



FINANCE &
MANAGEMENT
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MANAGER UPDATE

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A quarterly summary of topical management ideas

STRATEGY

JUST LIKE HOLLYWOOD,
NOBODY KNOWS
ANYTHING...



SUSTAINABILITY

REGULATION AND
REVERSE LOGISTICS

FINANCE

BEST PRACTICES IN
COST MANAGEMENT

ORGANISATION

SCENARIO PLANNING –
STATE OF THE ART

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Manager Update helps the general manager keep abreast of the latest articles in specialist management journals in a number of key fields, such as strategy and organisation, marketing, accounting and finance, and human resources management, plus other contemporary issues (see Foreword, right).

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FOREWORD**PEOPLE POWER**

*Emma Riddell, technical manager,
Finance & Management Faculty, ICAEW*

This issue's lead article 'Just like Hollywood, nobody knows anything...' struck a chord with me as it took me back to a previous role as financial controller of a TV and film production company. It didn't matter how wonderful we thought our new production was, or how good the preview ratings were, success was unpredictable. We all rushed in, the morning after transmission of a new TV production, to assess the viewing figures. What did the people out there really think?

As visiting professor at Henley Management College, Ian Turner discusses the wild unpredictability of success rates in the Hollywood film industry and how trying to determine the success criteria for films has been largely unsuccessful. Word of mouth is identified as the prime determinant of film success. Interestingly he further develops this by discussing how this 'winner takes all' characteristic is common to other businesses including the pharmaceutical industry.

Public perception can also be a key influence of a corporation's environmental and social policy. In the second article, Roger Mills, discusses how a focus on profits and growth in isolation is no longer acceptable; sustainability is playing an increasing role and can also make sound business sense. If this topic is relevant, look out for two articles coming soon in our monthly magazine *Finance & Management* which cover the practical application of sustainability policies and the Waste Electrical and Electronic Equipment (WEEE) directive.

Articles on best practice in cost management and the current status of scenario planning complete this issue, which I hope you will find an interesting read.

EMMA RIDDELL



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**JUST LIKE HOLLYWOOD,
NOBODY KNOWS ANYTHING...**

Ian Turner, managing director at Duke Corporate Education (Europe & Africa) and visiting professor at Henley Management College.

The Hollywood film industry has long been characterised by randomness, in that there seems to be no sustainable winning formula for success. Surprisingly, science-based industries such as pharmaceuticals resemble 'Hollywood economics' in their 'winner takes all' nature. This article discusses whether efforts towards success can affect the final outcome in such unpredictable markets, with examples from economist Paul Ormerod and 'The Shawshank Redemption'.

In a digital economy with the world of 'Web 2.0' ready to emerge, it is anybody's guess as to which enterprises will fail and which will thrive.

SUSTAINABILITY

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**SUSTAINABILITY, REGULATION
AND REVERSE LOGISTICS**

Roger Mills, professor of finance and accounting at Henley Management College.

In today's post-Enron, socially/environmentally-aware world, businesses are subject to greater transparency and accountability. In order to meet the needs of the present without compromising the future, it is vital to develop sustainability by:

- knowing the key aims of regulation such as the Waste Electrical and Electronic Equipment (WEEE) directive; and
- adopting reverse logistics to fight environmental degradation.

Innovative 'green' responses towards the challenge of sustainability should attempt to put 'people, planet and profit' in perspective.

FINANCE

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**IDENTIFYING BEST PRACTICES
IN COST MANAGEMENT**

Dr Giampiero Favato, a director of the Henley Centre for Value Improvement, and Roger Mills, professor of accounting and finance at Henley Management College.

When it comes to cost management processes, which are best practice and why is it important to avoid developing initiatives in isolation? The key points are that:

- various diagnostic models assessed include activity based costing (ABC), parametric cost analysis (PCA), price-led costing (PLC), design-to-cost (DTC) and cost as an independent variable (CAIV); and
- an integration framework for these management systems is essential, to clarify communication and strengthen links between entities.

Integrated systems reduce cost, risk and increase customer satisfaction.

ORGANISATION

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**SCENARIO PLANNING –
CURRENT STATE OF THE ART**

Bill Weinstein, professor of international business and director, the Henley Centre for Value Improvement.

The application of scenario planning as a response to uncertainty has exploded recently, yet is still underused by governments and businesses. Various developments show how it has progressed since its inauguration:

- in the 1960s, Royal Dutch Shell pushed out the boundaries of scenario thinking by using the real options tool; and
- it has recently expanded to include Sir Nicholas Stern's 2006 report on climate change and after-the-event verdicts on the occupation of Iraq.

It is important to clarify understanding of the word 'scenario' in order to advance its serious planning application.

JUST LIKE HOLLYWOOD, NOBODY KNOWS ANYTHING...

The wild unpredictability of success rates in the Hollywood film industry is, in fact, a model of the unpredictability of success in many other areas of business. **Ian Turner**, managing director at Duke Corporate Education (Europe & Africa) and visiting professor at Henley Management College, asks whether there is any one factor that creates success and examines what impact do efforts towards success have on the final outcome of any business or product.

In 1984 William Goldman, a successful screenwriter, published a personal view of the Hollywood film industry. Goldman, who produced screenplays for movies including 'Butch Cassidy and the Sundance Kid' and 'All the President's Men' concluded after many years of experience that nobody in the industry "knew anything" when it came to predicting whether a film project would be a rip-roaring success or abject failure. This was true at various stages of the film's development – when the project was being 'pitched', when the film was in production, when it had been subjected to a sneak preview and even when it had been released to the public. In fact, one retired studio executive admitted to Goldman: "If I had said yes to all the projects I turned down, and no to all the ones I took, it would have worked out about the same".¹

Unsurprisingly, Goldman's contention was hotly disputed within the film industry and in the succeeding two decades, many theories for successful movie formulae were devised by film executives: these included producing cheap films, only doing films over a certain budget,

ensuring the film had a bankable star or stars, betting on sequels or spin-offs, relying on original scripts etc. None of these formulae for success proved to be sustainable and many cost the proponents their jobs.

Twenty years after Goldman's book, Arthur De Vany² (an economics professor from the University of California) published the most detailed statistical analysis of 'Hollywood economics' to date. He concentrated on the period post the late 1950s when the old-style studio system was broken up for competition reasons. Stars were no longer contracted to studios and the studios' control over distribution channels was removed. As a result, producing a movie was no longer a vertically integrated operation driven by the whims or inspiration of powerful movie studio heads. The industry became a chaotic marketplace where independent producers pitched movie ideas to studio executives and, on the back of studio approval, would pull together a team of independent writers, directors, actors and stars to bring the project to fruition.

