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FACULTY OF BUSINESS AND ECONOMICS

FACULTY OF BUSINESS AND ECONOMICS
UNIVERSITY OF PANNONIA
Egyetem utca 10 Veszprém 8200 Hungary
+36 (0)88 624 812 (t) +36 (0)88 624 859 (f)
titkarsag@gtk.uni-pannon.hu (e) http://www.gtk.uni-pannon.hu (w)

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Wartha V. utca 1 Veszprém 8200 Hungary
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UNIVERSITY OF PANNONIA

Pannon Management Review

EDITOR
GYULA VASTAG

ASSISTANT EDITOR
ANAMARIA M. CRISTESCU-MARTIN

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Pannon Management Review

Pannon Management Review contributes to bridging scholarly management research and management practitioner thinking worldwide. In particular, *Pannon Management Review* broadens the existing links between Hungarian scholars and practitioners, on the one hand, and the wider international academic and business communities, on the other—the journal acts as an overall Central and Eastern European catalyst for the dissemination of international thinking, both scholarly and managerial. To this end, the articles published in *Pannon Management Review* reflect the extensive variety of interests, backgrounds, and levels of experience and expertise of its contributors, both scholars and practitioners—and seek to balance academic rigour with practical relevance in addressing issues of current managerial interest. The journal also encourages the publication of articles outside the often narrow disciplinary constraints of traditional academic journals, and offers young scholars publication opportunities in a supportive, nurturing editorial environment.

Contents

Foreword: 'We need a team!' **5**
Zoltan Debreczeny

Editorial: 'Walking the line' **7**
Gyula Vastag

Working smarter, not harder: reflections on the management of business schools and the role of business schools in innovation **13**
Roderick Martin

'To be, or not to be, that is the question': understanding decision making through literary models **31**
Krishna S. Dhir

The value of time (and the value of waste): time-based supply chain design **49**
Joseph D. Blackburn

YOUNG SCHOLARS' PLATFORM

Lost in knowledge sharing: possible lessons and implications for middle managers and their organisations **67**
Anikó Csepregi

Crisis?! What crisis?! Conversations with the management of Herend Porcelain Manufactory Ltd **89**
Nóra Kiss

ZOLTÁN DEBRECZENY

Foreword: 'We need a team!'

Veszprém
14 December 2012

Dear Readers,

'We need a team!', the title of the painting[1] on the cover of this first issue of *Pannon Management Review*, comes from the adage in a Hungarian cult movie, *Football of the Good Old Days*. Ede Minarik, the unlikely hero of this film, is a dream chaser (as well as a laundry owner), living in early Twentieth Century Pest. What is his dream? A world-class football team, no less! To achieve his dream, Ede Minarik fights against the odds (the football players are just poor young chaps living in a big, Central European city sometime between World Wars) and sacrifices everything he has. 'What happens in the end', I hear you say? Well, I think you better wait and see the movie for yourselves. What I can tell you now, though, is that the end matches the era.

Times have changed, places have changed, it is the Twenty-First Century, now, and I am writing not far from the frozen over waters of Lake Balaton in winter. The question 'What happens in the end?', however, stays the same. In addition to (money and) dreams, what else does one need to build a competitive, world-class team in the Twenty-First Century? Perhaps, the answer lies with Ede Minarik, his determination to never give up, and his capacity to start everything all over again. As, without a shadow of a doubt, the outstanding team behind this publication can testify.

*

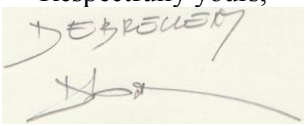
I am writing this foreword not long after my 60th birthday (which feels more like an afterword to me, at times). This is the first time that my paintings (usually perceived to be strange, talkative, philosophical, brazen, and critical as well as self-critical) are steered towards the faraway shores of high academia. Have I understood you correctly? Do professors with kindred spirit really expect me to set the tone of a contemporary academic publication with my work? If yes, then, as an admirer of great intellectual achievements who respects charismatic personalities

[1] 70 cm x 50 cm acrylic mounted on canvas.

and as a person who pursues new and original ideas, I am delighted to serve your esteemed community with my paintings.

Libraries are full of books analysing the harmony and unity of form and content. So, it is difficult to ever say something new on the topic, but we may always ask the relevant questions. Could there really be harmony and unity between the research-based, analysis-driven articles in this publication and the world of paintings intended to generate ideas and emotions in a light-hearted way? Could my work really contribute to shaping the form this publication takes? Read these excellent articles carefully, please, and let me know what your answers are—and, of course, may the articles in this publication give as much pleasure to contemporary artists as, I hope, my paintings on its covers give you.

Respectfully yours,



Zoltán Debreczeny
Artist Painter

Íráskép Galéria
Rózsa utca 14
Veszprém
Hungary

+36 (0)88 328 121
+36 (0)30 927 5088
debreczeny@iraskep.hu
http://www.iraskep.hu

GYULA VASTAG

Editorial: 'Walking the line'

In his first big hit, Johnny Cash sang about his love for Vivian, his first wife—a love that made him walk the line between the many temptations he faced on the tour and staying faithful to her. In management research, we also try to walk an otherwise imaginary line. If we substitute knowledge (as our object of desire) for Vivian, academic rigour for (methodological) temptations, and practical relevance for faithfulness, we are exactly where Johnny Cash was in 1956.

Like medicine, engineering, and others, the field of management is an applied discipline—the replicable knowledge acquired through well-documented steps conforming to up-to-date professional standards is supposed to have practical relevance. However, over the years, we—as a profession—have seemed to 'drift' away from seeking practical relevance in a field for which we claim competency. More and more, as we went through stages of professional development, we have retreated back into our academic ivory tower, burying ourselves in statistical and mathematical wizardry, often mistaking the means for the ends.

Among other things, *Pannon Management Review* wants to walk this line by providing a platform for research-based articles with practical relevance—offering actionable managerial advice. Over the years, several journal editors have expressed concern that there is a growing emphasis on publishing conformist articles—that fit the mainstream paradigm and do everything right, but, overall, do not move the field of management forward, either theoretically or empirically. *Pannon Management Review* is willing to take on this 'risky' challenge and publish the so-called 'interesting' articles that do not necessarily fit the traditional academic mould, but have the potential to enhance our knowledge and understanding. Furthermore, *Pannon Management Review* wants to offer publication opportunities—and a supporting, nurturing editorial environment—to young scholars, particularly to young scholars for whom English is not their first language. The journal also aims to publish portraits of companies and individuals whose performance is illustrative of management achievement.

Most fittingly, the name of the journal incorporates the name of its hosting University of Pannonia—and is also a reference to the wider region (Pannonia, in Roman times) surrounding Veszprém, the city where its hosting Faculty of Business and Economics is located. *Pannon Management Review* is the only English language management journal published in Hungary, and one of only a few

in Central and Eastern Europe. The publication of the journal was made possible under the New Széchenyi Plan by a grant from the National Development Agency of Hungary, with European Union support. In the months and years to come, the journal will seek to emulate the precedent set by the highly reputable *Acta Oeconomica*, the only English language economics journal in Hungary. *Acta Oeconomica* is led by the Faculty of Business and Economics colleagues Péter Mihályi (Editor) and Ádám Török (Chair of the Editorial Board), who also chairs the *Pannon Management Review* Management Committee.

This first issue of *Pannon Management Review* has attracted five outstanding articles written by five outstanding authors—three established scholars of international fame and two recent graduates of the University of Pannonia. Authors and articles alike reflect an extensive variety of interests, backgrounds, and levels of experience and expertise. At a first glance, each of these articles appeals to its own audience. At a second glance, all these articles cover issues of general management interest for both scholars and practitioners.

In 'Working Smarter, Not Harder: Reflections on the Management of Business Schools and the Role of Business Schools in Innovation', **Roderick Martin** has drawn on documentary evidence as well as on his own experience as a professor of international standing and director of British business and management schools. In addition to its direct relevance for managing universities in general and business schools in particular, Roderick's analysis has prescriptive implications for the management of professional 'knowledge workers', outside as well as inside universities. Underlying his article is the view that the value of advice rests on the awareness of initial analysis—if you are going in the wrong direction, using the techniques correctly will not get you where you want to go. A version of Roderick's article was initially presented at the Faculty of Business and Economics, University of Pannonia on 5 December 2011.

In '"To Be, or Not to Be, That Is the Question": Understanding Decision Making through Literary Models', **Krishna S. Dhir**, Immediate Past President of the Decision Sciences Institute (DSI), describes the relevance of selected works by Robert Frost and Ernest Hemingway for models of decision making. Krishna shows how the cited literary works cover, and in some ways go beyond, the elements and models of decision making processes presented in the academic literature.

In 'The Value of Time (and the Value of Waste): Time-based Supply Chain Design', **Joseph D. Blackburn**, a pioneer of time-based competition, takes us on a short journey—covering no less than over twenty years of his research, nonetheless—to illustrate the limitations of time-based competition. To this end, Joe introduces us to the marginal value of time (MVT), a metric fundamental to time-based supply chain design. His article offers excellent actionable advice to

managers on selecting the right supply chain strategy—in different settings, with different MVTs. A version of Joe's article was initially presented at the Faculty of Business and Economics, University of Pannonia on 11 October 2010.

In this first issue, the *Pannon Management Review* Young Scholars' Platform introduces **Anikó Csepregi** and **Nóra Kiss**, both former students of the Faculty of Economics, University of Pannonia. Anikó, now a 'full-grown' academic, successfully defended her PhD thesis last year and Nóra was awarded her MSc earlier this year.

In 'Lost in Knowledge Sharing: Possible Lessons and Implications for Middle Managers and Their Organisations', **Anikó Csepregi** studies knowledge sharing among middle managers in medium- and large-size enterprises in Hungary. She focuses on the maturity of knowledge sharing between middle managers and subordinates as well as among middle managers. In so doing, Anikó explores the influence individual characteristics such as age, length of service, and functional area have on availability and usefulness of knowledge sharing, the two defining dimensions of maturity of knowledge sharing. Based on extensive data collection and analysis, her article concludes by suggesting possible lessons for middle managers with low levels of maturity of knowledge sharing and by discussing the implications these may have for their organisations.

In 'Crisis?! What Crisis?! Conversations with the Management of Herend Porcelain Manufactory Ltd', **Nóra Kiss** portrays a company that is very close to the Faculty of Business and Economics, both geographically and emotionally. Nóra delves into the company's past, through documentary evidence, and sheds light onto the company's present achievements and future challenges, through unparalleled access to senior management. Her article shows how the company's recent history is an example of successful corporate transformation in challenging market conditions, whilst maintaining traditional, 'heritage' values.

The launch of *Pannon Management Review* fits clearly within the framework of the principles underlying the New Széchenyi Plan. Like István Széchenyi himself, the journal links theoretical comprehension with practical endeavour. It also draws its inspiration from both national and international perspectives, as István Széchenyi himself did. As the product of a major non-metropolitan university, *Pannon Management Review* epitomises the role of regional development in national and international affairs. In short, the journal aims to develop national intellectual resources in practically relevant directions through the publication of research by experienced scholars, younger researchers, and managers.

As any other project of such nature and magnitude, *Pannon Management Review* has had its own fair share of ups and downs. This editorial would therefore not be complete without thanking the people who have augmented the 'ups' and

lessened the 'downs'—and who have contributed to making it all happen. From the outer front cover of the journal to its outer back cover, these people are too many to count, too many to mention individually. However, for constant support throughout this project, I should like to thank Lajos Szabó and Zoltán Gaál. For informed advice at various stages of this project, I should like to thank Roderick Martin. And for picking up the proverbial pieces, I should particularly like to thank Anamaria M. Cristescu-Martin.

Gyula Vastag is Professor with the Faculty of Business and Economics, University of Pannonia in Veszprém, Hungary. He served as Managing Director of the Corvinus School of Management at his *alma mater*, Corvinus University, and as Professor and Area Coordinator of Operations and Supply Chain Management at the Central European University (CEU) Business School, both in Budapest, Hungary. In the US, Gyula spent almost two decades on the faculties of Kelley School of Business (Indiana University), Eli Broad Graduate School of Management (Michigan State University), and Kenan-Flagler Business School (University of North Carolina at Chapel Hill). In addition, he was Professor and Dean of Supply Chain Management Programmes at the University of Stuttgart (2000–2001), where he has been a visiting professor ever since. He also held a visiting professorship (part time) with the University of Groningen in the Netherlands.

Gyula earned his PhD and Doctor of Sciences degrees at (the predecessor of) Corvinus University and the Hungarian Academy of Sciences respectively, and finished his habilitation at Corvinus University.

His areas of interest include global operations and supply chain management, service operations management, and environmental management strategies. A successful and popular instructor, Gyula has developed and taught a wide variety of conventional and unconventional courses and educational programmes, both in business schools and for corporations—such as for the Kelley Direct Online MBA Program (Indiana University) and the action-learning programme for the executives of the largest bank in Central and Eastern Europe.

Gyula co-authored two books, wrote eight business cases, and contributed chapters to 15 books. He published over thirty peer-reviewed journal articles, in the US and Europe, and numerous papers in conference proceedings. The h-index of his publications in Harzing's *Publish or Perish* (based on over 1,000 citations) is 15 (as of 14 October 2012). His work on the competitiveness of metropolitan areas

has generated interest outside academic circles, and his cases on Sonoco's take-back policy were selected by CaseNet® as two of the six e-link cases for the seventh edition of Meiners, Ringleb, and Edwards' widely used *Legal Environment of Business*.

Gyula has cooperated and consulted with a large number of organisations, including the Aluminum Company of America (Alcoa), the Carlson School of Management at the University of Minnesota, the Global TransPark Authority of North Carolina, the US Federal Aviation Administration, and the North Carolina State University, in the US; the International Institute of Applied Systems Analysis, in Austria; ESSEC-Mannheim Business School, in Germany; Knorr-Bremse Hungary and the OTP Bank, in Hungary; and the International Institute for Management Development (IMD) and the University of St. Gallen, in Switzerland.

Gyula is Founding Member of the Executive Board of the European Decision Sciences Institute (EDSI) and the European Regionally Elected Vice-President (2010–2014) of DSI, where he is also Member of the Development Committee for Excellence in the Decision Sciences and Chair of the Member Services Committee (2011–2012). He is Founding Member of the Global Manufacturing Research Group, where he also served as Associate Director. In addition, Gyula served on the Executive Committee of the International Society for Inventory Research in 1998 and 2006, and he is currently Member of its Auditing Committee.

Gyula can be contacted at gyula.vastag@gtk.uni-pannon.hu, at the Department of Management, Faculty of Business and Economics, University of Pannonia.

RODERICK MARTIN

Working smarter, not harder: reflections on the management of business schools and the role of business schools in innovation[1]

The Lisbon Agenda enjoined Europe to work smarter, not harder—since her international competitive advantage lies in her cultural capital, not in her natural resources or labour power, Europe must deploy her limited resources to maximum effect, to achieve economic growth. The key to European economic growth lies, therefore, in innovation, new product development, and process innovation. This article reflects on what working smarter actually entails, in this setting, through examining the management of business schools and the role of business schools in innovation. Business schools are important for the development of innovation both directly and indirectly, through research and teaching. These reflections are based both on the personal experience of managing two business schools, and on academic research, my own and others', into the management of innovation. As such, it is very much a personal view, not an attempt to provide a consensus overview. Furthermore, while innovation is contingent upon structures, cultures, and attitudes, this article concentrates on structures, reflecting my initial education, first as a historian and then as a sociologist.

Since the 1990s, two trends have dominated contemporary business restructuring in response to increased international competition. The first is the decentralisation of operations, with corporate downsizing and down-scoping, delayering of middle management, the expansion of horizontal as well as vertical communication, an increasing use of project forms of organisation, and outsourcing (see, for example, Pettigrew and Fenton 2000). Large-scale manufacturing production has been carried out through international value chains, with dispersed operations, rather than in concentrated large-scale manufacturing sites (Gereffi and Korzeniewicz 1995). Economic transactions have been increasingly externalised, with external market relations replacing internal organisational relations—in Williamsonian terms, markets have replaced hierarchies (Williamson 1985). Product market fragmentation—and fluid labour markets—have led firms to adopt flexible and differentiated strategies in response. Similarly, the speed and variety

[1] This article is based on the presentation *Managing the Unmanageable: Reflections on the Running of Business Schools* given to the Faculty of Business and Economics at the University of Pannonia on 5 December 2011.

of technological changes have exerted pressures for the decentralisation of operations, both within and among firms. Finally, competitive pressures to reduce costs through lowering managerial overhead have worked in the same direction. The second trend is the centralisation of financial control, as a means of monitoring production costs and, in universities, as a mode of coping with growing student numbers and increasing size and complexity. Four pressures have lead to increased central financial control directly, while increasingly sophisticated financial management systems have enabled this trend. The first pressure is the primary need to control overall costs—decentralised financial controls generate financial seepage. Second, centralisation is a means of managing and controlling financial risk. Third, central control is a mechanism for redistributing resources within the firm—such reallocations may be required for investment in corporate facilities, such as information technology (IT) systems, or for investment in new product development. Finally, fourth, central control facilitates public accountability in public sector organisations. Reconciling operational decentralisation and financial centralisation leads to a continuing seesaw between organisational centralisation and decentralisation, with constant change resulting in organisational fluidity. As one IT manager commented during a research interview on IT strategy, reorganisations follow reorganisations on an approximately three-year cycle.

Reconciling operational decentralisation and financial centralisation leads to tensions, when considering innovation. Innovation involves individual skill, knowledge, and creativity, and their mobilisation to design and develop new products building upon initial invention, the original conceptualisation of a new product or service. Devolving responsibility to lower levels of the organisation allows employees to use initiative and imagination, to exploit the unexpected. Moreover, new product development is carried out by professional knowledge workers—scientists and technologists, researchers and consultants—who attach high importance to professional autonomy, with commitment to external bodies such as professional accrediting agencies and academic disciplines. Such professional values reinforce structural pressures for decentralisation. At the same time, innovation involves strategic decision making, and the redistribution of resources, which can only be carried out on higher level authority, since it involves reallocating resources from one activity to another. Moreover, professional knowledge workers are expensive, reinforcing senior management preference for central financial control.

Against this background, this article reflects upon issues in the management of business schools, with particular reference to innovation, both in the management of the schools themselves and in their relations with business. This article is concerned with business schools based in universities, rather than with autonomous business schools such as the Institute for Management Development (IMD) in Lausanne. Although the discussion is based primarily on British experience, the

conclusions are relevant more widely throughout Europe, since British business schools have been influential in Continental Europe, both in their own right and as a means for transferring US knowledge and experience. Moreover, there have been an increasing number of schools on mainland Europe teaching management programmes in English, often using English concepts and materials. At the time of writing (September–October 2012), the UK's Association of Business Schools (ABS) counts 117 members, with 249,000 fulltime and 108,000 part-time students. Some—such as Warwick Business School (WBS), Lancaster University Management School (LUMS), and, in London, Sir John Cass Business School—cover the full range of management education, from undergraduate level through to post-experience management development programmes. Others—for example, London Business School (LBS)—specialise in postgraduate and post-experience education. Others still—Ashridge Business School, for example, based in Berkhamsted in Hertfordshire—specialise purely in post-experience work. Postgraduate and post-experience business schools have greater freedom than university business schools, for example in curriculum development, and in financial arrangements. This current discussion draws heavily on my own experience in 'full service' university business schools—covering undergraduate education to post-experience programmes at the University of Glasgow Business School and at the Southampton Management School—and at the special case of the University of Oxford, and that of the Central European University Business School (CEU BS) in Hungary. The issues addressed below are relevant to all types of business schools, although the balance of concerns differs.

This article is divided into five sections. Following this introduction, the second section examines the issue of the decentralisation of operations, both regarding relations between business schools and their overall universities and in regard to the internal operations of the business schools. The third section examines financial arrangements. The fourth section discusses the specific role of business schools in innovation. Finally, the concluding fifth section returns to the issue of the significance of business schools for innovation—and for working smarter.

Operational decentralisation

Within universities and their business schools, as within industrial organisations, the issue of centralisation / decentralisation relates to three dimensions. (1) The first dimension is corporate governance, the fundamental form of corporate organisation: ownership, ultimate authority, fundamental objectives, overall corporate strategy, senior management appointments, and the arrangements for allocating senior management responsibilities. (2) The second dimension is the distribution of authority and power, including the responsibility

for the allocation of resources and for the management of operations. (3) The third dimension is the responsibility for decisions on task organisation and operational performance. In Western corporations, corporate governance is a matter for the boards of directors, responsible to shareholders through annual general meetings (AGMs). The allocation of resources and the management of operations is the responsibility of professional management, responsible to boards of directors through senior executive board members. Actual task performance varies with the technology of production, and with the control systems established to monitor performance, often within parameters set by professional autonomy. Whilst clear in theory, the differentiation breaks down in practice. The three dimensions are discussed in turn, in relation to university business schools.

(1) Corporate governance arrangements for business schools are established by the universities to which they belong. They differ amongst the four institutions, University of Glasgow, University of Southampton, University of Oxford, and CEU. At Glasgow, an ancient 'civic university', the University Court corresponds to the board of directors, the corporate body with ultimate authority and responsibility for the overall strategic direction of the organisation. At Southampton, a large post-War suburban university, the University Council occupies the same position, with the Council responsible for 'final decisions on matters of fundamental concern to the institution' (University of Southampton 2012). Both Glasgow's Court and Southampton's Council have majority external representation, in accordance with the advice of the UK higher education funding agencies[2]. Both Court and Council are much larger than boards of UK corporations, with 25 members, compared with 10–12 for corporate boards. At Oxford, there is no equivalent to the corporate board of directors. The highest authority is the Congregation, composed of all the senior members (approximately 4,000) of the University, with the elected University Council as the board of management responsible for developing overall strategy. The large majority of the Council members are internal, with only four external members in a Council of 28. At CEU, the Board of Trustees is the ultimate authority, made up wholly of external members, except for the President / Rector. Below Court, Councils, and, respectively, Board of Trustees, responsibility for academic policy rests with University Senates at Glasgow, Southampton, and CEU—there is no senate at Oxford, academic decisions being made within four large academic divisions, run by committees of faculty members, subject to Council and Congregation. Senates

[2] There are four higher education funding agencies, in the UK: the Department for Employment and Learning, Northern Ireland (DELNI); the Higher Education Funding Council for England (HEFCE); the Higher Education Funding Council for Wales (HEFCW); and the Scottish Further and Higher Education Funding Council (SFC).

are responsible directly for the academic work of the institutions, determining procedures for student admission, for performance evaluation, for discipline, and for examinations. Formal procedures for appointment to managerial positions, to faculty positions, and to support roles are under the authority of the Court, Council, and, respectively, Board of Trustees, whilst the actual appointments are delegated mainly to faculty. At Oxford, on accepting the Said benefaction in 1997, there was extensive debate in Congregation over the procedure for appointing the Dean of the Said Business School. The Dean was appointed by the University, but subject to the agreement of the Board of Trustees of the Said Business School Foundation. The Dean was simultaneously appointed to a Professorship, according to the University usual procedures.

Differences in corporate governance have implications for the management of business schools, including their approach to innovation. External representation is designed to make universities, as still substantially state-funded institutions, sensitive to external interests. The expansion of higher education has been justified as being in the public interest, with universities, especially business schools, seen as contributing to economic development, both through providing graduates with relevant education and training and through undertaking research relevant to economic performance. Although external board members are explicitly expected to act as individuals, and not as representatives of external interests, even when nominated by representative bodies, the careers and backgrounds of external members inevitably influence institutional priorities. Board members are almost exclusively from managerial and professional backgrounds at Southampton, and largely so at Glasgow; the CEU Board of Trustees reflects George Soros' broad intellectual interests, including philosophers and educationalists. Boards are naturally anxious to foster values and interests reflecting their own, without interfering in the details of faculty management—Oxford's very different corporate governance arrangements provide for greater academic authority. Differences in corporate governance do not determine patterns of innovation; but they do indicate different likely directions, with greater sensitivity to external teaching and research agendas at Glasgow, Southampton, and, in a different way, CEU than at Oxford. One issue for which boards have particular responsibility is the selection of university vice-chancellors, who, in turn, have the major influence on the appointment of heads of academic departments, including business schools.

(2) The second dimension is the distribution of power and authority, both between business school and university and, within the business school itself, between dean and faculty members. Business schools have the same fundamental structures of power and authority as other academic departments. However, unlike many academic departments, business schools are necessarily outward facing, responsive to a wide range of stakeholders: business communities, national

governments, local communities, as well as university, student, and faculty professional communities. Deans need to foster relations with the external business environment, as well as with the academic community. The expectations of the business community and those internal to the university may differ, with the external business community looking for directly, practically relevant teaching and research, whilst the university looks for international prestige through fostering teaching and research that contributes to theoretical development.

The appointment of business leaders as deans of several business schools is a clear recognition of the distinctive position of business schools in universities: business deans indicate clear sensitivity to external business interests, and, additionally, provide direct experience of managing in large organisations. This was done in only one of the four schools in which I worked, and, as in most other European schools, the appointments were not successful. University and business cultures diverged, and the management experience and skills acquired in business proved difficult to transfer: faculty working in business schools, especially in high-status institutions, were too committed to their own disciplines and values to accept without question the hierarchical assumptions of business deans.

Business school deans are middle managers responsible for the allocation of resources, within constraints set by senior university management, and for the internal operations of the school, within rules set by senates. Internal management is more problematic in business schools than in other departments, reflecting different types of professional background (whether primarily in business or in academia), and different faculty responses to the complexity of the school's stakeholder environment. Some faculty are oriented towards academic priorities, others towards internal academic management careers, and others still towards external business interests. Differences in experience and orientation have serious consequences, for example regarding individual remuneration. Business school faculty, especially in highly remunerated functions such as finance, accounting, and marketing, compare their levels of remuneration with similar management professionals in other types of organisations, and seek, sometimes successfully, higher levels of remuneration. Faculty oriented towards the business community have opportunities for higher levels of earnings than other faculty in the business school or in other departments, primarily through consultancy and teaching on executive management development programmes. Such differences inevitably result in strong internal conflicts over the appropriate remuneration for different types of activity, and over the extent to which external consulting activity should be encouraged, or permitted. Of course, business schools also have the same conflicts over pay, promotion, job security, and contracts as amongst members of other departments.

One aspect of middle management is the handling of relations with students. Students are major stakeholders in business schools, especially when they are

directly responsible for course fees. Deans seek to define and manage student expectations. The responsibility of the dean is to do so both regarding the curriculum and the overall student experience. Management students undertaking MBA programmes regard themselves as fee-paying customers, as well as (and sometimes rather than) students. Their expectations regarding the relevance of the curriculum and the pattern of teaching define acceptable content and criteria for evaluation—faculty members prepare course outlines which, once circulated, become 'contracts'. Student expectations are often conservative rather than innovative, conditioned by earlier experience, the textbook, and the wish for directly applicable knowledge. Where curricula are based on standardised conceptions of the discipline—'everyone knows what an MBA looks like', curriculum innovations become problematic. Only a small number of elite institutions—such as Stanford Graduate Business School and Yale School of Management, in the US, and INSEAD, in Europe—have the prestige to innovate and to persuade students to accept the institution's definition of quality.

