dramatic illustrations of these two errors emerged in every area from those arising from the correlation between years of education and employment, between parental behaviour and children's test scores, and between the test scores children achieved in their earlier and later years.

In all cases these misinterpretations have been used to justify massive authoritarian interventions which have devastating consequences for many of those involved ... and, indeed, for society itself.

The third error has been *failure to distinguish between the manifest (espoused) goals, or purposes, of a system and the functions that system actually performs*[91]. As Orwell observed, the latter are often the opposites of the former. Terms which mean their opposites pervade the policy area and render logical discussion virtually impossible[92].

The case for (i) encouraging critical thinking and challenging the widespread espousal of reductionist thinking (ii) encouraging (but not "teaching"!) more systems thinking and (ii) finding ways of stemming the rise of authoritarian individuals who lack the capacity for socially-oriented systems thinking in political systems and public bureaucracies seems overwhelming.

Practical Recommendations

Do I have any more specific recommendations?

To tell the truth, I am not at all sure what these are.

But here is some background to the observations I will make.

I start from the positon that we have to radically change the way we live if we are to survive as a species. We have therefore to abandon the goal of economic development which informs the writings of most of the authors and interventionists whose work we have reviewed – and especially those who wrote those reports on behalf of the Scottish Government.

I start from an acute distaste for, and disgust with, centralised command and control governance. This is a major contributor to the forces of Thanatos which are generating unconscionable divisions within our society and across the world and contributing enormously the forthcoming extinction of our species … probably carrying the planet as we know it with us.

I start from an acute distaste for the pervasive policies which assume that the way to help people who do not share our values is for us, for their own good, to subject them to compulsory re-education, torture, criminalisation, imprisonment, and, if all else fails, death.

I note that much can be accomplished by dedicated and persistent individuals but little through centrally prescribed reform programmes … indeed the work of these dedicated individuals is easily eliminated through the manualisation of procedures and the prescription of targets[93] i.e. through the de-professionalisation of the professions, understood as a requirement to exercise skill and judgment, especially in relation to moral issues.

I have noted that we need pervasive change in our thoughtways about "learning", competence, and appropriate forms of governance. Psychologists have a distinctive role to play in disseminating these alternative thoughtways, especially through their professional organisations.

To assist in this process I may offer a few catch phrases:

We need to move from

> **Making homes more like schools** to **making schools more like homes.**

> Understanding **teaching as telling** to **teaching as nurturing growth.**

> (a focus on) **content to** (a focus on) **competence.**

> Trying make **parents behave more like teachers to** trying to get **teachers to behave more like parents.**

> (a focus on) nurturing (and selecting) **"talent"** to nurturing **multiple talents** (ie, we need to move from a focus on identifying talented children to identifying the talents of all children).

> **The unqualified (unexamined) use of the word "learning"** to **always accompanying its use by a qualifier:** … learning WHAT? Learning *to* What?

Children are always learning *something*: the only question is **what**?

> So the first question is *what* are they <u>*doing*</u>*?* Only "ing" words are acceptable in answering this question: arguing, tolerating, perceiving, fighting, cultivating an image which will secure promotion.

We may note in passing, though it is not unimportant, that creating developmental environments is a demanding activity, very different from laissez-faire interpretations of "progressive education". It is a highly structured approach *directed toward goals which are very different from those most commonly pursued in schools.*

<div align="center">****</div>

Some other, more general, insights have also surfaced in the course of this essay.

These have included an emphasis on the importance of *comprehensive* evaluations and systems thinking in science more generally[94]. Failure to do so is highly unethical.

More specifically, there is a need for a greatly increased emphasis on the disbenefits conferred on individuals and society by current "educational" processes and policies.

Still more specifically, we need to move from our reductionist "scientific" models for thinking about processes and relationships to a more ecological model.

As a society, we need to make more effort to cater for diversity and, more specifically, the variety of values and competencies which exist in our society.

We need to make greater efforts to devise more appropriate governance systems … systems which encourage and reward experimentation, innovation, and learning – especially learning about systems – without central direction.

We need to recognise that the most important source of *in*competence in modern society is the inability and unwillingness to intervene *outside* the confines of employing and other organisations.

We need to forcefully attack the deeply embedded faith in, and myths about, hierarchy and promote the evolution of organically organised learning societies … ie societies which innovate and learn without central direction … and which operate in the long term public interest rather than the personal interests of dominators.

Appendix A
The Nature, Development, and Assessment of Competence

The nature of competence

In this Appendix I return to the task of (slightly[95]) elaborating our model of competence and the way in which its components are to be nurtured and assessed.

In the early 1970s we introduced the term "competence" to signal a need to move away from discussions couched in terms of knowledge, skills, and attitudes. Such discussions implied that it was possible to compile lists of the knowledge, skills, and attitudes required to undertake a particular job and then find out whether an individual possessed them. This framework typically avoided not only the question of whether the individual was motivated to bring such knowledge and skills as he or she possessed to bear on the task to be undertaken but also the question of what kind of task that individual might be strongly motivated to undertake: it might be more profitable to move him or her into a position where he or she could do that rather than select or reject him or her for a particular job.

On the basis of work already conducted in the motivational area[96], we felt that it was necessary to come at the question differently. The *primary* question had to do with motivation and then, not whether the individual possessed the requisite knowledge, skills, and attitudes in some kind of disembedded form, but whether he or she was inclined to engage in the network of cognitive, affective, and conative[97] activities required to undertake a particular kind of task effectively[98].

In the main essay, I mentioned a number components of competence (eg the confidence needed to undertake a particular activity, the tendency to anticipate obstacles, the willingness to persist and learn from the effects of actions), indicated that these things are relatively independent of each other, and suggested that they make cumulative and substitutable contributions to effective behaviour. And I indicated that, because these are not *general* predispositions of the individual in the sense that they pervade every aspect of an individual's behaviour, it is inappropriate to try to assess them except in the context of activities which the person concerned is strongly and intrinsically motivated to carry out. Instead of asking "How creative is this person?" one should ask "In relation to what kind of activity are they creative?" and so on. To carry out some activity effectively, one first needs to be strongly motivated to carry it out and then to bring to bear as many of these components of competence as possible. We refer to the activities which people who are both strongly motivated to undertake and able to carry out effectively as competencies.

This way of thinking may be made more concrete by reference to Grid 1.

GRID 1
A MODEL OF COMPETENCE

Examples of Potentially Valued Styles of Behaviour

	Achievement					Affiliation				Power	
Examples of components of effective behaviour.	Doing things which have not been done before.	Inventing things.	Doing things more efficiently than they have been done before.	Developing new formal scientific theories.	Providing support and facilitation for someone concerned with achievement.	Establishing warm, convivial relationships with others.	Ensuring that a group works together without conflict.	Establishing effective group discussion procedures.	Ensuring that group members share their knowledge so that good decisions can be taken.	Articulating group goals and releasing the energies of others in pursuit of them.	Setting up domino-like chains of influence to get people to do as one wishes without having to contact them directly.

Cognitive

Thinking (by opening one's mind to experience, dreaming, and using other sub-conscious process) about what is to be achieved and how it is to be achieved.

Anticipating obstacles to achievement and taking steps to avoid them.

Analysing the effects of one's actions to discover what they have to tell one about the nature of the situation one is dealing with.

Making one's value conflicts explicit and trying to resolve them.

Consequence anticipated:
Personal: e.g. "I know there will be difficulties, but I know from my previous experience that I can find ways round them.
Personal normative beliefs: e.g. "I would have to be more devious and manipulative than I would like to be to do that."
Social normative beliefs: e.g. "My friends would approve if I did that": "It would not be appropriate for someone in my position to do that."

Affective

Turning one's emotions into the task:
Admitting and harnessing feelings of delight and frustration:
using the unpleasantness of tasks one needs to complete as an incentive to get on with them rather than as an excuse to avoid them.

Anticipating the delights of success and the misery of failure.

Using one's feelings to initiate action, monitor its effects, and change one's behaviour.

Conative

Putting in extra effort to reduce the likelihood of failure.

Persisting over a long period, alternatively striving and relaxing.

Habits and experience

Confidence, based on experience, that one can adventure into the unknown and overcome difficulties, (This involves knowledge that one will be able to do it plus a stockpile of relevant habits).

A range of appropriate routineised, but flexibly contingent behaviours, each triggered by cues which one may not be able to articulate and which may be imperceptible to others.

Experience of the satisfactions which have come from having accomplished similar tasks in the past.

A variety of types of behaviour which people may be strongly motivated to undertake have been listed across the top of the Grid.

Down the side are listed a number of components of competence which, if engaged in, are likely to result in any particular activity being successful … but these components of competence cannot be identified, or even said to exist, in an individual unless some motive has been engaged. These components of competence include cognitive activities such as making plans and thinking about obstacles to goal achievement, affective activities such as enjoying the activity or anticipating the satisfactions which will come from completing a necessary but distasteful task, and conative activities such as exercising willpower, determination, and persistence[99]. In contributing to success in any chosen activity these components of competence operate cumulatively and substitutively. The more of them one brings to bear on the task, the more likely one is to succeed. They operate somewhat like the components of a multiple regression equation. More specifically, despite the beliefs about methodological rigour which preoccupy many psychometricians, they do not form an internally consistent "factor".

This version of the Grid is by no means complete and is intended for heuristic purposes only.

One way in which it is incomplete is that it lists only a few of the motivational predispositions observable in the population. For the sake of argument, one might say that there are perhaps a couple of hundred idiosyncratic concerns or motives that might be listed here. If this sounds like a lot, first consider how many elements there are in a table of chemical elements and then how species of animals are encompassed within the biological classification framework.

