

# SCENARIOS FOR SCHOOL AND TEACHER DEVELOPMENT

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The various reports of OECD in recent years have been outstanding, and it is timely that this conference has taken up the challenge to link them together, and draw implications for school and teacher development. These reports are *What Schools for the Future?* (OECD, 2001), *Understanding the Brain* (OECD, 2002), *Networks of Innovation* (OECD, 2003), *Teachers Matter* (OECD, 2004a), and *Innovations in the Knowledge Economy* (OECD, 2004b). Each draws from experience or studies in different countries and each follows one or more conferences or workshops where recommendations are critically tested. Account is taken of scholarly contributions that often stand alone in the traditions of academic publishing. These reports are robust and warrant the most serious consideration of policymakers and practitioners. It is fair to say that there is considerable inertia in the pace of change in education and take-up has been modest. It may be too early to expect more. This conference will play an important role in bringing a sense of cohesion to the effort, with a focus on the resource that is universally accepted as the most important of all, namely, the teacher.

Our purpose in this paper is to place more recent reports in the context of the first

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report *What Schools for the Future?* This early report of the *Schooling for Tomorrow* project generated six scenarios for the future of schools. It is argued that many of the problems identified in *Teachers Matter* are the result of a mismatch of professional needs in the 21st century and the continuing strength of a status quo scenario. The way forward for the profession is to accelerate a re-schooling scenario, with policy and practice shaped by what was learned and reported in *Networks of Innovation and Innovations in the Knowledge Economy*. Expressed this way, it appears that these developments will only come about by resolute policy across a system of schools. This is being attempted in some places and is the preferred approach. However, some interesting developments are occurring through initiatives at the school level, albeit in a supportive rather than hostile policy environment. We have reported on this in *The New Enterprise Logic of Schools* (Caldwell, 2005). There are implications for teacher development at every point in a lifelong approach to professional learning. It is possible to construct scenarios for teacher development and elements of a preferred scenario are included in summary form toward the end of the paper.

This outline of the direction to be taken in the paper suggests the need for dramatic change. This is indeed the case if a medium to long term perspective is adopted. There are too many deep-seated problems in the profession for this not to be the intention. However, it is important to acknowledge the success of schools and the contribution that teachers are making to its achievement. Considerable prominence is given to the results of another initiative of OECD, namely, the Programme in International Student Achievement (PISA) and Trends in Mathematics and Science Study (TIMSS). We will not provide yet another review of the rankings. It is sufficient to note that some nations do well and other not so well, with comparisons made on overall levels of achievement but also on disparities in achievement among different categories of student. Some nations do not meet the expectations of their governments and policymakers and practitioners are urged to lift their game, and take note of what their counterparts in other better-performing nations

are doing. It is reassuring that many nations in this part of the world are doing well.

It is helpful to complement measures of performance associated with PISA and TIMSS with others associated with different indicators of national wellbeing. For example, there are now robust indicators of creativity. The importance of 'the creative class' in successful economies has been well-documented by Richard Florida who reported in *The Flight of the Creative Class* that there is 'broad agreement among economists and business forecasters that the growth of the overall economy will come in the creativity or knowledge-based occupations and in the service sector' (Florida, 2005, p. 29). He was motivated by concern that some other nations were building capacity at a faster rate than the United States.

Florida documented growth in the creative sector, especially, and also the service sector, compared to sharp declines in the manufacturing and agricultural sectors, and reported that 'nearly all of the growth in jobs [in the United States] has come in two fields: expert thinking and complex communications' (p. 31). Florida compares the performance of nations as far as creativity is concerned, and the rankings are interesting, with generally high performance in countries represented at this conference. The following is a sample, based on data from WTO, OECD and UNESCO.

- The creative class accounts for more than 40 percent of the work force in nine countries: Netherlands (47 percent), Australia (43 percent); Sweden, Switzerland, Denmark, Norway (all 42 percent); Belgium, Finland (both 41 percent); and Germany (40 percent) (p. 137).
- The Global Talent Index has two dimensions: Human Capital and Scientific Talent. On the Human Capital Index, measured by the percentage of the population with a bachelor's or professional degree, the top-ranked nations are United States, Norway, Denmark, Netherlands and Canada. On the Scientific

Talent Index, measured by the number of research scientists and engineers per million people, the top ranked nations are Finland, Japan, Sweden, Norway, United States, Switzerland and Denmark. When the two indices were combined, the top ranked nations are Finland, Japan, Norway, Australia, Iceland, Netherlands, Sweden and Canada. The United States ranked 9th, United Kingdom 13th, Germany 18th and France 22nd (pp. 144-145).

- Along with technology and talent, tolerance is one of three factors in economic growth in the 21st century. The Global Tolerance Index has two dimensions: Values and Self-Expression. Sweden, Denmark, Netherlands, Norway, Japan, Germany, Switzerland, Iceland, Finland and New Zealand are the leaders (p. 151).
- The Global Creativity Index provides a measure of national competitiveness based on the three factors accounting for economic growth: technology, talent and tolerance. The 12 top ranked nations are Sweden, Japan, Finland, United States, Switzerland, Denmark, Iceland, Netherlands, Norway, Germany, Canada and Australia, ahead of the United Kingdom (15th), France (17th) and New Zealand (18th) (p. 156).
- Nations can be 'talent magnets' in respect to the proportion of university students who come from other countries. Top ranked countries are Australia, Switzerland, Austria, Belgium, United Kingdom, Germany, France, Sweden, Denmark, New Zealand, Ireland and the United States (p. 148). The United States has the highest number of foreign students in absolute terms, accounting for 36 percent of the world total (p.147).

