

# Pottinger

PERSPECTIVES

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# MAGIC, REASON OR EXPERIENCE?

**Will business ever match  
the rigour of science?**

With thanks to Sir Geoffrey Lloyd, Drs Jim Bennett and Piers Bursill-Hall,  
Associate Professor Alan Chalmers and Professor Simon Schaffer.





The notion of modern day science emerged in the early nineteenth century – William Whewell coined the term scientist in 1833. Before that, anyone investigating how the world worked was known as a “Natural Philosopher”. As a concept, “science” is much more than simply a word that represents technological development and invention. At its heart, it is a methodology for gathering the right data or facts, analysing them in a rigorous and reliable manner, and interpreting the findings and assessing their meaning. It is a process for evaluating theories about how parts of the universe really work, examining “proof”, and hence arriving at “truth”. Thus science is a philosophical paradigm. It is designed to support the development of thinking, increase in human understanding, and reliable decision-making.

Every half-decent scientist understands the scientific method, and the importance of how experiments are run, data is gathered and ideas are tested. Unscrupulous researchers may seek to bend the rules or bend the data, but the global community of peer reviewers who subscribe to the scientific method will scrutinise their data, their analysis and their findings. There is no “bend it like Beckham” when it comes establishing the veracity of a new theory.

This process – this philosophical paradigm – has been responsible for the most dramatic period of technological advances and associated economic development that the world has ever seen. It is no co-incidence that the industrial revolution followed hard on the heels of the birth of the scientific method. Since the start of the industrial age, there has been technological revolution after revolution, with the pace of change accelerating decade by decade. As one example, the smart phone has changed the lives of billions of people in the seven short years since the iPhone was born.

So it is nothing short of remarkable, then, that the same rigorous approach to gathering and evaluating data and reaching conclusions has never been brought to the world of business. In other words, the business community simply does not have the same rigorous philosophical basis when it comes to making decisions. This is a large

claim, so bear with me as I explain what I mean.

Ever since the dawn of modern-day accounting, businesses have recorded the financial performance of the fundamental aspects of their activities – income and expenditure, assets and liabilities, cash flows and contingencies. They have used profits, profitability and other financial metrics to assess performance and determine whether particular activities are attractive or not. Early developments included the realisation that maximising the return on your scarce resources would result in maximum overall profit. In the modern world, where there are often multiple scarce resources which may create constraints which change rapidly and dynamically over time, this tool has been blunted.

Meanwhile, since the late 1980s and early 1990s, businesses have used discounted cash flow models to assess the value of future profits and translate them into a measure of the total value of the business over the fullness of time. Today, however, the accelerating pace of change means that the base case forecasts on which these cash flow valuations depend are increasingly unreliable, and the methodology is looking increasingly flimsy. In parallel, companies have introduced other performance metrics – so-called balanced scorecards, which track other measures of success. These have

been useful in providing a broader and more sophisticated check on overall business performance and they have helped to drive a focus on a wider range of priorities than simply short term profit. But rarely have they been used in the same empirical and analytical way as financial information.

And if you step back from this detail, what is the underlying belief system on which business decisions are actually based? When companies make their largest capital investments, or propose major M&A transactions, or long term strategic initiatives, how are these decisions made? What is the underlying philosophical paradigm on which they rely to establish notions of proof and truth in the Boardroom?

Certainly there is the capital asset pricing model, Modigliani and Miller, and the various ideas developed by the leading economists of the 20th century. We also have the language of accounting and financial reporting, and hence the ability to describe the financial aspects of what is going on in terms that everyone who is financially literate should hopefully be able to understand. And we have the calculation machine that is the discounted cash flow model – a machine for translating base case projections of future profits in to single point estimates of current value, making some sort of allowance for risk along the way.

These are the basic tools associated



with what I call the “Age of Economic Rationalism”, which emerged after the Second World War. But is this really a philosophy, let alone a paradigm which is designed to support reliable and insightful decision-making about the proofs and truths of future profitability and associated value? Beyond the basic mathematics of basic addition and subtraction, Boardroom decision-making looks decidedly simplistic compared to the rigorous approach of the

up or down by 50%. Take the exact same model three years later, when general market values have fallen (or increased) by 30%, and financial advisors will almost always manage to recreate a scenario that appears entirely plausible, and magically lines up with the current market view. This is not science – it’s sorcery. The old adage “The market is always right” is terribly misleading. How else could the value of a business increase from \$10bn to \$100bn in a couple of years,

and Red Bull. Of the top twenty companies in the USA by market value, two are under twenty years old – something that has probably not been seen since for at least a century, and possibly more.

The fundamental challenge for any decision-maker is that their own experience is limited, often to just a few examples of broadly similar situations, often from different points in time or industries or locations. As any scientist would be able to tell you, a data set of three or four items is very unlikely to provide a statistically reliable guide to the future. As Jim Barksdale, former CEO of Netscape famously said: “If we have data, let’s look at data. If all we have are opinions, let’s go with mine.”

So although the application of reason is important, what has been missing is the availability of sufficient data – sufficient experience – to which to apply rigorous analysis.