Our present impression is that there are many fewer cumulative and substitutable components of competence than there are potential motivational predispositions… just as the number of organs from which thousands of animals are constructed are fewer than the number of species. The task now is to formalise and extend the model.

The development of competence

It seems from our research that the processes that can be used to nurture competence are common across homes[100], schools[101], colleges[102] and workplaces[103].

Unfortunately, those discussing them repeatedly say that those involved are "learning" without qualifying the word "learning". And indeed they are learning. But the most important things they are learning are *not* the kinds of thing that the word most often conjures up in the minds of educators and psychologists … for whom it *means* mastery of *content*. It is almost synonymous with … interchangeable with …that usage. Indeed, it is not stretching the point to say that the word "learning" has been hijacked to mean this and only this.

Even Robinson, who goes out of his way to stress the importance of leaning *to do* things, manages to give the impression that the developmental environments created by the practitioners he describes are leading those involved to develop the specific knowledge and skills of e.g. the carpenter, actor, or hairdresser.

In reality, what those concerned are mainly learning to do is to identify opportunities, to observe, to learn from the effects of their actions, to monitor the reactions of their customers etc. etc.

The important thing is that they are developing these components of competence whilst doing things they care about. The key lies in finding contexts in which those concerned can discover things they care about and like doing and then, while doing these things, develop these wider competencies, experience the satisfactions which come from doing so, and have the value of those contributions valued by others.

Not only do these educators specifically set out to encourage their students to clarify what they like doing and are good at and then develop components of competence whilst pursuing those activities they *respond* to their students in such a way as to encourage them. In contrast to meeting out external "rewards" in the form of promotion or financial reward to "motivate" them, they reward them by helping them to find situations in which they can do more of the same thing!

Returning to the word "learning" itself, there are even more unfortunate consequences of restricting its use to meaning learning *stuff*. It allows those who use it to talk, in an unexamined way, about things like "the processes which promote 'learning'" and the conditions under which students "do not learn". What nonsense! Everyone is always doing *something* and in the process learning to do *something*. The only question is "What?"

Now here is an interesting observation made in the course of our evaluation of the Lothian Region Educational Home Visiting (EHV) project[104].

The project sent teachers, some of whom were mothers, into the homes of 2-3 year old children with a view to modelling mothering behaviours so that the mothers would come to engage more often in these behaviours themselves.

Some of the home visitors became acutely distressed. Why? In part because they became aware that they were unexpected intruding into homes in which the mothers had very different values and priorities from their own. But it was also because they found that they could not *respond* to other people's children as they would have done to their own children. They did not know their motives and so could not set out to harness them. They did not know how to interpret their gestures and body language and thus their reactions to what they were doing. *They did not know the child's interests and were unable to monitor development and intervene recursively.*

The point is elaborated by Gregory[105]. It appears that the New Labour government that took over Thatcher's proselytising prescriptive framework proposed to make it compulsory for parents to undertake, on a daily basis, activities prescribed by the school for each child. I do not know whether it happened, but the message is clear enough: The government knows best; schooling is good for everyone; success in a competitive hierarchy counts above all; and authorities are entitled to impose their views on all parents regardless of the variance in parents' and children's' priorities and the distinctive roles parents play in nurturing the competencies of their children.

Many parent's priorities are very different. The role of the parent (as articulated by some of the parents we interviewed) is to create situations in which children can do the things they are predisposed to do and, in the process, develop such qualities as creativity, the ability to tolerate frustration as a necessary component of effective action, the ability to find information for themselves, and learn from the effects of their actions[106].

The notion derived from our much earlier work in the 60s[107] – namely that parents are their children's most important *educators* – in the sense of behaving as above – has been corrupted into its opposite… parents are to behave like *teachers!*

Of course, some parents do disapprove of some of their children's motivational predispositions and set about trying to change them rather than seize them as opportunities to for their children to practice and develop important components of competence . In our study, some "working class" parents did *not* want their children to take an interest in books and do well in school even if those children wanted to do so and set about trying to stamp it out. If these parents did not do what middle class do-gooders thought they should do it was not because they did not know *how* to do so but because they did not *want* to do so[108]. They did not want their children reading ("goodness knows what he might come across poking about in books") or doing well in school (because they would grow away from them and neglect them in times of hardship). They wanted their children to learn to do others things … be strong and tough and stick up for themselves and distrust public servants … because these were perceived to be the qualities required to survive in the jungle in which they found themselves … and set about creating situations in which their children would learn to do these things.

By the same token, some "middle class" parents did *not* want their children to want to develop toughness and strength and the ability to stick up for themselves (or create mayhem) and were reluctant to harness such motives if they appeared as opportunities to nurture important components of competence.

But, in general, the range of motives nurtured, and talents developed, in homes is much wider than is common in schools.

If we widen this discussion to include the project work organised in the schools whose work was summarised earlier, in the course of the group activity that what Montessori described as "valorising", in the groups of adolescents whose capacity to develop their peer's competence is hinted at by Harris, and in the "parallel organisation" activity which Kanter has shown to be so important from the point of view of organisational change and development, what we see is that people are able to do, and learn to do, things they care about especially when the importance of those contributions is recognised as a vital contribution to the overall activity of the group.

Elsewhere[109] I have brought together these and other key features of developmental environments which it would not be feasible to discuss here as follows.

In developmental environments people:
- have opportunities to consider their values and resolve value conflicts in an open and supportive atmosphere in which their views, concerns, and decisions are respected.
- have opportunities to experience the consequences of behaving in different ways with the assurance that mistakes will neither bring ridicule at the time nor have serious negative long-term consequences.
- are encouraged to evolve, and practise, new styles of behaviour while undertaking activities they are strongly motivated to carry out.
- can think about their organisations and their society and come to understand and perceive these institutions (and their operation) in new ways that have marked implications for their own behaviour.

- are given (or can evolve) new concepts to help them to think about their behaviour, the world in general, and the consequences of alternatives.
- are exposed to role models--either in real people or in literature--that enable them to see, and share in, other ways of thinking, feeling, and behaving; to observe the consequences; and to try the behaviours for "fit." (Exposure to others whose behaviour brings satisfactions that one wants oneself is a strong incentive to engage in the behaviour!)
- are provided with support, encouragement, and help *when they make mistakes*. Under these circumstances, it is particularly important for colleagues to identify and encourage what was worthwhile in the activity and to refrain from threatening inquisitions into the causes of failure. Colleagues should, in particular, refrain from implying that they know better than the person concerned what he or she should have done. After all, the person who undertook the activity knew more about both the situation in which he or she was working and his or her own abilities and limitations than did the others.
- are encouraged by having their accomplishments recognised and commented upon.

The Assessment of Competence

We have seen that one of the main factors driving competence-based education out of schools and undermining it in homes, workplaces, and society more generally is the absence of means of giving people credit for the talents and competencies they possess. And we have seen that the current preoccupations of psychometricians are inimical to the development of appropriate measures.

The problem is that getting the information required to complete an extended version of Grid 1 involves either relying on external observation or, somehow or other, getting inside that individual's head.

Observer's ratings are heavily dependent on (i) the priorities of the observer[110], (ii) (as in undertaking analyses in chemistry) familiarity with the requisite theoretical framework (atomic theory in chemistry framework for thinking about competence here) and the kinds of probes that can be used to elicit the information, and (iii) the environment in which the observations are made – and, in particular, the extent to which that environment constitutes a developmental environment.

Most attempts to develop more "objective" measures than those achievable by observation and interview have met with scant success[111].

By contrast, despite their obvious faults, tools like the *Edinburgh Competency Grid*[112] and *Behavioral Event Interviewing*[113] have proved more successful than might have been expected. (It has, indeed, emerged that both Google and Ernst & Young have abandoned educational qualifications as a selection tool and substituted Behavioural Event Interviews[114].)

The difference between Behavioral Event Interviews and the notorious employment interview is that they focus on actual events in the interviewee's history (and what those events reveal about the interviewee's motivation and values) and the components of competence brought to bear in those situations.

OK. Not perfect … but note the problem.

Few traditional tests other than *g*, whether derived from general psychology or the school system, have much predictive validity outside the school system.

So, in reality, the choice is between competency-oriented structured observation and BEIs with all their faults on the one hand and traditional tests which have little construct or predictive validity or, worse, render most people's talents invisible[115] on the other.

In this context, Lester[116] has drawn attention to an interesting paradox.

It is commonly said that interviews and ratings are subjective whereas assessments of knowledge are objective.

In fact the reverse is the case.

It is impossible to find out what someone knows because that knowledge is vast and largely tacit (ie consisting of unverbalised knowledge [often located outside the brain] of ways of doing things). It is true that I can find out whether someone knows something I know (as in traditional educational attainment tests). But, in reality, such an assessment would be entirely *subjective* because it would be completely dependent on *my* choice of what content to assess. By contrast, what people *do* is, in effect, objective – there for all to see.

Thus the only difference between what is said to be subjective and what is said to be objective rests in the openness to public inspection (or otherwise) of the point at which the decision is made.

Which seems like an appropriate note on which to conclude this Appendix!

Appendix B

Early Intervention: A Worse Than Selective Review of the Literature

I started preparing this sketchy Appendix out of a sense of duty rather because I felt that I had anything particular to say … Except to ask this question:

> How has it come about that one small educational intervention programme accompanied by a misleading evaluation (out of the many thousand such studies that could have been cited to show that most early-intervention programmes do *not* work) has come to be cited in report after report[117] as justification for deeply intrusive intervention programmes?