Florida contends that 'America will continue to be squeezed between the global talent magnets of Canada, Australia and the Scandinavian countries, who are developing their technological capabilities, becoming more open and tolerant, and competing effectively for creative people; and the large emerging economies of India and China, who rake in a greater share of low-cost production and are now competing more effectively for their own talent' (Florida, 2005, p. 238). He argues that

reform at the school level is critical to long-term economic success. Writing of the United States, he contends that 'we can no longer succeed – or even tread water – with an education system handed down to us from the industrial age, since what we no longer need is assembly-line workers. We need one that instead reflects and reinforces the values, priorities and requirements of the creative age. At its core, education reform must make schools into places where human creativity is cultivated and can flourish' (Florida, 2005, p. 254).

Schools should be given much of the credit for creative capacity in nations ranked highly in these comparisons. With the chief factors in shaping success in schools being teachers and their leaders, then those organizations and institutions that contribute to teacher development must also be given credit. However, as revealed in *Teachers Matter*, there are some deep-seated concerns about and within the profession, and it is important to place achievements and concerns in the context of societal and educational needs in the decades ahead. It is for this reason that serious attention should be given to likely and preferred scenarios for schools.

## **Scenarios for schools of the future**

Writing in 1993, Peter Drucker famously declared that: 'Every few hundred years in Western history there occurs a sharp transformation . . . Within a few short decades, society rearranges itself – its world view; its basic values; its social and political structures; its arts; its key institutions. Fifty years later, there is a new world . . . We are currently living through such a transformation (Drucker, 1993, p. 1)'. [Peter Drucker, arguably the world's most respected and influential thinker and writer on management over the last century, died on 11 November 2005, in the week of the conference, at the age of 95].

According to Drucker, the implications for schools are profound: 'As knowledge becomes the resource of post-capitalist society, the social position of the school

as 'producer' and 'distributive channel' of knowledge, and its monopoly, are both bound to be challenged. And some of the competitors are bound to succeed . . . Indeed, no other institution faces challenges as radical as those that will transform the school (Drucker, 1993, p. 209)'.

Writing at about the same time, David Hargreaves declared that 'schools are still modelled on a curious mix of the factory, the asylum and the prison' and that 'many of the hitherto taken-for-granted assumptions about schools must now be questioned' (Hargreaves, 1994, p. 43 and p.3). Hedley Beare predicted that 'From what we know already about the 21st century, it is clear that the traditional school has no chance of surviving in it, at least not in the developed economies' (Beare, 2003, p. 635). A key issue for consideration is the extent to which countries around the world and their schools are responding to Drucker's challenge, Hargreaves' critique and Beare's prediction.

An example of a systematic response lies in the work of OECD through its Schooling for Tomorrow project that led to the formulation of scenarios for the future of schools (OECD, 2001). The starting point was a conference on 'Schooling for Tomorrow' in Rotterdam in November 2000 that involved ministers and senior officers of education systems. Further work with representatives of key stakeholders led to the formulation of scenarios in 2001.

A comprehensive scan of internal and external environments for schools provided the foundation for this work. For the external environment, consideration was given to childhood, generational issues and the ageing society; gender and family; knowledge, technology and work; lifestyles, consumption and inequality; and geo-political dimensions – local, national and international. The internal environment was analyzed in terms of existing robust school systems; trends in the development of schools as learning organizations; issues related to evaluation, assessment and certification; and teachers and teacher policies.

The six scenarios described the possible strategic directions for schools over 10 – 15 years, with two maintaining the status quo, two involving re-schooling, and two resulting in de-schooling. While stakeholders have expressed views as to the desirability and probability of each (OECD, 2001), they are not intrinsically either 'good' or 'bad'.

In making this comment, it is appropriate to draw inspiration from the setting of the conference. We in the Kronborg Room at Marienlyst, looking across the water at Kronborg Castle, or Elsinore Castle as many would know it. This castle was the setting of Shakespeare's Hamlet. It was in this castle, in Act 11, Scene 11, that Hamlet declared: 'There is nothing either good or bad, but thinking makes it so'.

The following is a brief account of the major features of each. It draws from a revised version of the initial formulation (Istance, 2003, Chapter 62).

### **Maintaining the status quo**

For the two scenarios that attempt to maintain the status quo, one was that bureaucratic systems continue, with pressure to sustain uniformity and resist radical change, even in the face of critical commentary. Schools remain distinct entities. Efforts to change are countered by claims that equality of opportunity would be threatened and that important roles for schools related to socialization would be jeopardized. Curriculum and qualifications would remain centralized and student assessment is the key element in accountability frameworks. The classroom and the teacher remain the key units of organization. There is an emphasis on efficiency, and national and state / provincial departments maintain their roles despite pressures for decentralization. Teachers are civil servants, and union and professional associations remain strong.

Teachers leaving the profession without replacement characterize the second scenario that endeavours to maintain the status quo. This is the 'meltdown scenario'.

