TECHNICAL ANALYSIS AND THE ACTIVE TRADER

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Challenging the Herd

It was as a result of a combination of factors over the past three or so years that I was actually driven to write this book. First, Nassim Nicholas Taleb's excellent book *Fooled by Randomness* had a great impact on me. I found it a refreshingly different account of the business from the one that is usually described in books, and I believe that it is a must read for anyone who wishes to trade or invest. It was a great relief to me to find that there were other traders who shared similar beliefs, as I have mainly encountered traders who more closely resemble John the high-yield trader who is described in the first chapter, whereas Taleb's description of Nero Tulip (another more conservative person and trader) at times was uncannily similar to myself. (I just hope my ending is different!) Furthermore, the extent to which the book has been received and accepted gave me confidence that traders and investors are beginning to understand concepts such as stationarity and the misuse of probability, ideas that are central to my experience-based beliefs. Some of the concepts that I cover are probably more eloquently described in Taleb's book; I merely try to apply them to my topic of discussion.

Second, since moving to Western Australia, I have finally had the time to read many studies of technical analysis as well as of the relatively new field of behavioral finance. The former helped me to realize just what information and evidence on technical analysis are available. The latter is an exciting area that many private traders in particular will not be aware of. It is a positive science that bases its opinions on how people are actually observed to behave, whereas I believe that technical analysis and charting are more of a normative science and draw conclusions based on how they believe participants think. Until now, behavioral finance has been regarded as diminishing the case for efficient market theory; however, I hope to show that some of its findings also contradict some aspects of technical analysis. Perhaps

of more relevance is that in those instances, it is possible to see and understand how and why markets behave differently from how technical analysts believe they behave. Behavioral finance can also offer us an insight into why technical analysis and charting are so popular.

Third, having attended seminars and read many advertisements from individuals and firms offering chart- or technical analysis–based trading courses to private traders, I was appalled by some of the tactics employed. I wanted to set the record straight and explain why many of the claims made by these firms are false or misleading. In fact, I am amazed at how different the trading and investing world is to those on the outside who view the markets through the media and their "educators." Some of what I have read in magazine articles or heard at seminars has been so far removed from what I and my bank trading colleagues discussed and used that I wondered whether we were in the same business.

Thus, I believe that it is private traders and investors who can learn most from this book. I have attempted to collate and explain many interesting studies and papers and views that such traders would otherwise not have seen. I also wanted to show that the claims of chartists and technical analysts are theory, not fact, and that they have yet to be adapted to new studies or changing markets. The first part of that sentence may seem obvious, but when I was researching technical courses, I found that many gave the impression of being scientific and based on proven credentials. I want to show that there is far more to a sustainable trading career than back-testing moving averages or being able to identify a rounded-bottom formation and that any individual who thinks that there are shortcuts to success is deluding him- or herself, no matter what some course providers suggest.

I outline many potential deficiencies in charting and technical analysis to try to create an element of doubt on the subject in readers' minds. Even if you do not agree with me on all points, I believe that there will be some that seem strong. Hopefully, through this book, readers will become aware that technical analysis is not as scientific as it is often made out to be and that there are many questions that need to be addressed. I realize that some criticisms are stronger than others, but my aim was to include as many different reasons as possible why technical analysis might be a flawed concept. There seems to be a belief that just because technical analysis has been around for X many years, it must be beneficial. I want to show that this is not necessarily the case.

I do not expect everyone to agree with my views, but I do think that the issue needs to be debated more thoroughly. I want this book to be a wake-up call both to the industry and to private traders who might be drawn into technical analysis without ever questioning its merits. People seem to accept all too readily claims such as "the head and shoulders is a reliable pattern."

During my career, I have never had a problem with challenging the accepted wisdom, and I believe that this has helped to improve my trading. For example, I was in a minority in London when I viewed short-selling options skeptically in the early to mid-1990s. I had particular trouble persuading two former Salomon Brothers proprietary traders who were at the bank where I worked of the validity of my views. But within just two or three years, after their former colleagues had suffered the collapse of Long Term Capital Management and a few other events, views such as mine became more accepted. As a very good trader told me early in my career, "Your most profitable trades will be when you have the opposite position to most in the market." His words were certainly wise ones, and they not only backed up my own instincts to challenge widely held assumptions, but also added to my belief that following the herd or the trend would not always be the right way to be positioned.

While many people feel more comfortable doing what others do, perhaps in our business we need to step outside the comfort zone and be prepared to make our own decisions, act on our own analysis, and see if we can make it. However, I am in no way suggesting that I have "cracked" this business or that I am anything more than a normal guy who likes challenging assumptions, questions almost everything he is told, enjoys a challenge, and tries to learn from his and others' mistakes.

I would also like to say that I fully respect many of the more honest technical analysts out there, even if I disagree with their opinions. I respect their belief in their field and their dedication to it, although I do not believe that their analysis can have as positive an impact on trading as they believe. To be fair to them, they spend many hours analyzing charts and data, and they realize that experience is important too and that there are no quick routes to success. However, it is the claims and teachings of the more unscrupulous that I believe could seriously damage the industry's reputation. They fill the public's head with false beliefs that a profitable trading career can be enjoyed simply through back testing easily available data or being

able to recognize patterns. As I will highlight in the first chapter, even a supposedly respected senior member of the Australian Technical Analysts Association presented a seminar to potential clients for his course that I can only say highlighted some of the selling techniques that I object to so strongly. I realize that these firms and individuals are running businesses; however, unlike many industries, ours can actually lead to people losing significant sums of money. As someone who loves trading, I do not like to see individuals enter the business with false hopes, having been misinformed that there are easy routes to success.

While all the quotes and technical analysts' claims that I have used are genuine, I have not named individuals because I do not want to appear to be making personal attacks. I have used them simply because they are good examples of the points that I am trying to make. I have met some technical tutors who are thoroughly respectable, honest, and decent, but unfortunately, because of the nature of this book (a kind of reverse survivorship bias), they may not be mentioned. I expect a lot of criticism from those that I mention and from the technical analysis industry as a whole, but I am willing to accept this if it leads to a stronger debate on the topic.

At no point in my career have I ever made a conscious decision to doubt the benefits of technical analysis or charting; it's just that my experience of observing markets and their participants has led me to the conclusion that many of the assumptions of this form of analysis do not fit with what I have seen.

Of course charts will produce patterns, but I feel that the explanations for these patterns have little substance. In some cases the explanations for different patterns can contradict each other. In fact, when I was considering this point, I read the following statements in a course that was highly regarded in London. In the introduction, the author states, "It is fair to say that the vast majority of traders learn from their mistakes." Then, when discussing one of the main principles of technical analysis—namely, that history repeats itself, he comments, "Those who do not learn from the past are condemned to repeat the same mistakes over and over again. Sadly this is true of most people." I will discuss one area in particular where technical analysts believe that traders will learn from their mistakes or successes, which appears (to me) to contradict their belief that behavior is repeated. It seems to me that, having observed certain patterns appearing from time to time, technical

analysts have tried to construct explanations for why they have developed. In effect, the answer is known, and the technical analysts have then looked for evidence that would allow them to reach that answer. Surely a better technique would be to find out why people make certain decisions, understand what factors drive the markets, and then see whether this fits with the observed patterns. If not, as I think is the case in many instances at least, the patterns should be explained by mere randomness. Fortunately, we can now test some of the theories of technical analysis with the results from the behavioral finance studies.

I have also made an effort to describe *why* I think certain beliefs of technical analysts are incorrect. My concerns have usually been aroused by what I have seen in the markets. I have then researched to see if these concerns were backed up by other studies. Thus, I have not just tried to compile a study of technical analysis and claim that it fails; rather, I have endeavored to explain where I have seen it fail and to offer explanations as to why this might be the case. By doing this, I sincerely hope that my criticisms of the field will be acknowledged as constructive. This is an approach that I use in all aspects of my life, particularly my trading. It is not enough for me to be right (or wrong) about something; if I do not know why I was right (or wrong), then the result is of little consequence and might be attributed to luck.

I would also like to say that I did not set out to find only studies that agreed with my opinions. If I had found that the overwhelming evidence available suggested there are substantial advantages to using technical analysis, then I would have been forced to admit that I was wrong and to change my view. I can assure readers that I have no problem admitting when I am wrong, especially regarding trading, as doing so can prevent losses. In fact, I actually made an effort to ignore overtly negative studies on technical analysis, preferring to analyze studies that could offer more of an insight into why it might or might not work. Some of these on the face of it were actually positive toward some technical methods, yet when these studies were analyzed in more detail, the conclusions were not so clear-cut. Furthermore, when quoting examples from technical analysts, I have used only respected analysts and institutions to avoid being accused of scouring the murkier side of the business in a quest to find misleading statements or erratic analysis.

I am neither a mathematician nor a scientist; I am just a simple trader. This is why I have tried to look at technical analysis from a

trader's perspective. This is especially true of my analysis of the studies of technical analysis that have been conducted. There are people who are far more qualified than I to analyze the math behind them, although I do explore this area somewhat. However, with studies that use a sample period of say 100 years, I try to put myself in the position of a trader who was trading at the time to get a better idea of whether the trading tool was successful. As we shall see in Chapter 4, sometimes this can lead to different conclusions from those of the study itself.

ACKNOWLEDGMENTS

Trading and investing is a difficult business. There is much evidence to suggest that most individual traders and investors lose money during their (often short-lived) careers. Many people have grappled with the complexities of understanding economics and fundamental analysis and struggled to implement this and to achieve a successful trading technique. So when word spreads about people making money simply by analyzing past price data, whether it is done through patterns or indicators, it is easy to see why many will be attracted.

In fact, many of the principles of technical analysis and charting have been around for a hundred years or so, and there have always been a certain proportion of individuals who have believed in their merits. However I will describe in Chapter 1 how their popularity has increased in recent years and try to explain why.

Whereas investment banks put their trainee traders through a comprehensive training program before allowing them anywhere near a trading book, private individuals are being increasingly told that the answers to problems such as market psychology, when to enter and exit a trade, and how to test whether a strategy is successful can all be found through charts and/or technical indicators that are easily available.

Chapter 1 will also highlight some of the marketing ploys used by firms and individuals offering technical-based training courses and contrasts this to the methods of more fundamental-based course providers. I will also explain why some of the claims of the technical course providers can be misleading.

The second chapter outlines how and why technical analysis can sometimes yield positive results. Those who have read *Fooled by Randomness* will already be aware of concepts such as survivorship bias, data snooping, and the role that chance can have in all aspects of life, including trading. I also discuss whether technical analysis can be self-fulfilling (a hotly debated topic) and explain issues such as positive-feedback trading and how even "noise" traders (less-educated traders) can have profitable periods.

In Chapter 3, I discuss my own concerns with technical analysis as it stands today, the concerns that drove me to examine whether my beliefs (which were, after all, based on my trading experience) were supported by research that has been conducted on both technical analysis and trader psychology.

In the fourth chapter, I will outline and discuss the results of some studies of charting and technical analysis that have been conducted. Some of these are well-known within the industry but may be new to private traders. Importantly, in some cases I will look behind the headline conclusions of some of these studies to describe some of the secondary findings. These can be more important than the main conclusions. By the end of this chapter, readers should start to be building an awareness of just where the limitations of technical analysis might lie.

Chapter 5 introduces the field of behavioral finance, a relatively new field (compared to classical economics or charting), but one that is steadily gaining in popularity and acceptance. What is important to understand about behavioral finance is that it is a study of how individuals actually make decisions, including decisions where risk is a component, such as trading or investing. I will outline the main findings of this field and relate them back to charting and technical analysis in an effort to show that in some cases these findings are not compatible with the views of charting advocates. While behavioral finance is generally regarded as casting doubts on classical economics, and efficient market theory in particular, I hope to show that some of its conclusions are also incompatible with technical analysis as it is practiced today.

Chapter 6 analyzes the mechanics of modern markets and highlights just some of the different aspects that can affect a contract's price. What I aim to show is that just analyzing the price itself, without further knowledge or information, may not be enough. In fact, the idea of context is a central theme throughout the book. Just looking at a price or a series of data is, I believe, of little use without knowing the context of the information.

In Part 2 of the book, I outline a few suggestions to help us make better decisions. The starting point for this process is understanding the basics and fundamentals of our markets and doing our due diligence before we trade; this is all described in Chapter 7.

In Chapter 8 I discuss my belief that rather than being ahead, markets price in outcomes that may or may not be valid, as they can

sometimes reflect irrational thinking. I explain how understanding context and weighing possible outcomes are important techniques for us to learn and master.

Chapter 9 again covers the question of whether markets are ahead. We look at two correlated markets that are pricing in completely different outcomes. I suggest that they can't both be ahead.

In Chapter 10 I explain why it is important for us to make proactive decisions and how many technical indicators are too reactive for my liking.

And finally, in Chapter 11 we revisit the topic of behavioral finance and examine ways of avoiding or overcoming the heuristics.

Throughout the book, I have tried where possible to include anecdotes from my own experience as a way of describing how some of the points I make affect us in reality. I thought it very important that every issue that I deal with can be easily and directly related back both to the subject and to trading in general.

I would also like to emphasize that I am in no way strictly a believer in fundamental analysis. I believe that the widely held view that there are only two forms of analysis, fundamental and technical, is a little misleading. Understanding market fundamentals is important and can provide a reference point. Some forms of technical analysis can sometimes help, too, but on their own, both forms can have many drawbacks. Some traders use the two means together, which may be an improvement; however, there are still some missing links. As I will show that technical-based analysis of market psychology is flawed, this is one area in particular that traders will need to learn more about. Concepts such as weighing what is being priced into a contract and how this will be affected by possible outcomes, which is all part of the wider area of understanding risk, are just some of the complex areas that successful traders have to grapple with. Experience and art are a couple of extra factors that we will need to help us through this process. The former is possible only if we have a more rounded understanding of the markets (as well as discipline, humility, and some luck); the latter is something that not everyone will have and that will separate those who are cut out for a career in this business from those who are not. Unlike some of the advertisements that I see, I do not believe that everyone has the necessary attributes to be a successful trader or investor. For those who don't, it is important that they realize this early, before they lose too much money.

