

The ageing population and knowledge work: a context for action

Bradley Jorgensen

Bradley Jorgensen is Principal Adviser (Research and Innovation) at the Strategic Human Resources Branch, Education Queensland, Australia

Abstract

Purpose – This paper aims to investigate a workforce policy response to the ageing workforce, emerging social and demographic trends, ongoing and rapid change, the growth in complexity and the changing nature of work.

Design/methodology/approach – The main method for constructing this paper is analysis of selected texts rather than the more conventional empirical studies. The approach is that of scenario construction, guided by the criteria established by Nowotny et al. Evidence is gathered of emergent trends that affect management practices and structures now and in the foreseeable future. These trends are identified and woven into a commentary that links them in a focus on the priorities for Australian organizations.

Findings – The findings from this research suggest that "command-based" management structures of the bureaucracy, given emergent trends, present as an impediment to organizational success. Rather, a workforce policy reform agenda for both understanding and managing noted historical conditions in a coherent way is proposed.

Practical implications – The conclusions of this paper are significant for large organizations faced with the dynamism of the modern era and the difficulties associated with emerging demographic and social trends. They suggest a workforce policy reform agenda for both understanding and managing these historical conditions in a coherent way.

Originality/value – This paper deals with a topic that is exercising policy makers in all the developed economies. It offers practical advice to assist the development of workforce policy to better manage emergent trends.

Keywords Ageing (biology), Knowledge management, Lifelong learning, Employee development, Workplace, Society

Paper type Research paper

In this paper I discuss the positives and challenges associated with Australia's emerging population trends. First, I introduce the topics of change and the ageing workforce. I then point to Australia's emerging population trends illustrating the potential consequences of ageing and low fertility rates on workforce availability, practice and procedure. The implications associated with the influences of globalization, ICTs and ageing on the work force are then discussed. Solutions to some of the problems generated by these historical changes are canvassed.

Nowotny *et al.* (2001, pp. 33-49) identify an historical shift from what they refer to as "Mode 1" Society to "Mode 2" society. The organisational mechanisms of these kinds of societies are different. Nowotny (2002) states that:

In Mode 2 there is greater interaction . . . characterised by an overall increase in complexity which embraces a pervasive and inherent uncertainty, greater institutional permeability, the emergence of new forms of economic rationality, the emergence of a greater degree of self-organization, and a profound shift in our notions of time and space.

Nowotny *et al.* (2001 p. 36) describe "the accumulation of uncertainties affecting social choice and behaviour, individual life-styles and identities" as unending. In this accumulation, society's "stable categorisations" (Nowotny *et al.*, 2001) that once provided for differentiation, have been eroded revealing a much more fluid, volatile and transgressive existence. Similarly, the elimination of distance, induced by information and communication technologies, the compression of space associated with the merging of global and local and the emerging "self-organising capacity of science and society" have fundamentally altered existence (Nowotny *et al.*, 2001).

In a Mode 2 society, to "know" is to be capable of competent participation in the complex web of relationships among people and activities (Gherardi *et al.*, 1998). Life now moves at the speed of technology, connection between individuals is expanding, the concept of "remote" is disappearing and technology is feeding individuality (Romer, 2002). Roles are also changing. The young are teaching the old (Davis, 1997; MacKay, 1997) and ways of learning are changing. The co-evolution of society and technology has revealed new modes of organization for society and business (Malone, 2002). Knowledge has become a major organising principle for human development (Nowotny *et al.*, 2001).

Entry into this knowledge society will require new patterns of collaboration and new modes of partnership (Krogh *et al.*, 2000). These new ways of doing things emphasize the skills that individuals can bring to the workplace, especially the skills of cooperation and communication (Davenport and Prusak, 2000). However, contrary trends may compromise the potential value that is expected to flow from the economic, technological, social and political dynamism of the new era. Indeed, the combined effects of ageing, low fertility rates and vocational instability among younger workers may lead to a destabilising skills shortage, a reduction in the number of workers of prime working age (Morrison, 1999; Grant *et al.*, 2004) and a shift in dependency ratios (National Academy of Science, 2001). These trends carry with them a number of economic challenges. As the working-age population decreases, countries may begin to experience declines in human capital (Grant *et al.*, 2004), shortages that may impact economic growth potential, add to inflationary pressures and negatively impact productivity growth. These emerging pressures also have implications for the future performance of capital markets and "[in Europe] . . . will have a huge impact on the success of the current generation of pension reforms" (Böersch-Supan, 2004). In the wake of this potential, policy that seeks to support the continued participation of the large pool of older, experienced and skilled workers in paid work emerges as an important mechanism to protect productivity and economic growth potential.

For example, baby boomers are set to retire from the workforce during the next decade or so and, in their retirement, will take with them, in the medium term, irreplaceable levels of experience (Centre For Strategic and International Studies, 2000; Corporate Leadership Council, 2002a, b). At the same time low fertility rates will reduce the supply of younger workers joining the workforce (Access Economics, 2001). These trends will, in combination, produce labour market shortages, generating heightened competition for skilled and able employees. Employers will need to move quickly to capture and protect difficult to replace intellectual capital (Corporate Leadership Council, 2002a, b). Indeed, the decreasing availability of scientific and technical workers is already of particular concern (Clarke, 2002; Corporate Leadership Council, 2002b). Organizations must, therefore, look to new ways of retaining existing employees and to make better use of their older workers' skills and experience (Baltzell, 2000; Corporate Leadership Council, 2002b). Firms will also need to continue to advance and develop their younger workers. Managing this dyad will present special challenges for all organizations.

Many organizations already emphasize the role of the individual and the importance of partnership and collaboration as new and important organising principles. However, the question of how this emphasis will be realized, largely, remains open. Indeed, it would seem that the ageing population, low fertility rates and the looming skills shortage combined with the influences of globalization and information communication technologies (ICTs), if not handled well, might constrain the capacity of Australian organizations to achieve their goals and to meet stakeholder obligations. Significantly these trends are also accompanied by

concerns regarding the quality of the future workforce. I now turn to a brief examination of the Australian labour market.

In 2001, only 59 percent of Australian 17 year olds had a year 12 or equivalent education (Australian Bureau of Statistics, 2002). This standard of attainment which has remained largely unchanged over the last 40 years has led to predictions that Australia will have the lowest proportion of upper secondary qualified citizens in the Organization for Economic Cooperation and Development (OECD) by 2010 (Cosier, 2002). This statistic is complicated by the expectation that nearly half of the Australian workforce, listed as having a post graduate qualification in 2001, are expected to retire in the next decade (Australian Bureau of Statistics, 2002).

The looming skills shortage combined with the relatively low standards in educational attainment will present as difficult challenges for all organizations. Government, professional associations and organizations have taken some early steps to respond to these challenges though much of this remains embryonic. The Commonwealth Government's (Australia) recent announcement on superannuation reform continues this trend of adjustment (Commonwealth of Australia, 2004) marking out an important element of the ageing workforce reform agenda.