(3) In universities, task performance has historically been decentralised, with individual teachers responsible for the content of courses, and their mode of delivery, as well as their own research agendas. This optimises the use of individual professional skills and experience, facilitates personal interaction, and is consistent with the principles of academic freedom. High levels of autonomy provide scope for professional workers to innovate. However, there are strong pressures towards standardisation and external monitoring and measurement to improve overall performance in both teaching and research.

In teaching, individual professional autonomy, and the focus on personal interaction as the foundation of teaching and learning, is carried to extremes at Oxford, with the continued use of individual and paired tutorials at undergraduate level—none of the other three institutions adopted similar methods. (Oxford's score on hours of teacher–student interaction is low: hours are few, but the interaction intense.) However, growth in student numbers is increasing pressure for standardisation and central control of task performance in teaching, further justified on the grounds of equity and quality assurance, as well as reducing costs. In the UK, standardisation was institutionalised in the Quality Assurance Agency (QAA), responsible for monitoring and evaluating the quality of educational provision in universities, according to an elaborate quality framework: units of assessment (such as 'business studies') were given scores (out of 24) and grades indicating their quality. The development of such quality assurance procedures were premised upon the principles of industrial engineering, with the separation of conception from execution. In industrial enterprises, responsibility for new product development is concentrated in specialised research and development (R&D) divisions, with operations determined according to the principles of systems

engineering, embodied in IT systems. In teaching, conception has become centralised in bodies responsible for accreditation, supported by bureaucratic procedures for monitoring and evaluating curriculum development, methods of course delivery, and student performance. Hence, the quality of institutional teaching provision is assessed quantitatively, by the number of class contact hours. Quality assurance and accreditation procedures establish minimum acceptable levels of performance, boosting the quality of provision according to the stated criteria and introducing innovations in low-performing institutions. At the same time, such standardisation may constrain innovation in high-performing institutions.

Similar pressures for standardisation and performance measurement operate in research. Historically, individual faculty were responsible for defining their own research interests and priorities, in management as in other subjects—research agendas were devolved. In many disciplines, including some sectors of management, the major cost is time, over which individuals have significant control. Where research involved further costs, research funding followed 'responsive mode' procedures, whereby individual academics submitted research proposals to national research councils, with research council committees composed primarily of academics deciding on funding according to their conceptions of quality. Innovation was highly rated, within conceptions of quality defined by senior academics. Securing funding for research in management posed special difficulties, and applicants' success rates were low, approximately one in three. Serious empirical research in management required the negotiation of access, usually difficult to secure: firms were anxious about commercial confidentiality and time wasting, and especially reluctant to discuss management failures, although understanding failures is a major source of learning and innovation. Moreover, the intellectual quality of management research, for example in research methodology, often compared badly with research in more fully developed disciplines, such as economics. In the UK, university institutional funding for research is distributed according to performance in the Research Excellence Framework (REF). The research performance of individual faculty is evaluated according to international quality standards. In practice, this is usually measured by publications in 'A-rated' journals, with ratings based upon assessment of journal quality by international peers; ABS publishes a listing of quality journals. Journals such as *Administrative Science Quarterly* (*ASQ*), *American Economic Review* (*AER*), *European Journal of Operations Research* (*EJOR*), and *Management Science* are weighted heavily. Institutional research income is determined by totalling the average individual scores of faculty in each unit of assessment, for example 'business and management' (the largest unit of assessment, by far), and allocating an average score. The papers published in such journals are expected to contribute to the development of management theory,

rather than management practice; pressure from business and government for research to be relevant to practice is honoured in form, but largely neglected in substance. Increasing competitive pressure for improvements in research methodology may enhance academic innovation, but increasing methodological sophistication may have little relevance for the resolution of practical problems. Institutional expectations, individual incentives, and the interests of practising managers are not always aligned, in management research—institutions expect contributions to theoretical knowledge, practising managers want business solutions, whilst individuals seek financial and other rewards.

Under traditional 'responsive mode' means for funding research, research questions are defined by the researcher. This leaves the field completely open for innovation. Since the 1980s, research programmes have become increasingly common, in which central research councils ask for research proposals addressing specific topics, usually of current policy interest, to undertake 'useful' research. This has the advantage of attracting researchers to direct their research to issues of national importance, without restricting the research precisely. For example, currently (2012), Research Councils UK (RCUK) is running a research programme on the theme of 'The Digital Economy', and seeking proposals for research on 'New Economic Models in the Digital Economy'. Such programmes channel innovation in specific directions, with the advantage of informing current policy debates, but with the disadvantage of reducing the funding available for 'responsive mode' research, and thus limiting the scope for potentially innovative research.

In both teaching and research, external influence on business schools has increased, with standardisation and increased monitoring justified on the basis of improving quality. The external influence has raised the overall level of performance. At the same time it has reduced the scope for individual initiative and innovation.

Financial centralisation

Competitive pressures for reductions in costs lead to centralisation of financial control, to reduce risks and to prevent the seepage of resources facilitated by decentralised structures. Moreover, central financial control is a means of building up capital resources, to fund corporate infrastructure and investment in new technologies, new product development, and institutional innovations, as well as to cover management overheads. Firms differ in the procedures for deciding upon capital investment, especially the degree of discretion allowed to lower organisational levels, the level of detail in establishing annual operating budgets, and the extent of monitoring of operating and personnel costs. Private sector

organisations differ in the level of financial centralisation. During the 1990s, large diversified corporations, following explicitly decentralised strategies (such as the P&O group, with five divisions spread from construction to shipping), combined strict central financial controls with performance measured quarterly against centrally determined annual targets, within a highly diversified corporate structure—financial centralisation was combined with operational decentralisation. In universities, competitive pressures for financial centralisation are reinforced by requirements of public accountability, with institutions providing detailed accounts to demonstrate the proper use of resources for the purposes for which they were allocated, thus limiting cross subsidisation, for example between research and teaching activities. Centralisation of financial control is currently easier than in previous decades because developments in IT, and investments in IT, enable real-time monitoring of expenditures.

Business schools have strained relations with senior university managers over finance. In some circumstances, business schools may have a different relationship with their universities than other academic departments, with greater financial independence, and often greater financial responsibilities (for example, covering mortgages for buildings), reflecting their particular economic circumstances. But this was not so in the three British examples discussed here, whilst the financial arrangements for CEU BS were different, with funding arrangements separate from other departments until recently. Business schools were expected to contribute more to overall university budgets than other departments because they were perceived to be capable of generating more revenue—complaints of being treated as 'cash cows' were commonplace at gatherings of business school deans. The popularity of business studies amongst applicants for undergraduate university places, the high level of fees charged for postgraduate courses, especially MBA programmes, and income from executive teaching programmes generated substantial surpluses for business schools. Business schools were required to contribute a proportion (typically around a third) of the revenues generated by non-quota full-fee paying students, (primarily non-EU) to the centre of the university, as a contribution to covering overhead costs. A major job for business school deans became managing the level of transfer from business schools to central university funds—use of business schools as university 'cash cows' obviously reduced the resources available for innovations within the schools themselves. One of the roles of accreditation procedures is to legitimate arguments for retaining funds generated by business schools for their own use, especially for innovation (as investment in IT systems, for example), rather than transferring them to central university bodies for use for general university purposes.

Within business schools, deans manage expenditure, within overall budgets set by higher university management: institutions differ in the level of central control of individual budget lines, with staff expenditures usually controlled in more detail

than equipment expenditures. In addition to normal housekeeping parsimony, this involves seeking to achieve equity, and feelings of fairness, amongst individuals with nominally equal status but different earning power. Innovation raised particular issues for maintaining commitment and equity in two ways, in the case of the four examples discussed here. First, why should innovation be rewarded, where standard measures of effort and performance were based on teaching hours, student numbers, and publications, especially when there was scope for argument over indicators of innovation? Second, more fundamentally, what was the proper distribution of the rents from innovation between the individual and the institution? Where individual faculty members possess academic expertise directly helpful to business practice, for which business is prepared to pay, there is an obvious potential conflict between the financial interests of the individual faculty member and those of the school. The conflict is endemic to consultancy, much of which is routine, for which business schools have developed standard practices (time allowances, revenue sharing, and 'blind eyes'). Innovation raises more complex issues, especially difficult to resolve because innovations are by definition new. On the one hand, where individual faculty members have developed expertise, perhaps embodied in a specific technique or research instrument (for example, in measuring optimisation in supply chain management), they should be rewarded. On the other hand, the school has provided the context that enabled the individual faculty member to accumulate the expertise and cultural capital that made the innovation possible, and, therefore, the rents for the innovation should not be appropriated exclusively by individual faculty members. One means of reconciling the interests of the institution with those of the individual in exploiting innovation is through creating a new joint company, with ownership either shared with the school or wholly owned by the individual faculty member, paying a royalty to the school. Such arrangements are common to science and engineering faculties, but relatively rare, and difficult to operate in practice, in business schools, where innovation is more difficult to distinguish: tension over such a situation lasted for several years at Glasgow. (The relation between universities and start-up companies is an important theme in innovation, but more relevant in science and engineering than in business schools (Garnsey and Heffernan 2005).)

Innovation

Business school faculty contribute to management innovation both through the development of new knowledge and concepts and through dissemination of current knowledge (often misleadingly called 'best practice') by teaching and consultancy. Some areas of academic management research—such as operations research, marketing, business strategy, industrial economics, and human resource

management (HRM)—have contributed directly to management practice through the development of new concepts and ways of thinking. Finance was perceived as the 'most useful domain of research emanating from business schools', until 2008, providing the means for evaluating risk and, thus, the foundation for market expansion (Learmouth, Lockett, and Dowd 2012: 38). Other research has contributed to innovation by documenting and systematising current practice, as in much research in organisational behaviour.

This section addresses the issue of the contribution business schools make to innovation externally, both through research and through teaching. There are several programmes and textbooks on managing innovation (Tidd, Bessant, and Pavitt 1997, for example, now in its fourth edition), of greater or lesser practical value, which I do not wish to discuss specifically here. Instead, I want to discuss the different ways in which business schools can contribute to innovation generically. Business schools contribute to business innovation in five ways. The first is through documenting, systematising, and disseminating current best business practice. The second is through exploring the difficulties and limitations of current best practice. The third is through the empirical study of specific management issues, which may or may not give rise to more fundamental research. The fourth is through developing new ways of thinking about business. The fifth is through direct assistance to managers through consultancy.

The first contribution is through documenting, systematising, and disseminating current practice, both through teaching and through publishing textbooks. Textbooks form the 'working general knowledge' for managers, providing the framework within which the business world is interpreted and answers to specific questions, as well as fostering specific business values. Some textbooks achieve large sales and exercise considerable influence; a former Glasgow colleague's standard textbook is now in its seventh edition, and had sales of nearly fifty thousand copies a year, at the height of its popularity (Huczynski and Buchanan 1985). The HRM model developed by Beer and colleagues (1984) at Harvard Business School, published in *Managing Human Assets*, became conventional wisdom through incorporation in standard HRM texts. Almost overnight, departments of personnel management became the human resources function, accelerating existing trends towards the de-collectivisation of employment relations (Legge 1995). Textbooks define conventional wisdom. Such definitions initially assist in the diffusion of innovations, the growth of HRM, for example, leading to the adoption of new techniques of selection, training, and remuneration. But conventional wisdom subsequently becomes a force of conservatism—as Keynes famously commented, the thinking of contemporary politicians is dominated by the words of an out-of-date economics textbook.

Textbooks naturally contain some critical evaluation of conventional wisdom. But such evaluations are limited, since textbooks aim to outline current thinking,

not to undermine it, and textbooks that raise more questions than answers—and fail to provide solutions—have limited value for practically oriented managers. The second contribution to innovation is, therefore, through exploring the underlying limitations of current best practice. In HRM, for example, the development of the 'best fit' critique of 'best practice' thinking illustrates the role of business school contribution to innovation (Boxall and Purcell 2003: ch. 3). The issue is whether best practices are applicable across all organisations, or whether best practices should be adjusted to 'fit' different corporate strategies, and, if so, what form the fit should take.

The third contribution to innovation is through the investigation of specific empirical issues and the resolution of specific empirical problems, which may result in formulating recipes or formulae of general value. The bulk of management research contributes to innovation through accumulating such empirical data, which provides the basis for generalisations subsequently incorporated into textbooks. The issues addressed may be highly general: Michael E. Porter's (1990) study *The Competitive Advantage of Nations*, for example, sought to explain why some countries have been more successful than others at generating economic growth. Others may be highly specific: my own early research, for example, was concerned with the introduction of new technology, primarily in the newspaper industry, examining different approaches to the introduction of computerised photocomposition in British national newspapers (Martin 1981).

The fourth contribution to innovation is through developing new ways of thinking, that lead management in new directions. Changes in corporate governance from the 1990s onwards, with the growth of corporate structures based on the priority of shareholder value, owed much to business school thinking. The 'financialisation' of business (Davis 2009), the dominating influence of finance in the US, and the efficient capital markets hypothesis provided the framework for corporate restructuring until the financial collapse of 2008. Transaction cost economics developed by Oliver Williamson (Carroll and Teece 1999) combined with agency theory to provide the intellectual grounding for the focus on markets rather than hierarchy which underlay the development of models of corporate governance in the 1990s. Such theories provided the basis for the shareholder value models of corporate governance that were taken up by the Organisation for Economic Co-operation and Development (OECD), and formed the basis for corporate governance rules in Central and Eastern Europe (as in the *Corporate Governance Recommendations* of the Budapest Stock Exchange).

The fifth contribution to innovation is through direct consultancy, the provision of advice directly to business and government. Consultancy takes different forms: assistance in resolving specific business problems or provision of customised management development programmes. Consultants, including business school

consultants, transfer four types of knowledge: 'visions'; procedures (for setting up project teams, for example); tools (simulation tools, for example); and individual project knowledge (Ernst and Keiser 2002: 53). Consultants commodify knowledge, and, in doing so, accelerate its circulation.

Underlying the discussion of the role of business schools in innovation is the question 'Who defines the problem?'. To simplify, problems may be defined externally, by business or by the state, or internally, according to the logic of scientific theory. For business schools, problems are usually defined externally, by business or by the state, or, very occasionally, by other external bodies such as consumers' associations or trade unions. Some such problems are at the level of the enterprise and specific—optimisation of workflows, analysis of new markets, or construction of new corporate structures, for example. Others are general—the best way to increase rates of economic growth, for example. External definitions of the problems lead to 'pull' models of innovation. For example, EU Research Framework 7 (Research and Innovation), covering 2007–13, identifies a range of (rather general) priorities in seeking research proposals meeting the needs of the Lisbon Agenda. Such announcements pull research in specific directions. Internal definitions of the problem lead to 'push' models of innovation, in which advances in scientific knowledge lead to new understanding, which may eventually lead to the development of new products. For example, advances in physics led eventually to the development of nuclear magnetic resonance (NMR) technologies, which in turn led to new methods of medical diagnosis. Such innovations begin with theoretical hypotheses, experimentation, and the application of the hypothetico-deductive method, and can end with the development of new products and, occasionally, with technological transformations.

The difference between the two approaches is less sharp than indicated. External questions, whether defined by business or by governments, usually leave scope for academics to define questions in ways which meet their own intellectual aspirations, and are resolved through the use of theories. For business schools, 'pull' models of innovation are most relevant, with management at best more like medicine than physics: questions begin outside the theory, with issues of diagnosis and treatment. In some areas of management, such as economics and sectors of operations management, the theoretical structure of the discipline may be strong enough to support theory-driven research. However, in other areas, such as organisational behaviour, strategy, and HRM, theories are less well developed. This is not simply a reflection of the 'infant' state of management theory, compared with older academic disciplines. It reflects the nature of the subject. Management behaviour is conditioned by values, subjectivities, and self-conscious reflection. Management research is, therefore, more of an art or a craft than a science, although it makes use of scientific methods of acquiring and analysing knowledge. Moreover, even in the most scientific area of management, financial

markets, the increasing importance of 'herd' theories of market behaviour suggests that theories of markets are less well founded than previously thought.

Working smarter

Working smarter involves innovation, the design and creation of new products and services, and the diffusion of innovation. Invention is a matter of individual imagination; innovation is the process of transforming 'bright ideas' into useful products and services; and the diffusion of innovation is more a matter of organisational structures and institutional arrangements, including the role of universities. Business schools play an increasingly central role in universities, partly because of their popularity with students, seeing business degrees as a means of securing well-paid employment, partly because of the potential business schools are seen to have for contributing to economic performance. This article has been concerned with the latter: it has examined business schools as institutions, through the centralisation / decentralisation theme, and their effects on the potential for innovation, both internally, within the business schools themselves, and externally. This article has not sought to provide a comprehensive review of the field—it has reflected personal experience, and a background in employment relations, HRM, and organisational behaviour, rather than, let us say, operations or marketing. Direct experience of other management sub-disciplines might have led to different reflections. Business schools have a distinctive position in universities, because of their strong external orientation, the variety of their stakeholders, their popularity with students, their often fragile theoretical and methodological bases of management research, and, often, their relative financial strength. Business schools contribute to working smarter through the development of new knowledge, the systematisation and diffusion of current practices, and the development of management skills and values.

References

Beer, M., Spector, B., Lawrence, P., Quinn, M. D., and Walton, R. (1984). *Managing Human Assets*. New York: Free Press.

Boxall, P. and Purcell, J. (2003). *Strategy and Human Resource Management*. Basingstoke: Palgrave Macmillan.

Carroll, G. R. and Teece, D. J. (eds) (1999). *Firms, Markets and Hierarchies: The Transaction Cost Economics Perspective*. New York: Oxford University Press, Inc.

Davis, G. F. (2009). *Managed by the Markets: How Finance Re-shaped America*. New York: Oxford University Press, Inc.

Ernst, B. and Keiser, A. (2002). 'In Search of Explanations for the Consulting Explosion', in Sahlin-Andersson, K. and Engwall, L. (eds), *The Expansion of Management Knowledge: Carriers, Flows and Sources*, 47–73. Stanford, CA: Stanford University Press.

Garnsey, E. and Heffernan, P. (2005). 'High-technology Clustering through Spin-out and Attraction: The Cambridge Case', in *Regional Studies*, 39/8: 1127–44.

Gereffi, G. and Korzeniewicz, M. (eds) (1995). *Commodity Chains and Global Capitalism*. Wesport, CT: Praeger.

Huczynski, A. and Buchanan, D. (1985). *Organizational Behaviour: An Introductory Text*. Hemel Hempstead: Prentice Hall.

Learmouth, M., Lockett, A., and Dowd, K. (2012). 'Promoting Scholarship that Matters: The Uselessness of Useful Research and the Usefulness of Useless Research', in *British Journal of Management*, 23/1: 35–44.

Legge, K. (1995). *Human Resource Management: Rhetorics and Realities* (1st ed.). Basingstoke: Palgrave Macmillan.

Martin, R. (1981). *New Technology and Industrial Relations in Fleet Street*. Oxford: Oxford University Press.

Pettigrew, A. M. and Fenton, E. M. (2000). 'Complexities and Dualities in Innovative Forms of Organizing', in Pettigrew, A. M. and Fenton, E. M. (eds), *The Innovating Organization*, 279–300. London: Sage Publications.

Porter, M. E. (1990). *The Competitive Advantage of Nations*. London: Macmillan.

Tidd, J., Bessant, J., and Pavitt, K. (1997). *Managing Innovation: Integrating Technological, Market and Organizational Change* (1st ed.). Chichester: John Wiley.

University of Southampton (2012). *Role of University Court*, at http://www.soton.ac.uk (accessed 5 October 2012).

Williamson, O. E. (1985). *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: The Free Press.

Roderick Martin is Professor of Management, Emeritus, at the University of Southampton, in the UK, and Leverhulme Trust Emeritus Research Fellow.

Roderick was educated at Balliol College and Nuffield College, Oxford, and at the University of Pennsylvania. He wrote over ten books in business management, organisational behaviour, industrial relations, and industrial sociology—including *Investor Engagement: Investors and Management Practice under Shareholder Value*, *Transforming Management in Central and Eastern Europe*, *Bargaining Power*, and *New Technology and Industrial Relations in Fleet Street*—and published over sixty research articles in international journals. His forthcoming book, *Constructing Capitalisms: Transforming Business Systems in Central and Eastern Europe*, will be published by Oxford University Press in 2013.

At Oxford, Roderick was Official Fellow (Politics and Sociology) at Trinity College, Senior Proctor, and Official Fellow (Information Management) at Templeton College, and he held the positions of Lecturer (Sociology) and Senior Research Fellow at Jesus College. He was Professor of Industrial Sociology at Imperial College, University of London, and Professor and Director at both, Glasgow Business School, University of Glasgow, and the School of Management, University of Southampton, in the UK. At the Central European University (CEU) in Budapest, Hungary, he was Professor of Management at the Business School and Research Fellow at the Centre for Policy Studies. He held visiting posts with Cornell University, in the US, and with the Australian Graduate School of Management, Griffith University, Monash University, the University of Melbourne, and the University of New South Wales, in Australia.

Roderick is a member of the British Academy of Management (BAM) and of the British Universities' Industrial Relations Association (BUIRA). He served on the BAM Executive Council and on the Economic and Social Research Council (ESRC) Social Affairs Committee and Research Grants Board. In 1989–95, he developed the multi-national and multi-disciplinary ESRC East–West Research Initiative (GBP 5 million). Roderick undertook extensive consultancy work for private and public sector organisations—including, in the UK, the National Health Service (NHS), the Scottish Police College, and the Atomic Energy Authority.

Roderick can be contacted at roderick_martin_2006@yahoo.com.

KRISHNA S. DHIR

'To be, or not to be, that is the question': understanding decision making through literary models

The discipline of *decision sciences* seeks to develop theories and methods of formulating and solving general decision problems. Decision scientists study the environment in which decisions are to be made, including the conditions that could prevail in the environment. Decision scientists might also conduct scientific experiments, to comprehend the processes through which various outcomes may be realised. Such experiments have the potential of informing the decision makers on the cause–effect relationships between the alternative sets of actions available to them and the emerging respective consequences. A decision maker may have a different set of utilities associated with different outcomes. Decision scientists analyse the utilities of respective consequences resulting from alternative actions available to the decision maker, according to an appropriate system of utility assignment based on the preferences indicated by the decision maker. Challenges may exist at every step of such analyses. These may include acquisition of information pertaining to the nature of outcomes, such as the process of attaining the desired outcome, the benefits associated with it, and the cost of not seeking other alternatives. The decision scientist seeks to resolve these challenges by looking for an optimal solution, on the basis of some criteria that either maximise utility—or benefit—to the decision maker or minimise the cost. In the face of incomplete information, the actions recommended to the decision maker are usually a course of resolution, not necessarily a clear-cut solution.

Decision making is often described as an art. While one often hears of analysis of decisions described as a scientific endeavour, the practice of decision making is generally described as an art. Yet, decision scientists seldom investigate the arts, in spite of decision making being an effort rooted in the human condition. As in the case of most sciences, the analytical toolkit of decision scientists is mathematics. Generally, decision scientists have not examined the vast body of works of literary titans that pertain to decision making. The works of just a handful of writers are sufficient to point to the relevancy of literary works to the study of decision making processes: Joseph Conrad's novel *Lord Jim*; Robert Frost's poem *The Road Not Taken*; Ernest Hemingway's short story *Hills like White Elephants*; London School of Economics cofounder George Bernard Shaw's play *Pygmalion*; William Shakespeare's plays *Hamlet*, *Julius Caesar*, and *The Merchant of Venice*; and so on. In *Lord Jim*, Conrad described the instinctive, but momentous, action by the novel's eponym to jump the ship, *Patna*, at a critical juncture, and spends the rest

of the story explaining the subsequent choices triggered by that one action, and the final, fatal consequence. Frost's poem attempts a scientific approach, but finally admits that the role played by the 'leap of judgement' is not easily analysed. However, he does so not without leaving clues for further analysis. Hemingway examines the complexity of making joint decisions in the absence of a window into the heart of decision makers. Shaw's Professor Higgins places great confidence on the ability of science-based training to mould individual behaviour, but is defeated and, at the same time, enriched by emotions and sentiments. Shakespeare understood the complexity of decision making and effectively used decision analysis in various settings, be it Hamlet pondering suicide, Brutus contemplating his participation in the assassination of Julius Caesar, or Portia defending the Venetian merchant Antonio in the court of law and saving his life.

This article begins with a review of some of the important theories and frameworks of decision making—their limitations, too, will be briefly explored. This will focus the discussion on the nature and limitations of human judgement, which plays a critical role in decision making. There are advantages to be gained from efforts to overcome the limitations of decision making theories through the study of human judgement, and from aiding human judgement through the application of theories of decision making. If bounded by demands of rationality, a linkage between the mathematical, deductive application of decision theories and the subjective, intuitive approach of judgement is often a major challenge. To address issues that go beyond rationality, this article will draw illustrative attention to specific works by Robert Frost (2002) and Ernest Hemingway (1997) to the study of decision making. Decision models will be discerned in Frost's and Hemingway's works, and how they address the limitations of the traditional models and theories will be examined. Finally, Frost's and Hemingway's works will be integrated to yield a model of joint decision making process of two or more people, as a first step toward the study of organisational decision making.

A brief review of theories of decision making

While economists might seek to help managers achieve better business outcomes, a number of other disciplines have also been interested in aspects of decision making. For instance, philosophers seek to understand what decisions reveal about individual and societal values. Historians seek to understand the choices made at defining moments in time. Psychologists hope to understand human behaviour and the functioning of the mind. Mathematicians, logicians, sociologists, political scientists, and a number of other disciplinarians too have their reasons to dissect and examine the decision making process. Generally, however, they all seek to either extend the limits of rationality in the decision

making process or, at least, understand how the process deviates from rationality. The works of these scholars have resulted in literature being replete with a variety of models and theories of decision making. Modes of decision making are described variously. Some of the descriptors include: strategic, rational, satisficing, incremental, optimising, judgemental, subjective, intuitive, behavioural, and so on. This diversity of terms suggests underlying philosophical differences among the models and theories of decision making.

In his book, *The Functions of the Executive*, Chester Barnard (1938) recognised that the functionality of the corporate manager was not derived only from the manager's intuitive orientations, but from the organisational systems that defined the operation of the corporation. In his conception of a company, flow of information was critical to decision making. Barnard was one of the first to describe decision making as a function of a corporate executive. His description brought focus on the responsibilities of bringing deliberations to their logical end, allocating resources accordingly, and implementing specific actions. Resource allocation became the central interest of the emergent models and theories of decision making.

Decision models are simplified representations of the decision making process. Decision theories are explanations of that process. Included among the various theories are *decision theory* and *multiple attribute utility theory* (Raiffa 1997; Köksalan, Wallenius, and Zionts 2011); *behavioural decision theory* (Edwards 1954, 1961; Weiss and Weiss 2008); *psychological decision theory* (Kahneman and Tversky 1979; McDermott, Fowler, and Smirnov 2008); the *Delphi technique* (Linstone and Turoff 1975; Adler and Ziglio 1996); *social judgement theory* (Hammond et al. 1975; Cooksey 1996); *analytic hierarchy process* (Saaty 2008); *attribution theory* (Heider 1958; Harvey and Weary 1985); and *information integration theory* (Anderson 1981). The next section reviews the limitations in their range of applicability.