Not all school systems or parts of school systems would experience a crisis in this regard. There would be severe teacher shortages in some settings and this would limit capacity to deliver the curriculum. Crisis management would often prevail and a fortress mentality would be evident. The international market for quality teachers would be strengthened. Remuneration for teachers would increase in an effort to sustain the profession.

### **Re-schooling**

The re-schooling scenarios see an increase in public support for schools and a new status for the profession. The 'schools as core social centres' scenario would see the school playing an important role in building a sense of community and creating social capital. A range of cooperative arrangements between schools and other agencies, institutions and organizations will be evident. There would be a broadening of the curriculum and more non-formal learning. Management of such enterprises would be more complex and leadership would be widely dispersed. Local decision-making will be important but national and international frameworks of support will be utilized. Additional resources will be secured to upgrade facilities. A core of teachers will enjoy high status but a range of persons from other professions will be involved in different contractual arrangements to support schools.

The second re-schooling scenario sees a strengthening of schools as 'focused learning organizations', with emphasis on a knowledge rather than social agenda. Specializations and diversity will flourish as will research on different pedagogies. Management involves flatter organization structures and the building of teams and networks that draw on a range of expertise. There are high levels of investment in infrastructure, especially in disadvantaged settings. There is extensive use of ICT and partnerships with tertiary education and other institutions involved in knowledge creation and dissemination. Teachers enjoy high status as professionals, with substantial engagement in research and development as well as continuous professional learning. Much of the latter is in networks, including international networks.

There is diversity and mobility in employment arrangements.

### **De-schooling**

Increasing dissatisfaction with the formal institution of the school results in the weakening of schools and school systems and, in varying degrees, leads to the 'de-schooling' scenarios. One is known as 'learning networks and the network society' in which dissatisfaction and demand for more diversified approaches to learning results in a weakening of the formal institution of the school. This scenario is clearly supported by the powerful capacities for learning now possible through ICT. Home schooling flourishes in this scenario. Schools may continue but in networks that together furnish the services that are required. Different governance arrangements prevail but there will be a requirement that certain public obligations are met in the interests of access and equity. There will be a diminution of the teaching profession as it is currently understood but a range of new learning professionals will emerge.

The second de-schooling scenario is described as 'extending the market model'. It is also consistent with the loss of trust described above, as an increasing number of parents see schooling as a private good. The market for different approaches to learning flourishes, with different providers furnishing information on a range of indicators to attract customers. There is a greatly reduced role for public authorities that may be limited to market regulation more than provision. New learning professionals emerge. There is clearly potential for substantial inequities as far as access is concerned.

### **Next steps**

Work continues in the Schooling for Tomorrow project of OECD. Studies in five nations led to the construction of a 'toolbox' to assist policymakers and practitioners at all levels to develop their own scenarios. There is a clear preference in the different projects for one or other of the re-schooling scenarios. Istance (2003, p. 630) sug-

gests that 'some very powerful obstacles must be overcome' to bring these preferences to realization. He identified six areas of concern: bureaucracy, resources, public attitudes, teachers, knowledge management and communities and social capital. His comment about public attitudes is particularly powerful:

'How near is the general consensus so important to re-schooling – that schools are central societal institutions warranting high esteem and the end to carping criticism? Or will the underlying assumptions of the other scenarios prove to be more realistic – constant grumbling and the unwillingness to countenance significant change (status quo) or widespread dissatisfaction leading to flight and partial dismantling of school systems (de-schooling)? In the context of an ageing society, there is also the open question of how an increasingly potent elderly population prioritizes education compared with, say, health policies' (Istance, 2003, p. 650).

## **Scenarios for teacher development**

The success of some nations, including many in Scandinavia and Nordic countries, in international tests of student achievement, and on measures of creativity, as cited earlier, suggests that schools and their teachers are doing very well and little needs to change as far as initial teacher education and ongoing professional development are concerned. There are concerns in these and other nations that achievement could be higher or disparities among different groups of students could be reduced, but the situation suggests incremental rather than radical change, even though the work of teachers is so much more complex than in the past, and expectations of governments and society in general are increasing. It may not be helpful to explore alternative scenarios for teacher development to the extent they may lead to dramatic reform. Expressed another way, some may argue that the status quo scenario will suffice because schools will still continue to operate in 'robust bureaucratic systems', the first of the status quo scenarios in the set of six that were formulated in OECD's *Schooling for Tomorrow* project. A greater sense

of urgency is evident in places where the 'meltdown scenario' applies, as in some major urban settings in the United States, and the challenge is to secure a teaching force, any teaching force, to place in classrooms. In this instance, change in approaches to teacher development seems minor compared to broader societal change.

### **Teachers Matter**

Teachers Matter is almost certainly the most comprehensive report on initial teacher education and professional development ever compiled. It draws on surveys and case studies from around the OECD. Twenty-nine systems in 25 countries participated in the project from 2002 to 2004. It provides dependable knowledge on current concerns, practices across the range of countries, and promising approaches in teacher preparation and professional development in addition to policies and practices for attracting and retaining teachers.

Teachers Matter is generally a report about policy and practice in schools and school systems that continue under status quo scenarios, although some approaches are consistent with limited development along the lines of the re-schooling scenarios. One scenario for teacher development is that all of the approaches identified as good practice in Teachers Matter are implemented. This section of the paper briefly summarizes the features of such a scenario. Other scenarios for teacher development will emerge if momentum builds for the re-schooling scenarios, and these are considered in another section.

