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CPRN RCRPP

# **Smart Machines or Smart Workers? Human Resource Implications of the IT Revolution**

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# Fiction and Fact in Debates about Information Technology



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- popular discourse is confusing and contradictory
- research provides a ‘reality check’
- IT has ‘revolutionary’ potential, but depends on human resources and organizational context
- future directions are not predetermined: we can shape IT with creative policies



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# Pessimistic scenario

Jeremy Rifkin, *The End of Work*

“...new and more sophisticated software technologies are going to bring civilization ever closer to a new workerless world.”



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# Optimistic scenario

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Don Tapscott, *The Digital Economy*

“The Age of Networked Intelligence ... is not just an age of linking computers but of internetworking human ingenuity. It is an age of vast new promise and unimaginable opportunity.”



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# Major trends reshaping workplaces

## **INDIVIDUAL:**

- demographics
- rising education levels
- work and family
- stress, quality of life

## **ORGANIZATIONAL:**

- downsizing, restructuring
- learning and skills
- high performance model

## **MACRO:**

- economic globalization
- erosion of security  
“anchors”
- knowledge economy
- information technology revolution

# Five paradoxes of tech change



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- ① massive investment in technology / slow productivity growth
- ② concerns about technological unemployment / workers positive about impacts
- ③ rhetoric of human resource management and skill shortages / existing skills underutilized
- ④ IT's potential for work reform / many organizational barriers to change
- ⑤ IT costs declining sharply / an elite of information workers emerging



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# A Global Information Society

- An OECD goal
- Canada launched this policy direction with the 1994 Information Highway Advisory Council
- 3 cornerstones: job creation through technological innovation; universal, affordable access to technology; lifelong learning
- “Learning and training comprise an integral part of the knowledge economy.”
- this goal is now part of the ‘Knowledge based economy and society’ agenda

Canadian Information Highway Advisory Council, *Building the Information Society* (Industry Canada, 1994).



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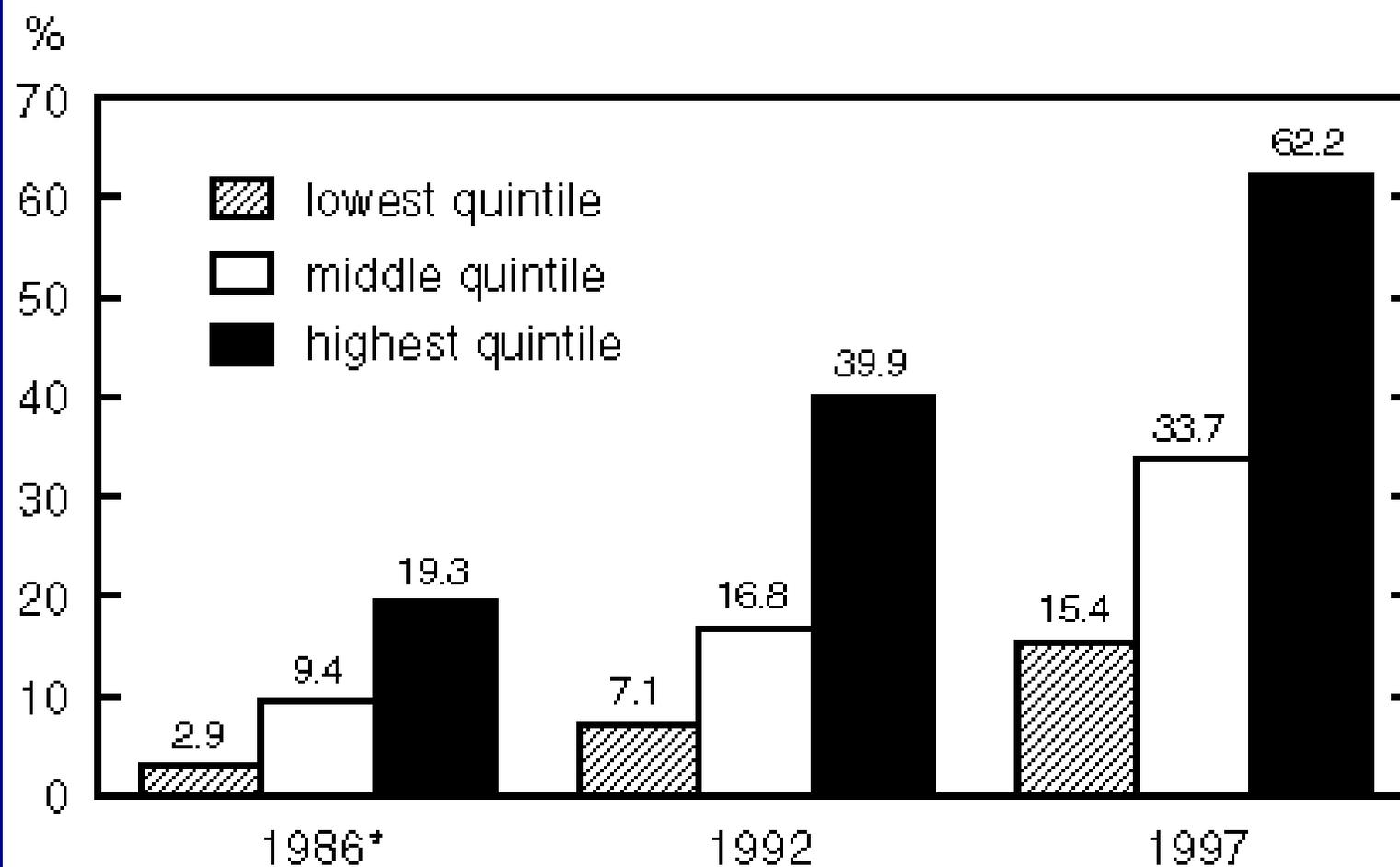
# Information Super Highway....?