De Vany's conclusions from studying the Hollywood film industry (and indeed film industries around the world, for there appears to be very little difference in outcome), is that the industry is characterised by high degrees of randomness and unpredictability. In short: nobody knows anything. Far from exhibiting the bell shaped curve beloved of statisticians, the success rate in the movie industry exhibits a pattern that is much closer to the famous Pareto 80/20 rule. In the film industry, the winner very often takes it all as hit movies account for a disproportionate share of revenues. According to De Vany, 78% of movies lose money. Of the 22% that are profitable, 35% account for 80% of the total profit generated by the industry. Indeed, taken overall, less than 7% of the movies made in Hollywood accounted for 80% of the industry's total profits over a 10-year period.

Thus, de Vany concluded, anyone who claims the ability to predict success is seriously deluded. For, as Goldman pointed out, you could never tell at any stage of a film's production whether it was going to be successful or not. Even promoting films heavily will not ensure success, since 'consumer herding' – through vigorous promotion – rapidly gives way to 'consumer learning' through word of mouth. Word of mouth, it seems, is the prime determinant of film success; news often spreads virally in a non-linear fashion resulting in either massive success or

Less than 7% of the movies made in Hollywood accounted for 80% of the industry's profits over a 10-year period



Ian Turner, managing director at Duke Corporate Education (Europe & Africa) and visiting professor at Henley Management College

pitiful failure. The presence of stars will also not automatically guarantee a film's success, (although it may cushion against extreme losses). Yet, in what de Vany calls the "curse of the superstar", producers who end up paying too much for their stars can condemn a film to losses before it even gets off the ground.

Moreover, de Vany concludes that runs of success are most likely random patterns. A successful run of films, he says, is no more likely to be the result of good judgement and creative insight than a series of failures could be attributed to a studio losing its way or failing to grasp popular currents. Imagine for a moment, he explains, that movies were like breakfast cereals. Each time we visited the supermarket, we would find a huge new selection of cereals, most of which were unrecognisable from our previous trip. Most of the cereals on display would be totally neglected by consumers, while large crowds would concentrate at key points in the shopping aisle, eager to scoop up the most popular brands. Yet a few weeks later, on returning to the same store, even these brands may well have vanished from the shelves. The typical breakfast would therefore consist of a product we had never tried before and we may not even like and bought largely on the word-of-mouth recommendation of friends or reading about its reputation in a newspaper article on cereals.³

As the cost of film production and distribution has risen geometrically in recent years, the industry has changed from film factory to clearing house for intellectual property rights. So, whilst de Vany is correct in pointing out that most movies lose money at the box office, they typically go on to generate profits from the rights to sales on video/DVD rentals, cable TV and Home Box Office transmissions, often for many years and indeed decades after their initial release. Take, for example, the film 'The Shawshank Redemption'. A moderately successful film at the box office in 1993 when it was released, it had the misfortune of being released in a year when blockbusters like 'Forest Gump' swept the awards and garnered most of the plaudits. 'The Shawshank Redemption' therefore failed to make much initial headway. Subsequently though, word of mouth (such as that propagated on internet fan websites) led to it being one of the most popular and successful films of recent years.

Medical guesswork

You may now be congratulating yourself on your prudence and foresight in avoiding such an unpredictable and quixotic industry that bears few similarities with your own. Your relief could be premature, however. For, as de Vany has pointed out, the Hollywood film industry is by no means unique. It is really an extreme example of an information industry, which in common with other such industries like the music industry or even the pharmaceutical industry, has specific characteristics. For example, such industries are typically 'hits-driven' and dominated by extreme events like breakthrough drugs and blockbusting films. The pattern of success and failure in such industries tends to be skewed, with disproportionate rewards accruing to the most successful products. They are, in other words, 'winner takes all' type indus-

tries. They are also typically characterised by high upfront costs eg in production and/or research and development, and deferred income. The actual costs of producing the product, be they medicines or DVDs, are usually marginal. Derivatives and me-too products abound, like sequels in the film industry, to try to reduce perceived risk. In such environments, competition is volatile and changes in industry ranking are likely to be quite frequent. But surely, you may be thinking, in science-based industries like pharmaceuticals, success relies heavily on great research and development (R&D) and effective market research? Evidence-based decisions must surely prevail. In fact, as a recent report in *Business Week* reveals: 'Even today, with a high-tech healthcare system that costs the US nation \$2 trillion a year, there is little or no evidence that many widely used treatments and procedures actually work better than various cheaper alternatives.'⁴

Evidence about the efficacy and suitability of pharmaceutical products spreads virally amongst patients in much the same way information about films spreads amongst the potential audience. Clearly, the difference in the case of the pharmaceuticals is that most powerful medicines are prescription only and are thus prescribed for specific complaints by skilled and experienced medical practitioners? Not necessarily. In *Business Week's* exposé of the medical industry in the US, for example, it is claimed that only around 15% of the treatments that doctors prescribe for particular conditions are actually backed by hard scientific evidence.⁵

The tipping point

Regular readers of *Manager Update* will recall discussions in previous issues of how 'intelligent systems' – such as ecosystems in nature or industries and markets in business – develop and evolve through periods of stability and incremental growth, punctuated by radical transformational change. This disjuncture has been referred to variously as the 'inflection point', 'break point', 'punctuated equilibrium' and perhaps most successfully, in the public mind at least, in Malcolm Gladwell's 'The tipping point'.⁶

Gladwell's insight into how social phenomena evolve derives from the study of epidemiology. To him, many observable phenomena can be explained as social epidemics, which take off and grow exponentially once they reach the eponymous tipping point. How is it, though, that films like 'The Shawshank Redemption' or books with such downbeat titles as 'A short history of tractors in the Ukraine' or 'Special topics in calamity physics'⁷ become bestsellers whilst others, even from well-known authors fail to take off? Before a phenomenon can reach a 'tipping point' into wide-scale popularity, Gladwell says, it must first be championed by some key individuals – either people with extensive networks, or individuals who are extremely knowledgeable and derive enjoyment from advising others, or those whose natural charisma encourages others to imitate their behaviour.

The phenomenon itself, though, must also have what Gladwell refers to as the 'stickiness factor' – a difficult

concept to define, but one which implies that there must be some innate quality that attracts attention and engages people's enthusiasm. Finally, as Gladwell himself concedes, even with these factors in place, context and circumstance play an enormous role in determining the likely outcome. Nobody can predict with any degree of precision how events will turn out and these ultimately affect the public mood and conspire to turn popular attention either towards or away from cultural artefacts like books and films. As complexity theorists have long maintained, very small changes in underlying conditions can provoke massive changes in outcomes.

'The wisdom of crowds'

Despite the inherent unpredictability of markets, groups of individuals are capable of making intelligent and accurate judgements. Such judgements can, in fact, prove superior to those of so-called experts – at least that is the contention of James Surowiecki's book 'The wisdom of crowds.'⁸ According to this view, crowds are wiser because they are better at cognition, ie making judgements, co-ordination, or optimising movements and flows by judging how other people are likely to act or react, and co-operation, ie working together to form networks of trust without any need for overall central direction.

