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Chapter 16

COMPETENCE, EDUCATION, PROFESSIONAL DEVELOPMENT, PSYCHOLOGY, AND SOCIO-CYBERNETICS

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ABSTRACT

What is the source of the widespread feeling that many professionals have not behaved professionally? Not usually a deficit in techno-rational knowledge (although such presumed deficits are precisely what is targeted in most attempts to fix the problem). More often the problem has been failure to build up a personal store of relevant up-to-date specialist knowledge. Still more often it stems from deficits in *tacit* knowledge ... (unverbalised) knowledge of ways of *doing* things. But most often it stems from a failure to consider the wider needs of clients and a disregard of the consequences of rule-bound actions grounded solely in disciplinary knowledge. In other words, by failure to engage with issues which lie *outside* the individual's domain of specialist knowledge. In such a context, the concept of certifiable professional competence becomes an oxymoron.

The problem in psychology is exacerbated by the fact that many widely accepted thoughtways and procedures have serious shortcomings. As a result, many actions based upon them have undesirable consequences for individuals, institutions, and society. They must therefore be considered unethical.

For these reasons, seeking to restrict the actions of professionals to those which fall within a domain of certifiable techno-rational competence, and requiring them to regularly update that knowledge, is dangerous. More helpful might be a requirement to demonstrate that one has, in one way or another, contributed to the development of the profession.

Keywords: Competency, professional development, socio-cybernetics, lifelong learning

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This chapter addresses issues having to do with the competence and professional development of people working with human resources in such areas as education and organisational and public management.

It is based on research that my colleagues and I have conducted in homes, schools, workplaces, and public management over the past half century.

My basic theme is that our technico-rational knowledge of such things as human development, the nature of competence, assessment, and management is so thin and so heavily based on such inadequate and misleading – indeed damaging – models and procedures, that it would be a mistake to require people working in these areas to engage in professional development activities conceived of as doing such things as taking further courses. My own position is that, if it is felt that continuing professional development does need to be authenticated, what would be needed would be evidence of it having *contributed to the development of the profession*. This would mean demonstrating that one had been doing such things as trying to influence the constraints that limit the effectiveness of psychologists, striving to develop new theoretical frameworks to handle previously neglected problems, and finding new ways of doing things. Doing any of these things would involve an ethical commitment to going well beyond the customary call of duty; doing things one does *not* know how to do. What would be required would be *professional* competence going well beyond what is currently considered to be one's area of certified technical competence.

An example may help to clarify the point. The word —ducation" comes from the Latin root —educre", which means —t draw out." This implies, and most teachers, pupils, parents, and educational philosophers agree, that the primary task of an educator is to draw out the diverse talents of children, pupils, students, subordinates, other course participants, or apprentices. Yet most teachers don't do this, pointing to many constraints that prevent them from doing so. The conclusion is stark: They cannot be considered to be competent teachers unless they set about, personally and through their professional associations, seeking to influence those constraints. Yet most teachers will claim, first, that it not within their remit to seek to influence such constraints, second that they are not *able* ... that is, they lack the competencies that are required ...to do so, and, third, that such activity is actually proscribed by professional/legal regulations to the effect that they work *only* within their domain of certified specialist competence.

More pointedly, so far as this chapter is concerned, the deficits in teachers' understandings of human competence (including professional competence), its development and assessment, and the determination of behaviour more generally are, in large part, due to oversights *on the part of psychologists*. We have failed to provide teachers with appropriate concepts and tools in these areas. Setting out to develop these understandings and tools – and understand why we have not, in the past, done more to develop them (and doing something about those constraints) – would require *psychologists* to engage in activities going well beyond what is currently regarded as their domain of professional competence. Thus, paradoxically, psychologists cannot be considered to be professionals *unless* they do these things. This turns out to be a rather general problem. Its resolution hinges not merely on developing an understanding of the nature, development, assessment, and deployment of generic, high-level, transferable competencies but also those required (i.e., the societal understandings required) to assert *professional* competence.

To re-state and re-phrase this: *Competence as a psychologist depends, among other things, on setting out to understand and influence the wider social forces that have deflected*

research psychologists from some of the most important topics they should have been investigating. This involves working outside their domain of certified technico-rational competence. More basically still, understanding the social forces that primarily control human behaviour must lie at the heart of any science which claims to be devoted to understanding and predicting human behaviour. Yet understanding these social forces has not, in the past, been seen as central to the mission of psychology.

STUDIES DESIGNED TO CLARIFY EDUCATIONAL OBJECTIVES

I begin by very briefly summarising – and thus necessarily over-stating – some results from a number of opinion surveys carried out among parents, pupils, teachers, 20-to-30 year-old year old ex-pupils, and employers in many countries.

The overwhelming majority of those who were interviewed[1] thought the main goals of education include developing such qualities as the confidence and initiative required to introduce change (actually, it was the most widely endorsed goal among our adolescent pupils), problem-solving ability, the ability to work with others, the ability to make one's own observations, and the ability to understand how organisations and society work and play an active part in them. More generally, they include helping people to develop and get recognition for, the diverse, often idiosyncratic, talents they possess. The objectives said to be most important do include helping people to acquire the credentials that appear to control entry to jobs, but the impact of this is tempered by widespread recognition that the formal knowledge on which such certificates are based is in reality *un*important[2].

Few schools do much work in these areas[3]. Goodlad (1983) made the point forcefully by saying that, in general, the activities in which most pupils are engaged for most of the time in most schools do not merit description as academic or intellectual. They fail to nurture such qualities as judgment, analytic ability, the ability to interpret, the ability to communicate, the ability to reconcile different points of view, or critical thinking.

The quest to understand the reasons why schools generally neglect their main goals and what needs to be done to generate more appropriate arrangements forms the basis for much that will be said in this chapter.

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[1] Morton-Williams et al., 1968; Goodlad, 1983; Johnston & Bachman, 1976; Flanagan & Russ-Eft, 1975; Flanagan, 1978; De Landsheere, 1977; Bill et al., 1974; MacBeath et al., 1981; Raven, 1977: Raven et al., 1975a, b; Andersson, 2001b.

[2] 73% of our adolescent pupils said that it was very important for schools to help them to do as well as possible in external examinations, but only 27% that it was important to learn about aspects of subjects not required for examination purposes. These figures compare with 83% who said it was very important for schools to help them ~~–D~~evelop the confidence and initiative required to introduce change". Their answers to other questions confirm that they correctly recognise that mastering the content they spend so much time studying and on which they are tested is largely a waste of time. I say ~~–c~~orrectly" because the fact is that such knowledge has a half-life of a year. People forget 50% in one year, 75% in two years, 87.5% in three years and so on. It is also out of date when it is taught and fails to relate to the problems with which pupils will have to engage later in life.

[3] Goodlad, 1983; HMI, 1990; Galton et al.,1980, ORACLE; Raven et al., 1985; Johnston, 1973; Johnston and Bachman, 1976; Fraley, 1981.

STUDIES OF COMPETENCE IN WORKPLACES AND SOCIETY

There are many reasons why it is important to ask whether the opinions summarised above are founded in reality. One is that it may well be argued that our competence as psychologists depends mainly on high-level competencies like those enumerated by parents, teachers, and students and that the focus in any professional development activities should therefore be on nurturing such competencies. Another is that the answer one gets to the question depends on the methodology employed in research seeking an answer ... and this is often deficient for reasons which call into question many widely accepted practices.

In the course of hundreds of studies[4] conducted using fine-grained methodology – and especially *Behavioural Event Interviewing* (a variant of Flanagan's *Critical Incident Technique*) – it has been shown that effective organisations call on even their "low-level" employees (lavatory attendants, machine operatives, bus drivers, sales people, etc.) to utilise high-level competencies. For example, a compilation of "effective" behaviours observed among machine operatives (Flanagan & Burns, 1955) included examples of them studying the way the organisation in which they worked functioned and working out for themselves what they should be doing and then doing it without having to be given instructions. However, as researchers like Kanter (1985), Schön (1983), and Cunningham (2001) have shown, even observations at this level fail to do justice to the diverse subtle contributions that people in effective organisations make to the emergent properties of problem-identification-and-solving networks[5] which are rarely discussed. These diverse contributions include not only intervening in the internal structure of the organisation (by, for example, getting together with colleagues to influence those above one) but also seeking to understand and influence external constraints and opportunities ... such as those offered by the market or arising from the operation of politico-bureaucratic systems. We will return to this later because it has assumed increasing importance as our work has progressed.

The issue of diversity is important. Researchers have shown that there are many different *types* of effective physicians and scientists ... and none of them are predicted by college grades (Price et al., 1971; Taylor & Barron, 1963). Occupational categories are particularly unhelpful. Psychologists, for example, do all sorts of different things (ranging from running countries and organisations through helping distressed individuals to designing educational programmes, editing journals, and thinking through serious conceptual issues). Such heterogeneous professional groupings are therefore perhaps best understood as sociological groupings which operate mainly to protect their members by erecting barriers to entry. And indeed, as Steiner (1999) has shown, these entry requirements have been raised consistently –

[4] Many of the earlier studies are summarised in Raven (1984, 1997), and Spencer and Spencer (1993).

[5] In 1985, Kanter, very usefully, introduced the term "parallel organisation activity" to describe these activities. The term is important because it draws attention to the fact that that this non-hierarchical work does not replace the normal day to day hierarchical and defined-task-oriented activities of the organisation. Rather, they go on alongside – in parallel with – them. However time and resources are specifically set aside for them and all members of the organisation are involved. During this time, fluid, non-hierarchical, groupings form around emergent and previously half-noticed "problems". The members of these groups contribute in many different ways and a deliberate effort is made to recognise these diverse contributions. And staff are encouraged to work with other people engaging with similar problems both within the organisation and outside. Such collaboration generates new ideas and establishes and maintains a network of contacts to provide help and support when difficulties arise.

thus reinforcing the notion that additional —training" is required – without there being any significant change in the nature of the activities actually carried out by those who gain entry.

A couple of studies are of particular relevance here because they deal with *professional* competence.

One is Schön's (1983, 2001) study of how professionals think in action. He argues that the claim of *most* of those who describe themselves as professionals is without foundation. They do not live up to the norms and values they or their professional organisations espouse. He cites lawyers who have no real interest in justice or compassion, physicians who have little interest in the equitable distribution of quality health care, and scientists and engineers who care little about the beneficence and safety of their technologies.