Notwithstanding the value of this recent initiative Australia's emerging demographic trends and educational attainment standards may constrain the capacity of business and government to implement their agendas. While comparative year 12 completion rates are of concern, post-secondary achievement standards are also of concern. For example, in 2001 approximately 60 percent of year 12 qualified Australian 17-year-olds did not go on to tertiary education and of those who did, approximately 60 percent are expected to achieve a recognized qualification by the age of 24 years (Cosier, 2002). Indeed, by the decade 2020-2030, given current educational attainment data, many older workers may not have the basic skills needed to gain entry into or to secure ongoing paid employment (Australian Bureau of Statistics, 2002; OECD, 1998a, p. 129).

In seeking to manage forecast workforce and skill shortages and to make better use of current employees, change to retirement policies that lengthen working life can be used to partially offset the projected fall in labour force growth and forecast skills shortages (OECD, 1998a). However, the incentives to retire and the disincentives to late retirement need to be adjusted in tandem with workplace reform (Carey, 1999; McMorrow and Roeger, 2000). The recent Australian Federal Government superannuation policy shift takes positive steps in this direction (Commonwealth of Australia, 2004). Business also has a role to play.

Given the weight of emerging demographic trends and forces for change many organizations may need to reconsider the appropriateness of existing working arrangements for older workers. Older workers could move from full-time work to new forms of part-time work according to the evolving needs of the employer and the individual. Individuals could take up new forms of tenure and contingent employment as internal consultants or as employees working to adjusted schedules. In so doing, these workers could contribute their skills and experience directly to specific projects and, in the process, transfer knowledge to younger workers (Office for an Ageing Australia, 1999). Measures such as these are likely to assist organizations to maintain their leadership bench strength at a time of critical vulnerability. There could also be periods of intense work, interrupted by pauses for sabbaticals and the like. Starting at age 50 or so, mature employees could begin a planned transition from full-time work to full retirement (Baltzell, 2000; Office for an Ageing Australia, 1999). Employees no longer competing for promotion or for "sought after jobs" could move from supervisor or manager to mentor, coach or adviser (Office for an Ageing Australia, 1999).

In providing for phased retirement for its able, adaptable and healthy individuals, employers could save some of the costs of hiring and training new employees while also maintaining the institutional memory and technical knowledge of its older workers (Kelly, 1997; Van Yoder, 2002). Indeed, a positive return on the training and development investment in older employees, due to the low quit rate of older employees, is likely (OECD, 1998b; Agarwal and De Groote, 1998).

However, the expansion of working time corridors and the intrusion of work into life, a product of the technologically induced collapse of time, space and distance (Docherty *et al.*, 2002; Lowe, 2004; Nowotny *et al.*, 2001), often associated with "low quality work" has left many feeling disenchanting. The ideas of choice, opting out, seizing control and "sea change" now feature prominently in popular literature. Workplace reform proposals therefore, also need to recognise and respond to the intrinsic and extrinsic value that individuals place on work. This suggests that reform efforts should move away from the "generic", towards individual tailoring and reminds that flexibility in retirement goes hand-in-hand with individual choice and flexible careers.

The modern workforce is characterized by flexible careers where employees work in a number of different organizations and occupations during their working lives. Though, for many public sector employees, such as in Education Queensland where average tenure is around 12 years, the mobility that characterizes employment in the private sector would be a unique experience (Department of Industrial Relations, 2001, p. 20). In the general population the wide variety of experiences accrued through the routine of professional and personal development, contributes to the acquisition of expertise across various domains (Van der Heijden, 2002). However, employers and employees in the private sector also face challenges. Many highly qualified employees, over the age of 40, are confronted with a progressively declining degree of re-employability (Van der Heijden, 2002). While this may not have been a problem in the past, in the face of constant organizational change (Davenport and Prusak, 2000) many older workers may lack the skills to adapt and are at risk of being left behind.

For public sector employees the lack of mobility is a complicating factor, particularly when judged against evidence that suggests that life-long learning has not been widely adopted in some jurisdictions (Grimbeek, 2003). Indeed, in the modern era the need for continuous education in adults is especially important among professionals where the limited shelf-life of new degrees has been reduced to less than five years (OECD, 2002b). Equally important, adults will not only have to learn more, continuously, they will also have to "unlearn" more than ever before (OECD, 2002b). These emerging requirements resonate with the debate surrounding "The rise of the creative class" postulated by Florida (2002).

Creativity ... is now the decisive source of competitive advantage (Florida, 2002 p. 5).

With the shift to an ideas and creativity driven environment, success follows those who can exploit "intangible" knowledge and information and convert them to tangible benefits – financial, cultural and social. Given forecast workforce and skill shortages members of the ageing workforce, knowledgeable, skilled and experienced, may well have to be relied on as an important creative force for the future.

Several possibilities follow. Measures that improve the attraction and retention of older workers, deal with the physical decline associated with ageing, maintain trainability, focus on learning, improve work-life-balance and deal with ageism are now discussed.

The importance of skilled people to organizational success (Baltzell, 2000) and creativity will compel organizations to look to older workers to supplement the skills and knowledge that they need to succeed. In particular, workforce ageing will also mean that many organizations will increasingly rely on mid-to-late-career workers and a greater share of workers aged 45 years and over (OECD, 1998a). Indeed, at age 55, many employees may prefer to remain in the workforce (Senate Employment, Education and Training References Committee, 1995) and may not have the financial resources, despite recent initiatives, to fund their retirement (Hume, 2002).

If organizations are to succeed in attracting and retaining older workers, the implementation of policy that seeks to remodel employment practices and processes to better accommodate the needs of older workers while continuing to meet the needs and aspirations of younger workers would seem to be a useful approach. However, the task of accommodating these needs, to design sustainable work systems (Docherty *et al.*, 2002), will not be easy (Zemke *et al.*, 1999). The physical decline associated with ageing will present specific challenges.

Changes in musculo-skeletal capacity can be pronounced after the age of 45-50 years. For example, strength at 55 years of age is approximately 80 percent of strength at age 35

(McMahan and Phillips, 1999). Change in the physical work capacity of individuals has also been associated with a decline in the functionality of the cardiovascular system (Ilmarinen, 2001). Accordingly, when job demands exceed an older worker's capability, the older worker may be forced to compensate by using increased physical effort or by taking fewer rest periods (McMahan and Phillips, 1999). Compensating practice of this type can lead to the development of cumulative trauma disorders. This would be an unwelcome outcome for affected employees and for employers struggling under the weight of ballooning workers' compensation levies and charges. Job design and measures such as quality workplace initiatives (Docherty *et al.*, 2002) emerge therefore as important reform tools.

Notwithstanding these concerns regarding the physical decline associated with ageing, research quoted by Access Economics (2001), shows that work methods and strategies resulting from older persons' experiences may raise their levels of effectiveness to a standard greater than what it was in their earlier years (Access Economics, 2001; Ilmarinen, 2001). Indeed, the functions of information processing change very little with age. Moreover, some cognitive functions, such as language or the ability to process complex problems improve with age (Ilmarinen, 2001). In most work tasks, speed and precision can be substituted by the high motivation, experience and wisdom of ageing workers (Ilmarinen, 2001). Research has also shown that in Australia mature workers have good learning capacity and retain information better than their younger counterparts (Office for an Ageing Australia, 1999) and as well as offering continuity, contribute to the blending of skills throughout the workforce. Similarly, recent research has shown that the brain maintains its plasticity throughout life. Consequently, learning can, and should be, life-long (OECD, 2002b). There is also a "use-it-or-lose-it" element to the cognitive capacity of older workers to acquire new skills (Van der Heijden, 2002). Indeed, the feasibility of change is contingent on the character of early training and the opportunities provided for retraining (Ryder, 1965). This underscores the importance of life-long-learning (Ilmarinen, 2001) and reminds of the, potentially, adverse implications for ageing workers who have been isolated from the learning agenda (Schienstock, 1999).