The Reality of
Technical Analysis

The Growth of Technical Analysis and Charting

THE MODERN FINANCIAL WORLD

There is little doubt that over the past 15 or 20 years in particular, the use of technical analysis and charting, both in financial market analysis and as an aid to selecting and managing trades, has grown considerably. This very statement could be used by supporters of chart-based theories to substantiate their claims of the technique's success. Surely if a method of analysis and trading did not work, it would not gain in popularity. However I believe that the recent growth in the sector can be attributed to a number of factors. In this chapter I will describe why new and existing market participants might be drawn into this area, while in Chapter 2 I will go on to describe reasons other than it is a robust and accurate trading and analysis tool that can account for the success of technical analysis.

To begin with we must look at a few of the important factors that have had a large influence on the way in which financial markets have developed over the past 20 years or so. Financial markets in most developed countries have undergone huge changes since about the mid-1980s. Initially, share markets became computerized, allowing for easier and cheaper transactions for all. More recently, futures markets in Europe and Asia have also moved from pit trading to screen

trading, and volumes have soared as a result. It is now only a matter of time before the large U.S. futures markets become totally computerized as well. New products such as Contract for Differences (CFDs) have been established, allowing individuals to trade (on margin) commodities and even currencies, which were previously out of reach of most traders and investors. All this has been made possible by the Internet and fast communications, making trading from home extremely easy. Financial markets are therefore more easily accessible to individuals than ever before.

Second, as far as the share market is concerned, the period has seen one of the greatest bull markets in history. Although there has been a shakeout, at this point in time most markets have stabilized and investors' confidence is high again. Therefore the period as a whole can still be viewed as one of significant stock market growth. As most investors and traders prefer to be buyers of shares (as opposed to short selling), we are more likely to see new participants entering the industry during such times of stock market gains.

Third, in the United Kingdom, Australia, and some European countries predominantly, there have been a number of privatizations of well-known national companies. Individuals were encouraged to participate in these share offerings and did so in large numbers. As a result, the level of share ownership in these countries increased significantly. In fact, it is quite plausible that as these individuals now held shares, they would be more inclined to follow the financial media and be drawn to making more investments.

The increasing emphasis that has been placed in all Western countries on the need for adequate pension provision has led to nearly all governments providing incentives for individuals to start up and fund their own pension plans. Many have just decided to put their money into managed funds, but a reasonable minority have decided to build their own portfolios, with shares in particular probably being the most popular investment.

As a society, our attitude toward risk has changed greatly over the past generation or two. Having witnessed firsthand the depression of the 1930s, my grandfather and most of his generation viewed debt (excluding mortgages) as something to be avoided. Yet nowadays most people readily take on many forms of debt, such as credit cards, store cards, and so on. Furthermore, as a society, we more readily embrace other riskier situations, such as self-employment and less social secu-

rity safety nets. In fact, I would argue that in many countries (although excluding much of Europe), there has been a shift in risk away from governments and corporations and into the hands of individuals. This shift in risk though has been cleverly framed by claims such as "we are giving individuals more choice" (governments) and "there is greater flexibility in working for oneself as a consultant rather than working for a company" (corporations). While these statements are partially true, individuals must realize that while they may be doing well out of the current situation, it is partly a result of their carrying more risk.

The upshot of this situation from a trading perspective is that as people have become more comfortable with risk, they have also been more inclined to trade or invest in financial products. The current boom in leveraged products such as CFDs, in which individuals are not only trading but borrowing money with which to trade, would further appear to support this argument.

Finally the influence of the media on society as a whole, and, more importantly for us, on the financial world, has grown immensely. There are now many dedicated financial television and radio stations creating celebrity analysts and presenters. Even mainstream channels are airing more financial programs, and virtually all news programs now recap the day's main market news. Moreover, the tone of financial reporting has changed. Previously, newspapers in particular would report market and company news in a fact-based manner that the general public would have found bland and difficult to understand. Nowadays reporting of this sort of news regularly includes tips and opinions designed to make the story more appealing to the public.[1] Similarly, as Robert Shiller explains in his book *Irrational Exuberance*, the media are prone to what he terms record overload. They like to report the market from the viewpoint of what records have been set, giving the impression that new records are constantly being established. I would argue that this is likely to encourage many people to enter the markets. There are also more financial newspapers and magazines, including many dedicated solely to trading (as opposed to investing). The growth of the Internet means that there are millions of trading- and investing-related Web sites and thousands of trading and investing chat rooms.

It is easy to see, therefore, why so many new participants have entered the business. We have the media all around us telling us how people are making their fortunes in the markets. Super-bullish analysts, financial advisors, and stockbrokers appear on our TV screens

telling us that markets always go up in the long term and that buying shares is a "no-brainer." We also see advertisements in newspapers and on the Internet in particular from firms that have found the "secret" to making money trading the markets.

Share trading is no longer a costly business requiring a relationship with a stuffy stock brokerage firm. We can place a few thousand dollars in an account and, with a few clicks of a mouse, become the proud owner of any stock we wish—no paperwork, no hassles. Furthermore, markets such as futures, commodities, and currencies can now be traded more cheaply and transparently and by anyone who wishes to do so. Following privatizations and the increase in emphasis on personal pensions, more and more people have entered the share market. To these individuals, the world of stocks and shares and financial investments in general is no longer one in which they feel uncomfortable.

LOOKING FOR TRADING EDUCATION

Having established that the number of traders and investors has increased considerably in recent times, let's now examine what these new traders and investors find when they look for help in learning to trade. I am not suggesting that they will all look for such education, but a high proportion will. So just what is the range of alternatives out there?

Across all forms of media, the overwhelming majority of the courses, education, and books found are based on technical analysis. When I visited the www.google.com search engine, I found there were nearly nine million items listed under "technical analysis" compared to just under four million for "fundamental analysis." "Stock market education" and "financial market education" had roughly three and a half and five and a half million items, respectively. What is perhaps more important is that on the more general searches, such as "stock market education," technical analysis or chart-based courses were by far the majority. Even some links that appeared to be neutral, such as ones simply offering stock market education, in fact turned out to be selling charting packages.

The tones of the links on the technical analysis search were upbeat and eye-catching, too. There were dozens of sponsored links (the ones that stand out on the right-hand side of the page on Google) on the technical analysis search that made claims such as "Smart

Trading Software—up to 80% accurate market predictions" and "Ultimate Forex Trading—understand market dynamics. Predict and extract profits." On my search under "fundamental analysis," I found only five sponsored links, one of which had no relevance to financial markets and two of which were actually for technical analysis products! On the whole, the links were also far more low-key in nature.

I will accept at this point that some of the items that are listed under "technical analysis" are in fact so-called black-box systems, which many technical analysts would argue do not provide technical analysis tuition. However, I would counter that the availability and acceptance of such systems has been helped by the belief that it is possible either by recognizing chart patterns or by analyzing technical indicators or past data to "beat" or predict the markets. This is a view that many technical practitioners have helped to spread.

If we look at the books available, we see a similar theme. Trading-related books are dominated by those on technical analysis. Titles such as *The New Science of Technical Analysis* give the impression that the field is scientific in nature. Others such as *Market Trading Tactics: Beating the Odds through Technical Analysis and Money Management* or *Predict Market Swings with Technical Analysis* or *The Investor's Guide to Technical Analysis: Predicting Price Action in the Markets* are in a vein similar to that of the links that can be found through the Internet search engines. They allude to the idea that technical analysis can help users beat the market.

We can already see, therefore, that in two of the most common means of finding information, namely via the Internet and through books, if we look for help in learning how to trade or invest, we are far more likely to come across technical analysis than any other form of education. Furthermore, the claims that are made by so many providers of technical analysis courses are very eye-catching and are more inclined to attract attention.

Attending expos (exhibitions) has also become a popular way for traders to seek out information and education. Under my company name (Marketwise Trading & Consulting), I took a stand at one such expo in Perth. Once again, a good majority of the educators or system providers were technical analysis–based, as were most of the seminar presenters.[2] In fact the organizer of the expo (which tours Australia) is actually a board member of the Australian Technical Analysts Association (ATAA). While I am in no way suggesting that

the organizer deliberately tries to exclude nontechnical educators (after all, he allowed me to have a stand, and he is in fact a thoroughly decent chap), the evidence suggests that the technical analysts are far better at marketing their beliefs.

From researching the books available, Internet links, and Expo exhibitors and speakers, what I shall suggest is that people may be drawn to technical analysis simply because it is the most easily found form of education. For example, if my wife wishes to do some form of exercise and there are five Pilates instructors and one yoga instructor in the local directory, she will be more likely to be drawn toward Pilates. This does not necessarily mean that Pilates offers superior results; it might just be that Pilates is the current fad. Ten years ago I doubt if she would have found one Pilates instructor, and she might have ended up practicing yoga.

When I looked at what various exchanges and brokers offered in the way of education, the picture was mixed. Some exchanges offer their own courses; however, these tend to be more basic and theoretical in nature. Some brokers offered either a few pages of tips or hints or nothing at all. Where brokers did provide links, they were to technical-based course providers.[3] If there is to be an improvement in the level of private trader/investor education, I believe it is these institutions that should lead the way. It is surely in their interest to have better-educated clients who will take up less of their brokers' time and will hopefully have more success.

The product that in my opinion needs the biggest shift in education provision is financial futures. As a relatively new product (at least as far as private traders are concerned and compared to shares) whose rise in popularity has coincided with that of technical analysis, new participants could be forgiven for thinking that using technical analysis is the only method of trading these instruments. The vast majority of the education material that I have come across for futures is based on charts or technical indicators. Indeed, many individuals actually take up futures trading because technical-based course providers and reading material suggest that futures are ideally suited to their form of analysis. Here in Australia, the percentage of private futures traders who actively use technical analysis is estimated to be about 80 percent. From discussions with private client futures brokers in London over the years, I believe that the numbers there are similar, and this would suggest that the situation is the same worldwide.

Thus new traders and investors get little or no help in learning to trade from many brokers and mainly theory-based or very basic fundamental education from exchanges. Anyone who wishes to trade futures (who hasn't originally been encouraged to do so by a technical analyst) will almost certainly be drawn toward chart and technical analysis. This further goes to show that the two main alternatives for new private traders and investors is either no education or technical-based teaching. For many private traders, learning how to trade or invest will typically mean learning technical analysis and little else.

Compare this to the training programs that investment banks put their trainees through. These training programs last on average two or three months and are designed to give the trainees a thorough grounding in all aspects of the industry. They cover areas such as risk analysis, accounting methods (so that they are comfortable reading financial statements), corporate finance (so that they understand the mergers and acquisitions process and how and why a company might decide to issue new shares or bonds), and the financial markets themselves (trainees are taught about different markets such as corporate and government bonds, currencies, and so on). Banks try to give their trainee traders as rounded and comprehensive training as possible in the belief that enjoying a sustainable trading career will require various forms of knowledge and an understanding of how the markets and the industry work.

THE SALES PITCH

Having established that technical analysis is the most easily found form of education, I shall look more closely at some of the techniques used to hook potential clients. After all, it is some of these techniques as well as some misleading statements that are made that encourage new traders to try the methods and thus help to increase the number of technical traders. Do the providers of these technical courses give realistic and provable claims in their marketing, or do they sell dreams?

At the lowest level, there are the advertisements that we see in newspapers, in magazines, and on the Internet from individuals claiming to have found a technique or system that beats the market. Typically, such individuals had previously been working in a normal job when they suddenly hit upon a system that made large and regular profits. In almost all cases, these systems will use technical methods.

With these I shall group the black-box–style systems, the difference being that with these, the system itself generates the trading ideas, as opposed to the individual's scanning and back-testing for trades that fulfill the system's criteria. The sellers of these systems will usually be able to show a profitable trading record for their system and use this as "proof" of its ability. I will demonstrate in Chapter 2 why this is not necessarily accurate.

Undoubtedly there is a market for these get-rich-quickly-and-easily schemes, and there will always be people who are willing to believe that it is possible to have a system that will continually out-perform the market. Not only that, but these people are not concerned that the providers of these systems are prepared to sell their amazing secrets for just a few thousand dollars. As I have previously stated, I believe that the increasing acceptance of technical analysis has result-ed in a more widespread belief that it is possible to find a system that can beat the market.

The majority of technical analysts will (in some cases rightly) object that they make no such claims—that theirs is merely a study of market trends or psychology, and that they are far more honest with their claims. Indeed, I have been on such courses and read course material from others (such as the course that I quoted from in the pref-ace) that are in this camp. However, the common factor in all such courses that I have encountered is that they were predominantly run by financial market professionals for financial market professionals. The tutors were aware that any claims that their form of analysis can yield a simple key to success would not be accepted by investment banking professionals. The reason why traders such as myself went on these courses was to educate ourselves about this form of analysis and decide on its merits for ourselves. Whether we believe in it or not, technical analysis is around and will stay around, and in the course of trying to understand the markets, we need to learn about how all par-ticipants trade, even the ones we don't agree with.

To analyze the methods of some of the supposedly more respectable technical course providers who sell their education to non-investment bank professionals, let's look at a couple of examples from Australia.

When I visited the Web site of the Australian Technical Analysts Association (ATAA), I was pleased that in a document outlining what technical analysis is and why it should be used, the author made the

following points. First, "Those who trade successfully using technical analysis do not try to forecast prices." Then, "The second common misconception is that it is necessary to identify the top and bottom prices in a trend. Again there are some technical analysts who try to do this with conspicuous lack of consistent success." These are important points to be made. Too many private traders are continually trying to "buy the low" and "sell the high," spurred on by the belief that chart patterns and technical indicators can help them do this. In theory it sounds very appealing; however, in practice, it is extremely difficult and risky, and at least the author of this piece agrees that technical analysis is not designed to do this. Similarly the U.S.-based Market Technicians Association mentions on its home page the need to "edu-cate the public and the investment community about the use, value *and limitations*" [author's emphasis] of technical analysis.

