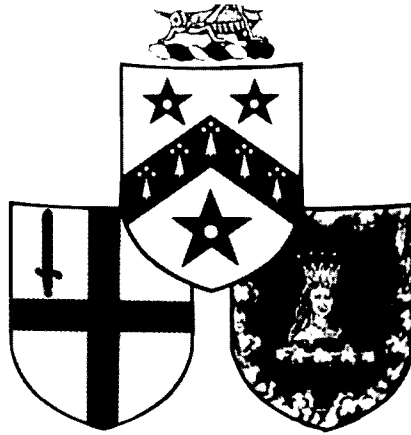


G R E S H A M
COLLEGE



**YESTERDAY'S EDUCATION
FOR TOMORROW'S BUSINESS**

Lecture 3

FROM PUZZLES TO PARADOXES

by

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Gresham College was established in 1597 under the Will of the Elizabethan financier Sir Thomas Gresham, who nominated the Corporation of the City of London and the Worshipful Company of Mercers to be his Trustees. They manage the Estate through the Joint Grand Gresham Committee. The College has been maintained in various forms since the foundation. The one continuing activity (excepting the period 1939-45) has been the annual appointment of seven distinguished academics "sufficiently learned to reade the lectures of divyntyte, astronomy, musicke, and geometry" (appointed by the Corporation), "meete to reade the lectures of lawe, phissicke, and rethoricke", (appointed by the Mercers' Company). From the 16th century the Gresham Professors have given free public lectures in the City. A Mercers' School Memorial Chair of Commerce has been added to the seven 'ancient' Chairs.

The College was formally reconstituted as an independent foundation in 1984. The Governing Body, with nominations from the City Corporation, the Mercers' Company, the Gresham Professors and the City University, reports to the Joint Grand Gresham Committee. Its objectives are to sponsor innovative research and to supplement and complement existing facilities in higher education. It does not award degrees and diplomas, rather it is an active collaborator with institutions of higher education, learned societies and professional bodies.

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Gresham College

From Puzzles to Paradoxes

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This year's government White Paper on Competitiveness¹ opened its analysis of the learning and skills needed required for the future by quoting Adam Smith. He commented² that "the greater part of what is taught in schools and universities does not seem to be the most proper preparation for that which is to employ them for the rest of their days." The White Paper went on to highlight the growing importance of learning in its broadest sense in a modern society which requires that all people have the opportunity to realise their potential. The White Paper outlined a scenario in which education from early years "the foundation for the future" to higher education and work place skill development were part of a seamless web of development, response and adaptation.

This emphasis is relatively new in the UK. John Betjeman's poem the *Executive* was quoted earlier. Learning, development and training had no role for this young executive except in a very specific sense:

I do some mild developing. The sort of place I need
Is a quiet country market town that's rather run to seed.
A luncheon and a drink or two, a little savoir faire -
I fix the Planning Officer, the Town Clerk and the Mayor.

Betjeman's view of the economic role of learning was not enthusiastic:

The villagers were ruled by masters three -
Squire, parson, schoolmaster. Of these, the last
Knew best the village present and its past.
Now, I am glad to say, the man is dead,
The children have a motor bus instead,
And in a town eleven miles away
We train them to be 'Citizens of To-day.'
And many a cultivated hour they pass
In a fine school with walls of vita-glass.
Civic, eurythmics, economics, Marx,
How-to-respect-wild-life-in-National-Parks;
Plastics, gymnastics - thus they learn to scorn
The old thatch'd cottages where they were born.

¹ Cmnd 3300 (1996) *Competitiveness: Creating the Enterprise Centre of Europe*, London, HMSO

² Smith, A. (1778) *The Wealth of Nations* London, Everyman Vol2 (1910)

These doubts and questions have echoes in the harsher images created by Willy Russell. In *Our Day Out* - the kids going on the day trip have no doubt about their position in the education pecking order. They are:

Mrs Kay's Progress Class
We're the ones who
Never pass

The chorus in the play is provided by the bored girls who respond to every new experience with variations on the refrain:

But it's borin'
It's really borin'
We should a stayed at school
An' done some drawin'
A zoo's just stupid animals
An' some of them are smelly.