Despite the general evidence of a physical decline associated with ageing, the degree of physical change in older workers is strongly dependent on the effectiveness of exercise and the adoption of healthy lifestyle choices, heredity, and the environment (Ilmarinen, 2001; Scroop, 2000). A recent release from the OECD notes the growing evidence that supports the value of non-pharmacological and behavioural interventions for contributing to improved performance into old age (OECD, 2002b). For example, task improvement correlates with improved cardio-vascular function (OECD, 2002b). Motivation has also been shown to be more important than youth for successful learning (OECD, 2002b). Accordingly, an ageing workforce policy mix that safeguards health through a combination of redesigned workplace practices and procedures that are matched to individual capabilities, along with the modification of lifestyle factors appears warranted (Ilmarinen, 2001). The example provided by Lockheed Martin Tactical Aircraft Systems provides a useful illustration of an effective ageing workforce policy approach.

The experience of Lockheed Martin Tactical Aircraft Systems in their approach to their ageing workforce has shown that the costs associated with the redesign of jobs, tools and practice, can be offset through improved performance, lower claims and reduced medical costs (Van Yoder, 2002). Given this experience it would appear likely that in implementing an ageing workforce strategy, similar benefits would also flow to Australian organizations. Importantly, such an approach is also likely to assist in the transmission of highly desirable work traits from older to younger workers such as loyalty and a strong work ethic. To assist in this process, older workers would need to be provided with enhanced development opportunities (OECD, 1998b), to maintain their trainability, new modes of tenure, encouragement to adopt healthy lifestyles and customised working arrangements.

If older workers are to acquire the necessary levels of adaptability, the literature suggests they would need to participate in broad training and development programmes in new domains, concentrating on expanding their capacity to cope with future employment challenges throughout their careers. Importantly, workers employed in a learning

environment, are much less susceptible to a decline in trainability (OECD, 1998b). It would seem wise therefore, when seeking to enhance employability, that all individuals acquire more than one area of professional expertise. In this regard regular cross-functional job changes are likely to assist (Van der Heijden, 2002). Opportunities such as participation in research partnerships with universities, project-based and "stretch" assignments, work shadowing as well as secondments, attachments and shadow cabinet (for potential executives) designed to facilitate wider learning or to address the specific needs of individuals would also be appropriate. Succession planning, talent management, individual development planning for high-performing employees and the like also emerge as positive intervention strategies. Importantly, the value of the learning that would flow from these types of formal and informal activities could also be recognized and accredited, ensuring that the application of individual effort is appropriately recognized. More broadly, the increasing prevalence of transdisciplinary studies and approaches to work will assist all workers to grow and learn, life-long (Koizumi, 1999 as cited in OECD, 2002b).

The drivers for learning are also associated with modern working conditions. The average worker is confronted with new tasks and problems and has to develop new skills and competencies more frequently than before (Schienstock, 1999). For individuals then, life-long learning has become an essential for both employability and career progression. At the same time, fewer occupations can now guarantee lifelong employment. Rather, security of employment now resides in the capacity of individuals to build their employability. The "new" contract revolves around employee motivation, job enrichment and competency development (Schindlmayr, 2001).

Importantly, since the life-cycles of occupations and functions offered by organizations have shortened significantly in the last 20 years, the mastering of learning and coping strategies is relevant to all employees regardless of age (Van der Heijden, 2002). Accordingly, it would seem reasonable for organizations to adjust their professional development models to focus on keeping employees' skills relevant and employees functionally mobile, through formal and informal means and by expanding the training time horizon. By investing in its employees throughout their careers and in utilising formal and informal methodologies employees will be assisted to maintain their trainability and employability. While skills learnt "on-the-job" tend to be less portable than formal training and may expose workers to the risks of functional immobility, a balanced, formal and informal development regime is likely to achieve the desired end (OECD, 1998a).

More specifically, training for younger and older workers is likely to be more successful when the training regimes seek to capitalize on the qualities and attributes that the different age groups bring to the training experience (Casey, 1998). Importantly, age specific risks need to be dealt with early during working life (European Foundation, 1999). If older workers can be trained to cope with new technology and work methods, and are provided with a flexible benefits and work package as well as "quality work" they would be much more likely, and able, to stay longer. Accordingly, in creating conditions that let employees manage and balance their lives, learning and careers, business and government would provide their workers with the capability to learn throughout their working lives. The introduction of measures aimed at improving work-life-balance along with other measures such as the provision of individual learning accounts and development plans will assist. Similarly, the introduction of "quality employment" measures (Docherty *et al.*, 2002; Lowe, 2004) will also assist employers to attract, retain and develop an engaged and competent workforce for the future. In particular, measures that seek to accommodate the work-life-balance aspirations of individual employees appear to offer an important set of reform strategies.

Modern employees now need to be autonomous and self-motivated learners. In the future knowing how to improve one's own learning and performance will be especially important (UK Cabinet Office, 2001). Learning accounts along with development incentives, particularly for high potential and high performing employees, will provide organizations with the means to achieve preferred, organizational and individual, learning and development outcomes. In turn, individuals could shift their development goals to accord with their life-cycle phases, career aspirations and ambitions, adjusting the pace of their

lives to suit their emerging, planned or short notice needs. However, many outside considerations can affect the lives of employees both on and off the job impacting the capacity of individuals to engage in life-long learning. For example, in Australia and the USA elder care is emerging as a growing concern (Hume, 2002; Van Yoder, 2002).

Recent evidence in Australia shows that increasing numbers of older people are living alone with the likelihood that care-giving responsibilities are set to expand (Trewin, 2000). Despite the expanding role of women in society, attitudes remain "strikingly" robust (United Nations, 1997), with women continuing to bear the brunt of the care giving responsibilities (Hignite, 2000; OECD, 2000a). In a recent *Harvard Business Review* article on women in management, 67 percent of respondents reported family commitments as a barrier to advancement (Wellington *et al.*, 2003 p. 19). While Encel (2003) notes a rise in the labour force participation rate among women over the last 20 years, the growth in the number of single parent households and the growing need for elder care may well see the gains of the recent past lost. Accordingly, the introduction of policy to assist women in their care-giving role will assist to maintain and, perhaps, increase the participation rate of women (McMorrow and Roeger, 2000). Time scarcity will provide an added complication.

Increasingly, working adults, sharing the same households, will move towards divergent shift and work schedules, complicating their efforts to build sustainable work-life patterns (Castells, 2000; Glenn, 1995). Time scarcity will, become a dominant factor for individuals seeking to balance their lives, work and study (Lowe, 2002). Equally so, the trend towards an increasing proportion of single-parent households with dependent children will be an added complication (Castells, 2000). Under the weight of these "new" living arrangements the predominance of contingent employment practices for women in Australia may expand further (OECD, 2002a). Accordingly, the introduction of policy that assists business and government employees to access a greater range of flexible time off options including leave packaging and flexible working time provides ways of generating the necessary flexibilities (Office for an Ageing Australia, 1999). Ageism will present as a particular difficulty.