Limitations of decision analysis

Individual decision making is fundamental to organisational decision making. Much of the research on individual decision making process has drawn from the decision analysis literature. This is especially true for studies in clinical judgement and medical decision making. Yet, evidence that individuals utilise decision analysis when making decisions is scant. Individual decisions of import are often made under time pressure, with limited time available for research.

As stated earlier, the various theories and models strive to extend the rationality of decisions. Yet, these models have generated considerable controversy. The question central to the controversy is what constitutes rational decision making and

whether this is better achieved through intuitive rather than mathematical techniques (see Polister 1981; Shaban 2005). Questions remain, for instance, about the validity and applicability of multiple attribute utility theory. These include what procedures should be used for the assessment of utilities and their functions; whether weights should be assigned through direct elicitation or inferred indirectly through observations; when and where can the theory be applied; and how to validate the theory. Kahneman and Tversky (1979) reported significant departures from behaviour predicted by the maximisation of expected utility. In his 1978 Nobel Memorial Lecture, Simon (1979:) stated '[i]t is not that people do not go through the calculations that would be required to reach the SEU [subjective expected utility] decision—neoclassical thought has never claimed that they did. What has been shown is that they do not even behave as if they had carried out those calculations, and that result is a direct refutation of the neoclassical assumptions.'

The critics of mathematical, deductive methods such as decision analysis suggest that such methods may lead to oversimplifications, cause errors, and introduce biases of their own. For instance, such methods assume that objectives are fixed and constant, the problem at hand is independent of time, payoffs are measurable and quantifiable, and the problem can be described as a closed system (Harrison 1981). In fact, not only do utility scales differ from person to person, they also change for the same person with experience and over time. For a complete analysis of decision, the problem of interest needs to be broken down into its component elements or parts. In so doing, some relevant variables may not be identified, and the interrelationships may be overlooked. This risk can be considerable and stakes enormous—as, for instance, in the case of medical decision problems. Emerging technologies confront medical professionals and patients alike with unique, complex, and previously unseen situations. These situations do not always lend themselves to mathematical, decision analysis methods, for various reasons. For instance, it may be difficult to construct a decision tree for a specific situation. Or, even with a decision tree constructed, it may be difficult to obtain meaningful probabilities for possible outcomes. In fact, outcomes may not even be known and may be difficult to anticipate. Such problems may require exercise of judgement.

Few would argue the important role played by human judgement in top management decision making. However, the main argument in favour of the use of decision analysis methods is that intuitive decision making capabilities of individuals are limited. Studies on the process of human judgement have demonstrated these limitations (Cooksey 1996)—their nature is reviewed in the next section.

Limitations of human judgement

Cooksey (1996) demonstrated that, unaided, decision makers have difficulty in using all the information available to them. Memory was also cited as a limitation, though a computer-based reminder system can significantly reduce such drawbacks. On the other hand, Goldberg (1970) indicated that intuitive judgements are not always inferior to the predictions through formal, analytical models. Kahneman and Klein (2009) reported that, under certain conditions, predictions based on consensus within a group of decision makers can do as well as, if not better than, predictions of formal, analytical models. Also, consensus among experts was seen to improve precision and reduce errors associated with assessment by individuals (Novotný and Raková 2010).

Hungarian psychologist Egon Brunswik described human judgement as a process through which an individual uses social information to make decisions (Hammond et al. 1975; Cooksey 1996; Hammond and Stewart 2001). Such information is obtained from an individual's environment, and is interpreted through the individual's 'cognitive image' of the environment. The cognitive image provides a representation of the environment based on past experiences and training, and essentially predisposes the person to respond to social information in more or less predictable ways. Human judgements are then based upon one's biased interpretation of available information. Therefore, one's judgements may be considered as probabilistic statements about one's environment and how one reacts to it. Understanding the limitations of this process requires examination of its characteristics.

The human judgement process has three fundamental characteristics. It is covert, inaccurately reported, and inconsistent (Hammond et al. 1975; Cooksey 1996). *Covertness* refers to the subjective nature of the judgement. It is seldom possible for an individual to describe his or her judgement process accurately. Usually, the only means of 'uncovering' and 'explaining' judgements are introspection or guessing at the reasons for the observed judgement. *Inaccurate reporting* refers to such explanations being incomplete. This is not due to evil intent of misleading the observer, but rather to fallibility of subjective reporting. *Inconsistency* is observed when identical circumstances do not result in identical judgements. Judgement being a covert process, not explicitly observed by both a person making the judgement and an observer, it often results in different outcomes at different times. When judgements made by one individual are noticed by another, the observer may conclude that the individual making judgements is either incompetent or has hidden motives. Motivational explanations have assumed that the individuals' inconsistencies arise from their self-serving behaviour. However, the psychological theory of human judgement described by Brunswik (see Hammond et al. 1975; Cooksey 1996) finds such assumption unnecessary. Human

judgement is inconsistent because it is not a fully analytical and controlled process—therefore, inconsistency is an inherent characteristic.

The limitations of the judgement process offer potential for misunderstanding, mistrust, and conflict among decision makers. Social judgement theory (Hammond et al. 1975; Cooksey 1996), which evolved from Brunswik's work (see Hammond and Stewart 2001), contends that disagreements may flow from mere exercise of judgement. Consequently, an aid to judgement must make explicit the parameters of human judgement and the components of disagreement. Social judgement theory explores these parameters by posing five questions (Cooksey 1996). (1) What is the *criterion* of the judgement? In other words, what is being judged? (2) What *factors* influence judgements? Or, what are the factors considered by the individual making judgements? (3) What relative *emphasis* does the individual put on each of the factors? When using information on factors considered, the individual attaches various weights to these factors. Different individuals are likely to attach different weights to the factors. (4) How does the individual *integrate* the information regarding each factor to arrive at an overall judgement? This involves identification of the mathematical relationship which describes the dependence of the overall judgement on the factors considered. The relationship between each factor and the overall judgement may be linear or non-linear, and the contribution of each factor to the overall judgement may be positive or negative. (5) What is the *consistency* with which the individual is able to make judgements? An individual may make different judgements about the same situation on different occasions. A major cause of inaccuracy in unaided exercise of judgement is that individuals are seldom aware of the specific weights and functional relationships they employ with respect to the various factors.

With both—mathematical, deductive approach to analysing decisions and empirical, inductive approach to understanding the intuitive processes of human judgement—being limited in their own way, are there advantages to be had through linking of the two? The next section examines this point.

Need for a linkage

It has been long recognised that limitations of clinical intuition and judgement-based decision making can benefit from formal methods of analysis. For sure, decision aids have long been used to guide decision makers. Generally, however, these efforts have been based either on expectations of rationality or on a degree of understanding of the extent to which human behaviour might deviate from rationality. How might one address aspects of human decision making process that go beyond rationality? It is evident that limitations of formal methods draw attention to the need for intuitive techniques that might assist human judgement.

As stated by Polister (1981:), '[t]he two methods seem clearly to need each other, and the time has come for some form of marriage.' Tools have been reported in the literature which aid linking of formal methods with intuitive methods. For instance, Hammond, Mumpower, and Smith (1977) described a symmetrical linkage system based on social judgement theory that connected a model of a cognitive system based on value judgements to a model of an environmental system based on technical facts. Difficulties encountered in such efforts have also been reported (Andersen and Rohrbaugh 1992). Dhir (2001) used the symmetrical linkage system to link an environmental model to the cognitive models of the top management of a corporation. A major advantage revealed by these studies is that linking mathematical, operations research models with cognitive models enables decision makers to carefully identify and re-evaluate their underlying assumptions and important factors in a decision problem.

The various models of decision making discussed above can be of assistance to a decision maker to the extent that they can be benchmarked against rationality. However, they do not prove helpful in all cases. When the decision process is irrational, new models and theories may be required. One such attempt is presented in the next section.

Beyond rationality

Chamberlain (1968: 37) stated, '[s]trategic decisions rest on the use of judgment. The nature of nonlogical process on the strength of which final choice rests is not easily specified. It is the ingredient which business sometimes identify as "seat-of-the-pants" thinking, to distinguish it from the cerebral variety. It is sometimes referred to as intuition, sometimes as a "gut feeling." It probably includes a considerable amount of experience [. . .] to give one a sense of confidence in being able to make a "right" or a satisfactory choice or nerve to make some choice and face the consequences.' In Preface to *Lyrical Ballads*, William Wordsworth (2009:) wrote, '[i]f the time should ever come when what is now called science, thus familiarized to men, shall be ready to put on, as it were, a form of flesh and blood, the poet will lend his divine spirit to aid the transfiguration, and will welcome the being thus produced, as a dear and genuine inmate of the household of man.'

Marks (1971, 1977) suggested that decision problems that lend themselves to a fully rational analysis are likely to be handled at the relatively lower levels of an organisation. He contended that top management must cope with decision problems that are beyond the realm of fully rational analysis and require exercise of judgement. Of course, the approaches based on mathematical, deductive and empirical, inductive methods described above utilise methodologies implying

rational analysis. Marks encouraged comparison of alternative means of analysis and suggested examination of works of thinkers whose business begins at the limits of rationality, such as poets and preachers. He presented an interesting analysis of Frost's poem, *The Road Not Taken* (Marks 1971; Frost 2002), and Hemingway's work, *Hills like White Elephants* (Marks 1977; Hemingway 1997).

Two decades before Chester Barnard (1938) wrote his famed book, Robert Frost was well placed to examine the nature of decision making. He had extraordinary command of the use of metaphors and also functional comprehension of science. He regularly penned down his thoughts on astronomy, botany, education, geology, literature, philosophy, physics, politics, psychology, and religion. He had the capability of bringing the spiritual and the physical together. He wrote in his notebook, corrections included, '[s]cience is nothing but practical experience carried to a greater extent. It ~~lengthens~~ pushes knowledge from miles to light years. It teaches us on the job what is passable in material strength {speed} speed and finish, what is sufficient to do and think. It teaches us to forget sentiment not to worry {or be anxious} about sentiment nor ~~and~~ about God who is the King of sentiment. Science teaches us how much less ~~that~~ than all this is possible to get along on' (Faggen 2007). In 1916, he wrote *The Road Not Taken*.

Frost's inside view of individual decision making

Marks (1971: 59) described Frost's poem as providing an 'inside view of a moment of decision'. He stated, 'it confronts the very matter that students of scientific management stay clear of'. The poet has difficulty in determining which of two roads had been less travelled by. Yet, the poet appears to believe that decision making is a rational process in which facts are important. Facts obtained by the poet do not clearly indicate the ideal choice. He first notes that the road he chose was 'just as fair' as the one he did not. But, then, he tentatively submits that the one he chose has 'perhaps the better claim'. Then, he quickly backtracks, reverting to the original stand, and notes that both roads have been worn 'about the same'. Nevertheless, the poet decides 'to claim publicly that the facts had clearly shown one of the two roads to be less traveled and that was the one he had taken' (Marks 1971: 60). There is no evidence to support such a claim. Yet, the poet asserts his final decision. 'To be sure, many decisions in life can be made and explained rationally. For many kinds of problems some answers are better than others, and the great hope of scientific management is that the number of these will be increased [. . . .] But many decisions in life cannot be made rationally—not in the sense that they can be made and explained so that everyone would agree on the same choice. These are the decisions with which executives must deal' (Marks 1971: 60–l). In Frost's poem, the dramatic moment of decision is apparent. It

occurs at the hyphen in the last stanza, when the poet takes a 'leap of judgment, a leap beyond facts and beyond logic' (Marks 1971: 61).

In certain ways, it is easier to study organisational decision process *in vivo*, than individual human decision making. As stated before, Frost's decision model describes the *inside view* of the moment an individual's decision is made. Is it a valid view? How do we know what the process is inside one's head? It cannot be directly observed. The process is covert. If reports of human judgement are flawed, as discussed above, would not the poet's self-reporting of what happened in his own mind be faulty too? To make this inside view explicit, it may be profitable to investigate the dynamics of two individuals attempting to arrive at a joint decision.

Hemingway's two-person decision process

Two persons attempting to arrive at a joint decision would yield an opportunity for direct observation of the decision process. In an organisation, decision making is shaped not only by what goes on inside an individual's mind, but also by the social interactions among individuals. To the extent that organisational decisions are joint decisions, it would be logical to study the organisational decision process through investigation of two-person decision process. Ernest Hemingway's (1997) short story, *Hills like White Elephants*, offers such an opportunity. The story is set at the railroad station in the Ebro River Valley of Spain. Two persons, a man and a woman, are conversing intensely while awaiting a train that is to come from Barcelona and head for Madrid. The woman is pregnant, and, apparently, not married. The two are exploring the decision to abort the pregnancy. The abortion would be performed in Madrid. Both persons are tense, and their hearts are heavy. This becomes evident very early in the story. They have already come to the railroad station. Evidently, the journey to Madrid has begun. However, they have not yet achieved joint commitment to the decision to abort the pregnancy. The man tries to get the woman to give her full assent to the operation. 'It's really an awfully simple operation, Jig,' the man says. Yet, he adds, 'if you don't want to you don't have to. I wouldn't have you do it if you didn't want to.' And, again, he states, '[b]ut I know it's perfectly simple.' The woman, on the other hand, tries to get the man to state clearly that he wants her to go through with the abortion. Both avoid the responsibility of the decision. The tension mounts as the discussion continues without resolution. Both parties try to cope with the situation in different ways. The man is persistent in his effort to shift the responsibility to her, 'you've got to realize'. At last, she says, 'Would you please please please please please please please stop talking?' She threatens to scream. Just about then the waitress shows up and informs them that the train would be arriving in five minutes. The man says, 'I'd better take the bags over to the other side of the station.' Even with

some time left at hand, the man wants to take the bags to where the train would come. The woman smiles at him and says, 'All right. Then come back and we'll finish the beer.' Apparently, there is enough time to finish the beer. Yet, the bags are being given priority. Marks (1977: 382) described this moment as the one when the 'decision already made is remade'. At this moment, the decision of the man becomes *explicit*.

A number of elements are discerned in Hemingway's story characterising the two-person decision process. There are facts of the case. These facts are gathered from various sources. 'It's really an awfully simple operation, Jig.' The man repeats this information several times. The man offers more information, 'I'll go with you and I'll stay with you all the time. They just let the air in and then it's all perfectly natural.' The man says, 'I have known lots of people that have done it,' and the woman replies, 'And afterwards they were all so happy.' The experience of others is a source of information. However, did they survey those among their acquaintances who had had abortions? Was it fact that those who had had abortions were 'all so happy'? There are apparently additional sources of information. They are not necessarily tested out for validity. The woman makes a point in the story by saying simply, 'I just know things.' Similarly, the man says earlier in the conversation, 'We will be fine afterward. Just like we were before.'

There are additional elements present in the two-person decision making process as described by Hemingway (Marks 1977). There is the matter of wanting to go through with the abortion. The man says, 'If you don't want to you don't have to. I wouldn't have you do it if you didn't want to.' The woman responds with, 'And you really want to?' He replies, 'I think it's the best thing to do. But I don't want you to do it if you don't really want to.' The man is apparently saying that he will not be held responsible for the decision. She should take the responsibility for the decision herself. She should not blame him, later, should things turn out different from the desired outcome.

The woman tests him out. She says, 'And if I do it you'll be happy and things will be like they were and you'll love me?' He could say, 'Yes,' at this point, and no further discussion would be required. Instead, he dodges the question with, 'I love you now. You know I love you.' And the discussion continues. The woman counters with, 'Then I'll do it. Because I don't care about me.' The man reads an accusation in that. Instead of being pleased with the statement, he says, 'What do you mean?' Again, the discussion continues. When she says, 'And I'll do it and then everything will be fine,' the man replies, 'I don't want you to do it if you feel that way.' Marks (1977: 391) described this dialogue as 'trans-rational' and stated, 'Hemingway points to a dimension of human experience which is not so much opposed to reason as it is beyond reason.' Marks (1977: 391) referred to this dimension as the 'sound of sense', explaining that 'decisions turn finally on words but also on their timing and tone, on meanings which reside in the quality and

manner in which words are enunciated as well as in the silences which surround them'.

Another element that can be identified in this story is that of silence. Just as the conversation begins to explore a difficult subject, the woman breaks away from it, looks at the bead curtain, and says about it, 'They've painted something on it. What does it say?' 'Anis del Toro. It's a drink,' he replies. This is the silence. In breaking away from a difficult argument, the woman has conveyed to the man how she feels about the main topic of the conversation. She discussed the inconsequential bead curtain. Yet, she said nothing directly about the subject. This is the 'sound of silence'. Similarly, tasting the drink they had ordered, she says, 'Everything tastes licorice. Especially all the things you've waited so long for, like absinthe.' She gets the desired effect. The man gets impatient. 'Oh, cut it out,' he says.

The last element identified by Marks (1977) is the remaking of the decision. In Hemingway's two-person decision model it is possible to identify the moment at which both persons recognise that the decision has already been made. Neither acknowledges this recognition verbally. The key moment is nonverbal. The man takes charge of the bags, and of their relationship. The woman wants it that way, and asks him—with a smile—to come back and finish his beer.

Frost's poem is illustrative of a single-person decision process and Hemingway's short story is illustrative of a two-person decision process. The obvious question that arises is whether Frost's inside view of decision making can be integrated with Hemingway's outside view of two individuals attempting to arrive at a joint decision. The next section attempts to answer this question.

Integrating Frost's and Hemingway's models

While Marks (1971; 1977) described Frost's and Hemingway's decision models, he stopped short of integrating them. A close examination of both these processes may offer clues for the organisational decision process. For instance, does Hemingway describe what factors come to play in the decision process when a single decision maker, described by Frost, must accommodate a second person who is also making a decision of common interest?

Frost's poem contains many of the problem solving elements familiar to decision theorists: definition of the problem, collection of data, assessment of uncertainty, assessment of opportunity cost, application of the criterion of choice at the decision point, and the responsibility of the decision maker for the consequences. These concepts are quite familiar to those acquainted with the typical operations research / management science techniques. The problem is that there are two diverging roads, and the traveller wants to travel both at the same

time, but cannot. The poet stands observing at the fork in the road for a long time. He looks down them as far as possible, collecting data. He experiences uncertainty in regard to the 'claim' of each and knows that the opportunity cost of his decision is that he may not have another chance. Finally, an objective criterion is presented, it being the road 'less traveled by'. The application of this criterion is not necessarily consistent. The poet has difficulty in obtaining hard facts.

Moreover, the moment of decision is apparent in Frost's model. It occurs at the hyphen, at which point the poet takes a leap of judgement, beyond facts and logic. Unpredictability and uncertainty exist because the decisions involved here relate to unique events which are to occur in the future, and which are subject to unknown circumstances. Chamberlain (1968: 34) stated that, in such cases, '[e]vent stands independent and isolated, with no calculable odds of success or failure. Nor can the uncertainty be overcome by the acquiring of additional data. Although further information may improve the decision, and to that extent reduce uncertainty, there must always remain a class of facts which can only be expected or guessed at.'

The elements of problem solving described above differ in terms of the sources of knowledge implicit in them. After all, data collection is a search for facts about the problem at hand. Assessment of uncertainty in the decision analysis approach may call for contemplation of both facts and evidence on hand, as in the case of developing hypotheses to define the problem of interest, describing solutions or goals in terms of future states, and proposing hypotheses to 'connect' alternatives to consequences. Finally, the formulation of criterion and the leap of judgement at the decision point are grounded in the cumulative knowledge possessed by the decision maker, and rely on intuitive analysis. The criterion is formulated and the leap is guided by the accumulated facts, evidence, and perceptions. Frost suggested that facts, evidence, and perceptions are all appropriate sources of knowledge to arrive at decisions. The importance of information in the decision making process is recognised by Frost. However, just how this information shaped the poet's decision is unclear. The facts are ambiguous. Which was the less travelled road, in fact? Or were they both equally travelled? With ambiguous facts, how did the poet process them? Of course, the leap of judgement, the moment of decision, occurs within the decision maker's head, and the covert process that guides it cannot be directly observed.

In the Hemingway model, both individuals in the story, the man and the woman, gather information through facts known to them, evidence from their own and other people's experience, and their own perceptions, interpretations, and judgements. In this respect, the Hemingway model is not different from the Frost model. However, information pertaining to the trans-rational aspects of the decision is exchanged in the Hemingway decision model through other means too. Silence plays an important role in uncovering information pertaining to emotional dimensions. Meaning is ascribed to silence through its location in the discussion,

that is, through what is said or done just before and just after the moment of silence. Similarly, the sound of sense is instrumental in the exchange of information through interpretation. It allows information to be conveyed beyond literal meaning of words, and its realm goes beyond facts, experience, and perceptions—beyond rationality. It includes relevant information on emotions, values, beliefs, and ideologies.

While in Frost's model there was a clear moment of decision, no such moment is discernible in the Hemingway model. It is not clear at what point in their discussion did the individuals make their own respective 'leap of judgment, a leap beyond facts and beyond logic' (Marks 1971: 61). Their journey to Madrid had begun already, when they set out for the railroad station. However, neither party had acknowledged their respective commitment to the journey, possibly even to themselves. The leap of judgement could have been made by either or both before the two persons arrived at the railroad station. However, even in that case, neither party knew that the other had already made the leap of judgement. If one had been aware that the leap of judgement had already been taken by the other, then there would not have been the need to explore each other through discussions. Commitment to the decision on part of either party was not apparent to the other. So, they came to the railroad station, still tentative about the future course of their actions.

Hemingway suggests that the prerequisite to joint action is the recognition that a decision has been made, in fact, already. However, according to Frost's decision model, action by an individual is possible only after the individual has already made the leap of judgement. It follows that for joint action among a set of individuals, each of the interested parties must make their respective leap of judgement. Recognition of a decision already made, then, may be described as the realisation on the part of each individual that all other parties involved have made their respective leaps of judgement. This model may now be extended to a group of individuals. Joint action among a number of individuals would be possible *after* each individual has recognised that *all* members of the group have made their respective leaps of judgement. The implication for organisations is that they should foster an environment of openness to facilitate easy *recognition* and *analysis* of information, to facilitate earlier leaps, and transparency of individual decision making process, to aid the leaps.

Frost's and Hemingway's representations of decision making processes are remarkable, in that they incorporate in a concise manner the findings of numerous studies reported in the literature. They point to the need for coping with uncertainty and ambiguity. Indeed, unstructured decision making situations are characterised by uncertainty, ambiguity, and equivocality. Frost suggested that individuals cope with uncertainty by making the leap of judgement. The uncertainty is not removed prior to the leap—'[o]n the contrary [. . . ,] he cannot

remove uncertainty except by making his leap' (Marks 1971: 61). Hemingway pointed to sources of information—sound of sense, for example, and information contained in silence—not addressed by traditional decision theories. He implied that in the face of uncertainty and ambiguity, individuals involved in group decision making seek to remake decisions or seek recognition of the decision that has already been made. Neither Frost nor Hemingway addressed the issue of validity of decisions, although Frost (2002:) acknowledged the consequence of the decision, concluding, '[a]nd that has made all the difference.'

Summary

This article reviewed some of the important theories and frameworks of decision making and discussed their limitations. It also reviewed the nature and limitations of human judgement, and the role of human judgement in decision making. This article argued that there are advantages to linking the mathematical, deductive approaches of prevailing decision theories to the empirical, inductive approaches deployed in the study of subjective human judgement processes. It suggested that the challenge posed by decision making going beyond rationality might be addressed through the works of literary titans. To offer examples that illustrate this point, this article discussed the works of Robert Frost (2002) and Ernest Hemingway (1997). Decision models were discerned in Frost's and Hemingway's works that can be applied to the study of individual and organisational decision making processes, respectively. The integration of the two models offered insights into the process of joint decision making by two individuals that can be extended to organisational decision making.

References

Adler, M. and Ziglio, E. (eds.) (1996). *Gazing Into the Oracle: The Delphi Method and Its Application to Social Policy and Public Health*. London: Kingsley Publishers.

Andersen, D. F. and Rohrbaugh, J. (1992). 'Some Conceptual and Technical Problems in Integrating Models of Judgment with Simulation Models', in *IEEE Transactions on Systems, Man and Cybernetics*, 22/1: 21–34.

Anderson, N. H. (1981). *Foundation of Information Integration Theory*. New York: Academic Press.

Barnard, C. I. (1938). *The Functions of the Executive*. Cambridge, MA: Harvard University Press.

Chamberlain, N. W. (1968). *Enterprise and Environment: The Firm in Time and Place*. New York: McGraw-Hill.

Cooksey, R. (1996). *Judgment Analysis: Theory, Methods, and Applications*. New York: Academic Press.

Dhir, K. S. (2001). 'Enhancing Management's Understanding of Operational Research Models', in *Journal of Operational Research Society*, 52/8: 873–87.

Edwards, W. (1954). 'The Theory of Decision Making', in *Psychological Bulletin*, 51/4: 380–417.

Edwards, W. (1961). 'Behavioral Decision Theory', in *Annual Review of Psychology*, 12: 473–98.

Faggen, R. (ed.) (2007). *The Notebook of Robert Frost*. Boston, MA: Belknap Press of Harvard University Press.

Frost, R. (2002). 'The Road Not Taken', in E. C. Latham (ed.), *The Poetry of Robert Frost*. New York: Henry Holt and Company.

Goldberg, L. R. (1970). 'Man Versus Model of Man: A Rationale, Plus Some Evidence, for a Method of Improving on Clinical Inferences', in *Psvchological Bulletin*, 73/6: 422–32.

Hammond, K. R. and Stewart, T. R. (eds) (2001). *The Essential Brunswik*. Cary, NC: Oxford University Press.

Hammond, K. R., Mumpower, J. L., and Smith, T. H. (1977). 'Linking Environmental Models with Models of Human Judgment: A Symmetrical Decision Aid', in *IEEE Transactions on Systems, Man and Cybernetics*, 7/5: 358–67.

Hammond, K. R., Stewart, T. R., Brehmer, B., and Steinmann, D. (1975). 'Social Judgment Theory', in M. F. Kaplan and S. Schwartz (eds), *Human Judgment and Decision Making*, 271–312. New York: Academic Press.

Harrison, E. F. (1981). *The Managerial Decision Making Process* (2nd edn). Boston, MA: Houghton Mifflin.

Harvey, J. H. and Weary, G. (1985). *Attribution: Basic Issues and Applications*. New York: Academic Press.

Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York: Wiley.

Hemingway, E. (1997). 'Hills like White Elephants', in E. Hemingway, *The Short Stories*. New York: Charles Scribner's Sons.

Kahneman, D. and Klein, G. (2009). 'Conditions for Intuitive Expertise: A Failure to Disagree', in *American Psychologist*, 64/6: 515–26.

Kahneman, D. and Tversky, A. (1979). 'Prospect Theory: An Analysis of Decision under Risk', in *Econometrica*, XLVII: 263–91.

Köksalan, M., Wallenius, J., and Zionts, S. (2011). *Multiple Criteria Decision Making: From Early History to the 21st Century*. Singapore: World Scientific.

Linstone, H. A. and Turoff, M. (1975). *The Delphi Method: Techniques and Applications*. Reading, MA: Addison-Wesley.

Marks, B. A. (1971). 'Decision under Uncertainty: A Poet's View', in *Business Horizons*, 14/1: 57–61.

Marks, B. A. (1977). 'Decision under Uncertainty: The Narrative Sense', in *Administrative and Society*, 9/3: 379–94.