But, then, as I re-read one of the reports on that study to make sure that my criticisms were justified, I came across the fact that, if I have correctly understood the statistics, as teenagers, virtually all the girls in both the experimental and control groups in the study had become pregnant, so, presumably, some of them were by now mothers, and all the boys had been arrested, many of them several times.

Now I ask you: Can a study conducted in the kind of environment revealed by such statistics really provide a basis from which to generalise about the need for, and nature of, intrusion into, for example, every home in which there are children in Scotland?

But, to return to my original question and write what I intended to write about the study in question, i.e. the High/Scope Perry preschool project conducted in the early 1960s and associated with the names of David Weikart[118] and Schweinhart & Weikart[119].

Over a period of 4 years, the study identified 123 low-IQ 3-4 year-old children living in poverty and randomly assigned them to an experimental or a control group[120]. Although more

exact figures are available in the report, I may, to simplify this discussion, round them up and say that this amounts to a total of about 30 children a year. That gives 15 in the experimental group each year. 4 teachers worked with each set of children … that's 4 children per teacher – and those teachers also visited the homes of every child at least once per week. Yep, by god, one would indeed expect some benefits!

Now, these are not exactly the kinds of numbers one would expect to find at the base of a study yielding conclusions that are being used to justify massive worldwide intrusive intervention to promote "success" in an "educational" system which is of enormous importance to those concerned.

But this is not all I have to say. From the point of view of commenting on the published evaluation reports, it is important to note that those in the non-experimental "control" group were not left alone … they knew they were part of a study and were subject to repeated interviewing and a heavy programme of testing.

As in other studies, the IQ and related benefits "washed out" by age 7.

But the school performance of the experimental group continued to improve relative to the control group. But ask yourself "why?" These pupils were more likely to be in regular classrooms and thus being taught the regular curriculum and subject to repeated testing from the project. They were therefore more likely to become test sophisticated. They were less likely to be designated as in need of "special education" and thus more likely to get jobs. The girls were slightly less likely to get pregnant and both boys and girls slightly less likely to get into trouble with the police.

Note the norm-referenced basis for all this. In norm referenced systems, if one goes up another comes down. That was exactly what emerged from the Scottish studies of remedial education mentioned earlier. So it is extremely unlikely that the seats in the special education classes of the Ypsilanti schools were left empty as a result of these children moving out. Other children would have been labelled as in need of "Special Education", moved into those seats, not taught the regular curriculum, failed to get school credentials, and, as a result, become less able to get jobs.

So we see, yet again, the significance of failing to implement *comprehensive* evaluations. No one sought to enquire into the *disbenefits* of the programme, especially to those who were in neither the experimental nor control groups of the study.

Instead we are treated to some somewhat fantastical conclusions to justify the programme. As with many misleading conclusions derived from playing with spreadsheets, these derive from the assumptions that are fed in and neglect of the norm-referenced nature of the criteria.

The money saved by not being in remedial education and prison is calculated. The gain to society of being employed is calculated. WOW.

But remember: the remedial education places were not left empty, the money was spent on someone else. The prisons were not left empty. If ex-pupils from the experimental group got jobs (and thus became less dependent on welfare) someone else did not.

And so the net gain to society was …….… zero!

And so to return to my question: Why has this small study, conducted in far from normal social conditions, and subject to incomplete and inadequate evaluation, come to be so widely cited as justification for worldwide massive intervention programmes relating to poorly conceptualised notions of "cognitive development" and educational attainment? And why has a parallel – and equally expensive and destructive – situation grown up in relation to promoting the (again misleadingly conceptualised and assessed) "ability to read"-- where, it emerges, that, despite a vast proliferation of "research", there is again not a shred of reliable evidence that the prescribed interventions (including ever-earlier attendance at school) work … apart from a single study of 54 pupils[121]?

My feeling is that the answer has to do with a pervasive human desire to be part of a crusade conducted from the high moral ground and, on this basis, exempted from a need to consider the multiple undesirable consequences inflicted on those affected[122]. One sees the same thing in the persecution of those who engage in behaviour which never did any harm to anyone but which have nevertheless been rendered compulsory or illegal. This includes criminalising and imprisoning people for watching "extreme pornography", in the crusades of Christians against Muslims in middle ages, in the persecution of aristocrats in the French revolution, the persecution of everyone in the Cultural revolution in China, the criminalisation of cannabis smokers and those taking LSD in the US and UK, the harassment of parents who do not follow the approved child rearing practices in bringing up their children, in the consignment of school rejecters to destructive schools "for their own good", and in the climate of hostility toward vulnerable people of all kinds that has grown up in our society.

It seems to me that the task of ameliorating, rather than reinforcing, this disposition is something that an educational system worth its name would seek to embrace.

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I turn now so to the formal (if somewhat nominal) task I have set myself in this Appendix.

However, I have to say by way of introduction that, from the point of view of developing a climate of innovation and learning based on experimentation and evaluation and from which evidence-based policies could emerge, the field amounts to nothing less than a heartbreaking disaster. It seems that millions, if not billions, of dollars and pounds have been invested in programmes which confer few benefits on anyone other than on those involved in generating proposals for, and obtaining funds for, interventions and their evaluations … and then implementing those vast programmes and evaluations.

The range of interpretations of "the gap" to be closed, how those gaps are to be closed, and how to find out whether those gaps have been closed boggle the mind.

The literature is vast. Even when I attempted to review it 1981[123] it was apparent that there is a vast array of models of intervention with widely varying objectives and evaluated in very different ways[124]. There were over 3000 publications relating to the evaluation of Headstart alone[125] [126]. A single evaluation of Homestart ran to 3000 pages and one of Follow Through to 20,000 pages. And the conclusions drawn by the three main reviewers of work in the area were utterly contradictory. Thus, whereas Mann et al.[127] concluded that, of 62 schemes selected for their quality, 49 showed a beneficial effect and only 13 did not, and Brown[128] came to the conclusion that the 13 that did not show an effect were unsatisfactory in one way

or another (thus concluding that there were *no* studies which did not deliver benefits), Hawkridge et al.[129] and McLoughlin[130] came to exactly the opposite conclusion. Hawkridge *et al* concluded that, out of over 1000 studies only 21 met a criterion of improved academic or intellectual functioning while McLaughlin et al.*,* after reviewing 40 "exemplary" studies which had at one time or another reported benefits, concluded that "at the outset (of this exercise) it was expected that a major proportion of the effort would involve reconciliation of different, but apparently valid, studies … this turned out not to be a substantial problem … the major problem was to draw *any* valid substantive conclusion from *any* of the studies."

My own conclusion was that *none* of the programmes, whether home based or not, had the effects which such authors as Bloom[131], Dave[132], Coleman[133] and others had led some of our colleagues to expect … and which, it would seem, huge numbers of psychologists, educationists, and public servants still expect[134]. I wrote: Although "the effects – if any – to be detected are so elusive and the methodological "defects" in the studies loom large ... there can be no doubt that the original (cognitive and academic) grounds on which such vast funds were poured into this area have been thoroughly challenged". And I went on to ask whether if, as the cross cultural (IEA) research reported by Peaker[135] and others in the early 1970s suggest, entry to school systems at any age up to eight makes no difference by the time children are eleven, there any good grounds for promoting *early* intervention anyway[136] [137]?

I have, somewhat unenthusiastically, sought to update these bleak conclusions by retrieving what seems to be a detailed review of research in the area published by Burger in 2010[138] and the chapters in the book *Combatting Educational Disadvantage* edited by Cox[139].

It appears that things have only got worse.

My reading of Burger's article is that, while "model" programmes *can* confer significant "benefits", most do not. A significant proportion do yield increases in "cognitive development" but have little effect on "closing the gap". "Cognitive Development" is operationalised as performance on attainment tests. Potential benefits like avoiding assignment to special education or being held back a grade were studied in so few studies and so badly assessed that no conclusions can be drawn.

In his own words

> Early learning opportunities appear to enhance children's capacity to learn which might improve their later elementary school performance. By providing social and cognitive experiences, preschool programs supplement the home environments of children. They create a familiarity with (pre-) school institutions and procedures which might facilitate the formal schooling later on.

Note, first, the constricted use of the word "learning" and its encapsulation into the notion of "capacity to learn" and, secondly, the circularity of the argument: school learning may promote school learning[140]. Wow.

So much for that!

In a wider context, however, it is important to note that the concept of "disadvantage" has changed dramatically over the past 50 years (that is to say, since we collected the social survey data[141] that Peaker related to school achievement in such a way as to lead the Plowden

committee[142] to highlight the importance of home background). In the late 70s the problem was largely seen to inhere in disadvantaged socio-economic conditions or in the needs of children who had difficulty coping with schools. Today, as Tomlinson [143] has argued, those concerned with school failure or success first came to be preoccupied with the role played by the cultural background of migrants and then with the way in which government policies offering a choice of school which, when associated with league tables and the competition which results (through a process they categorise as a market process) have, through geographical migration among other things, generated huge differences in the socio economic backgrounds of the pupils they cater for and the cultures of schools themselves. The attention of researchers and administrators has shifted from disadvantaged children to "ineffective" schools[144].... to be fixed by prescription, manualisation, inspection, and more high-stakes testing.