An ageing society means that greater numbers of older people may want or need to remain in the workforce for longer periods (Human Rights and Equal Opportunity Commission, 1999). However, prejudices can also exacerbate many of the "problems of ageing" (European Foundation, 1997 p. 6; Laws, 1995). Older people often encounter barriers to full participation in society (Human Rights and Equal Opportunity Commission, 1999). This is most marked with respect to employment. For example, a common stereotype of older workers is that they are less productive in the workplace. Prejudices such as these exacerbate many of the "problems of ageing" (European Foundation, 1997, p. 6; Laws, 1995). Accordingly, as the workforce ages, it seems reasonable to assert that employers must confront their own prejudices through education and training and learn how to manage older employees more effectively (Capowski, 1994). Significantly, a failure to address ageism may lead to the loss of the potential value that older workers can bring to an organization.

Ageism is a particularly insidious form of discrimination and does not just target the elderly. Ageism deals with a broad category and involves negative attitudes about people who are simply older than others (Gudykunst, 1994). These negative attitudes can extend to a deep-seated uneasiness, revulsion or distaste for growing old (Gudykunst, 1994) and are most commonly covert, "... evasive and easily masked" (Encel, 2003 p. 4). Indeed, when the self-concepts of individuals are threatened individuals tend to respond by seeking ways to bolster their self-image (Gudykunst, 1994). Often this is done through positive comparison.

Generally young people tend to associate ageing with disability, dependency, or irrelevancy (Gudykunst, 1994). Older people, on the other hand, may, through a lack of effective interaction, adopt self-protection strategies (Gudykunst, 1994). Combined, these stereotypes can contribute to a break down in communication and collaborative effort. Accordingly, a focussed education and policy approach that deals with the full complexity of ageing and ageism would, in principle, appear warranted.

However, policy approaches that deal with ageing and ageism also need to be carefully framed so as not to stigmatise older workers (European Foundation, 1997), isolate younger workers or to impose obligations on older workers who simply do not have the health or desire to continue in full time or part time employment. The logic of a well-implemented ageing strategy is that it will improve morale, teamwork, cooperation and productivity across all levels of the organization (European Foundation, 1997), to create a sustainable work system. Key success factors include backing from senior management, supportive human resource structures, the commitment of the ageing workers, flexible and patient implementation and financial backing. Accordingly, an integrated and balanced policy approach, tailored to meet the needs of work and life in the modern era would provide a feasible policy response to the trends of ageing, low-fertility rates and less than ideal educational attainment standards. I now turn to discuss learning and diversity in the socio-cultural context of organizational life.

Expert knowledge is a fusion of knowing, know-how and reflection constructed from social interaction within a specific socio-cultural setting (Gherardi *et al.*, 1998). Yet such (tacit) knowledge is difficult to tap into because it is arcane, complex and elusive (Krogh *et al.*, 2000; Florida, 2002). Indeed, "know-how and know-who" tend to remain tacit, socially embedded and resist codification (Paquet, 2000, p. 5). In order to surface tacit knowledge and to build new cognitive associations (Kleiner, 1995) collaboration based on trust, openness and reciprocity between entities is required (Holton, 2001; Davenport and Prusak, 2000).

Difficulties associated with capturing "lessons", experienced by many organizations, (Davenport and Prusak, 2000) can be attributed, in part, to a reliance not only on the technical aspects of knowledge management but also a dysfunctional socio-cultural context (Lowe, 2002). Tacit knowledge is a key learning element but resists codification (Florida, 2002) and can only be shared through cooperation and interaction (European Foundation, 1996; Lundvall and Borrás, 1997; Krogh *et al.*, 2000). Thus, trust, interpersonal and communication skills and mutual commitment are now very important (European Foundation, 1996; Wenger *et al.*, 2002). Individuals however, can only communicate and cooperate in a socially cohesive environment (Lundvall and Borrás, 1997).

Ageism therefore presents as a potent dis-integrating factor. Given the importance of social cohesion to successful learning and organizational performance, the ageing of society, external and internal trends and the continued growth in diversity, the need for modes of work and organization that contribute to the development of social cohesion and which truly value workforce diversity among a community of cooperating individuals are thus re-emphasised.

Through community, knowledge can be shared and exchanged, providing the opportunity to apply new knowledge to new contexts and in so doing enhance individual learning. Indeed, high-level skills and knowledge in individuals flows from "learning" that comes from socialized knowledge (Zack, 1999). This underscores the importance of participation, integration and interaction (Hartog, 1999) and reminds that an effective response to the ageing of the workforce may also contribute to improvements in knowledge management. Indeed, the combination of complimentary competencies, the alignment of the purposeful parts (Gharajedaghi, 1999), has become the linchpin of the knowledge economy (Amidon, 1997). "Learning" has become a form of social calculus, a framework to integrate vertical, horizontal and temporal capabilities (Gharajedaghi, 1999).

Organisational effectiveness now relies on the purposeful association of an organization's members, their mutual commitment and their sense of belonging. Accordingly, in seeking to respond to the challenges posed by demographic, social and technological trends the incorporation of new management processes that recognize the dynamics of knowledge work as well as the development of new ways to build, capture and utilize new ideas through learning set in the social context of the organization would be feasible initiatives.

The growth in knowledge work, in company with the technological and societal dynamism of the modern era, also raises the need for structural and procedural reform, tailoring, high job quality and new ways to support and develop key employees. These interventions resonate with the ageing agenda and are now discussed.

Notwithstanding the forces for change noted earlier, Lundvall and Borrás (1997) argue that efficiencies will only follow if accompanied by organizational flexibility and new forms of managerial control. Thus, hierarchical and complex modes of organization with simple jobs are being replaced by decentralised and network-oriented organizations with more complex jobs (European Foundation, 1996). The emphasis has shifted to "communication, teamwork, reliability, problem solving" (Garvin, 1993) "and includes the incorporation of a positive attitude to learning" (Seltzer and Bentley, 2001 p. 19). More broadly, in response to ageing and the dynamism of the modern era, an integrated organizational response that seeks to harness the benefits of knowledge work while mitigating the risks associated with the ageing population and emerging skill shortages is likely to facilitate goal achievement. Approaches that provide for tailoring, enhance flexibility and seek to develop a quality workplace emerge as feasible approaches.

If older workers are to be encouraged to remain in the paid workforce they also need a reason to extend their working lives. Factors such as occupational stress and illnesses, the intensification of work, extended working hours, intimidation and harassment are unlikely to assist in reshaping older workers attitudes towards an extended working life (European Foundation, 2002). The creation of an organizational reputation of being an ethical, trustworthy and a generally good place to work is likely to deliver additional benefit to (Hewitt Associates, 2000). For example, the promotion of quality jobs, characterized by the attributes of openness, job-depth, participation, individual autonomy, open communication, learning and growth opportunities and individual tailoring, has been shown to attract and retain high performing and motivated employees (Docherty *et al.*, 2002; Lowe, 2004; Presidency of the European Union, 2001; Wenger *et al.*, 2002). By adjusting the rhythm of work, investing in tailored training and development and by providing flexible structures, benefits and remuneration, business and government in Australia would have the means to demonstrate their commitment to their employees. These measures would assist in engendering loyalty (Corporate Leadership Council, 2000; Presidency of the European Union, 2001), contribute to the well-being of employees and boost organizational performance (Presidency of the European Union, 2001).