McDermott, R., Fowler, J. H., and Smirnov, O. (2008). 'On the Evolutionary Origin of Prospect Theory Preferences', in *Journal of Politics*, 70/2: 335–50.

Novotný, F. and Raková, M. (2010). 'Assessment of Consensus Forecasts Accuracy: The Czech National Bank Perspective' (Working Paper Series 14), at http://www.cnb.cz/miranda2/export/sites/www.cnb.cz/en/research/research_publications/cnb_wp/download/cnbwp_2010_14.pdf (accessed 17 November 2012).

Polister, P. (1981). 'Decision Analysis and Clinical Judgment: A Reevaluation', in *Medical Decision Making*, 1/4: 361–89.

Raiffa, H. (1997). *Decision Analysis: Introductory Readings on Choices under Uncertainty*. New York: McGraw Hill.

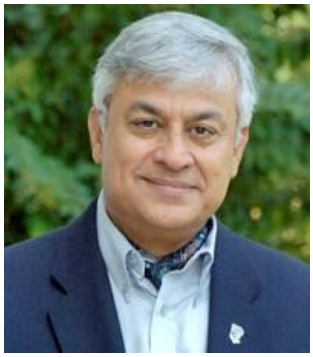
Saaty, T. L. (2008). *Decision Making for Leaders: The Analytic Hierarchy Process for Decisions in a Complex World*. Pittsburgh, PA: RWS Publications.

Shaban, R. (2005). 'Theories of Clinical Judgment and Decision-making: A Review of the Theoretical Literature', in *Journal of Emergency Primary Health Care*, 3/1–2: .

Simon, H. A. (1979). 'Rational Decision-making in Business Organizations', in *The American Economic Review*, 69/4: 493–513.

Weiss, J. W. and Weiss, D. J. (2008). *A Science of Decision Making: The Legacy of Ward Edwards*. New York: Oxford University Press.

Wordsworth, W. (2009). 'Preface to Lyrical Ballads', in *Poetry and Cultural Studies: A Reader*, 21: .



Krishna S. Dhir is Henry Gund Professor of Management at the Campbell School of Business, Berry College in Mount Berry, Georgia, where he also served as Dean. He was previously Director of the School of Business Administration (SBA) at The Pennsylvania State University at Harrisburg, where he also held the SBA Professorship. As their chief academic officer, he steered both these institutions to their respective Initial Accreditation by AACSB International. In addition, Krishna has been visiting professor at universities in Australia, Hungary, India, Malaysia, and the United Kingdom. He has also served as an AACSB Mentor for Initial Accreditation.

Krishna was the President of the Decision Sciences Institute (DSI), in 2011–2012, where he was awarded both the prestigious Dennis E. Grawoig Distinguished Service Award, by the DSI, and the Jimmy D. Barnes Distinguished Service Award, by the Western Region of the DSI. He is also the recipient of the James A. Jordan Jr. Award for Teaching Excellence and the Excellence in Teaching Award from the Pennsylvania State University at Harrisburg. Krishna's book, *The Dean's Perspective: Issues in Academic Leadership in Schools of Business*, was published by DSI in 2009, and its Japanese translation in 2011, by Chuo-Keizai-Sha of Tokyo, Japan.

Krishna is a Fellow of the Operational Research Society (FORS) in the UK. He holds a PhD in Management Science and Administrative Policy from the University of Colorado in Boulder, an MBA from the University of Hawai'i; an MSc in Chemical Engineering and Physiology from Michigan State University, and a BTech in Chemical Engineering from the Indian Institute of Technology in Bombay, India.

Krishna can be contacted at kdhir@berry.edu, at the Campbell School of Business, Berry College.

JOSEPH D. BLACKBURN

The value of time (and the value of waste): time-based supply chain design

The strategic concept of time-based competition was introduced by George Stalk (1988) in an article entitled 'Time—The Next Source of Competitive Advantage'. Stalk (1988) argued that an organisation could achieve a powerful competitive advantage through the speed by which it responded to customers, developed new products and services, and moved products through the supply chain. Books by Stalk and Hout (1990) and Blackburn (1991) expanded on this theme, by describing how firms could develop and implement time-based strategies.

Much of the early work on time-based competition focused on the benefits of speed and implied that faster is better (Schmenner 1988). Firms such as Dell Computer, Wal-Mart, and Zara were used as examples to show how a business model built upon speed could propel a firm to a pre-eminent position in its industry. Dell replaced the traditional distribution model in consumer electronics with a build-to-order direct-to-customer model which yielded dramatic increases in speed and reductions in cost. Wal-Mart employed a faster supply chain to obtain shorter replenishment cycles, gaining them the fastest product turnover and profitability among mass-market retailers. Zara used 'fast-fashion'—more frequent product introductions and shorter lifecycles—to become a dominant fashion retailer.

Is faster always better? In *Clockspeed: Winning Industry Control in the Age of Temporary Advantage*, Fine (1998) observed that the standards for speed vary across industries, and that competitive advantages based on speed are temporary. Blackburn (2012) found that there are limits to time-based competition and that these limits vary across industries. Just as there are limits on the speed of physical processes quantified by laws of physics, there are limits on the speed of business processes defined by economics principles. For business processes, the limits on speed are imposed by a metric called the marginal value of time (MVT) and defined as the value gained by an incremental increase in the speed of the process. For example, if a firm could increase future profitability by USD 10,000 by reducing the length of time to process orders by one day, then MVT for order processing is USD 10,000 per day. Generally, improvements in the speed of operations processes are desirable up to a point: the point at which MVT equals the marginal cost of additional speed. Thus, the firm in our example could spend up to USD 10,000 to improve order processing speed by one day. Such points are

dynamic, not static, because they change over time with technology, the level of competition, and consumer preferences.

Service processes provide good examples of MVT and the existence of economic limits to speed. In the operation of a large telephone call centre, the time required to respond to customers by a service agent is a critical performance metric. Management could improve the speed of response by increasing the number of agents (but at a cost)—and, with enough agents on hand, it could reduce the response time to virtually zero! However, there are clear economic limits to how much a telephone call centre would be willing to spend to further reduce customer waiting time. The economic limit is set by MVT, the value to customers of an incremental decrease in average waiting time. Telephone call centre management would only want to add service capacity up to the point at which the marginal cost of additional service equals the MVT for the reduction in customer waiting costs.

This article summarises over two decades of research in the area by the author and his colleagues (Blackburn 1991; Blackburn et al. 2004; Blackburn and Scudder 2009; Blackburn 2012) and shows how MVT can be used as a tool to develop effective supply chain strategies. In a supply chain, the average lead time is the amount of time a product spends end-to-end. Since it measures the value gained by an incremental reduction in the average lead time, MVT is a useful design parameter that dictates when it is important to design a supply chain for speed—and when it is not. To illustrate this proposition, this article summarises three research cases—all drawn from the author's previous research—that show the role of MVT in optimal supply chain design. The first is a sourcing decision case, where a firm must decide how to configure the supply chain from suppliers to minimise total acquisition cost (Blackburn 2012). The second case concerns the design of a supply chain for perishable food products, where MVT changes along the supply chain (Blackburn and Scudder 2009). The third case concerns the design of a reverse supply chain for returned products (Blackburn et al. 2004).

The time-based approach to supply chain design suggested in this article is a modification of a supply chain taxonomy first proposed by Fisher (1997). He classified products into two categories, *functional* and *innovative*, and proposed a simple dichotomy for designing supply chains based on product characteristics. Functional products have predictable demand and relatively long lifecycles. Innovative products have highly variable demand and short lifecycles. Fisher argued that *responsive* (time-based) supply chains are appropriate for *innovative* products and that (cost) *efficient* supply chains are appropriate for *functional* products. All three research studies summarised in this article show that the value of time offers an alternative way to view Fisher's strategic construct. Innovative products are very time sensitive and tend to have a high MVT—functional products have a low MVT. For products with high MVT, the supply chain needs to be

designed for speed (responsive)—for products with low MVT, cost efficiency is more important than speed. The following three cases illustrate the use of MVT in developing optimal supply chain strategies.

Designing supply chains for sourcing and offshoring component parts—the case of the automotive industry

The growth of global supply chains appears to violate the principles of time-based competition. Over the past several decades, supply chains for product sourcing have become longer, and slower, as US firms have moved production or sourcing of components to China and other offshore locations (Blackburn 2012). Time-based strategies would dictate shorter, faster supply chains to improve replenishment times and lower inventory costs.

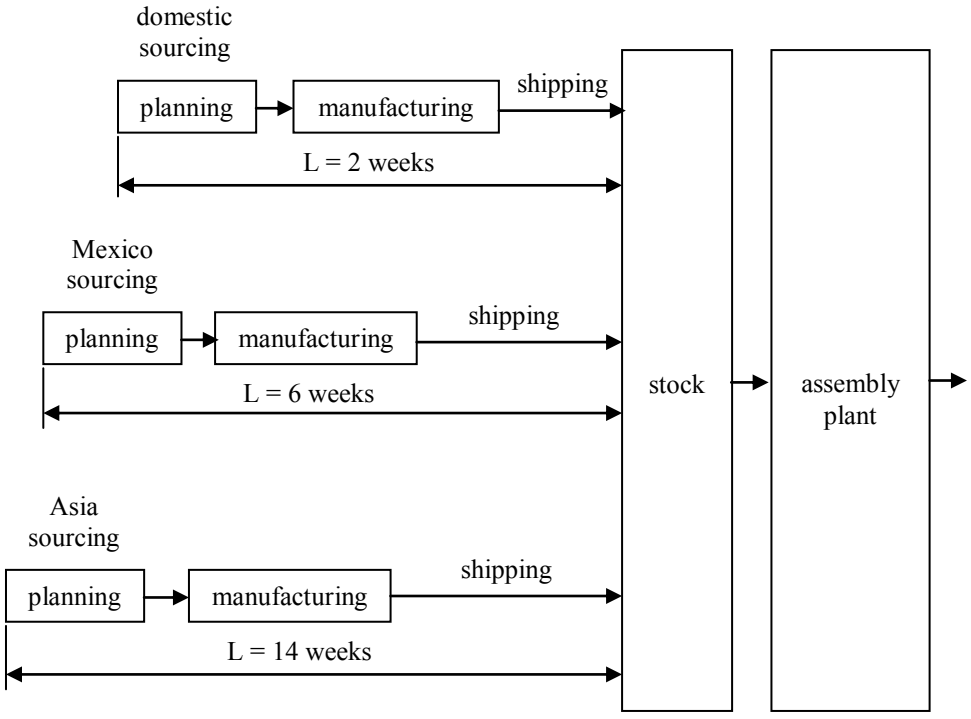


Figure 1: Component sourcing at Volunteer Manufacturing

If time is so valuable, then why are supply chains so long and time consuming? According to Blackburn (2012), the answer lies with the MVT for supply chains—which is surprisingly low for *functional* products. Consequently, only a small reduction in manufacturing cost offshore is required to offset the increased inventory cost of a longer supply chain. The following example of a sourcing decision for automotive parts illustrates why we have observed such an explosive growth in global supply chains caused by firms moving production offshore in search of lower costs.

Volunteer Manufacturing sources components globally for assembly into automotive products in the US. In its efforts to reduce the total cost of sourcing components, the firm periodically evaluates alternative sourcing strategies. Figure 1 (p. 51) illustrates the available options for a typical component. Domestic sourcing has the shortest replenishment lead time (two weeks), but the highest component manufacturing cost. Mexico, with a slightly longer supply chain (six-week lead time), offers the advantage of lower manufacturing cost, but with higher supply chain inventory cost. Sourcing from Southeast Asia lengthens the supply chain (to about fourteen weeks), slows the response and further increases supply chain inventory cost, but has the lowest acquisition cost of components. For Volunteer Manufacturing, the sourcing decision involves a classic trade-off between manufacturing costs and supply chain costs, and the resolution of the trade-off depends on the MVT for the supply chain.

Automotive assembly at Volunteer Manufacturing is based on a make-to-stock supply chain: a stock of components is held in inventory and components are pulled as needed for assembly. To calculate the total cost of sourcing product from different locations, an analytical model is needed to calculate inventory cost as a function of the length of the supply chain lead time (L). Once the inventory cost has been determined, a total inventory cost model is needed to capture how cost changes with L, and to obtain the MVT for the supply chain.

The details of developing an analytical model to calculate the total inventory cost in a make-to-stock supply chain, such as the one at Volunteer Manufacturing, are omitted here, but can be examined in Blackburn (2012). The model is based on the following assumptions: the upstream producer of a product (or component) ships to a downstream inventory stocking point. The products are *functional* (in Fisher's terminology)—that is, the products have predictable demand and relatively long lifecycles. Demand at the stocking point is variable—and normally distributed. Inventory is managed by a standard order-up-to model with a replenishment lead time (the total time for upstream production and delivery of the product to the stocking point) of L weeks—the lead time may be fixed or variable. The total inventory cost is the sum of ordering costs, carrying costs of inventory (pipeline inventory, cycle stock, safety stock at the stocking location, and the average amount backordered), and penalty costs for shortages or backorders. Most

inventories in supply chains are managed suboptimally, in the author's experience. Therefore, for greater generality, this analytical model specifically does *not* assume that the inventory ordering policy is optimal, only that the firm maintains a consistent inventory policy as lead time changes.

Although the analytical formulas for calculating MVT as a function of L are complex (Blackburn 2012), the basic, two-stage evaluative procedure is simple. First, the total annual inventory cost is converted to inventory cost per unit of product. Second, MVT is calculated analytically as the percentage change in unit product inventory cost per unit change in L. For example, if MVT were 0.5 per cent per week, then, implicitly, a one week decrease in lead time reduces the unit inventory cost of the product by 0.5 per cent. The conversion to inventory cost per unit of product is fundamental to this model, because, otherwise, considering MVT's sensitivity to the cost of the product would have to preclude making general statements about the MVT of the supply chain—including, specifically, making MVT comparisons across product categories.

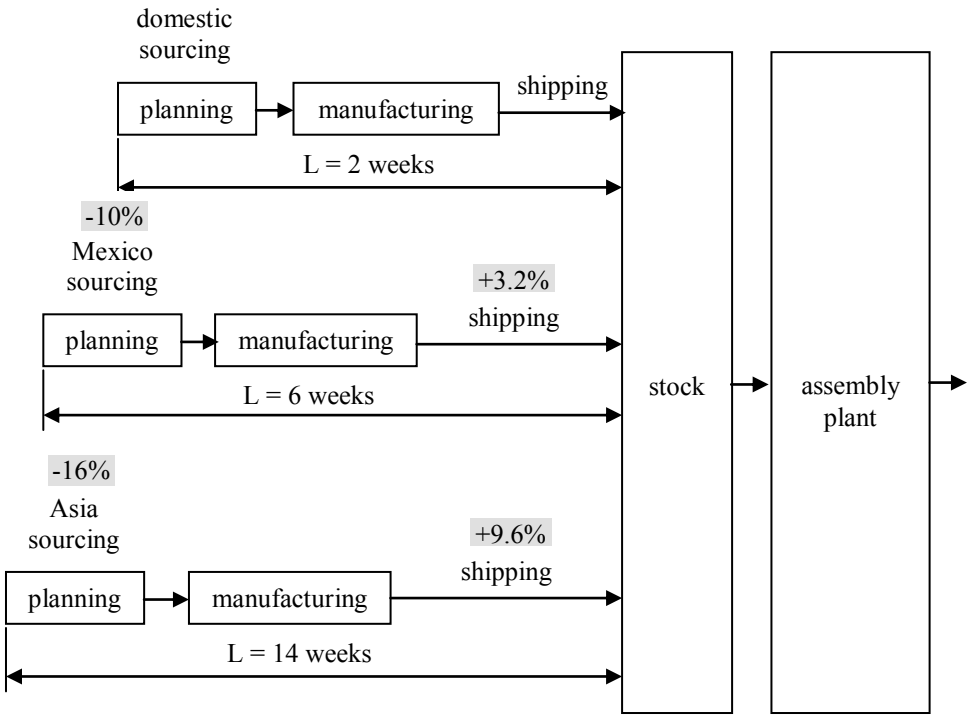


Figure 2: Comparative component sourcing at Volunteer Manufacturing

Once MVT is expressed as a function of L, it becomes possible to quantify how inventory costs change with L—and comparing sourcing alternatives becomes straightforward. Total sourcing cost per unit of product is the sum total of unit manufacturing cost, shipping cost, and inventory cost. To compare domestic sourcing with offshore sourcing, MVT and the difference in lead time (ΔL) are used to compute the increase in inventory costs effected by offshore sourcing (MVTxΔL)—offshore sourcing is only cost effective if the reduction in the sum total of unit manufacturing and shipping cost exceeds MVTxΔL.

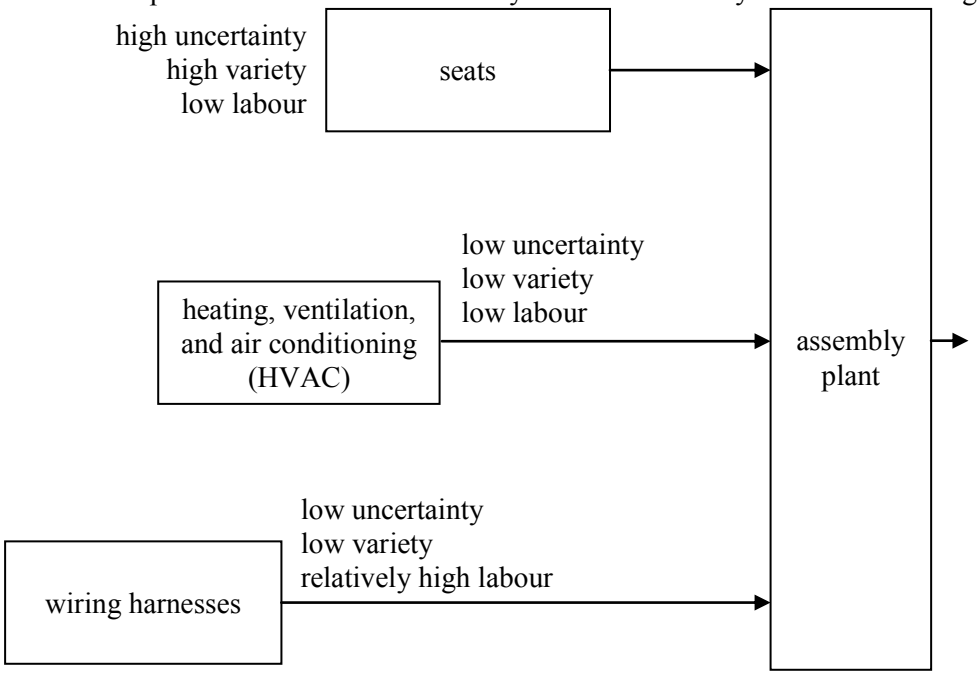


Figure 3: Response time strategies in supply chains in the automotive industry

For Volunteer Manufacturing, MVT is 0.8 per cent per week—that is, a one-week increase in supply chain lead time increases product cost by 0.8 per cent. Therefore, a 5 per cent decrease in sourcing cost (the sum total of manufacturing and shipping cost) would be roughly equivalent to a six-week increase in the length of the supply chain. Figure 2 (p. 53) summarises the results for the alternative sourcing locations—for comparison purposes, all cost differences are relative to domestic sourcing. Due to lower labour and related manufacturing costs, sourcing from Mexico reduces the sourcing cost by 10 per cent per unit. With a ΔL of

approximately 4 weeks and an MVT of approximately 0.8 per cent, this longer supply chain increases inventory cost by approximately 3.2 per cent of unit cost. However, the net effect of sourcing from Mexico is a reduction in unit cost of 6.8 per cent. Similarly, sourcing from Asia reduces the sourcing cost by 16 per cent, but the increase in lead time increases the unit cost by approximately 9.6 per cent. All in all, however, the net effect of sourcing from Asia is a reduction in unit cost of 6.4 per cent. Based on the total cost of sourcing, Mexican sourcing is slightly more cost efficient than Asian sourcing—both alternatives offer a considerable advantage over domestic sourcing.

Volunteer Manufacturing is a typical example for supply chains for functional products. Regardless of unit value, MVT is surprisingly low (lower than 1 per cent, in most cases)—a very robust result that also applies to supply chains with variable lead times.

A low MVT implies that extending the supply chain to locations with lower manufacturing costs is not very costly. It is economical for a firm to extend their supply chain by up to five weeks to obtain sourcing cost savings of 5 per cent. A low MVT imposes strict limits on time-based competition, but provides a compelling explanation for the surge in outsourcing and longer supply chains. If time and inventory costs are ineffective barriers for safeguarding domestic manufacturing, the trade-off is easily tipped in favour of offshore manufacturing. It may be economical to go great distances to acquire products at a lower cost.

However, the limits on time-based competition do not exist for innovative, time-sensitive products such as fashion apparel, consumer electronics, and fruits and vegetables—the analytical model summarised here does not consider the cost of product obsolescence, supply chain disruption, and supply chain coordination. When these effects are equated for, MVT becomes significantly higher and favours shorter supply chains and domestic sourcing.

The effect of MVT on supply chains in the automotive industry results in different distances between suppliers and assembler. Figure 3 (p. 54) shows that different response time strategies in supply chains in the automotive industry lead to a mixture of sourcing strategies. For example, seat manufacturers are always located close to the assembly they feed, usually within a half-hour's drive time. Seat production has high variety and high demand variability because the seats are produced in sequence for assembly, and they vary both in colour and style within a given automobile line. Therefore, seats are a time-sensitive rather than functional product, and the supply chain for seats has high MVT. With low labour content and high MVT, the eventual benefits from extending the supply chain would not offset the accompanying increase in inventory cost. On the other hand, wire harnesses require a very high labour content and tend to be functional products. Because their MVT is low, manufacturers can afford to extend the supply chain to take advantage of low labour costs. For these reasons, wire harness manufacturing

facilities for domestic US assembly plants have typically been located in Mexico. Manufacturers of heating, ventilation, and air conditioning (HVAC) products face lower levels of variety and demand uncertainty than seat manufacturers—each car model has a very limited set of HVAC options. The MVT for HVAC units lies between that of seats and wire harnesses. With low labour content there is little incentive to move production offshore, but distance to the assembly plant is less critical than with seats. HVAC manufacturers typically locate manufacturing facilities at sites that can conveniently serve more than one auto assembly plant, with supply chains that are longer than for seats. In most supply networks, and largely due to MVT, distance between supplier and assembler increases with increasing labour content and decreases with increasing variety.

For functional products, MVT tends to be constant along the chain. Changes in MVT along the chain require a more flexible design—a situation examined in the next section.

Designing supply chains for perishable products—the case of the fresh fruit and vegetable sector

In most supply chains, MVT is essentially constant along the chain because the value of the product remains stable throughout the supply process. This is not the case for the supply chains for fresh fruits and vegetables and other perishable products. The value of perishable products changes significantly over time, at rates that are highly dependent on temperature and humidity. This means that the MVT for perishable products changes along the supply chain, rendering conventional supply chain design strategies inappropriate.

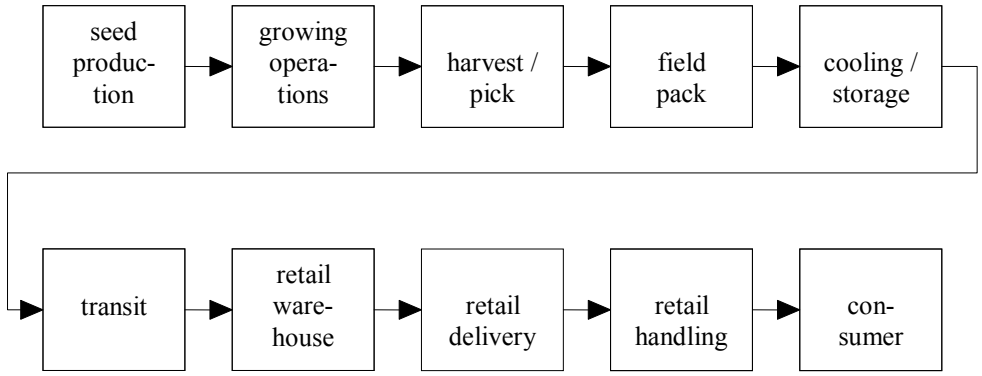


Figure 4: Stages in the melon supply chain

While Blackburn and Scudder (2009) studied perishable product supply chains in detail, this section focuses on the supply chain for melons, which is similar to that of other highly perishable fruits and vegetables. Figure 4 shows the sequence of activities in the supply chain for melons. For perishable products such as this, quality begins to deteriorate immediately upon harvest, and the problem is to choose a supply chain design that limits the loss in product quality in the stages between harvest in the field and customer.

Unlike the MVT for functional products discussed in the previous section, the MVT for perishable products is not constant along the supply chain, and the state of the product does not remain stable. A melon is at its peak value—in terms of freshness, taste, and texture—at the instant it is picked. As an organic product, it begins to degrade in value at an exponential rate highly temperature dependent, after picking, due to the process of respiration—respiration rates increase rapidly with temperature. Contrary to conventional perishable inventory models, the units of product lose value at different rates, depending upon the time and temperature since picking. Moving the harvested product to a nearby cooling facility, where the melon is cooled to a temperature just slightly above freezing, abruptly halts the loss in value due to product deterioration.

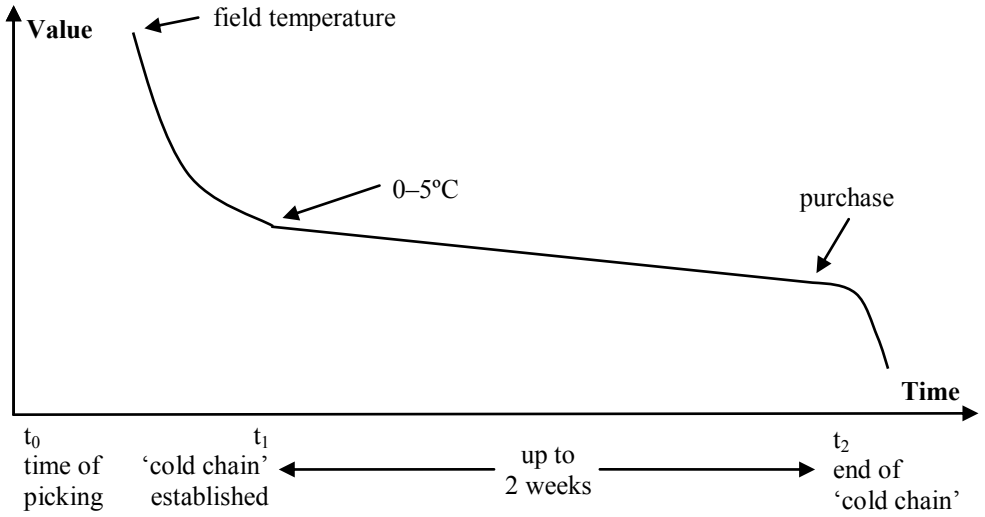


Figure 5: Decline of melon value over time

Figure 5 shows the MVT profile for the fresh melon supply chain. At time of picking (t_0), the product is at field temperature and at its maximum MVT—that is, it is losing quality and value at maximum rate. Value decreases exponentially, as

the product waits for transfer to the cooling facility. Once there and cooled to a temperature a few degrees above freezing (time t_1), product deterioration is reduced to a much lower rate. If a 'cold chain' is maintained, the product value can be maintained for several weeks as the melon moves from the field to the market. Maintaining a cold chain is necessary to stabilise product value and quality.

