GUY FRASER-SAMPSON

THE PILLARS OF FINANCE

THE MISALIGNMENT OF FINANCE THEORY AND INVESTMENT PRACTICE

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The Pillars of Finance

Also by Guy Fraser-Sampson

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The Pillars of Finance

The Misalignment of Finance Theory and Investment Practice

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Contents

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Chapter 1

Introduction

Rather a long time ago I found myself sitting in a finance class as I studied for an MBA. For any reader who has studied finance themselves, we had just got to the stage where the lecturer was explaining that the risk premium of any investment was the same as its excess return. I struggled in vain to get my head around this. How could something good and desirable (excess return) constitute 'risk'?

'I'm sorry,' I said, 'but I don't understand.'

The lecturer looked at me condescendingly.

'The maths really isn't that difficult,' he said, 'but I'll happily take you through it again if you like.'

'No, I understand the maths,' I replied. 'I just don't understand what you mean by "risk". How are you defining it?'

He stared at me blankly, as a murmur of agreement spread among the non-financial folk in the room. Then his face cleared.

'Just learn it this way for the exam, OK?'

I suppose the problem was in large part that I had originally studied law and gone on to qualify as a lawyer. If your mind has been trained to approach any question by working out which rules might apply and then reviewing the facts to see where the best fit might lie, then the meaning of words is key. Legal rules are framed in language (they could hardly be anything else) so

it is important to understand what they say as precisely as possible. More cynically, it is also helpful to be able to suggest ways in which their meaning may be manipulated to serve the ends of one's own client, but again this is impossible without a good understanding of language and meaning generally.

When you study law at university you are required to study something called jurisprudence, which is essentially the philosophy of law. Thus, in addition to the dry stuff of statutes and cases you are forced to consider questions such as 'what makes a good law?', 'are we required to obey a bad law?', and even more fundamentally 'what is a law?' While many of my fellow undergraduates were unhappy about this, resenting the lost opportunity of being able to study an additional practical module such as Company Law or Succession, I found it immensely enjoyable. Perhaps this had something to do with the fact that I had already read quite a lot of philosophy myself, and had found it a worthwhile experience despite much of it being written in language so impenetrable that I vowed then and there that should I ever find myself faced with the task of writing a book, then I would endeavour to do so in as open and entertaining a way as possible.

My concern with the meaning of risk stayed with me over the years, at first as no more than a niggle in the background, but as I saw more and more examples of people reaching obviously bad decisions through what felt like a slavish adherence to an obviously artificial concept then it grew steadily stronger. The more I thought about it, the more I wondered not whether Finance had got it wrong (that was obvious to me), but how and why, and why on earth nobody else seemed to think that any of this was of any consequence.

Jurisprudence offered a clue to this last point. If the students of every subject were also forced to study philosophy then perhaps they too would be able to take a wider view, one of which the practical skills and technical knowledge that they were taught formed a part, but not the whole. One in which these wider considerations could be seen as giving context and meaning to the specialist theory. One where, should conflict arise between this overarching intellectual framework

and the narrow thinking of the discipline itself, then the latter would be thrown into question and forced to justify itself.

The Italian philosopher Benedetto Croce encapsulated what I had in mind far more eloquently. He said that a heart in the right place, rather than a mind in a high state of training, was the more likely source of truth.[1] It seemed to me that what I was already starting to term Finance World was evolving highly intelligent ways of seeking knowledge, but starting from the wrong place and taking aim at the wrong targets. Instead of seeking to impose order upon apparently random data, they should have been asking themselves basic questions such as 'what is finance?' and 'how does it operate?'

I was subsequently lucky enough to be allowed to study for a PhD on the nature of investment risk under the supervision of Professor Steve Thomas at Cass Business School, and the literature review which appears later in the book is taken directly from my PhD thesis. This was an interesting and comforting process, since as I pursued it I became aware that in fact others too had harboured doubts about the traditional view of risk. The works of others revealed that even the word 'traditional' is misleading here, since the truly traditional view had been that risk was too complex ever to be properly understood, and certainly incapable of mathematical calculation, whether in the way that Finance World proposed or otherwise.

On the contrary, the prevailing view was of fairly recent origin, having been advanced in a single article by Harry Markowitz in 1952. The choice of the word 'advanced' is deliberate since Markowitz never actually said that what he was calculating was the same thing as risk, though it is implicit (he actually used the phrase 'an undesirable thing'). Upon these rather shaky foundations Finance World then piled a mass of mathematical techniques, many of which form part of what has become known as Modern Portfolio Theory.