Yet, for many younger workers the static and functional isolation of their specialty areas might be regarded as "low quality", by failing to adequately capture the wide applicability of their bachelors' degree and professional knowledge (Lowe, 2001). For example, many teachers regard much of the content based exchange between teacher and student as a low risk low skill arena where their professional expertise is under-utilized (Hargreaves *et al.*, 2001; Zimmer and McKern, 2000). On the other side of the coin, few recent graduates have the necessary leadership and teamwork skills (Lowe, 2002) to effectively engage with others across the organization. For many, these skills are more likely to be acquired through experience. These factors underscore the importance of action learning, making an increased use of existing talent (Baltzell, 2000) and the adoption of formal and informal learning approaches that emphasize cooperation, communication, community and project based or cross-functional employment opportunities to name a few (Hargreaves *et al.*, 2001; Lowe, 2002). For high performers and high potentials, individual development strategies emerge as key.

In turn, a move away from functionally based careers to team based practices and improved opportunities to access cross-functional employment (Tiwana, 2000) and promotion, individual development, mentoring, coaching and career planning would follow. Initiatives such as these can assist professionals to extend their learning well beyond their "book knowledge" (Quinn *et al.*, 1996 p. 188). Opportunities such as the ones described here have been advocated by (Drucker, 1988) who, in "The coming of the new organization" forecast the rise of work performed by specialists working together and sharing mutual responsibility in task forces that cut across traditional departments.

Further, senior executives and those with hard to replace expertise and experience, who are approaching retirement, could, as part of their phased retirement programme, become mentors imparting their experience, advice and network access to directly assist newly appointed executives, managers and supervisors. In so doing these newly appointed managers would be given the opportunity to capture corporate learning through

engagement with their assigned mentors (Fullan, 2003) thus realising and capturing the social capital investment in older workers (Glaeser, 2001). In turn, the lessons of the past would not have to be re-learned.

I now discuss an alternative mode of organization and the role of the individual. I do this so that the preceding discussion is linked to structural and procedural reform initiatives proposed here.

In many organizations the model of organization is mechanistic tending towards centrism (Gharajedaghi, 1999). The mechanistic form lacks the ability to restructure itself or to take full advantage from the knowledge of staff. As Stiglitz (1994) observes, centralization does not work because it stifles the bottom-up approach and ignores the individual (Paquet, 2000). Indeed, decentralization as a mode of organization has been forecast "to become more critical" to organizational success in the future (Drucker, 1988 p. 16) while control from the centre is becoming impossible (Allee, 2003). Drucker (2001) adds that emergent structures are too complex, too volatile and changeable for the routine of management that emphasizes hierarchy, top down decision making and functional "silos". Drucker's observation rejects the deterministic hypothesis (Laszlo, 1996; Prigogine, 1997) and points to the adoption of a multi-dimensional organizational design that recognizes the interdependence of technology, outputs and the environment as a preferred mode of arrangement (Gharajedaghi, 1999; Paquet, 2000).

In the future, for change to be enabled it is a prerequisite to have a flexible, adaptive, and agile schema that recognizes the value of knowledge and learning (Fullan, 2001). The preferred model of organization for knowledge worker is a model that delivers "power-to-do" (Gharajedaghi, 1999), multiplied and duplicated across an organization, rather than "power-over".

As Prigogine (1997) notes, chaos cannot be solved at the level of individual trajectories but only at the level of "ensembles". Under such a construct, the role of the Centre is properly one of ensuring that the interface between operating elements, the ensemble, is robust (Prigogine, 1997). Indeed, in the model proposed here, and in acknowledging the complexity of modern organizational life, the role of the centre is less the management of structure and the topology of networks, and more the focussing on the complex dynamics that take place along the links (Gharajedaghi, 1999). Under such an arrangement, the Centre's role is the management of the architecture, interactions and relationships between entities rather than setting a direction down a linear path (Fullan, 2001). This role involves the adoption of measures that enable collaboration, the flexible provision of resources and infrastructure, facilitating innovative practice and enhancing the flow of information between interdependent elements. In effect, the Centre's role would move to support learning about learning (Fullan, 2001). Such a scheme of arrangement recognises the multi-dimensionality of organizational life, that knowledge growth is facilitated through sharing and that through learning a socio-cultural system acquires the capacity to adapt (Gharajedaghi, 1999). Issues associated with the ageing of the workforce serve to underscore the importance of adopting a socio-cultural and systems approach to learning and flexibility. The role of the individual is central in such an arrangement.

Given the forces for change in the world of work and the growth in complexity, both externally and internally, organisational arrangements that emphasize communication, flexibility, fast decision making, the role of the individual, participation and collaboration are now important. Relationship skills that deliver the capacity for individuals to engage across disciplines in the socio-cultural context of organizational life now need to be emphasized (Davenport and Prusak, 2000). Higher levels of individual skill, flexibility and adaptability are also needed to accommodate ongoing workforce and workplace developments (Senate Employment, Education and Training References Committee, 1995). Accordingly, it would seem prudent for business and government when reviewing their responses to the ageing of the workforce to reconsider their organizational forms, to not only embrace the concepts of complexity (Laszlo, 1996) and organizational flexibility but also to respond to the needs of individuals and the communal networks that connect them to their daily work (Allee, 2003).

In this endeavour programmes that emphasize networking and collaboration through professional communities of practice (Fullan, 2001), weaved into the organizational hierarchy will assist (Hasse, 2003). A range of measures that facilitate improved learning opportunities, workforce and workplace flexibility, include structural and procedural reform and deal with the complexities of ageing and workforce and skill shortages will deliver an improved capacity to deal with the dynamism of the modern era in a integrated and coordinated fashion.

Conclusions

To conclude this paper, forecast workforce shortages in Australia combined with ongoing low levels of educational attainment will see the competition for skilled labour increase markedly. Increasingly, success will depend upon being able to attract and retain the best and the brightest (Van Yoder, 2002). Significantly, employers and society in general hold inaccurate perceptions about the capability of older workers (Senate Employment, Education and Training References Committee, 1995).

Consequently, many older people have a wealth of knowledge and skills that are not being fully utilized (Senate Employment, Education and Training References Committee, 1995). In turn, business and government in Australia can no longer afford to discard the most loyal, committed and experienced element of its workforce (Corporate Leadership Council, 2002b). Indeed, the literature suggests that premature retirement dilutes organizational diversity, narrows the leadership development pool, contributes to higher training costs, reduces organizational flexibility and interferes with the processes of learning and innovation. Accordingly, an employment strategy that recognizes the value of its older workers would be a futures oriented response to the forces at work in the external environment.