The author gives many examples of how people can effectively self-organise without central direction or state intervention. In contrast, the book also highlights situations where crowds are not likely to produce good decisions such as where, for example, the members of a group are too committed or not capable of reaching a truly independent view. 'The wisdom of crowds' provides important insight and in addition to the obvious applications to government, the principle can be applied by organisations to improve forecasts of market trends. However, whether taking strategic decisions by committee will improve a company's decision-making is open to some debate: in cases where management teams have worked together in the same organisation for a long time there is always the risk of 'group think', where consensus built on easy assumptions is apt to emerge.

Why most things fail

Failure is ubiquitous, according to economist Paul Ormerod.⁹ More than 99% of all species that have ever

existed on earth are now extinct, he says. Every year, on average more than 10% of companies in the United States disappear. Failure is thus a characteristic feature of our economy and it is not just in Hollywood that the phrase 'nobody knows anything' resonates. Many excellent companies have, for example, made massive mistakes – Wal-Mart lost millions of dollars and failed to transfer the recipe that had made it so successful in the US to Germany, forcing the company recently to withdraw. Dixon's group DSG quit the voice-over-internet market, a year after a high profile launch, claiming that the move had been premature.

Even the biggest and best are not immune. He quotes at length from an insider's view of Microsoft, pointing out that the first two versions of Windows had been miserable commercial failures and Microsoft had announced publicly that it was going to pull its support for Windows and promote IBM's OS/2 as the main PC operating system for the 1990s. Customers, however, decided differently, and when the third version of Windows was eventually launched to the public the massive take-up in the first six months convinced Microsoft to change its strategy. Ormerod retells a brilliant quote from a Microsoft insider. The impression was created, he wrote, "that the captains of industry should chart strategic courses steering their tanker carefully and gracefully through the straits. The view from inside, though, resembles more white water rafting. 'Oh my God huge rock dead ahead! Everyone to the left. NO, NO the other left!'"¹⁰

As Ormerod demonstrates, our ability to process information – and in particular to make sense of the many complex linkages involved in strategy – is severely limited, even with the power of the most powerful computers now available. Thus, in the game of chess, computers are able to analyse all possible situations only when there are a maximum of five pieces on the board at any one time. Any more and the possible permutations become too large to compute. Add to this the fact that chess is a game of two equal players, where the rules are well defined and the moves sequential (conditions which are greatly at variance with the reality of competitive situations in modern business) and it is easy to see why success and failure in business can sometimes appear to be random. The approach adopted by chess grand masters is instructive in this light: most top players apparently make rule of thumb decisions. Most of the time they attempt to use their skill and experience to consider a reasonable move, rather than computing all the possible permutations.

Ultimately, though, good or bad decisions can determine an organisation's fate. In seeking to uncover the laws that govern companies' survival and failure, Ormerod uncovers a principle that he terms the 'power law'. This rule would appear to account not just for patterns of corporate survival but indeed for the development of whole economies. As derived from survival studies of species in nature, the power law holds that extinctions fall away with the square of the size: ie periods of dramatically large incidences of extinction occur relatively infrequently. As he explains, the world is not completely turned upside down by the power

The Hollywood film industry, the music industry and even the pharmaceutical industry are 'winner takes all' types

law. Small events, most of the time, induce small shocks, and large shocks to the system have much greater impact. Sometimes, however, the system means small events can induce quite profound changes and, occasionally, a large shock will be contained and have little impact.

Ormerod tests this principle on data for extinction rates for the world's largest companies since 1912. The pattern that emerges is very similar to the extinction of species in nature, with the frequency of very large annual extinction rates being comparatively rare. The difference, of course, between biological species and human organisations like companies is that, at least in theory, companies are able to think about the future and develop strategies to avoid extinction and maintain growth. Yet, despite this apparently critical ability for companies to think and act proactively, the pattern and incidence of extinctions seem to be very similar in both cases. There are some other interesting insights from this study. The probability of corporate failure is highest at the start of a company's life. However, the benefits of experience peak pretty quickly thereafter.

After just two to three years the probability of failure is largely unrelated to the age of the firm. Equally, size is no guarantee of survival, for while larger firms are slightly more likely to survive than their smaller counterparts, this effect is limited. Company extinction rates cannot generally be explained by external shocks to the economy. Firms appear to be relatively responsive to overall changes in the environment, Ormerod contends. The better theoretical explanation, he believes, is that extinction rates can best be accounted for by the competitive interactions between the different firms in each market space. These interactions can be purely competitive or co-operative or combinations of both.

In trying to model corporate extinctions using computer simulations, Ormerod concludes that extinction rates would fall and the average life span of companies would increase dramatically as companies acquire more knowledge about the cause and effect of their actions. Unfortunately, he observes, the evidence on firm extinction is more consistent with the assumption that companies (and indeed other entities like governments and individuals) have only a very limited capacity to acquire knowledge about the true impact of their actions on others. "In short, despite the ability of humans and human institutions to act with intent, in reality it is as if they operate close to the paradigm of the agent with zero cognitive ability."¹¹

'The long tail'

A long-standing rule of thumb in economics and strategy is that companies able to secure leading positions in their market space enjoy economic rewards. As *Wired Magazine* columnist Chris Anderson points out in his new book 'The long tail', companies have traditionally concentrated on the 'short head' of the popularity curve where most of the demand and purchasing power is concentrated. In a digital economy, in con-

trast, the 'long tail' of products – for which there is relatively low demand – becomes both more important and viable from a commercial point of view.

Anderson stumbled upon this when studying data for web-based companies like Amazon and iTunes. Whilst blockbusters and hit records had disproportionate economic success, a characteristic of such sites was that every product on offer was actually consumed by somebody, at some point, on a regular basis. In a digital economy it is easier, Anderson claims, for such ultra niches to emerge and for communities of users online to share things at little or no cost. The 'long tail' is not applicable to all markets but could be important in industries where the costs of creation are drastically reduced, distribution is easy – such as through the internet – and consumers are capable of using filters such as user recommendation reviews and sophisticated search engines that access precisely what they want when they want.

In such industries, companies can make money, but the watchword is 'lean': avoid inventory, produce to order, let customers do as much of the work as possible, price creatively to attract customers with different needs and elasticity, share information and understand "the power of free combined with money-making value-added services".