He then goes on to examine the behaviour of some architects, designers, engineers, psychotherapists, and town planners whom he *would* be prepared to describe as professionals. They engage in activities going well beyond the boundaries of their job descriptions and engage with many issues which others would be inclined to overlook. To find ways forward, they engage in —experimental conversations with the problem" often re-defining it and extending its boundaries. The —real problems" lie *outside* the areas of technical competence that their training equipped them to handle; yet they are crucial to their competence, and especially their claim to be professionals. Hence the importance of Schön's (1983, 2001) claim that what is needed is not technico-rational competence but —the abilities required to deal with the swamp" (i.e., the competencies required to deal with situations in which the problems are unclear, messy, confused, and incapable of technical solution). Perhaps of particular interest here is these professionals' engagement with *systems* processes. Whereas many of those working with societal problems (such as malnutrition) propose discipline-based solutions drawing on the technical knowledge of their own particular discipline, the need is for systems-oriented understanding and intervention, which is to be sharply distinguished from —multi-disciplinary" intervention based on independent inputs suggested by a variety of —disciplines".

Also of interest here is Hattie's (2009) meta-analysis of more than 800 meta-analyses of the contribution to pupil —achievement" (traditionally measured) of 138 variables widely considered important to determine school success. Despite the gross limitations of the input and outcome measures, Hattie's conclusion is that effective teachers are extraordinary people characterised by high levels of dedication and personal competence. One of the most important things they do is to continuously seek feedback from their pupils and use it to reconsider their goals and reflect on, and improve, the quality of their teaching. They study the barriers the pupils have encountered and, when they find that their own activities have not had the desired effect, restructure what they are doing so as to achieve their objectives. This stands in stark contrast to the more common interpretation of —feedback" – which tends to be viewed as feedback *to pupils* of some kind of mark or score unaccompanied by any attempt to understand and remedy the problems which have prevented the pupils —doing better" (i.e., arriving at —The Correct Answer").

At the heart of this shift in understanding of the educational process lies a move from thinking of the task of —teaching" as involving —telling" to thinking of it as —managing development".

Another study that is of interest here is Adams and Burgess's (1989) study of teacher competence. Through an extended action-research process, they discovered that different teachers felt that they contributed in very different ways the process of schooling and

education *conceived of as a whole*. Thus some teachers felt they had made a particular contribution to developing effective relationships with parents, others to getting the building improved, others to helping pupils with social difficulties, and so on. The *varieties* of teacher competence, physician competence, salesman competence, scientist competence, managerial competence and so on is something with which we, as psychologists, need to come to terms.

The studies mentioned above forcefully raise questions about the *criteria* to be applied when considering or assessing occupational and professional competence. One thing we have seen is that multiple and barely discussed contributions are required to create climates or cultures of enterprise or intelligence. Different people contribute in different ways, and the talents required to make these contributions in an important sense do not exist except in a context of complementary, if not congenial, contributions made by others.

*In*competence

What are the implications of these findings for the professional competence of teachers and psychologists? It can hardly be considered *ethical* to keep so many for so long in such environments. It is therefore an *ethical* requirement – a *professional* requirement – for psychologists and teachers to try to do something about it[6]. What competencies do they need to do *that?* And how can we prepare students to be competent thinkers throughout their lives? We will return to these questions.

Here we should note something else ... something to do with *incompetence* and the demand for certificates supposedly testifying to professional competence.

Surveys reported by Schön (1983, 2001) and Ilott (2001) show that vast numbers of people either have direct experience of, or are acutely aware of, instances of professional incompetence among doctors, lawyers, nurses, social workers and others. This experience includes the widespread observation that many —professionals" find ways of meeting —targets" (including taking content-based courses purporting to contribute to professional development) that have been laid down for them or creating the impression of following mandatory procedures *without* delivering the benefits they are expected to deliver to clients (Seddon, 2008).

And here is the catch. The response of politicians and most professional organisations to such observations on the part of the public has been to introduce —quality control" procedures *based on assessments of technico-rational knowledge.* Hence the proliferation of demands for certificates of —competence" to carry out the most menial tasks and the proscription of actions which go beyond what these areas. Hence the endless regulations about of which Schön's professionals complained so loudly.

Yet, as the work of Schön (1983, 2001), Hogan (1990), Becher (2001), Ilott (2001), and others has shown, incompetence is not the obverse of competence. The main sources of

[6] It will, of course, be objected that things have changed since these data were collected. But Andersson's (2001a,b) data hardly support it. In broad terms, one-third liked school, one-third just about tolerated it, and one-third found it a thoroughly destructive experience. Throughout my career as a researcher I have heard statements to the effect that —Yes, it used to be like that, but, in the last couple of years, things have changed". Whenever these beliefs have been checked they have turned out to lack foundation. Perhaps more convincing is the fact that, time after time, as the truth has dawned, one tranch of trumpeted reforms has been replaced by another equally lacking in an understanding of the kinds of problems discussed in this chapter - and thus unlikely to be successful.

*in*competence do not arise from deficits in the technico-rational knowledge. Nor do they even arise mainly from deficits in the kinds of competencies highlighted above. Rather, they arise from failure to *exercise* those competencies. They stem from a lack of *professionalism.*

Our incompetence *as psychologists* stems mainly from failure to do the things we should be doing to contribute to collective activity, and, in particular, from our failure to influence the social and political climate and structures which mainly determine what we do and the research which gets carried out.

The Importance of Beliefs about Society

Before leaving the question of competence and incompetence, and especially professional competence, it is important to return to another quality which pupils, teachers, parents, and employers said it was very important for pupils to develop, namely the ability to build up one's own understanding of how society works and, especially, the ability to intervene to improve its operation.

With a view to checking the validity of such claims, I interviewed a cross section of workers, ranging from street sweepers and blacksmiths to the chief executives of trans-national corporations (Raven & Dolphin, 1978). I opened the interviews by asking my informants to tell me something about their jobs and their lives. Before long, they would be sitting on the edge of their chairs telling me about some problem they had. I would then ask —What could you do about that?" One after another they said —There's nothing I could do about it; the government should do it – but it's not my job to influence the government". Somewhat taken aback, I proceeded to arrange for our participation in a couple of national surveys around the topic (Raven & Litton, 1982; Raven & Whelan, 1976). These confirmed my initial observations: By and large people felt that only the government should tackle their problems. I was shocked. But then an interesting thing happened. An economist colleague pointed out that, in all countries of the EU, some 45% of GNP is spent directly by their central governments. But this is not the end of the story; the figure does not include expenditures by local governments or the nationalised or quasi-nationalised industries. When these are added in, the total comes to some 65%. And even this is not all. By requiring people to insure their cars, their health, meet endless regulations regarding health and safety and so on, governments —control" much more of total expenditure. We calculated 75%. Wow. The people were right (again!). So the importance of being able to build up one's own understanding of how society works, which involves much more than understanding the formal political system, turns out to be even more important than most people think. Indeed, it turns out that people's beliefs about society, how it works, and their place in it are, despite their neglect by psychologists, some of the most important determinants of behaviour. But there are good reasons why teachers and psychologists shy away from the area. Encouraging people to analyse and think about these processes and develop the strategies required to intervene in them is, as Harold Rugg (Robinson, 1983; Rugg, 1926) and others (e.g., those running the UK Schools Council Humanities and Integrated Science Projects) discovered to their cost, not only controversial but dangerous. Yet it cannot be too strongly emphasised that the ability to understand and influence social forces and invent ways of handling the value conflicts involved is a crucial competence to be possessed by – one would like to say —all', but that is not the case – citizens – especially those responsible for education and for bringing

innovative programmes of psychological research and new forms of public management into being.

The Contrary View

Most psychologists would take issue with much of what I have said about the importance of high-level generic competencies in the workplace, citing numerous impressive studies which appear to show exactly the opposite. These include those brought together by such authors as Gottfredson (1997), Schmidt and Hunter (1998), Jensen (1998), and Ree, Earles, and Teachout (1994). Such studies seem to point unarguably to the conclusion that, as Ree et al. put it, *"**g** and not much else"* is important.

The discrepancy between the conclusions emanating from these two streams of research stems from what seems, on the surface, to be a difference in methodology. However, it, in reality, reflects a basic difference in the thoughtways (paradigms) on which the studies are built. Although this was highlighted by none other than the father of ***g***, Charles Spearman, almost a century ago, the accepted criteria for high quality measurement taught in most advanced courses, and demanded by most journal editors, almost preclude the development of a more appropriate paradigm.

Spearman wrote:

> Every normal man, woman, and child is ... a genius at something ... It remains to discover at what ... This must be a most difficult matter, owing to the very fact that it occurs in only a minute proportion of all possible abilities. It certainly cannot be detected by any of the testing procedures at present in current usage.

What he means to say, although he didn't fully realise it, is that it requires the development and adoption of an alternative way of thinking about and —assessing" individual differences. Or, more bluntly, that the current paradigm renders most people's most important talents invisible. It therefore deprives them of opportunities to get recognition for and utilise them. In reality, a more extreme statement turns out to be justified: it denigrates them.

The implications of these observations (and this will become a recurring theme of this chapter) are twofold. On the one hand, they urge us to resist offering, or participating in, —professional development" activities which will lead to further embedment of inappropriate thoughtways and procedures. On the other hand, they underscore the notion that we have a professional responsibility to contribute to the development of a more appropriate framework. It is to the development of the understandings and competencies required to do this that activities concerned with the professional development of psychologists need most importantly to be directed.

But hand in hand with the task of developing a more appropriate psychometric paradigm comes the task of clarifying the *nature* of these competencies; developing better ways of thinking about them.

Building on the work of McClelland et al. (1958), I have argued (Raven, 1984, 1997, 2001a, b) that a two *stage* or two *component* framework is required to think about and assess competence. First, we need to find out what it is that the person concerned is strongly motivated to do. And then, *and only then,* we need to establish which of a series of

cumulative and substitutable components of competence, such as thinking about the nature of the task being undertaken, bringing to bear relevant habits and information, monitoring the effectiveness of thought and action, creativity, and persuading other people to help, the individual being assessed brings to bear in his or her efforts to undertake the activity.

It does not make sense to seek, as most psychometricians seek to do, to try to assess —initiative", —creativity", or even —the ability to think" (problem identification and solving ability; meaning-making ability) generically – independently of the activity being undertaken. These are all complex, difficult, and demanding activities that no one will undertake unless they are strongly and intrinsically motivated to carry out the activity.