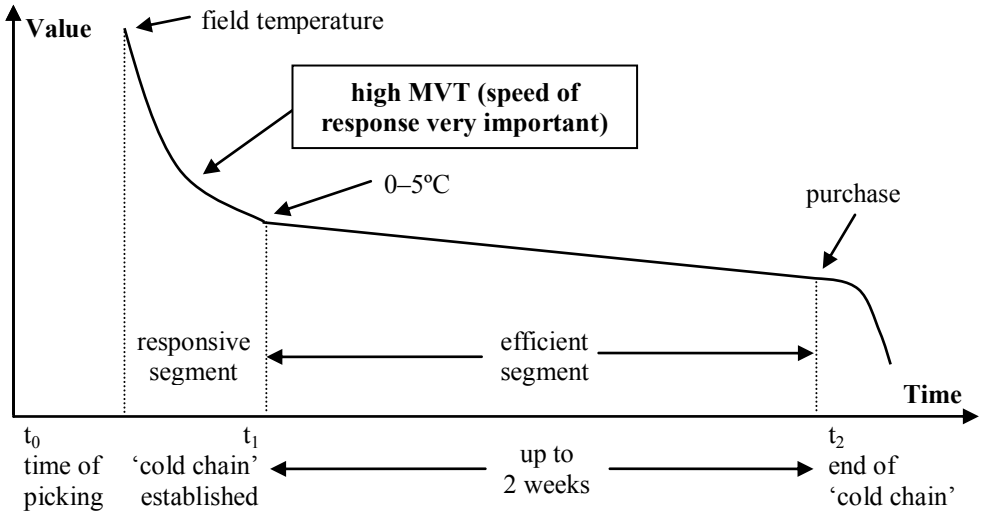


Figure 6: Hybrid supply chain: responsiveness and efficiency

The difference in MVT along the supply chain for melons dictates a hybrid design strategy (see Figure 6). Between t_0 and t_1, the supply chain must be designed for *speed*, because the product is losing value at a rapid rate and MVT is very high. From t_1 to t_2, the supply chain can be designed for cost efficiency—by maintaining the product at a cold temperature, MVT is kept low, so cost efficiency becomes more important than speed. In this part of the supply chain, costs can be kept low by choosing a minimum cost transportation strategy, while insuring that the cold chain is maintained throughout the transportation process.

Management of the first stage of the supply chain (between t_0 and t_1) is most critical because value lost in the product due to delays at this stage can never be recovered. In the field, product is typically transferred in batches to the cooling facility, and the time from harvest to cooling depends on the batch size. If the batch size is too large, the product sits too long at high temperatures, and significant value is lost. On the other hand, very small batch sizes incur higher transportation costs than large batch sizes. Blackburn and Scudder (2009) showed that the optimal batch size can be calculated using a model that is analogous to the

economic order quantity (EOQ) model in inventory theory, altered to reflect an exponential loss in value of the product.

This example illustrates that there are significant differences between the supply chains for perishable products and conventional supply chains. Changes in MVT along the supply chain dictate a hybrid mix of responsiveness, in one segment, and cost efficiency, in the other. Fortunately, both segments can be managed separately, because little coordination is required between the two.

Designing reverse supply chains for product recovery—the case of time-sensitive technology products

The flow of product returns from customers has become a major issue for retailers and manufacturers. In the US alone, the total value of products returned in this *reverse supply chain* exceeds USD 100 billion annually. This value is growing rapidly with increasing on-line sales, which tend to have higher return rates than in-store sales. For products returned within 90 days of sale, the burden falls on manufacturers, who must credit the retailer for product value and dispose of the product through reuse, recycle, refurbish, or salvage.

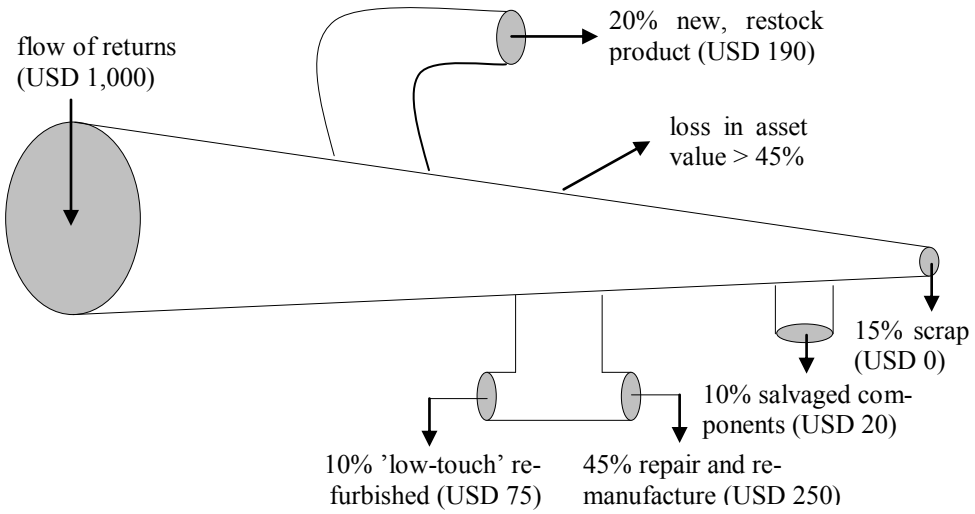


Figure 7: Shrinking pipeline for product returns

While focused on forward supply chains, many firms ignore their reverse supply chains and seek to handle returns at minimum cost. Cost-efficient supply chains tend to be slower than responsive ones, and delays in dealing with returned

products can lead to increased losses in asset value and a diminished set of reuse options. This approach may reduce handling costs, but may result in sending a product to landfill, losses for the firm, and long-term damage to the environment.

Blackburn et al. (2004) illustrated how assets can be lost through mismanagement or neglect of the return stream for products whose value diminishes rapidly over time. Figure 7 (p. 59) represents the returns process as a shrinking, leaking pipeline. The percentage losses shown are averages representative of firms with time-sensitive technology products in the authors' own research database. For every USD 1,000 of product returns, approximately half the asset value (more than 45 per cent) is lost in the return stream. The explanation is twofold. First, the value of the product decreases with time (at rates as high as 1–2 per cent per week), as the product moves through the pipeline to its ultimate disposition. Second, the returned product, once new, must be downgraded to a lower-valued product—remanufactured, salvaged for parts, or simply scrapped as not reparable or obsolete. Much of the second type of loss is unavoidable, because only a fraction of returns can be restocked as new items (20 per cent, in the case of time-sensitive technology products). However, losses due to time delays represent a significant opportunity for asset recovery.

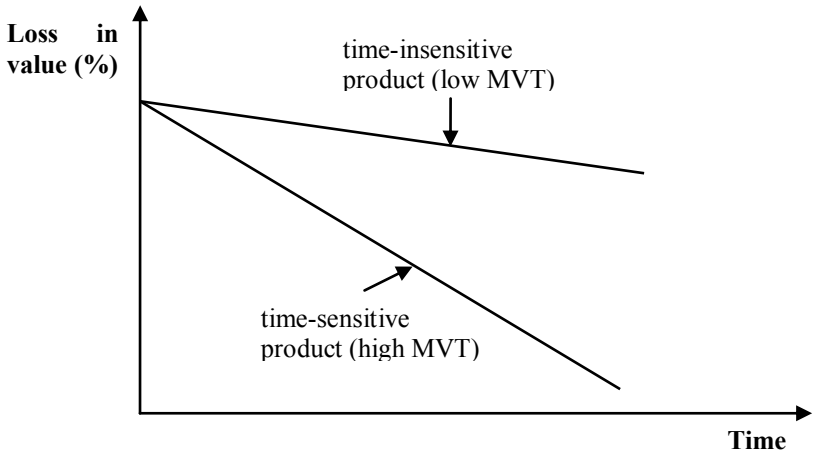


Figure 8: Differences in MVT for product returns

To control asset losses due to time delays in the reverse supply chain, managers must be sensitive to the value of time for product returns and use it to (re)design the reverse supply chain for asset recovery. The product's MVT is a simple, effective metric for measuring the cost of delay—for returned products, MVT

varies widely across industries and product categories. Figure 8 shows MVT in percentage terms, to facilitate comparisons across product categories. Time-sensitive, high MVT products such as PCs and other consumer electronics may lose value at rates in excess of 1 per cent per week—at such rates, returned products may lose up to 10–20 per cent of their value simply due to time delays in the evaluation and disposition process. On the other hand, for low MVT products such as disposable cameras and power tools, the cost of delay is usually closer to 1 per cent per month.

Design choices

Because asset recovery depends strongly on reducing time delays, MVT is a convenient parameter to drive design decisions for the reverse supply chain. As in previous sections, it is useful to recast Fisher's (1997) taxonomy of strategic design choices for supply chains in time-based terms. Using Fisher's product classification, *innovative*, short lifecycle products (such as laptop computers) have high MVT, whereas products such as power tools and disposable cameras are more *functional,* less time-sensitive, and have low MVT. The resulting design dichotomy is expressed as follows: products with high MVT require time-based reverse supply chains designed for *responsiveness* and products with low MVT require reverse supply chains designed for *cost efficiency*.

The major structural difference between cost-efficient and responsive reverse supply chains lies in the supply chain positioning of returned product testing and evaluation, where product condition is to be determined. For low MVT products, cost efficiency is the objective, and the returns supply chain should be designed to *centralise* the evaluation activity. With high MVT products, responsiveness is the goal, and the evaluation activity should be *decentralised*, to minimise time delays in processing returns.

The centralised model for cost efficiency

Figure 9 (p. 62) shows a generic model of a reverse supply chain built around centralised testing and evaluation. To achieve cost efficiency, the returns supply chain is designed for economies of scale. Every returned product is sent to a central location for testing and evaluation, to determine condition and issue credit. Product returns are shipped in bulk, usually, to minimise shipping costs. Once evaluated for condition, the product is distributed to the appropriate facility for disposition: restocking, refurbishment or repair, parts salvaging, or scrap recycling. The centralised reverse supply chain is designed to minimise processing costs, often at the expense of long delays, so it should only be used for functional, low-MVT products.

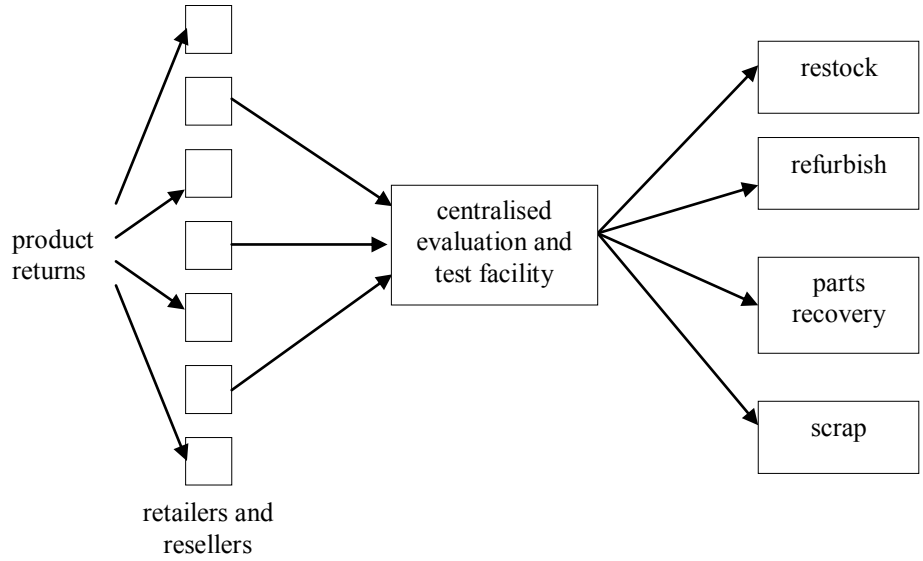


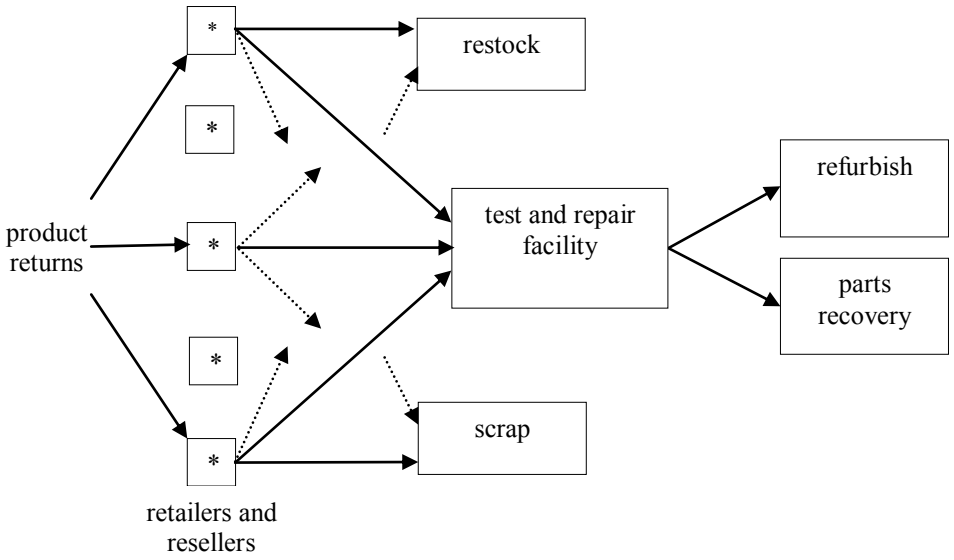
Figure 9: Centralised, cost-efficient reverse supply chain

The centralised model adopts a fundamental principle of forward supply chain design strategy, *postponement*. Postponement—or delayed product differentiation—is an effective strategy for dealing with the cost of variety, reducing inventory in forward supply chains (Feitzinger and Lee 1997). However, postponement is less effective as a strategy for reverse supply chains. The key return decision is based on an initial evaluation of product condition in order to make a disposition choice. With returns, little is gained from postponing product differentiation, because product variety and condition are predetermined at the time of receipt.

The decentralised model for responsiveness

In the reverse supply chain, there are significant time advantages to early, rather than late, product differentiation—a design principle called *preponement*. Early diagnosis of product condition maximises asset recovery by fast-tracking returns to their ultimate disposition and minimising delay cost. Upon return of consumer electronics products such as PCs, printers, and phones, a field test can be conducted to categorise products as new, refurbishable, salvageable for components, or scrap. Then, new, unused products can be restocked without any time delay (and asset

value loss), scrapped products can be recycled, and the remaining products can be sent on for further evaluation. As Figure 10 illustrates, to achieve preponement and reverse supply chain responsiveness, product testing and evaluation must be *decentralised*.



* = evaluation of product at retailer or reseller

Figure 10: Decentralised, responsive reverse supply chains

Decentralised preponement improves asset recovery by reducing time delays in two ways. First, it reduces the time delays for disposition of new and scrap products—new products tend to have the highest MVT and stand to lose the most from processing delays. Second, it speeds the processing of products that need further testing and repair. By diverting new and scrap products from the main returns flow, overall congestion is reduced and the remaining products flow faster, thereby reducing asset loss further. For products with high MVT, preponement may increase asset recovery speed dramatically.

To summarise, product returns represent a value stream, not just a waste stream, and the reverse supply chain should be managed to recapture that value. Like that of forward supply chains, the design of reverse supply chains involves a trade-off between efficiency and response. To improve asset recovery in reverse supply chains, firms must consider time (as measured by MVT) as a key performance and design metric. If the product has a high MVT, then the reverse supply chain should be decentralised, to achieve preponement and speed. If the product has a low

MVT, then the reverse supply chain should be centralised, to achieve cost efficiency.

Conclusion

This article has important implications for managers seeking the right supply chain strategy for their product. The three cases discussed here are typical of most supply chains, in that selection of the appropriate design involves a trade-off between speed and cost efficiency. MVT is an ideal tool for resolving this trade-off, because it succinctly captures the relationship between cost and time in a supply chain. In supply chains for functional products, with stable demand and relatively long lifecycles, the value of time is much lower than intuition would suggest, and firms can extend their supply chains long distance effectively, to obtain lower sourcing costs. When the value of time varies along the supply chain, as it does with perishable products, managers should consider flexible designs, to combine speed and cost efficiency. By ignoring their reverse supply chain, many managers miss an opportunity to capture asset value. As is the case with forward supply chains, the design of the reverse supply chain pivots on MVT. With time-sensitive products, early identification of product condition (preponement) is necessary to maximise asset recovery.

References

Blackburn, J. D. (ed.) (1991). *Time-Based Competition: The Next Battleground in American Manufacturing*. Homewood, IL: Business One Irwin.

Blackburn, J. D. (2012). 'Valuing Time in Supply Chains: Establishing Limits of Time-based Competition', in *Journal of Operations Management*, 30/5: 396–405.

Blackburn, J. D. and Scudder, G. (2009). 'Supply Chain Strategies for Perishable Products: The Case of Fresh Produce', in *Production and Operations Management*, 18/2: 129–37.

Blackburn, J. D., Guide, V. D., Souza, G. C., and Van Wassenhove, L. N. (2004). 'Reverse Supply Chains for Commercial Returns', in *California Management Review*, 46/2: 1–17.

Feitzinger, E. and Lee, H. (1997). 'Mass Customization at HP: The Power of Postponement', in *Harvard Business Review*, 75/1, 116–21.

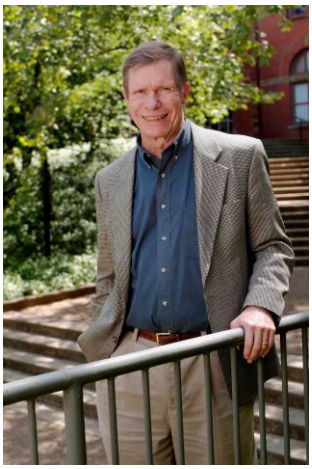
Fine, C. H. (1998). *Clockspeed: Winning Industry Control in the Age of Temporary Advantage*. Reading, MA: Perseus Books.

Fisher, M. L. (1997). 'What is the Right Supply Chain for Your Product?', in *Harvard Business Review*, 75/2: 105–16.

Schmenner, R. W. (1988). 'The Merit of Making Things Fast', in *Sloan Management Review*, Fall 1998: 11–17.

Stalk, G., Jr. (1988). 'Time—The Next Source of Competitive Advantage', in *Harvard Business Review*, 66/4: 41–51.

Stalk, G., Jr. and Hout, T. (1990). *Competing Against Time*. New York: The Free Press.



Joseph D. Blackburn is James A. Speyer Professor of Production Management Emeritus at the Owen Graduate School of Management, Vanderbilt University.

Joe received his PhD in operations research from Stanford in 1971. His research and teaching in operations management focuses on time-based competition—how organisations can use faster response to customers for competitive advantage. In 1995, Joe was elected Outstanding Professor in the Executive MBA Programme, where he continued to teach until recently. He is the author of *Time-Based Competition: The Next Battleground in American Manufacturing*, and is an authority on accelerating new-product development, streamlining supply chains, and reverse supply chain strategy.

Joe served as Associate Dean (1988–1993), Acting Dean (1999–2000), and Senior Associate Dean (2005–2007) at the Owen Graduate School of Management, Vanderbilt University. Prior to coming to Owen, he was Associate Professor of Operations Management at Boston University's School of Management, Assistant Professor of Management Science at the University of Chicago's Graduate School of Business, and Visiting Assistant Professor of Decision Sciences at Stanford University's Graduate School of Business.

Before moving to academia, Joe was a chemical engineer for Eastman Kodak. He is a Fellow of the Production and Operations Management Society and serves as Senior Editor for *Sustainable Operations, Production and Operations Management Journal*.

Joe can be contacted at joe.blackburn@owen.vanderbilt.edu, at the Owen Graduate School of Management, Vanderbilt University.

ANIKÓ CSEPREGI

Lost in knowledge sharing: possible lessons and implications for middle managers and their organisations[1][2]

Knowledge sharing plays an essential role in the success of organisations. The success, or failure, of knowledge sharing activity depends on how the individuals and / or groups involved feel about the knowledge sharing process itself and about one another (Smith 2005). This article defines knowledge sharing as a two-way process—imparting and receiving of knowledge—between two or more parties. The information thus shared can be knowledge personal to the parties involved in the process—knowledge found in people's own minds, in other words—or indirect knowledge—knowledge of and contained in relevant sources of information (such as paper documents and electronic documents and databases, for example). Knowledge sharing can be simultaneous, when the parties involved in the process are all present, or consecutive, when the parties make their knowledge explicit. The knowledge sharing process is of mutual benefit to the parties involved. In addition, this article defines middle managers as being those employees who work below the top management of the organisation—the chief executive officer (CEO)

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[2] This article is based on the author's 2011 PhD thesis on *The Knowledge Sharing and Competences of Middle Managers* and on her wider research activities within the Strategic Management Research Group (SMRG) at the Department of Management (Faculty of Business and Economics, University of Pannonia) (see Gaál et al. 2012, for example). For financial support received at various stages in her overall research, the author is extremely grateful to the Department of Management (Faculty of Business Administration, University of Pannonia), the ALCOA Foundation, the 'Közösen a Jövő Munkahelyeiért' Alapítvány ('Together for Future Workplaces' Foundation), and TÁMOP-4.2.2-08/1/2008-0018-Élhetőbb környezet, egészségesebb ember; Bioinnováció és zöld technológiák kutatása a Pannon Egyetemen (Better Environment, Healthier People; Bio-innovation and Green Technology Research at the University of Pannonia). For contributing to the betterment of this article with their helpful comments, the author is extremely thankful to Dr. Lajos Szabó (PhD supervisor), Prof. Zoltán Gaál, and Dr. Nóra Obermayer-Kovács.

and / or top managers—and who are responsible for and work with employees hierarchically lower than themselves. Characteristic mainly of medium- and large-size enterprises, middle managers play a significant role in vertical organisational communication and influence horizontal knowledge sharing within the organisation. This article presents part of the results of a study conducted among middle managers in Hungary, highlighting how the individual characteristics of middle managers can influence the maturity of their knowledge sharing. 'Maturity of knowledge sharing' is defined by two dimensions—'availability' and 'usefulness of knowledge'—and two directions—middle manager–middle manager and middle manager–subordinate. 'Availability' is the extent to which the middle managers studied here, their subordinates, as well as other middle managers are willing to spend time helping one another and sharing their knowledge when necessary. 'Usefulness of knowledge' refers to whether the middle managers studied here, their subordinates, as well as other middle managers possess the necessary knowledge—and to its usefulness for others. This article investigates why and in what areas maturity of knowledge sharing differs, covering differences in age, length of service, and field of activity. In addition, this article suggests ways of enhancing middle managers' maturity of knowledge sharing—ways of bringing all middle managers' maturity of knowledge sharing to at least the level of the most mature, thus allowing for the wider creation and improvement of the overall organisational knowledge.

Research background

In 2007, the Strategic Management Research Group (SMRG) at the Department of Management, Faculty of Business and Economics, University of Pannonia in Hungary decided to study knowledge sharing among middle managers and the middle managers' vertical / downward and horizontal / lateral relationships (see, for example, Csepregi 2011; Gaál et al. 2012). Studies of middle managers date back to at least the 1970s, when, according to Chandler (1977), middle managers were concerned exclusively with the supervision of lower hierarchical levels. Nowadays, however, a large body of literature discusses their role in other areas.

There has not been a universally accepted definition of middle managers, in the recent literature. Bower (1986: 297–8), for example, stated that middle managers 'are in a position to judge whether issues are being considered in the proper context'. Uyterhoeven (1989: 136) argued that middle managers are 'responsible for a particular business unit at the intermediate level of the corporate hierarchy'. Ireland (1992: 18) described middle managers as employees who work between an organisation's top-level and first-level managers, integrating 'the intentions of top-level managers with the day-to-day operational realities experienced by first-level

managers'. Regarding their position in the organisation, Staehle and Schirmer (1992: 70) emphasised that middle managers are 'employees who have at least two hierarchical levels under them and all staff employees with responsibility for managing personnel'. This article defines middle managers as being those employees who work below the top management of the organisation—the CEO and / or top managers—and who are responsible for and work with employees hierarchically lower than themselves. This definition entails that research on middle managers should focus on medium- and large-size enterprises.

Previous studies focused exclusively either on middle manager–subordinate relationships (Crouch and Yetton 1988; Xin and Pelled 2003; Glasø and Einarsen 2006) or on middle manager–top manager relationships (Schilit 1987; Nonaka 1988; Dutton et al. 1997; Pappas, Flaherty, and Wooldridge 2003). However, Kaplan (1984: 38) pointed out that such vertical relationships also extend to the superior's superior and the subordinates' subordinates. Moreover, he argued, middle managers are engaged in horizontal / lateral relationships—with peers, other middle managers' superiors and subordinates, as well as professionals in other organisations, not only in vertical relationships. Such multidirectional relationships were also identified by Uyterhoeven (1989: 137)—'the middle manager wears three hats in fulfilling the general management role', as a subordinate, as a superior, and as an equal, having to manage relationships upwards when they take orders, downwards when they give orders, and laterally when they relate to peers.

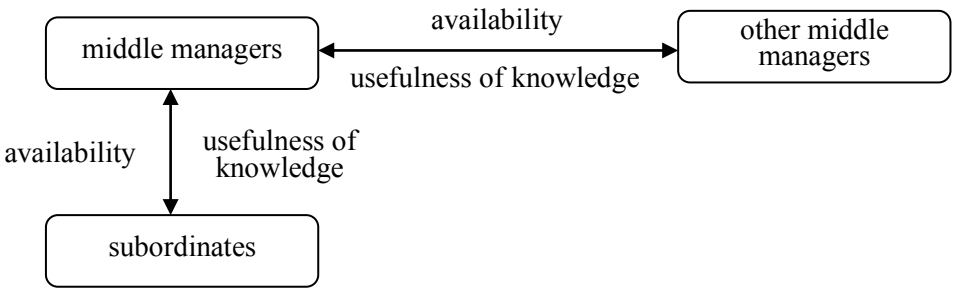

Figure 1: Maturity of knowledge sharing: dimensions and directions

Recognising this multidirectionality, the SMRG study into middle manager knowledge sharing investigated both vertical and horizontal relationships, within as well as between different organisational units. The study did not investigate the leadership function, where only the middle manager–subordinate relationships would have been examined. Instead, it concentrated on the knowledge sharing function, especially on its maturity. As illustrated in Figure 1, 'maturity of knowledge sharing' refers to the level of knowledge sharing development and is

defined by two dimensions—'availability' and 'usefulness of knowledge'—and two directions—middle manager–middle manager and middle manager–subordinate. 'Availability' is the extent to which the middle managers studied here, their subordinates, as well as other middle managers are willing to spend time helping one another and sharing their knowledge when necessary. 'Usefulness of knowledge' refers to whether the middle managers studied here, their subordinates, as well as other middle managers possess the necessary knowledge—and to its usefulness for others.