In reviewing this literature, I myself have continued to be shocked at the pervasive failure of these high-status researchers to question the false assumption, based on the observed correlation between academic qualifications and the ability to get jobs, that if everyone gets more education (of more or less the present type) we will all get jobs and economic development (the desirability of which I question in itself) will ensue. The fact that many pupils do not *want* these "middle class" jobs, still less to compete at largely meaningless "academic" tasks, to get them. Hardly any of the evaluators attended to the requirement that, to be acceptable, evaluations must be comprehensive. What *damage* do these seemingly highly effective individuals and schools do to some of their pupils and society, especially in the long term? It is possible that much of this oversight is the result of the previously discussed process whereby the way in which research funding is allocated contributes to the collection of policy-based evidence rather, as is claimed, evidence-based policy. But this does not entirely relieve the individual researchers of some responsibility.

The statement that parents are their children's most important educators is echoed everywhere … but usually interpreted to mean that parents should do more of what schools do rather than the reverse[145] [146]. Although some parents who value things like reading and school success do do, and specifically set out to do, things which promote these developments[147], these are often not the things on which psychologists and educational researchers tend to focus … and those researchers also overlook the things parents do to nurture the other, and more important, competencies that they and their children value. (In reality, it would be impossible for them to study these things without adopting a descriptive, category-based, framework of the kind used in biology [in place of the current variable-based] for thinking about individual differences and an ecological framework for thinking about their interactions[148] [149]). And those promoting home intervention overlook the damage they do to parenting by trying to force parents to do the kinds of things they recommend. There is, in these studies little recognition of the dilemmas that parents and administrators face. There is, for example, no discussion of the "middle class mothers' dilemma". These parents *know* that, in many ways schools are bad for their children … and some of them in particular. They know that schools are not doing the things they would like them to do. But they also know that the name of the game is to accumulate certificates which will buy entry to jobs. As Goodlad showed so dramatically[150], when the chips are down, they opt to have schools focus on academic qualifications. And here is another one. In the course of a huge and competent assessment of the effects of "follow through", in which the RPM was used as an *outcome* measure, Stallings and Kaskowitz[151] showed that the more schools went in for "open education" the greater were the increases in *Progressive Matrices* scores. But there was a catch. Reading Writing and Arithmetic scores declined to an equal and opposite extent

Although it has, very surprisingly, not arisen in connection with any of the studies I have reviewed here, there is one last issue to which it is important to draw attention

One would have imagined that at least some of these studies would have set out to document the *relative* gains of more vs less disadvantaged or more able vs less able children *on the same test.*

But I have not come across any in this area.

I have, however, come across them in other areas, such as among those who have sought to assess the differential effect of mixed ability vs ability-streamed teaching on "academic" performance and those which set out to assess the differential effect of one training or intervention programme or another on the gap between the RPM scores of more able vs less able students.

Nothing could appear to be easier.

But that is far from being the case.

It is easiest to illustrate the problem in relation to use of tests with low ceilings.

Such tests would (obviously!?) be unable to record the extra-high scores that the more able pupils might have obtained under certain conditions … such as being grouped for teaching purposes with other high achievers.

Obvious. *Not*!

In fact, the problem is pervasive.

Thus some researchers have claimed that the programmes they have devised raise the RPM scores of low ability students more than those of high ability students.

And indeed, if one looks at the raw-score differences that is the case.

Yet the result is an artefact which stems from what may be regarded as a defect in the construction of the tests themselves.

When expressed in Item Response Theory terms, there are bigger gaps between the difficulties of the items making up the easier compared with the more difficult sections of the test.[152] [153].

As a result, a given *change* in ability shows up as a bigger jump in the raw scores of the less able compared with the more able.

This problem is pervasive and much more serious for "Likert-type" tests designed to measure qualities like depression and internal/external locus of control (which make no pretence of conforming to Guttman/Rasch/IRT criteria) than it is for attainment tests.

Collectively, all tests the items of which do not increase in difficulty in regularly and equal steps – i.e. all tests not yielding interval scales – can be designated as having "arbitrary metrics"[154]. Equal raw score differences at different parts of the scale – ie at different levels of total score – do not mean the same thing.

But this is not the only way in which the measures chosen for use in evaluation studies tend to be arbitrary in ways which render them unfit for purpose.

Kazdin[155] has shown that they tend to be arbitrary in a way which is even more relevant to the evaluation studies discussed in this Appendix.

Kazdin takes the problems that arise in the evaluation of psychotherapy to illustrate the problem.

Here, patients, like the pupils involved in the "river" project described earlier and students involved in the kind of individualised competence-orientated programmes studied at NELP[156], may change in many different directions. One participant may react, change, in ways that are very different from the ways other participants change. What is more, each individual my change in many different directions. He or she may become more confident and capable at doing some things whilst becoming less confident about doing other things. Unless the evaluator has endeavoured to mount a comprehensive evaluation … that is to say, if he or she has employed a short (arbitrary) selection of off-the-shelf "measures" to assess the outcomes … this information will be lost and the resulting evaluation misleading, indeed unethical.

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Endnotes

[1] Jencks et al. (1972)

[2] Bernstein (1971)

[3] Bookchin (2005/1971)

[4] The *Raven Progressive Matrices* tests are widely used to measure one component of Spearman's **g,** namely *eductive* ability – the ability to draw meaning out of confusion.

[5] At that time this was a local authority area near Glasgow.

[6] It would seem that, at least as far as the socio-economic situation is concerned, little has changed. In a recent lecture Stuart Walton observed that "... a ten mile stretch of the M8 (the motorway from Edinburgh to Glasgow) runs through the most deprived area of Europe".

[7] Raven (1981 RPM)

[8] To quote from the Scottish Government's **Children and Young People (Scotland)** Bill

> "As set out in the *Government Economic Strategy,* two of the key elements in delivering an **economically successful Scotland** are learning skills and wellbeing, and equity. Scotland's first Skills Strategy, *Skills for Scotland,* highlights that the early years of a child's life lay the foundations of **skills for learning, life and work** and have a major bearing on wider outcomes including **employment**. The Nobel Prize-winning economist James Heckman has set out an economic case that shows the rate of **economic return on early years investment is significantly higher than for any other stage in the education system**.

> "The recent OECD review of quality and equity of schooling highlights the huge influence of social circumstances on **educational attainment** in Scotland. Other UK research highlights that the **home learning environment in the early years is the largest factor in attainment and achievement** at age 10, bigger even than the effect of pre-school and primary school. The Millennium Cohort Study provided evidence of significant inequalities in development at age 3 that can persist throughout people's lives. Supporting parents to provide a stimulating and supportive home environment, particularly in the early years, combined with high quality pre-school and school education is therefore a key element in delivering **solidarity and cohesion** and improving **participation and productivity** within the Scottish economy."

These observations prompted the Scottish government to mandate the appointment of a "named person" … i.e. a person named by the state … to intervene in every home in which there are children under 22 years of age. Justified on the basis of offering every family a "first point of contact" with the plethora of "care" agencies nominally available to "help" families and children, the Bill actually provides for the state to appoint a single state servant "to ensure the well-being" of every "child" under 18. That person will have access to all family health, criminality, and educational records. He or she will be required to visit the family to undertake hour-and-a-half long assessments 11 times, 8 of them in the child's first year and 3 more between 13 months and 5 years. In the course of these visits he or she will monitor, not just the health and development of the baby, but also a range of aspects of parental attitudes and family life, including finances and mental health. The assessments include two sets of tightly-printed 16-page Questionnaires … one relating to the child and the other to the parents. The selection and wording of the questions is permeated by "middle class" thought-ways, biases, and values, embody unquestioning endorsement of the doubtful benefits for all children of the so-called "educational" system, and acceptance of the misleading popularised interpretations of the (actually meagre and mostly seriously flawed) research into the "importance of the first three years" from the point of view of promoting "cognitive development" (operationalised as performance on academic attainment tests). Under the legislation (which has, perhaps been somewhat amended as a result of legal proceedings), the "named person" has/would have the right to initiate procedures to compel parents attend parent-"education" courses and, in the last resort, take the children into care and send the parents to prison for failing to follow state-prescribed guidelines. (As an aside to illustrate what we are getting into here, it may be mentioned that the questionnaire for adolescents requires the named person to assess whether the young person has, along with a positive attitude to school, "appropriate attitudes towards his/her sexuality"… One shudders to think what happens if the young person is deemed by the named person - who is unlikely to be familiar with, or accepting of, the range of human sexual behaviour revealed by Kinsey (1948, 53) and others - not to have appropriate attitudes to either of these things.)

[9] See Appendix B for a critique of the research on which this claim is based.

[10] For the disbenefits see the film *I Daniel Blake* and Webster (2016).

[11] Although it is a major digression here, one might also wonder whether a study of the Scottish *Modern Studies* curriculum would help the public servants and citizens of the area that was once Monklands to develop the competencies and understandings needed to undo what appears to be an institutionalised climate of hostility toward, and harassment of, the vulnerable that has come to pervade our society … I mean a pervasive climate of hostility toward, and harassment of, "failing" children in schools, struggling parents, failing "health care" systems, "migrants", asylum seekers, the mentally ill, "benefit" claimants, and those who, through some minor misdemeanour, have either been criminalised (like 1 million cannabis smokers[Nutt https://www.youtube.com/watch?v=MRLXt1oIsqI&t=2741s]), or threatened with, criminalisation. (Bear in mind that a "criminal record" follows one throughout life bars one from access to many meaningful types of employment, and in this way contributes to unemployment, quest for "benefits" and destitution.). (By the way, it is well worth looking at Webster's (2016) research documenting the progressive manufacture of destitution among those seeking "benefits"). Perhaps more pertinent to our discussion of ways of "closing the gap" consider the way in which the Scottish *Children and young people Bill* sets about identifying "failing students", "school rejecters"*,* and their parents and subjecting them to compulsory and punitive re-education and "remedial" courses which conflict with their values, drain their energy, intrude into their "leisure", and drain their finances.