Teachers Matter reports on approaches in initial teacher education, and describes efforts to develop standards for teachers and the emergence of professional bodies to guard these standards and register teachers. It concentrates on professional development, for it is in this regard that the effort in most countries is fragmented, and the need for a more coherent and comprehensive approach over a professional lifetime is apparent. The following excerpts (with minor editing) illustrate the diffe-

rence among the nations in the survey, and the general direction of its recommendations.

'In some systems, professional development is largely provided by state agencies (such as France, Germany, Korea, and Spain). Other systems (such as the Flemish Community in Belgium, Denmark, Finland, Hungary, Italy, the Netherlands, Norway, Sweden and Switzerland) are moving from a supply-oriented model of in-service training to one based on demand and have deregulated the market for professional development accordingly. Schools are allocated funds to organize in-service training responding to their specific needs and can pay for trainers, researchers or advisers. In such countries, universities and other teacher education providers sometimes compete with non-government agencies, private consultants and training firms offering professional development activities for teachers' (pages 122-123).

'In over half of the countries there is no minimum requirement for teachers to engage in professional development. In those countries that have set a minimum requirement (some states in Australia, Austria, the French Community of Belgium, Finland, Hungary, the Netherlands, Scotland, Sweden, Switzerland and some school districts in the United States) the requirement is most commonly five days per year, with a range from 15 hours per year (Austria) up to 104 hours in Sweden and 169 hours (10 percent of the total teacher workload) in the Netherlands' (page 123).

'In about one-quarter of the countries completion of professional development activities is required for teacher promotion or recertification: for promotion in England and Wales (to principal), Korea, Northern Ireland, Switzerland and the United States, and for re-certification in Israel and the United States. Most countries note, however, that participation in professional development is generally considered beneficial in career progression' (page 123).

'Most countries now link professional development to the developmental priorities

of the school and co-ordinate in-service education in the school accordingly. In three-quarters of the countries professional development activities are planned in the context of school development' (page 123).

'There is, however, not a single country that offers in-school training aligned with school development aims exclusively. In almost all countries the individual teacher decides which professional development activities she or he wants to pursue. Most countries offer teachers a range of different professional development activities inside and outside the school. In many countries teachers can get a leave of absence, a sabbatical or a research grant to pursue study and research activities' (page 123).

'Presently, there is little evidence about the effects of teachers' professional development on student outcomes. In general, there is still very little knowledge about the nature and extent of professional development as an activity' (page 127).

'The most effective forms of professional development seem to be those that focus on clearly articulated priorities, provide ongoing school-based support to classroom teachers, deal with subject matter content as well as suitable instructional strategies and classroom management techniques, and create opportunities for teachers to observe, experience and try new teaching methods' (page 129).

[Citing Hargreaves, 2003] 'To encourage schools to become learning organizations requires ensuring among teachers: the motivation to create new professional knowledge; the opportunity to engage actively in innovation; the skills of testing the validity of innovations; and the mechanisms for transferring the validated innovations rapidly within their school and into other schools' (page 130).

[In initial teacher education] 'The overarching priority is for countries to have in

place a clear and concise statement or profile of what teachers are expected to know and be able to do. This is necessary to provide the framework to guide initial teacher education, teacher certification, teachers' ongoing professional development and career advancement, and to assess the extent to which these different elements are being effective' (page 131).

'Much of the focus of teacher development has been on initial teacher education, the knowledge and skills that teachers acquire before starting work as a teacher. Most of the resources for teacher development have been allocated to pre-service education. However, given the rapid changes in schools, the potentially long careers that many teachers have, and the need for updating and professional development, teachers' development must be viewed in lifelong learning terms, with initial teacher education conceived as providing the foundations for ongoing learning, rather than producing ready-made professionals' (page 132).

'Initial teacher education must not only provide sound basic training in subject-matter knowledge, pedagogy related to subjects, and general pedagogical knowledge; it also needs to develop the skills for reflective practice and research on the job. It is unrealistic to expect that any initial teacher education programme, no matter how high quality, will be able to fully develop student teachers in all of these regards'. (page 134).

'The crucial importance of induction programmes for new teachers in the early years of their teaching careers is now widely acknowledged. In successful programmes, mentor teachers in schools provide guidance and supervision to beginning teachers in close collaboration with the initial teacher education institution' (page 135).

'Three broad strategies [for professional development] are evident among participating countries. The first strategy is entitlement-based, and generally results

from collective bargaining agreements that stipulate that teachers are entitled to certain amounts of released time and / or financial support to undertake recognized professional development activities. The second is more incentive-based, linking professional development to needs identified through a teacher appraisal process, and / or recognizing participation in professional development as a requirement for salary increases or taking on new roles. The third broad strategy is more school based, and links individual teacher development with school improvement needs. The three strategies are not necessarily mutually exclusive, although the starting points of the entitlement and incentive-based approaches tend to be the individual teacher rather than the whole school. A comprehensive approach to professional development would encompass all three strategies' (page 136).

The International Centre for Classroom Research (ICCR) in the Faculty of Education at the University of Melbourne is using advanced computer storage and longitudinal analysis of lessons in mathematics, videotaped in 14 countries. Our knowledge of approaches to teacher development will be enhanced with the dissemination of the findings. The Learners' Perspective Study at ICCR, which is still expanding to include new nations, is currently examining which are the best mechanisms through which the findings can be relayed to classrooms to improve practice. Work at ICCR includes studies of classrooms in Japan and China, as summarized below.