So when I attended a seminar presented by a long-standing and well-respected board member of the ATAA who had also taught tech-nical analysis at the Securities Institute of Australia (SIA), I expected a similarly realistic tone. I first grew concerned when I read the title of the presentation: "Timing the Turns—Identifying Tops and Bottoms." There I was thinking that the official ATAA line (as stated on its Web site) was that technical analysis was not about picking tops and bottoms!

The rest of the seminar description included the following: "will show how you can forecast major market tops and bottoms based on simple price, range and time analysis. He will include a discussion of market timing based on seasonal time, time in degrees and WD Gann's most amazing discovery, his Mater Time Factor."

What I wish to highlight here is the use of certain words. "Forecast," "simple . . . analysis," and "amazing discovery" are the same claims that we saw on the Internet sites and book titles. They are eye-catching and will obviously appeal to the general public. They give the impression that traders will be able to easily (simple analysis) predict (forecast) the markets if they use the presenter's form of analy-sis. Yet the ATAA itself does not believe that this is true. In fact, these are the same sorts of words that are used by the "get rich quick with my system" advertisements.

During the presentation itself, serious discussion of identifying tops and bottoms and market timing was kept to a minimum. The basic tone of the seminar was humorous, bordering on comical. I realize that

it is important to inject humor into presentations, but this seminar would not have been out of place at a comedy club. It seemed to me that the presenter's aim was to make his audience feel good and to explain as little as possible about the subject. Small snippets about market timing were intertwined with such important information as a photograph of Bill Gates as a teenager with long hair, accompanied by the comment, "Would you buy a computer from this man?" While the audience was howling with laughter, I was cringing at the back, wondering when I was going to learn how to identify market tops. Instead, we were treated to a few more jokes, mainly at the expense of a well-known Australian stockbroker who had just been convicted of insider dealing, coupled with "discussion" such as a graph of the stock of a well-known company that had recently filed for bankruptcy, accompanied by the question, "Who would buy this stock?" Apparently the aforementioned stockbroker had issued a buy recommendation on the stock, although I failed to see any relevance in this. I assume that the presenter was intimating that his form of analysis would have prevented traders from buying this stock, and as everyone in the audience would have been aware that the company had failed, this would have impressed them.

I would estimate that a third (or less) of the available time was dedicated to the discussion topic. If we take the episode as a whole, including the subject title, the wording of the areas of discussion, and the tone and content of the actual seminar, I would suggest that the tactics and claims of the presenter differ little from those of the "get rich quick" brigade. I can obviously see how this attracts people to technical analysis; however, this once again shows that people are being attracted to the area despite the facts about it, not because of them. This is the same thing that we saw with the books and Web sites, and it helps to show how, before we even analyze their results, people will be tempted by technical analysis. Officially, the ATAA Web site states that there is little or no point in trying to predict tops and bottoms, yet here we have a senior member of that association presenting a seminar claiming to do just that. If such presenters wish to claim that they are above the "get rich quick" brigade, I feel they have a duty to make more realistic claims, such as those made on the ATAA Web site. Otherwise they leave themselves open to the allegation that they are selling dreams, not a robust method of achieving a sustainable trading career.

Having shown how even respected technical analysts help to spread the idea that making profits using their methods can be simple, I will describe some of the other marketing methods that are commonly used and how they can be misleading. In order to do this, I will refer to advertisements and marketing campaigns used by a large Australian firm. Although this firm does teach some fundamental aspects of the stock market, the actual method of selecting trades that it teaches is the use of technical levels such as stocks breaking through new highs coupled with volume and moving-average data.

This particular firm advertises quite heavily in the press here in Australia, and in particular it provides examples of how successful traders who have completed its training have been. All you need, it suggested in an advertisement in May 2004, is to have AU$10,000 or more, to be motivated to improve your financial position, and to have at least 30 minutes a day to commit to trading. The full training program costs about AU$5,000. With all this in mind, let's look at an advertisement placed in February 2004. It showed the following results that three of the firm's clients achieved over three months under the title "Impressive Results."

Name	Opening Balance	Closing Balance	%Profit over 3 mths
Tim	$6,030	$11,593	92%
Joel	$8,511	$13,350	57%
Bronwen	$5,495	$7,338	34%

On the face of it, this shows us three clients who the firm claims are successful and whom it uses as proof of the benefits of its methods. However, as part of its requirements, the firm states that traders need at least $10,000, yet none of the three individuals highlighted here had an opening balance of $10,000 for the period. I would also be most surprised if individuals would pay up to $5,000 to educate themselves if they had only $5,495 or even $8,511 to then trade with, and if the firm accepts $5,000 from individuals who have only a further $3,000 to trade with, I would further question its morals. (I realize that in this business, morals are often left by the wayside, but I personally believe that all involved, particularly with private clients, have a duty to act with the utmost professionalism and integrity.)

If we therefore think that these individuals started with at least $10,000, then they are not as successful as the advertisement states.

Actually, until this period, they were all losing, and the third individual still is. In fact, after training costs, they are all still behind. Furthermore, the first and third had suffered quite substantial losses in percentage terms (which the firm itself likes to highlight): nearly 40 percent and 45 percent, respectively. Faced with such losses, many people might not have actually continued trading.

This advertisement was not the only one showing these kinds of successes. In another, the top trader, who is shown as making 263 percent over a three-month period, had an opening balance of just $3,328, which rose to a closing balance of $12,089. Again, if an initial balance of $10,000 is required, the "star" performer has possibly lost as much as 70 percent before this period's success. I would further argue that for this person to have then made so much suggests a volatility of earnings that is inconsistent with a reliable trading technique.

When I visited the firm's Web site for further information, I found two periods in which larger samples had similar results. In the first sample period, which was the second quarter of 2003, there were 11 sets of results, of which only 3 had opening balances of $10,000 or more. Indeed, the second-"best" trader started the period with only $2,000. The second sample period, the third quarter of 2003, had 4 accounts out of 13 with opening balances of $10,000. The second-best performer here had $3,589, which grew by 281 percent. It does not take a technical analyst to identify a trend here!

In another advertisement, the firm highlights the most successful individual trades, and every example involved companies with small market capitalizations (the largest was just AU$110 million and the smallest a paltry AU$5 million or US$3.4 million) and very low share prices (as low as 12 Australian cents or 8 U.S. cents). These are hardly the kind of shares that educated traders and investors should be dabbling in. I would suggest that if these are the kinds of shares that the firm's tuition leads people toward, then their education is nowhere near as robust as the firm claims.

What I hope to have shown is how the statements made by this firm, while correct, are not actually clear examples of a robust or reliable education. On the face of it, they show successful traders, yet in reality many of these traders are quite possibly losers. Perhaps some of the firm's clients do start with less than $10,000, but it is hard to believe that the majority of its clients would have so little trading capital, especially when they have paid up to $5,000 just for education.

Furthermore, some of the trades that the firm claims as successful are speculative trades on cheap penny shares, which of course will show high percentage gains when they are successful but are in no way examples of a reliable trading system. I cannot be charged with taking a few trades out of context because in the advertisement that I have quoted from, every single example of a successful trade involves a stock with a very low market capitalization.

Once again we can see how the public can be enticed into the world of technical analysis through clever marketing. This firm's ads are headed by statements such as "Money Making Opportunity" and "You can make money trading the stock market." Of course they will appeal to the public, as will all the other examples that I have given in this chapter. The end result is that thousands of individuals around the world will be attracted to technical analysis each year as a result of slick marketing. Even though organizations such as the ATAA (officially anyway) admit that technical analysis should not be used to try to predict future prices or tops and bottoms, many advertisements and technical course tutors claim to do just that. In effect, these firms and individuals are hiding the real truth about the limitations of their field and are instead telling the public what it wants to hear—that is, that there are easy methods of making money in the markets using technical analysis. It is not too surprising that so many people will take the claims at face value, especially since they are usually accompanied by a few glowing testimonials from satisfied customers. Even if these firms can show 5 or 10 or even 20 satisfied customers, if they have trained thousands of people, such testimonials are practically meaningless.

This leads me to one last interesting point about the education firm. It claims to have taught thousands of individuals over more than a decade at least. In population terms, Australia is a small country, and after discussions with brokers and magazine editors, I would estimate the number of traders to be roughly between 40,000 and 50,000. If the firm's methods really were that successful, we could assume that the profitable traders would tell their friends, and so on. By now the whole of Australia should be aware of just how good these techniques are through word of mouth. This is obviously not the case, as the firm still advertises for new clients. One could say that if you are a trader in Australia who has heard of this firm (or others like it) only through media advertisements, then its claims of teaching thousands of traders

should be viewed as a negative rather than a positive, for if its methods were good, it would not need to advertise anymore.

Although I have examined two Australian firms here, I have found that the same advertising methods are in use all around the world. Most of the book titles and Internet links that I described earlier were from U.S. firms, and I am sure that all readers, whether they are from the United States, Europe, Asia, or wherever, have read similar ads and heard similar claims. Unfortunately, in the private sector anyway, these appear to be the norm.

For example, on many visits to the Web site for a firm calling itself "a leading provider of stock screening and online trading tools," I noticed that many of the most actively analyzed stocks were relatively small. For example, on one visit to the site, the most popular stock for back testing was one with a market capitalization of just US$147 million. Once again, traders using these technical tools were being drawn toward very small stocks.

Of course, there is no law against slick marketing; however, the limitations of technical analysis and charting generally are not explained clearly enough for new traders to make a proper, informed decision as to these techniques' usefulness. Certainly from my conversations with private traders, the downside of technical analysis became evident only after they had sustained losses. Hopefully this book will be able to assist new traders to see the often neglected arguments against technical and chart-based techniques so that they can make a more informed decision about how they wish to trade or invest.

With the marketing of technical courses and techniques, the distinction between education and a trading system is often blurred. As a result, many people will pay sometimes high fees in the belief that they will be educated about trading and/or investing and the markets, but they will in fact learn only a specific type of analysis or be led toward using a particular type of trading system. This practice is especially distasteful when the "education" firm actually receives further financial benefits from the sale of the software or trading system. I firmly believe that education firms should educate people about trading and that firms that sell software or trading systems are not educators but vendors and are offering advice to their clients by suggesting that by using their product, the client will make money. In this regard I was heartened to read that in October 2004 the Australian Securities and Investments Commission warned an "education" firm about some

of the marketing practices it was using to sell one of its software packages.

I have spoken to many people who have signed up with firms that claim to educate their clients about trading but that actually just espouse and teach one style of trading, such as Gann theory or a moving-average-based system. Some of these people have quickly realized that they are not being educated but are being sold a system, but many would-be traders are hooked by this misleading process. They will have to pay to be "educated" as to the benefits of the system and then will often pay again for the software that will enable them to carry out the required analysis. In reality, the first part of this process is not education, it is a sales pitch, and people should be less inclined to pay sometimes high fees to attend these sessions.

The firms that operate on these lines even include some of the larger "education" firms, which is why I wish to warn people about the marketing methods they might use and why their trading techniques or systems might not be as robust or reliable as they claim.

NOTES

1. Richard Parker, "The Media Knowledge and Reporting of Financial Issues," presentation at the Brookings Institution, 1998.
2. Approximately two-thirds of exhibitors were selling products solely based on technical analysis. Most of the seminar speakers were technical analysts, too.
3. I looked at Web sites for LIFFE, Eurex, NYSE, SFE, ASX, Merrill Lynch, Citigroup, Lquay, Refco, ManFinancial, E*TRADE, and Commsec in early-mid 2004. I have also had conversations with brokers from many firms both in Australia and in the United Kingdom.

Why Technical Analysis Can Appear Plausible

WE SEE ONLY THE WINNERS

Even if I disagree with their form of analysis and some of their marketing ploys, I do not suggest that most or even all of the technical course providers have not made money using technical analysis, and I would agree that there are many traders around the world who similarly profit from one form or another of chart- or technical-based trading. What I will show in this chapter is that there can be reasons for this other than that this form of analysis is robust. The first point to state is that, as described in Chapter 1, many people will be using technical analysis simply because it is the predominant form of training available and it is backed up by clever marketing and some misleading statements.

Over the years, hundreds of thousands of traders have used technical analysis. What's more, as I have discussed earlier, the numbers are increasing, and I believe they will continue to increase for the foreseeable future (the graph of technical traders would show quite a steep upwardly trending line). Out of all the millions who have tried this form of analysis, there are bound to be some successes. These successful traders may claim that it is their system or form of analysis that

has worked, and it is among these individuals that we find the technical analysis course providers. The idea that their success might be due to luck or to a particular set of market conditions will not usually be considered. However, what about all those who lose money using technical analysis? Admitting failure, let alone advertising it, is not something that most individuals like to do, so they will keep quiet. We can start to build a picture of vocal winners advertising their success and losers quietly slipping away and not showing up in our research on the subject. This is termed *survivorship bias*. The information that we can find on the subject is heavily biased toward the winners, or survivors. If 100 traders use technical analysis and 10 do well, we will hear only from the 10 successful ones. The other 90 are hardly likely to start advertising how they lost money.

In fact, survivorship bias is widespread in the financial industry. Financial planners and stockbrokers often provide graphs showing how owning stocks over the past 100 years or more has been a great investment. However, this is not necessarily true; it depends on which stocks we have owned. If the S&P 500 rises over the next 50 years, stockbrokers will make similar claims, but for those who owned WorldCom or Enron, the reality will be vastly different—try telling them that stocks always go up in the long run. Indexes are almost rigged to go up, as weak stocks are thrown out and stronger ones are added. The graphs and statements provided by financial planners are heavily influenced by survivorship bias.