I was also lucky enough to be guided towards the works of various eminent research scientists, books which I would

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[1] As interpreted by Clive James in *Cultural Amnesia*, Picador, London 2007.

not normally have tackled despite being a compulsive reader. Understanding how scientists pursued their quest for knowledge raised yet more questions about how and why Finance World operated as it did and, as will become apparent, I read the likes of Popper to get a clearer grasp of just what a 'science' might be in the first place.

Over the years I slowly moved towards a very different view of risk. I also started to try to sketch out a framework for gaining a better understanding of the whole broad sweep of finance in the same way that scientists had done in fields such as physics. To this end, it was not enough to look at risk in isolation, at least not until one could fix its own meaning and place in the overall scheme of things. It was this that gave me the idea for the pillars of finance which, with the appropriate addition of upper case letters, duly became the title of this book.

The purpose of the pillars of finance is to frame and advance our own quest for knowledge, in the same way that time, space, and causation do for physicists. This is particularly necessary in the case of finance, since nobody seems ever to have asked, let alone attempted to answer, the most fundamental question of all, namely 'what is finance?' A sneaky look at the closing paragraphs of the book will reveal that I advance the suggestion that finance is some sort of function of return, risk, and value operating in the presence of time and human behaviour. This may or may not be a proposal that will stand the test of time (indeed, I hope not, since only by a hypothesis being discarded and a new and potentially better one being adopted can progress be made), but it does at least offer a decent starting point.

What was required, then, was a study of all these pillars, not just risk, and that is what this book attempts to do. It is important to recognise from the outset that this is not an easy task, as may be guessed from the facts that this book has been ten years in gestation, and has taken me well over a year to write.

One problem is that nobody appears ever to have considered most of these questions before, and the works of those who have, such as Ludwig von Mises, appear to have been

ignored to an extent which in the hands of a conspiracy theorist might well produce accusations of them having been deliberately suppressed. Perhaps this has something to do with the Markowitz-type view having hardened into something approaching religious dogma. Whatever the case, there is little guidance to be found from anything written after the Second World War, at least not within the realm of finance.

Another problem is that it is impossible to look at any of the pillars in isolation. I have where possible sought to push and pull them into dedicated chapters of their own, but such an approach requires some repetition of both material and argument. After much consideration I took the view that this was an acceptable price to pay for the benefit of at least partial compartmentalisation of topics, and I would ask the reader's indulgence in this regard. For example, much of the discussion about return mirrors what we need to say about time, there are equally obvious cross-overs between return and risk, while issues such as subjectivity, perception, behaviour, emotion, and even the nature of knowledge itself are threads which run through everything we need to consider.

Mention of these matters raises another obvious requirement: it is not possible to seek any understanding of finance without considering other academic disciplines such as psychology and philosophy. In addition we will look at examples drawn from art, literature, and various other areas.

Bringing these two factors together, some chapters offer vignettes drawn from real life which invite the reader to adopt a different perspective on various aspects of finance, hopefully prompting some new insights in the process. I have learned over the years, in both teaching and speaking assignments, that people tend to respond to images and stories much more readily than they do to dry facts, so please accept these in the spirit in which they are intended (which is at least partly as fun).

Incidentally, I believe that it was in the application of disciplines such as philosophy to finance that I began to make real progress. As we will see, a school of philosophy called Logical Positivism undoubtedly played a key role, largely unrecognised today, in enticing finance down a wrong turning from

which it has yet to return. Similarly, it was when I considered the difference between a subjective, as opposed to an objective, perspective that my ideas on the nature of risk started to fall into place.

I soon realised that once you approach finance in a spirit of honest enquiry, rather than noting and accepting what Finance World would have you believe, it not only becomes quickly apparent that we hardly understand anything at all, but also that the existing framework has been sloppily constructed. Nobody has ever bothered properly to define the terms or set the parameters. Instead, finance has simply been assumed to be whatever makes it most convenient for academics to pursue their own particular fields of enquiry, and whatever causes the least friction with an investor's chosen methodology.