But the picture is not wholly negative. Briggs - a teacher - eventually provokes the half mocking refrain from the girls that:

We really think you're great sir
Tell us everything you know
We'd be really brainy sir
If all teachers were like you.

This blurred image of doubt, challenge and opportunity is explored further in Russell's later play *Educating Rita*. He highlights the threat that learning can be: Frank (the University teacher) asks Rita why she never became a proper student:

Rita What? After goin' to the school I went to?

Frank Was it bad?

Rita Nah, just normal, y' know; borin' , ripped-up books, broken glass everywhere, knives an' fights. An' that was just in the staffroom. Nah, they tried their best I suppose, always tellin' us we stood more of a chance if we studied. But studyin' was just for wimps, wasn't it? See, if I'd started takin' school seriously I would have had to become different from me mates, an that's not allowed.

This image of learning being a threat is not new. Shaw explored it in *Pygmalion*. Professor Higgins promises to transform Eliza's prospects through training:

You see this creature with her kerbstone English: the English that will keep her in the gutter to the end of her days. Well, sir, in three months I could pass that girl off as a duchess at an ambassador's garden party. I could even get her a place as a lady's maid or shop assistant, which requires better English

But once the transformation is completed Eliza is forced to conclude:

What am I fit for? What have you left me fit for? Where am I to go? What am I to do? What's to become of me?

This separated and potentially threatening role for learning was part of the economic paradigm that dominated the last two centuries. The puzzle faced today is to transform this view of learning in an environment in which the threat lies in not integrating learning into economic and business life. This shift is as deeply rooted in the new industrial revolution as assumptions about the division of labour and the mobilisation of resources was in previous revolutions. Understanding and responding to the shift require some understanding of the nature of revolutionary change in ideas, assumptions and beliefs.

Just What is Normal?

Tom Kuhn the philosopher of science draws an important distinction between normal science and revolutionary science³. Normal science occurs when there is general acceptance of a set a beliefs and assumptions about the way the world works - generally or in a specific field of endeavour. Scientists feel no need to question their core beliefs or assumptions and concentrate their efforts on "puzzle-solving" and refining their professional skills and techniques. Kuhn comments that "perhaps the most striking feature of normal science problems ... is how little they aim to produce major novelties, conceptual or phenomenal." Change is cumulative, gradual and conforms to accepted rules. Scientific Revolutions occur when these rules and beliefs are rejected and replaced by a new set of beliefs.

The revolution usually occurs in three stages. First there is the emergence of anomalies. These are phenomena or research findings that do not fit into the old set of beliefs. The classic example of this was the "discovery" of oxygen and the subsequent revolution in chemistry. The first stage in this revolution occurred when scientists like Priestly, Lavoisier and Scheele produced effects in their experiments that could not occur if they accepted the old phlogiston theory of gases. The accumulation of these anomalies makes it harder and harder for people to accept the status quo.

This eventually produces a crisis in which the defenders of the status quo and the advocates of change may clash. The defenders either attack the advocates of change as in the case of Galileo or assert that the difficulties reflect some failures on the parts of the innovators. Their research methods are questioned and their interpretations doubted. Innovators produce a wide variety of claims, theories or beliefs to explain or justify their position. Many of these provide partial but unsatisfactory explanations. Eventually, the crisis is resolved when the profession has "changed its view of the field, its methods and its goals." Across industry over the last decade, there were managers who identified the emerging

³ Kuhn, T. S. *The Structure of Scientific Revolutions* Chicago, The University of Chicago Press, 1970

problems and proposed alternative ways forward. They were seldom blinded like Galileo for seeing too clearly - but few survived to see the predicted crisis emerge or their ideas implemented.

Economics sees the same debate. This is not the type of debate about peripheral or technical issues that dominated the seventies and eighties. The battle between R^2 s or simultaneous equations versus least squares has been won - or lost ... The argument goes to the heart of economics. There are those who seek security in numbers and methodologies while others call for a new economics to reflect a new economic or business, world order.

The New Economics?⁴⁵⁶⁷

Discussion of new economics or new economies operates on two basic levels. There are those who claim that economic thinking has become a cul-de-sac characterised by increasingly sophisticated attempts to analyse, model or predict economic behaviour based on a set of theories that are fundamentally flawed. Nobel Laureate, Wassily Leontief comments that "In no other field of empirical inquiry has so massive and sophisticated a statistical machinery been used with such indifferent results⁸." The public failure of economists to predict or explain the emergence or disappearance of stagflation, the economic downturn of the late 1980's, the Japanese recession, the collapse then recovery of Germany post integration of the East, the difficulties of Russian economic recovery, the turmoil of the Exchange Rate Mechanism has undermined the discipline's credibility.