The vision is a heady one. Anderson has supplied a text for the so-called Web 2.0 world, where blogs proliferate and community-based sites like Wikipedia and MySpace emerge to challenge more established 'bricks-and-mortar' corporate structures. Many of these enterprises will fail – for nobody really knows anything in this world – but some will build successful models and others whilst not successful themselves will create opportunities for other players to develop and thrive. **MU**

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SUSTAINABILITY, REGULATION AND REVERSE LOGISTICS

It is no longer enough for a company in today's business climate to focus on profits and growth. Environmental and social issues also need to be considered as a priority. Perhaps surprisingly, working on sustainability can make sound entrepreneurial sense – it is not just an ethical issue. Nevertheless, the demands of the challenges sustainability issues raise should not be underestimated, as **Roger Mills**, professor of finance and accounting at Henley Management College, explains.

A report by the WWF and Global Footprint Network shows that within the next 43 years humanity will demand twice as much as our planet can supply. Global Footprint Network calculates that in 2003, humanity's 'ecological footprint' – the land and water a person needs to sustain their lifestyle – was 25% larger than the planet's capacity to produce these resources. It now takes, for example, about one year and three months for the Earth to regenerate what we use in a single year. The carbon dioxide 'footprint' which accounts for the use of fossil fuels, is almost half the total global footprint, and is its fastest growing component, increasing more than nine fold from 1961 to 2003. In little more than nine months of 2006, humans used up all that nature can replenish in one year, and for the rest of 2006 they ate into the planet's ecological capital!

Developed countries are, it seems, the worst offenders. North America's ecological footprint is 9.6 hectares (23.7 acres), compared with 1.4 hectares for the typical African. If the whole world adopted a US lifestyle, it has been estimated that four extra planets would be needed! In a

world of greater transparency since events like Enron and Worldcom, businesses will have to answer to the consequences of their decisions in an environment that is placing greater emphasis on accountability. In fact, from a business perspective, increasing attention is being paid to what is known as 'sustainability', defined by Brundtland as meeting the needs of current generations without compromising the ability of future generations to meet their own needs.*¹ "Sustainability is quite simply a vital issue for business and the concept is about developing a corporate strategy that responds to stakeholders' expectations while ensuring long-term performance and profitability."² Put at its simplest, resources are finite and if, for example, a furniture manufacturer does not pay attention to sustainability, there may be no long-term because of the depletion of timber products.

Sustainability may also make sound business sense. For example, ABN AMRO tested sustainability against six core values to check whether sustainability adds value. It established that sustainability added value not only to its bottom line but also for its stakeholders and its reputation.³ In fact, there is the view that there are wider stakeholder interests involved and that intangible assets have grown in importance such that any vital issues tend not to sit on the balance sheet, but are those which enable business to survive in the long-term. In this sense, sustainability can be viewed as the capability of a corporate organisation to add value and to continue to exist as an entity. Furthermore, sustainability is broad-reaching because it touches on many key business issues – eg, it can be considered to be about risk and reputation on the one hand and business opportunities on the other.

Regulation and sustainability

In this context, it is important not to overlook the significance of regulation. For example, the Waste Electrical and Electronic Equipment directive (WEEE directive) aims to minimise the impact of electrical and electronic

* In 1987, the World Commission on Environment and Development developed a definition of sustainability that was included in its findings, which became known as the Brundtland Report. It stated that sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainability is about developing a corporate strategy that responds to stakeholders' expectations while ensuring profitability



Roger Mills, professor of finance and accounting at Henley Management College.

goods on the environment, by increasing re-use and recycling and reducing the amount of WEEE going to landfill. It seeks to achieve this by making producers responsible for financing the collection, treatment, and recovery of waste electrical equipment, and by obliging distributors to allow consumers to return their waste equipment free of charge.

The WEEE directive was agreed on 13 February 2003, along with the related directive on restrictions of the use of certain hazardous substances in electrical and electronic equipment (ROHS). It was transposed into member state legislation during 2004 and has yet to be implemented in the UK, but it is scheduled for implementation on January 1 2007 when WEEE regulations enter into force and from 1 July 2007 full producer responsibility begins.

This regulation applies to all EU member states and some are further ahead than the UK, eg Germany, where the WEEE directive took effect in 2006.⁴ At the time of implementation in Germany, the consequences in terms of changes of organisation and material flows of the German treatment system were unknown. However, Walther and Spengler used a linear, activity-based model to optimise the allocation of discarded products, disassembly activities and disassembly fractions to factors of the treatment system from which parameter and model modifications were made to allow forecasting of future developments. In a case study, they applied their model to Lower Saxony (a federal state of Germany) to allow a validation of the model, as well as an evaluation of future scenarios. Based on this, Walther and Spengler predicted the impacts of new legal and economic developments on the treatment of discarded electronic products.

They found that the directive will cause increasing centralisation tendencies and transportation costs and so emissions caused by treatment of WEEE will rise. This seems to contradict national sustainability endeavours, eg reduction of emissions, and they found striking reasons for the preservation of prevalent decentralised treatment structures when looking at Germany in isolation.* They did recognise that an expansion of product categories to all WEEE categories and the enlargement of geographical borders to Germany or even Europe may prove beneficial.

Environmental design – the ultimate solution

As mentioned above, a key aim of the WEEE legislation is to reduce the environmental impact of electrical and electronic products by making producers responsible for recovering, re-using and recycling large percentages of the equipment they manufacture and import, once it reaches the end of its life. Yet despite the regulation's approaching deadline, it seems that many companies are still unclear about the implications this legislation will have on the design of their products. One key problem for companies is ensuring that design teams are aware of the requirements and feel empowered to develop products that are compliant. This is because it has been argued that 'at least 80% of the quantities and costs of materials and utilities required to manufacture electrical

and electronic products are locked in at the design stage.'⁵

One problem is the scarcity of practical tools to guide the design decision-making process and support the development of financially viable and compliant, electrical and electronic products. Lofthouse and Bhamra⁶ have, for example, produced an end-of-life decision-making design guide to help companies quickly identify the implications of the WEEE directive for the products they design, manufacture and import, by guiding them towards appropriate solutions that will help them get maximum product revenue by using the restrictions of the directive as an opportunity for innovation.

It is clear that the most effective ecodesign principles should be implemented at the early stages in a product's life and that industrial designers have an important role to play in ensuring that electrical and electronic products are compliant with the WEEE directive. With this in mind, it is also important to ensure that industrial designers can easily access information on the WEEE directive in a way which empowers and engages them, however, according to Lofthouse and Bhamra it has not been addressed in a way which directly takes into consideration the culture of industrial design.

The reverse logistics approach

While the medium to long-term solution is ecodesign, reverse logistics may be a weapon for fighting environmental degradation in the shorter term. One view of reverse logistics is that it is the handling of 'returns', especially in such areas as TV shopping, retail and mail order operations. Some operations of this type have a significant percentage of returns, and often separate systems are set up for dealing with returned merchandise and its re-use and resale. However, reverse logistics has a broader scope. It involves the recycling and re-use of materials contained in a product and its packaging after that product's useful life has ended. Reverse logistics is a departure from dirtier and increasingly unacceptable options such as landfills or incineration. Reverse logistics includes recycling, material substitution and re-use, and re-manufacturing. It takes in all the logistics steps involved in collecting, disassembling and processing used products, parts, materials and packages to provide an environmentally safe method of recovery.