So the whole development and assessment process looks very different from that most commonly envisaged when people speak about such things as the promotion of self-assessment through professional development activities. The shifts are from teaching as telling to teaching as nurturing growth, from a focus on *content* (to be mastered) to nurturing *competence,* from —ability" to —abilities", from assessment as scores on measures generated to meet the requirements of classical test theory and which presuppose that the ability can be —measured" out of context, to finding ways of detecting (making descriptive statements about) the components of competence brought to bear in the course of undertaking specific, personally valued activities.

These observations imply a two-*stage* (*not* a two-factor) assessment procedure. It is necessary to first find out what the person being assessed is strongly and intrinsically motivated to do, and then, and only then, which of these components of competence he or she tends to bring to bear to carry out the task (he or she will not display these components of competence unless engaged in a task they care about). In other words, what this means is that we need a *descriptive* model analogous to those used in chemistry and biology to think about competence and its assessment. This may be contrasted with the *variable*-based models so common in physics.

The difficulty posed by the studies of workplace competence reviewed by myself (Raven, 1984, 1997) and Spencer and Spencer (1993) as well as those being developed by psychologists involved in the —strengths" based movement (e.g., Buckingham & Clifton, 2005) is that their authors adopt idiosyncratic frameworks to describe the competencies needed in the occupational group or organisation studied. If we are to move forward it will be necessary to develop a common, agreed, set of descriptors – as in chemistry and biology.

I developed a preliminary version of what may be a more appropriate framework in my 1984 book *Competence in Modern Society*. Two key (if preliminary) observations were that the kinds of things people might be strongly motivated to do (i.e., activities they could be said to value) seemed to be endless, while the components of competence that might be brought to bear to carry out those activities seemed more limited in number.

In concluding this section I would like to reiterate the basic points being made here. On the one hand, attempts to introduce such things as licensing arrangements requiring people to demonstrate familiarity with traditional procedures is to be resisted. On the other hand, any claim to professionalism by those working in the area needs to be supported by evidence of a commitment to advance the development of psychological theory and practice in the area.

NURTURING COMPETENCE: THE IMPORTANCE OF DEVELOPMENTAL ENVIRONMENTS

Over the past half century we have studied the development of competence in homes, schools, and workplaces. I will summarise some of the results in a moment. But, although it may at first appear to be of tangential relevance, I should first comment on the way in which psychologists have generally sought to investigate the effects of the environment on human characteristics.

Quite apart from the widespread gross misuse of multiple regression techniques in research studies (APA, 1999), most of those working in the area have sought to determine the relative importance of a variety of environmental variables by running correlations between scores on ability —ariables" and environmental —variables". But ask yourself where biologists or chemists would have got to if they had tried to classify all animals or substances in terms of one, two, five, or 16 variables (analogous to *g*, —lfiid" and —ystallised" —ntelligence", —BigFive", or 16 —psonality" factors) and then tried to establish the part played by different aspects of the environment in generating this variance by calculating the correlations with 10 variables purporting to measure the environment.

The outcome doesn't bear thinking about! But it is worth noting that, had they proceeded in this way, they would have been entirely unable to account for some of the simplest things, such as the transformations that occur in, for example, chemistry (e.g., as one pours sulphuric acid onto copper) or the development of complex ecological niches as in symbiosis. While reflecting on the implications of this, note that the properties of copper sulphate cannot be predicted by combining the individual properties of copper, sulphur, and oxygen in any kind of linear way, and those three substances are not recognisably —he same" when studied in combination and when considered individually. Psychologists who have sought monotonic relationships (in which a change in one variable is expected to produce some incremental change in another) between individual and environmental —ariables" are unable to account for (or, indeed, even recognise) such things as the transformations that occur in homes, schools, and workplaces as mentors' values engage with those of tutees and, through the release and modelling of components of competence, produce dramatic changes (Jackson, 1986; Winter, McClelland, & Stewart, 1981).

Now to draw out the implications for the way in which we think of professional competence. What we have here is the promulgation of a way of thought that *cannot* meaningfully engage with the nature of human competence and its development. It is unethical (diversionary) to promote it. On the other hand, the field cries out for the *development* of psychological theory and practice. Thus there is no shortage of opportunities for psychologists to contribute to these developments. However, as we will see later, there are endless constraints on their doing so ... so it becomes even more important for psychologists, if they are to claim to be professionals, to seek to advance understanding of, and influence, those constraints.

Developing Competence in Schools

As has been mentioned, extensive studies have shown that few of the activities that characterise most schools are likely to lead to the development of high-level competencies.

However, there are exceptions. In the course of our own research we observed that, as described below, when teachers set out to nurture high-level competencies through inter-disciplinary, enquiry-oriented, group-based, project work largely conducted in the environment around the school, huge numbers of talents, at best only marginally related to ***g***, come to light.

This is hugely important for at least two reasons. First, these talents are invisible, unrecognised, neglected, and, indeed, stifled, if one accepts the framework for thinking about individual differences adopted by most psychologists – including those providing courses purporting to enhance professional competence in the area. Second, the work illustrates one way in which these diverse talents can be nurtured, released, and harnessed to create climates or cultures of enterprise or intelligence. From this follows a dramatic reorganisation of most peoples' thoughtways. "Intelligence" is to be understood as an *emergent property of a group* rather than an individual characteristic. Furthermore, this intelligence depends on releasing and harnessing a huge variety of individual talents that are scarcely related to intelligence as conventionally understood. Thus, conventional ways of thinking are unethical – destructive of both individuals and society.

When we first visited the school we found the pupils engaged, more or less full-time, in a project designed to get something done about the pollution in the local river (see Raven, Johnstone, & Varley, 1985).

Some pupils decided that the first thing to do was to measure the pollution in the river. Some of them then set about collecting samples of the river water and trying to analyse it. This took them to the not-so-local university where they worked with lecturers trying to engage with this (apparently difficult) problem. Note that these pupils were developing the *competencies* of the scientist: the ability to identify problems, the ability to invent ways of investigating them, the ability to obtain help, the ability to familiarise themselves with a new field, and the ability to find ways of summarising information. Other pupils decided that more progress was to be made by studying the dead fish and plants along the river bank. Still others argued that all this was beside the point; the river was clearly polluted, and the problem was to get something done about it. Some then set about drawing pictures of dead fish and plants from the river bank with a view to releasing community action. The objective was not to depict what was seen *accurately,* but to represent it in such a way as to evoke emotions that would lead to action. While the "scientists" mentioned above sought to report the results of their work in what might be termed a classic academic format, other pupils again argued that that was irrelevant and set about generating slogans, prose, and poetry that would evoke emotions that would lead to outrage and action. Thus the *criteria* for what constituted effective reading and writing differed markedly from those which dominate most classrooms, and they varied from pupil to pupil. Still other pupils argued that, if anything was to be done about the river, it was necessary to get the environmental standards officer to do his job. (It turned out that he knew all about the pollution but had done nothing about it.) This led some pupils to set up domino-like chains to influence politicians and public servants. This in turn led the factory that was causing the problem to get at the pupils' parents saying that, unless

this teacher and her class was stopped, they would all lose their jobs. Unabashed, some pupils set about examining the economic basis for the factory's claims.

Note that this teacher was not so much concerned with enhancing pupils' specialist *knowledge* in each of these areas[7] as to nurture a wide range of *different* ***competencies*** in her pupils. These competencies were not limited to substantive areas of investigation but also included the ability to contribute to group processes, including such things as the ability to put people at ease, the ability to defuse the intolerance which develops between people who contribute in very different ways to a group process (e.g., the intolerance of —artists" for —scientists"), the ability to publicise the observations of the quiet —ideas person", and the ability to —sell" the benefits of the unusual educational process to parents. The teacher in fact devoted considerable attention to highlighting the different types of contribution which different children were making to the group process. As a result, they stopped thinking of each other in terms of —smart vs. dumb" and instead noted what each was good at.

It is important to repeat that what was happening here required those concerned to make *descriptive statements* about each individual pupil's talents and areas of knowledge and expertise. Despite the assumptions which many of those who have grown up in the current climate of assessment bring with them, this could not be achieved by trying to arrange them on scales —measuring" these different abilities because a *different set of scales* would be required to record the talents of each child.

Note, also, that the class's ability to achieve its objective was dependent on *an emergent culture of intelligence or enterprise* which involved harnessing the *diverse* contributions of the pupils and *not* on individual champions or —high ability" pupils. More than that, many of the competencies individual pupils could develop and display were entirely dependent on other pupils creating an appropriate —environment" made up of —supporting" activities. Such competencies could only be said to *exist* in such a context.

In short, what we have here is a demonstration of not merely the feasibility but actual importance of moving from thinking in terms of —ability" to abili*ties*, of moving from viewing education as primarily concerned with conveying *content* to seeing it as being mainly concerned with nurturing *competence*, and from thinking of —intelligence" as a relatively unalterable, individual quality to something which is a distinctly alterable characteristic of a group. It also requires us to think of the processes involved in a way analogous to those that would be required to think about the development of different species within an ecological niche and the characterisation of the niche as a whole.

Although implied by what has been said, it is useful to underline that the teachers' and pupils' notion of *what was to be learnt* was different. Pupils were to learn to lead, to invent, to put people at ease, to find ways of doing the impossible, to create political turbulence, etc. The objective was not that they should —learn" in the sense of acquiring stocks of standard, formal, low-level, verbalised *knowledge.* The ability to build up idiosyncratic combinations of up-to-date specialist knowledge, and tacit knowledge, yes – but that was different.

[7] It is important to note that, even if the teacher's objective had been to enhance the pupils' knowledge, documenting that knowledge would have posed insuperable problems for evaluators steeped in classical measurement theory. This stems from the fact that the knowledge would, on the one hand, have consisted of unique combinations of up-to-date specialist knowledge (i.e., it would have largely been idiosyncratic) and, on the other hand, would have been comprised of unverbalised, and often unconscious, knowledge of *ways of doing things* (i.e., it would mainly have consisted of *tacit* knowledge).

It cannot be too strongly emphasised that the hijacking of the term —darning" to mean learning *content* has to be strenuously resisted. One has *always* to ask learning (*to do) **what?***

A similar ploy can be used to challenge widely accepted thoughtways about abilities. There is a tendency to seek to, for example, arrange people in a hierarchy according to their —creativity". But it is clear that one of the pupils mentioned above displayed a great deal of creativity in the course of orchestrating classroom (and political) disruption, another while putting others at ease, and another while finding ways to undertake a scientific study. One has always to ask: —Creativity (etc.) *in relation to carrying out which kinds of activity*?"