The anxiety of policy makers in business and the public sector to understand the changes facing them gets little response from economics. Even relatively small, short term changes seem beyond the ability of economist to explain or predict. In economies like the UK, forecasts like the money supply, public sector borrowing, inflation and growth rates are no sooner published by government economists than they are revised. The last year or so has seen estimates of the UK's Public Sector Borrowing Requirement in 1997 range from £15Bn to £35Bn and back to £25Bn. There is nothing in classical economic theory that will lead you to believe you can predict the future but that is small consolation to those looking for a return for their investment in economics. Jokes about economists camouflage a

⁴ Reich, R.B. *The Work of Nations: Preparing Ourselves for 21st Century Capitalism* book

⁵ Fortune, Feb 20, 1995 p32

⁶ Fortune Nov 28, 1994 p22

⁷ Webber, A. M. 'What's so New about the New Economy' HBR jan-Feb 1993, p24ff

⁸ Leontief, W. "Theoretical Assumptions and Unobserved Facts" American Economic Review, LXI, 1971, p1ff

genuine business concerns from whether there are business cycles to why does supply and demand work sometimes - but not others?

These concerns were seen as relatively unimportant while there was broad agreement about economic principles, economic or business knowledge and the economic environment was generally stable. None of these propositions hold true any longer. The Keynesian consensus that held true for the thirty years after the end of World War Two collapsed under a combination of economic difficulties and intellectual assault. The economic difficulties in the West revolved around three issues. Initially, there was a sharp reduction in the rates of economic growth enjoyed in the richer advanced industrial countries especially in Europe and North America. At first, this was linked with increases in energy prices but the slow down in growth persisted long after the real price of energy was back to its early rates. Second, economic slow down was soon associated with increased unemployment and rapid increases in inflation. The combination of these phenomena challenged many Keynesian and post-Keynesian assumptions about economic behaviour. The third - and perhaps the most deep rooted change - was the reduced competitiveness of western economies against those of Japan and other East Asian countries.

The intellectual assault on Keynesian orthodoxy is linked most closely with the work of Milton Friedman and the Chicago School of Monetarist Economists. They highlighted the failure of the Keynesian approach to explain how unemployment and inflation could co-exist. They went further to re-emphasise the impact of the money supply especially the effects of government borrowing on inflation and economic performance. The challenge to the Keynesian orthodoxy extended to serious questioning of the role of the state. Keynes had given a prominent and largely beneficial role to the state in economic management. The Monetarists and Neo-Austrian School of Economists highlighted the dangers of the state interfering in the working of the market mechanism. The rationalist school of economists led by Thomas Sargent⁹ took this argument further by questioning the beneficial results of any state intervention. In sum, the rationalists argued that traditional Keynesian and Classical Economics models are no longer valid¹⁰.

Despite the vigour of their attacks and the strength of their arguments, the critics of the Keynesian consensus have not replace this paradigm with a generally accepted alternative. Instead the questions asked go more deeply into the fundamentals. There is a burgeoning belief that the traditional core assumptions are open to question. It is argued, for example, that land, labour and capital as

⁹ Sargent, T. and Wallace, N. "Rational Expectations, The Optimal Monetary Instrument and the Optimal Money Supply Rule" Journal of Political Economy, April 1975

¹⁰ Sargent, T. "Rational Expectations" in The New Palgrave Dictionary of Economics, London, MacMillan, 1987

the building blocks of economics are no longer enough - now it is land, labour, capital and technology or knowledge.

Sayonara Ford-San

Doubts about the core beliefs of economics highlight the profound changes in the world economy. The globalisation of world markets extends beyond a shift in economic power. East Asia will generate faster growth than any other part of the world over the next few decades. Between 1992 and 2000, 40 per cent of all new purchasing power will be created in East Asia. Giants like China and India are determined to create the conditions for comparable growth. This shift in economic power is associated with new thinking about technology, work and the nature of economic relations¹¹.