Take another look at all the newspaper and Internet advertisements and the books available. How many are written by traders who have lost money using technical analysis? The answer, of course, is few, if any. All we might find are a few articles and papers by supporters of fundamental analysis who make general claims against technical trading on mainly academic grounds. For new traders, survivorship bias means that their view of technical analysis will almost certainly be a positive one. From the evidence that I have seen and heard (discussed further in Chapter 3), the success rate of technical traders is nowhere near as high as a new trader might believe.

There is another way in which survivorship bias affects technical analysis. Over the years, many different patterns, indicators, and methods have been tried, and what we see today are the survivors. If only a few dozen had been tried, then finding 20 or 30 good ones would be impressive, but as thousands have been tested, some are again bound

to have performed better. In layman's terms, these could be the best of a bad bunch. The volatility of the markets means that even if we tested a thousand systems that we knew were poor, some would make a profit.

In their study (which I will examine in more depth in Chapter 4), Sullivan, Timmermann, and White state,

> Suppose that, over time, investors have experimented with technical trading rules drawn from a very wide universe—in principle thousands of parameterizations of a variety of types of rules. As time progresses, the rules that happen to perform well historically receive more attention and are considered "serious contenders" by the investment community, while unsuccessful trading rules are more likely to be forgotten. After a long sample period, only a small set of trading rules may be left for consideration, and these rules' historical track record will be cited as evidence of their merits. If enough trading rules are considered over time, some rules are bound by pure luck, even in a very large sample, to produce superior performance even if they do not genuinely possess predictive power over asset returns.[1]

NOISE TRADERS

Andrei Shleifer, professor of economics at Harvard University, in his book *Inefficient Markets—An Introduction to Behavioral Finance* mentions how

> When there is a variety of noise traders, some of them might get lucky and do well, thereby attracting imitators. . . . And even if noise traders lose wealth, they may keep coming back into the market because they keep earning investable labor income themselves, and besides there is a noise trader born every minute.

I should first explain *noise* and *noise traders* for those who are unfamiliar with the terms. Noise can be viewed as the opposite of (factual or reliable) information and so would include tips or rumors. Noise traders, as described by Fisher Black[2] are traders who trade on such evidence as if it were information in the false belief that they gain a trading edge from it. I would suggest that most private traders who use technical analysis should be classified as noise traders. These traders are trading on the basis of the false hopes and misleading statements that I described in Chapter 1. Furthermore, their knowledge of

the markets themselves is very small, as more often than not they are told that they do not need to understand the fundamentals of the market. Black believed that "if they expect to make profits from noise trading they are incorrect"; however, later in this chapter I will describe how in fact it may be possible for noise traders to make money in certain situations and how this is related to technical trading.

Shleifer therefore suggests that some noise traders will succeed through luck and attract imitators. People are loath to consider the possibility that their success is due to luck, preferring to believe that it is due to good decision making. Contrast this to losses, which are often attributed to bad luck. With hundreds of thousands of practitioners using different forms of technical analysis, market volatility alone could result in successes. We need to consider the possibility that at least some of these successes might be due to luck. As I discussed in Chapter 1, the two course providers here in Australia that I highlighted claim to have taught thousands of individuals in a small country, yet they still need to advertise their courses. This would appear to support the view that their methods are not working when a larger sample is considered. As all scientists will tell you, the results of a larger sample are far more reliable than the results of a small one. If one individual teaches thousands and most of the thousands struggle to make profits, this should weaken the case for their tutor even if that tutor is still making money.

I have also seen evidence that the second part of Shleifer's statement holds true, too—that is, even if the noise traders suffer losses, the money they earn from their jobs may lead them to reenter the market. I have spoken to many private traders who have suffered losses after attending technical analysis–based trading courses who then save up to learn about a different technical technique. One person whom I met told me that he had lost in the region of AU\$50,000 so far on technical training and trading, but he still felt that technical analysis could make him a profitable trader. Having attended many seminars from leading technical teachers here in Australia, he had concluded that there was no need to understand the fundamentals of the markets or explore alternative ways of decision making.

So, not only will some losers (in the trading sense) quietly slip away, not wanting to mention how or why they lost money, but others will actually still support a course or form of analysis that has caused them to lose money. So strong are the effects of advertising and sur-

vivorship bias that these individuals believe that their losses must be due to something *they* are doing wrong. Again, I have spoken to individuals who have attended technical courses but are no longer actively trading (I assume, therefore, that the techniques learned were not that profitable) who will still give glowing testimony about the course. Having spent so much money, they are extremely unwilling to admit (to the outside world, anyway) that they might have made a mistake.

THE PUBLIC IS LEARNING WRONG "FACTS"

One result of the advertising and marketing methods employed by the technical analysis community is that the general public can start to learn "false facts." In *Irrational Exuberance*, Shiller quotes a few examples of this phenomenon in the investment world, such as the public's belief that stocks will always outperform other investments, such as bonds, over the long run, despite the fact that this has not always been the case and will not necessarily be the case in the future. Other well-known "facts" that Shiller showed to be untrue include the statements that the birth rate in New York jumped nine months after a 1965 power blackout and that there were a very high number of suicides at the time of the 1929 crash. These ideas seem rational enough and highly believable, so we seem to just accept them.

Therefore if the public is constantly being told that technical analysis is scientific or that it can help them forecast or predict the market or even that most traders are using and profiting from technical analysis, then over time these statements may be accepted as facts even though the true picture (as I will show in this book) is somewhat different. I believe that there are now a large (and growing) number of individuals who genuinely believe that the merits of technical analysis in its current form have been proven.

One reason why I think that this has become more of an issue in recent times, and why interest in technical analysis has risen in popularity recently, is that we are now living in an age where we increasingly believe that computers and data analysis can solve most or all of our problems. People are therefore now more willing to believe that an approach such as technical analysis will be able to solve the age-old riddle of the markets. The markets are portrayed as a kind of mathematical problem waiting to be solved. Computers helped us land a man on the moon and put a rover on Mars, so it may seem plausible that

they can figure out what is going on in our markets. The idea that perhaps markets might be too complex to "solve" with computers or that there is any kind of randomness to prices or even that the irrationality of some or all of the participants in the markets would make analyzing charts and trying to make solid predictions based on them futile is being increasingly ignored.

It is interesting that both in investment banks and among private traders, those with a background in areas such as information technology are drawn to technical and mechanical methods. They view the markets as they do any other problem waiting to be solved. I will discuss later in the book two such traders whom I worked with who performed poorly because of their flawed methods.

What's more, people are starting to believe that if a system can be found that yields good results, then if it is sold to other traders, they will all still be able to make money. Any notion that the effectiveness of such a system will be diminished if it becomes widely known is ignored, if not forgotten completely. In fact, it is quite likely that if it is possible to make money through an identifiable pattern or system, then market participants will spot this (there are hundreds of thousands of traders watching the markets) and preempt that pattern, consequently rendering it useless. Nassim Nicholas Taleb uses the following analogy: "If traders detect a pattern of stocks rising on Mondays, then, immediately such a pattern becomes detectable, it would be ironed out by people buying on a Friday in anticipation of such an event."

BACK TESTING BREEDS MISGUIDED CONFIDENCE

The (mis)use and teaching of back testing is at the heart of many technical and mechanical courses. Clients are told to back-test a system and their findings will help them select their trades. If a particular system has had a high degree of success in the past, then it is inferred that this will be a good system in the future. Being able (through new software products) to conduct this kind of analysis has significantly helped to provide an aura of plausibility and credibility to technical analysis. I would imagine that most members of the general public would be very impressed with this form of analysis and could easily be persuaded that a system that has been shown to be successful in the

past is highly likely to be successful in the future. Unfortunately back testing and the way people use it can be prone to many problems.

Every day, I imagine, perhaps tens of thousands of traders crank up their back-testing software and perform what they think is a thorough and effective evaluation of different trading rules. They will take a contract, let's say Microsoft stock, download X months' worth of data, and then apply certain trading rules. Someone who believes (or who has been taught to believe) in using moving averages will apply different sets of moving averages until he finds the one that has been most successful over the study period. Indeed, some of the software products available now will break down the results into many different areas, giving what appear to be almost scientific results. The back tester will now apply the most successful method, confident that it has been "proven" to be the best.

However, let's take a step back and look at what the back tester is actually doing. He is looking at the answer and then finding the pattern that fits it best, but only from among a group of patterns that he knows can work because he knows the answer. This is called data snooping. Of course he can find a set of rules that has worked well in the past, and the more rules he tests, the better the performance of the most successful will be, but as we already know the answer, the results are not particularly informative. In a study of technical trading rules in 1992, Brock, Lakonishok, and LeBaron state, "Numerous moving average rules can be designed, and some, without a doubt, will work. However, the dangers of data snooping are immense."[3]

The leap of faith that the back tester has to make is to believe that what has worked well in the past will work well in the future. I will cover both my own views on this and the significant results of a study in which this area was examined in the next two chapters. Suffice it to say at this stage that a system that has worked well in the past is precisely that, a system that has worked well in the past. Whether it continues to work will depend on many variables; however, as the back-testing software cannot explain why the system has worked in the past, let alone whether past conditions will continue, it is far simpler for teachers of back testing to ignore this whole gray area and just claim that if a system has been shown to be successful in the past, then it must have a better chance of being successful in the future.

Of course, the back tester must also believe that no one else has spotted the pattern she has detected; otherwise, there is the possibility

that others will try the same trades and the opportunity will disappear. However, in a world in which such software is easily available to all and sundry, not to mention the huge computer systems and trading teams that investment banks and hedge funds have, can we really believe that we are the only person to have spotted a particular pattern?

There are also major flaws with the risk analysis that back testing provides. In its most basic form, this takes the form of probability. Back testers will look for the trading rules that have previously had the highest probability of success. Once again, for a more eloquent and well-presented case highlighting the limitations of this approach, readers should go to Taleb's book. In simple terms, if a method has say an 80 percent probability of making 3 percent and a 20 percent probability of losing 15 percent, is it still a good trade? The expected return on such a trade is actually negative. Probability does not provide accurate risk analysis.

Some of the software packages available do provide a more detailed analysis of the selected trading rule. As well as showing the probability of success, they actually detail the best and worst scenarios that the tested method has shown. Thus back testers can see and work out (if they are able to) what the expected return is as well as just the simple probability of success. Also, importantly, if a trading rule has led to a large loss, the back tester will be able to see this and can act accordingly. So can back testers with this kind of software feel far more confident that when they trade, they are aware of the risks of their trade?

Wrong again, I'm afraid. All they are aware of are some of the risks of the trade over the period studied. These will be relevant only if the same set of conditions continues, and even then, as I explain in the next chapter, there is a good chance that they will not still apply. If market conditions change, then the back-testing results will be of little use. For instance, if we back-test a trading rule for a stock for a period of, say, six months or even a year, and during that time that stock has just crept higher with little volatility, then the results that we get will be relevant only if the stock continues to creep higher. In reality, analysis such as the worst loss that the trading rule has resulted in shows only the worst loss under the conditions that existed during the study period. If the stock now falls or becomes more volatile, then such findings may well prove useless. When discussing data snooping in a study in 1970, Jensen and Bennington approached this topic by suggesting, "Given enough computer time, we are sure that we can find a mechanical trading rule which 'works' on a table of random

numbers—provided of course that we are allowed to test the rule on the same table of numbers which we used to discover the rule."[4]

Now that we understand that back testing past data is a flawed basis for judging trades, let's examine another advertisement, this time from a firm selling an options trading system. The firm has an Australian Financial Services Licence, which is supposed to be the sign of a trustworthy and reliable company. Indeed, this firm does say, "This is not a get rich quick scheme." Yet it claims that its system offers "Guess Free Trading" and a "tried and tested method of achieving believable and sustainable returns." How does the firm know this? Because it has back-tested its system. "We offer two years of back data to test our trading method." Of course its method will work on the past two years' data because those are precisely the data that it designed and tested its system around. Through our understanding of the limitations of back testing, we now know that as a basis for making future decisions, this information is of little relevance. Topics such as stationarity and alternative histories, which I discuss in the next chapter, will further help to explain this. Perhaps the vendors of this system would like to market a system based on the findings of the report that I will now describe.

FINALLY UNMASKED: THE BEST TRADING STRATEGY AS DISCOVERED BY BACK TESTING

On page 4 of their study, Sullivan, Timmermann, and White describe a report that illustrates just what back testing can "prove." They explain how David Leinweber, the managing director of First Quadrant, LP, in California, "discovered that historically the single best prediction of the S&P 500 stock index was butter production in Bangladesh."

How many readers are actually willing to base their trading decisions on Bangladeshi butter production? Shall we attribute these findings to data snooping?

BANK TECHNICAL ANALYSTS ADD PLAUSIBILITY

For many individuals, the fact that almost all investment banks and brokerage houses employ technical analysts might be seen as adding

credibility to the field. Surely banks would employ such analysts only if they believed in their analysis. In reality, this is not necessarily the case. Some bank traders do use technical analysis (fortunately for me, virtually all the traders that I have ever worked with do not); however, banks employ technical analysts for the same reason that they employ any analyst: they employ individuals who they think can help them sell their products. As there are technical traders out there, the banks will provide research for them to encourage them to trade more. If more traders started to use the phases of the moon as a basis for trading, the banks would employ astronomers. It is similar to sports car manufacturers, who, at exhibitions, hire attractive models for their stands because the models help to attract the manufacturers' target group (predominantly young males). No one would argue that these girls have any relevance to the performance or quality of the car itself.