It follows that business and government in Australia also needs to benefit from the knowledge, skills and intelligence of all its workers (Wells, 1998) other than bidding them a premature goodbye. More broadly a sustaining structure and culture that supports the ongoing development of core skills (Wells, 1998) according to the needs of individuals and those of the organization are indicated by the literature (Wells, 1998). The introduction of flexible employment policies, quality work and flexible benefits will assist in this regard. For older workers, customized working arrangements and higher levels of investment in life-long learning will help to ensure that workers' skills remain relevant (Carey, 1999). In the future, focussed initiatives for older workers will provide the means to retain institutional knowledge and specialized skills (Rappaport, 2001).

Organisational flexibility and new forms of management control are also needed. The literature suggests that a broad framework that supports organisational change, workforce mobility, quality of employment, the physical decline associated with ageing, formal and informal training for new skills, a willingness to experiment and a recognition of the needs of the individual along with flexible work and benefits will be required. Business and government also need to shift the organizational focus to work units and sub-groups, and expand the roles of its employees. Training to promote networking and transdisciplinarity, to support autonomy and to provide for the fluid exchange of information is likely to assist in this effort. Similarly, horizontal career moves, assigning individual responsibility for career management and learning and the use of development incentives are also likely to be beneficial (Corporate Leadership Council, 2002b). Thus, in seeking to respond to the challenges posed by the ageing of the workforce, low fertility rates and the dynamism of Mode 2 Society a transgressive reform agenda that embraces a multiplicity of approaches rather than single-issue reform proposals would appear to offer a long-term remedy.

References

- Access Economics (2001), "Population ageing and the economy", available at: www.health.gov.au/acc/fofa/documents/pdf/popagefact3.pdf (accessed 31 May 2002).
- Agarwal, N. and De Groote, M. (1998), "Retirement of older workers: issues and policies", *HR Human Resource Planning*, Vol. 21 No. 1, pp. 42-52.

- Allee, V. (2003), *The Future of Knowledge. Increasing Prosperity through Value Networks*, Butterworth-Heinemann, Burlington, MA.
- Amidon, D. (1997), *Innovation Strategy for the Knowledge Economy: The Ken Awakening*, Butterworth Heinemann, Newton, MA.
- Australian Bureau of Statistics (2002), "Transition from education to work survey", available at: <http://80-www.abs.gov.au.ezproxy> (accessed 1 September).
- Baltzell, M. (2000), "Implications of an ageing population: the changing future profiles of the workforce in international organizations", available at: www.alcoa.com.au/news/speeches/BMBFulbrightspeech.html (accessed 31 May 2002).
- Böersch-Supan, A. (2004), "Global aging: issues, answers, more questions", available at: www.rand.org/labor/aging/rsi/rsi_papers/2004_boersch.doc (accessed 30 September).
- Capowski, G. (1994), "Ageism: the new diversity issue", *Management Review*, Vol. 83 No. 10, available at: <http://80-proquest.umi.com.ezproxy.cqu.edu.au:2048/pqdweb?TS=1023338943&Did=00000000026394&Fmt=3&Deli=1&Mtd=1&Idx=1&Sid=12&RQT=309> (accessed 7 June 2002).
- Carey, D. (1999), "Coping with population ageing in Australia", OECD economics department working papers No. 217, available at: www.oecd.org/eeco/eeco (accessed 29 August 2002).
- Casey, B. (1998), "Incentives and disincentives to early and late retirement", Working Paper AWP 3.3, available at: www.oecd.org (accessed 3 May 2002).
- Castells, M. (2000), *The Power of Identity. The Information Age: Economy, Society and Culture*, 2nd ed., Vol. 2, Blackwell Publishers, Oxford.
- Centre For Strategic and International Studies (2000), "Global aging. The challenge of the new millennium", Centre For Strategic and International Studies and Watson-Wyatt Worldwide, available at: www.csis.org (accessed 1 August 2002).
- Clarke, J. (2002), "Military workforce: planning for future capabilities", paper presented at the Australian Defence Force Personnel Symposium, Australian War Memorial, Canberra, June.
- Commonwealth of Australia (2004), *Australia's Demographic Challenges*, available at: <http://demographics.treasury.gov.au/content/default.asp> (accessed 9 March).
- Corporate Leadership Council (2000), "The employer of choice of the future", available at: www.corporateleadershipcouncil.com (accessed 3 July 2002).
- Corporate Leadership Council (2002a), "The ageing workforce: retention and knowledge management", available at: www.corporateleadershipcouncil.com (accessed 27 August).
- Corporate Leadership Council (2002b), "Succession planning in the public sector", available at: www.corporateleadershipcouncil.org (accessed 29 August).
- Cosier, I. (2002), *Work in the Knowledge Society Seminar*, Central Queensland University, Sydney.
- Davenport, T. and Prusak, L. (2000), *Working Knowledge*, Harvard Business School Press, Boston, MA.
- Davis, M. (1997), *Gangland: Cultural Elites and the New Generationalism*, Allen & Unwin, Maryborough.
- Department of Industrial Relations (2001), *Queensland Public Service Workforce Management Report, 2001*, Division of Public Sector Industrial and Employee Relations, Department of Industrial Relations, Brisbane.
- Docherty, P., Forslin, J. and Shani, A. (2002), *Creating Sustainable Work Systems. Emerging Perspectives and Practice*, Routledge, London.
- Drucker, P. (1988), *The Coming of the New Organization: Harvard Business Review on Knowledge Management*, Harvard Business School Press, Boston, MA.
- Drucker, P. (2001), "The next society: a survey of the near future", 3 November, available at: http://economist.com/surveys/displaystory.cfm?story_id=770819 (accessed 1 September 2003).
- Ekamper, P. (1997), "Future age-conscious manpower planning in The Netherlands: from early retirement to a new perspective on the elderly", *International Journal of Manpower*, Vol. 18 No. 3, pp. 232-47.



Encel, S. (2003), "Age can work: the case for older Australians staying in the workforce". A Report to the Australian Council of Trade Unions and the Business Council of Australia, available at: www.bca.com.au/upload/AGEDOCfinal22.04.03.pdf (accessed 23 April).

European Foundation (1996), "Green paper – living and working in the information society: people first", available at: <http://europa.eu.int/ISPO/infosoc/legreg/docs/peopl1st.html> (accessed 27 August 2002).

European Foundation (1997), "Combating age barriers in employment.. European Foundation for the improvement of living and working conditions – research summary", available at: www.eurofound.ie/ (accessed 29 August 2002).

European Foundation (1999), "Active strategies for an aging workforce", European Foundation for the Improvement of Living and Working Conditions, available at: www.eurofound.ie/living/ageing.htm (accessed 27 August).

European Foundation (2002), "Third European survey on working conditions", available at: www.eurofound.ie/ (accessed 13 August).

Florida, R. (2002), *The Rise of the Creative Class. And How it's Transforming Work, Leisure, Community and Everyday Life*, Basic Books, New York, NY.

Fullan, M. (2001), *Leading in a Culture of Change*, Jossey-Bass, San Francisco, CA.

Fullan, M. (2003), *Change Forces with a Vengeance*, RoutledgeFalmer, London.

Garvin, D. (1993), *Building a Learning Organization: Harvard Business Review on Knowledge Management*, Harvard Business School Press, Boston, MA.

Gharajedaghi, J. (1999), *Systems Thinking: Managing Chaos and Complexity – a Platform for Designing Business Architecture*, Butterworth-Heinemann, Stoneham, MA.