There is an approach in Japan that illustrates a form of professional development that is so deeply embedded in teaching practice that the two are indistinguishable. These might be considered an 'ideal form' of teacher development within a status quo scenario. With its origins in the early 1900s most primary (elementary) and many middle school teachers participate in 'lesson study'. In 'lesson study', small groups of about four to six teachers collaborate, and are assisted by a teacher or member of staff from the ministry of education who is expert in content, pedagogical or curricular knowledge to collaboratively research aspects of their teaching. Some teachers are involved in more than one 'lesson study' at a time. The tea-

chers set a goal that they would like to address and they collaboratively design a detailed lesson plan. One of the teachers then carries out this plan in a classroom while being observed by the others. Within a week of the lesson being carried out, the group reconvenes to discuss the outcomes. A revised lesson plan may then be used, with another member of the group giving the lesson. The work on the shared goals of the group may continue for a few years. The lesson studies are written up and published, so that others may learn from these experiences. Teachers are thus participating in active research in the classroom, reflective practice and in the dissemination of their findings.

An approach in China called 'keli', or 'exemplary lesson development', is a new model of in-service teacher education developed since 2003. The primary difference between the Chinese keli and the Japanese lesson study appears to be that the groups who perform keli include a range of academics and researchers from universities. Participation in a number of keli groups is expected of academics in education. This means that keli is based, to a greater extent than lesson study, in research. The aim of a keli community is to develop an exemplary lesson for a particular topic. The following is a summary of the approach (Huang and Bao, forthcoming):

A teacher usually designs the lesson independently and gives the lesson publicly. Then, the first feedback meeting takes place immediately after the lesson, which usually includes the following sections: introduction of the design of the lesson, comment on the lesson, and suggestions for further revision. The aim of this meeting is to find the gap between the teacher's existing experiences and the innovative design suggested by NMCS (National Mathematics Curriculum Standards). Following the first reflecting section, the teacher will revise the design and re-deliver the lesson in other classes at the same grade within the same school. After that, a second reflection meeting will be conducted which focuses on the difference between the new design and effective classroom practice, so as to improve the de-

sign further. At the third stage, the teacher gives a lesson by using the revised design and focuses on how students learn in a new style and attain a high quality of learning. All the designs and implementations are focused on the same content and are done by a teacher in different classes of the same school.

In a recent review of teacher preparation and development around the world, Darling-Hammond (2005) affirms these practices in Japan and China, noting that 'schools provide teachers with 20 or more hours each week for collegial work and planning, visitations to other classrooms and schools and demonstrations of teaching strategies'. She adds that, in contrast 'US teachers have almost no in-school time for professional learning or collegial work. Nearly all professional development occurs in workshops or courses held after school, on weekends, or during a small number of professional development days' (Darling-Hammond, 2005, pp. 239-240). As *Teachers Matter* reveals, the US pattern is generally the norm around the world.

An attempt has been made to introduce Japan's lesson study in the US, but it was found that teachers had difficulty posing rich researchable questions, designing a classroom experiment, specifying the type of evidence to be collected, and interpreting and generalizing the results (Fernandez, 2002). Yoshinori Shimizu, a member of the Learner's Perspective Study team of ICCR at the University of Melbourne, has assisted in implementation of lesson study in the United States, where it tends to be an American adaptation rather than a faithful implementation of the original approach (Clarke, 2005).

The editors of the special issue of *Phi Delta Kappan* in which Darling-Hammond's article appeared (and others cited below) highlighted the importance of practitioners engaging in international dialogue and called for more joint research and development projects: 'International research teams are becoming more and more common in science, health and industry, but they remain rare in education and

child development'. They urge the creation of institutional partnerships to integrate international content into teacher preparation and leadership development: 'Just as no business can rise to the top today without significant exposure to business practices around the world, so our teachers and educational leaders need to understand how to incorporate an international dimension into teaching and be able to compare our education systems against international benchmarks' (Stewart and Kagan, 2005, p. 245).

There are some pitfalls in moving innovations around the world without rigorous research and if the education profession loses touch with its disciplinary base. In a remarkable introduction to an article reporting 'the best and the worst of the east and the west' in the teaching of mathematics and science, Yong Zhao reported the following;

'In March, 2005, during the annual session of the Chinese National People's Congress, a group of members of the Chinese legislative body introduced a proposal calling for an immediate overhaul of the New Mathematics Curriculum Standards for elementary and secondary schools. A similar proposal was introduced by members of the Chinese People's Political Consultative Conference, the highest political organization representing non-communist parties and social elites without party affiliations. Both proposals were initiated and supported by prominent mathematicians and scientists who believe the New Math Curriculum Standards, released by the Chinese Ministry of Education in 2001 and largely modelled after the 1989 version of the math standards issued in the US by the National Council of Teachers and Mathematics (NCTM), are ruining math education in China' (Zhao, 2005, p. 219).

## **Synthesising the scenarios**

Teachers Matter does not explicitly deal with the teaching profession as it may emerge in the re-schooling and de-schooling scenarios generated in the Schooling

for Tomorrow project as reported in *What Schools for the Future?* Policies and practices are illustrative of schools that continue to operate in a status quo scenario, especially the 'bureaucratic systems continue' option. Consideration is given in this section of the paper to the implications for school and teacher development if other scenarios emerge. Particular attention is given to the re-schooling scenarios.