Maturity of knowledge sharing	Components			
	1	2	3	4
usefulness of other middle managers' knowledge to focal middle managers	**.899**	.101	.168	.105
usefulness of focal middle managers' knowledge to other middle managers	**.823**	.018	.156	.274
availability of subordinates to focal middle managers	.092	**.858**	.222	.127
availability of focal middle managers to subordinates	.033	**.854**	.175	.213
availability of other middle managers to focal middle managers	.238	.181	**.858**	.047
availability of focal middle managers to other middle managers	.104	.240	**.833**	.222
usefulness of focal middle managers' knowledge to subordinates	.094	.209	.124	**.874**
usefulness of subordinates' knowledge to focal middle managers	.340	.146	.132	**.756**

Extraction method: principal component analysis.
Rotation method: Varimax with Kaiser normalisation.
Rotation converged in six iterations.

Table 1: The rotated component matrix for middle managers' maturity of knowledge sharing

Investigation of maturity of knowledge sharing in middle manager–middle manager and middle manager–subordinate relationships used principal component analysis and revealed the following dimensions (see Table 1):

1. For middle manager–middle manager availability, focal middle managers' availability for other middle managers and other middle managers' availability for focal middle managers.

2. For middle manager–subordinate availability, focal middle managers' availability for their subordinates and their subordinates' availability for focal middle managers.
3. For middle manager–middle manager usefulness of knowledge, focal middle managers' usefulness of knowledge to other middle managers and other middle managers' usefulness of knowledge to focal middle managers.
4. For middle manager–subordinate usefulness of knowledge, focal middle managers' usefulness of knowledge to their subordinates and their subordinates' usefulness of knowledge to focal middle managers.

The higher the values of these dimensions, the higher the maturity of knowledge sharing. However, the SMRG study aimed neither to create a dimension index nor to differentiate among levels of maturity of knowledge sharing. Instead, it aimed to reveal those individual characteristics that result in differences within dimensions, creating (at least) two dimension groups, one characterised by 'the most favourable results' (higher maturity of knowledge sharing) and the other by 'the least favourable results' (lower maturity of knowledge sharing).

Research methodology

The average number of registered middle- and large-size enterprises in Hungary was 5,780, between 2007 and 2010 (KSH 2010). Four thousand such enterprises covering a wide range of economic sectors were selected randomly, for the SMRG study, and were sent cover letters and questionnaires (see Csepregi 2011: 209–16 (Appendix 2)), by post or electronically, with the request to be filled in by at least one middle manager. In addition, an electronic version of the questionnaire was created on LimeSurvey, an Online Survey Tool, and a website was established, to allow participants in the study to access further information about the research. The website address was highlighted on the questionnaire.

Between 2007 and 2010, 400 completed questionnaires were returned from middle managers in manufacturing / production, maintenance, logistics, finance / accountancy / controlling, quality management, human resources (HR), project management, commerce / purchase / sale / marketing, and research and development (R&D) (see Table 2, p. 72). The organisations they represented were in commerce, building trade, processing, logistics / warehousing, mining, telecommunications, agriculture, tourism / catering, education, government, healthcare / social support, estate agency, financial intercession, information technology (IT), electricity / gas / fume / water supply, and other economic sectors (see Table 3, p. 72)—and were involved either only in production activity, or mainly in production activity, or mainly in service activity, or only in service activity (see Table 4, p. 73).

Fields of activity	Middle managers	
	Numbers	Percentages
manufacturing / production	48	12
maintenance	52	13
logistics	32	8
finance / accountancy / controlling	40	10
quality management	16	4
human resources (HR)	56	14
project management	32	8
commerce / purchase / sale / marketing	68	17
research and development (R&D)	56	14
Total	**400**	**100**

Table 2: Middle managers' fields of activity

Economic sectors	Middle managers' organisations	
	Numbers	Percentages
commerce	44	11
building trade	28	7
processing	72	18
logistics / warehousing	32	8
mining	16	4
telecommunications	17	4
agriculture	15	4
tourism / catering	12	3
education	15	4
government	17	4
healthcare / social support	15	4
estate agency	16	4
financial intercession	12	3
information technology (IT)	17	4
electricity / gas / fume / water supply	20	5
other	52	13
Total	**400**	**100**

Table 3: The economic sectors of middle managers' organisations

In terms of type of enterprise ownership, the organisations the middle managers represented were fully national and privately owned, fully national and state

owned, with a national majority and privately owned, with a national majority and state owned, fully foreign, and with a foreign majority (see Table 5).

Types of activity	Middle managers' organisations	
	Numbers	Percentages
only in production	112	28
mainly in production	132	33
mainly in service	72	18
only in service	84	21
Total	**400**	**100**

Table 4: The types of activity of middle managers' organisations

Types of enterprise ownership	Middle managers' organisations	
	Numbers	Percentages
fully national and privately owned	144	36
fully national and state owned	56	14
with a national majority and privately owned	36	9
with a national majority and state owned	32	8
fully foreign	104	26
with a foreign majority	28	7
Total	**400**	**100**

Table 5: The types of enterprise ownership of middle managers' organisations

Research findings

The SMRG study focused on two directions of investigation—middle manager–subordinate and middle manager–middle manager—vis-à-vis maturity of knowledge sharing defined through availability and usefulness of knowledge. The focal middle managers' individual characteristics investigated in this study included their functional area, their length of service in their respective organisations, and their age. To ease raw data handling and the interpretation of findings, the middle managers' functional areas were divided with the use of decision tree analysis into 'soft' (HR, project management, commerce / purchase / sale / marketing, and R&D) and 'hard' (manufacturing / production, maintenance, logistics, quality management, and finance / accountancy / controlling) (see Csepregi 2011: 111–12 (Table 42), 208 (Appendix 1)). With regards to the length

of service in their respective organisations, two main groups of middle managers were identified, with less than three years and with more than three years of service. With respect to their age, two other groups of middle managers were identified, younger than 35 years old and older than 35 years old.

Middle manager–subordinate availability

Decision tree analysis was used to reveal the classes of middle manager–subordinate availability (see Figure 2, p. 75), analysis of variance was applied to differentiate the classes with most and least favourable results (see Table 6, p. 75), and post hoc test (with LSD test) was conducted to reveal the significant differences between the most-most and the least-least favourable results (see Table 7, p. 76). The SMRG study revealed that only two of the three individual characteristics investigated influence middle manager–subordinate availability. The level of relevance of these two characteristics is also important. The study showed that middle managers who had worked in their organisations for more than three years, and in 'soft' functional areas, were the most available for their subordinates. The same finding was also found valid for their subordinates (see Csepregi 2011: 93–6 (3.5.3 Results)). The explanation was twofold. First, length of service in their respective organisations resulted in reciprocal middle manager–subordinate trust based on familiarity with each other. Second, length of service in their respective organisations and functional areas resulted in enhanced experience and knowledge.

In contrast, the SMRG study showed that middle managers who had worked in their organisations for less than three years, and in 'hard' functional areas, were the least available for their subordinates. The same finding was also found valid for their subordinates. The explanation was threefold. First, trust based on familiarity with one another had not had time to develop between middle managers and their subordinates Second, middle managers had not had time to familiarise themselves with their respective organisations and functional areas. Consequently, they were less available for their subordinates than they would have been otherwise. Third, quantitative targets and their realisation dominated 'hard'—more than they did 'soft'—functional areas. They were considered generally accepted and known by subordinates, which was not always the case. As a result, middle managers were failing to perceive the need to be available for their subordinates and they were less available for them than they would have been otherwise. By default, subordinates were less available for their middle managers than they would have been if the middle managers had been available for them—not least because they had to find solutions to problems without their middle managers' collaboration.

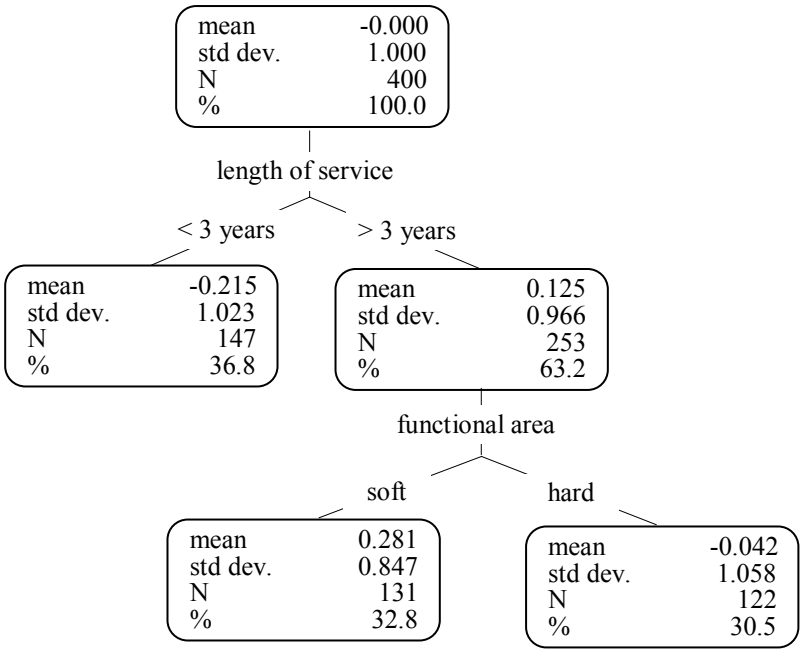

Figure 2: Classes of middle manager–subordinate availability based on individual characteristics

Middle managers' individual characteristics		**Effects on middle manager–subordinate availability**
functional area	'hard'	least favourable
	'soft'	most favourable
length of service (in years)	under 3	least favourable
	over 3	most favourable
age (in years)	under 35	n/a
	over 35	

Table 6: The effects of middle managers' individual characteristics on middle manager–subordinate availability

Middle manager–subordinate usefulness of knowledge

The SMRG study revealed that only two of the three individual characteristics investigated influence middle manager–subordinate usefulness of knowledge. The level of relevance of these two characteristics is also important. The study showed

that the knowledge of middle managers who had worked in their respective organisations for more than three years, and who were more than 35 years old, was the most useful for their subordinates. The same finding was also found valid for their subordinates. The explanation was twofold. First, length of service in their respective organisations resulted in enhanced experience and knowledge of the organisation and their particular functional area—and enhanced acceptance / respect from subordinates. Second, age, especially if combined with length of service, also led to enhanced acceptance / respect from subordinates. Prior to this study, other Hungarian researchers had reached similar conclusions. For example, Bakacsi et al. (2002) studied the Hungarian propensity for high power distance and paternalistic leadership style (see Hofstede 2001). Therefore, higher regard for older rather than younger middle managers is not surprising—most of these middle managers were born in a paternalistic regime (Pintér 2007).

Multiple comparisons						
Dependent variable: middle manager–subordinate availability (functional area and length of service in the middle manager's organisation)						
I	J	I-J	Std. error	Sig.	Confidence interval: 95%	
					Lower bound	Upper bound
least-least 'hard' < 3 years	most-most 'soft' > 3 years	-.60637711*	.14086537	**.000**	-.8833146	-.3294397

* The mean difference is significant at the 0.05 level.

Table 7: The LSD test of the least-least and most-most favourable results

In contrast, the SMRG study showed that the knowledge of middle managers who had worked in their respective organisations for less than three years, and who were less than 35 years old, was the least useful for their subordinates. The same finding was also found valid for their subordinates. The explanation was threefold. First, middle managers who had worked for less than three years in their respective organisations had insufficient experience of coordinating and communicating with their subordinates. Second, middle managers who had worked for less than three years in their respective organisations had insufficient experience of their functional areas. In addition, third, the first two explanations were even more relevant for middle managers less than 35 years old—in Hungary, older middle managers are more accepted / respected than younger middle managers (Pintér 2007). The author's interviews of middle managers revealed that knowledge shared by young middle managers is usually problem-specific and of short-term relevance. Young middle managers (especially young middle managers who had worked for less than three years in their respective organisations) may force their

expertise (knowledge acquired through education and experience gained earlier in their careers) onto their subordinates and meet with resistance, particularly if there is a clash of organisational cultures. No matter how useful in itself, knowledge sharing only becomes useful with time—the time it takes middle managers to develop adequate relationships with their subordinates.

Middle manager–middle manager availability and usefulness of knowledge

The SMRG study revealed that only two of the three individual characteristics investigated influence middle manager–middle manager availability. The level of relevance of these two characteristics is also important. The study showed that middle managers who had worked primarily in 'soft' functional areas, and for more than three years, were most available for other middle managers. The same finding was also found valid for other middle managers. The explanation was twofold. The first explanation lay with the highly interactive nature of 'soft' functional areas, as well as with the other middle managers' need to keep up-to-date with what goes on in their organisations. Teamwork—and the ability to work as part of a team—played an important role, relationship orientation was dominant, and good relationships with other middle managers were significant. The second explanation stemmed from middle managers acquiring knowledge and understanding of one another, and of their organisations, with time.

In contrast, the SMRG study showed that middle managers who had worked primarily in 'hard' functional areas, and for less than three years, were least available for other middle managers. The same finding was also found valid for other middle managers. The explanation was twofold. First, middle managers in 'hard' functional areas are characterised by low levels of interaction—they rely on rules and regulations and are task oriented, and individual work and responsibility dominate. Consequently, middle managers in 'hard' functional areas may seem less open, less friendly, and less available than middle managers in 'soft' functional areas. Second, middle managers who had worked for less than three years for their respective organisations may be viewed by other middle managers as unaware of the goals of the organisation and as lacking in adequate experience—an understandable, but misleading, attitude, since middle managers new to the organisation may bring rich, relevant expertise from elsewhere.

The SMRG study revealed no significant differences between the middle managers' usefulness of knowledge in 'soft' and 'hard' functional areas. However, the study also showed that the knowledge of middle managers who had worked for more—rather than less—than three years in their respective organisations was considered more useful by other middle managers. The same finding was also found valid for other middle managers. Length of service in the organisation

(knowledge and understanding of the organisation, in other words) mattered, not age—alongside, of course, earning the trust of other middle managers.

Possible lessons

Middle managers who had been working for less than three years in a 'hard' functional area, and who are less than 35 years old, are characterised by low levels of maturity of knowledge sharing. Although other middle managers, subordinates, as well as superiors contribute to its improvement, the onus for maturity of knowledge sharing enhancement through patience and openness lies with the middle managers themselves. Patience is required because the study showed that length of service is decisive both in availability and in usefulness of knowledge, vis-à-vis both subordinates and other middle managers. Openness is required to counteract the rigidities intrinsic to 'hard' functional areas—the remaining of this article suggests ways in which this can be achieved through trust development, learning, teamwork and self-improvement, training, and competence development.

Trust development

Being open and allowing time for interaction with others may lead to the development of trust. Frequent interactions, personal contact, and socialising among individuals are just a few advices that could be followed to encourage trust building (Arino, De la Torre, and Ring 2001; Child 2001). To promote intensive conversation, cooperation, and knowledge sharing, opportunities have to be created to develop trust levels sufficient for enabling cooperation and knowledge sharing, and resulting in higher productivity (Chami and Fullenkamp 2002; Kaser and Miles 2002). Besides increasing productivity, trust in a workplace had been shown to have a strong effect on job satisfaction, stress, and organisational commitment (Kramer 1999; Levin and Cross 2004).

However, trust and the willingness to share knowledge may differ, depending upon the nature of the personal interactions among individuals (Feldman and Lynch 1988). As an example, the relationship between trust and the willingness to share knowledge can be different for those with whom someone has agreeable personal interactions than for those with whom these personal interactions are rather difficult (Holste and Fields 2010). Knowing this, other solutions should be found for building trust with those with whom interactions may be a bit challenging.

Knowledge of the parties involved in numerous interactions with others leads to a certain level of trustworthiness, which, as a specific form of trust, is called 'knowledge-based trust' (Jones and George 1998). Before entering any

relationship, these parties weigh the opportunities that they can gain from trusting each other against the potential risks that may occur. The parties might stop believing in the benefits of the relationship, if it does not yield the expected results, which may reduce the willingness of building a higher trust level or may lead to a breakdown in trust (Jones and George 1998). Middle managers cannot fully follow this behaviour. This does not mean that middle managers should trust everybody, but always weighing the opportunities is not a solution either.

McAllister (1995) identified two types of trust, 'cognition-based trust' and 'affect-based trust'. Trust is cognition-based when 'we cognitively choose whom we will trust in which respects and under which circumstances, and we base the choice on what we take to be "good reasons", constituting evidence of trustworthiness' (Lewis and Weigert 1985: 970). Affect-based trust relies on the emotional ties that link individuals and that include feelings of friendship, love, or care (Lewis and Weigert 1985; McAllister 1995). Without affect-based trust, the sharing of tacit knowledge is low (Holste and Fields 2010). Nonetheless, although the importance of affect-based trust is undeniable, cognition-based trust dominates for middle managers in medium- and large-size enterprises.

Learning

Being open and allowing time for interaction with others may also lead to learning. Middle managers may learn from other middle managers, subordinates, as well as superiors. Moreover, the learning process is not necessarily one-sided. Despite the relative youth of those under discussion (less than 35 years old), middle managers may contribute to learning with their own expertise (knowledge acquired through education and experience gained earlier in their careers, which, in cases, may have been quite intense).

Teamwork and self-improvement

Being open and allowing time for interaction with others facilitates teamwork, and may ultimately lead to self-improvements in middle managers. Launching an organisational development, an organisational shaping, or a knowledge management programme, for example, would require selecting middle managers and apportioning middle manager roles. Middle managers' wide variety of backgrounds should be regarded as a network of knowledge, and as an asset leading to self-improvements in less experienced middle managers. The network knowledge contains several generations of middle managers (ranging from slightly experienced, through reasonably well experienced, to highly experienced), but centres on the older (more than 35 years old), highly experienced middle managers, characterised by high levels of maturity of knowledge sharing.

Training

In-house training by middle managers in 'soft' functional areas may be highly beneficial for middle managers in 'hard' functional areas. Sharing best 'soft' functional area practices, as well as sharing day-to-day experiences, may induce middle managers in 'hard' functional areas into being open and allowing time for interaction with others. In-house training by reasonably well experienced and highly experienced middle managers may also be highly beneficial for middle managers in 'hard' functional areas, through sharing of expertise and of knowledge of the organisation itself. Subordinates of middle managers in 'hard' functional areas may benefit too from such training, directly or indirectly.

Competence development

Maturity of knowledge sharing entails certain competences which, in turn, entail matching middle managers with their middle managerial positions. Assessment centres may contribute to securing this match, and project management may also benefit from such an approach.

The SMRG study used principal component analysis to reveal these competences (see Tables 8a, p. 81, and 8b, p. 82). For all of these competences to be highly developed would be extremely unusual. However, middle managers whose competences do not meet requirements—but whose technical expertise, for example, does—can always receive relevant training. Knowing that the organisation thus invests in their long-term future, being open, and allowing time for interaction with others can only facilitate the acquisition of competences leading to high levels of maturity of knowledge sharing.

In order, for example, to develop their ability to combine technical expertise with creativity, middle managers' methodological competences need to be investigated and, where necessary, enhanced. There are two types of methodological competences: competences important in thought processes (logical thinking, systematising ability, analytical ability, and system analysis ability) and competences important in work processes (awareness of organisational goals, result orientation, and practical comprehension of tasks). Systematising ability and system analysis ability allows middle managers to contribute knowledge to the systems of their organisations. Middle managers have to integrate information / knowledge into their functional areas, departments, or groups and to apply it into practice. Analytical ability makes processing and using such information / knowledge possible. Through logical thinking, middle managers can take necessary knowledge out of the wider knowledge set and process and share this knowledge relevantly, in order to fulfil effectively the organisational goals

assigned to them. Practical comprehension of tasks and awareness of and identification with organisational goals allow middle managers to interpret and transpose knowledge into practice.

Competence	Component						
	1	2	3	4	5	6	7
ability to initiate a relationship	**.736**	.000	.070	.102	.020	.158	.183
ability to maintain a relationship	**.729**	-.032	.040	.139	.018	.223	.134
empathy	**.682**	.119	.115	.220	.201	-.081	-.033
ability to provide feedback	**.588**	.048	.187	.297	.010	.044	.230
objectivity	**.489**	.084	.157	.031	.234	.148	.100
international work experience	.078	**.934**	.120	.062	.000	.003	.018
international education	.070	**.892**	.133	.050	.051	.056	.040
work experience in international surroundings	.006	**.843**	.219	.143	.042	.012	-.029
work experience in other types of organisations	.038	.181	**.818**	.094	-.000	.018	.129
work experience in other specialised fields	.182	.111	**.706**	.103	.249	.001	.036
experience gained by individual interest	.265	.058	**.692**	.079	.094	-.007	-.040
work experience in similar organisations	-.003	.169	**.676**	.024	.011	.119	.261

Extraction method: principal component analysis.
Rotation method: Varimax with Kaiser normalisation.
Rotation converged in seven iterations.

Table 8a: The rotated component matrix for middle managers' competences

Knowledge sharing facilitates such processes, both in effort and financially, though social competences for communication and social competences for co-operation. Social competences for communication (ability to understand, ability to summarise, and ability to explain) and for co-operation (ability to initiate a relationship, ability to maintain a relationship, objectivity, ability to provide feedback, and empathy) secure efficient as well as effective knowledge sharing processes. The ability to summarise, for example, allows middle managers to share

only the most relevant knowledge with others—the result of prior selection of knowledge facilitated by their ability to understand. The ability to explain, to take another example, allows middle managers to share knowledge in a manner that is understandable and perceivable by the targeted audience.

Competence	Component						
	1	2	3	4	5	6	7
systematising ability	.060	.088	.047	**.733**	.116	.000	.175
analytical ability	.190	.088	.149	**.731**	.035	.184	.027
logical thinking	.262	.027	-.013	**.667**	.226	.115	.052
system analysis ability	.156	.086	.116	**.608**	.006	.214	.221
ability to undertake tasks	.080	.016	.012	.216	**.806**	.199	.090
ability to manage stress	.076	.044	.192	.076	**.792**	.024	.042
stamina	.198	.021	.076	.047	**.707**	.217	.235
result-orientation	.053	.014	.072	.101	.202	**.826**	.027
organisational goal awareness	.218	.131	-.085	.075	.094	**.704**	.126
practical comprehension of tasks	.133	-.079	.125	.286	.093	**.607**	-.007
ability to understand	.178	-.038	.086	.075	.036	.087	**.814**
ability to explain	.106	.013	.159	.123	.109	.130	**.653**
ability to summarise	.141	.046	.046	.189	.167	-.084	**.641**

Extraction method: principal component analysis.
Rotation method: Varimax with Kaiser normalisation.
Rotation converged in seven iterations.

Table 8b: The rotated component matrix for middle managers' competences (continued)

There are three other types of competences that facilitate knowledge sharing: personal, professional, and international. Personal competences refer to stamina, ability to manage stress, and ability to undertake tasks. Professional competences

refer to experiences gained by individual interest, including in other specialised fields, at similar or other types of organisations. By gaining such experiences, middle managers may acquire a wide range of information and knowledge in various fields. Professional competences help and shorten middle managers' integration into their organisation, as well as the probation time and the time taken by acquiring the communication jargon specific to that organisation. International competences refer to expertise gained from working and / or studying overseas and / or in international surroundings. International competences facilitate the transfer of current best practices from overseas organisations to nationally owned enterprises, for example, where they are either unknown of or simply not used. International competences are indispensable in organisations with either direct international links, through overseas operations, or with indirect international links, through international partnerships.

As this section shows, there are many types of competences, and the list of competences is very long. Matching middle managers with their managerial positions entails figuring out what specific competences actually need to be nurtured and how.

Implications

Maturity of knowledge sharing varies with middle managers' individual characteristics discussed in this article, while organisations facilitate its enhancement, in order to develop organisational knowledge. Nonaka and Takeuchi (1995: 13) pointed out that 'the organization cannot create knowledge on its own without the initiative of the individual and the interaction that takes place within the group'. They also stressed that organisational knowledge creation has its roots in individuals' tacit knowledge and that it 'should be understood as a process that organizationally amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization' (Nonaka and Takeuchi 1995: 59). The creation of organisational knowledge was explained as follows: 'for tacit knowledge to be communicated and shared within the organization, it has to be converted into words or numbers that anyone can understand. It is precisely during this time this conversion takes place–from tacit to explicit, and, as we shall see, back again into tacit–that organizational knowledge is created (Nonaka and Takeuchi 1995: 9).

Since the creation of organisational knowledge is constituted by interactions, one of the most important management tasks is to encourage these interactions (the sharing of knowledge) occurring among employees. Sharing individual knowledge plays a major part in organisational activity—this, is considered, helps both individuals and organisation to grow (Spender 1996; Teece 1998; Kearns and

Lederer 2003). The reason why knowledge sharing within an organisation is so important is reinforced by Dunford (2000: 296) too: 'much of the key knowledge is held by individuals unless there is some structure to retain it within the organizational memory'. However, if individual knowledge is not shared or cannot be shared in an effective way within the organisation, then, the knowledge may vanish or may have limited effect on the organisational effectiveness and the organisational knowledge base (Bhatt 2002; Chou et al. 2007).

Conclusions

The SMRG study conducted between 2007 and 2010 showed why there are differences among middle managers' maturity of knowledge sharing, and where these differences appear (for full details of the study, see Csepregi 2011). The study focused on adult middle managers (over 18 years old) who worked for more than a day in either 'soft' or 'hard' functional areas in medium- or large-size enterprises operating in Hungary. Four hundred middle managers participated in the study, and the enterprises they represented covered both production and services. Regarding type of ownership, these enterprises were fully national and privately or state owned, with a national majority and privately or state owned, or fully foreign or with a foreign majority.

The SMRG study revealed that there are significant differences in the middle managers' maturity of knowledge sharing, defined through availability and knowledge sharing, both with regard to subordinates and to other middle managers. Similar findings were also found valid for subordinates' and other middle managers' maturity of knowledge sharing. The relevance of age, length of service, and functional area was investigated vis-à-vis availability and usefulness of knowledge sharing—all these individual characteristics were found relevant, albeit not together, not at the same time.

Middle managers who had been working for less than three years in a 'hard' functional area, and who were less than 35 years old, were characterised by low levels of maturity of knowledge sharing, both with regard to subordinates and to other middle managers. This article advised middle managers patience (to reach the length of service necessary to allow availability and usefulness of knowledge) and openness (to counteract the rigidities intrinsic to 'hard' functional areas). This article suggested possible lessons for these middle managers, and possible remedial actions involving not only the middle managers themselves but also subordinates, other middle managers, and the wider organisation: trust development, learning, teamwork and self-improvement, training, and competence development. Both middle managers and their organisations stand to gain from learning these lessons and from applying these actions, through enhanced middle manager maturity of

knowledge sharing and enhanced overall organisational knowledge. Knowledge sharing is a win-win deal for everybody.

References

Arino, A., De la Torre, J., and Ring, P. S. (2001). 'Relational Quality: Managing Trust in Corporate Alliances', in *California Management Review*, 44/1: 109–31.

Bakacsi, Gy., Takács, S., Karácsonyi, A., and Imrek, V. (2002). 'Eastern European Cluster: Tradition and Transition', in *Journal of World Business*, 37/1: 69–80.

Bhatt, G. D. (2002). 'Management Strategies for Individual Knowledge and Organizational Knowledge', in *Journal of Knowledge Management*, 6/1: 31–9.

Bower, J. L. (1986). *Managing the Resource Allocation Process*. Boston, MA: Harvard Business School Press.