[12] MacPhearson, J. S. (1958), Hope (1984), Deary et al. (2004, 2005).

[13] Maxwell (1969)

[14] I elaborate on this point later. Here it is sufficient to note that the observed correlation between level of education and success in gaining employment does *not* mean that "if we all get more education we will all get jobs". If, as is the case, we are dealing with a norm-referenced system, requiring everyone to stay in the so-called "educational" system longer simply means that everyone has to run harder to get to the same place.

[15] Kohn (1969/77), Raven (1976 PM&V)

[16] Raven (1976 PM&V)

[17] Who are, of course, mostly those who liked school and owe their jobs to their success there.

[18] Which, as we shall see later, lack construct and predictive validity outside the school system.

[19] Raven et al. (1985 OTPC), Taylor (1974,76), Montessori (1948/2007), Robinson & Aronica (2015)

[20] Raven (1997 CIMS), Spencer & Spencer (1993), Schon (1983)

[21] That is to say are endorsed by the vast majority of parents, teachers and employers [Raven, 1977, 1994; Wilson, 1973; Goodlad, 1983; Flanagan, 1978; De Landsheere, 1977; Gow et al., 1980; Johnston, 1973)].

[22] This way of thinking about competence, talents, and abilities is formalised in Appendix A.

[23] Sperry (1983)

[24] "Thinking" in the context of how to run a company may not be the same thing as thinking in the course of interacting with a block of wood to craft a previously unimagined sculpture.

[25] See Footnote C (check) and appendix A.

[26] As will be elaborated below, most work in modern society is senseless in the sense that it is concerned with the production and distribution of products (junk foods, junk clothing) and services (junk "education", junk health care, junk defence) which contribute little to quality of life. Unfortunately, the work is not merely senseless: It is both unethical and deeply destructive. The mining of materials required for, manufacture of, distribution, and disposal of the goods involved is contributing to the destruction of the soils, seas, and atmosphere at an exponentially increasing rate. And the living and working arrangements of those involved in their production are, especially when the lives of those living in the "third world" are taken into account, deeply destructive of people's health and wellbeing. On the other hand, this work often provides opportunities to be creative, exercise power, engage in conversation etc.

[27] This thesis is developed more fully in a book chapter entitled *Intelligence, engineered invisibility and destruction of life on earth* (Raven, 2008 IED).

[28] Robinson and Aronica (2015)

[29] Sahlberg (2015)

[30] Mortimore and Whitty (2000)

[31] In addition to numerous individual projects (e.g. Adams, 1981; Burgess & Adams 1986; Berlak et al., 1992; Dockrell, 1988) there have been major government-sponsored attempts to broaden the basis of educational assessment. These have included the 20 year long work of the Schools Council's Examinations Committee which resulted in the Waddell report (1978) and the parallel Irish enquiry into the Intermediate Certificate

Examination (Andrews, 1974). The individual pilot studies conducted as part of these projects sank without trace while the effects of the reports were neutralised by "invisible" government intervention. The most extraordinary of the latter being the way in which the recommendations of the Schools Council enquiry were subverted by the anonymous insertion of a single sentence into their recommendations after they had been signed off by the committee. Whereas the committee had argued that pupils had a wide range of abilities and talents that could be nurtured by schools and that society needed these talents so that the examination system needed to offer a wide range of levels, methods, and modes of assessment the effects were entirely neutralised by the anonymous insertion of a single sentence which read "The results will be expressed on a single scale of seven points in a subject area." This, of course, trapped the system back into single-factor hierarchical thinking. For a fuller account of this process see Chapter 7 in Raven (1994).

[32] Schon (2001)

[33] Au (2008)

[34] Actually, there was more than one class and a composite picture was formed for presentational purposes.

[35] Raven, Johnstone and Varley (1985 OTPC). However fuller and more accessible discussions are available in Raven (1994 and 2012).

[36] 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.

[37] Again this is a composite.

[38] 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 officers manage 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.

[39] Lees (1996)

[40] 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).

As an aside at this point, I feel I have to say that I am not really a Robinson fan. Here are some reasons why: Robinson argues that young children are avid learners without challenging the use of that word. Despite his emphasis on tacit knowledge … unverbalised knowledge of how to do things … he fails to note that the children involved in the activities he describes are mainly learning *to do* various things – to fight, to manipulate, to persuade, to lie, to deceive, to balance, to think, etc. These are learned in relation to particular contexts and may not generalise. The children may learn how to think about various puzzles … but does this generalise to thinking about social problems? About how to put people at ease? Is thinking in relation to such things the same *kind* of thinking, anyway? They learn to *invent* … and test out through action ... alternative ways of persuading, jumping over hurdles, etc. Yet he seems to imagine that, when not doing these things, these pupils and students are not learning to do anything. My point is that they are *always* learning *something.* The only question is *What?* Are they inventing better ways of tolerating boredom?

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

[42] 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.

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[43] 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.

[44] Harris (2006)

[45] In reality, there are shockingly few studies of mothering behaviour … i.e. of what mothers are about and what actually goes on in homes. Most widely held beliefs about such things as the "lack of stimulation" in working class homes are myths derived from backward projections observations made in schools. Just as the home visitors involved in the home visiting project we studied (Raven, 1980) observed, and researchers like Tizard & Hughes (1984, 1986) confirmed, these assertions are often without foundation or are a product of constraints outwith the mothers' control. Nevertheless, the ends to which mothers' child-rearing behaviour – such as "cognitive stimulation" – may be applied can be very different from those of middle class parents … and those who find their way into bureaucracies prescribing remedial programmes in particular. Thus the top priority for the low-socio-economic status mothers we studied was that "their children should really need them", which sounds, and is, very different from what it is generally assumed they would or should be. Just to be absolutely clear, Tizard & Hughes wrote: "… the conversations in the working-class homes were just as prolific as those in the middle-class homes. There was no question of these children 'not being talked to at home' and few signs of language deprivation …We became increasingly aware of just how rich this environment was for *all* children..."

[46] Bronfenbrenner (1974, 1975, 1979)

[47] See discussion under *Comprehensive evaluation and its implications* below.

[48] Such narrow and misleading evaluations are partly a product of a research funding process which corrupts "evidence based policy" into "policy based evidence". Most research is now funded through a process whereby researchers respond to government "Calls for Proposals" which prescribe the precise issues to be investigated and how the questions to be investigated are framed. Thus the selection processes through which government agencies select the research to be funded enable them to avoid funding research to investigate things those concerned do not want to know about. And the terms of the contracts frequently explicitly forbid the researchers from pursuing issues other than those laid down in the Call for Proposals. They also require the researchers to get government approval for anything they wish to publish. The process thus results in research which may be said to have been "designed" to get results which support government perceptions and policies rather than the kinds of open-ended research which might offer a basis for alternative policy proposals. The effects are further exacerbated by publication process which requires researchers to submit their proposed publications for peer review. Such peers are reluctant to agree to publications which challenge the conclusions they have drawn from their own research … and on which their careers depend. The most notorious examples of this process are to be found in the U-tube videos posted by Nutt, e.g. https://www.youtube.com/watch?v=MRLXt1oIsqI&t=2741s. But it is also evident from the way in which studies and discussion of the wider goals of education have virtually disappeared from the educational research literature since the early 1980s … which coincides with the introduction of the national curriculum and continuous testing via standardised tests. School effectiveness (and its assessment) has come to mean that and only that.

[49] Andersson & Strander (2004)

[50] In reality, their conclusions are based on a huge amount of earlier research. Goodlad (1983) found that only English and Mathematics were considered "important" by more than two-thirds of high school students in the US. Unfortunately, even this rating/expectation is based on a false hope because students will forget much of what they have been taught within two years. School subjects are also boring: only Arts, P.E., and Languages were rated as interesting by more than one-third of those taking them. These results again correspond to the results of studies which have been carried out in the UK (Morton-Williams et al., 1968), Belgium (De Landsheere, 1977), Ireland (Raven et al., 1975 a & b; Bill et al., 1974) and Scotland (MacBeath et al., 1981; Gow and Macpherson, 1980). More than half of the adolescents we interviewed rated more than half of their subjects *both* boring and useless. Very many students indicated that, even when students rated subjects "important", it was only the certificate conferred that was important; the *content* was unimportant. More than half wanted schools to do more to achieve more than 90% of the objectives we asked them about and this was especially true of objectives like helping them to identify, develop, and get recognition for their own particular talents. In short, while content-oriented education is a waste of time (apart from conferring certificates which will buy entry to jobs) competency-oriented education would be a great boon.

And the pattern continues when one looks at ex pupils. Bachman et al. (1978) first asked whether the results just reported merely reflect adolescents' tendency to complain. To their surprise they found that, whereas only 13% of adolescents at school said they had had opportunities to identify and develop their talents, the proportion of young adults who said they had been able to do this at work was 80%. Most of the employed adults we interviewed said that, at school, they had not learned things which were useful in their jobs or in their leisure (Raven, 1980 PT&C). Although a significant proportion of those in middle class occupations said that their education had helped them to get a good job, working class people did not even derive this benefit from their education.