To make this rather naïve construction seem less silly, Finance World has set finance within the imposing field of science, thus legitimising the purely mathematical techniques which they have chosen to employ. Yet ironically as soon as one subjects finance to any rigorous analysis it can be seen that not only is it not a science, but also that even those who are most vociferous in their declarations of its scientific nature actually treat it in a most unscientific way. We will be considering this with the assistance of Karl Popper, who, as noted already, wrote extensively on what qualifies as a 'science' and what does not. We will see that, far from being a science, finance as it has been practised more closely resembles the development of religion as described by Frazer in *The Golden Bough*,[2] with belief elevated to the status of sacred dogma, and high priests initiating adepts into its mysteries. In such an atmosphere, honest enquiry tends to be seen as dissent, or even heresy, and treated accordingly, usually accompanied by accusations of lack of understanding.

It was this failure of finance to address the most fundamental questions such as 'what is finance?', let alone 'what is

[2] James Frazer *The Golden Bough*, Wordsworth Editions, London 1993 but originally published in 1890.

risk?', that got me thinking what a pity it was that, unlike law studies, finance did not include any comparable subject to jurisprudence, especially when I found out that scientists (real scientists, that is) were encouraged to study the philosophy of science.

While it lies beyond the scope of this book, this almost certainly explains why, until very recently, finance was seen as operating in a sterile vacuum of numbers and mathematical processes, entirely divorced from either behavioural factors or ethical considerations. In the current environment, of course, ethical issues have forced their way to the foreground and finance is struggling to adapt and evolve with this new development. In part this is because, since it has no equivalent of jurisprudence, it has no conceptual frame of reference with which to consider these soft, qualitative questions that require value judgement rather than mathematical calculation.

In part, though, it is because to accept the need to do so upsets the cosy existing view of risk. Once you accept that ethical considerations are relevant you must accept that investors and financiers will at least consider and seek to avoid being exposed to the opprobrium of the press and the public, to say nothing of their peers. Indeed, anybody who is today engaged in any way in the taking of investment decisions, whether as principal or adviser, will know that this 'headline risk' or 'reputational risk' can be the most important factor in deciding whether or not to adopt a particular course of action. Yet to admit that there is material risk attaching to an investment which is not capable of mathematical calculation flies in the face of the present approach.

It is this tendency of science to ignore anything that cannot be calculated which forced a narrow, mathematical approach on finance. In such an environment it is irrelevant to consider people's behavioural impulses, or what impact they may have upon others, society, or the financial system as a whole. In fact finance expressly abjures any such enquiry, requiring us to believe that all investors are rational.

The practical consequences of this failure by finance properly to enquire into the nature of its cogs and levers can be

seen all too clearly as part of the origins of the crisis which began in 2007. Because risk had been misunderstood, it was mis-described and mis-priced. At the same time, things which were undoubtedly 'risk' were ignored because they did not fit the accepted definition. Arguably, all these factors remain in place today.

Meanwhile the awkward squad has been growing larger and more vociferous. Just within the last two weeks of the writing of this book, I twice heard the validity of Modern Portfolio Theory being openly challenged: once at a family office investment conference, and once on a radio programme. The cracks between financial theory and investment reality have widened into a yawning gap and people are starting to notice, though as yet they have questions but no answers. This book is designed, if not to supply them, at least to suggest where to look.

As to that, I promised some vignettes and different perspectives so let us dive straight into the wonderful world of Douglas Adams.

Chapter 2

The ultimate question

In Douglas Adams's *Hitchhiker's Guide to the Galaxy* series of novels (described by its creator as a trilogy in five parts), a race of super-intelligent beings build a massively powerful computer called Deep Thought to find the answer to the Ultimate Question: Life the Universe, and Everything. After seven and a half million years of consideration, it gravely announces that the answer is 42.

There is a direct analogy here with the world of traditional finance, in that whenever you ask a broad, conceptual question you are guaranteed to receive a narrow, calculated answer which may or may not be correct. In fact, it is almost guaranteed *not* to be correct, but we will come back to that. What is much more important is to understand why this might be.

A closer examination of *Hitchhiker's Guide to the Galaxy* (a work to which we will return) reveals an important clue. When Deep Thought eventually spews out its solution to the Ultimate Question (chosen, said Adams, because 42 was by far the most amusing of all the two digit numbers), his baffled minders finally think to ask the great machine what the question was. Deep Thought confesses that it does not know. His creators realise to their horror and embarrassment that they have wasted seven and a half million years trying to find the answer to a question, without first defining which was the correct question to ask.