THE RULES DID WORK DURING THE PERIOD IN WHICH THEY WERE DESIGNED, BUT THEY ARE NO LONGER VALID

Many of the tools that are used today are not new, but have been in existence since the early part of the last century. During that period, practices such as insider trading and market manipulation were rife. Information was not transmitted to everyone at the same time; those with good communications and contacts received information much more quickly than the general public. There was, therefore, a strong feeling among investors of the time that "others knew more" and that if a stock was rising (or falling), perhaps this was because someone knew something. As we shall later see, this is a feature of human psychology that is a hindrance to traders. In those times, though, thinking along these lines may have had some basis, and generating trading rules based on how others are trading (trend spotting and following) may have been successful.

Nowadays with such practices outlawed and information being available to everyone quickly, this view that others know best is no longer as valid. Therefore, the reasoning for following trends without any further investigation into why the trends might be happening is less sound.

As we shall see in Chapter 4, the performance of technical tools diminishes when the markets and information become easier for everyone to obtain and trade.

THE TEACHERS KNOW MORE THAN THEY LET ON

If, as I suggest in this book, most traders who use technical analysis lose money, what might separate the winners from the losers? Two obvious points of difference might be luck and discipline, and certainly these could play a part. A third consideration might also be that the winners, who might then go on to become teachers, know a bit more about other aspects of the market than they let on.

I suggest further on in the book that just analyzing a chart without knowing its context is of little use. Perhaps, then, despite telling their clients that the chart tells us everything, these winners do use some of the more "fundamental" aspects of analysis. However, they realize that these aspects might be difficult to teach or unappealing to clients, so they ignore them. After all, it is often the belief that trading can be made easy through chart analysis that attracts people to charting.

For example, although Richard Russell[5] uses Dow Theory in his analysis, his daily report covers many more fundamental aspects of the markets. He is very aware of what lies beneath the chart and the circumstances surrounding the chart action. Interestingly, he does not suggest that his form of analysis makes trading easy; instead, he tells his readers that the business is tough and that some art and experience is required. While I might not necessarily agree with Dow Theory, at least Mr. Russell is honest with his readers in suggesting both that knowledge of more fundamental analysis is helpful and that technical analysis does not make trading easy.

I wonder how many other technical teachers use some of the more fundamental techniques but are not so honest with their clients.

TECHNICAL ANALYSIS AS A SELF-FULFILLING PROPHECY

Whether or not technical analysis or charting can be a self-fulfilling prophecy has been one of the most hotly disputed topics in the industry for many years now. It is with some trepidation that I approach the subject, but I do so because there have been some interesting views espoused by the behavioral finance economists in particular. What I will try to do is to apply these theories to what I have seen in order to make a case that indeed technical analysis can be self-fulfilling.

One of my concerns with technical analysis is that using it requires a trader to make trading decisions based purely on the previous actions of others. I find it too reactive. Indeed this reactive aspect of technical analysis forms part of the case for its being self-fulfilling.

In effect, the technical traders need other, more fundamental traders to set a price. We should see that fundamental or more rational traders (these are not necessarily the same) can operate without technical traders, but technical traders cannot trade without others setting a price. For example when an initial public offering (IPO) is issued, technical traders will not be able to trade it until the stock has some history behind it. So, once a market (price) has been established, technical traders will analyze any patterns they see and dissect the price action, and *then* make their trades. Using the IPO example, if the stock has rallied since the offering, then the trend-following technical traders will start to buy, thus pushing the stock higher. This point becomes particularly interesting if the number of technical traders is large.

If the number of technical traders is large (and certainly the number has been growing over the past 20 or so years), then this first round of momentum or trend-following buying will not be the last. More technical traders will be aware of this now stronger trend, and the price will rise further. Now we have a situation in which the earlier technical traders have been "proved" right and will be making profits. As for the later traders, if there are enough technical traders or if some exceptional fundamental news is released, then they might make money, but they are exposed to a particular problem that is a direct result of the reactive nature of their trading. Harrison Hong and Jeremy Stein describe this problem as follows:

> Ideally, one uses a momentum strategy because a price increase signals that there is good news about fundamentals out there that is not yet fully incorporated into prices. But sometimes, a price increase is the result not of news but just of previous rounds of momentum trade. Because momentum traders cannot directly condition on whether or not news has recently arrived, they do not know whether they are early or late in the cycle. Hence they must . . . accept the fact that sometimes they buy when earlier rounds of momentum trading have pushed prices past long-run equilibrium values.[6]

This scenario of buying after prices have risen (and selling after they have fallen) is called positive-feedback trading. It has been wit-

nessed not just with shares but with all markets, including housing and insurance. This type of inference that a price will continue to move as it has in the past and the potentially self-fulfilling nature of it is similar to a phenomenon that we have all witnessed regarding restaurants. If there are two restaurants next to each other, when deciding which one to dine at, it seems perfectly plausible to many to patronize the restaurant that is busier. The belief is that it is busier because its food is better. However, of course this is not necessarily the case, and in fact the decision of the first diners that evening could be crucial for the restaurant owners, as it will encourage other diners.

Positive-feedback trading incorporates a philosophy of trading that has been used by many very successful traders, including George Soros and John Maynard Keynes (as well as being a renowned economist, Keynes was a very successful investor).

Soros has called his philosophy "reflexivity." In his own words, "Financial markets attempt to predict a future that is contingent on the decisions people make in the present. Instead of just passively reflecting reality, financial markets are actively creating the reality that they, in turn, reflect. There is a two-way connection between present decisions and future events."[7] In short, what he is saying is that tomorrow's market price will be directly influenced by the decisions that participants make today.

This may sound like common sense to many readers, but this view and the ramifications of it are by no means universally welcomed. Many technical analysts, for example, do not believe that their actions can actually influence prices because this would mean admitting the possibility that technical analysis can be self-fulfilling.

We can start to see again how the type of traders that exist in a market can determine how the market trades. A recent example of positive-feedback trading would be the Internet share bubble. The more Internet share prices rose, the more the belief that they would continue rising was reinforced, and thus they continued to rise. As Shleifer suggests, this can lead to a bubble-type loop.

So why don't bubbles occur more often, you may ask. The answer, partly, is that normally the number of fundamental or rational traders relative to the positive-feedback traders is larger, or at least similar. However, if a certain belief (whether or not it is misguided) becomes popular enough, the number of positive-feedback traders can become large enough to move prices away from what would otherwise

be equilibrium. Not only that, but some normally rational traders might join the positive-feedback traders because they realize that it is the path of least resistance.

George Soros (whom I would describe as a rational and knowledgeable investor) describes in his books many examples of joining the positive-feedback traders. For example, during the 1960s, when poorly informed traders were driving the price of conglomerate shares to unrealistic levels, Soros decided that the best strategy was not to sell these shares short in anticipation of a crash, but rather to buy them in the belief that there would be further buying by more poorly informed investors (in essence, trend followers or positive-feedback traders). Indeed, the crash in conglomerate shares took a few years to materialize and did not occur until 1970. The big difference between Soros and the rest of the positive-feedback traders was that he knew why he was buying and why the price was rising, whereas the others were just buying *because* the price was rising. They did not know why it was rising, nor did they care. They looked at past performance and believed that the sharp rise in conglomerate share prices would therefore continue.

Keynes's description of this process was, as one would expect, slightly more colorful. He likened the stock market to a beauty competition in a newspaper where the winner is the reader who guesses which beauty will receive the most votes from the other readers.

Thus, even very knowledgeable investors and traders accept the idea that the type of participants and the techniques they use can play a major role in influencing prices. If there are enough positive-feedback traders, then even if their methods are irrational, some informed traders will trade in the same way—in simple terms, "If you can't beat 'em, join 'em."

The behavioral economists also conclude that irrational traders can actually influence prices. I quoted Andrei Shleifer's comment earlier about how some noise traders might get lucky and make money, and that they may attract imitators. He goes on to add, "Such recruitment will also increase noise traders' influence on prices." This topic is also discussed by Fisher Black and Richard Thaler, among others, but all of these writers, through their research, have reached the same conclusion, namely, that noise traders can influence prices. There are also suggestions and examples of how these noise traders can lead to increased volatility in the markets. Shleifer and other economists show how "noise trader risk" may prevent arbitrageurs or rational traders

from exploiting prices that seem far from equilibrium because of the risk that they will move even further away. As more knowledgeable traders, they are risk-averse, and sometimes this can lead to noise or irrational traders dominating the market, as their lack of knowledge may mean they will take on more risk.

Thus we have evidence from both successful investors and behavioral economists describing positive-feedback trading, how it influences prices, and how under certain circumstances it can lead to a price bubble.

Let's now try to tie all this back in with technical analysis. First, I believe that there are clear similarities between the concept of positive-feedback trading and that of technical analysis. This, in turn, makes the possibility that technical analysis can be a self-fulfilling prophecy highly likely—indeed, at times highly probable. In a study on the subject, Alexander Stremme states, "The existence of technical trading causes technical trading rules themselves to be successful." He concludes, "Our results demonstrate that, while being ex-ante irrational, their very existence can make technical trading rules ex-post profitable. In other words, technical trading can be seen as a kind of 'self-fulfilling prophecy.' These results are in line with empirical evidence."[8]

Furthermore, as more traders use or become aware of technical analysis, the chances of its becoming self-fulfilling will increase. As technical traders come to be a higher percentage of market participants, their beliefs and actions will be more influential. From my experience, I have certainly seen that some contracts can trade more technically than others. By that I mean that in some contracts (especially some currencies and futures contracts), there is increased price action and volume around well-known technical levels, whereas in others I have noticed little, if any, such action; the technical levels were of little consequence. This has helped me to the conclusion that technical analysis can be self-fulfilling if there are enough participants who use it.

I have seen clear examples during my career of how technical analysis might sometimes work not because it is a robust or accurate form of analysis, but rather because some participants understand that it is used by others and can be self-fulfilling. For instance, when I traded on the London International Financial Futures Exchange (LIFFE), I observed and spoke to futures traders who every morning would write down "important technical levels," which they copied from a

page on the Reuters news terminal that was placed in the cafeteria. What it is important to note here is that these traders had no idea what these levels actually were. They could have been a 52-week high, a support level, a weekly high, or something else; all the Reuters page told them was what the support and resistance levels were supposed to be, with one asterisk for a minor level and three for a major one. Although these traders predominantly traded the flow of the market, they knew that it made sense to make themselves aware of the levels that technical traders relied on, and if need be they would act on them. Yet they did not know, nor did they care, what these levels were. If I had had the computer skills to hack into the Reuters page, I could have put any levels I wanted on them, and these traders would have used them. (Luckily for them, I have enough trouble with Microsoft Word, let alone trying to become a hacker!)

COULD A TECHNICAL ANALYSIS BUBBLE DEVELOP?

On the whole, through either pattern recognition or past data analysis or both, technical traders are trying to identify strong trends in the belief that these will continue. If there are enough traders with similar views and trading techniques, it is distinctly possible for a bubble to develop as a result of positive-feedback trading. As the number of technical traders is increasing, I believe that there is an increasing risk of these positive-feedback loops developing. However, in the short term at least, this may mean that some technical trading rules may actually seem to be quite successful as a result of the effects of positive-feedback trading and the notion that they can be self-fulfilling. Indeed, when trading certain contracts that I believed had more technical participants, even I would make myself aware of the levels these traders considered important and would sometimes join them if I thought their influence was strong enough.

In his study, Stremme states, "It turns out that, as long as technical traders are active, bubbles will always emerge. . . . Fluctuations caused by noise will be picked up by technical analysis and amplified by the buy or sell signals generated by the corresponding trading rules." In his conclusion, he writes, "However, if there is a sufficient level of fundamentalism in the market, it can be shown that bubbles will always burst in finite time."

It could well be, therefore, that, using the philosophy "If you can't beat 'em, join 'em," as technical analysis is a growing field, using some of their trend-following rules and indicators might prove successful, and we might all need to use them. However, rather like the Internet share buying that we witnessed in the late 1990s, if you buy just because others have bought previously, then you run the risk that you are late with your trade and will get caught up in the inevitable correction.

Furthermore, the evidence, both empirical and from the analysis of noise trading by behavioral economists, suggests that such positive-feedback or trend-following trading can result in increased market volatility. Increased volatility can prove too difficult for many individuals to trade and, as I will show in Chapter 4, actually lowers the performance of technical analysis. Thus, although technical analysis can initially be self-fulfilling, there is evidence to suggest that in the longer term it might be self-defeating because of the increase in market volatility that it creates.

THE PRISONER'S DILEMMA

As an aside, and to introduce an interesting study and area of debate, I want to discuss a study of why we might use technical analysis and how its growing popularity might affect its profitability, conducted by Shareen Joshi, Jeffrey Parker, and Mark Bedau (entitled "A Prisoner's Dilemma Causes Technical Trading"). They find that traders are confronted by what is known as the prisoner's dilemma. For those who have not come across this model, the prisoner's dilemma is a very interesting situation in which the decisions of more than one person will affect all involved.

In the classic model (presented by Axelrod, Hofstadter, and others), there are two prisoners who have been arrested for a crime and are faced with the same choices. If one confesses and the other denies committing the crime, the one who confesses will go free and the one who denies the charges will serve five years in prison. If both deny the charges, then they will face two years each in prison, but if they both confess, they will serve four years each. Both prisoners are aware that the other has been offered the same deal, but they have no means of communicating with each other.

For both prisoners, if they don't confess, they face the possibility of serving five years if the other does confess. The rational decision

for a person in this situation is to confess to the crime, but the paradox is that if they both behave rationally, they will face four years each, or a total of eight person-years in jail. In this situation, the best result is actually achieved by both individuals behaving irrationally and denying the crime. So behaving rationally can lead to a reward that is inferior to that resulting from behaving irrationally. The ramifications of this model are used in many areas, including business and international politics.