The success of reverse logistics depends on encompassing the entire supply chain. Trading partners have to work together to ensure that the reverse logistics process is linked across all levels of the chain. The process involves recovery of parts and materials from outdated or used-up products, with an eye toward protecting the environment. In some cases, a product may still be directly reusable, after some cleaning or minor adjustment. In others, products and their components are totally unusable,

* They did recognise that an expansion of product categories to all WEEE categories and the enlargement of geographical borders to Germany or even Europe may prove beneficial.

and are disposed of as waste. However, a large proportion of used products and parts can be rebuilt, re-manufactured, or recycled back for use in manufacturing the same product or different products. An ideal is integrating forward and reverse logistics cycles together into a closed loop system.

The WEEE initiative provides a very strong incentive for adopting the reverse logistics approach. Furthermore, there may be some very substantial financial rewards for both the companies responding to the WEEE demands regarding their products and those organisations that respond by providing the reverse logistics service. Recent ongoing research findings demonstrate that companies with the best environmental programmes experience significant operating benefits compared to those with the worst or nonexistent programmes. Benefits can include greater growth in operating income, higher sales-to-assets ratio, greater sales growth, higher return on investment and greater return on assets.

Dell's approach to green operations

The electronic products industry has been under scrutiny over how its products and processes may affect the environment. One particular focus has been on the disposal of products such as computers when they reach the end of their useful life. According to Kulwiec, one of the leading players in this industry, computer maker Dell has committed itself to an environmental policy of managing all stages of a product's total life cycle, from initial concept and design through manufacturing, customer ownership and end-of-life re-use and recycling.⁷ Dell believes that each phase of the life of a product, from design to disposal, must be managed with an eye toward eliminating or minimising impact on the environment. The basic elements of the total life cycle management program are as follows:

- *product design* – as discussed in an earlier section of this article, efficient product recycling and re-use can be factored into the product at the beginning of the

design stage such as, for example, ease of disassembly and recyclability. The use of hazardous materials can be avoided or minimised by selecting alternative materials whenever possible, that do not create a disposal problem later on;

- *packaging* – one goal of Dell's packaging engineers is to reduce the amount of overall packaging materials, while still providing the desired level of product protection;
- *supply chain collaboration* – Dell makes most of its components and many of its products through partnerships with global suppliers. In so doing, the company requires that suppliers meet its environmental requirements, and also encourages them to integrate environmental management systems into their operations;
- *consumer product re-use or recycling* – Dell views its relationships with consumer customers to be a continuum, from acquisition to end-of-life solutions. Various options are available when a computer is no longer needed involving donation and/or recycling; and
- *training programmes and ongoing commitment* – Dell employees and full-time contractors are given an introduction to environmental issues when they are hired. Employees working in departments or units that have potential environmental impact also receive training in the ISO 14001 environmental system.⁸

Conclusion

Numerous entrepreneurial responses to the challenges of sustainability are emerging. For example, one Dutch start-up uses reverse logistics to manage the problems created for manufacturers and suppliers by goods returned by customers. Interestingly, for this business, being profitable is only a part of its mandate. It seeks to put 'people, planet and profit' in perspective. By managing the supply chain in an innovative way it is able to employ people who would find obtaining employment a challenge because of age or disability and provide goods that might otherwise be scrapped at affordable prices to lower income groups. Doubtless, there will be many other similarly innovative sustainable responses. **MU**

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IDENTIFYING BEST PRACTICES IN COST MANAGEMENT

As cost management practices have been criticised for their inefficiency and inability to cope with a rapidly evolving environment, it is worthwhile looking at which of the three major categories – diagnostic, re-engineering, or integrated cost management systems – applications generally fit into. Dr **Giampiero Favato**, a director of the Henley Centre for Value Improvement, and **Roger Mills**, professor of finance and accounting at Henley Management College, analyse which of these costing systems should be regarded as the current best practices.

Cost management practices have come under substantial criticism for their lack of efficiency and capacity for coping with the requirements of a rapidly evolving environment.¹ Lack of cost accounting innovation does not, however, appear to be the issue: accounting practitioners and academics have joined forces to create new forms of cost management that provide decision-relevant information. Reviewing new contributions to costing practices originated in the last two decades, Björnenak and Olson identified the leading cost management techniques in the literature as follows: activity based costing (ABC), parametric cost analysis (PCA), price-led design (PLD), design-to-cost (DTC), target costing (TC) and cost as an independent variable (CAIV).²

At the same time that these changes have taken place in cost management, there have been parallel developments in the structure and focus of organisations. Process, or horizontal, management has emerged as a key to improving the throughput and performance of an organisation. Demanding better products and services delivered faster and with an ever-increasing level of customisation, clients are, quite simply, forcing companies to re-examine every facet of their operations. However, the rapid pace of the implementation of new management systems means that many organisations are faced with fragmented information flows that have created a Tower of Babel. New management and measurement systems are developed in isolation from other initiatives and systems, resulting in redundancy, gaps and miscommunication. Lacking an integration framework, these initiatives have often failed to provide all of their promised benefits.³

LaLonde and Ginter⁴ argue that cost management applications generally fit into three major categories: diagnostic, re-engineering, or integrated cost management systems. The categories differ in focus, detail and sophistication. Integrated cost management systems represent the most mature forms of ABC.⁵ Integration of information is essential if an organisation's resources are to be deployed optimally. Integration provides the basis for robust decision analysis because it supports the incorporation of multiple perspectives. Many unsuccessful implementations have occurred because diagnostic and re-engineering models promise the capabilities of an integrated cost management system but cannot deliver the same result. Integrated cost management systems go beyond cost budgeting to make proactive strategic and operating decisions based on value added rather than

cost information, and they should be regarded as current best practices in cost management.

Diagnostic models: ABC and PCA

The diagnostic models enable managers to diagnose potential problems within key processes. High cost activities or processes can be targeted for cost reduction through re-engineering or process improvement. Diagnostic models have become the most widespread form of ABC due to their lower cost and their having no impact on the existing financial management system.

ABC is an accounting methodology that assigns costs to activities – rather than products or services. This enables resource and overhead costs to be more accurately assigned to the products and the services that consume them. ABC is based on a reform of the data collection process used to derive costs. Costing of this kind can be used for product costing, and it is also useful as a means of analysing and improving business performance. ABC

Integrated cost management
systems go beyond cost
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decisions

*Dr Giampiero Favato, a director of the Henley Centre for Value Improvement (right), and
Roger Mills, professor of finance and accounting at
Henley Management College.*



has become the best method to identify profitable and unprofitable customers. ABC customer profitability analysis is based on the simple principle 'customers consume activities'. It is not uncommon to find with ABC that 80% of overhead activity cost is consumed by 20% of your customers.