A further clue is that computers, no matter how powerful they may be, are of course incapable of conceptual thought, and must therefore always turn towards a calculated answer to any question, or, perhaps more precisely, one that is capable of calculation. It is a method of response which also seems to afflict many who labour in the field of finance.

Ask a question such as 'what is the risk of this investment?' and we will receive a '42' type response – probably something like '14.3 per cent', without even specifying 14.3 per cent of what. We are implicitly challenged to take issue with the answer, and the challenge usually goes unanswered. Even if we did challenge it, we would be curtly assured that the answer was correct, and indeed it would be – in the sense of having been correctly calculated.

The inventor of the world's first programmable computer was of course the brilliant mathematician Alan Turing, who built it in conditions of great secrecy during the Second World War with self-educated post office electrical engineer Tommy Flowers. Sadly, because of the highly secret nature of their work (the British had it in mind to use the machine and its successors to crack Soviet codes in the same way as it had helped to crack the German codes originated by the Enigma machine) both were denied true recognition for their achievement for many years. Turing was awarded a relatively lowly civilian decoration (the OBE) where surely a Nobel Prize would have been more appropriate had people known the full story, while Flowers received the even more humble MBE and was sent back to work repairing telephone exchanges. Turing was to die of cyanide poisoning in mysterious circumstances in 1954, by which time he was seen as a security risk by British Intelligence following a conviction for homosexuality, which would not be de-criminalised in the UK until as late as 1967.

Turing wrote a classic paper on computers in 1950, although it was based on work which he did during the war, to which he could of course allude only obliquely, though it does contain confirmation that binary digital computers had already been developed and, by clear implication, that he had played a major part in the process. Its dry academic title was *Computing Machinery and Intelligence* but, as Turing made clear in the very first sentence, it set out to consider the question 'can machines think?'

There then follows a very important little passage, the significance of which is usually overlooked. Turing says that in

order to consider this question it is first necessary to arrive at definitions of 'machine' and 'think' respectively. This may seem an obvious thing to say, and thus trivial to remark upon, but it is actually very significant indeed with regard to the world of traditional finance. As we will see, finance does not set out by defining its terms. It simply accepts whatever definitions have already been arrived at and, again as we will see, these have been put in place originally in a very artificial and irrational way by limiting the sort of questions which might be asked during that discussion, and thus restricting both the number and nature of possible answers.

It is in such apparently simple and obvious steps that true genius can perhaps most readily be discerned. For this is not an approach which Turing adopts simply for the purposes of this paper. On the contrary, an obituary published by the Royal Society in 1955 makes it clear that this:

> strong preference for working everything out from first principles instead of borrowing from others – a habit which gave freshness and independence to his work

was a lifelong practice, and indeed that even while at school he had been the despair of his science teachers by constantly challenging anything which they advanced as a proven fact. Clearly Turing was one of life's awkward squad; we will be meeting more members of this exclusive club in later chapters.

Turing defines the sort of machine which he has in mind as a digital computer, and gives an analogy of a human computer. This human is required to function according to set rules from which he is not allowed to deviate. He may perform any number of calculations, whether addition, subtraction, division, or multiplication. He also has an infinite supply of paper upon which to perform and store these calculations, and a desktop calculator to assist him.

He has more problems when it comes to 'thinking', since he readily admits that there are alternative views of this. He is quite clear, though, that it is more than simply making calculations

and following rules, another acute observation which has sadly been lost upon the practitioners of traditional finance:

> The popular view that scientists proceed inexorably from well-established fact to well-established fact, never being influenced by any improved conjecture, is quite mistaken. Provided it is made clear which are proved facts and which are conjectures, no harm can result. Conjectures are of great importance since they suggest useful lines of research.

Turing believes that, as so defined, no computer then available was capable of 'thinking', but that by about 2000 this would have changed. Scientific opinion is still divided upon the extent to which this prediction may or may not have been proved correct, but Turing's paper remains a classic and is still discussed today on a daily basis.

It is perhaps best known for its postulation of what Turing called 'The Imitation Game' in which a man (A) and a woman (B) sit in different rooms, being asked questions by an observer (C) in a third room and answering them by teleprinter. C's task is to determine which of A and B is a man. A's task is to confuse and mislead C. B's task is to help him. Turing's idea was that you would run the game a large number of times, and then repeat the experiment with a computer taking the part of A. Would there be a difference in C's success rate?