- In 1997, 36% of households had a computer, up from 20% in 1992
- In 1998, 23% of Canadian households used the Internet, up from 7% in 1996
- in 1995, 9% of employees worked at home, up from 6% in 1991
- 22% of teleworkers were provided a computer by their employer
- 4 in 10 Canadians working for an employer would switch to an equivalent job with another employer if they could telework, and 3 in 10 would forego a wage increase to be able to telework

Sources: Statistics Canada, 1997 Household Facilities and Equipment Survey, 1995 Survey of Work Arrangements; EKOS Telework Survey



## Computers in the home: high-income households have a large advantage



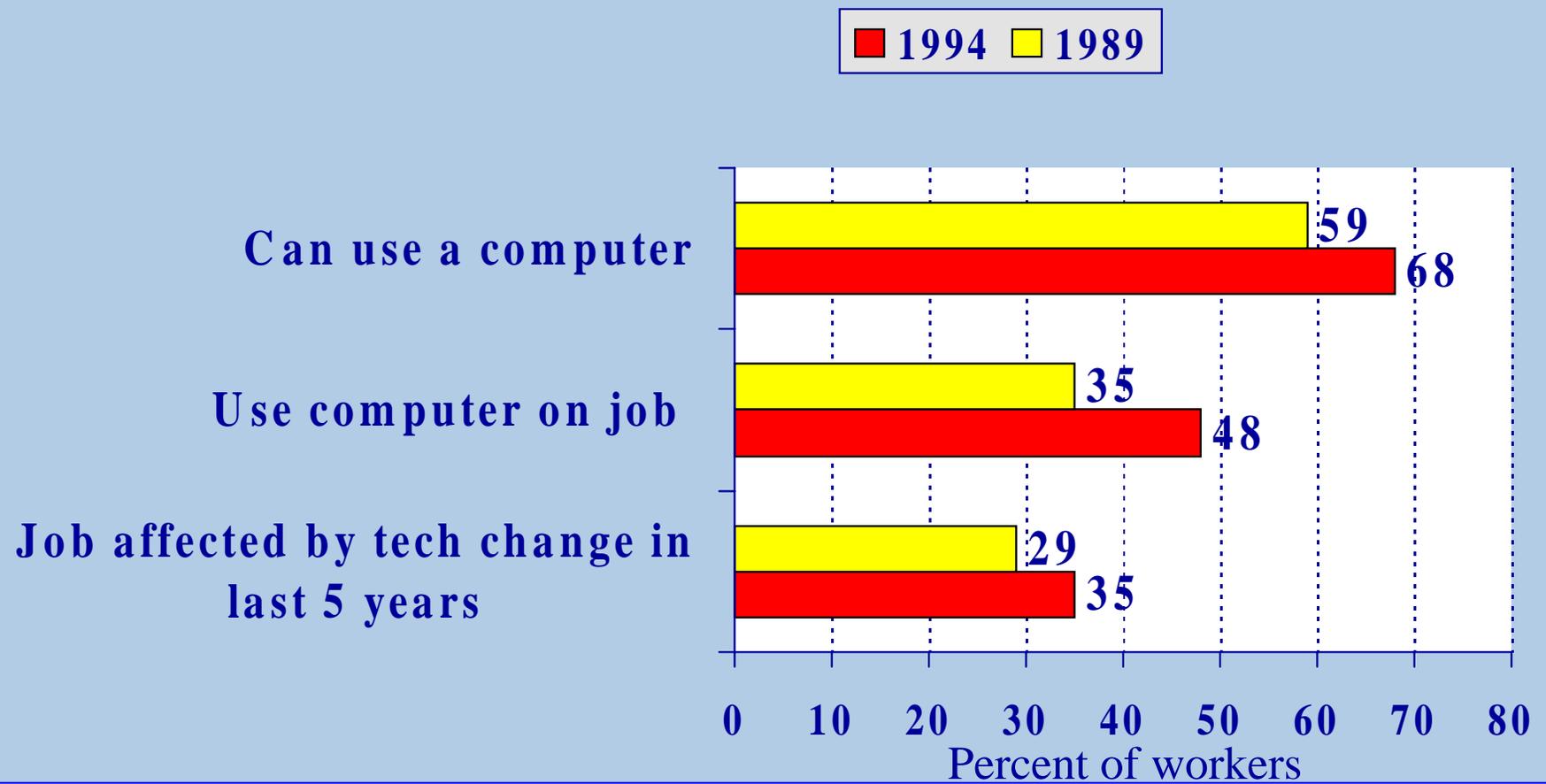
\* Not available for 1987.

Source: Statistics Canada, 1997 HF&ES



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# Workplace computer trends



Source: Statistics Canada, 1989 and 1994 General Social Surveys.



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# Untapped IT talents

- 1997 survey of 1994 Alberta university grads
- Economy booming, low unemployment
- By most indicators, grads “successful”
- But essential knowledge, skills and abilities not well utilized
- *only 1 in 3 ‘extensively’ used their writing, computer, information management skills*
- 1 in 4 felt overqualified, as in other studies

# Skilled work requires an enabling environment



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“The secret to success seems to lie in flexible adaptation to technological change. This means ensuring that the workforce has the *skills* to respond to the demands of technological change. It also requires adapting *organizational process and structure...* Organizations have to understand that technology creates *systemic change...*”

(Gaylen Duncan, Information Technology Association of Canada, in 1997 Conference Board study.)



# Technology and productivity

- Huge investments in IT, especially in service industries, has not had expected productivity payoffs? Why?
- OECD concludes that new technology brings job gains and productivity when it is linked to investments in organizational changes and upskilling
- Innovation and technology diffusion must be part of a broad policy agenda that includes organizational change, management strategies, education and training systems -- conditions that foster *high-trust, high-skill* workplaces

(OECD Jobs Strategy: Technology, Productivity and Job Creation, 1998)



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# The high performance workplace