In two of our own studies (Raven, 1977, 1980), and in Flanagan's (1978) study, ex-pupils were asked to identify the benefits they had derived from their education. Only a small proportion were able to report *any* benefits - but those they did report involved the development of high-level competencies like leadership. Yet, where these qualities had been developed, it was chiefly whilst they held positions of responsibility as prefects or in clubs and societies. A similar conclusion emerges from the work of Collins (1979) and that of the Centre for Educational Sociology in Edinburgh (1977).

Both Bachman et al. (1978) and Flanagan and Russ-Eft (1975) found that many ex-pupils founder around in the job market until, if they are lucky, they are able to find niches in which they can develop and use their own particular talents, that is to say, until they find niches in which they can develop and use the kinds of talent nurtured in the schools we discussed earlier and those showcased by Robinson.

It is often claimed that schools have changed since these data were collected. Certainly numerous papers have been written and endless administrators' and teachers' time has been devoted to talking about change … and it is even possible that things changed one way and then back again (perhaps as a result of government prescription and high stakes testing). But remarks which permeate the writings of Robinson & Aronica (2015) suggest that things are, in general, pretty much as is they were … and this impression is, indeed, reinforced by the speed with which one much trumpeted reform programme succeeds another … which can only suggest that the last attempt to change things has failed. These observations are confirmed in Denvir's (2014) article *School is even more boring than when you were there* and by conversations with my grandchildren.

[51] Raven (1977 SR), which summarised results from research we had undertaken over the previous 20 years. Going beyond Andersson, however, we were able to show that school rejection was little related to IQ or socio-economic background. But it *was* strongly related to both the level and, indeed, the specific type of job those concerned expected to enter.

[52] Dunleavy et al. (2012)

[53] Although the following discussion focuses on the damage the so-called "educational" system inflicts directly on the bottom third, one should also perhaps comment on the damage done to society … and the bottom third of pupils in particular … by the top third. For example, it is the top third, who have no experience of what it is like to be in the bottom third, who draft the regulations controlling the lives of the bottom third – and their education in particular.

[54] In reality, *most* pupils are damaged by the system in the sense that it does not enable them to discover and gain recognition for their most important talents. What is more, society as a whole, and everyone in it, is/are unbelievably damaged (see Raven, (2008 IED) by the way in which the so-called "educational" system operates to render invisible, and thereby discourage the development of, the multiple talents needed by organisations and society.

[55] e.g. via mandatory Standardised Attainment Testing (SATS) in English schools and their equivalent in Scotland.

[56] See (Raven, 1991 TI). While the tests do have strong predictive validity within the school system they have little predictive validity outside it (see Schmidt et al., 2016). How could things be otherwise? Formal knowledge of this kind has a half-life of a year (in that, unless it is rehearsed, students forget 50% after one year, another 50% of the remainder in next year, and so on indefinitely). The snippets of knowledge assessed fail to sample the domain of knowledge implied by the tests' names (how could it be otherwise given the knowledge explosion), is mostly out of date when it is taught, and does not relate to what the pupils will need to know in the future.

[57] Maxwell (1969), Hope (1984), Wolf & Jenkins (2014)

[58] Webster (2014, 2016)

[59] The references to this and other studies will be found in endnote 46 (check).

[60] Sahlberg and others have argued that this preoccupation was attributable to those promoting the "neoliberal" agenda.

[61] These spoils could, of course, not only have been achieved but both greatly exceeded and more widely available through collective social change.

[62] In reality, the claims the proponents of these studies made when seeking funds (such as that they would facilitate the identification of effective teaching practices) were entirely fraudulent. In the first place, the tests failed to cover the full range of desired and desirable and undesired and undesirable outcomes of the educational processes supposedly being studied. That meant that they could not, in reality, identify the genuine benefits that some systems conferred and the disbenefits conferred by others. Secondly, the methodology used to construct the tests meant that, even within the limited range of outcomes studied, the tests *could not* reflect most of the effects of alternative curriculum content or teaching process: This was because the tests had to be constructed to "work" – ie yield sets of items which would "scale" according to Item Response Theory (AKA "Rasch" scales) – in *all* the countries involved. Items which would have reflected the idiosyncratic benefits of particular curriculum content and practices were thereby eliminated. That meant that *could not* identify processes that were particularly effective or ineffective in ways on which those who designed them had chosen to focus. Little attention was paid to assessment of the differential social contexts in which different practices were implemented. Yet it is commonplace to find that what appear to be the differential effects of alternative practices are, in fact, reflections of the different contexts in which those differentiated practices were implemented. In this context, it is of more than a little interest to note that, in generating an explanation of the Finnish PISA results, Sahlberg (2015) devotes virtually his entire attention to a discussion of the social context. Maybe this suggests that Finland has somehow become permeated by the kind of pervasive climate of innovation and initiative that McClelland discusses in *The Achieving Society* and related publications

[63] For example, as we ha ve seen, measures of "reading ability" fail to pick up many of the kinds of reading people employ in everyday life, and measures of "scientific ability" fail to measure the competencies of the scientist instead of the short-term ability to recall tiny snippets of mostly out of date information. And such authors as Schmidt et al. (1998, 2016) have shown that scores on these tests rarely predict performance at anything outside the school system. A fuller documentation of these claims will be found in Raven (1991 TI). See also Baker (2007).

[64] See the 12 volumes of the 6-subject study conducted by the International Association for Educational Evaluation (the IEA) in 26 countries. (See e.g. Peaker (1975), Walker (1976).

[65] See Wikipedia PISA entry and e.g., OECD (2014) reporting some results from one of the PISA (Programme for International Student Assessment) projects. And see Bautier (2007) and Bonderup (2007) for minor critiques of these tests.

[66] Hattie (2009)

[67] But see e.g. Raven (1994, 2012)

[68] The word "autopoietic" implies a system which is, in some sense, self-organising, self-reproducing, and self-extending. The problem with the term "self-organising" on its own is that it is frequently taken to absolve the user from the need to explain how the process works. What we have seen here is that the "self-organising" processes of the educational system involve a whole series of mutually reinforcing and recursive feedback loops both within the educational system itself and in its interactions with the wider society.

[69] See, e.g., Shiva (1998) for a fuller discussion.

[70] In reality both of these observations illustrate the, actually horrendous, pervasive and pernicious effects of neglecting systems thinking in policy making and science. These are discussed more fully in Raven (2016). 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 test alternative ways of thinking about things. Combined with the previously mentioned pervasive predisposition to believe that one has a right to impose what one believes to be good and right on others by force – and regardless of most of the consequences for people who embrace alternative values – the process leads directly to the emergence of what are, in effect, fascist policies and, in the end, Fascist regimes.

[71] It may be useful to give another example of the effect of neglecting systems thinking in "management". To many people it seems obvious that the performance of systems can be improved by setting "targets". In reality, the setting of "targets" always makes things worse. This is because they deflect people's attention away from the goals the system was intended to achieve and the multiple things which would need to be done to achieve them and instead lead them to invent ways of meeting the mandated targets without doing what would actually need to be done to achieve the system goals effectively. (See e.g. Spearman (1927), Deming (1980), Kohn (2000), Seddon (2008), Campbell (1979).

72 The amount of research needed to develop the understandings and measures needed to move toward comprehensive evaluations cannot be over-estimated. There are no agreed conceptual frameworks for thinking about and assessing multiple talents and high level competencies in general, let alone how they are to be nurtured (see Raven, 2014). Actually, finding ways to handle these problems requires a paradigm shift in ways of thinking about the nature of competence, measurement, and science in psychology and education. The dearth of conceptual frameworks and tools to think about and assess the outcomes of social processes, and thereby to move toward evaluations that are more complete and comprehensive than those employed in "economic" and market evaluations, is staggering. It follows that one of the responsibilities of our public servants must be to make appropriate arrangements for the conduct of this problem-driven (as distinct from literature-driven) adventurous research. (Note that such research will challenge the paradigms of those who currently control the funding and evaluation of research.)

73 There are, in fact, even more fundamental problems to be addressed by the scientific community than those discussed in the note above. Some of those involved in the degrowth movement have suggested that there may even be a fundamental problem inherent in the very way of thinking we have followed here. To ask "How is it possible to view those sleeping rough in the streets as making a positive contribution to society?" already traps us into evaluative terminology. Maybe we should merely accept difference without implying any valuation or judgment. How is it possible to even think about and describe communities (e.g. "flow" cultures) which, at least on the face of it, appear to function in this way? This is perhaps a more extreme version of a problem that has bothered me for years. I have found it almost impossible to communicate what I understand people in working class communities are telling me about their values and priorities to middle class researchers. These researchers at first question the meaning of the words my interviewees have used in such a way as to make them appear to be nonsense. And, if this in itself is not sufficient to prevent them hearing what is being said, they move on to saying "but, even if you are correctly conveying what they have said, they *should not* think like that". As I see it, this is only the beginning of the problem. In what terms is one to discuss what it feels like to live in, and how one views others in, a "flow" community – ie in a community in which there is no discernible hierarchy or religion – that is to say in a community like those that keep emerging in places like the Himalaya. We have no words or framework in terms of which to talk about them. Yet, if we are to survive as a species, our problem may be precisely to live in ways which correspond more closely to those found in these communities.

74 Mill (1859/1962)

75 More fully developed in Raven (1994) and (1995).

76 Kanter (1985)

77 Note that Kanter's research was not confined to private-sector organisations.

78 Bookchin (2005 [1971; 1991]) [summarised by Raven. (2008)].

79 Recent books on non-hierarchical organisations include Erdal (2008), Goldratt & Cox (2007), Johnson & Bröms (2000) and Semler, R. (2001).