Of course, as Turing himself admits, this is not the same thing as determining whether a machine can 'think', but whether it can be developed in such a way that can fool C into thinking that it is a man. (Note that C's objective is not, as many observers have wrongly stated, to decide which of the players is human but (effectively) to decide which is a woman. It is unclear why Turing stated the problem in this way.) It may be that what he has in mind is for a powerful enough computer to be capable of being programmed with the best way of responding to any possible question, though whether this would satisfy his own proffered definition of 'thinking' is open to question. Whatever the case, Turing admitted that such a thing was not possible (though he believed it would be in the future), but

he suggested at various times that a computer might be more capable of human-like thought, or of seeming to be capable of it, if some totally random element, such as a random number generator, was built into its processes.

So, by Turing's definition, a computer is capable of calculation and of following processes that can be expressed by 'is/is not' logic, and can in fact do so much more quickly and efficiently than any human. He might have added, though it is probably implied by his provision of an infinite supply of paper, that a computer is capable of finding 'best fit' solutions to problems by means of iteration (running the same calculation many times with just one input varying each time, in order to confine answers within a constantly narrowing range of uncertainty). It can appear to think intuitively, but only by effectively rolling a die or spinning a roulette wheel as part of its workings.

Even Turing, though, despite his high expectations of the development in artificial intelligence, drew back from suggesting that a computer would ever be capable of conceptual thought. If you present a computer with a blank sheet of paper then it will remain a blank sheet of paper unless and until you program the computer to do something. It is incapable of writing down, as a human might if he or she was recording his or her thoughts, something such as the following:

> What shall I think about today?
> What are the topics I have been considering lately?
> Which of these shall I choose to consider today?
> What exactly is it that I wish to resolve?
> How shall I frame the relevant question?
> How shall I define the terms which I use to frame my question?
> ... and so on.

This is exactly the mistake made by the inventors of Deep Thought. They believed that if they produced a computer with sufficient capacity, it would be able to choose exactly how to express the question to which they wished to know the answer, and to define precisely each term used in that question.

They might also have spotted that 'Life, The Universe and Everything' is not actually a question in the first place, but that is another matter.

They were wrong of course. No matter how powerful and sophisticated the computer, these tasks are beyond it and probably always will be. You can program a computer how to respond to an infinite number of individual questions. You can even give it fuzzy logic so that it appears to be able to 'learn' from past experience (although all it is really doing is noting a particular combination of circumstances and assuming that whenever they recur in the future, so will the same outcome), but you cannot grant it the power to take a blank sheet of paper, gaze out of the window, and come up with a conceptual question which it wishes to debate with itself. You cannot get it, in Turing's words, to 'conjecture'.

Conversely, even human beings, who *are* capable of conceptual thought, cannot calculate an answer to a question whose terms are ambiguous ('what is the risk of this investment?') or which is simply incapable of a calculated solution ('do you think Janet would make a good wife for John?').

In the first example, it all depends what you mean by risk, and, even if you define this clearly, it still depends on whether you have chosen something that can be measured in the first place, and whether you have the available data and formulae with which to do so. It also assumes that there are no other variable factors which you need to take into account, such as the circumstances of different investors, or changing economic conditions.

In the second example, there is no recognised way of calculating an answer based on any accepted, objective, quantitative scale. In any case, it would depend upon what John was looking for in a wife, whether he was correct in his views, and how well I know Janet. It might also depend on how well Janet might be able to conceal her true nature from me, and on the circumstances in which I thought it was likely Janet and John might find themselves during their married life together.

Important points, surely, and yet points which are simply ignored by traditional finance. Not so much ignored, in fact,

as simply airbrushed out of existence. Remember Joseph Heller's *Catch-22*, a made-up phrase which has passed into everyday usage. The original Catch-22 related to airmen trying to get relieved from combat flying on the grounds of insanity (echoes of Klinger in *MASH*). The regulations provide that in order to be relieved you must be insane, but they also provide that the act of making an application to be relieved from combat flying is the act of a sane man. Thus, no application can ever succeed.