Chami, R. and Fullenkamp, C. (2002). 'Trust and Efficiency', in *Journal of Banking and Finance*, 26/9: 1785–809.

Chandler, A. D. (1977). *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Harvard University Press.

Child, J. (2001). 'Trust: The Fundamental Bond in Global Collaboration', in *Organizational Dynamics*, 29/4: 274–88.

Chou, T. C., Chang, P. L., Cheng, Y. P., and Tsai, C. T. (2007). 'A Path Model Linking Organizational Knowledge Attributes, Information Processing Capabilities, and Perceived Usability', in *Information and Management*, 44/4: 408–17.

Crouch, A. and Yetton, P. (1988). 'Manager–Subordinate Dyads: Relationships among Task and Social Contact, Manager Friendliness and Subordinate Performance in Management Groups', in *Organizational Behavior and Human Decision Processes*, 41/1: 65–82.

Csepregi, A. (2011). *The Knowledge Sharing and Competences of Middle Managers* (PhD thesis), at http://konyvtar.uni-pannon.hu/doktori/2011/Csepregi_Aniko_Csilla_dissertation.pdf (accessed 18 November 2012). Veszprém: Doctoral School of Management Sciences and Business Administration, University of Pannonia.

Dunford, R. (2000). 'Key Challenges in the Search for the Effective Management of Knowledge in Management Consulting Firms', in *Journal of Knowledge Management*, 4/4: 295–302.

Dutton, J. E., Ashford, S. J., O'Neill, R. M., Hayes, E., and Wierba, E. E. (1997). 'Reading the Wind: How Middle Managers Assess the Context for Selling Issues to Top Managers', in *Strategic Management Journal*, 185: 407–25.

Feldman, J. M. and Lynch, J. G. (1988). 'Self-generated Validity and Other Effects of Measurement on Belief Attitude, Intention, and Behaviour', in *Journal of Applied Psychology*, 73/3: 421–35.

Gaál, Z., Szabó, L., Obermayer-Kovács, N. Csepregi, A. (2012). 'Middle Managers' Maturity of Knowledge Sharing: Investigation of Midlle Managers Working at Medium- and Large-sized Enterprises', in *The Electronic Journal of Knowledge Management*, 10/1: 26–38.

Glasø, L. and Einarsen, S. (2006). 'Experienced Affects in Leader–Subordinate Relationships', in *Scandinavian Journal of Management*, 22/1: 49–73.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviours, Institutions, and Organizations across Nations*. London: Sage Publications.

Holste, J. S. and Fields, D. (2010). 'Trust and Tacit Knowledge Sharing and Use', in *Journal of Knowledge Management*, 14/1: 128–40.

Ireland, R. (1992). 'Corporate Culture Is Best Conveyed by Mid-level Managers', in *Baylor Business Review*, 10/1 (Spring): 18–19.

Jones, G. R. and George, J. M. (1998). 'The Experience and Evolution of Trust: Implications for Cooperation and Teamwork', in *The Academy of Management Review*, 23/3: 531–46.

Kaplan, R. E. (1984). 'Trade Routes: The Manager's Network of Relationships', in *Organizational Dynamics*, 12/4: 37–52.

Kaser, P. and Miles, M. (2002). 'Understanding Knowledge Activist's Successes and Failures', in *Long Range Planning*, 35: 9–28.

Kearns, G. S. and Lederer, A. L. (2003). 'A Resource-based View of Strategic IT Alignment: How Knowledge Sharing Creates Competitive Advantage', in *Decision Sciences*, 34/1: 1–29.

Kramer, R. M. (1999). 'Trust and Distrust: Emerging Questions, Enduring Questions', in *Annual Review of Psychology*, 50: 569–98.

KSH (Központi Statisztikai Hivatal (Hungarian Central Statistical Office)) (2010). *Hungarian Central Statistical Office*, at http://www.ksh.hu (accessed 31 December 2010).

Levin, D. Z. and Cross, R. (2004). 'The Strength of Weak Ties You Can Trust: The Mediating Role of Trust in Effective Knowledge Transfer', in *Management Science*, 50: 1477–90.

Lewis, J. D. and Weigert, A. (1985). 'Trust as a Social Reality', in *Social Forces*, 63/4: 967–85.

McAllister, D. J. (1995). 'Affect- and Cognition-based Trust as Foundations for Interpersonal Cooperation in Organizations', in *Academy of Management Journal*, 38/1: 24–59.

Nonaka, I. (1988). 'Towards Middle Up/Down Management: Accelerating Information Creation', in *Sloan Management Review*, 29/Spring: 9–18.

Nonaka, I. and Takeuchi, H. (1995). *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.

Pappas, J. M., Flaherty, K. E., and Wooldridge, B. (2003). 'Achieving Strategic Consensus in the Hospital Setting: A Middle Management Perspective', in *Hospital Topics*, 81/1 (Winter): 15–22.

Pintér, I. (2007). 'Új utakon az andragógia', in *Tudásmenedzsment*, 8/2: 3–10, at http://www.feek.pte.hu/tudasmenedzsment/full/82szam.pdf (accessed on 15 December 2010).

Schilit, W. K. (1987). 'An Examination of the Influence of Middle-level Managers in Formulating and Implementing Strategic Decisions', in *Journal of Management Studies*, 24/3: 271–93.

Smith, P. A. C. (2005). 'Knowledge Sharing and Strategic Capital: The Importance and Identification of Opinion Leaders', in *The Learning Organization*, 12/6: 563–74.

Spender, J. C. (1996). 'Making Knowledge the Basis of a Dynamic Theory of the Firm', in *Strategic Management Journal*, 17/Winter: 45–62.

Staehle, W. and Schirmer, F. (1992). 'Lower-level and Middle-level Managers as the Recipients and Actors of Human Resource Management', in *International Studies of Management and Organization*, 22/1: 67–89.

Teece, D. J. (1998). 'Capturing Value from Knowledge Assets: The New Economy, Markets for Know-how, and Intangible Assets', in *California Management Review*, 40/3: 55–79.

Uyterhoeven, H. (1989). 'General Managers in the Middle', in *Harvard Business Review*, 67/5: 136–45.

Xin, K. R. and Pelled, L. H. (2003). 'Supervisor–Subordinate Conflict and Perceptions of Leadership Behavior: A Field Study', in *The Leadership Quarterly*, 14/1: 25–40.

Anikó Csepregi is Assistant Professor at the Department of Management, Faculty of Business and Economics, University of Pannonia. She teaches Project Planning and Control, at graduate level, and Management and Project Management, at undergraduate level, and she supervises both graduate and undergraduate dissertations.

Anikó completed her Bachelor of Business Administration at the College of Finance and Accounting, Budapest Business School in 2004 and her MSc in Economics at the Faculty of Economics, University of Pannonia in 2006. She undertook doctoral studies and research with the Doctoral School of Management Sciences and Business Administration, University of Pannonia, where she was supervised by Dr. Lajos Szabó. For her thesis on *The Knowledge Sharing and Competences of Middle Managers*, Anikó was awarded a PhD degree by the University of Pannonia in 2011.

Anikó's research interests are knowledge management, knowledge sharing, and competence management. She has presented several papers at conferences in Hungary and overseas, and she has authored and co-authored several articles in these areas. Anikó serves on the editorial boards of two specialist journals, *Knowledge Management Research and Practice* (*KMRP*) and *Management and Marketing*, and on the Committee for the European Conference on Knowledge Management. She is also a mini track leader for the International Conference on Business Excellence. In addition, she has been an active member of the Strategic Management Research Group (SMRG), Faculty of Business and Economics, University of Pannonia, where she has been involved in European Union-funded projects. For the excellence of her research, Anikó has received financial support from the Department of Management, Faculty of Business Administration, University of Pannonia; the ALCOA Foundation; the 'Közösen a Jövő Munkahelyeiért' Alapítvány ('Together for Future Workplaces' Foundation); and TÁMOP-4.2.2-08/1/2008-0018-Élhetőbb környezet, egészségesebb ember; Bioinnováció és zöld technológiák kutatása a Pannon Egyetemen (Better Environment, Healthier People; Bio-innovation and Green Technology Research at the University of Pannonia).

Anikó can be contacted at csepregia@gtk.uni-pannon.hu, at the Department of Management, Faculty of Business and Economics, University of Pannonia.

NÓRA KISS

Crisis?! What Crisis?! Conversations with the management of Herend Porcelain Manufactory Ltd[12]

For generations of Hungarians, and of customers worldwide, the name 'Herend' has signified timeless elegance and beauty embodied in luxury fine porcelain. The Herend Porcelain Manufactory Ltd[3] craftsmen and craftswomen weave the values of traditional arts and crafts in over sixteen thousand shapes and four thousand patterns. Despite such highly skilled craft, the luxury porcelain market has been narrowing, over the years, and the global economic crisis has had severe impacts on porcelain manufacturers worldwide, including on Herend. On this unpromising backdrop, unlike most other manufacturers of luxury porcelain, Herend has actually improved its performance. This article stems from the author's internship with the manufactory in June–July 2011 and from her MSc dissertation on the manufactory's organisational culture (Kiss 2012), and sets to explain this counterintuitive state of affairs by looking into Herend's long and convoluted history, through documentary evidence, and into its increasingly complex present, through conversations with the management.

Consumer habits have changed, over the years—and alongside the effects of the global economic crisis. Luxury substitute products have appeared, adding an increasing number of untraditional competitors to the competition traditional in the luxury porcelain market. In the last ten years, for example, the German luxury porcelain market halved. Moreover, ever since 2008, Meissen, Herend's foremost competitor, has been heavily affected by the global economic crisis. Up to ten other large German manufacturers have had to close down altogether. Other, smaller European manufacturers such as the Austrian Augarten, the German

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[3] Herendi Porcelánmanufaktúra Zrt., in Hungarian.

Ludwigsburg, Nymphenburg, and KPM, and the French Sèvres have shrunk, operating from only a handful of boutique shops.

At the same time, according to Dr. Attila Simon (2011), its Chief Executive Officer (CEO), Herend Porcelain Manufactory Ltd 'was again profitable in 2010 and achieved its best results in nine years, exceeding its own business plan and expectations. No other porcelain manufactory achieved similar figures. Furthermore, based on number of employees and export markets, we can safely say that Herend is the largest porcelain manufactory of the world.'[4]

With significant profits achieved in spite of an unfavourable foreign exchange market, the year 2011 was even more successful than 2010. Profit before tax rose by 10 per cent, in comparison, and domestic and foreign turnovers both increased. Herend paid 10 per cent dividends to its owners. In addition, a new, special brand outlet was established at Liszt Ferenc International Airport in Budapest, Hungary. The current (November 2012) financial indicators are equally promising, pointing towards further highest performance in recent years.

To understand its present and, possibly, its future too, the next section, based on Balla (2003), Szelényi et al. (2004), and Herend (2012b; 2012c), examines the manufactory's distant and recent past.

A manufactory 186 years young

The beginnings of Herend Porcelain Manufactory Ltd go as far back as 1826, when the forerunner of the manufactory was founded by Vince Stingl (1796–1851?). Vince Stingl was a ceramist with knowledge of porcelain manufacturing and problems of financial liquidity. Mór Fischer, the next owner, was set on modernisation and expansion, and the manufactory became a porcelain factory in 1842 (see Illustration 1, p. 91).

A fire in 1843 led to changes in the owner's business philosophy. The manufactory started to produce porcelain which had formerly been manufactured by famous German, French, Italian, and Austrian factories such as Meissen, Sèvres, Capodimonte, and Vienna. Sales increased with consumer demand—and lack of competition.

This new, artistic direction was very successful not only in Hungary but also overseas. Herend won its first gold medal at the 1846 Industrial Art Exhibition in Pest, and the 1851 Great Exhibition in London brought it international recognition—Queen Victoria ordered a dinner set there, with a butterfly and floral pattern which has born her name ever since, and which continues to be in demand nowadays, all over the world. Herend's international recognition continued to

[4] Translated from Hungarian.

grow with the 1853 International Trade Fair in New York and the top prize at the 1855 World Fair in Paris. Ming, Esterházy, and many other well-known patterns were created during this period. They often bore the names of the wealthy customers for whom they were initially created, as a sign of respect, from the manufactory, but also as a marketing tool, for the manufactory—an astute arrangement, mutually beneficial.

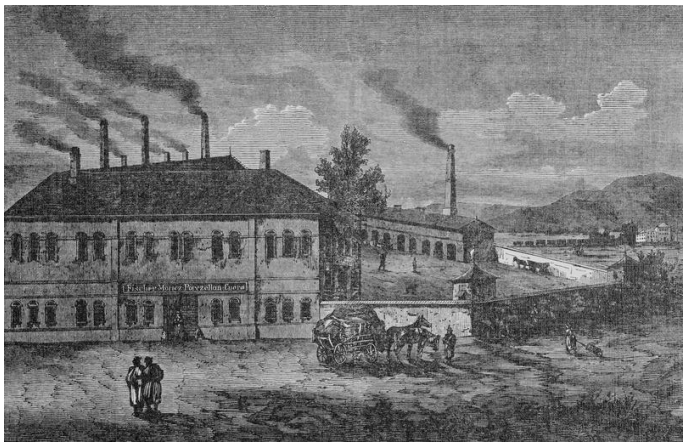

Illustration 1: Mór Fisher's porcelain factory before 1876
Source: Herend (2012c), courtesy of Herend Porcelain Manufactory Ltd

With strong industrialisation and numerous new factories sweeping away the old guild system, Herend, the pride of the Hungarian industrial development, almost came to a complete holt in 1873—mechanisation rendered Herend's traditional manufacturing methods obsolete. Herend's success at the 1873 World Fair in Vienna could not prevent the manufactory's bankruptcy the year after. Some of the factors which contributed to the manufactory's severe decline—such as the economic depression, globally, and the lack of government support, nationally—were outside its powers. However, some others were well within its powers. Initially of a very great help, Fisher's artistic inclinations and preoccupations ultimately stood in the way of sound business judgement.

Fischer retired in 1876 and left the manufactory to his two sons. The Fischer brothers gave up their father's artistic line and focused on lower cost, and lower quality, products. Intriguingly, success failed to follow. Faced with constant liquidity problems, the Fisher brothers finally sold the manufactory to the state in 1884. Soon after, the state sold it to a public limited company. To increase profitability, the new management made an attempt at diversification and started to produce stoneware and earthenware. Again, intriguingly, success failed to follow. After one more attempt at domestic arts and crafts, the manufactory finally closed down in 1896.

Jenő Farkasházy Fischer (1863–1926), Mór Fischer's grandson, took over his grandfather's legacy, purchased Herend in 1896, and returned to an artistic

direction. The manufactory started to produce to order as well as to regain its reputation, nationally and at international trade fairs. Unfortunately, the manufactory was hit by the porcelain industrial crisis, in 1907, and, just a few years later, alongside everybody else, by World War I. Most manufactory employees were on the front, the demand for porcelain was low, the sales were down, and the manufactory hardly produced anything at all. The Austro-Hungarian Monarchy dissolved at the end of World War I, Hungary lost two-thirds of its territory, and Herend a sizeable part of its national market. Jenő Farkasházy Fischer transformed the manufactory into a stock company in 1923. At the peak of its economic difficulties, Herend was operating with only 23 employees.

Out of the devastation left behind by World War I and its aftermath, new lower-middle and middle classes emerged, soon recognised as valuable consumer markets by Herend's management. New lines, most notably of figurines, were introduced for these new markets in the 1930s. The number of employees rose, and reached 450 by the end of the 1930s. In addition, Herend acquired international recognition, once again. However, with the advent of World War II, success was relatively short-lived, and Herend became isolated from its export markets as well as from its import markets for raw materials.

After the socialist nationalisation of 1948, Herend recovered. Various developments were accompanied by changes in the management culture and by economic and artistic independence. The manufactory resorted to the strengths and energies embedded in its own past. The forms and patterns of old, including the famous Herend figurines, were given a new lease of life. At the same time, the search for new ways of doing things was restarted and the interest for modernisation renewed. As a result, Herend's artists were able to experiment with new ideas and create new masterworks. While harmonising tradition and modernity at Herend has always been challenging, more often than not, it seems, it has also been the key to success. The next section looks closely at Herend's present.

The manufactory today

The manufactory was privatised, in 1989, and a new ownership structure was created, based on Anglo-Saxon principles. To attract and retain highly skilled staff, Herend offered company share ownership to its employees, under the XLIV Act of 1992 on Employee Ownership Programme[5] (MRP). Distribution of shares began in 1995—75 per cent of the shares are owned by employees, now, and 25

[5] *1992. évi XLI:. Törvény a Munkavállalói Részvénytulajdonosi Programról*, in Hungarian.

per cent by the Hungarian state. Of the 75 per cent shares owned by employees, 50 per cent are owned directly by them and 25 per cent indirectly, through the MRP established in 1992 to ensure a circle of member-owners among the prevailing employees of the company. Employees may retain their shares, on leaving the company (through retirement, for example), or they may sell them to MRP. Employees may also inherit shares, but if the inheritors do not work for the manufactory, then the shares are repurchased by MRP.

Illustration 2: Herend Porcelain Manufactory in 2012
Source: Herend (2012c), courtesy of Herend Porcelain Manufactory Ltd

Due to favourable market conditions, the manufactory grew steadily, after the implementation of the new ownership structure, and the financial loan Herend took in order to buy the shares from the Hungarian state in the first instance was repaid swiftly. The 1990s brought Herend a series of major achievements in the form of new, modern buildings (see Illustration 2) and technology—including the Porcelánium, a museum and mini factory highly successful with visitors to the area. The events of 11 September 2001 put an abrupt stop to this growth. In the words of **Mr. László Szesztay**, the manufactory's Commercial Director,

'*the US market and the buying habits of well-off customers elsewhere overseas started to change, after 2001, as if in shock . The luxury porcelain market had been narrowing anyway, up to that point in time, due to social changes and changes in people's dining habits. The low-design consequence of modernisation had become increasingly popular, in Western Europe, and a real threat for Herend's intricate, rococo and baroque styles. Furthermore, changes in dining habits, such as the advent of fast food chains, and hectic lifestyles have ousted the traditional family meal from people's lives, and do not favour the luxury porcelain industry. Further narrowing of the market may also be caused by the increasing number of substitute consumer articles.*'[6]

[6] All the interviews in this article were carried out in and translated from Hungarian.

Exclusive holidays and expensive jewellery, to name just two examples, are attractive alternative options for costumers with disposable incomes—in the current economic environment, the options have become that much broader, and the market that much more dictatorial. Again, in the words of **Mr. László Szesztay**,

'*the events of 11 September 2001 affected the entire world, not just us, and we had to rethink much of what we did. Tourists' habits started to change—people did no longer dare to travel by airplane, and well-off customers preferred cruise ships. We realised that some previously very important markets linked in with tourism—some markets in the Caribbean Islands, for example—would be lost in a couple of months.*'

While market trends were changing, and the market demand for Herend products was dropping, the manufactory's production rate was left unchanged, and a considerable amount of stock was accumulated fast. Distribution too collapsed with the changed market circumstances, and employee-related costs rose. The staff numbers had not been a problem before.

It was on this background that Mr. József Kovács retired as CEO and a new management team took over in 2003. In the words of **Dr. Zoltán Gaál**, the manufactory's Chairman of the Board of Directors,

'*the new CEO started with huge enthusiasm, but also, in my opinion, with no experience and little understanding of the luxury porcelain industry. Methods expedient in telecommunications and information technology simply did not work here. The new management team appointed by the newly appointed CEO were equally inexperienced in the luxury porcelain industry. Besides, they seemed unable to take advantage of the local knowledge and social capital of their predecessors. Our employees were working hard, they were doing what was expected of them, they were not responsible for the situation that developed. Difficulties could not be overcome, we were moving in the wrong direction, and we kept going down.*'

With the manufactory's very survival at stake, in 2005, Herend's Board of Directors had to take the difficult decision of appointing a new CEO, in the person of Dr. Attila Simon.

The cornerstones of his countercyclical strategy of stabilisation were market retention, cost reduction, increased effectiveness, harmonisation between demand and supply, advertisement of the manufactory aspects of the production process, and maintenance of the ownership structure. The new CEO set himself to implement this strategy in three stages. The first stage was a thorough analysis of the manufactory's situation. The second stage was the establishment of long-term goals and short- to medium-term priorities. To this end, three-year general and functional programmes were defined, with extensive communication central to all these programmes—unknown, secret strategies are difficult if not outright

impossible to follow, and employees' trust and support was a critical success factor. The third stage consisted of measuring progress against targets, while taking into account the manufactory's internal culture and external environment. Field force analysis was employed to distinguish potentially beneficial influences from potentially harmful influences, including in terms of source and degree of influence.

Dr. Attila Simon called this normative management method 'the grand coalition'. The members of this grand coalition were the Hungarian State Privatisation Company[7] (ÁPV), MRP, the directors, the management, the works council, and the employees' trade union. This grand coalition was based on negotiation, cooperation, and sincerity—trust, morality, ethics, and honesty are all part of Herend's management culture.

The general programme

The general programme defined as part of the manufactory's strategy of stabilisation revolved around market retention, annual revenue stabilisation, and cost reduction. It required extensive examination and revision of activities which did not contribute directly to either production or sale. Outsourcing such activities became a distinct option. It also required rethinking the incentive system, to reflect the company performance—the wage system was analysed, and the social expenditure revised. With the Herend products as the manufactory's main strength, technology development and product quality became important parts of the general programme. Since rationalisation of the organisational structure can lead to increased flexibility and effectiveness, the number of directorial levels was rethought. Some aspects of employee share ownership and the manufactory's in-house training system were also revised.

This general programme generated aims and tasks for each of the five functional areas, financial, commercial, human resources, production, and quality assurance. To return the manufactory back to growth, each of these five areas had to implement their own functional programme. The next sections detail these functional programmes and present the views of the management with regard to the challenges they had faced, the measures they had taken, the results they had obtained, and the future challenges they envisage.

The finance programme

The Finance Department played a major role in returning Herend back to growth. To reduce costs and increase efficiency, the Finance Department had to

[7] Állami Privatizációs és Vagyonkezelő Rt., in Hungarian.

analyse and compare the planned and realised costs; analyse the upper limit of sales, as determined by demand, and the lower limit of sales, as determined by costs; and determine the breakeven point, so that the manufactory produces sufficiently to at least cover its costs (although costs depend not just on the volume of production but also on the volume of production experience). In addition, the Finance Department dealt with the control of investments, the revision of stock and customer payment conditions, the formation of the planning system, the uniformisation of the financial reporting system, the identification of currency exchange risks, the supervision of tenders, and the introduction of the Systems Applications and Products in Data Processing (SAP) software. **Dr. Melinda Hegedűs** was appointed as the manufactory's Finance Director back in 2005.

NK: What were the challenges the Finance Department faced in 2005?

MH: *The manufactory was in great difficulty then. The situation could be characterised as a financial and economic crisis.*

NK: What had caused these difficulties?

MH: *A severe drop in tourism led to a significant decline in demand, and trade decreased drastically, both domestically and internationally, after the fall of the Twin Towers in September 2001. A change in CEO resulted in a change of direction for the manufactory, in 2003, but the new direction proved impracticable. Credits had been accumulating, resulting in layoffs in 2005, and peaking in February 2006. We reached rock bottom, in February 2006, but we have been recuperating gradually ever since.*

NK: What measures did the Finance Department take to overcome these difficulties?

MH: *It was a very serious, very deep crisis—crisis management was our overall number one priority, and financial stabilisation was one of our main priorities. We needed to reduce our costs—so, we set about by rethinking every process, and by implementing very strict cost reduction measures. We achieved decreases in almost all types of cost. In addition, all managers knew what they had to do. I remember there was one goal at the time, for the directors, that the manufactory does not go bankrupt.*

NK: When did the manufactory recover from these difficulties?

MH: *It was a very gradual process. A large company such as Herend is like a big ship. Due to inertia, the ship continues to move towards an undesired destination, even after applying the brakes. I think we recovered from these difficulties when we repaid our loan to the last penny. At the beginning of 2007, if my memory serves me right.*

NK: How did the global economic crisis affect the manufactory?

MH: *We were in the middle of our crisis management process, in 2008, when the global economic crisis started. It hurt, but we were perfectly prepared. If the global economic crisis had begun in 2005 instead of 2008, perhaps we would have*

gone broke. Fortunately, however, we had already gained appropriate crisis management techniques, by 2008.

NK: Will the global economic crisis have any spillover effects on the manufactory?

MH: *It definitely will. We have all the techniques which enable us to handle it, but we are not out of the crisis yet. Of course, it will all depend on how deep the crisis will turn out to be.*

NK: Export represents the major part of the manufactory's sales. How will the manufactory handle the risk from exchange rate fluctuations?

MH: *We apply for forward exchange transactions, and we are in a much better position now than we used to be—we have significant savings, and we manage our savings in foreign currencies.*

NK: Now that the manufactory has reached financial stability, are there any new investment plans?

MH: *We are implementing new investment projects continuously, and there are new investments projects this year too. Our car fleet has been completely replaced; our production, distributor, and computer system has been developed; a new glazing machine is arriving in November* (2012)*; and there will be new control equipment for the kilns, which need regular maintenance.*

NK: Planning is very important to the manufactory. How does the manufactory monitor its planning activity?

MH: *The annual planning tasks and the realisation of plans are monitored regularly. Payment plans are made with the so-called rolling method—a planning method which requires continuous foresight based on financial and non-financial indicators, and which exceeds the confines of traditional annual planning. Our target is the rolling annual revenue plan. Fortunately, we have not had any causes for modifying our plans yet.*

NK: What do you think the biggest future challenge will be for the manufactory?

MH: *Market retention will be our biggest challenge. The global economy does not show signs of recovery yet—so, in the middle of a global economic crisis, market retention is the biggest challenge.*

The commercial programme

The effectiveness of the Commercial Department is central to the manufactory. The Commercial Department was concerned with market retention and revenue stabilisation as well as with looking for new partners and building new distribution channels—in turbulent economic environments, markets and partners alike may disappear. In addition, the Commercial Department had to prepare different action plans for different scenarios and different outcomes. Developing the store network

was part of the commercial programme and meant not just looking for new opportunities but also maintaining the existing network, with the help of good communication and the establishment of good partnerships. The commercial programme established a price level policy and determined the market pricing as well as effective incentives for those responsible with revenue generation. Diversification, another part of the commercial programme, required thorough analysis and the (re)building of the Herend brand through effective marketing based on effective communication channels and styles. With the manufactory having to balance consumer needs, on the one hand, with its own style creation function, on the other, the commercial department was instrumental in product development. Last but not least, the commercial department elaborated the manufactory's Internet policy. The Internet has opened new opportunities for those who can use the advantages of information technology effectively. It offers a platform for the manufactory's cultural mission, and advertising space as well as new sales and communication channels. The manufactory's Commercial Director is **Mr. László Szesztay**.

NK: What were the challenges the Commercial Department faced in 2005?

LS: *We always have one main challenge: to sell as much as possible. We also have to build stable markets and then retain them. The former management did not really face the problems—they chose a 'forward escape'. Their oversized market plans proved to be desires rather than well established solutions. In one and a half years, a huge amount of debt was accumulated. When the new CEO took over, the manufactory was close to bankruptcy.*

NK: How did your partners react to the manufactory's difficulties?