Developing Competence in Homes

Parents play an important role in nurturing the competencies of their children[8]. I will use the term *developmental environment* to refer to a kind of environment more likely to be created by parents who try to identify the particular interests and talents of each of their children and then create situations in which their children can undertake activities they care about – and, in the process, practice and develop high level competencies like the ability to problematise, find information, persuade other people to help, monitor the effectiveness of their behaviour, and so on.

Having set up a situation in which children can practice observing, inventing, adventuring, communicating, experimenting, and thinking whilst undertaking activities they care about, these parents intervene only occasionally. They do this sensitively when they sense an opportunity to assist their children through what Vygotsky (1978, 1981) might have termed a zone of proximal development. They help their children to conceptualise, to notice and resolve discrepancies between the expected results of their actions and the actual results, and to think about things which are not immediately present. They encourage them to think about the future and the long-term personal and social consequences of their actions and to act on those insights. They share their values and their view of the world with their children. They let them know that they think it is *important* to think, invent, adventure, and be in charge of one's destiny. They lead their children to become sensitive to cues which tell them that things are not working out as they had hoped, or even that they are getting out of control and that they should therefore either stop or get help. In this way their children learn to adventure into the unknown, secure in the knowledge that they can detect when things are going wrong and that they will be able to re-gain control.

We will later return to the vitally important question of why more teachers – and especially university lecturers – do so little to facilitate the development of such competencies in their students.

School vs. Home "Education" (or "Professionals" vs. "Amateurs"?)

One of my aims in this chapter is to call into question most conventional notions of what is meant by professionalism and professional development and, in particular, to underline the

[8] In addition to our own work reference may be made to the work of Kohn (1969, 1977); Sigel (1985, 1986); Sigel & McGillicuddly (1984); McGillicuddy-DeLisi (1982).

need to define professionalism as involving contributions *outside* one's domain of specialist technico-rational knowledge and, especially, contributing to the development of professional understanding.

Thus far, I have reviewed material which suggests: (a) that education involves a great deal more than schooling; (b) that parents are their children's most important educators, not in the sense that they do the things that schools do, but in the sense that they deploy sensitive strategies to facilitate the development of a wide range of important motivational dispositions and components of competence (including the ability to perceive, think, read, and communicate); and (c) that parents promote school success and cognitive development *indirectly*, by fostering such qualities as the ability to think for oneself, understand how systems work, and confidence in dealing with adults.

When one turns to an area of competence development in which teachers often claim particular professional competence, namely nurturing the ability to read, it again emerges (Tizard et al., 1982) that many parents (i.e., amateurs) are more effective than most teachers (i.e., professionals). One reason is that, as Francis (1982) found, parents tend to embed reading with their children in a meaningful, ongoing, joint activity. They provide different kinds of assistance depending on the child's previous experience with particular words. They vary what they do with the child's expectation of the text and with the child's (and their own) beliefs about the purpose of the reading session. When they help children to clarify meanings, they take account of the particular context in which the word is used and its function in the sentence. They relate the material they read to the child's interests. They spend a lot of time thinking about children's specific difficulties and trying to invent ways of helping them to overcome them.

When it comes to writing, one again finds that, whereas teachers tend to focus on low-level components of the task (such as on the *form* of letters and the format of sentences) parents tend to encourage their children to write about things they care about, and, in so doing, lead their children discover the deeper structure of language. They also develop idiosyncratic ways of communicating effectively by using such devices as allusion and innuendo. Many parents encourage their children to write messages with a view to influencing other people. Their success (or otherwise) in this endeavour provides the children with feedback about the effectiveness of their strategies.

It is often claimed that the main reason most teachers don't do these things has to do with class sizes. But this is actually not among the main causes of the discrepancy. Dewey had one adult to every four pupils in his school, but still only about 5% did what he enjoined them to do (Fraley, 1981). In an Educational Home Visiting project we evaluated (Raven, 1980), there was one teacher to every child and their task was to model mothering behaviour! *Still* most of them did not do the things many mothers do —instinctively". Part of the problem was that they felt obliged to conform to their image of what a *teacher* does. But other reasons included the fact that they did not know what the children's interests were and felt that they did not have the time to sit around and wait for this to emerge. After all, they were paid to be there to make something happen. Because they did not know what the children's motives were, they had little opportunity to harness them to create opportunities to feed the growth of important components of competence like seeking out and acting on self-generated feedback in order to undertake an activity more effectively. They had few opportunities to engage the child in activities that were important to them (the teachers) and then both model competent behaviour for the child and engage the child in thinking about constraints and inventing ways

forward. Besides, their priorities in child development often conflicted with those of the mother. The mother might not want the child to ask questions or even to find written material which would enable them to pursue their own interests —Godness knows what he might find poking about in books".

One of the things we have here is evidence of psychologists' general neglect of external determinants of behaviour. If we are to claim competence *as psychologists* we have to pay much more attention to these. If we are to claim to be *professional* psychologists, we have to join together with others to get something done about the pervasive neglect of such factors in the conceptual and research base which guides our profession.

But what would be a *professional* response to the material summarised above. One conclusion might be that we need to do much more to clarify the nature of developmental environments and the barriers which prevent most teachers and many parents creating them. Drawing such a conclusion would open up endless opportunities for psychologists to contribute to the development of their profession.

As far as professional development is concerned, it is clear that one thing we do *not* need is a requirement that teachers and psychologists demonstrate that they have undertaken activities (such as reading or taking courses) to bring them up to date with —developments" within the dominant paradigm of schooling and education. Equally, it is clear that one of the things we do need is opportunities for teachers and psychologists to contribute to the development of new ways of thinking, new tools, and new social arrangements. Backing up one step, what this would seem to mean is that it is necessary, if teachers and psychologists wish to claim to be professionals, for them to be involved in *promoting* such developments.

Developing Competence in Higher and Further Education

There can be little doubt that Higher and Further education *should* be primarily concerned with the development of generic, transferable, high-level competencies. Indeed, unless it does so, it is difficult to justify current arrangements because only a minority of students pursue careers related to their discipline of study. For example, in 1990, over 40% of graduates in history from British universities and nearly 40% of graduates in physics went into marketing, management services, or financial work. Graduates from physics, the biological sciences, and foreign languages enter almost as wide a range of jobs as do graduates from English, history, and the social sciences (Association of Graduate Careers Advisory Services, 1992). The vast majority claim that they have ceased to use any of the specialist knowledge they so painfully acquired at college after two years at work.

Once again it emerges that most higher education fails to nurture important high-level competencies [see Jacob (1956) and studies conducted by McClelland and his colleagues (e.g. Winter et al., 1981)]; although, as usual, the vast majority of studies in the area, such as those brought together by Pascarella and Terenzini (1991), fail to examine such issues.

However, when an appropriate methodology is adopted, it becomes clear that there are exceptions (see Winter et al., 1981; Mentkowski, 2000). Paradoxically, one the major groups of institutions that actually do nurture them consists of colleges that are widely accused of

—elitism": namely —Ivy League" colleges in the US and their equivalents in Britain[9]. The other main group consists of colleges with a special mission, such as Bennington and Alverno.

As in schools, it emerges that certain forms of joint project-based education are particularly important. Also – and, for the sake of brevity, I did not dwell on it in connection with school education – exposure to mentors who share the students' concerns and provide role models especially of the normally private components of competence which make for effective behaviour. By engaging students in their own research, mentors, for example, not only portrayed high-level competencies in such a way that the students could —catch" them but involved the students, as apprentices, in those very activities. Thus students became involved in puzzling over half-identified and barely verbalised problems and undertaking —experimental interactions with the environment" to clarify both the nature of the problem and the effectiveness of strategies being employed. For example, a tutor might say (but not in so many words) —We seem to have a problem here. I'm not sure what it is. But if we do *this*...Whoops, NO!; that was a mistake. But what that means is...". And so on. In such ways students came to develop the confidence and competence needed to adventure into the unknown. More than that, they came to think it was *important* to do so. Also important were demanding, Socratic-like, interactions which challenged the way students thought and led them to change those thoughtways and assumptions, to engage in critical thinking, and enhanced their ability to muster arguments and persuade.

Once again, as in the contrast between parenting and schooling, it is clear that these are personal interactions which cannot easily be incorporated into large-scale programmes. Despite this, one institution, the School of Independent Studies at what was then the North East London Polytechnic (NELP) (see Stephenson, 2001), did at least illustrate how this could be done.

The concept of capability, which underlay the programme, had its origins in a *Capability Manifesto* drawn up by the Royal Society for Arts in 1980. This viewed capability as an all-round quality, observable in what Weaver (1994) described as the ability to engage appropriately and sensitively in —purposive and sensible" action, not just in familiar and highly focused specialist contexts but also in response to new and changing circumstances. This was seen to involve ethics, judgements, the self-confidence to take risks, and a commitment to learn from the experience. A capable person has culture, in the sense of being able to —decide between goodness and wickedness or between beauty and ugliness" (Weaver, 1994).

The programme began with an *Exploration Stage*, lasting 10 to 12 weeks, in which students were encouraged to review their values, priorities, strengths, and developmental needs and helped to plan, and negotiate approval for, their individualised developmental programme; continued with a *Progress Review Stage* running through the main study phase, in which students were helped to monitor and review their progress; and ended with a *Demonstration Stage*, in which students set out to show what they had learnt to do by applying it to real situations relevant to their intended career. Such a framework could well be adopted by others seeking to nurture the diverse competencies of professionals, including psychologists.

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[9] It is of interest that the main beneficiaries of these programmes are people who have not, in any sense, been directly involved – i.e., members of the community as a whole – and not the participating individuals themselves. Note the importance of this finding from the point of view of underlining the importance of *comprehensive* evaluations.

Once things got to the stage of evaluating both the overall programme and individual students' development, the problem, with which we are now all too familiar, namely that all the students developed in different directions (see Stephenson, 2001), reared its ugly head. However, an ingenious solution was found. Instead of seeking to assess outcomes directly, the process of validation moved to validating the individual *programmes of study* and then testifying to the fact that the students had followed those programmes (Adams, Robbins, & Stephenson, 1981). It was argued that, if students had engaged an appropriate *process,* the outcomes, especially the idiosyncratic *knowledge* outcomes, which Lester (2001) has shown (contrary to all conventional wisdom) it is logically *impossible* to assess, would have been achieved.