Gherardi, S., Nicolini, D. and Odella, F. (1998), "Toward a social understanding of how people learn in organizations", *Management Learning*, Vol. 29 No. 3, pp. 273-97.

Glaeser, E. (2001), "The formation of social capital", *Isuma*, Vol. 2 No. 1, available at: www.isuma.net/v02n01/glaeser/glaeser_e.shtml (accessed 5 September 2002).

Glenn, G. (1995), "Serving Australia: the Australian defence force in the twenty first century", available at: <http://defweb.cbr.defence.gov.au/documents/DATA/DEFPUBS/PORTDOCS/SERVAUST/SERVPRE.PDF> (accessed 18 October 2002).

Grant, J., Hoorens, S., Sivadasan, S., Van Het Loo, M., DaVanzo, J., Hale, L., Gibson, S. and Butz, W. (2004), "Low fertility and population ageing: causes, consequences, and policy options", available at: www.rand.org (accessed 12 October).

Grimbeek, P. (2003), "Survey of training, skills and professional development needs for teachers", Education Queensland, Staff College Inclusive Education, Brisbane.

Gudykunst, W. (1994), *Bridging Differences: Effective Intergroup Communication*, 2nd ed., Sage Publications, Thousand Oaks, CA.

Hargreaves, A., Earl, L., More, S. and Manning, S. (2001), *Learning to Change. Teaching Beyond Subjects and Standards*, Jossey-Bass, San Francisco, CA.

Hartog, J. (1999), "Behind the veil of human capital". *OECD Observer*, No. 215, January 1999, available at: <http://www1.oecd.org/publications/observer/215/e-harto.htm> (accessed 25 September 2002).

Hasse, R. (2003), "Organizations and change in information societies – networking, fragmentation and their impact on uncertainty absorption", in Bechmann, G., Krings, B.-J. and Rader, M. (Eds), *Across the Divide: Work Organization and Social Exclusion in the European Information Society*, Edition sigma, Berlin, pp. 175-95.

Hewitt Associates (2000), "Best employers to work for in Australia study 2000. Summary of findings", available from Defence Personnel Executive, Directorate of Strategic Personnel Planning and Research, Australian Defence Force, Canberra.

Hignite, K. (2000), "Aging gracefully", *Association Management*, Vol. 52 No. 8, (electronic version).

Holton, J. (2001), "Building trust and collaboration in virtual teams", *Team Performance Management: An International Journal*, Vol. 7 No. 3-4, pp. 36-47.

- Human Rights and Equal Opportunity Commission (1999), "Age matters? A discussion paper on age discrimination", available at: www.hreoc.gov.au/pdf/human_rights/age_report_2000.pdf (accessed 23 April 2003).
- Hume, D. (2002), *Preparedness of the APS for the Implications of an Ageing Workforce*, Hume Consulting Group, Mawson, ACT.
- Ilmarinen, J. (2001), "Aging workers: aging of workforce in the European Union", *Occupational and Environmental Medicine*, Vol. 58 No. 8, p. 546.
- Kelly, C. (1997), "Of bridge jobs and boomerangs", *Institutional Investor*, Vol. 31 No. 9, pp. 47-53.
- Kleiner, A. (1995), "Twenty-first century organizations: four plausible prospects", available at: www.gbn.com/public/gbnstory/articles/ex_21st_cen_org.htm (accessed 1 October 2002).
- Koizumi, H. (1999), "A practical approach to transdisciplinary studies for the 21st century. The centennial of the discovery by the Curies", *J. Seizon and life Sci.*, Vol. 9 No. B1999.1, pp. 19-20.
- Krogh, G., Ichijo, K. and Nonaka, I. (2000), *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*, Oxford University Press, New York, NY.
- Laszlo, E. (1996), *The Systems View of the World. A Holistic Vision of our Time*, Hampton Press Inc, Cresskill, NJ.
- Laws, G. (1995), "Understanding ageism: lessons from feminism and postmodernism", *The Gerontologist*, Vol. 35 No. 1, pp. 112, (Electronic version).
- Lowe, G. (2001), *High Quality Work Environments as the Key to Attracting, Retaining and Developing Top Talent*, Canadian Policy Research Networks Inc., available at: www.cprn.org/en/doc.cfm?doc=214 (accessed 1 May 2003).
- Lowe, G. (2002), "Leveraging the skills of knowledge workers", *Isuma*, Vol. 2 No. 1, pp. 79-86, available at: www.isuma.net/v03n01/lowe/lowe_e.pdf (accessed 5 September).
- Lowe, G. (2004), "Healthy workplace strategies. Creating change and achieving success", available at: www.grahamlowe.ca/documents/93/Hlthy%20wkpl%20strategies%20report.pdf (accessed 9 March).
- Lundvall, B. and Borrás, S. (1997), "The globalising learning economy: implications for innovation policy", available at: www.cordis.lu/tser/src/globec.htm (accessed 10 June 2003).
- McMahan, S. and Phillips, K. (1999), "America's aging workforce: ergonomic solutions for reducing the risk of CTDs", *American Journal of Health Studies*, Vol. 15 No. 4, pp. 199-202, available at: <http://80-proquest.umi.com.ezproxy.cqu.edu.au/pqdweb?index=0&did=000000051075702&SrchMode=1&sid=1&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1062376696&clientId>.
- McMorrow, K. and Roeger, W. (2000), "The economic consequences of ageing. A comparison of the EU, US and Japan. Directorate-General for Economic and Financial Affairs", European Council, available at: www.eurofound.ie/living/ageing.htm (accessed September 2003).
- MacKay, H. (1997), *Generations Baby Boomers their Parents and their Children*, Pan Macmillan Australia, Sydney.
- Malone, T. (2002), "Towards a knowledge society in the Americas", available at: www.sigmaxi.org (accessed 25 August).
- Morrison, P. (1999), "Population matters. Presentation to the National Science Board", available at: www.rand.org (accessed 10 October 2004).
- National Academy of Science (2001), "Preparing for an aging world: the case for cross national research", available at: <http://books.nap.edu/catalog/10120.html> (accessed 11 October 2004).
- Nowotny, H. (2002), "Re-thinking science: knowledge and the public in an age of uncertainty", Abstract. Available at: www.wiss.ethz.ch/research/res_nowotny.de.html (accessed 21 September 2003).
- Nowotny, H., Scott, P. and Gibbons, M. (2001), *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty*, Polity Press, Cambridge.
- Office for An Ageing Australia (1999), "National strategy for an ageing Australia. An older Australia – challenges and opportunities for all", available at: www.health.gov.au/acc/ ofoa/ageing_policy/nsaa/nsaabk6.htm (accessed 31 May 2002).

Organization for Economic Cooperation and Development (1998a), "Workforce ageing consequences and policy responses", Working Paper AWP 4.1, available at: www.oecd.org (accessed 27 August 2002).

Organization for Economic Cooperation and Development (1998b), "Maintaining prosperity in an ageing society. The OECD study on the policy implications of ageing", Ageing Working Papers, WP AWP4.1, available at: www.oecd.org (accessed 3 July 2002).

Organization for Economic Cooperation and Development (2002a), *Babies and Bosses: Reconciling Work and Family Life. Australia, Denmark and The Netherlands*. OECD Publications, Paris.