The challenges that this creates are expanding exponentially – most boards and management teams are finding it increasingly challenging to identify viable long term strategies in the face of accelerating change and increased complexity in virtually all aspects of their operations. The answer lies in bringing much, much more experience to the table, and in having the intellectual and statistical tools to be able to interpret and analyse this data and translate it into meaningful conclusions that will inform decision-making.

An enormous amount has been written about “big data”, and much more importantly about the big analytics on which it depends. As I highlight in my next monthly column

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## “To the practically and philosophically minded, these are significant challenges”

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scientific community. Indeed you could argue that the basic laws of finance add up to not much more than the certainty that repeated losses will lead to financial failure, and the knowledge that repeated and exponentially growing profits are the nirvana that all Boards and CEOs seek.

The financial language which is spoken around the world may be a common one, and the tools in use are familiar wherever you travel. But businesses do not have a common framework for assessing the risk inherent in any projection of future profits. Nor do they have a common framework for embracing this uncertainty, and identifying what it really means for value, or capital structure, or strategic decisions. In truth, the discounted cash flow model is just one step short of financial magic. Give me a financial model, and I will be able to make half a dozen almost invisible changes to the assumptions, and move the suggested value

without any material change in its underlying prospects?

For the last few decades, the answer to this onslaught of financial wizardry has been to reinforce the importance of “judgement”. Boards have emphasised the importance of bringing reasoned argument and perspective to bear on major decisions, to avoid the risk that too much emphasis is placed on financial analysis, often produced by advisors who have strong financial incentive to tell a story that supports the deal in question. A great deal of reliance has been placed on the “wisdom of experience” in making such decisions, and in sorting out the strategic wheat from the consultants’ chaff. But has this really worked well? Certainly the world has seen more financial value destruction over the last decade or two than at any other point in human history. And conversely, we have also witnessed extraordinary value creation by 23 year olds powered by pizza



in CEO Magazine, big analytics can yield amazing insights from small data, and indeed this is precisely the type of problem that Boards face with most major strategic, investment or M&A decisions.

Thus the days for magic and reason are over – 21st century decision-making will be all about new ways of using a great deal more experience to inform decisions. This means big data, big analytics, and a much more sophisticated financial evaluation toolkit. But before we embark on this new journey into advanced statistics, a subject area even more arcane than financial wizardry, we must stop and take very careful stock of the decision-making paradigm that we are proposing to embrace. Like an ancient navigator setting sail to explore the far ends of the Earth, we need to be very clear how our instruments work, how we address the uncertainties inherent in any measurement, and how we can use our findings to establish both proof and truth in the Boardroom.

With this in mind – and remembering the benefits of the rigour of the scientific method – there are three key elements of robust analysis and decision-making that every leader should keep in mind:

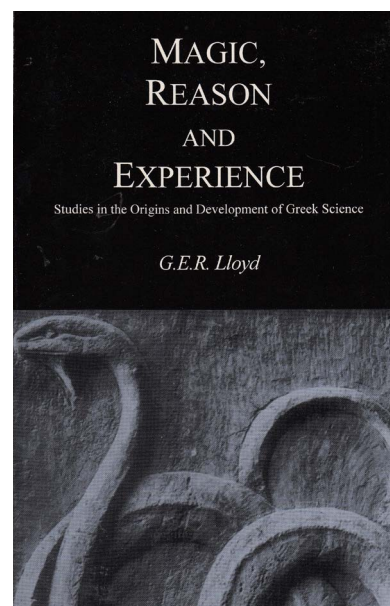
- Deal with the data: To support any decision, you must seek to gather as much relevant data as you can, and assess that data rigorously. This means you will need to develop internal capabilities in the statistically robust analysis of data. Your CFO will need to become your chief data officer – or will find themselves reporting to the CDO within a decade;
- Embrace Uncertainty: Accept that the future is uncertain, and find ways to build that uncertainty into your thinking in a much more explicit way than simply applying a higher (or lower) discount rate. Identify the implicit distribution of outcomes that are buried in the data, and never, ever turn them into a base case. If you do, you will lose virtually all the information you have learned from your analysis. If you and your advisors aren't using Monte Carlo simulations, Bayesian regressions, and applying all the advanced statistical techniques behind big data to assess the uncertainty inherent in any project, then you are flying blind;
- Remember philosophy is the key to knowledge: If you want to have confidence in the proofs you develop to support major strategic or financial decisions and to arrive at truth in the boardroom, then you must have absolute confidence in the decision-making paradigm on which you are relying.

To the practically and philosophically minded, these are significant challenges. But they are way too important to be dismissed in favour of the magic of financial modelling, the religion of economic rationalism, or perfectly reasoned argument based on only a small handful of data points. We all know that one year's profit is no guide to long term value creation for shareholders, and we all know that any individual set of long term forecasts is mathematically certain to be wrong to at least some degree. Upside and downside scenarios, or the user of higher or lower discount rates, are extremely blunt tools, particularly given the pace of change and extent of uncertainty which we now face.

Happily, the statistical, financial and decision-making techniques that are needed to answer these challenges are well established in the world of science. Indeed many of them are nothing new, and have been in use for decades in the worlds of engineering, fluid dynamics, actuarial analysis and many others. We have used them in the Pottinger business for a decade, and they are amazingly effective.