It may be mentioned in passing that we have shown that similar arrangements can be made in schools. If it can be shown that a teacher has created a "developmental environment" in his or her classroom, the competencies pupils have developed become *visible.* These build on the invisible idiosyncratic, expert, formal and tacit, knowledge base the student has built up. This process could well find wider application in the evaluation of group-based personal development programmes among adults.

Something else of considerable importance may be noted in passing. A similar shift toward understanding process and *inferring* outcomes underlies a move from trying to apply positivistic, reductionist models in evaluation toward "illuminative" evaluation based on a study of the *processes* involved. *Most* important outcomes cannot be "measured" in the conventional sense.

As might be anticipated, it was not too many years before the progamme was, to all intents and purposes, closed down, in part because the external quality control agency (HMI) was uncomfortable with this shift from positivistic to illuminative evaluation methods.

But there was another interesting twist of direct relevance to the theme of this chapter. As might be anticipated on the basis of what was said earlier, those discipline-based NELP lecturers who *did* set about nurturing high-level competencies were accused of unprofessional conduct because they had strayed outside what was taken to be their domain of specialist knowledge (O'Reilly, 2001).

Unfortunately, there are yet other barriers to generalising educational activities of the kind encountered in institutions like Oxbridge, Alverno, and NELP.

One group of these relates to values conflicts. This will assume increasing importance as this chapter progresses. Indeed, at one level, it can be said that the most important problem in education is to come to terms with the diversity of values; a statement that is underlined in the subtitle of one of my most important books (Raven, 1994).

Other barriers to wider dissemination of competence-based education into universities are revealed in Schön's (1987) book *Educating the Reflective Practitioner.* He and Argyris spent over a decade trying to introduce activities designed to promote the development of the kinds of competence that he had, in *The Reflective Practitioner,* shown to be so important into MIT. They failed miserably. One reason was that the lecturers were not much interested in enhancing the competence of their students. They were locked into a framework in which the publication of bulletproof studies within their disciplines was the primary requirement. The peer review process ensured that publications putting forward insights which went *beyond* the data but were not tested *within* them would be rejected. More specifically, this prohibition extended to most research adventuring outside what were currently conceived to be the

boundaries of the –discipline". Clearly such lecturers provided no role model for ethically-guided adventurous research and action involving comprehensive inputs and evaluation.

Less expected was the reaction of the students. Basically, they said —No one can tell if I am a competent manager or not. So what I will have to do is focus on getting myself promoted. That means parading the latest _in' terms and phrases in front of my boss. That is exactly what the entire _educational' system has encouraged me to do and advanced me for doing. No problem".

So here we have further insights into why the educational system as a whole does not do the things which most people, in a sense, want it to do (i.e., the things which are, in fact, the most important from the point of view of nurturing occupational and societal competence). Handling them requires systems thinking: How does the system work? What is driving it? How can I deal with some of the constraints which prevent me doing what should be done? These themes will become a major concern as this chapter progresses.

Developing Competence in Workplaces

The way in which managers nurture the talents of subordinates emerges incidentally, but in a most interesting and revealing way, in a study conducted using Behavioural Event Interviewing by Klemp, Munger and Spencer in 1977. But to understand the significance of what these managers (actually Naval Officers) were doing in the staff development area, attention must first be drawn to some of the other things they did that differentiated them from other officers. Even though they were working in what might be taken to be an archetypical command-and-control organisation (the US Navy), one of the most striking things they did was initiate new developments themselves; they did not wait to be given instructions. Like Hattie's teachers, they publicly set goals, encouraged feedback from their subordinates to help them monitor how well things were going, *and changed the goals if it emerged that a goal was inappropriate or that problem was not what it had been taken to be.* Likewise, they did not sit around complaining about the orders that came from higher up in the hierarchy, they got together with other officers at their own level to influence those above them. They themselves did not issue orders but set about mustering arguments and persuading people to do the things that they felt needed to be done. And they did not offer punitive feedback but rather encouraged people to monitor the effectiveness of their own behaviour and change the goals and the strategies where necessary.

So here indeed were some distinctive role models from whom subordinates could learn how to behave competently. But then these officers engaged in some distinctly unusual activities to facilitate the development of subordinates. On the one hand, they encouraged their subordinates to join them in doing *their* job. (Many managers fear that, if they were to do such a thing, the subordinates would oust them from their position.) When they were working with subordinates in this way they were able to lead those subordinates not only to observe, but actually *to share in* many of the normally private components of effective behaviour. They were able to share the opening *feelings* that suggested that they had an encountered some kind of problem, their struggles as they tried to —think" about it in various ways and rejected most of their initial —thoughts" because they did not square with all the facts (in other words, as they conducted mental —experimental interactions with the problem"). Then, still unclear about what the problem was, they might initiate some kind of

overt action, quickly discover that it did not produce the desired result, and use this feedback to clarify the nature of the problem and the effectiveness of their strategy.

Furthermore, once they realised that the overlap between their motivational predispositions and those of a particular subordinate was insufficient to permit effective role modelling to occur, some of them sought out other managers who did share their subordinate's motives and placed those subordinates with him or her with a view to developing the components of competence in the context of undertaking those activities. Some of the teachers and parents whose work we described earlier did similar things.

ASSESSMENT

One of my objectives in this chapter has been to alert readers to some of the dangers inherent in thoughtways and procedures commonly advocated in universities and liable to be taught in continuing professional development courses in the education/human resources area and to suggest ways in which psychologists could, instead of taking courses, contribute to the continuing development of their profession.

So the logical next step is to turn to the assessment of competence.

But, before doing that, it is useful to highlight some fundamental problems associated with the concept of evidence based practice, and especially the notion of payment by demonstrated results; in education, personal development, and psychotherapy.

Most of the researchers working in the area have more or less proceeded on the assumption that —nothing could be simpler" than demonstrating change (or the lack of it). Simply administer some test before and after an intervention and subtract the initial from the subsequent scores.

Nothing could be more misleading! In the first place, as we have seen, there are not, and, if one works within the traditional measurement paradigm, cannot be, —measures" of the most important outcomes (or, to tell the truth, measures of the inputs or processes involved). The effective study of processes calls for the adoption of an ecological-type model with many and recursive feedback loops.

But, even if one ignores these problems, it emerges that most of the studies are extremely misleading and damaging. Yet they have had dramatic effects on practices and procedures which influence millions, if not billions, of people worldwide.

In actuality, we are here talking about what might be taken to be a number of different things: 1) the assessment of (relative) change in groups over time or in response to different treatments, including such things as administrative arrangements (that was what Hattie's meta-meta-analysis of 800 *meta*-analyses of tens of thousands of studies was all about), 2) the demonstration of *individual* change so as to be able to do such things as compare the relative effects of different treatments (e.g., drugs) on the same individual, and 3) the calculation of individual responsiveness *scores*, as in the calculation of personal —learning potential" scores by subtracting the pre- from post-intervention test scores (these difference scores then being correlated with other variables in an effort to do such things as clarify who responds).

One basic problem, although it is not the most fundamental, is that, incredible as it may seem, tests developed according to Classical Test Theory are unfit for (this) purpose.

The basic problem is that such tests do not yield equal-interval scales. Thus a score difference of, say, five points at one point in the scale is not the same thing as a score difference of five points at another point in the scale.

One implication of this is that the conclusions drawn from, for example, the thousands of studies purporting to compare the relative gains made by —more" and —less" able students in response to alternative educational and administrative practices are open to serious question. In fact it turns out that the findings can be easily reversed by even such a simple change as employing a test of the same —ability" but having a different level of difficulty.

Likewise, since a —learning potential" (gain) score of five means very different things at different points in the scale, any attempt to relate such scores (without reference to the point in the scale from which they are drawn) to other things, such as —environmental" (e.g., socio-economic) variables are likely to be seriously misleading.

In technical terms, the truth is that such change scores are heavily dependent on: 1) the absolute difficulty of the test, 2) the shape of the Test Characteristic Curve, and 3) the sector of the curve on which the change is measured (see Prieler and Raven, 2008 for details). To solve the problem it is necessary either to generate tests having linear Test Characteristic Curves or to make complex calculations using speciality computer programs.

The second basic problem arises from the tendency of most evaluators to focus on single outcomes in a manner not merely encouraged by, but often demanded by, reductionist science. Yet any educational or developmental process has a range of outcomes, some of them desired and desirable, some undesired and undesirable, some short and some long term, some on individuals, some on society (what is good for the individual may be bad for society), and varying from individual to individual.

The problem may be captured by saying that most evaluations purporting to support —evidence based practice" are insufficiently *comprehensive.*

In fact, as Prieler and Raven (2008) show, two important transformations in conventional thinking emerge if one pursues this issue. One is that the quality of an evaluation is to be judged more in terms of its *comprehensiveness* (its ability to get a rough fix on all important outcomes for different sorts of people, for individuals and the society in which they live, and in the short and the long term) than by the accuracy of its measures of particular outcomes or the —sophistication" of its analytic techniques.

Unfortunately, even this statement is not strong enough. Many effective educational/developmental processes are *transformational.* They do not result in people becoming —better" or —worse" along some predetermined —dimension". Instead they do such things as release previously existing components of competence into some activity the potentiality of which was not previously even suspected (see, for example, Jackson, 1968 for schoolchildren, Stephenson, 2001 and Winter et. al., 1977 for University students, and Hughes, 1998 for adults.)

Kazdin (2006) has underlined similar points in relation to psychotherapy. It *cannot* be meaningfully evaluated using a few pre-determined tests.

But worse is to come. These competencies are not merely released or triggered by some chance encounter with another person or problem. Their very existence depends on there being a supportive, if not necessarily congenial, context. And the effects of these collective interactions emerge not merely at the individual level (as in, for example, the strength of a single plant) but, more importantly, in a form that is analogous to an index of the viability of an ecological niche in a particular context. Suffice it to say that, in a single field, there are

many hundreds of types of grass, no one type being the "fittest" in any general sense, and that the proportions of different strains varies with the balance of other plants, animals, and nutrients within a huge variety of niches.

These observations point to some of the most basic problems with research in the area. To move forward it will be necessary to move away from the kinds of procedures embraced by reductionist science to those hinted at in our earlier references to "illuminative" research and what might be described as an "ecological" image, not merely of the educational process, but of science itself.