The important new technologies differ from those which characterised traditional business and economic conditions. Typically, these operate to enhance gradually the ability of people or firms to perform existing work. Most of the enhancements in production technologies in, say the car industry, between the 1920's and 1980's made it easier, faster or cheaper to perform the form of work defined by Ford and others during the last industrial revolution. The conveyor belts might break down less often, go faster or the materials last longer. One of Henry Ford's workers of c 1924 could step onto a production line in Detroit (USA), Longbridge(UK), Turin (Italy) or Stuttgart (Germany) during the 1970s and find the product process recognisable and understandable. The advent of robots, the shift to team working and the 'Japanisation' of working methods make today's factory and its operations unintelligible to the old Ford worker. The technologies that are emerging are fundamentally 'disruptive'¹² of establishing work practices. A secretary trained to use a manual typewriter could move easily to electro-mechanical or electronic typewriters but word processors changed the nature of this type of work¹³.

Writers like Fukuyama¹⁴ have shown than the commitment to team work, the emphasis on quality is more than just another technique for improving productivity - they reflect a different work ethos. The knowledge revolution means taking on board this different thinking. The knowledge business is culturally heterogeneous. It is capable of adapting to the different needs of diverse stakeholder groups across the range of its activities. The nature of

¹¹ Schwab, K. and Smadja, C. 'Power and Policy: The New World Economic Order' Harvard Business Review November-December 1994

¹² Bower, J.L. 'Disruptive Technologies: Catching the Wave' Harvard Business Review January Februray 1995

¹³ Drucker, P. Towards The New Economics London, Heineman, 1994

¹⁴ Fukuyama, F. *Trust* New York, The Free Press, 1995

trading relations is already evolving in response to these influences. Arno Penzras of Bell Labs, the Nobel Laureate, believes that the nature of personal and business relations rests on shared assumptions or knowledge and common languages. Communication technologies make extended and extensive contact easier than ever before. Penzras believes that "tomorrow's interactions may depend more on shared understanding than on sharing the same office corridor". Knowledge and information systems influence every aspect logistics, manufacturing and operating systems.

Row, Row, Row the Boat

Logistics are "the enabling systems" of management. Their impact is often underplayed but can change the fundamentals of an industry. The clearest case of this was the impact of Ro-Ro (Roll on, Roll off) shipping on the global car market. The introduction of Ro-Ro shipping was the essential pre condition for any country to build up a global car market. The costs and risks of traditional sea borne transport made it impossible to open up world markets. These markets were land locked until the floating car park arrived to transform the economics of international trade in cars. Once markets could be reached, other advantages came in to play.

Business structures generally reflect the mixture of technology and culture that shapes the industry or enterprise. Business success mirrors the ability of enterprises to manage that success. Communication, control and information technologies are especially important in shaping management structures. In the nineteenth century, communication was generally personal, hard copy and slow. Management structures reflected this. Manufacturing plants were concentrated and their owners lived locally. This provided direct personal supervision and control. Distant operations required a different form of control system or structure. Poor and slow access meant that 'local' managers required a great deal of autonomy. This posed special problems for the great international trading concerns like Swires, Jardines, The Hudson Bay Company and others. They resolved this by placing particular emphasis in recruiting their 'agents' from groups they trusted especially family members. Trustworthiness was even more important than competence. There were, also, very few levels of hierarchy between the 'agent' or 'local manager' and the proprietor. They were neither needed - because of the infrequent contact - nor appropriate - because of the wide and distant relationship.

The clearest lesson of the first and second industrial revolution is that there are winners and losers. Some corporations and their leaders will understand and adapt to new conditions. They will survive and prosper. They have the capacity to grow. Others will strive to retain their old ways of operating in the face of new conditions. These efforts to "buck the market" involve massive costs and high risks. Some will survive by affirming distinct, core strengths and concentrating their efforts around a specialism. The role of management is to establish a framework within which the options are understood and decision made. The option are clear.