Joshi et al. conclude that adding technical techniques to our trading is rational in that it should add to our earnings, so for this reason many will use them. Faced with the existence of technical analysis, we should use it. However, widespread use of these techniques will lead to positive feedback and more noise being incorporated into prices, thereby lowering the returns for everyone. The authors conclude, "Technical trading is inevitable even though traders would benefit if it could be prevented."

This is a fascinating dilemma that again suggests the idea that technical analysis techniques can be self-destructing. Certainly presenting the choice of using technical analysis in terms of the prisoner's dilemma is a very interesting way of investigating why people might use it. It actually suggests that using technical analysis is rational because as individuals we should earn more by using it. However, collectively, we would do better if nobody used these techniques than if everybody used them. While I might have my doubts as to whether using technical analysis is rational, the concept of the prisoner's dilemma is interesting in terms of how it can be related back to Soros's idea of reflexivity. The actions of participants will have a direct impact on how the market will trade; there is no sort of predetermined outcome that is not affected by our actions. If enough people trade in the same way, they will have an effect on a market, and a positive-feedback loop can develop. In these situations, only early traders stand any chance of profiting, and latecomers stand to lose; for traders as a group, the collective outcome is a poor one.

As we know that a high percentage of futures traders use technical analysis, this may help to explain why so many fail—the collective return for everyone may be poor if technical analysis is widely used. I would actually argue that no matter what analysis we use for trading, if too many people have the same trade that trade may be a dangerous one to hold and have a poor expected return. I will discuss this topic

again in Part 2. What I am trying to show throughout this book is that not only is there strong evidence that technical analysis and charting are poor approaches to trading, but there are quite a few possible, and perfectly plausible, reasons why this might be the case.

BACK TO THE POSSIBLE TECHNICAL ANALYSIS BUBBLE

In contrast to the Internet share frenzy it may be difficult to establish definitely that a technical analysis–based bubble has developed. It was easy to see that any stock with dot-com after its name reached ridiculous valuations. However, as technical analysis is applied to literally thousands of contracts, rather than one easily recognizable bubble, we might witness many, more selective bubbles. A rise in volatility in the affected products should ensue, too. Early trend spotters could be rewarded, but latecomers (who do not know that they are latecomers) will get caught holding a misvalued product. Remember, it is the success of the early birds that encourages imitation and the whole positive-feedback process.

Of course, for a bubble to develop, a whole range of factors would need to be in place. These would include media hype, the public believing we are in a new era, and the public having enough spare money to partake in trading or investing. I have already shown how technical analysis is getting the upper hand in the media. The public is also gradually being persuaded (often by false claims) that computers and technical trading have finally begun to unlock the secrets of the markets and, what's more, that the technology to do this is now affordable for most people. At this point in time, too, after years of rising house prices and low unemployment in many countries, many individuals do have spare capital to trade with.

I saw evidence of this for myself at the expo in Perth where I was an exhibitor. I was approached by many people who were keen to become full-time traders. Quite a few claimed that they were fed up with working hard for little money and that they had heard (through all the media that I described in Chapter 1) that they could make a good and easier living through trading. While I was trying to explain that trading is actually a tough business, requiring knowledge of many areas, discipline, and hard work, among other things, all around me were technical system and education vendors claiming that there were

easier ways of selecting trades—using their "proven" system or teaching. The expo attendees were being told that finally they did not need to learn the fundamentals of the markets anymore; the technical methods bypassed this. I will let readers guess for themselves whose stand was busier, mine or those of the technical course providers.

There is one other recent development that may also be helping technical traders. The rapid growth in margined trading such as CFDs means that private traders can have a bigger impact on markets than they had previously. A trader who has a $10,000 account can now trade up to $200,000 of stock. So, particularly in the smaller-cap stocks, which, as we have seen, attract technical traders, there is a greater chance for technical rules to be self-fulfilling. If a technical Web site or system has only 50 followers who each allocate $5,000 of margin to a trade and the margin requirement is 5 percent, then these 50 people can effectively buy $5 million of stock. We saw in Chapter 1 that companies with a capitalization of around $100 million were popular to trade, and so just these 50 people could send orders to buy 5 percent of such a company if they followed the same strategy. My figures are actually likely to be conservative, as some systems have hundreds of followers. There is therefore far greater scope for technical systems that specifically target smaller-cap stocks to be self-fulfilling, initially anyway, but latecomers (who do not know that they are late) will face significant losses as prices move far from equilibrium.

In fact, as an aside, the dynamics of our markets have changed with this increase in heavily margined trading, especially when we take into account the fact that most private traders only buy stocks. A CFD provider here in Australia told me that only about 20 percent of its clients ever sell short. The extra buying power created is significant, especially in countries such as Australia, where outside the top 40 or so companies, the market capitalizations are quite small.

In this last section, I have deviated slightly from my topic and have injected some conjecture into this book. As much as anything, this is to help stir up a debate on the subject. I am not suggesting that I definitely believe that a technical analysis–based bubble will develop, but I do think that there is sufficient evidence to suggest that as the popularity of technical analysis grows, the chances of more positive-feedback loops developing is greater. However, if a technical analysis bubble does develop, like all similar bubbles based on misguided notions, it will be doomed to end in failure for the majority.

What I do hope to have proved, though, is that, contrary to what technical analysts want us to believe, there is very strong evidence to suggest that technical analysis can be self-fulfilling.

NOTES

1. Ryan Sullivan, Allan Timmerman, and Halbert White, "Data Snooping, Technical Trading Rule Performance, and the Bootstrap," London School of Economics Financial Markets Group, 1998.

2. Fisher Black, "Noise," *Journal of Finance*, vol. 49, no. 3, 1986.

3. William Brock, Josef Lakonishok, and Blake LeBaron, "Simple Technical Trading Rules and the Stochastic Properties of Stock Returns," *Journal of Finance*, vol. 47, 1992.

4. Michael Jensen and George Bennington "Random Walks and Technical Theories: Some Additional Evidence," *Journal of Finance*, vol. 25, 1970.

5. Richard Russell writes a very good daily report on his Web site www.dowtheoryletters.com.

6. Harrison Hong and Jeremy Stein, "A Unified Theory of Underreaction, Momentum Trading and Overreaction in Asset Markets," *Journal of Finance*, vol. 54, no. 6, 1999.

7. George Soros, *The Crisis of Global Capitalism* (Boston: Little, Brown, 1998). In fact, reflexivity is covered in many of Soros's books, including *The Alchemy of Finance*.

8. Alexander Stremme, "Technical Trading: A Self-Fulfilling Prophecy," Stern School of Business, New York University, 1999.

Technical Analysis and Market Reality

In the first two chapters, I raised some concerns about the marketing methods and claims of many technical course providers and illustrated the limitations of back testing, among other things. In this chapter I will describe the other concerns about charting and technical analysis that I have had during my trading career. It was these issues that led me to examine just what evidence was available from both studies of technical analysis and studies of how people actually approach the decision-making process when they are trading (these are discussed in Chapters 4 and 5). I wanted to see whether the information that I gathered supported what I have witnessed, or if indeed it contradicted my beliefs and supported the use of technical analysis. I have always been happy to change my opinion if I was proved wrong, and this philosophy has helped me on many occasions when trading. One of my core beliefs, which I teach all my clients, is, after establishing a trade, always look out for new evidence and information, and if this information casts doubt on the original trade, then exit. In effect, I am always looking to find out why I might be wrong, which I know from experience and from the studies that I describe in Chapter 5 is a different approach from the one most traders adopt.

THE IMPORTANCE OF CONTEXT, PART 1: RISING AND FALLING MARKETS ARE DIFFERENT

My first exposure to charting came very early in my career, at a Japanese securities firm where I was employed to trade Japanese warrants. I should add here that, as has almost always been the case in my career, I entered the Japanese market just before a crash. I started on the desk in November 1989, and the mood in the market was buoyant. Within only a few weeks this had changed, and by the time I was given full control of a trading book in May 1990, the bear market was in full swing.

I sat next to the manager of my department, and on Friday afternoons, when the market in London was closed, we often had discussion about the market. Most traders were struggling with the bear market and the huge swings that came with it. My boss told me that (as was the norm for Japanese firms) my firm employed an expert on candlestick charting as an analyst. Usually we on the trading desk never saw the analyst's reports, but my boss sometimes shared some of the findings. What became very evident to me over the following months was that the views of the candlestick analyst were often way off the mark. For example from time to time, perhaps after an injection of public money from the Japanese authorities, the market would rally sharply. I was then told that we had seen a "bullish engulfing day" or some other such bullish pattern and that I should position myself for a rally. In fact, on occasions when the candlestick analyst was particularly convinced, the whole desk would be instructed to build long positions up to our limit. I cannot recall one occasion when we made money from this. After perhaps half a dozen such instances in a row, when my boss told me again that a recent rally had led the candlestick analyst to believe that the Nikkei was heading higher, I refused to buy and replied, "Perhaps it won't fall as quickly as it has been, but it certainly is not going up!"

Thus my introduction to charting did not impress me. My manager had explained to me that up until this point, the analyst had enjoyed a good deal of success and was very highly regarded. His performance had dropped considerably when the market was falling, which according to the beliefs of chartists, should not have been the case.

I actually count myself lucky that I have traded in many falling markets, as I have been able to witness just how different markets can

be when they are falling from when they are rising. Many traders and technical analysts, particularly those who concentrate on shares, have been exposed almost exclusively to a market in which prices are generally rising. A brief period in 1987 and the years 2000–2001 would have been their only exposure to some of the confusing and volatile traits that falling markets can have. For example, a very high proportion of the technical course providers who teach share traders here in Australia have traded or taught only during the current bull market. A market such as this is in reality the easiest to trade, and any deficiencies in a technique may not be discovered in such a market. This could well be another factor that has contributed to the success of technical analysis, for share traders anyway. Again, I will discuss what some studies have found in the next chapter.

What I have witnessed (although I try not to make generalizations about markets) with equities is that there can be sharp corrections in falling markets, and that such corrections are less frequent and severe in rising markets. Buying on dips is an often-practiced technique in rising markets, and although I personally don't agree with it per se, it can yield good results. However, selling short during bear market rallies is a far more risky proposition, which is one reason why short selling is usually recommended only for experienced traders. Bear-market rallies or short squeezes can be very large and often can look and feel like a real rally. They can be accompanied by increased volume, and with many technical indicators such as moving averages and chart patterns, as we saw with the candlestick patterns with the Nikkei, they will give buy signals. Of course, technical analysts will argue that since we find out that it is a bear-market rally only after the event, what if in fact the signal is the start of a rally? This is a fair point, but what I would say is that it is the fact that they are looking for changes in trends that leads them to be exposed to the risk that they are wrong. If a market has been falling (sharply), I would want much more evidence that conditions have changed than any technical indicator or chart pattern can provide. Furthermore, technical analysts believe that their analysis will work in all markets. If you believe that a crossing of moving averages coupled with rising volume is a positive indicator, then you must believe that this is always the case. However, there is a strong possibility that if you employ this approach when in fact you are in a bear market rally, the risk/reward profile of the trade is vastly different from your expectation.

I have seen similar problems with support and resistance. So-called support levels, however important they are, often fail to have any impact in falling markets. Traders will often use the phrase, "there's no support in a falling market," and this is indeed often the case. Once again, what I have witnessed suggests that theories or concepts such as support and resistance may have some use in certain market conditions (usually less volatile, rising markets) but cannot be applied to all market situations. Yet how many technical analysts would accept or teach others that their theories apply only in certain market conditions? The failure of believed support levels in certain conditions, coupled with my observations of how futures traders on LIFFE would note down levels without regard for what they were, has led me to the conclusion that if and when support and resistance levels do work, it is either because participants are aware of them and make them work or just due to chance. How many traders or investors are aware of the 52-week price history of a contract without referring to a chart? How many would know what support and resistance levels were without looking at charts? Is it not the case, then, that as more people now have access to charts, more will be able to work out such levels and trade accordingly if they have been told that these levels work? Once again, we are entering the subject of technical analysis as a self-fulfilling prophecy.

The theory of support and resistance states that once broken, a support level will become a resistance level and vice versa. The belief is that investors who bought at the support level and subsequently lost money would learn from their mistake and not do so again; in fact, they should now be sellers at that level. This infers that investors learn from their mistakes. However, as I mentioned in the preface, at the same time that technical analysts want us to believe that investors learn from their mistakes, one of the main principles of the field is that history repeats itself and patterns are repeated. If investors learned from the past, would they repeat the same patterns? I, for one, find it hard to reconcile these views.

My experience with trading both rising and falling markets has led to another question for technical analysts with regard to stocks in particular. As the vast majority of share traders and investors trade them from the long side (that is, they are buyers of shares rather than short sellers), they (and therefore the market) are clearly happier when share prices are rising. A fall in share prices, especially a significant

one, can be very damaging to the morale of these traders and might explain some of the increase in volatility that is often associated with falling prices.

Therefore, having seen that a rising share market trades differently from a falling one, I can see no reasons *why* the trend reversal patterns should be the same for both. The fact that chartists believe in double tops and double bottoms, head-and-shoulders tops and bottoms, and other such patterns suggests that the same decision-making process is taking place among participants in both situations. I cannot agree with such thinking, and therefore I believe that if such patterns have been seen to occur, it must be the result of either chance, the interpretations of the chartists themselves, or the self-fulfilling nature of technical analysis. Of course, there might well be another suggestion, namely, that in fact these patterns are nowhere near as successful in showing trend reversals as we are led to believe.