Many of the concerns reported in *Teachers Matter* are illustrative of what occurs under the more negative of the status quo scenarios, the so-called 'meltdown'. *Teachers Matter* informs us that about half [of the 25 participating countries] 'report serious concerns about maintaining an adequate supply of good teachers, especially in high-demand subject areas' and 'long-term trends in the composition of the teaching workforce (fewer higher achievers and fewer males)' (OECD, 2004a, p. 8). There is also concern that 'some countries experience high rates of teacher attrition, especially among new teachers' (OECD, 2004a, p. 9). As described in earlier pages, the 'meltdown' scenario sees teachers leaving the profession. There would be severe teacher shortages in some settings and this would limit capacity to deliver the curriculum. Crisis management would often prevail and a fortress mentality would be evident.

Compare this scenario with the upbeat view of the profession in either of the re-schooling scenarios. As described earlier, for the 'schools as core social centres' option: 'a core of teachers will enjoy high status but a range of persons from other professions will be involved in different contractual arrangements to support schools'. For the 'schools as focused learning organizations' option: 'There is extensive use of ICT and partnerships with tertiary education and other institutions involved in knowledge creation and dissemination. Teachers enjoy high status as professionals, with substantial engagement in research and development as well as continuous professional learning. Much of the latter is in networks, including international networks. There is diversity and mobility in employment arrangements'.

Since the re-schooling scenarios are preferred by the majority of stakeholders, as reported in *What Schools for the Future?*, it seems appropriate to work on policies and practices that will nurture and sustain them. Some of these policies and practices should focus on school and teacher development. Approaches considered to be good policy and good practice in *Teachers Matter* should be pursued because they are likely to prove as effective under re-schooling scenarios as they would under status quo scenarios.

It is important to stress that a shift to re-schooling scenarios is already under way and does not necessarily involve radical reform. The latter is not appropriate in some countries because of their already high achievements, as outlined in the first section of the paper, in international tests of students' achievement and on measures of creativity.

### **The new enterprise logic of schools**

We outline the possibilities by referred to three publications by Caldwell (2004, 2005, 2006). The first is *Re-imagining the Self-Managing School* (Caldwell, 2004) in which the author examined practice in self-managing schools (school-based management, local management) as it had evolved since earlier co-authored publications on the theme (Caldwell and Spinks, 1988; 1992; 1998). He found that practice had far outstripped its initial conceptualisation. He engaged school leaders in four countries (Australia, Chile, England and New Zealand) in a series of nine workshops over nine weeks from February to May of 2005 to identify the major elements of what was unfolding. The outcomes were reported in *The New Enterprise Logic of Schools* (Caldwell, 2005a; 2005b). It was apparent that many of the characteristics of re-schooling scenarios were evident, either 'schools as social core centres' or 'schools as focused learning organizations' or a mix of the two. Elements of status quo scenarios were retained and this is understandable, given that policies and practices that nurtured the new enterprise logic were determined by government, and implemented in more or less traditional ways through a bureaucratic system.

The elements of the new enterprise logic are as follows:

1. The student is the most important unit of organization – not the classroom, not the school, and not the school system.
2. Schools cannot achieve expectations by acting alone or operating in a line of support from the centre of a school system to the level of the school, classroom or student. The success of a school depends on its capacity to join networks to share knowledge, address problems and pool resources.
3. Leadership is distributed across schools in networks as well as within schools.
4. Networks involve a range of individuals, agencies, institutions and organizations across public and private sectors in educational and non-educational settings. Personnel and other resources are allocated to energise and sustain them.
5. New approaches to resource allocation are required under these conditions. These take account of developments in the personalising of learning and the networking of expertise and support.
6. Intellectual capital and social capital are as important as other forms of capital.

The notion of new enterprise logic was drawn from *The Support Economy* (Zuboff and Maxmin, 2004). The need to transform an organization to the extent that a new logic should underlie its form and function arises from the need to respond to the needs of clients, consumers and customers, and in the case of schools, students and parents. Zuboff and Maxmin (2004) suggested that this is an international phenomenon.

'These new voices rise from the United States to the United Kingdom, from Canada to New Zealand, and across Western Europe. They have gathered force in the offices and classrooms of Santiago, Istanbul, and Prague. They form a new society of individuals who share a claim to psychological self-determination – an abiding sense that they are entitled to make themselves' (Zuboff and Maxmin, 2004, p. 9).

Psychological self-determination is 'the ability to exert control over the most important aspects of one's life, especially personal identity, which has become the source of meaning and purpose in a life no longer dictated by blood lines and tradition' (Zuboff and Maxmin, 2004, p. 135). The personal freedom that is implied here does not mean that community is unimportant or that the individual may not act with high moral purpose.

Outcomes include a capacity to work in teams, even though the individual is the most important unit of organization. A capacity for schools to operate in networks to share knowledge, address problems and pool resources is important in the new enterprise logic. Schools should not be isolated silos. Similarly in respect to the importance of social capital. Schools should be part of a network of individuals, agencies, organizations and institutions that provide mutual support to their different endeavours. In summary, self-determination is not inconsistent with – indeed it is supported by – a sense of community and the building of strong social capital.