Choices

Pre- Revolution	Post-Revolution
Lifelong Employment	Lifelong Employability
Minimise risks from change	Maximise opportunities from change
Adversarial management	Collaborative Management
Narrow view of main stakeholders	Extensive view of main stakeholders
Concentrate rewards	Distribute rewards
Emphasise administrative expertise	Emphasise technical expertise
Focus on continuity	Focus on continuous discontinuity
Separation and specialisation key to success	Holistic approach to organisation
Fragmented view of work and enterprise	Integrated view of work and enterprise
Stick by old rules	Search out new rules

Innovative businesses and business leaders have absorbed these choices and opted for change. At Perot Systems, Mort Meyerson used development programmes, reward systems and his leadership to provoke change. On adversarial management he comments; "we identified people who were abusive. We coached them and took them through a personal reinvention process to show them new ways of leading. These were high ranking company officials who had generated significant business, met or exceeded their financial goals - but simply mistreated their people. Not all of them could convert. Those who couldn't change, we asked to leave."

He extended this approach to rewards. "We still tell people we'll give them anything we can in the way of rewards. In fact, more than 60 per cent of the company is owned by the people who run the company ... (but we offer) them another dimension that they can't get in other high performance companies: a human organisations. Meyerson places a premium on his own accessibility; "I'm accessible to anyone in our company in real time, anywhere."

People are aware of these shifts and their implications. Recent research on vocational education indicates the reasons why people embark on formal, vocational learning.

The Reasons for Starting an Episode of Learning (%)

	In Paid Work	Not in Paid Work	All
To make work more satisfying	29	11	26
Required by employer	24	1	20
To get a job	4	49	11
To change the type of work done	11	13	11

To help with job or update skills	8	3	7
To gain promotion	8	1	6
To help get on to future learning course	2	13	4

Source: Hutton, R and Rice, J. "Perspectives on Lifetime Vocational Learning" p426¹⁵

A fundamental shift has occurred in the relationship between the systems used to support business effectiveness and the people involved. Korendo Shiotsuke, Fujitsu's director of public relations believes that 'most systems in the past were used to replace human beings. In the future, we see the role of systems as supporting the creative work done by human beings.' This poses major problems for individuals, enterprises and communities locked into separated, low involvement, low-learning approaches to business.

The Cheshire Cat

A successful response to change means reviewing the nature and structure of corporations. The deconstruction of corporations extends further than breaking them up into smaller units. Dominic Cadbury of Cadbury-Schweppes calls this the creative disintegration of large corporations. Deconstruction means understanding the hidden assumptions and beliefs that bind the large enterprise and using this new understanding to rebuild the organisation around smaller, better integrated enterprises. Alan M Webber argues that 'people who manage in the new economy and companies that compete in it, live in the creative tension of creative destruction¹⁶.'

Breaking up large firms to build more entrepreneurial units creates new opportunities. These units compete successfully against the older, line managed enterprise founded on the division of labour. They gain a competitive edge along two dimensions. First, their unity reflects the units of the customer needs they meet. Second, they combine flexibility with low costs. They are held together by their value and information systems. It is no coincidence that the great business leaders of the first and second industrial revolutions made no secret of the values that underpinned their first. Josiah Wedgwood, Samuel Whitbread, Francis Lowell, Andrew Carnegie, William Lever, Charles Schwab, Pierre du Pont, Werner von Siemens and George Westinghouse were as willing to discuss the values that underpinned their businesses as the innovations that drove their firms.

¹⁵ Hutton, R and Rice, J. (1995) "Perspectives on Lifetime Vocational Learning" Labour Market Trends, Vol 103, November

¹⁶ Webber, A. M. 'What's So New About the New Economy' Harvard Business Review Jan-Feb 1995

The renewed emphasis on the values that underpin an enterprise derives from the difficulties of control in the new, more open, entrepreneurial, learning environment. This is especially true when the emphasis shifts from management of controllable inputs to less easily controlled processes and outputs. Part of the success of Japanese industry lies in their more clear articulation of the core values of the enterprise and their willingness to empower all employees to defend these values. The clearest case of this is the use of the Waigaya session at Honda. This allows any employee to raise any issue at an open meeting. Critically, it gives employees the chance to question decisions, instructions or procedures which undermine the core value of commitment to quality. Self control, in this form, eliminates the costs and waste associated with external inspection and testing.

The integration of work, expertise (Fachkompetenz) and technical competence is a priority in Germany companies. This is part of an industrial tradition which means that shop floor staff in engineering and production were able to interact with customers, understand their needs and deliver against their specifications.