80 Cybernetics is the study of the, mostly invisible, guidance and control systems in animals and machines. It is important to mention the animals because they are managed by organic, non-hierarchical, systems with multiple interacting and mutually influencing feedback loops, including many operating outside the nervous-system. So *socio* cybernetics becomes the study of the hidden systems which control the operation of society and the design of better ones.

81 Bookchin (2005/1971), Graeber (2013), Marks et al. (2006), Lane (1979, 1991), Inkeles & Diamond (1980)

82 Webster (2014, 2016)

83 Marks et al. (2006), Lane (1979, 1991), Inkeles & Diamond (1980)

84 On the other hand, as a colleague has pointed out, it does often provide opportunities to experience other satisfactions, such as the opportunity to be creative or inventive … even in relation to such things as organising strikes and disruptions … to feel important, to have one's talents recognised (cf. "education"), to socialise with others. One would like to believe that it is these things that drive the system! Indeed finding ways of satisfying these needs in a system in which income is not dependent on work is one of the problems encountered by such people as Douglas (1935, 1936).

85 Bookchin claims that senseless work and hierarchy recursively co-create each other. The senseless work is required to justify the claim that a structure of authority is required to organise it. That authority then commands the development of arrangements to compel people to undertake the menial tasks required in the system … and so on recursively.

[86] If the evolution of the living planet, Gaia, is to be understood as having come about through a series of self-organising processes, those operating to bring about its death can be collectively categorised as the forces of Thanatos.

[87] In relation to the financial "benefits" system, the remediation of educational "disadvantages", and the promotion of "reading" ability.

[88] Its operation can also be seen in connection with what happened as the, largely genuine needs oriented and locally organised, "job creation" programmes of the 1970s were replaced by "market-driven" activities of the 1980s.

[89] Namely that work expands to fill the time allotted to it.

[90] This figure is widely circulated among sociocyberneticians because it is so intuitively obvious. The figure itself is commonly attributed to Deming but one of its most vocal exponents is Seddon.

[91] Systems thinkers have a useful acronym to help distinguish between the two. They argue that the Purpose of a System is What It Does. (POSIWID). Forget the window dressing. Immediately one does this it becomes clear that the Purpose of the "Benefits" and "educational" systems is to create hierarchically-organised work the purpose of which is to generate and reinforce hierarchically organised senseless work in society.

[92] See Raven (1997)

[93] Campbell (1979) long ago condensed his observations about the destructive effects of prescriptive quantitative targets as "Campbell's law". This reads: "The more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor." One sees the effects *a fortiori* in the operation of the NHS and the educational system.

[94] Raven (2016)

[95] Full discussions can be found in Raven (1997) and Raven & Stephenson (2001).

[96] McClelland et al. (1958 to 73)

[97] Conation has to do with will, persistence, determination.

[98] As has occurred in so many other areas (including the use of the word "eduction" itself) the term "competence" has been seized upon by tens of thousands of practitioners and used in such a way as to corrupt it back to refer to the precise framework it was introduced to move away from.

[99] I have been urged to reframe the components of competence as Executive Functions. But to do so in the context of current thoughtways in psychology would reinforce the impression that these are *general* dispositions of the individual rather than dispositions which can only be observed and "measured" while the individual is engaged in a task he or she cares about. It would also encourage the view that they have an identifiable neurological basis in the way in which "executive functions" are often said to be located in particular parts of the brain and have pathways which can be strengthened and weakened by particular kinds of exercise or experience (or the lack of it) in such a way that they can, like skills, be called up whenever they are needed. They can somehow be identified and "got hold of" independently of context. It would also reinforce the impression that they are sub-factors of "intelligence" which would reinforce the status of that construct … although they are, indeed, activities which need to be undertaken to think clearly about a particular issue.

[100] Raven (1980 PT&C)

[101] Raven (1977), Raven et al. (1985), Montessori (1948/2007), Robinson and Aronica (2015)

[102] Burgess (1979, 1986), O'Reilly (1999, 2001), Stephenson (2001), Winter et al. (1981)

[103] Raven (1997/84 CIMS), Raven & Stephenson (2001), Klemp et al. (1977)

[104] Raven (1980 PT&C)

[105] Gregory (2000)

[106] Incidentally some of these parents explicitly set out to promote Cognitive Development … the ability to reason and take several things into account when coming to decisions ...in the form beloved of psychologists … by encouraging their children to *share in* their thought processes – their internalised "experimental interactions with the environment", their toleration of frustration, their experience of delight at solutions, etc. – as they sought to solve their own problems and resolve moral dilemmas. (*Note the modelling of normally private components of competence going on here.*)

[107] Morton-Williams (1966), "Plowden Report" (1966)

[108] Many were, of course, constrained from doing so by the situation in which they found themselves.

[109] Raven (2001)

[110] Many parents, teachers and managers are uncomfortable with adventurous, enquiring, children, pupils, and subordinates.

[111] Stephenson (2001, 2008), Raven (2001 AC), Dockrell (2001), Wolf (1987-2001), McClelland (2001).

[112] Raven (1994 SIK)

[113] Spencer & Spencer (1993)

[114] Bryant (2013), Havergal (2015)

[115] Raven (2008 IED)

[116] Lester (2001)

[117] Scottish Government. (2014), Heckman (e.g. Carneiro & Heckman (2005), Robinson & Aronica (2015), Mortimore (2000), Sylva (2000), Burger (2010)

[118] Weikart (1978)

[119] Schweinhart and Weikart 1977, 1990, 1997. Schweinhart et al. (2005)

[120] Because my concern here is with the evaluation I have not discussed the nature of the programme.

[121] As with "cognitive ability", researchers, educators and at least middle class parents generally accept without question the notions, first, that all children need to be able to read and, second, that it will be possible to teach all children to "read" in the form operationalised by tests of "reading ability". This has resulted in demands for earlier and earlier school attendance and the development of prescriptive (manual - based) and proprietary programmes for teachers and parents to follow. Naturally, these things have made the huge variance in "reading ability" and the "gaps" seemingly arising from differences in home backgrounds ever more visible. The desire to close these gaps has resulted in the development and imposition of endless proprietary reading programmes and programmes to consign the "needy" to "remedial" programmes classes at all ages to age 20 (see Wolf & Jenkins, 2014), compulsory parent involvement in centrally prescribed teaching arrangements, and home intervention programmes. Yet, Suggate (2012) reports that, despite a vast mountain of what looks like relevant research, there is in fact *no* reliable evidence that these things confer any long term benefits. As in the wider "cognitive development" area, the one widely cited apparent exception to this statement comes from a study by Juel (1988) which is based on no more than 54 participants … with only 21 in the lower ability range. As Suggate puts it:

> I have scrutinised evidence thought to reject (the hypothesis that enhancing reading skills early in life has *no* long-term effect) and found it to be lacking due to a failure to look long term and causally. Three lines of evidence from international, pre-school, and school samples were examined, hailing from a rich range of experimental and quasi-experimental methodologies, often looking longer- term. Although this evidence lacks a definitive randomised trial with struggling readers, there is still insufficient reason to maintain that the early and explicit development of decoding skills leads to unique leads to unique long term benefits for later reading. Therefore, instead of acting like a snowball rolling down a mountain, the effects of early reading are more like watering a garden before a rainstorm; the early watering is rendered undetectable by the rainstorm, the watering wastes precious water, and the watering deflects the gardener from other important preparatory groundwork.

In the context of this discussion I cannot resist the temptation to draw attention to the fact that, although "dyslexia" has come to accepted as a specific, treatable, condition "it" actually consists of a rag-bag of very different conditions, most of which are system-created (Elliott & Grigorenko, 2014; Raven, 2014 D).

[122] This is perhaps best categorised as a predisposition to fascism.

[123] Raven (1981).

[124] The *range* of models is breath-taking, ranging from primary emphasis on encouraging the adult members of the communities concerned to develop the civic perceptions, expectations, and abilities required to gain control over the wider political and administrative process in which they are embedded, through giving parents the right to hire and fire teachers, assess pupils' progress in school and determine school curricula (in order to ensure their relevance to the needs of their own culture), having parents come into classrooms to model effective human behaviour for the pupils, the introduction of project-based education designed to enhance motivation, and conventional programmes, ranging from one-to-one instruction to highly structured programmes designed to teach children particular skills, words or phrases.

The models vary along a number of different dimensions. In the first place they vary in the way in which "the problem" which is to be tackled is defined. Thus, they may construe the problem as being that children have not developed the attitudes and abilities which are thought to be essential for school success. Or they may see "the problem" as being that *parents* do not understand *how* to foster these attitudes and abilities.

Or they may locate the problem in the wilder society: The problem may be that the role of the school in society is such that it must *necessarily* define some children as 'failures' and others as 'successes'. If this is accepted the problem does not stem from deficits in pupils, parents, teachers or schools but from deficits in the way which society is organised'.

To some degree independently of where "the problem" is located, programmes vary in their definition of the target for intervention, Thus, even if "the problem" is felt to lie with the children, remedial action may be directed toward the children themselves, their parents, their teachers, their schools, their communities, or politicians.