As we will see in later chapters, Finance World uses a similar device. Though it is never expressly stated in this way, it is as follows:

> *Principle A: it is possible to calculate the answer to any question*
> *Principle B: you may not ask any question to which it is not possible to calculate the answer.*

Obviously if you restrict the number and type of questions which it is possible to ask, then you also restrict the scope of debate. What you are effectively doing is to rule certain matters as being unsuitable for discussion. For conceptual enquiry, Turing's conjecturing, requires language which is rich in subtle shades of meaning, and yet clear and precise. The English language, by the way, is ideally suited for this task since it is an amalgam drawn from at least three different linguistic sources, and has a much larger and richer vocabulary than, say, French where one French word often has to do service for three or four English words, all of which have slightly different connotations; a difference which it is often difficult to express properly in French translation.

Suppose however that you were deliberately to restrict the number of words available for use, perhaps even to restrict the number very severely? This is exactly the situation which George Orwell imagines in *1984*. He envisages a dictatorial regime simply expunging from the language any terms which refer to things they do not wish to have discussed. In place of standard English they create Newspeak, 'the only language in the world whose vocabulary gets smaller every year'.

In addition, the words they retain relate only to their antonym, that is, a word with precisely the opposite meaning. Thus, in describing conduct there may be 'good' and 'bad', but no 'tolerable', 'reasonable', 'excusable', or any of the other many words which could be used to describe shades of meaning in between. In such circumstances, conceptual discussion of course becomes impossible – exactly what the regime wants; you cannot discuss or think about something which you cannot describe or define.

Let us go back to the question 'what is the risk of this investment?'

Suppose that the investment in question were some shares in a Russian oil company, then an intelligent response might be to begin by listing all the various different types of risk to which such an investment might be subject: oil price risk, currency risk, Russian political risk, stock market risk, terrorist risk, and so on. An even more intelligent response might be 'well, it all depends'.

Perhaps it all depends on what you mean by 'risk', or on the particular circumstances of each individual investor, or on what the available alternative investments might be, or even on why you want to know the answer to the question in the first place. Traditional finance however will not even pause to consider these wider ramifications but will simply spew out an answer like 42. It is content that the answer is the correct answer to *a* question. It is not concerned as to whether it is the correct answer to *the* question which you wish to pose. It can produce a correct answer (but only, as we will see, to certain types of question), but it cannot determine what is the correct question to be asking in the first place.

Why is it that finance, like Deep Thought, is incapable of resolving any situation except by churning out numbers which may or may not make sense? Well, the two most important clues to this mystery have already been disclosed. Finance (1) never stops to consider 'what is the right question to ask?', and (2) is incapable of answering any question except by means of mathematical calculation.

How is it able to get away with this? Effectively by use of Newspeak. Finance has evolved a language of its own, which it forces us to use, and in so doing effectively strangles any possibility of conceptual thought. Suppose, for example, that you did indeed begin your consideration of the question by saying 'well, it all depends what you mean by risk'. Roget's *Thesaurus* lists well over twenty words which are synonymous with the adjective 'risky' yet each of which has its own subtle shade of meaning. Finance Newspeak however recognises only one. It then compounds this problem by using the word in a sense which has no bearing at all on how it is used in everyday speech. So, not only are we denied an opportunity to go back to first principles for ourselves, as advocated by Turing, but we are actively misled, since everybody outside the world of finance (and even quite a few within it) will never realise that what is being described is not even 'risk' in the generally accepted sense of the word at all.

Traditional finance, then, may validly be compared to a totalitarian dictatorship which actively suppresses conceptual debate because it cannot handle its possible consequences, and which feeds false information to the population into the bargain.

For once you allow people to debate, for example, 'is this government better or worse than its predecessors?' you prompt discussion not only of what 'better' or 'worse' might signify in these circumstances, and to what extent even these terms may be incapable of general agreement, but also what constitutes a 'government'. From here it is but a short step to asking what forms of government may be appropriate, and how and why a government might need to prove its validity, for instance by due democratic process. Much easier simply to stop people from being able to ask 'what is government?' in the first place.

Traditional finance has its own chosen means of stopping this discussion dead in its tracks. First, it would rule the question unacceptable because it is not capable of a mathematically calculated answer. Second, no discussion would in any event

be possible because the word 'government' would either no longer form part of the language, or would have been ascribed a set definition from which you would be unable to depart through fear of having electrodes attached to your genitals.

As we will see in a later chapter, when we consider the concept of knowledge itself, sciences such as physics rest upon firm foundations. A physicist would probably state that physics rests upon three interlocking things: space, time, and causation, and would be able to define exactly what was meant by each. A traditional finance tyro would, if pressed, probably venture that the three pillars of finance are risk, reward (or return), and value. Yet follow-up questions such as 'what is risk?', 'what is return?', and 'what is value?' would be met either by a blank stare, or an attempted explanation of how they might be calculated in particular circumstances.