But despite the many great books which have been written over the years, one over-arching question remains for virtually every business in the world. Conventional business thinking has never addressed the deepest philosophical question: what is the business equivalent of the scientific method? This rigour in data gathering, analysis, and decision-making is at the heart of virtually all discoveries over the last three hundred years. The companies that answer this question will, surely, have exceptional impact and create enormous wealth. **P**

By Nigel Lake



*A long time ago, I had the great privilege to major in History and Philosophy of Science at Cambridge University, guided by some of the world's most insightful thinkers in that field, including Geoffrey Lloyd (an extraordinary teacher and historian of Ancient Science and Medicine), Jim Bennett (one of the world's leading experts on old scientific instruments), Simon Schaffer (inspirational through the precision of his thinking and amazing ability to point you to the most insightful references), and Piers Bursill-Hall (history of mathematics and who reminded us all that old colleges have great libraries filled with important books – "Read them!"). I was also inspired by the great text "What Is This Thing Called Science" by Dr Alan Chalmers, who I recently discovered is based at the University of Sydney.*

*This article gained its title from the seminal book "Magic, Reason and Experience: Studies in the Origins and Development of Greek Science" by Geoffrey Lloyd, one of the few books I have kept from my university days, along with the Chalmers work above.*

*Perhaps it is not surprising after all that some of the most useful thinking for dealing with the complexities of a rapidly changing business world has its origins in the study of the last great revolution in human philosophy – the transition from the age of magic to the modern world of reason and experience. I offer a sincere thank you, across the years and the miles, to my teachers of old. The sparks cast in the late 1980s have turned into a blazing fire in 2014.*

## Latest issue from Pottinger Perspectives:



Corporate decision making is filled with allusions to eyesight: “it is good to be visionary”, “you’d better keep your eye on the ball”, “don’t be blindsided” and “watch out for tunnel vision”. When we talk about what a *company* sees, that is unquestionably data.

Yet, when it comes to the incorporation of data into strategic decision making and capital planning, it is typically a case of the blind leading the blind. Even when data is incorporated into strategic decisions, there remains an overwhelming preference for outdated tools, which do not respond to the realities of modern data analysis and the insights that this brings. Discounted cash flow models date from the same era as Polaroid cameras and liquid paper – and unthinking reliance on them has severe and often very expensive implications for investors, employees and all other stakeholders.

<http://www.pottinger.com/quant-or-bust.html>

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We help our clients to adapt, innovate and transform their organisations to ensure their sustained success in today’s increasingly complex and fast-moving business and economic environment. We do this by providing insight and advice that encompasses the design of strategy and the negotiation and execution of M&A transactions.

Our clients say that we offer a completely different proposition to traditional consulting and investment banking advisors, seamlessly integrating true strategic thinking, commercial insight, financial expertise and execution excellence. Our assignments typically relate to one or more of:

- Strategy and public policy
- Mergers and acquisitions
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Together our team has advised on over 200 M&A and financing transactions, as well as many significant strategic advisory assignments. Our experience covers most of the world’s larger economies, and we enjoy the complexity of assignments that extend across borders and cultures.

We are regarded as an industry leader in productivity and as a role model for investment in our people. We have been recognised by the Australian Workforce and Productivity Agency as a benchmark for effective skills development in financial services and for the last seven years we have been awarded “Recommended Employer” by the Australian Business Awards.



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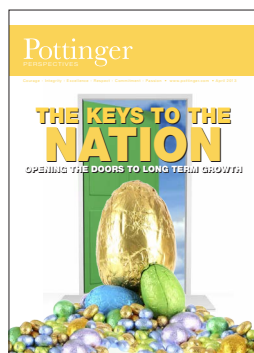
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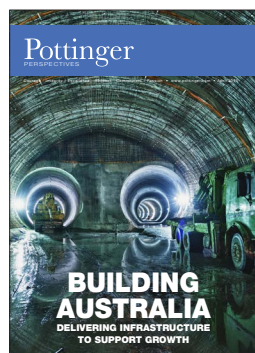
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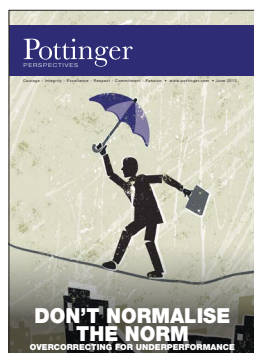
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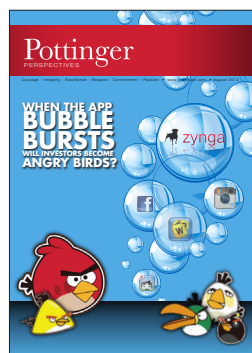
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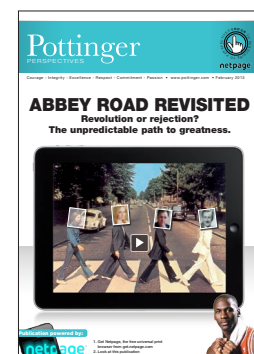
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