Finally, they vary in the delivery systems they favour. Thus they seek to deliver their "benefits" to children through programmes based on schools, homes, institutes of adult education, or the political systems of society. Those who attribute "the problem" to children's ability deficits may simply set about trying to tackle the symptom, by, for example. teaching the children concerned things that it is deemed they need to know - such as the names of things or relationships; they may attribute "the problem" to such things as the mothers not "knowing that it is important to play with their children", and therefore set about trying to get the mother to treat her children in new ways; they may attribute it to the mother not having time to spend. with her children and therefore set about trying to correct her environment or at least encourage her to do so; or they may attribute it to the child not having had the opportunity to observe his parents engaging in effective problem-solving activity and may therefore set about encouraging the parent to endeavour to tackle her own problems in her children's presence - and this may involve helping her to join with others in bringing effective pressure to bear on politicians and administrators.

Those who see the problem as inhering in schools may set about trying to get schools to relate to children's values - by, for example, giving the parents the power to hire and fire teachers; they may encourage schools to drill the pupils in the knowledge and skills they "need" if they are to "take advantage of what the school system has to offer"; they may set about encouraging schools to treat different children in different ways either to "enhance their motivation" or in order to enable then to develop different competencies. Some advocate more "child-centred" educational programmes and others more "teacher:-centred". (None, to my knowledge however advocate a more individualised competency-centred approach, although, as I argue in *Parents. Teachers and Children* (1980), this appears to be the crucial variable differentiating between the home and the school as educational institutions).

Those who focus on politicians and administrators may demand the creation of more humane and satisfying living environments for "disadvantaged" people; they may seek to get these politicians and administrators to treat the parents concerned in a more developing and growth-enhancing fashion; or they may strive to get then to do something about social structural variables on the grounds that the educational system is primarily about the allocation of privilege - with the result that enhancing the success of one group of children will simply mean inflicting the "disadvantage" on another group of children. They argue that the politicians' and administrators' task is to change our social structure in such a way that everyone can be helped to develop and utilise his skills and talents and be adequately rewarded for so doing.

[125] In connection with Headstart alone, Stallings and Kaskowitz(1974) identified over 80 of these models each replicated at different sites throughout the US. Some of the programmes sought to increase attainment scores on the false assumption that if everyone got more education and higher scores all would get jobs. Others sought to raise the scores of vulnerable children so that they have a better chance of competing in the scramble for the qualifications which control access to the good things in life. Some accepted that education in itself would nurture the qualities required for economic development. Some sought to intervene in the ecological context which results in some people being confronted with insuperable barriers to obtaining even a half decent life style. The strategies were also hugely variable: attendance at pre-school, changes in regular schooling, and home interventions of different kinds.

[126] More recently, Burger (2010) provides a more extensive discussion of these models.

[127] Mann et al. (1977)

[128] Brown (1977)

[129] Hawkridge et al. (1968)

[130] McLoughlin (1977)

[131] Bloom (1964)

[132] Dave (1963)

[133] Coleman (1966)

[134] This statement should not be read to imply that nothing can be done. On the contrary, it is evident that individual highly dedicated individuals like the teachers whose work was discussed earlier in this essay and those whose work was summarised by Robinson can perform what seem to be miracles (although, even here, I know of no evidence that the programmes were continued after those individuals disappeared or that the benefits did not, in the long term, "wash out") [Although it may seem invidious to pick out one particular study for further comment, it is nevertheless worth doing so in order to highlight the importance of particular characteristics. The study on which I would like to focus is that of MacKay (2006, 2007). The first distinctive feature of this project is that it ran for 10 years and was dependent on MacKay's extraordinary commitment to intervene with teachers, parents, and administrators {who kept changing}. {Recall what those teachers who ran the successful environmentally-based, competency oriented, project-based educational programmes discussed earlier had to do.} Next worth noting is the multi-component nature of the intervention itself. Finally, at least far as I can judge from the evaluation report, the most important contributors to its success were: (i) the levels of intense individual support offered by teachers and others and (ii) the way in which all pupils were encouraged to set individual goals for the outcomes of the next step in their development and later review their progress in such a way as to be able to identify barriers in relation to which they could seek help.

[135] Peaker (1975)

[136] It is ironical that Peaker was responsible for the analyses that led the Plowden Committee on primary education (1966) to emphasise home background was a vital determinant of school success.

[137] Suggate (2009) shows that the more recent PISA studies show the same thing, this time specifically in relation to reading.

[138] Burger (2010)

[139] Cox (2000)

[140] Suggate (2012) has raised serious questions about the validity of even this, apparently obvious, statement.

[141] Morton-Williams (1966)

[142] Plowden report (1966)

[143] Tomlinson (2000)

[144] Sammons et al. (1997)

[145] See Gregory (2000)

[146] In our statistical studies it emerged that, overall, the Educational Home Visitors made parents feel more *in*competent and more inclined to hand children over to professionals, although this effect was probably confined to *some* EHVs and *some* parents.

[147] Reese (2012) opens her chapter by describing an idealised process in which parents take their children on their knees and, after careful study of what interests the child, select books to read with them whilst asking open-ended questions about what is happening. This leads the child to pick up the book and continue reading on his or her own. But, Reese asks, What happens if the parent (like me) does not like reading or cannot read? And what if, again like me, the child dislikes reading and experiences requirements to do so when they could be doing other things as an undesired and undesirable intrusion into their lives? Schools not only do not emulate this process but continue to punish children by first forcing them to read when they do not want to and punishing them for failure to do so effectively by such things as inscribing them in remedial homework and reading programmes and… in my day, reinforcing these deprivations and tortures with physical punishment. Today, bastardised images of the wider benefits of home reading and the benefits of asking questions have grown into massive programmes to compel parents to engage in these activities against the threat of being themselves subject to compulsory "parent education" courses, having their children taken into care, or, as a last resort, being sent to prison. (Isn't it amazing what authoritarian bureaucrats can do with a good idea!) What is more, as two of the few researchers who have actually studied what goes on homes Tizard and Hughes, 1984) have shown, this image is entirely misleading. Parents mainly teach reading … letter and word recognition … entirely incidentally … through such things as playing games like "I-Spy" or compiling shopping lists. Yes, indeed, "Miffy" is fun ... but the entire context in which discussion of the teaching of reading has been set is constricting and entirely misleading. In which context I feel I have to comment that there is in the entire 350 page book comprising 29 chapters purportedly dealing with "Contemporary debates in childhood education and development" no mention of the wider multiple competence-development-oriented activities which parents can, and do, engage in with their children *in relation to their own goals and values* with which I have been primarily concerned in this essay … I mean such things activities to promote a wide variety of competencies and the self-confidence needed to present

themselves positively to, ingratiate themselves with, and manipulate teachers (see Tomlinson & Tenhouton 1976), to deal with bullies in schools and workplaces, to engage in imaginative talk … and so on and so on. It is worth generalising a bit more: what we are saying is that many parents who care about school success promote that success so *indirectly* by nurturing self-confidence, presentational skills, the capacity for systems analysis. The absence of any discussion of these things in the latest books I have read suggest that the authors miss the point: How are we to nurture at least some high level competencies in all children? Worse, the absence of any discussion of these things suggests that the authors themselves lack capacities one would have expected to find in senior researchers. They might be characterised as suffering from tunnel vision, constricted thinking; conventionality, and trained incapacity to think.

[148] One problem with work in this area is that, as Harris has shown, the interpretations usually placed on the correlations between child and parent behaviour that are typically reported by psychologists are incorrect: It is a case of children influencing their parents rather than the reverse. More seriously, however, as researchers like Tizard, (1974), Tizard & Hughes (1984), Hughes (1996) and Reese (2012) have shown, in the course of mutually-influencing reciprocal interactions, different parents treat their different children in different ways – but in ways that are not usually studied by psychologists -- and that variance in parental behaviour *does* have different effects on different children (and vice versa) but, again, in ways that are not typically studied by psychologists. Actually, the situation is worse than that. These things *cannot* be studied via the dominant research paradigm. An *ecological* approach is required. An analogy will make the point clear: A typical meadow contains hundreds of species of grass and hundreds of thousands of interacting plants and animals living in some kind of symbiotic relationship. One can, and many agricultural researchers do, study such things as how the yield of seeds produced by a particular strain of grass varies with the weather or application of a pesticide (although even this, as we have seen, is unjustifiable because it neglecting important effects on the soil and the food chain). But such information gives a farmer no guidance as to how to husband his meadow. By the same token, as we have seen, the work of the typical educational researcher gives those teachers whose work was condensed into the very short summary of group-based, multiple-competence-oriented, project work discussed earlier or parents who wish to nurture the diverse and multiple talents of their children much guidance as to how to go about their business.

[149] Kazdin (2006) has drawn attention to the unethical nature of most of the evaluation studies that are accepted by educational researchers. In these what Kazdin calls an arbitrary selection of metrics (measures/tests) have been deployed in an attempt to evaluate programmes in which the participants change in multiple, and often contradictory, ways. Any short selection of off-the-shelf measures will necessarily fail to pick these up. Much earlier, Parlett (1972), Hamilton (1977), and others had drawn attention to similar problems in their writings on *Beyond the Numbers Game.*

[150] By forcing parents to say which of his list of potential educational objectives was the *most* important Goodlad (1983) demonstrated that, far from what appeared to emerge in his chapter "parents want it all", when the chips are down the choice is "exam success".

[151] Stallings and Kaskowitz (1974)

[152] Prieler & Raven (2008)

[153] This defect has been rectified with the development of the *Standard Progressive Matrices **Plus.*** (Raven, 2008 SPM+), Raven et al., 2000).

[154] See a special issue of *The American Psychologist* devoted to *Arbitrary Metrics* in 2006 and especially the articles by Embretson and Kazdin.

[155] Kazdin (2006)

[156] Stephenson (2001)