Consider this ABC customer profitability example. Large retail customers typically demand low purchase prices. If a company sells to someone like Wal-Mart, their gross margin per cent may be several points lower than other smaller customers. ABC analysis often exposes, however, that large retailers consume less than 30% of the overhead activities. As a result, while the Wal-Mart gross margin may only be 25%, an ABC 'bill of activity' may show that their pre-tax profit contribution is actually 10%, not a loss of 5% (25%-30%). Thus, walking away from business opportunities with large retailers is very dangerous without first performing ABC customer profitability analysis.

A major advantage of using ABC is that it avoids or minimises distortions in product costing that result from arbitrary allocations of indirect costs. Unlike more traditional line item budgets – which cannot be tied to specific outputs – ABC generates useful information on how money is spent, if a department is cost effective, and how to benchmark oneself against others for quality improvement. The ABC approach has the major advantage of speed: an organisation can quickly produce activity-based cost models using this approach. A major drawback can be lack of detail.

Conversely, PCA is a costing process capable of integrating a great number of cost drivers into a simple linear regression model. PCA is a method of estimating the cost of a product using mathematical relationships to other parameters of the product, such as part and labour cost. These models or cost-estimating relationships (CERs) are often obtained by regressing the total cost of a product on a set of variables that represent the product's performance, costs of parts, labour etc.

Klein and Tait,⁶ in an early example of applied PCA, expressed the number of tool-design and tool-fabrication hours per part in terms of the number of drilled and

reamed holes, the volume of the piece, the number of locating points, and the complexity of part orientation. The authors used step-wise regression to select, from the eleven chosen as possible cost drivers, these statistically significant variables for a linear equation. The authors also introduced the reality of cost uncertainty through a trade-off of confidence and expected time.

Today, parametric estimating is usually applied to large systems, such as those found in the US Department of Defence (DoD) or NASA. Thus, parametric estimating relies on simulation models that are systems of statistically and logically supported mathematical equations. These equations define the impact of a product's physical, performance and programmatic attributes on cost and schedule. Tailoring parameters are used to describe the object being estimated. Output of the model is validated with data from past projects. The object to be estimated is described by choosing specific values for the independent variables in the equation that represents the characteristics of the object. The equations are then used to extrapolate from past and current experience to forecast the cost of future products. The basic assumption is that a measurable relationship exists between system attributes and the cost of the system: if a function exists, the attributes are cost drivers.

Probably the most limiting aspect in developing CERs is the validity of the data that is used: PCA focuses on extracting cost trends from high-level data rather than building cost estimates from the bottom up in a task-by-task approach.⁷

Re-engineering models: PLC and DTC

A re-engineering – or 'bottom up' approach – begins with an activity analysis of the lowest level of the firm. The activity analysis attempts to identify the performance of any non-value-added activities. The bottom-up approach has the strength of providing greater insight into the activities performed within the organisation and its ability to support and direct re-engineering efforts. This approach, though, suffers from lengthy implementation times, complexity and significant costs.

Drucker⁸ contends the shift from cost-led pricing to price-led costing (PLC) will drive the re-engineering of economic supply chain costing. PLC costing uses the price the customer is willing to pay to determine the allowable costs, beginning with the design stage. Companies can only apply PLC if they know and manage all of the costs within the supply chain. Saturn's car concept developed by General Motors is an example of price-led costing.

The DTC process is the more general form of price-led costing. DTC is a tool enabling companies to manage and control cost in development processes by establishing cost goals at specified levels of a work breakdown structure and then requiring the project to make trades which will ensure that the system built will meet those cost goals.⁹

The DTC process comprises the following elements:

Parametric estimating relies on stimulation models that are systems of statistically and logically supported mathematical equations

- allocation of target cost to the cost factors of the project;
- design to meet target cost and provision of data and cost estimation tools for designers;
- cost control using cost estimation for each cost factor and design to cost reviews (DTCR); and
- corrective actions as required reducing cost.

In early 2000, Harley Davidson's management implemented a new-product cost management strategy based on design for manufacturability. Cost management was responsible for supporting all projects in product development as well as providing budget and forecast support to all of the company's production facilities. Cost management also provided product cost for motorcycles and for the first time, had the ability to understand the cost for all destinations, options and colours. Materials management and cost management worked closely to integrate DTC into Harley Davidson's supply base. By providing early cost data, the development teams could manage the necessary trade-offs. For example, cost information was linked to the corporate profit plan, which gave the financial community direct understanding of the direction of the company's financial future. Five years later, Harley Davidson's revenue growth percentages continue in the double-digit range and the company now commands nearly 50% of the US market for motorcycles.¹⁰

The major limitation of DTC strategy is that there may be no system that can meet stated cost objectives for the required set of product features. In this unfeasible case, either the project must be discontinued or the requirements must be modified to permit feasibility (cost-design trade-offs). A major problem is that without accurate quantification, management may not be aware that the combined set is unfeasible until far too late in the development process.

Understanding the relationships between activities, outcomes and value creation has become the key to achieving profitable performance. To reach this understanding, an organisation has to integrate its information flows. Integration creates a knowledge base that can be used to communicate decisions, objectives, results and opportunities from the top of the organisation to the bottom.

Integrated cost management systems: TC and CAIV

The key principles of the integrated cost management systems reflect the information and decision-making needs of the managers who use it. Specifically, these principles include:

- strategic orientation – a cost management system must incorporate and reflect the strategies of the organisation and the core competencies that support the achievement of strategic goals;
- customer driven – information system design, integration and use must be centred on defining and meeting customer requirements;
- value based – competitive advantage and profitable growth stem from understanding how and where the organisation creates value for its customers;

Understanding the relationships between activities, outcomes and value creation has become the key to profitable performance

- process/horizontal focus – integration must incorporate the flows of materials and information across and between organisations, highlighting interdependencies;
- decision relevance – information systems have to be defined around and support the key decisions of the organisation;
- cost effective – integration should focus on the essential 20% of data that support 80-90% of the decisions made within an organisation rather than on comprehensive integration of all of the organisation's available data; and
- relationship based – integrated information systems must be based on and highlight the performance of key transactions and relationships across the value chain.

The TC process combines all requirements of an effective integrated cost management system. TC is a disciplined process that uses data and information in a logical series of steps to determine and achieve a target cost for the product. In addition, the price and cost are for specified product functionality, which is determined from understanding the needs of the customer and the willingness of the customer to pay for each function. Another interesting aspect of TC is its inherent recognition that there are important variables in the process that are essentially beyond the control of the design group or even the company.