Once again, the dangers are clear in relation to requiring psychologists to enroll in "professional development" courses built around the received wisdom. More than that, in this case, it is apparent that there is a need for professional commitment to work *outside* the profession to undo the damage that has been caused by basing policy on studies that have, in the past, adopted inappropriate methods and procedures.

THE ASSESSMENT OF COMPETENCE

So far I have summarised some of our work on the nature, development, and assessment of competence that highlights an apparently incomprehensible lacuna in the research psychologists have carried out in the past; a lacuna which has had serious negative consequences for individuals, organisations, and society. As a result, failure to undertake the necessary research must therefore be considered both unethical and unprofessional. Yet the design and conduct of the research that is needed would challenge the paradigms which currently dominate our field and, indeed, call into question many basic assumptions of reductionist, positivistic science itself. To get it done it would be necessary to intervene in poorly understood social and political processes currently considered to be outside the domain of psychology. This would invite a challenge to our professionalism which only a reconsideration, along the lines Schon has indicated, of what it *means* to claim to be a professional could resolve.

As has been shown, most mainstream psychometric frameworks fail to recognise most of the talents most people possess. They make it impossible to mount meaningful evaluations of educational, personal development, and clinical (e.g., psychotherapeutic) programmes and policies. Worse, as Spearman noted, their use within schools drives education out of these institutions because they focus teachers', pupils', parents', employers', administrators' and politicians' attention on the goals that are assessed and thus deflect attention from the most important qualities pupils possess and which society urgently needs to set about nurturing and utilising. What could be more unethical?

And the previous paragraph understates the problem, because most of the tests used in schools lack both construct and predictive validity. Concerning predictive validity, it is now well known from Schmidt and Hunter's (1998) meta-analyses that scores on educational tests correlate hardly at all with performance outside the school system.

As to construct validity, I have already laboured the point that they cannot legitimately be viewed as ways of assessing peoples' knowledge because their most important knowledge is both idiosyncratic and tacit.

But all these observations are really secondary to the primary point. And that is that psychologists have failed to provide parents, teachers, university lecturers, managers or any of those involved in personnel development, assessment, and selection with appropriate ways of thinking about and identifying the diversity of talents that are available. As a result, neither educational nor psychological researchers are able to mount meaningful evaluations of individuals or educational programs or policies.

A vague awareness of these things, combined with much more articulate unease about the uses to which test scores are put, has led to widespread criticism of testing.

The response of bodies like the International Test Commission has been interesting, if predictable. It has been to retreat into specification of technico-rational requirements for tests and testers. These rely heavily on widely endorsed, but poorly understood, concepts like —validity". Yet, as Messick (1995) and I have shown, one cannot validate tests using the procedures widely advocated in text books. So, once again, —professional development" courses set up to disseminate the standards set by such bodies and certifying such things as competence in testing, courses which inculcate the received wisdom on psychometrics and test construction, are liable to prove *dysfunctional.* One *cannot* assess things like —creativity" or even —the ability to think" in prescribed manner.

Laudable though the objective of, like the Joint Committee, setting standards prescribing that —only reliable and valid tests may be used in the evaluation of people and programs", their *effect* is to render many important personal qualities and the effects of policies and educational and social activities invisible. Since there are no good measures of the main objectives and outcomes of the kind of interdisciplinary, competency-oriented, enquiry-based, education discussed earlier, the requirement that only reliable and valid tests be used in their evaluation induces researchers to use only *irrelevant* tests unrelated to many of the objectives and possible unintended and undesirable consequences of both the programmes being evaluated and any programmes with which they are compared. As Kazdin (2006) has put it, such standards lead evaluators to employ what amount to arbitrary selections of measures unrelated to either the objectives of the programme or any analysis of its probable effects. This not only renders the positive outcomes of these activities invisible, it also ensures that many negative effects, especially of conventional educational activities and health care programmes, go undetected and undiscussed; indeed, they become almost undiscussable.

BARRIERS TO THE DEVELOPMENT OF AN EFFECTIVE EDUCATION SYSTEM AND A PRELIMINARY DISCUSSION OF THE MANAGEMENT AND ORGANISATIONAL ISSUES INVOLVED

There are many reasons why schools tend to neglect their main goals. These 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, and, especially, how to nurture and recognise the huge variety of talents which are to be found in any classroom. They include an inability to handle the value conflicts that surface as soon as one tries to introduce educational programmes that actually set out to nurture high-level competencies or promote diversity. They include an inability to initiate a network of experiments aimed at different aspects of —the problem" and make appropriate arrangements to learn from those experiments.

So far as I can see, if society is to handle the values conflicts involved it would be necessary to create a variety of distinctively different educational programmes which actually do nurture different talents, to document the differential consequences of each of these in a comprehensive way, and to feed that information to the public so that pupils and parents 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 system to politicians who take decisions binding on all. In short, it involves the evolution of new concepts of bureaucracy and democracy (see Raven, 1995, 2000, 2010a).

So, whose job is it to carry out the activities mentioned in the last paragraph? As far as I can see, it has to be the job of public servants. It becomes their job is to create a variety of options in every community, to ensure that they are comprehensively evaluated, and to feed this information to the public. More fundamentally, their task becomes that of promoting 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 methodologies grounded in positivistic thinking and promoting an understanding of the kinds of "illuminative" methodology mentioned earlier and, in particular, examining the results of the experiments that have been initiated to draw out their implications for understanding the currently invisible *systems* processes that are deflecting the activities from 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 adjustment) in the long-term public interest.

If they are to do these things, there will need to be a sea-change in beliefs about the role of public servants. It will be necessary to generate new job descriptions for them, and it will be necessary to evolve new staff and organisational appraisal systems to find out how well they are doing.

How to get them to pay attention to such evaluations of their work? The answer was, in some sense, provided by John Stuart Mill in 1859. One way to make it more likely that people will act in the long term public interest instead of their own personal interests is to expose their behaviour to the public gaze. Or, as Mill put it, making "visible to everyone who did everything and by whose default anything was left undone". So what is required is a network of overlapping monitoring/supervisory groups as distinct from a form of accountability supposedly feeding information through extended bureaucratic chains to distant multi-purpose assemblies composed of what Adam Smith (1776) and John Stuart Mill described as committees of ignoramuses. Would the public participate in such arrangements? Make no mistake about it, when people can have an *influence,* as is very rarely the case in the context of what currently passes for democracy, they participate.

In reality, despite the negative comments I have made about the market process, it is important to understand the problem it was meant to solve and how it was meant to work. Adam Smith (1776) and Fred Hayek (1948) advocated it as an answer to a very basic question which is still with us; namely, how to create a society which will innovate and learn without central direction; one which will harness the expert information which is widely dispersed in the hearts, heads, hands, and tools of billions of people. The proposal was for an *organic* system with multiple feedback loops which did not depend on decisions by committees of wise men. Indeed, it was argued that the very concept of a wise man was an oxymoron. The reason was that, if someone initiates some activity at one location and someone else another

activity at another location, no one can tell in advance what will happen when the two things come together. To pick up Ridley's (2010) memorable image, the problem is to facilitate the process whereby ideas evolving in different ecological niches have sex with each other and produce unpredictable, previously unimaginable, outcomes! It follows that, as Smith asserted, key information required to take wise decisions not only is not, but *cannot,* be available. On the other hand, through the market process, individuals could use their pennies to influence on the direction of development. They could —vote" separately on thousands of issues. They could invest in enterprises they liked the sound of and choose between a myriad of goods and services. They did not have to vote for politicians (whom they did not trust) offering only alternative *packages* of policies and largely unresponsive to feedback. They could change their decisions over time as they saw how things worked out.

For a variety of reasons it is up to psychologists to come up with a better answer to Smith and Hayek's question based on our understandings of organisational arrangements, the sources of (and deterrents to) managerial and professional competence, staff guidance, placement, and development systems, and staff and organisational appraisal systems. And we need to do so pretty quick since the two main models competing for public attention at the present time (current forms of —the market" and current forms of politico-democratic management via bureaucracy) are widely discredited, thereby producing alienation and apathy.

A Re-Formulation of the Problem

To re-state the problem in other terms: The need is for a better design for a socio-cybernetic system for the management of society.

To clarify, cybernetics is concerned with the study of guidance and control systems in animals and machines. One has to say animals, otherwise people think only of manmade systems, like missiles. But as soon as one says animals it is clear that one is concerned with understanding and mapping guidance systems which depend on multiple feedback loops many of which do not pass through any central nervous system. So socio-cybernetics is concerned both with understanding the social forces that control the behaviour of people in society (and regularly undermine well-intentioned social action) and designing better socio-cybernetic guidance systems for society.

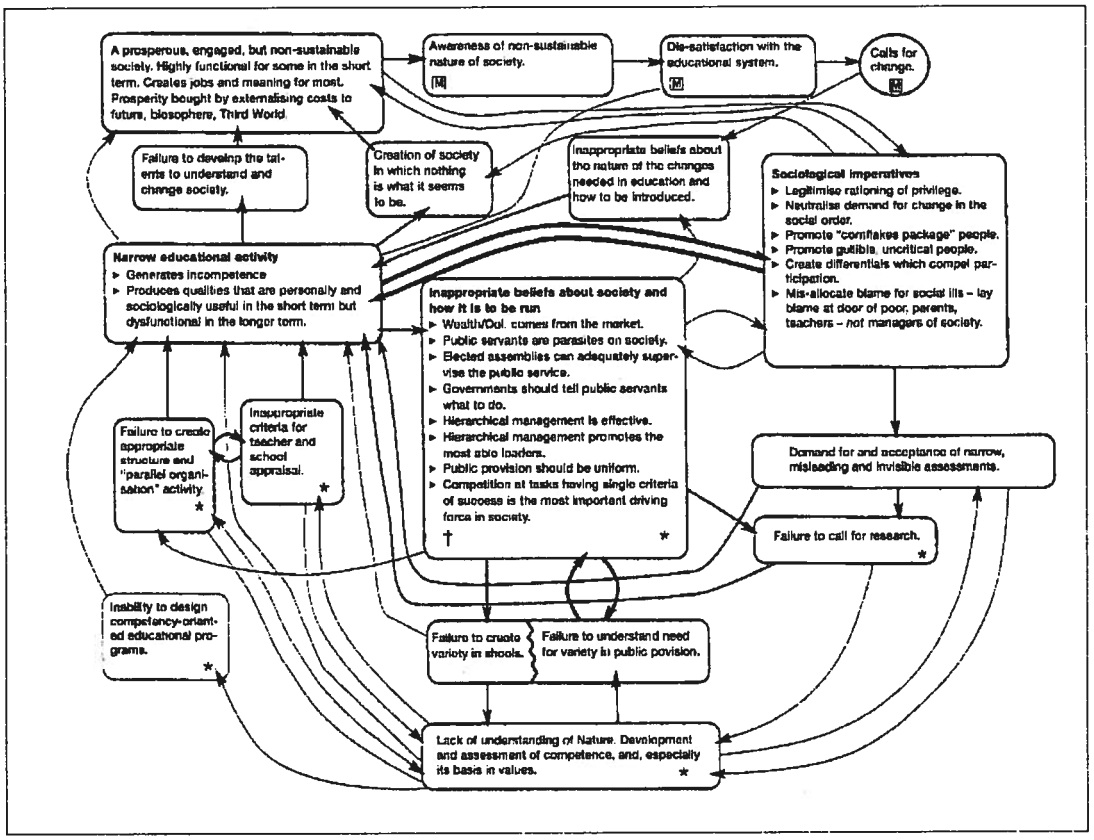
Since psychology is centrally concerned with understanding the causes of human behaviour, it is clear that psychologists should be playing a major role in helping to develop an understanding of these processes and designing a better management system for society.