LS: *Our representatives were anxious, and they were enquiring about our business policy and about our next steps. Quite understandably, our partners whose activities relied primarily on Herend's activity were the most concerned.*

NK: How did the manufactory succeed to reassure partners and customers?

LS: *Through the appointment of a new CEO and a new management team. The new CEO even invited Mr. József Kovács back, for a while—Mr. Kovács had been our last CEO bar one. His return was a kind of token that the manufactory will continue to build upon Mr. Kovács' previous business policies. In addition, by putting an end to unrealistic initiatives, our actions served as ultimate reassuring evidence.*

NK: How did the global economic crisis affect the manufactory's commercial activities?

LS: *Our customers—our market—represent a very special segment within the luxury consumer market. Consequently, there is just an indirect connection between the global economic crisis and its impacts on the manufactory. An economic crisis in the US or Japan will have an effect on the manufactory, of course, but not directly.*

NK: Had the global economic crisis actually have a positive effect on the manufactory, through the elimination of competitors?

LS: *There was such a perception. In the last ten years, the German porcelain industry roughly halved, in terms of manufacturing and sales—of closer concern to us, the German porcelain retail trade almost halved. Up to ten porcelain manufactories closed. In addition, Meissen, our main rival, was affected badly by the global economic crisis and transferred its emphasis to jewellery, fashion, and furnishings. It may well follow that some retailers will turn away from Meissen, as a result, simply because they can no longer identify themselves with their new product lines. This may constitute an opportunity for us, but it is far too early to say one way or other—we simply do not know yet how the market has reacted to Meissen's new strategy.*

NK: How does the manufactory respond to changes in consumers' needs?

LS: *We want—and can—respond to changes in consumers' needs, but the manufactory must not follow the changes in consumption patterns blindly. The drastic changes in the German market constitute a perfect illustration. Twenty years ago, traditional, handcrafted porcelain played a significant role in German furnishings and dining habits. Nowadays, traditional, handcrafted porcelain does not seem to appeal to the younger, better-off generation. This has resulted in a decrease in the German porcelain market. When I joined the manufactory, back in 1985, Germany was our largest market, while the American market was just starting to rise for us. Twenty years later, we were losing important German and North European markets, because the manufactory was not following the changes in consumption patterns. However, while addressing change, we need to remain loyal to our traditions. Thanks to our traditional lines, there are several markets where our styles are very popular, and the US is one of them. In addition, we are hugely successful in Japan, where European history is appreciated and respected. Of course, we are 'rejuvenating' our product lines. We are rethinking traditional, well-known patterns such as Rothschild, Apponyi, and Victoria, for example. The Royal Garden pattern* (see Illustration 3)*—a low-key, pastel representation of the*

Illustration 3: The Royal Garden pattern, a result of product development
Source: Herened (2012a), courtesy of Herend Porcelain Manufactory Ltd

Victoria pattern—was only created last year, but it already proved a very successful product development. A Royal Garden dinner set was presented to Prince William and Princess Catherine on their wedding. As you may know, the Duke and Duchess of Cambridge did not generally accept wedding presents, but they did accept ours—Prince William had fond childhood memories of Herend porcelain. Their personal representative collected our wedding present from the Hungarian embassy in London.

NK: Have there been any changes in the manufactory's major market emphasis in recent years?

LS: *There have been, but, fortunately, with no major negative impacts. The US and Japan, our two largest markets, continue to give us stability. We experienced losses in the Scandinavian and German markets, but Scandinavia has never been one of our strong export markets. With its mixture of European and US consumption patterns, the UK remains a good European market for us. The UK's role as a business and tourism hub results in a varied customer base for us. Our customers there include not only native British but also Middle Eastern and Asian tourists and business people. Italy remains our third or fourth largest European market. Of our new market base, Russia was the country where we were very successful very fast. Other former member states of the former Soviet Union followed shortly after. At present, we are most successful in Azerbaijan, but Uzbekistan and Kazakhstan look encouraging too. Taiwan and Korea are also prosperous markets in Asia. China, where porcelain was first manufactured, has become an export market for us, in the last few years. The Arab states of the Middle East are interesting markets for us. Establishing traditional, stable representations there did not prove possible, but being commissioned one-off projects did. Once we started to understand the Arabian culture, we soon realised that well-off Arabian consumers prefer ordering either directly from us or through their favourite London-based interior design company. For them, Herend porcelain holds a value too intimate to see it on display even in the luxury stores available to the wealthy Arabian audience, and I do not think we could be paid a compliment better than this. We have especially good relationships with Oman, where we supply directly to the ministry responsible for the maintenance and provision of the Sultan's Palace.*

NK: How successful is the manufactory in Hungary?

LS: *Compared with previous years, this year we are very successful, not least because of our dedicated sales employees, but also because of a number of changes in our approach. The new brand store at Liszt Ferenc International Airport brought us good results, so far, and we survey our customers there, to understand their knowledge of the Herend brand. According to the data we have collected so far, it would appear that the new brand store at Liszt Ferenc International Airport is a good advertisement for us.*

NK: What do you think the biggest future challenge will be for the manufactory?

LS: *Harmonisation between the need to change with changes in consumption patterns, on the one hand, and the need to preserve our core values and traditional, rococo and baroque styles, on the other, will be the biggest future challenge for us.*

The human resources programme

The main task for the Human Resources Department was the efficient management of the labour force. Layoffs were inevitable, but the lawnmower approach was avoided. Dismissals were agreed upon after intensive consideration of market forecasts, technology developments, task systems, and efficiency increases. Early retirement became one viable solution, and a revision of activities helped to distinguish core activities from peripheral activities in order to facilitate outsourcing decisions. The Human Resources Department also had to deal with some financial aspects, such as share repurchasing, employer-granted loans, advances on salary, and the membership fund. Wages were revised and corrected, ceasing wage pressure and increasing the efficiency of the sliding wage scale. The elements and the levels of the manufactory's own social benefits system were also revised. Later on, and in conformity with the overall general plan, the Human Resources Department as well as the Quality Assurance Department ceased to belong at directorial level. The manufactory's Human Resources Manager is **Ms. Gyöngyi Pék**.

NK: What were the challenges the Human Resources Department faced in 2005?

GP: *The year 2005 was a very difficult year for us. We had sustained significant losses, and our primary concerns were cost reduction, loss minimisation, and the settlement of overcapacity. Layoffs, unfortunately, could not be avoided.*

NK: What were the reasons behind the drop in annual average numbers of employees shown in Table 1 (p. 102)?

GP: *Due to reductions in demand and internal inefficiencies, we were working at overcapacity, overproducing and accumulating a huge stock of products. The first wave of layoffs took place in 2005 and the second in the first quarter of 2007. Implementing shorter working hours also contributed to capacity reduction. It was all going reasonably well until the advent of the global economic crisis in 2008. Orders dropped even further, and employee numbers became a problem once again. Fortunately, however, we won two public tender opportunities at the right time for preventing further job losses. In addition, women were offered the opportunity to retire after forty years of service. Between eighty and one hundred*

people left us this way, in 2011, and harmony between orders and capacity was once again re-established.

Annual average number of employees at Herend Porcelain Manufactory Ltd							
Type of employee	**Year**						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
blue collar	1,053.2	877.5	773.1	729.0	708.5	697.2	619.8
white collar	290.9	242.2	218.8	205.2	200.6	196.8	180.1
retired	13.1	11.5	12.5	12.3	8.4	7.7	5.9

Table 1: The annual average numbers of employees at Herend Porcelain Manufactory Ltd between 2005 and 2011
Source: Courtesy of the Human Resources Department, Herend Porcelain Manufactory Ltd

NK: What does the future hold for the manufactory in terms of employee numbers?

GP: *We do not plan to increase our employee numbers, in the near future, because orders have not been increasing at such a rate as to justify such an increase. However, if orders pick up, then we can rely on latent extra capacity at least to an extent. For example, employees returning from maternity leave, currently on six hours a day contracts, could be employed on eight hours a day contracts. In addition, paid overtime is always a viable and flexible option to increase capacity.*

NK: What did the manufactory's employees think about these changes?

GP: *Not much, at the beginning. Let me give you an example. It occurred to us that, towards the end of the year, there were fewer tasks to carry out than earlier in the year—employee, and task, optimisation through working method transfer was the obvious, natural solution. It was a difficult changeover, but more and more employees recognised that, if there was not enough work for them in their area of expertise, there was enough work for them in other areas. In our company, employers and employees depend on one another to a large extent—employees may be highly skilled in one area, but may not be able to find work elsewhere easily. All in all, these changes were very successful.*

NK: People are employers and, at the same time, employees, at the manufactory. Are there any conflicts between these two capacities? Is one of them stronger than the other?

GP: *In our experience, the employee is the stronger of the two. As employers, people rely on yearly dividends. As employees, people have the security of a guaranteed monthly income. Employer-employees also have the security of a stable workplace.*

NK: Employee recruitment is key to the manufactory's future. What attracts the young generation to the manufactory's own vocational school?

GP: *We collaborate with the local primary school and we introduce seventh grade pupils to the secrets of porcelain manufacturing and painting as part of their curricular drawing course. In addition, we participate in an increasing number of career days at schools throughout the region. Up to ten young people enrolled in our vocational school both in 2010 and in 2011, and five enrolled this year. With changes in conditions and the restoration of the former vocational training, we hope to increase our student numbers again, next year. Our aim is to win over not only the current young generation, but many young generations to come.*

NK: What do you think the biggest future challenge will be for the manufactory?

GP: *Continuing to adjust to a rapidly changing environment, and harmonising continuous development with traditional manufacturing methods and values.*

The production and quality assurance programmes

The Production Department was expected to satisfy orders in accordance with the contractual obligations, on time and of the high quality standards expected by the manufactory's customers. To increase internal efficiency and improve quality, the production programme included support and reorganisation of technology and compliance with technology developments. Technology developments had to adjust to market requirements. In this context, the Production Department had to define investment goals and expectations, and had to keep investments and staff numbers under control. Just like the Human Resources Department, the Production Department too had to rethink its incentive system. The manufactory element of the production required revision and rationalisation of the process, to reinforce expertise and to comply with health standards, safety procedures, and environmental regulations. The manufactory had an independent Quality Assurance Department, and the quality assurance programme provided for the creation of a single quality control unit for both in-process and finished products, independent of production. Their further duties were reducing scrap costs, maintaining ISO specifications, and securing a professional relationship between technology and quality assurance. Herend quality means not just product quality but also appearance, orderliness, cleanness, discipline, regulation, and documentation. The manufactory's Production Director is **Dr. István Ködmön**.

NK: How does the manufactory determine the optimal production volume?

IK: *My colleagues and I had worked hard at determining this optimal production volume—this year in particular, requirements and possibilities are in harmony. Our work was preceded by working method transfers and employees learning new skills in areas other than their area of expertise in order to enhance*

capacity as and when required by the market. As a result, the manufactory did not have to dispense with its employees during the global economic crisis. On the contrary, the management's primary aim was to preserve its employees' jobs.

NK: Women took the opportunity to retire after 40 years of service. Was this disadvantageous for the Production Department?

IK: *We had several months at our disposal to prepare for this eventuality, for instance through working method transfers.*

NK: How did the global economic crisis affect the manufactory's production activity?

IK: *Our premium products may be classified into three categories. The global economic crisis did not affect two of these three categories, the most expensive and the least expensive. Only the demand for our medium-priced products was affected negatively by the global economic crisis. The situation has been stabilising ever since, but this was particularly the case in the years 2009 and 2010. To protect our employees' jobs, we were working to a very tight work schedule, at the time. Our operational culture had to become much more regulated, disciplined, and less tolerant. From a democratic leadership we had to turn into an autocratic leadership, to match the circumstances. Flexible working hours were no longer sustainable, in the Production Department. However, by July 2011, everything returned to normal. We are now confident that the manufactory will not be affected by spillover effects from the global economic crisis. With 50–60 export markets worldwide, the ripples of the global economic crisis cannot affect them all at one and the same time—a much better position to be in than if we had concentrated all our efforts in just one particular segment.*

NK: Have there been any perceptible changes in consumer demand?

IK: *Over the last ten years or so, we have witnessed an interesting trend: the demand for figurines has declined alongside changes in family patterns and home furnishings.*

NK: What determines product development?

IK: *Product development is the direct result of inputs from several sources. Firstly, inputs from wholesalers are paramount in markets such as the US and Japan, for example, where wholesalers have exclusive rights and expect intensive product development. Secondly, our own, internal needs and ideas are another source of inputs for product development. The results of a whole year's intensive, hard work are then presented at the Annual International Trade Fair in Frankfurt. Thirdly, the absolute pillar of product development is the individual needs, needs which my colleagues transform into ideas and then into new products.*

NK: By ignoring machine technology, is the manufactory at a competitive disadvantage?

IK: *In a way, indeed, it is more difficult to compete without the use of machine technology. However, the real value of—and demand for—our products lies in its*

handcraftsmanship. Intriguingly, the market—especially the Japanese market—does not tolerate the almost inevitable handicraft differences which give products individuality and uniqueness. Consequently, we had to develop our skills to the highest professional levels, manifest in consistent colours, sizes, and patterns. Since such products are made in relatively large numbers, this is a serious challenge.

NK: How do you secure the quality of your products?

IK: *Each and every one of our products goes through a multi-round quality control system. In-process controls are installed at different stages on the production line, to avoid further work on deficient pieces. Before its delivery to the customer, the finished product constitutes one of the key control points. We continue to improve this system. Over the last several years, we have overhauled the entire production process, production philosophy, and quality control system. As a result, we save about HUF 30–40 million (EUR 130,000, approximately) annually.*

NK: Does the traditional manufactory production system coexist easily with modern management sciences and techniques?

IK: *Of course. While respecting the past, we have to wink towards the future. Management's foremost challenge is to imagine the future of the manufactory based on the values of its past. If the manufactory wants to stay the same, it has to change day after day.*

NK: What do you think the biggest future challenge will be for the manufactory?

IK: *Maintaining harmony between commercial requirements and available capacity and strengthening our labour force. In so doing, we have to take into consideration the fact that some of the skills involved in the production process cannot be learned overnight—they may take several years to acquire at professional level. This is a major challenge for the management, and for the manufactory as a whole.*

The manufactory's future

The manufactory succeeded in implementing the overall, general plan and the five departmental plans. Its costs decreased by HUF 2 billion (EUR 7–7.5 million, approximately), compared with the year 2005. All bank loans were repaid, and the manufactory accumulated significant savings. Repurchase of shares also restarted. Indoor unemployment was wound up, due to proper labour force management, and incomes and social benefits went up again. Its annual revenue and profit before tax increased year by year. New markets were opened, and the volume of sales stabilised and, then, rose (see Table 2, p. 106). Net export turnover increased by 10

per cent in 2010 compared with 2009, and by a further 3 per cent in 2011 compared with the previous year. The figures for the net domestic turnover demonstrate that the manufactory is becoming more and more successful nationally as well as internationally—a remarkable achievement, considering the surrounding domestic economic difficulties. Recalling Mr. László Szesztay's words, this year (2012) may be more successful still.

Net annual turnover at Herend Porcelain Manufactory Ltd (million HUF)			
Type of net annual turnover	**Year**		
	2009	**2010**	**2011**
export	2,774	3,048	3,135
domestic	1,172	1,173	1,266

Table 2: The net annual export and domestic turnover at Herend Porcelain Manufactory Ltd between 2009 and 2011 (in million HUF)
Source: Courtesy of Herend Porcelain Manufactory Ltd

Nowadays, the manufactory maintains low levels of stock of its most popular products and produces on demand according to a pull production system. Efficiency gains can be deduced from developments throughout the manufactory. Despite the very tough times the manufactory went through, the Herend brand remains strong. To focus on its main activities, and following organisational restructuring, the manufactory retains three of the previously five directorial departments (Finance, Commercial, and Production). The grand coalition continues to exist—it helped the manufactory get over challenges, and it will remain a strong, positive force in the future. The manufactory's financial indicators continue to rise, and the manufactory preserves its market leader position in the luxury porcelain industry. The manufactory's Chairman of the Board of Directors, **Dr. Zoltán Gaál**, is very satisfied with the results.

NK: What was the primary task of the management newly appointed in 2005?

ZG: *The manufactory was in a very critical condition, in 2005, due to major financial losses and significant bank loans. 'With such huge debts, will the manufactory remain independent?' was the question in everyone's mind. This gem of a luxury porcelain manufactory became a target for takeover attacks. In addition, the state could sell its shares—the legislation allowed it, at the time. The newly appointed management had to overcome this situation fast. To steer the manufactory towards more hospitable waters, significant collaboration was required and, indeed, established, to fend off such attacks. It was a really hard period, with many injured parties, but retaining the ownership of the manufactory was at stake, alongside the manufactory remaining a stable workplace up to the*

year 2020 and beyond. By the way, with their loyal and hard-working people, the communities of Herend, Bánd, Márkó, and Szentgál, of which some are Swabian settlements, have won my respect and admiration. The changes necessary to overcome this situation could not have been implemented by force, without their cooperation and support. The manufactory is back in good hands, now, as well as on the right track.

NK: What does the Board of Directors do, and what are your duties as its Chairman?

ZG: *In my opinion, there is a good division of labour between management and the Board of Directors. The members of the Board of Directors do not intervene in affairs of operational management, but carry out strategic activities such as formulating goals, outlining possible pathways to the targets to be achieved, and performing strategic controls. To this end, we have a very good reporting system in place. Reports based on considerable analyses of data inform our decision making on a monthly, quarterly, and particularly half-yearly and yearly basis. I am particularly interested in efficiency indicators—how much net profit does a sales revenue figure of HUF 1 generate, for example, or in how much sales revenue does a wage figure of HUF 1 result. Efficiency indicators and financial ratios such as the capital intensity ratio show how competitive we are.*

NK: How is the manufactory doing now, and what do you think the future will hold for it?

ZG: *The manufactory is growing—this is an undeniable fact. Our wages increased to a level nationally respectable, dividends of 10 per cent were paid out in 2012, and we usually provide one-off grants too. All in all, we continue to climb, and we may climb even higher this year* (2012) *than we did in recent years. In the luxury porcelain industry, Herend is in a better position than both Meissen and Augarten. Of course, the countries' national economic environments influence our manufactory as well as anyone else. Therefore, for the manufactory to grow, first the economies have to grow.*

In a stable or slightly diminishing luxury porcelain industry, our manufactory can still find opportunities for expansion. I see opportunities in Russia and China, where the markets are particularly large but our stakes are particularly small—to respond to these opportunities, we have to invest. Diversification and new partnerships are also possible future directions for the manufactory. To avoid redundancies and to avoid loosening the manufactory definition, there are other, more convenient opportunities, such as investing in a press in order to improve the quality of our white goods—which is what we call our products before decoration by painting, but after burning and polishing. We will not move towards mass production—we want to remain a manufactory where beauty and handcraftsmanship are both integral parts of the definition. Changing our

organisational culture in order to enhance performance will be the manufactory's next challenge.

Dr. Attila Simon, the manufactory's incumbent CEO, believes that, by definition, a good quality status implies the existence of a better quality status, and that the manufactory's duty is to achieve it, through a realistic growth strategy. Future goals and possible ways to achieve these goals are defined by management and the Board of Directors in cooperation. The manufactory has a 3–7 year long-term strategy, annual business plans consisting of detailed programmes, and detailed departmental action plans containing concrete operational measures. Several management techniques are used in this thorough strategic planning: PESTEL analysis, Porter's analysis, resource analysis, comparative analysis, portfolio analysis, stakeholder analysis, and SWOT analysis. In addition, as evidence of continuous development, the manufactory has been applying lean management techniques, since 2007, when the production process was rationalised with assistance from the consultancy firm Hexolut. Following a thorough analysis, the concept of 'improving island' was developed and implemented. Stocks and accounting activities between different functional areas were reduced drastically, as a result. In addition, production efficiency was increased and classification mistakes during the quality control process were reduced. The production time was decreased drastically. Furthermore, a Kaizen list was put on display, to allow for the collection and implementation of employees' ideas and suggestions respectively (Hexolut 2012).

The future organisational philosophy of the manufactory consists of three elements, according to the manufactory's strategy: its environmental philosophy, its mission, and its achievable status. The environmental philosophy refers to maintaining Herend's manufactory status, its presence in the luxury porcelain market, and its current ownership structure. Herend is an inalienable brand as well as a Hungarian manufactory which rejects foreign capital. The mission refers to the manufactory's social and environmental responsibilities and to its openness to the outside world. The manufactory aims to establish an organisational environment where employees are flexible, loyal, action-oriented, skilled, committed to improving their competences, have salaries nationally competitive, and can envisage their future with the manufactory. The manufactory also aims to undertake the cultural mission of looking after and preserving the arts and crafts traditions and of educating the domestic and European markets to this effect. The manufactory has achieved its previously appointed status. The manufactory leads the luxury porcelain market, is profitable, is operating without any external capital, and is able to fulfil all the customer requirements. Among others, the Herend brand epitomises excellent product quality, customer service, and human and professional relations.

Conclusion

Is there a general recipe for all companies facing difficulties? Surely, there is not. Enterprises are all different. A recipe successful somewhere may be unsuccessful elsewhere. Nevertheless, there must be common recipe elements just as there are specific and unique ones. Hard work and persistence must be on any such recipe, for example. All in all, however, there is no general recipe, but Herend Porcelain Manufactory has found its own, unique success recipe. The manufactory is more prosperous now than it has been in many years, and the opportunities for future growth are numerous.

NK: What is the secret?

MH: *The product.*

LS: *Especially in a continuously changing world, a business policy loyal to the manufactory's core values and basic principles. High quality, wide range of products, and customer-friendly service are also important, but remaining loyal to traditional, handcrafted porcelain manufacturing is the most important of all.*

GP: *Local people, local knowledge. People's affection for both products and manufactory. The solidarity typical of this manufactory—the manufactory is about each and every one of its employees. A common goal, and trying to pull in the same direction. The CEO and the management sharing a common interest in maintaining the current ownership structure and the company's operation as a manufactory.*

IK: *If anybody unravels Herend's secret, the secret will then be lost. Herend's secret is just . . . Herend . . . .*

ZG: *Collaboration, hard work, and persistence in achieving the right goals. The CEO, his personality, and his exemplary behaviour.*

AS: *Commitment to handmade porcelain and manufactory production. High quality. Uniqueness. Preservation of values derived from the past. Faith in the revalorisation of porcelain. Strong product development activity. Balance of economic, social, and cultural aspects. Finally, as stated in our social mission, looking after and preserving domestic and European values as precious inheritance for future generations.*

Art at Herend is not just about exceptional porcelain but also about exceptional management. Without proper steering, the ship that Herend Manufactory Porcelain Ltd represents would still be in the eye of the storm. Just like the art of porcelain manufacturing, leadership is not just a discipline but also an art with its own complexities.

References

Balla, G. (2003). *Herend. A Herendi Porcelánmanufaktúra története* (*Herend: The History of Herend Porcelain Manufactory*). Budapest: Kossuth Könyvkiadó.

Herend (2012a). *Herendstore*, at http://www.herendstore.com/Herend-China-Royal-Garden-Dinner-Plate-p/hevict1-01524-0-00.htm (accessed 6 November 2012).

Herend (2012b). *Manufactory: History*, at http://herend.com/en/manufactory/history (accessed 3 October 2012).

Herend (2012c). *Manufactory: Then and Now*, at http://herend.com/en/manufactory/akkor-es-ma (accessed 6 November 2012).

Hexolut (2012). *Herendi Porcelánmanufaktúra Zrt.—Értékáram elemzés, javítósziget tervezése és bevezetése, fehéráru minőségellenőrzési folyamatok fejlesztése, égetési területek fejlesztése* (*Herend Porcelain Manufactory Ltd—Value Stream Analysis, Improving Island Planning and Implementation, Development of White Goods Quality Control Process, Development of Burning Areas*), at http://www.hexolut.hu/cegunk/referenciak/projektleirasok/herendi-porcelanmanufaktura-zrt (accessed 6 November 2012).

Kiss, N. (2012). *Melyik kikötőbe tart a Herendi hajó?* (*Which Port Does Herend's Ship Keep?*) (MSc dissertation). Veszprém: Department of Management, Faculty of Business and Economics, University of Pannonia.

Simon, A. (2011). *Aktuális: Hireink* (Current: News), at http://herend.com/hu/aktualis/hireink/reszletek/vezerigazgatoi-evertekelo (accessed 1 November 2012).

Szelényi, K., Vadas, J., and Varga, V. (2004). *Herend: Virágzó Manufaktúra az ezredfordulón* (*Herend: Blooming Manufactory at the Millennium*). Budapest: Magyar Képek Kiadó Veszprém.

Nóra Kiss was born in Szombathely, Hungary, where she studied at Nagy Lajos High School between 2003 and 2007.

In 2007, Nóra enrolled on the Human Resources Bachelor's Degree Programme at the Faculty of Economics, University of Pannonia in Veszprém, Hungary. She was awarded her BSc in 2010, for her dissertation *Measurement of the Effectiveness of Training*.

Between 2010 and 2012, Nóra studied on the Management and Leadership Master's Degree Programme, where she specialised in Human Resources Management and Organisational Development. In 2012, Nóra was awarded an MSc by the Faculty of Economics, University of Pannonia for her dissertation *Which Port Does Herend's Ship Keep?*, a study of the organisational culture at Herend Porcelain Manufactory Ltd. For her scholarly achievements, Nóra was presented with the Chamber Award of the Veszprém County Chamber of Commerce and Industry.

Nóra was a Human Resources Trainee with Yageo Europe Ltd, in 2008, and with General Motors Powertrain-Hungary Ltd, in 2009. More recently, in 2011, she was a Product Development Trainee with Herend Porcelain Manufactory Ltd. She is currently considering her employment options.

Nóra can be contacted at nora.kiss88@gmail.com.

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Dear Colleagues,

European Decision Sciences Institute
Fourth Annual Conference
Budapest, 16–19 June 2013

'Two countries separated by a common language!' Paraphrasing these famous words, the theme of the **Fourth Annual Conference of the European Decision Sciences Institute (EDSI)** highlights the importance of local contexts in a globally connected and, as such, increasingly standardised world. EDSI 2013 aims to analyse how global trends get embedded in local contexts and how the interactions between global and local forces take place. Hence, the Conference theme, **Common Disciplines that Separate Us: Local Contexts in Global Networks**.

Despite global trends, as scholars, we define our respective professional worlds very differently from one another: we prefer some journals to others, even when we publish papers on the very same topics; we follow different value systems, even when we judge something as assumingly straightforward as quality; and we join international professional organisations of obvious local flavours. The Decision Sciences Institute (DSI)—of which EDSI is its European chapter—embraces the duality of globally determined local contexts: DSI is a globally integrated professional association with an inclusive and cross-disciplinary philosophy.

EDSI 2013 will take place in Hungary in an inspiring environment of over one millennium of history and culture, counting from the year 1000 when St. Stephen, the country's first King of Hungary, was crowned. This very special event offers an extraordinary occasion for leading and budding scholars alike to meet and discuss new directions and trends, and provides a neutral platform for analysing issues of current interest.

On behalf of (E)DSI, I cordially invite you to the Conference—see you in Hungary in the summer of 2013!

Prof. Gyula Vastag
Conference Chair, University of Pannonia

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