### **Networks and networking**

The importance of networks and networking is the subject of another OECD report entitled *Networks of Innovation: Towards New Models for Managing Schools and School Systems* (OECD, 2003). This is as important as others in the OECD series if implications for school and teacher development are to be drawn. The following excerpts illustrate the case for networks:

'School autonomy goes hand-in-hand with being connected to community, other educators, and the broader society. Hence, the key roles of networks and partnerships. Too much educational practice in OECD countries is characterised by isolation: schools from parents and the community and from each other; teachers and learners in isolated classrooms' (Ylva Johansson, of the Swedish E-Learning Organization, in Johansson, 2003, p. 149).

'The challenge of reforming public education systems is therefore acute. Those responsible are in no position to deal with uncertainties. What they can do is manage and transfer knowledge about what works effectively, intervene in cases of under-performance, create the capacity for change in the system and ensure that it is flexible and adaptable enough to learn constantly and implement effectively' (Michael Barber, former head of the Prime Minister's Delivery Unit in the UK in Barber 2003, p. 115).

Networks are also a feature of the preferred re-schooling scenarios:

Networks in 'schools as core social centres' scenario: 'Community interests – linguistic, cultural, professional, geographical – find very strong expression in this scenario, using the school as the focal point. Schools would be allowed a great deal of room to respond to, and promote, these interests. Networking and cooperation would therefore flourish' (OECD, 2003, p. 25).

Networks in 'schools as focused learning organizations' scenario: 'Networks of expertise, including among teachers, would be an essential feature of this scenario. Bureaucratic and hierarchical models would give way to flatter, collaborative arrangements of networks, and there would be numerous partnerships involving the different stakeholders. The very management and governance of schooling arrangements would come to rely heavily on networks, with all the positive features of professionalism and dynamism this implies, but also the potential problems of instability and patchiness' (OECD, 2003, p. 26).

### **Innovation in schools**

Having noted the emergence of networks and networking in the new enterprise logic of schools, with support in Networks of Innovation (OECD, 2003), it is critically important to consider what is to be transacted; what knowledge is to be disseminated, what problems are to be solved, what resources are to be shared. Another

OECD report shows the way, namely Innovation in the Knowledge Economy (OECD, 2004b). The following excerpts (slightly edited) illustrate the major themes:

[Factors important in innovation include] 'The interaction between people in communities of knowledge; the capacity of different sectors to "codify" or make explicit the often deeply embedded knowledge that can contribute to economic advance; and the relationship between the public aspects of knowledge that allow it to spread and the private features that give an incentive to private agents to produce it in the first place' (page 9).

[Citing David Hargreaves] 'Curiously enough teachers at the elementary and secondary level do not fit the template of the modern knowledge-based communities, even though they make intensive use of knowledge' (page 23).

'In the field of education, science does not much "enlighten" the art of teaching. It can hardly be said to play a very strong role as a factor enabling the direct production of systematic knowledge which translates into "programmes that work" in the classroom and lecture theatre. Education is not a field that lends itself well to experimentation: what works with a pilot school may prove hard to replicate elsewhere. Education also constitutes a realm where knowledge is little codified. There are fewer equivalents in teaching to the kinds of reference books and documents used by doctors, lawyers or engineers. So young teachers begin their careers without the help of those "sets of codified instructions". As a rule, the profession of teaching is not organized to keep practitioners informed of alternative approaches and solutions tested by others; instead they proceed by intuition and imitation of recognized practices in the repertoire of "master teachers"' (pages 30 -31).

'There are four innovation "pumps":

- Science-based innovation. Science plays an unquestionable role in advancing knowledge. However although it can produce rapid progress in knowledge, its

findings are often generalised and applied only slowly.

- Collaboration among users and / or doers. New actors are becoming engaged in innovation processes, develop collaborative modes of knowledge generation, and this creates new opportunities.
- Modular structures each with freedom to innovate, yet joined together in a whole innovative system. This devolved character of innovation in complex technological systems creates new needs for co-ordination and certification.
- Information and communication technologies harnessed effectively as an instrument of innovation, can be a powerful trigger for transforming activities' (pages 42-43).

'In primary and secondary education teachers in schools remain largely ignorant of, and entirely indifferent to, the battles between competing epistemic cultures among the schools of education which conduct research and control the initial training of teachers. Sometimes their inclination is to favour the humanistic mode of research, for here they are less intimidated by their lack of research expertise. Generally, however, they are free from pressure to take sides on issues of epistemic culture and can, like practicing doctors, find ways of combining the scientific and humanistic cultures in their day-today practice. The teaching profession's community of practice will thus not subscribe to one dominant approach, as in the case of medicine, but will come to share elements of both epistemic cultures in a new synthesis of practice that selects and blends elements of both. This is why the "four innovation models" ["pumps"] framework is useful in suggesting that the science-based model is extremely important but will never cover more than one part of the whole "innovation tank" of the education sector' (page 65).