Let's turn now to the last issue mentioned when summarising the problems that need attention if we are to create an effective educational system; namely, the need to create a ferment of innovation, experimentation, and learning. There are so many things to be done that they could not possibly be centrally decreed. No blueprint is possible. The question then is to how to create a *learning society,* a society which will innovate and learn *without* central

direction[10]. On the face of it, it would seem that organisational psychologists should be able to make some important contributions to the design of such a system.

But the *most* important lesson we learned at this point in our work was that the contributors to the abject failure of the so-called educational system do not operate independently but form a network, or system (using the word in another sense), of recursive and mutually supportive feedback loops. This network seems to have the capacity to perpetuate, even extend and elaborate, itself. It becomes virtually impossible to change any one part without changing others; otherwise the changes one has made are either negated by the reactions of the rest of the system or produce unanticipated, and often unwanted, changes elsewhere.

This network of feedback loops is sketched in Figure 1.



*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 act in, the long-term public interest. This means systematic, broadly based, evaluation and participative democracy.

Figure 1. Feedback loops driving down quality in education.

Among other things, the Figure shows:

1. That the dominance of the activities with which schools are preoccupied arises from:

[10] Those who are ready to take the plunge may care to note that something still deeper is implied by the term "Learning Society". It is what the system, qua system, learns to do or stop doing that it is most important to influence – not the learning of the individuals within it.

a. A series of sociological imperatives (e.g., that schools assist in legitimising a hierarchical society and deciding who will be promoted into the higher ranks). (It follows from this, and this has important implications for the way we tend to think about solutions to the problems reviewed earlier, that what happens in schools is not mainly determined by the wishes of parents, teachers, pupils, employers, ministers of education or anyone else but, at least to a significant extent, by what is assessed in the sociological process of allocating position and status.);
b. Inappropriate beliefs about the nature of the changes that are needed in education itself, the management of the educational system, and the management of society;
c. Society's failure to initiate research which would yield useful insights into such things as the nature of competence and how it is to be fostered and assessed;
d. The absence of (a) systematically generated variety in, and choice between, educational programmes which have demonstrably different consequences and (b) information on the consequences of each of these alternatives;
e. Failure to create climates of innovation within schools[11] and
f. Inadequate dissemination of the results of research into the nature, development, and assessment of generic high-level competencies, and, especially, the implications of the values basis of competence.

2. That this narrow educational process has a series of knock-on effects which finally contribute to its own perpetuation. The competencies and beliefs that are nurtured and inculcated in schools reinforce a social order which offers major benefits to —able" people who do what is required of them without questioning that order. That society creates endless work which gives meaning to people's lives (but does little to enhance the general quality of life) and creates wealth at the expense of the biosphere, future generations, and the Third World. The formal and informal —educational" system helps to teach a host of incorrect beliefs which collectively result in nothing being what it is popularly or authoritatively said to be. This double-talk makes it extremely difficult to conduct any rational discussion of the changes needed in society. The sociological imperative that schools help to legitimise the rationing of privilege contributes to the demand for, and encourages acceptance of, narrow, invisible, and mislabelled assessments. Those predisposed to acquire these —qualifications" are not inclined to see the need for, or to commission, genuine enquiry-oriented research or notice other talents in their fellows. Teachers who become aware of the hidden competencies of their —less able" students experience acute distress. The lack of understanding of the nature of competence leads to a failure to underline the need for a variety of value-based educational programmes and thus to the perpetuation of narrow educational activity.

[11] The requisite developments are fully discussed in Chapter 8 of Managing Education for Effective Schooling (Raven, 1994) but especial reference may again be made to Kanter's (1985) notion of —parallel organisation activity".

3. That the main motives for change are widespread awareness that there is something seriously wrong with the educational system, and, more specifically, that it fails miserably in its manifest task of identifying, nurturing, recognising, and utilising most people's motives and talents. The most commonly proposed solutions to this problem, based as they are on other misunderstandings, are, however, inappropriate. However, another motive for change stems from increasing recognition that we have created a non-sustainable society and that basic change in the way society is run is essential.
4. That there are a number of points at which it should be possible to intervene in this network of feedback loops to create an upward spiral. These might involve:
    a. Changing the way we run society, introducing more, and more appropriate, social research and evaluation activity, and finding ways of holding public servants and politicians accountable for seeking out and acting on information in an innovative way in the long-term public interest;
    b. Introducing the —parallel organisation" activities[12] that are required to promote innovation within schools;
    c. Establishing a greater variety of distinctively different, value-based, educational programmes and providing information on the short and long-term, personal and social, consequences of each;
    d. Creating public debate about the forms of supervision (the nature of the democracy) needed to ensure that public servants seek out and act on information in an innovative way in the public interest; and
    e. Disseminating what is already known about the nature, development, and assessment of competence and its implications.

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

(1) It is impossible to achieve significant benefits by changing any one part of the system, such as curriculum or examinations or professional training on its own, without simultaneously making other changes; otherwise 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, psychologists, 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

[12] See footnote 5.

an analogous way to that in which marine engineers harness the potentially destructive forces of the wind: They will not go away!

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

(5) The network of forces depicted (a) has the effect of driving attempts to deal with the problems based on single-variable common-sense interventions ever more narrowly, and ineffectively, around the triangle in the top left hand corner of the Figure, and (b) diverts attention from the developments, indicated in the bottom part of the Figure, that are so essential to move forward.

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

(7) The system does not merely reproduce itself; it leads to the production of ever more elaborate versions of itself; it is self-elaborating; autopoietic[13].

In the foregoing, we have repeatedly used the word —force". We must now take up the question of the nature, or status, of these —forces". Viewed in one way, Figure 1 is analogous to a map of the interacting gravitational forces controlling the movements of the planets. But, if so, the nature of the *social* forces involved has yet to be elucidated. What is clear is that the links in the figure are not flows of e.g., resources as in the models developed by Forrester in 1961 and disseminated by Meadows, Meadows, and Behrens (1972). Nor are they flows of —information" as in networks of e-mails. Nor are they flows of, for instance, people from one section of the —educational system" to another. The contents of the boxes are not people or stocks of food or components. Only if the feedback loops really do represent *forces* of some kind does it make sense to ask how they can be harnessed (as in the forces acting on a sailing boat) or amplified or damped down (as in electrical energy flowing through a radio).

Put like that, it suggests that the need is to find ways of mapping, measuring, and harnessing social forces in a manner analogous to those adopted by physicists and engineers. And I have spent many years trying to do this [see e.g. Raven & Navrotsky (2001) and Raven (2010b)]. However, as was stressed earlier, the field of cybernetics encompasses the study of such things as the multiple, non-hierarchical, guidance and control systems that operate within organisms or within ecological niches. Unfortunately, in trying to do these things, biologists and ecologists encounter much the same problems as we do here.

Just to spell out the implications of these observations: on the one hand, it is clear that common-sense based —solutions" to the problems of the educational system are not going to work, so there is no point in enjoining administrators, teachers, or psychologists to attend

[13] i.e., in some sense self-organising, self-reproducing, and self-extending. The problem with the word –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 and in relation to the wider society.

courses devoted to their promotion. On the other hand, there is endless scope for adventurous research to advance understanding in the area. Thus while, yes, there is need, through professional development activities, to release, nurture, and create conditions for harnessing all of the competencies that are so crucial to the creation of cultures of innovation and intelligence, the chief focus of professional development activities has to be on finding ways of enabling and encouraging all members of the profession to contribute to the development of the profession. Paradoxically, doing *that* will mean working *outside* our areas of certified professional competence.

But to return to the point, our problem here is to find ways of understanding, mapping, and harnessing these social forces: the forces that primarily determine the behaviour of organisations and people.

In my efforts to do this I was introduced to what at first seemed a very promising lead, which does indeed illustrate the feasibility of trying to make progress along these lines. However, it incidentally yielded some dramatic illustrations of the counterintuitive, and usually counterproductive, effects of common-sense based interventions into poorly understood systems that are well worth examining.

The work deals with the complex and recursive feedback loops among the hundreds of variables that contribute to such things as quality of life, economic well-being, mortality, population, pollution, agricultural production and the consumption of resources.

The basic model showing these interactions was developed by Forrester in 1961 (see Forrester, 1971), formed the basis of the famous —Clubof Rome" report *Limits to Growth* in 1972 (Meadows et al., 1972).

One of the things Forrester (1971) shows is that, if things are left pretty much as they are, industrialization will eventually be suppressed by falling natural resources.

But if science and technology find a way of avoiding resource depletion, which is an —obious" —olution" to the problem, the outcome is even less desirable. Population and capital investment are then able to rise until a pollution crisis is created. Pollution then acts directly to reduce birth rate, increase death rate, and depress food production. In this case, population, which peaks in 2030, declines by 83% within 20 years. Forrester (1971) notes that this would be disaster of unprecedented proportions.