Further evidence of a difference in participants' psychology between rising and falling stock markets can be seen using the VIX index, as James Montier describes in his book *Behavioural Finance— Insights into Irrational Minds and Markets*. The VIX index is a weighted average of implied volatilities of options on the S&P100 index. As implied volatility will usually rise in times of nervousness and fall in periods of stability, the VIX index can be viewed as a measure of fear. Montier shows that a 5 percent month-to-month drop in the S&P100 was associated with a 30 percent increase in implied volatility, but a 5 percent month-to-month rise in the S&P100 was associated with an 8 percent *decline* in implied volatility. Here is clear evidence that in the stock market, sharp falls are associated with more fear than rallies. However, I would think that many readers already believe that this is the case. Yet technical analysts want us to believe that participants go through similar decision-making processes in both rallies and falls, hence the patterns are the same. They also want us to believe that both support and resistance levels are formed in similar ways and are equally valid, yet why should this be the case for shares, especially if volatility on down moves is far greater than volatility on up moves? We must at least begin to consider that if such levels do work, they can only be the result of either a self-fulfilling aspect of technical analysis or chance, rather than the result of accurate analysis of market psychology.

THE IMPORTANCE OF CONTEXT, PART 2: STATIONARITY

Technical analysts would have us believe that by analyzing participants' past actions, we can get a good idea of how they are thinking and behaving and therefore how the market might move in the future. But what if the participants change?

From what I have witnessed, this is a far more realistic description of how markets actually operate. Every market's situation and makeup is constantly changing. There are new entrants, existing participants leave, new data and information come to the market, and so on. Therefore, knowledge derived from previous statistics is less reliable. Readers will also note how this point ties in with the deficiencies of back testing. This concept is referred to as nonstationarity.

As an example, we need only look back at the Internet share frenzy that existed in the late 1990s. A whole new wave of participants entered the markets over that period and altered the way those stocks traded. After the collapse of these shares, many of these individuals left the market. Now there are new participants in the markets who are trading with a different set of ideas and expectations. Therefore, why should we place any importance on the trades and graph points that the previous individuals created? I would argue that price data created during the boom period is irrelevant to us now, other than being an interesting story from history. The only way that past data such as this can affect today's or any future day's price action is if enough participants use it as a reference.

Although I have used an example of nonstationarity over a longer period of time, in reality, this movement of individuals and information is occurring on a daily or even hourly basis. For example, I described how during the Japanese stock market crash in 1990, from time to time we would see an injection of money into the market by the authorities in order to stabilize the market. Some technical indicators, candlestick chart methods, and so on would see this as a reversal of the weak conditions and give buy signals. Yet this public money was just a short-term measure, sometimes lasting only one trading day. It was certainly not an indication that the market was turning around or that new buying interest had entered the market. In order to truly understand what is happening in the market, we need to look at information that a graph cannot show us so that we can understand the context of the price moves. Those who look only at graphs and believe

that price tells us everything we need to know will not see the whole picture.

Therefore any study of past prices is purely that, a study of past prices. This is similar to the situation in sports: the fact that one team beat another in a previous encounter may help in predicting the outcome of a new game if all players and conditions are the same. However, if one team has lost players to injury or if the previous game was played in warm, dry conditions and now the field is very wet and slippery, the previous result should carry less importance. It is important to understand the underlying conditions as well as the result itself.

THE IMPORTANCE OF CONTEXT, PART 3: ALTERNATIVE HISTORIES

What does a chart show us? It shows us the results of past decisions made by all participants. Through understanding nonstationarity, we can already see that past participants might not necessarily still be involved and therefore past actions might not be a reliable source of information for deciding current market psychology.

However, even if all participants were the same, the outcome of each day's events would not necessarily be the same even under the same conditions. In this way our markets resemble sports, another area of unpredictability.

Let's take a sporting example again and use a game of soccer. If we had two games played between the same two teams with the same players in both games and the same field conditions and referees, would we see the same patterns of play and result? Right from the kick-off, with 22 players and a referee all making decisions, they will not all make exactly the same decisions in both games. That is, after all, why we watch sports: even with the same teams, outcomes can vary from game to game. It is the fact that people will make different decisions in what look like similar situations that makes sports unpredictable. A striker may make a good run, lose his marker, and score in one game. Yet in another he might not go on the same run, or perhaps the defender will stay closer to him, or he might miss the shot, or the goalkeeper might save the shot, or the player who passes the ball might pass to someone else, or he might overhit the pass, or . . . or . . . or . . ..

Therefore, if the result of one game is a 3-0 win for one team, does this mean that the result of the second game will also be 3-0 for

the same team, with the game following exactly the same pattern, even with the same players and conditions? Of course not. If we analyze the play and results of the first game, what we are looking at is one possible outcome for that group of players under those conditions. But there could have been many other results if any or all of the thousands of decisions that were made during the game were different the second time around. Even with the same participants, there could have been many *alternative histories*.

Exactly the same thing is true of the markets. When we look at a chart, what we see is just one of the possible outcomes; there could have been many others. Soccer games have only 23 participants, whereas markets have thousands; therefore, the scope for alternative histories is huge. For example, on a busy and volatile day in the German Bund market, which is computer-based, there will be hundreds (if not thousands) of participants making decisions, with many just entering orders to buy or sell at the market price. Under the same circumstances, would we expect exactly the same results, with the same opening, closing, and high and low prices? The answer is no. A delay of just a split second in one participant's decision-making process may lead to a different market price.

What is very important for traders and investors to understand is that the outcome that we have already witnessed is not necessarily the most probable or the most likely. Greece, which was an 80-1 outsider at the start of the tournament, recently won the European Soccer Championships, beating much higher-ranked teams along the way. Should you therefore bet on that team's doing it again? A technical analyst would, because he is looking at past actions as if they were the only possible outcome. He does not consider the possibility that there might have been other outcomes, as they will not show up in his graph or indicators. You cannot make judgments on information that you cannot see, so the technical analyst will believe that Greece winning was the most likely path because it is the one that he sees. Yet we know this is nonsense. We know that there can be upsets in sports (that's why we love watching them), and the same can be true in the markets (for some of us, that's why we love trading them).

I can imagine that many readers, on their first reading of this, can easily accept the sporting examples, but may not accept the idea that this can apply to markets too. Many people, technical analysts in particular, struggle to come to terms with the fact that, with so many

participants and decisions, there can be thousands of alternative histories. This is even perhaps of greater importance to technical analysts, as they can place great importance on prices such as a daily high or low, which are direct results of just one possible outcome. The fact is, we must accept that in all aspects of life, including the markets, unlikely outcomes can sometimes materialize, and it is simply not credible to suggest that the market always trades on the most probable path. Anyone who has ever been involved in the markets in a price-setting or market-making capacity, if he or she was being honest, would acknowledge this.

So why have I placed this under the topic of context? The answer is that when studying past actions, putting them into context and trying to determine what alternative outcomes there could have been and could be in the future are vital processes for traders to go through. When analyzing a trade, we must try to work out what are the possible future outcomes; in particular, we need to understand and protect ourselves from the worst possible outcome. If the worst possible outcome is a large loss, then we should avoid the trade. A chart will not be able to tell us the worst possible outcome; it shows us only one previous outcome. Technical analysts want us to believe that because this outcome was the winning one, it was the most likely. This is not the case.

It is exactly the same with back testing. I described in the previous chapter how the results of back testing might be valid only if all the conditions of the back-testing period are the same, yet we can now see that even this is not the case. If some of the data that are analyzed are the result of an unlikely outcome or event, then we must understand this and realize that it might not affect the future market prices. Furthermore, we need to use our own knowledge to determine what the possible future outcome for our trade might be.

Technical analysts, therefore, base their decisions only on the visible outcome and believe that that was the sole alternative. So they are ignoring any other possibilities. Technical analysis cannot and does not provide for any exploration of alternative histories. I have spoken to many private technical traders who have suffered "unforeseen" losses from time to time. My reply is that any event is unforeseen if you do not even try to look for it.

We can use another good example from the sporting world to examine the benefits of understanding context. In one of the 2002 Winter Olympics' speed skating finals, the Australian skater was in

last place when all the other competitors fell over, and he came through to win the gold medal. Now let's say that the race was to be rerun the next day, and we ask two people whom they want to bet on. One watched the race; the other has just looked at the result. Clearly the decision-making process will be different for these two individuals, and they may come to completely different conclusions. The one who just saw the result would believe that the Australian was the best skater and would probably make him the favorite. The person who watched the race might think that the Australian was actually very unlikely to repeat the feat. If the two were bookmakers, which one should we expect to have a longer career?

One of the main attributes of the better traders that I have met and worked with is their ability to look at data and weigh the possible outcomes of a given trade in the future. Obviously a chart cannot tell us this; what is required is an understanding of the markets and the context of the events that are taking place. I have seen this used often in investment banks and hedge funds, but rarely among private traders. Sounds tough? Well, it is not simple, but this business is not supposed to be simple. Anybody who enters it believing that there are simple methods of making consistent and sustainable profits is deluding herself. Many traders will look for shortcuts through all this, but in the trading and investing business, there can be significant drawbacks to using such shortcuts. As I shall show later on, these shortcuts may be nothing more than just rules of thumb.

THE IMPORTANCE OF CONTEXT, PART 4: MARKETS ARE NOT ALL THE SAME

Technical analysis is often described as an investigation into market psychology, one that can be applied to all markets. However, having traded markets as diverse as small-cap Japanese shares and U.S. 10-year bonds, what is clearly evident is that markets can be very different. The range of available information can be different, the types of participants can be different, and the range of derivatives can be different, too (more on this in Chapter 6). All of these have an effect on the underlying market.

Although chartists believe that their patterns are reliable across all markets, analysts who use other technical indicators (such as moving averages) claim that they too understand that markets are different

and that different studies might need to be applied to different markets. For example, one stock might trigger successful trading signals using 15- and 29-day moving averages, while another might yield positive results from analyzing Relative Strength Indicators (RSI) and the crossing of 10- and 30-day moving averages. This, it is claimed, is a method of finding the right study for the right market.

However, it is nothing of the sort. It merely encourages the trader to do more data snooping until he or she finds some data that "prove" what he or she wants them to prove. Once again, traders are told to work their way through the dozens of available indicators and studies until one or more generates (yesterday's) answer.

The foreign exchange market has a different set of participants from, say, a biotechnology stock. The former will be traded by large hedge funds, central banks, large corporations and export firms hedging their currency risk, and so on. Most of these groups will not be involved in the latter market, where fund managers, who only buy shares, and individual investors will be the main participants. I have so far failed to discover any evidence that the second group of participants will in general have trading techniques and beliefs similar to those of the first group. In particular, we can see large differences in how we should analyze these instruments if they are falling in price.

Let's use the U.S. dollar–yen market as an example and compare it with Coca-Cola stock. With the Coca-Cola shares, a large majority of the participants are holders or buyers, whether they are pension fund managers or Joe Public. However, in contrast, it is not necessarily the case that most participants in the dollar-yen market are long dollars. It is a two-way price, and traders can and will be either long dollars or long yen. So, if Coca-Cola shares fall significantly, it is fair to say that most participants will suffer losses, and this will affect their trading (more about this from a behavioral finance perspective in Chapter 5). However, if the dollar-yen price drops, the situation is not necessarily the same. Some participants will be holding losing positions and Japanese exporters may be hurting (if they have not hedged), but some traders will be long yen and will be making profits. Of course, with no open interest available, it is impossible to see the numbers of longs and shorts, but suffice it to say that the percentage of long dollar traders will in most instances be lower than the percentage of long Coca-Cola investors. I therefore cannot see how we can be told that if a double bottom forms in both markets, this is a

sign that sentiment in both markets has necessarily turned higher. The profit-and-loss situation of participants in the two markets is different, and we should expect the participants to behave in different ways, so why should we believe that any pattern means the same thing in these two markets?

As different markets have different profiles and participants, why should we expect chart patterns and technical indicators to apply to all contracts in the same way? If technical analysis is indeed a study in market psychology, then why should the same patterns apply to all markets? This assumes that all participants trade for the same motives and with the same psychology, and I will discuss the problems with such assumptions in Part 2 of the book.

Even within a subgroup such as shares, I cannot analyze all contracts using the same methods. When analyzing a trade involving a stock, I will want to know what its price/earnings ratio (P/E) is, for example, as this can help me decide how risky a trade might be or how much capital to commit. I will not treat a trade involving a stock trading at a P/E of 80 in the same way as one involving a stock trading at a P/E of 12. They are different types of products with different expectations and possibly with different types of participants. For example, small-cap Internet or technology stocks can attract a different style of trader from a blue-chip bank.

However, when looking at chart patterns or the crossing of moving averages or indeed any technical-based method once again we find that the same approach is applied to all contracts. I showed in Chapter 1 that many technical traders were being drawn toward low-priced small-cap stocks, stocks that few, if any, professionals would suggest were good stocks to trade. They are prone to bouts of speculation and periods of volatility not usually associated with blue-chip stocks. Indeed, technical analysts claim that being able to use the same methods to analyze completely different markets is an advantage of their field. They see no problem with using the same techniques to analyze markets with completely different participants and completely different conditions and circumstances. They must believe that in all markets and in all situations, all humans behave in the same way, and that they will continue to repeat this behavior.

Similarly, some contracts have a range of derivatives available on them, while others have none. The effect of derivatives can sometimes be substantial (as I will discuss further in Chapter 6), and once again I

find it hard to believe that the same patterns will be of use when analyzing a contract that has derivatives and one that doesn't.

Also, some contracts have a defined market size, whereas others do not. For example, with stocks, we can see the number of shares outstanding, which cannot change unless the company restructures in some way. But with futures, there is no set limit on the number of contracts that can be created and traded, and this is also true of the options on these futures contracts. At the end of the day, markets move on demand and supply. Supply, therefore, is an important factor, and in some circumstances it can be crucial. Once again I fail to see how a chart pattern, which is supposed to show us market psychology, can be of equal use in both defined and open-ended contracts. While it is true that with futures and similar contracts, we can track the open interest to see whether new positions are being established, without a limit to the supply, the market can trade in a different manner. For example, if a contract that has a set issue size is tightly held (that is, if a large percentage of the issue is held by a few groups or individuals), the price moves in such contracts might reflect only the trades of the small number of outstanding instruments that remains and not be a true reflection of the whole market. The effect on the price of such a contract can also be substantial, as, with only limited supply, even a small buying interest can lead to a price rise. Of course patterns will be created, but whether they show the same supposed psychological implications as the same patterns on, say, a futures contract is open to debate.