For example, the marketplace determines the selling price, the global collection of customers, competitors and the general economic conditions at the time the product is being sold. The desired profit is another variable that is beyond the control of the design organisation. It may be set at the corporate level. It is influenced by the expectation of the stockholders and the financial markets. In addition, the desired profit is benchmarked against others in the same industry and against all businesses. In this complicated environment, it is the role of TC to balance these external variables and to help develop a product at a cost that is within the constraints imposed.¹¹

TC builds upon a DTC approach with the focus on market-driven target prices as a basis for establishing target costs. The target costing concept is similar to the CAIV approach used by the US DoD.

CAIV is basically an acquisition process intended to integrate proven successful business practices with promising new DoD initiatives to obtain effective, yet reasonably priced, defence capabilities. Traditionally, the success of acquisition programs has been judged by their accomplishments with respect to three parameters: cost, schedule and performance. Of these, performance usually received the most emphasis, and was treated as a 'fixed' or 'independent' variable. Schedule and cost were allowed to vary in order to achieve some desired level of performance. In an era of reduced budgets, DoD has adopted the CAIV approach of treating cost as the independent variable of the three, allowing performance and schedule to vary somewhat in an attempt to keep defence systems affordable.

The CAIV process entails setting aggressive, yet realistic cost objectives when defining operational requirements

and acquiring defence systems and managing achievement of these objectives. Cost objectives must balance mission needs with projected out-year resources, taking into account existing technology, maturation of new technologies and anticipated process improvements in both DoD and industry. As system performance and cost objectives are decided (on the basis of cost-performance trade-offs), the requirements and acquisition processes will make cost more of a constraint and less of a variable, while nonetheless obtaining the needed military capability of the system. Although much discussion of CAIV is centred on new systems, there is always opportunity for cost reduction. CAIV principles are applicable throughout a system's life cycle. For example, Raytheon Missile Systems Company (RMSC) implemented a CAIV process to develop and design military products with the highest quality and performance, at the lowest cost, and in the shortest turnaround time.

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The AIM-9X missile system program is currently in the Engineering and Manufacturing Development phase at RMSC. As one of the DoD flagship programs, AIM-9X was chosen by the Navy to be a candidate for the CAIV process. RMSC's design teams conducted structural evaluations of various cost-performance tradeoffs by establishing realistic but aggressive cost requirements; devising appropriate metrics; allocating requirements down through the product structure; and managing risk to achieve cost, schedule and performance objectives. The result was the most cost efficient means of balancing both cost and performance requirements. After RMSC implemented the process, the programs sub-assembly recurring unit cost was reduced from \$35,000 to \$4,000. This represented a savings of \$310 million over 18 production lots, while still maintaining product performance.

Conclusions

Why should a company use any or all of the cost management processes, let alone undertake the effort to integrate them? First, integration of information is essential if an organisation is to deploy its resources optimally. Integration provides the basis for robust decision analysis because it supports the incorporation of multiple perspectives. The competitive advantage stems from a deeper understanding of the relationships among activities, outcomes, and value creation. The integration of information flows is an essential element of effective management decision-making, serving to clarify communication and strengthen the linkages among interdependent functions, teams or entities.

Meeting the integration of information needs is the prerogative of integrated cost management systems, such as TC and CAIV, which should be regarded as the current best practices in cost management. Integrated management systems reduce cost and risk by setting aggressive and firm cost objectives, increasing competition, incentivising suppliers, and effectively utilising producibility programs and design re-use. In addition, integrated costing systems reduce total ownership cost, increase customer satisfaction and provide cost performance that meets or exceeds the customers' needs. **MU**

SCENARIO PLANNING – CURRENT STATE OF THE ART

There has been a torrent of publications in the field of scenario planning in the past three years. What is the range of diverse applications to which scenario planning has been applied? How far are managers aware of its potential and eager to implement scenario planning? **Bill Weinstein**, professor of international business at Henley Management College and a director of the Henley Centre for Value Improvement, discusses the issues.

This article's review of scenario planning work published in the past three years shows vigorous production across a range of diverse applications. Scenario analysis has been applied to a wide variety of subjects. There is, however, a practitioners' consensus about the basic principles of scenario building and scenario impact assessments. Scenarios as a response to uncertainty remain central in contrast with forecasting; hence, more than one and often up to four scenarios are developed.

Scenario thinking, established as a planning tool 35-40 years ago in a geopolitical and military context, has evolved to look at the financial valuation of options, invoking real options analysis as an aid to investment decision-making. Another notable feature of recent studies is the depth and range of evidence and interpretation delivered, helping to render scenario-building more credible.

Scenario planning is applied to public policy analysis of alternatives in areas such as global warming, health, education and welfare as well as civil strife. It is also recognised in applications to short-term product marketing issues. Research and development (R&D) are natural terrains as they exhibit high risk/high return uncertainties, problematic time scales, and the need to know and confront alternatives. A gap between the thinking of scenario technique's advocates and many managers may be explained by the proliferation of several popular uses of the word 'scenario', which obscure the serious and systematic applications of scenario analysis.

Significant developments

The application of scenario-based planning has expanded in recent years, with hundreds of organisational staff, consultants and professors adding to a rich variety of approaches. While such vitality is healthy, an unintended consequence is that most practising managers, including those on boards, risk bewilderment. That may partly explain why few organisations use scenario planning.¹ In fact, there have been considerable refinements in the application of scenarios, to which have been linked notable analytical techniques such as 'system design'.² In contrast with any sense of distance from an increasingly refined technique, in which analysts are applying scenario

approaches to macro- or even to global-scale developments, are down-to-earth scenarios about micro-issues such as product-market issues in specific territories.³

The lament that scenario planning for governments, businesses, non-governmental organisations and public services is underused – or indeed not used at all – contrasts with earlier expectations of an upsurge in scenario thinking to match the early 21st century crises over pandemics, terrorism and Middle East conflicts, to name but a few. The current dichotomy will be addressed lastly in this review, whilst it begins with what is formidable: the relative solidity of scenario analysis and consensus over its fundamental principles.

Practitioners have remained remarkably faithful to the core principles about scenarios. Although a few authors risk confusion between scenarios with forecasts or predictions, the main body of practitioners, now more globally spread than before, agree on essentials such as that scenarios are speculative stories about possible futures and not predictions. They express uncertainty over futures, and they highlight issues that would have to be confronted at some time in the future. They open a range of possible future developments and invite responses most appropriate to the impact of each development. An advance marks much

The application of scenario-based planning has expanded in recent years

Bill Weinstein, professor of international business at Henley Management College and a director of the Henley Centre for Value Improvement



recent work, as it carries a strong insistence upon the quality of the assumptions used; uncertainty is not an excuse for looseness, even if the freer-wheeling visionary approaches to scenarios may be partly exempt. The rigorous examination of evidence, however incomplete, is the demand of the day.