It would be interesting to review further findings from the work. But, as mentioned earlier, this lead did not live up to its initial promise. This was precisely because Forrester (1971) did *not* find ways of including the kinds of *social* forces shown in Figure 1 in their model. As a result, the implementation (or otherwise) of their recommendations becomes dependent on social and economic forces which lie outside it. One can no more identify the relative importance of a variety of possible interventions into the social guidance and control system in this area than one could in relation to the educational system.

To say a little more about this, consider Figure 1, which was based on the systems diagrams, now termed systemograms, published by Morgan (1986). Useful though they are, there is a fundamental problem. It is not possible to assess and weight the relative importance of the feedback loops that are depicted in such a way to be able to assess the likely effect of any proposed intervention. This remains a central problem to be addressed if we are to move forward.

Nevertheless, several things are already clear. One is that, if one is to intervene effectively in socio-cybernetic systems, we need some basic understanding of the system we are dealing with. And then we need to make numerous, *systems-oriented*, interventions.

Ironically, generating an understanding of a system depends on diffuse experimentation *coupled with comprehensive evaluation and a deliberate effort to elucidate the implications of the effects of the action, both intended and unintended, for our understandings the system itself.* It is quite possible that a diffuse network of such experiments might lead to some kind of assessment of the relative weights to be attached to each of the feedback loops.

THE WAY FORWARD

In developing our map of some of the systems processes that control the operation of the so-called —educational" system, we have attempted to follow the injunctions of House (1991), Parlett (1972, 1976), and Hamilton, Jenkins, King, MacDonald, and Parlett (1977) to use psychological data to illuminate a hidden network of social forces which overwhelmingly determines our behaviour and our theories. Many will claim that, as psychologists, we should not have done this or that we have —gone way beyond our data" in doing it. Yet, if we, as psychologists, wish to claim either to be serious students of the determinants of behaviour or that we aspire to apply science to benefit society, there is no doubt that we need to take the study of such forces seriously.

But clearly we will not engage with this task if we continue to work within the images and definitions of our role that we have accepted in the past. We need to actively articulate and promote a new image of ourselves and the role we can play in society. To put this another way, if we are to ferment the paradigm shifts that are required, or if we are to contribute as we would like to society, it is crucial for psychologists, *as part of our professional responsibilities,* to seek to understand, and find ways of intervening in, the omnipresent social forces which we have now seen control so much of our behaviour. Yet few of those who have noted the need for a sea change in thinking about the nature, development and assessment of competence believe it is part of their job to try to bring it about, still less to intervene in the network of social forces we have described.

How then to design a better guidance and control system for the management of the educational system and society more generally? There are many examples of more effective organisational arrangements to be found in research into individual organisations. Examples include those contributed by Schon (1971), Kanter (1985) Deming (1980), Johnson and Broms (2000), Kohn (1969), Semler (2001) and Erdal (2008).

Bookchin (2005) has underlined that what is common to these developments is that they involve moves toward —organic" structures.

In saying this he seeks to make a connection with the fact that the functioning of organisms is dependent on multiple, mostly non-hierarchical, feedback processes. Most functions, such as the maintenance of body temperature, are dependent on multiple feedback processes the majority of which do not pass through the central nervous system.

Bookchin (2005) then notes that it is so with many preliterate societies. Many have no chief, no hierarchy, no formalised religion, no written language, and no formal government structure. And the activities undertaken by individuals within them change depending on the needs of the whole.

One way of summarising what emerges from many of the studies of modern organisations alluded to earlier is that organisations benefit greatly if they can move toward organic structures.

Unfortunately, as Bookchin (2005) shows, the trend, seemingly since time immemorial, has been inexorably toward centralised command-and-control structures. This despite the repeated demonstration, not only that these run into enormous problems and generally fail to deliver high quality of life for most of those who participate in them, but also of the viability and success of alternatives.

The question is, then, why this trend has continued so inexorably and eliminated most of the successful alternatives.

This becomes a crucial question which organisational and other psychologists must answer if they wish to advance more successful management arrangements in connection with private or public institutions.

There is a strong tendency to attribute it to the doings of evil capitalists. Yet our work on the educational system shows that the process has too many components to support the view that it has been designed by an elite. What is most striking is that the system has evolved further and further along its current trajectory despite the repeated demonstration that the vast majority of pupils, parents, teachers, ex-pupils, and employers want it to move in exactly the opposite direction and despite the existence of a number of alternatives.

Bookchin (2005) attributes the overall trend in society to a —self-organising" process in which the central theme is the perpetuation and legitimisation of hierarchy.

It is this sociological need for hierarchy which drives the creation of huge amounts of essentially senseless work which constitutes the ‗economic' system but, as Lane (1991) and Marks et al. (2006) show, does little to enhance quality of life. Unfortunately, a serious by-product of this senseless work (often focussed on materialistic goods) is the destruction of our habitat and thus, in due course, the elimination of our species.

There is not space to elaborate this thesis here (but see Raven, 2009). Suffice it to say that it is urgent for psychologists and others to study the socio-cybernetic processes that are contributing to this evolutionary trend and find ways of intervening in it.

AN INCIDENTAL, BUT PERHAPS REVOLUTIONARY, OBSERVATION

At this point we may draw out to a, somewhat paradoxical, but strikingly revolutionary, thought that seems to have emerged in our discussion. This is that what we have said essentially involves turning psychology inside out. It means de-animating human behaviour in the way Newton de-animated the behaviour of moving objects. It means attributing much of what we and others do to the invisible social forces that act upon us rather than to individual motives or values. Of course this is an over-statement because we have seen that these forces select and promote certain sorts of people who seem more adapt at promoting the —dfnctions" of the system. Nevertheless there is something of an irony in suggesting that the way forward involves promoting the use of psychology to de-psychologise human behaviour.

And so to recap: early in this chapter it became clear that we need a new framework, or paradigm, to guide our thinking about competence and its development and assessment. But

study of why the educational system has not in the past operated in a more professional way highlighted a more fundamental problem. This is that the behaviour of both our institutions as wholes and individuals within them is primarily determined by networks of mutually supportive and recursive *external* forces. This observation in turn affects our understanding of competence because it thus emerges that our competence is centrally dependent on understanding and harnessing these forces. More than that, it means that, if we are to claim special expertise in the area of understanding and predicting human behaviour we have to de-animate psychology: to turn it inside out. This is not to say that we should neglect individual psychology any more than the discovery of Newton's laws of motion mean that we should ignore the differences between different species of bird. But what it does mean is that, as professionals, it is incumbent on us to press for study of these forces. If we are to do these things we will need to press, not only for the development of new technico-rational knowledge but, more basically, for a move away from our current enthrallment with positivistic, reductionist, science. If we are to do any of these things we will need to reconsider what it means to be a professional; what professional competence involves.

CONCLUSION

In this chapter we have seen that:

1 Much received wisdom relating to the nature, development, and assessment of competence is inadequate. Worse, that much of its application has undesirable, indeed unethical, consequences for individuals and society. It follows that it would be unprofessional, indeed unethical, to require participation in —continuing professional development" activities conceived of as requiring enrollment in such things as courses to update participants' technico-rational knowledge.
2 There are endless opportunities to contribute to the evolution of better ways of thinking about, nurturing, and assessing competence. Unfortunately, dealing with the social forces which have, in the past, prevented psychologists doing these things calls for involvement in activities which are currently viewed as outside of psychology, and which many would therefore regard as going beyond their understanding of what it takes to be regarded as a professional psychologist. Nothing could be further from the truth; indeed, recognition of the importance of seeking to understand and find ways of intervening in these networks of forces has major implications for the way psychologists think about the determinants of behaviour and our understanding of competence in particular.
3 Our own research, including our work on the barriers to effective work in the area, suggests many leads which might be followed up in attempts to move forward.
4 While it *would* be possible to offer off-the-job programmes to nurture the competence of psychologists, those who set out to provide them would face serious challenges overcoming which would call for exceptional levels of competence and commitment going well beyond what most would regard as the legitimate calls of duty.

5 A more fruitful basis on which to move forward might be to require organisations to set aside time for what Kanter (1985) has usefully designated —parallel organisation activity" and to require psychologists to produce evidence that they have contributed to such activities.

6 What happens in the educational system, and society more generally, is not determined by the values or priorities of parents, pupils, teachers, employers, ministers of education or anyone else but by a network of recursive autopoietic social forces which few have sought to map or understand. Common-sense based interventions in these networks are either negated by the operation of the rest of the system or have counterintuitive, and usually counterproductive, effects.

7 The two key developments are required if we are move forward (i.e., to find ways of tackling the social and —environmental" problems which confront us) are (a) to develop better ways of thinking about, mapping, measuring and harnessing the social forces mentioned above, and (b) to design a new, organic, socio-cybernetic system for the management of society. In this connection, it was suggested that one way of looking at the task would be to see it as pointing the need to devise a new answer to Adam Smith's attempt to formulate arrangements that would lead to a society which would innovate and learn without central direction.

8 For the domain of psychology in general, we need a number of paradigm shifts as basic as those Newton introduced into physics. We need to —deanimate" our explanations of behaviour and see it as being primarily controlled by networks of invisible forces which can nevertheless be mapped, measured, and harnessed as effectively as Newton's observations made it possible to map, measure, and harness invisible physical forces; although a more appropriate image of the developments that are needed might be provided by attempts to map the interactions occurring in ecological niches.

9 Even more basically, if such developments are to occur, it will be necessary, though our professional development activities, to promote a movement away from a reductionist to what might be called a more ecological image of the scientific process itself.

BIOSKETCH

JOHN RAVEN. Perhaps the most important strand in John Raven's life work has been that which began with studies of what parents, pupils, teachers and employers wanted from the educational system. The barriers to delivering these outcomes included deficiencies in understanding of the requisite developmental (curriculum) processes and ways of testifying to the diverse outcomes. But more important was failure to come to terms with the sociological functions of the system and inappropriate (command-and-control-oriented) images of the way institutions, and especially public provision, should be managed. Yet, over time, something still more important came to the fore. What happened seemed to be controlled, not by people's priorities, but by a network of recursive and mutually reinforcing socio-cybernetic feedback loops. This prompted the realisation that we are all daily driven to do many things we are not personally predisposed to do. These insights led, first, to further work on public

management, and especially the developments needed to create a sustainable society, and, second, to the notion that, just as it was necessary to de-animate explanations of the behaviour of moving objects in physics, so it will be necessary to de-animate our explanations of human behaviour and come to see it as being mainly determined by networks of invisible external forces rather than individual predispositions.

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