For traditional finance is incapable of conducting conceptual debate. Like Deep Thought, it is capable of spitting out a neat calculated solution to any problem which may be stated as a mathematical formula or a logic proposition, but it is incapable of framing the question in the first place, or of testing whether the right question is being asked, or even of ascertaining whether it is appropriate to be stating it as a formula or proposition.

The fact that we need to to ask these very necessary questions about the nature and validity of the pillars of finance but are unable to do so, masks an even greater need which lies unfulfilled. Before we can even embark upon this process, we need to find the answer to our own Ultimate Question: what is finance?

What is finance? How do we define it and describe it? Have we actually understood even the basic points of what it is and how it operates? Should we not at least consider the possibility that what we know as 'finance' is actually an impostor, who has kidnapped the true finance and locked it away in a cellar somewhere while it carries on a massive deception on the world at large, having stolen the prisoner's clothes and identity?

As we will see, the answer to this last question is actually 'yes'. What the world knows as finance is really the biggest

intellectual confidence trick ever to be perpetrated, one that has seduced the finest minds in the finest universities and investment banks, a lie upon which a whole industry and sub-industries have been built, and a deception, moreover, which has enjoyed such total and prestigious support that none has felt able to question it.

Like the builders and operators of Deep Thought, we have been blinded by its supposed intelligence, and have thus felt unable to question its thought process. To have suggested at any time that it didn't actually know what it was doing would have required great moral courage, and possibly suicidal leanings. Like the subjects of the Emperor walking through the streets naked, we have felt compelled to admire the fine fabric and workmanship of his imaginary clothes. It takes an innocent child to shout out the truth: that His Majesty doesn't have any clothes on.

We need to understand why this totally false view of finance has been able to hold sway for so long, but in order to do so we must consider how this state of affairs came to pass in the first place.

This is an important point which is lost not only on those who practice finance, but on all those who labour in just about any field of study today. As the base of human knowledge has expanded rapidly, so we have each been forced to study a smaller and smaller area in greater and greater detail. As our knowledge has deepened, it has inevitably grown narrower. It is like pushing a cloth down through a hole in a table with your finger. The deeper it goes, the less of the surface of the table will it cover. If we are truly to understand finance, we need to try to put this process into reverse, since its mysteries cannot be grasped in isolation.

The great cricket writer and commentator John Arlott put this as well as anyone when he said 'what do they know of cricket, who only cricket know?' Substitute 'finance', or indeed anything else for 'cricket', and there you have it. In order to understand something you have to know not only what it is and how it operates, but how it came about and what beliefs and other influences operated upon it in the process. Arlott

himself, incidentally, put his beliefs into practice. As well as being a renowned authority on cricket, he was an acknowledged international expert on the red wines of Bordeaux, a soccer journalist, an active human rights campaigner who was an early and vociferous opponent of apartheid, a police officer, and for many years the BBC's poetry correspondent, credited with discovering the young Dylan Thomas.

So, in our quest for the answer to our own Ultimate Question we will be dealing not with formulae and calculations but with images and illustrations drawn from history, psychology, literature, philosophy, and science. Why? Because they have all operated upon finance in the past, influencing its development, and continue to do so today. In the process we will hopefully establish what sort of an animal finance is, or at least what sort it is not. This is important, since it will influence the way in which we approach it. If a forensic scientist is examining a myxomatosis virus and is asked whether it constitutes a threat to the patient's health, he or she will need to know whether the specimen has been taken from a human or from a rabbit before a sensible answer can be given.

In this way we will hopefully come to know the right questions to ask to unlock the prisoner in the cellar, and bring him blinking and uncertain into the daylight. We also need to be able to recognise how much damage the impostor has inflicted on the world of investment in the meantime, and why, and how.

There are some in the world of traditional finance who may see this exercise as irrelevant or, still worse, a threat. It is neither of these things. For it is only by asking the right questions, from a secure base of understanding how things came to be as they are, that we might go about trying to get things right in the future – and that surely is in everyone's interests. After all, we need to choose some new clothes for the prisoner to wear on his release.

That is what this book is about ... and our quest for an explanation will begin in Kansas City in 1931.