Organization for Economic Cooperation and Development (2002b), "Understanding the brain. Towards a new learning science", available at: <http://www1.oecd.org/publications/e-book/9102021E.PDF> (accessed 24 April 2003).

Paquet, G. (2000), "The new governance, subsidiarity, and the strategic state", available at: www.governance.uottawa.ca/english/Publications/Downloads/Paquet/2000%20-%20The%20New%20Governance,%20Subsidiarity%20and%20the%20Strategic%20State.pdf (accessed 30 June 2003).

Presidency of the European Union (2001), "For a better quality of work", paper presented at European Union presidency conference, Brussels, 20-21 September, available at: www.eu2001.be (accessed 28 August 2002).

Prigogine, I. (1997), *The End of Certainty. Time, Chaos, and the New Laws of Nature*, The Free Press, New York, NY.

Quinn, J., Anderson, P. and Finklestein, S. (1996), "Managing professional intellect", *Harvard Business Review on Knowledge Management*, Harvard Business School Press, Boston, MA.

Rappaport, A. (2001), "Employer Strategies for a Changing Workforce: Phased Retirement and Other Options", *Benefits Quarterly*, Vol. 17 No. 4 (electronic version).

Romer, P. (2002), "The future just happened", available at: www.bbc.co.uk/future (accessed 24 May).

Ryder, N. (1965), "The Cohort as a Concept in the Study of Social Change", *American Sociological Review*, Vol. 30, pp. 853-61.

Schindlmayr, T. (2001), "Defence personnel environment scan available at: <http://defweb.cbr.defence.gov.au/dpe> (accessed 3 July 2002).

Scroop, G. (2000), "The impact of age on the physical and psychological performance of ADF personnel", Adelaide, Australia, available from Defence Personnel Executive, Directorate of Strategic Personnel Planning and Research, Australian Defence Force, Canberra.

Seltzer, K. and Bentley, T. (2001), "The creative age: knowledge and skills for the new economy", in Cosier, I. Dr (Ed.), *Working in the Knowledge Society*, Central Queensland University, Rockhampton.

Senate Employment, Education and Training References Committee (1995), "Report on the inquiry into long term unemployment", available at: <http://council.labor.net.au/libcat/0006456.html> (accessed 8 June 2003).

Schienstock, G. (1999), "Social exclusion in the learning economy", paper presented at the European Socio-Economic Research Conference Centre de Conférences Albert Borschette Brussels, 28-30 April, available at: www.uta.fi/laitokset/tyoelama/sowing/report/SocExcLearningEcon.pdf (accessed 23 July 2003).

Stiglitz, J. (1994), *Whither Socialism*, The MIT Press, Cambridge, MA.

Tiwana, A. (2000), *The Knowledge Management Toolkit*, Prentice-Hall, Englewood Cliffs, NJ.

Trewin, D. (2000), *Population Projections Australia 1999-2101*, Ausinfo, Commonwealth of Australia, Canberra.

UK Cabinet Office (2001), "In demand adult skills in the 21st century. Performance and innovation unit", available at: www.cabinet-office.gov.uk/innovation/2001/workforce/report/index.html (accessed 24 May 2002).

United Nations (1997), "Care giving and older persons: gender dimensions. Report of the expert group meeting 30 November-2 December 1999, Malta", available at: www.un.org/esa/socdev/ageing/agemalta.htm (accessed 7 March 2000).

- Van der Heijden, B. (2002), "Prerequisites to guarantee life-long employability", *Personnel Review*, Vol. 31 No. 1, pp. 44-61.
- Van Yoder, S. (2002), "Coping with the graying workforce", *Financial Executive*, Vol. 18 No. 1, pp. 26-9.
- Wells, S. (1998), *Choosing the Future: The Power of Strategic Thinking*, Butterworth Heinemann, Stonham, MA.
- Wellington, S., Brumit Kropf, M. and Gerkovich, P. (2003), "What's holding women back?", *Harvard Business Review*, Vol. 81 No. 6, p. 19.
- Wenger, E., McDermott, R. and Snyder, W. (2002), *A Guide to Managing Knowledge: Cultivating Communities of Practice*, Harvard Business School Press, Boston, MA.
- Zack, M. (1999), *Competing on Knowledge. 2000 Handbook of Business Strategy*, available at: <http://web.cba.neu.edu/~mzack/articles/compknow/compknow.htm> (accessed 1 October 2002).
- Zemke, R., Raines, C. and Filipczak, R. (1999), *Generations at Work: Managing the Clash of Veterans, Boomers, Xers, and Nexters in your Workplace*, American Management Association, New York, NY.
- Zimmer, I. and McKern, B. (2000), "A review into military postgraduate education" available at: <http://defweb.cbr.defence.gov.au/dpe/publications/zimmer.pdf> (accessed 17 October 2002).

Further reading

- Castells, M. (2000), *The Rise of the Network Society. The Information Age: Economy, Society and Culture*, 2nd ed, Vol. 1, Blackwell Publishers, Oxford.
- Commonwealth of Australia (2001), "Planning for the workforce of the future. An overview. Workforce planning in the Australian public service", available at: www.anao.gov.au/WebSite.nsf/Publications/4A256AE90015F69B4A256A0E00106BBA (accessed 9 March 2004).
- Council On The Ageing Australia (2001), "Investing in the future. Australia's ageing workforce", Submission to the Federal Budget 2001-02, available at: www.cota.org.au/budgetworkforce.htm (accessed 31 May 2002).
- Lowe, G. (2001), *Employer of Choice? Workplace Innovation in Government. A Synthesis Report*, Canadian Policy Research Networks Inc, available at: www.cprn.org/en/doc.cfm?doc=197 (accessed 3 March 2003).
- Mauzy, J. and Harriman, R. (2003), *Creativity Inc.*, Harvard Business School Press, Boston, MA.
- National Institute on Aging (2002), "Behavioral and social research program 98-99 annual report", available at: www.nia.nih.gov/research/extramural/behavior/resources.htm (accessed 3 July).
- Nonaka, I. (1991), "The knowledge creating company", *Harvard Business Review on Knowledge Management*, Harvard Business School Press, Boston, MA.
- Organization for Economic Cooperation and Development (2000), "Reforms for an ageing society", available at: www.oecd.org (accessed 29 August 2002).
- Organization for Economic Cooperation and Development (2001), "The new economy: beyond the hype", available at: www.oecd.org (accessed 24 May 2002).
- Schuller, T. (2001), "The complementary roles of human and social capital", available at: www.isuma.net/v02n01/schuller/schuller_e.shtml (accessed 5 September 2002).
- Sheen, V. (2001), "Challenging convention: Australia's ageing workforce – the challenge for human resource management", paper presented at the Australian Human Resources Institute Conference, May, Melbourne Convention Centre, Melbourne.
- Sujansky, J. (2002), "Generation y critical care and feeding", *Workforce, Costa Mesa*, Vol. 81 No. 5, pp. 15, available at: <http://80-proquest.umi.com.ezproxy.cqu.edu.au:2048/pqdwweb?Did=000000120908741&Fmt=4&Deli=1&Mtd=1&Idx=8&Sid=2&RQT=309> (accessed 18 June).