'Leadership, too, needs to change from the current school improvement model if it is to support the development of organizational capital. It needs to move away from a focus on "managing change" – which most commonly refers to change that is externally imposed. Rather, the principal needs to mobilise a school's intellec-

tual and social capital, especially in relation to teaching and learning, in ways that achieve high leverage, by a combination of incremental and radical innovation. Schools must still be managed, but with an emphasis on managing knowledge inputs and outputs, rather than on managing people and tasks. As in other industries, true "horizontal" based innovation needs to create networks that reach beyond the boundaries of the individual organization. Increasingly it is involving collaboration across schools. An innovative school has four options: keep its innovations to itself, to protect its competitive advantage; sell its innovation; share its innovations within a defined network community of learning; or freely reveal, as illustrated in open source projects [where the creator makes the innovation freely available]. The second (selling) has occurred in limited circumstances, but the third (sharing within a self-selected network) is probably the most likely development in the near future, because it allows both the exchange of very different innovations to the mutual benefit of network. One feature of current UK experience that is transforming horizontal innovation is the development of "specialist" schools, allowing greater scope for informal trading of comparative advantage across institutions' (p. 72).

'The old model of university-based educational research has failed to have transformational outcomes for schools, and indeed the overall impact of such research has been disappointingly small. The emergence of intermediate organizations in between academe and practice can start to change and blur the relationship between those who produce knowledge and those who apply it. In the case of education, at least in England, two particular trends can be observed. First, a growing number of intermediate organizations and agencies (many of them agents of central government) are getting involved in both R&D and its application in practice. Second, in partnerships with such organizations, practitioners are able to be more influential as clients than they ever were with university researchers. In this departure from a "linear" form of R&D, school practitioners have yet to find and exercise a collective "voice" to institute radical changes in priorities' (page 72).

Two links to other publications are made before drawing together the implications for school and teacher development. First, it is important to note another OECD publication *Understanding the Brain* (OECD, 2002), making five books that together make a powerful contribution to the theme of the conference. It is beyond the scope of the paper to explore the contents and recommendations of this report. It is sufficient to note that it outlines a domain that is addressed only minimally in initial teacher education and ongoing professional development. If education is to have an evidence base matching that shaping medical practice, then understanding the brain, and the ways in which the brain works, should be a major strand in life-long learning for teachers. Research in schools of education should be connected to research on the brain. Second, take-up of the themes in the various reports is an apparently daunting challenge for schools, especially when a new enterprise logic drives the operation. This need not be the case, as argued in *Exhilarating Leadership* (Caldwell, 2006). The author observed in workshops that provided evidence for *The New Enterprise Logic of Schools* (Caldwell, 2005a; 2005b) that leaders in schools that had been transformed in important ways and that reflected the new enterprise logic found the experience to be exhilarating, despite the many problems that had to be addressed. A further round of workshops helped identify the factors that tipped the balance to exhilaration. There is a need for more research and perhaps another report to focus on the positive outcomes of change along the lines of the re-schooling scenarios.

## **The way forward**

There are many implications and possibilities in the five reports of OECD that form the basis of this exploration of scenarios for school and teacher development. Five are identified here, signposting important directions in a preferred scenario:

1. Good practices in teacher development in *Teachers Matter* are affirmed, especially those that more closely integrate professional learning with work in the

classroom. This is done well in the teacher study approach in Japan, but teachers in some other countries seem ill-equipped to adopt such practices, for example, the United States. There is a need for more international projects that show how take-up can occur in different settings. However, Teachers Matter largely drew from systems that were continuing a status quo scenario and, given stakeholder preference for re-schooling scenarios among those described in *What Schools for the Future?*, other approaches are also needed if the profession is to flourish in the years ahead. Several of these approaches are recommended in Teachers Matter.

2. There is a need for a more rigorous scientific and disciplinary base to initial teacher education and ongoing professional development. Such a base should also be a driver or 'pump' for innovation. Schools have limited experience as knowledge-based communities, and traditional top-down approaches to the transfer of knowledge need to be complemented by lateral transfer through networks. These are promising examples on networked learning communities in England.
3. The re-schooling scenario that calls for schools to be 'core social centres' implies a range of professions will work together at or near a school site, that is, different professions will be 'joined up' in driving the new enterprise logic of schools wherein the student is the most important unit of organization. This may mean that initial teacher education and programmes of professional development should also link different fields of professional practice and their underpinning bases of knowledge. It may mean that schools of education in universities that operate alone, without links to other professional faculties, may be severely limited in the contribution they make to a powerful education profession.
4. Consistent with evidence cited in the paper, a range of intermediate organi-

zations may provide services 'between' the university and the school as part of networks of knowledge. These may include profit and non-profit entities operating as individuals, agencies and institutions. Some schools in Australia are developing their own research and development 'institutes' to achieve the same ends. These approaches serve to enrich the field of professional practice in education.

5. Networking across different fields of professional practice, greater reliance on a scientific base, and continuous change in response to new technologies and heightened expectations, suggest that careers in other fields where these are manifested should be an advantage for those entering the teaching profession. Trends for recruitment along these lines were reported in Teachers Matter.

We hesitate to comment on how these may be played out in countries represented at this conference, especially in our host nation, which already performs highly on international tests of student achievement and features among the rankings on indicators of creativity. Denmark is not alone in seeking to provide the best system of education in the world. We are aware that many practices are being challenged, for example, streaming based on individual ability, and the nature and frequency of assessment for learning and assessment of learning. Questions about the nature and length of initial teacher education are raised here as elsewhere. Levels of trust and teacher autonomy appear to be high. The good news is that radical reform in a relatively short time is not the way forward. The OECD reports provide a foundation for the planning of an orderly approach that can enhance the profession and ensure that expectations for schools are satisfied in the decade ahead.

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