From Shell Centre to Potsdam

Most recent and current practitioners date the organisational planning use of scenarios back to the 1960s, with Herman Kahn and two companies, GE of the US and Royal Dutch Shell, initiating serious work in the field.⁴ Many of the earliest applications were to military strategies. Now though, after 35-40 years, the centre of the field is held by Shell and many people schooled at the company's planning unit. In fact, it is one of those former members who has written arguably the most thoughtful book on the subject.⁵

In addition to Shell's periodic magisterial global scenarios,⁶ it leads the way in pushing out the boundaries of scenario thinking in a challenging respect. Although one article bears the unprepossessing title 'Three decades of scenario planning in Shell', its concluding section outlines 'focused scenarios' as they are applied to projects being judged in terms of real options.⁷ Using the real options tool provided through the financial option pricing model by Black and Scholes in the early 1970s, contemporary managers – after some years of lag – can focus on the value embedded in exercising an option to invest by imagining that the uncertainty has been resolved – including all the choices that may be encountered over an investment's life.

This approach adds a broader perspective to the traditional DCF approach to valuation by focusing on "the impact of the positive potential uncertainty".⁸ However, after warning that financial options analysis cannot be readily adapted to investment uncertainties over real assets, what is emphasised is the need to dig deeply into the factors that can affect payoffs. The volatility to which certain factors, especially those beyond the firm's control, are subject, requires scenarios to capture possible futures. The behaviour of the US gas market provides a major example of how scenarios are needed to capture so-called unexpected discontinuities – and their impact on Net Present Value projections. The fundamental market shift struck in 2000-2005. The authors argue that whilst scenario planning is not designed to choose particular investment projects and allocate capital efficiently, it should be "combined with a real options approach, as a project's value

may change over time due to the introduction of new information."⁹

This approach is classified by Millett¹⁰ as a hard-nosed analytical development of scenarios, focusing on resource allocation and investment decision-making. Although not intended to exclude the visionary or 'soft' approach to scenario building, it has nevertheless gained intellectual thrust. In a vein similar to Shell's work on using scenarios to make real options analysis more readily applicable than its daunting mathematics implied, Mills, Weinstein and Favato used examples from pharmaceutical product development go-no-go decisions to depict scenario-based impacts on the value of options. A role is given to scenario analysis that confers relatively greater credibility on the use of real options in conditions of uncertainty.¹¹

The more demanding analytical level established by Shell and the above authors is shared by several studies which plainly harness two important aspects: the quality of assumptions built into scenarios – requiring intensive empirical research and interpretation – on the one hand, and rigorously formulating estimated impacts on the other. These features are evident in a 2006 study prepared at Potsdam University.¹² In an extensive and carefully-crafted construction of four scenarios, the authors ambitiously focus on a broad category of companies, 'multinational corporations', in the quest to depict how MNCs may engage in knowledge production in the future. As is now typical of such in-depth work, it stands upon foundations explored or laid down in other related works, thereby converting scenario work from isolated solo or back-room team efforts into a networked and results-debated process before publication.¹³

Expanding the range in scenario applications

The range of scenario thinking has expanded, through choices made by several practitioners and professionals, although the risk of its conceptual dilution will attract a final comment. Given its initial applications in geopolitical and military analysis, that continues to exert a powerful influence.¹⁴ With equally obvious relevance, R&D strategic choices have been found to be ripe for scenario-based analyses of alternatives. A practical detailed approach has been outlined with examples by Ringland¹⁵ and an adventurous approach has been applied to the Finnish industry's wood procurement.¹⁶ The application of scenarios to countries' futures continues unabated.¹⁷

One genre of scenario thinking contrasts what would happen if there were no human interventions with what could happen if certain types of policy were adopted and enforced. A notable example in the UK debate on climate change was the contribution in late 2006 of Sir Nicholas Stern, the economist whose report depicted the difference for decades ahead in the amount of carbon emissions if the status quo went unchanged and if various control policies were in place.¹⁸ The contrast between passive and active responses in many areas of policy is sharpened by at

Scenario planning should be
'combined with a real
options approach'

least two other recent studies. The future of water quantity and quality in Australia's Great Barrier Reef is partly based on supporting studies, mentioned above, as a growing characteristic of in-depth scenario work, in this case using simulations of environmental changes.¹⁹ The second study expresses in scenarios future outcomes that relate environmental change to human health risks, linking science with policies addressing human vulnerabilities. In line with respect for the now well-worn paths in the use of scenarios, it distinguishes impacts from responses, and assumptions of no-change from those of policy change.²⁰

Further evidence of the wide range of issues and goals to which scenario thinking has been applied recently may be found in the developing of scenarios for Guatemala's civic culture which is one of several similar exercises in Latin America, Africa and Asia-Pacific sponsored by the United Nations Development Program.²¹ The use of cross-impact analysis among changing factors used in building scenarios is also illustrated in a 2005 study of public education in Ohio.²²

Reckoning with a dichotomy

What, though, of the general manager who allegedly doesn't take readily to scenario planning or appreciate its alleged merits? In parallel with the development of scenarios – which in this review of the past three to four years of published work shows much experts' agreement on principles – has been, arguably, the proliferation of several everyday or popular uses of the term that inadvertently obscure, dilute or confuse understanding.

Possibly those who regret the lack of managerial interest in scenarios have not kept up to date with the ways in which popular or common managerial parlance have changed. Into it has seeped, for example, 'The scenario in English rugby is ...' which merely equates scenario with the present situation: no reference to the future. In another common use, scenario is equated with the results of an implemented plan or the goal of the management ('our scenario is 95% market share in sales of ice-cream to Siberians'). In this use the achievement of the goal or a desired result is not to be chal-

In parallel with the development of scenarios has been the proliferation of several everyday uses of the term that obscure understanding

lenged: the use is motivational; nothing here about alternative possible futures and responses.

A third use of scenario is as an after-the-event verdict on the unexpected and unintended impacts that resulted from a course of action: what has happened is not what 'we' wanted, eg the consequences of US-UK occupation of Iraq, where some problems beyond original plans were classified in Donald Rumsfeld's phrases 'known unknowns' and 'unknown unknowns.' This is of course a retrospective assessment of actual events, not the pre-action speculation about alternative possible outcomes.

This article has focused on the very recent consolidation of 'scenario planning' which made explicit the understanding that scenarios refers to developments in the external environments of organisations that are uncertain and for which judgments have to be made in advance as to how to prepare for their impacts. Although no-one can legislate against the use of the word 'scenario' in a free-thinking public domain, clearing the undergrowth of alternative popular meanings has become necessary to disseminate scenarios in their serious and systematic forward-looking planning applications. **MU**

Footnotes to this article are on page 18.

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