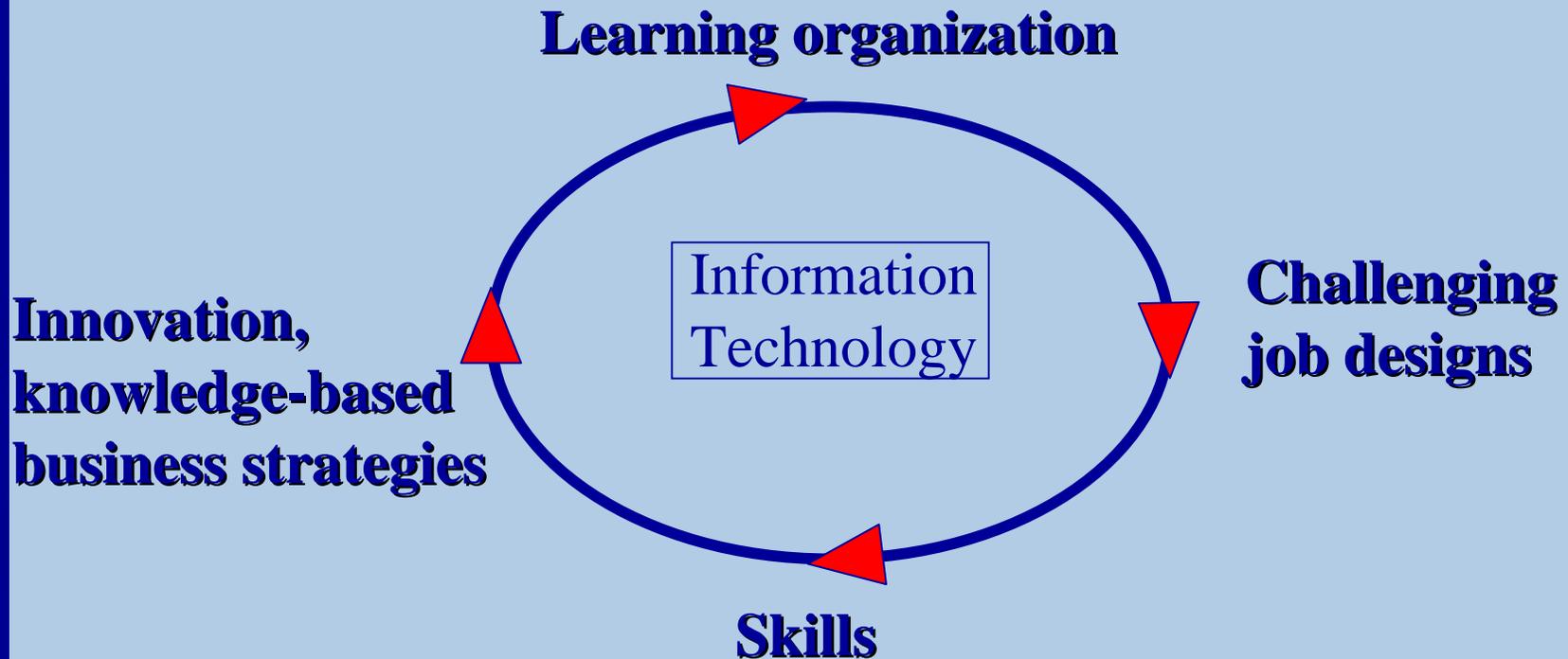
*‘Bundled’ workplace innovation and intensive HRM practices contribute to high performance:*

- flexible organization
- team-based work
- commitment to training
- employee participation
- sharing of rewards and information
- promote health and well-being
- family-friendly policies

# Skills and learning: the virtuous circle



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Source: G. Betcherman, K. McMullen & K. Davidman, TRAINING FOR THE NEW ECONOMY. CPRN, 1998..

# Broadening the IT Policy Agenda



- **how do we promote learning organizations and lifelong learning?**
- **how do we redesign jobs and organizations to tap more human potential?**
- **how do we address the problems of unequal IT access and resulting labour market polarization?**
- **how can we ensure that IT improves the overall quality of life for Canadians?**
- **how can employers, professional associations, unions, educational and training institutions, and governments help create these changes?**



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