A high skill, high competence workforce is hard to separate from a high added value, high capability enterprise. The creation of this workforce starts with values of the society's education system. Individual, enterprise and community approaches to learning are central to the social and economic goals of the society. In his *Review of Qualifications for 16 - 19 Year Olds*, Sir Ron Dearing¹⁷ summarised both the need and the challenge.

"Education is about developing all the talents, abilities and faculties of young people. It is about developing them as human beings, and about preparing them for citizenship and parenthood as well as for the work of work. We should encourage all our young people to achieve as much as they are capable of, from those young people with serious learning difficulties, to those who are highly talented."

With only three provisos, this could provide a framework for education for business for the future. The focus on the young is redundant when all people require support, the line between work and other aspects of life is becoming blurred and the learning difficulties are not confined to those with less well recognised talents. Open learning systems which break the bounds of conventional structures and let learners build their learning around their capabilities and needs are vital to achieve full involvement. Organisations in which there is a high degree of trust are more capable of successfully initiating change and responding to imposed change.

¹⁷ Sir Ron Dearing, Chm (1996) *Review of Qualifications for 16 - 19 Year Olds* London, SCAA Publications

Trust

The success of trust based organisations in creating a learning culture contrasts sharply with the problems of corporations in which a blame based culture has evolved. In blame based organisations the priority is to find someone to blame - not to solve the problem. The clearest condemnation of the old management is the old "truism" - you know why the manager is smiling, its because he has found someone to blame. At its nadir a few years ago, IBM epitomised a blame culture. Top management were too busy blaming others for the problems to take any action. The rest of the managerial labour pool was too busy blaming top management to respond to pressures for change.

Trust based organisations recognised the multi-dimensional nature of the Trust relationship. It operates within the enterprise and defines the nature of the relationships between senior, middle and operations management as well as their links with other colleagues in the enterprise. Trust has a public, formal aspect in the mission or value statement of the organisation. This has real value when it is reinforced by the actions and policies adopted in the organisation. It is easier to build trust and learning on the basis of shared experiences and values. In Germany, for example, the shared educational experiences of technicians and engineers who have attended Fachschulen (technical universities) or other universities plus the unified system of qualifications supports trust building. For these firms the value of a knowledge edge is clear. It is now clear that the knowledge edge is vital across business.

Cues to the best ways to build and exploit this knowledge edge can be found in industries like pharmaceuticals. The pharmaceutical industry consists of large companies that have survived over long periods. This longevity is closely with specific competences. Perhaps the most important of these distinct competence is the ability to foster a high level of specialist knowledge within the organisation. Firms like Bayer, Glaxo and Sterling have sustained and developed this expertise over long periods of time. They have, however, prevented that information becoming embedded in such a way that it permanently fixed the organisation in the past, unable to respond to an ever changing competitive environment. This distinct "knowledge" competence is closely linked with an ability to sustain continuous discontinuity.

Conclusion

Further and higher education participation rates across the industrial and industrialising world are increasing. Participation rates in personal development or work based learning is growing. The graduate workforce is already the norm in technology based industries and much of the business services sector. It is becoming the norm in many other industries. Many companies are reinforcing this trend by local action or involvement in national initiatives. Ford, Unipart and others are systematically creating their own, internal universities. Access to higher education and vocational education initiatives based on the workplace

can be seen in locations as diverse as Texas, Finland, South Africa, Australia and India.

Graduate workers are part of a new environment that requires new kinds of managers with different skills, competence. An important aspect of this change will be a blurring of the line between the leader and the manager. Managers and workers need to re-learn the leadership skills that determined the success of their predecessors during similar revolutions. It is sometimes argued that entrepreneurship - a key characteristic of the new manager - cannot be taught. Even if this is true, it is clearly possible to exclude or discourage entrepreneurship through policies or training. Entrepreneurial skills will be needed in work and during the career breaks that will be the norm for managers in the future.

The same changes in career patterns calls for people who combine their core competences with a portfolio of skills ranging from organisational sensitivity, people development, learning (and relearning) and "whole business thinking." This approach creates a labour pool with far greater insight into the core capabilities of the enterprise besides greater skills in integrating the different aspects of the firm's operations. These are the abilities people will need to manage the paradoxes and dilemmas they face in the new economic environment.