If technical analysts want me be to believe that theirs is a study in market psychology, then I would want more evidence as to why their analysis is relevant to a particular market. Otherwise, I really do not care whether certain patterns have been witnessed in the past. After all, if I don't look for any patterns, then I will not find any (more on this in Chapter 5).

THE IMPORTANCE OF CONTEXT: A SUMMARY

The last few subsections have outlined different topics that all come under the wider heading of context. Different markets have different personalities, participants, derivatives, and so on. Indeed, the situation for each individual market is constantly changing. I therefore find it hard to be convinced that I should be solely analyzing data and price

action created by participants who may no longer exist. Furthermore the data are always old.

I believe that context is very important when looking at past data. I see little relevance in analyzing prices created during the Internet share frenzy, as many of the participants from that era no longer trade those stocks. The only reason I can see that their actions can influence today's market is if enough of today's participants look back and use the assumed important levels that were created back then.

Similarly, to believe that the same patterns mean the same thing in all markets seems a little too simplistic to me, and certainly my experience has suggested this too. I have no doubt that the same patterns have been seen in different markets and that they will continue to be seen, but without sufficient evidence that they really do highlight a psychological aspect of the price data, I remain a skeptic.

Some technical analysts will argue that they realize that markets are different and apply different technical indicators accordingly. But, as I described, they are really just data snooping to find what has worked well in the past. Furthermore, believers in chart pattern use the same patterns in all markets.

In short, I think that truly understanding market sentiment or psychology and being able to fully understand what past price data mean require an understanding of market conditions that technical analysis cannot provide. Understanding the context of price action is vital to us.

For example during the Iraq conflict in 2003, there were some large swings in stocks and indices in particular depending on how the conflict was going (from a coalition point of view). If coalition forces suffered heavy losses, stocks would fall. If they moved closer to Baghdad, stocks rose. It is important to understand this if we are looking at a stock that is, for example, trading at a resistance level generated during these times. The worries and concerns that may have resulted in participants selling then do not apply now. Therefore, I see decisions or prices made then as less important and relevant for making trading decisions today. I do not believe that it is necessarily psychologically important if today's participants push a price above a level created by yesterday's, especially when the circumstances are so different. It is important only if I want it to be and if I tell others that it is important, too.

The concepts of stationarity and alternative histories are particularly important to understand. Even on their own, they offer a pow-

erful and convincing argument against technical analysis. Not being a mathematician or a scientist, it was not training in these fields that led me to believe in these concepts. I have witnessed them firsthand, and they have formed an integral part of my trading for some years now. Thus it was from experience, not a textbook, that I learned about them.

Golfers too should understand the theory of alternative histories and how it relates to the context of an outcome. There is a saying in golf that "there are no descriptions on a scorecard." As an example, let's say that two golfers are playing the same hole, a par 4 of 350 yards. One of them mishits his tee shot 60 yards, then mishits another 80 yards, then another 80 yards, then finally connects properly with his fourth, which rolls onto the green and into the hole for a par 4. The other player hits his tee shot 250 yards, then hits a lovely iron shot to leave his ball 15 feet from the flag, then takes two puts for his par 4. Both scorecards show the same score, a par 4, but if the two golfers played the hole again, which would be the more likely to repeat the score? By only studying the scorecard and accepting that outcome and not understanding the context or why the score occurred, we will not see the whole story. This applies, too, to technical analysts and back testers, who just accept the data they are provided with and calculate trade ideas from it. They will miss all other possibilities, which sometimes could be the most likely.

By trying to understand context, we are deciding that the current price or past price data alone are not enough to make a decision. For example, let's say that the Toyota Corolla is a very popular car and it now sells for US$50,000. What does this mean? Unless we compare it to other similar products or changes in the Consumer Price Index and, if there appears to be a discrepancy, try to understand why, the price alone is meaningless. I am sure there are many readers who do such analysis for cars and TVs, yet forget this when they are trading or investing and are just content to buy what others have bought and sell what others have sold.

One of the main selling points for technical analysis is that it can be used to analyze any market. Thus a trader can move from a trading a bond to trading a stock to trading a currency and use the same analysis technique. I cannot find any means to justify this, whether it is empirical or psychological or even from a logical perspective.

WHAT IS A CHART?

If we are going to study technical analysis and charting, we might as well start right at the beginning by looking at the basis for most technical studies, the graph. Until recently, whether or not the graph itself accurately represented the market activity was not questioned, but now there is an increasing number of traders who are casting doubt on this. I have described how the public can learn wrong "facts" and how most people seem unwilling to challenge the accepted wisdom. Perhaps unwilling is too harsh a word; more likely, most people are happy to accept as fact information that is told to them by someone who appears to be knowledgeable on a subject, especially if there are many others saying the same thing.

So if most financial advisors tell us that stocks always outperform bonds over a certain long-term period, we are likely to accept this, even though the truth is different. If technical analysts tell us that a chart is an accurate representation of a period's trading activity, then, likewise, most people will just accept this. It seems perfectly plausible, if not common sense, to think this.

But does a chart accurately reflect a period's trading activity, or is it just a simple and easy way for us to look at information? Let's look at a simple example (Figure 3-1).

Here we have an example of how a bar graph would show a period's trading activity. Whether the period is one day, one hour, or five minutes is not important at this point. According to the bar graph, the opening price in both periods was $5, the closing price was $5.05, and these two prices were also the high and low for the period. Most peo-

FIGURE 3-1
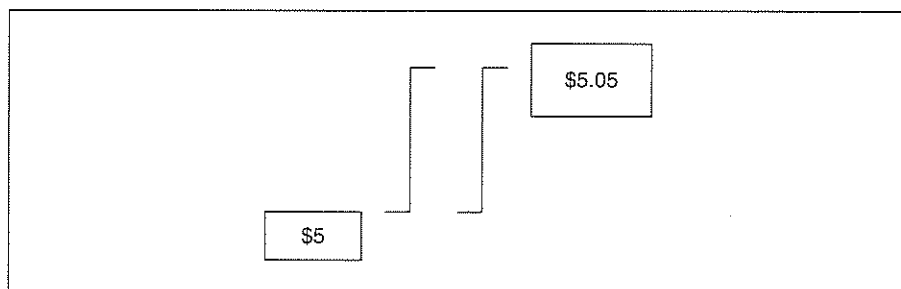
ple and all technical analysts are happy to accept that this is all the information that is required to make a decision on the trading activity during this period.

However, these two bars could have been formed in different ways, ways that might not show up in the graph. For example, consider the following sets of data. The bid/ask spread for both contracts is 5.00–5.05.

	Data Set 1			Data Set 2	
	Price	Volume		Price	Volume
Open	5.00		Open	5.00	
	5.00 ×	100,000		5.00 ×	100,000
	5.05 ×	100,000		5.00 ×	75,000
	5.00 ×	100,000		5.00 ×	100,000
Close	5.05 ×	100,000		5.05 ×	3,000
				5.00 ×	70,000
				5.00 ×	50,000
			Close	5.05 ×	2,000

Both of these sets of data would generate the bar graphs shown in Figure 3-1, but clearly they are not the same (in fact, the same bars could have been formed by a vast number of different trading actions). The first point to make is that there are more trades in data set 2 than in data set 1, yet the volume for both would show as 400,000. In fact, the difference in the number of trades in a period could be much larger. If there were only two trades during one period, does this reflect the same activity as if there were 100 trades? The volume generated in the two examples may or may not be similar, but certainly the type of activity is different.

Data set 1 shows the activity of a contract that is seeing two-way activity with neither more buyers nor more sellers. The fact that the closing price for the period was at 5.05 may just be because a trade on the offer price occurred just prior to the close. It would therefore be wrong to infer, as many technicians would, that the contract is firm or more likely to rise in price.

Having noted that the bar of data set 2 would be the same as that of data set 1, we can now see that data set 2 in fact is a contract that is trading in a completely different way from data set 1. Data set 2 has traded a majority of its volume at the bid price, but again, a buy order just before the close has generated a closing price of 5.05. Technical

traders can be tricked into thinking that the contract looks firm. A bar such as data set 2 would be viewed by chartists as a bullish one because the contract closed on the high, but this is a huge oversimplification, a rule of thumb.

In fact, during my years in the business, I have seen literally thousands of occasions on which the closing price has not really reflected the trading action of the period. As most traders know that closing prices are especially important to technical traders, it is quite conceivable—in fact, highly probable—that some traders will use the bid/ask spread or even buy or sell contracts to generate a closing price that might better suit their needs or might trigger technical stop-loss orders or new technical trades. At this point, back testers too should be feeling a little uncomfortable in that the open, high, low, close data that they download may not be true reflections of market action.

There is one more crucial element of market activity that these types of graphs miss, and that is volatility. As we have seen, both data sets 1 and 2 generate the same bar graphs, yet they are completely different in nature. For those of us who trade options, a contract such as data set 1 can be more volatile than a contract like data set 2. In fact, because most option traders use a chart-based method of determining historical volatility (that is, the volatility of the underlying contract), they too can make serious errors in analyzing a contract's volatility. Knowing how volatile a contract is can and should influence our choice of trade.

With regard to misrepresenting data in this way, both bar and candlestick charts suffer from similar problems. Technical advocates would suggest that point-and-figure graphs can help to solve this problem; however, they do not show us volume, and so perhaps a combination is required, or perhaps something different. Perhaps a better approach would be to try to receive the data trade by trade and to analyze this. However, although I believe that this technique might be superior to using bar or candlestick charts, for most private traders there is far too much data to analyze, and we have already seen how private traders are put off by hard work.

Viewing data trade by trade is exactly what the former pit traders on LIFFE and other floor-based exchanges used to do. Interestingly, the performance of these traders was far better than the norm for the futures industry, and I believe that this is one of the reasons why.

When the markets went screen-based, many of these traders initially looked at the market though charts and ended up with losses sim-

ilar to those of the private traders that they had previously taken money from. It took time for the few who remained to learn how to see the market as they used to.

A market can look completely different when it is analyzed trade by trade instead of using a chart. Those of us who have worked within the industry as market makers can truly appreciate this. As an active market participant, I have witnessed many occasions when the chart for a period has looked very different from the market that I actually traded.

In fact, there is a growing interest within the industry in market data that is not expressed in the standard chart form, but rather in a more "raw" manner. One of the pioneers in this field has been economist Richard Olsen, whose research has led him to believe that "markets have internal structures, with participants acting in prescribed ways based on their differing profiles and time horizons."[1] In order to conduct this form of analysis, Olsen has developed a method of presenting data that allows for each market's seasonality. Data from periods where there are fewer trades will be compressed, and data from more active periods expanded. Therefore, what we see is the behavior of the market at that particular moment in the context of the number and character of the participants in it.

Thus, we would not simply look at the same type of graphs or data for any contract; instead, what we see is directly relevant to that particular contract and how its participants are behaving. Therefore this will vary from contract to contract.

While I am not yet sure whether this method of data analysis really does lead to a more robust way of forecasting markets (I have not had enough exposure to the product to make a judgment), it certainly appears to be a superior way of looking at market data compared to the graphs that are currently used. Importantly, this method of processing data aims to capture volatility by taking market action into account.

So we can see that there is a growing realization within the industry that the current method of reviewing trading activity, namely graphs, is not adequate, and a new approach is now being tried out and used. Of course, some traders will just use the currently available technical tools and apply them to these data, but I have already described some of the problems that I believe exist with the current tools and will elaborate on them in the following two chapters too. However I came across one study[2] in which this approach had been tested. It is interesting to note the reasons that the author gave for conducting these tests.

He explains, "Many technical trading systems have less than 50% winning trades but rely on the fact that the winning trades make up for the more numerous losing trades." So he suggests that most technical tools get the market direction right less than half the time. We shall see similar results in the next chapter.

Although the results of the study show that applying technical tools to this firm's data gave better results than applying them to normal data, they by no means showed that the tools' directional predictive powers were of any significance. In predicting the correct market direction, the best result was a 50 percent success rate using the Market Time data and a 42 percent success rate using normal data. To be fair, the author was not intending to prove the benefits of the tools, but just to show whether using his firm's data would result in better performance.

I have outlined a few problems of graph and open, high, low, close analysis, but I am sure that there are many others. Hopefully, readers should already understand that perhaps the charts that are used do not accurately reflect the data that we assume they do. Just because these charts are used by everybody else or we are told that they are an accurate means of displaying data or they are simple to read does not mean that we should use them. We should not care what other people use, as most of them lose money; we should not believe unchallenged what others tell us, as there are many false claims in this business; and we must not always use the simplest means of analysis, because it may not be the best. In fact, as I will discuss in Chapter 5, using charts actually fits in well with the biases and rules of thumb that behavioral finance economists have found that we use. These biases are in fact hindrances to us as traders or investors and may explain why so many do so badly.

I should state that many months after writing this section, I was intrigued to read similar views in Van Tharp's book *Trade Your Way to Financial Freedom*, and while I can assure readers that the views expressed in this section are entirely my own, I feel that I should acknowledge that Van Tharp has written about this topic, too.

IF IT MOVES, CHART IT!

To quote from the course mentioned in the preface,

> There is little doubt that technical analysis is a study of human psychology and the reactive element of human beings. These mood swings

form the basis of technical analysis, generally because people in the market follow a repetitive pattern over and over again.

Thus, according to technical analysts, the reason why these patterns occur again and again is human psychology, and I think it is fair to say that all technical analysts agree on this. This is the fundamental premise of their analysis; its aim is to expose market sentiment through the analysis of participants' psychology via patterns in graphs and data.

It is therefore interesting and somewhat confusing to see technical analysts assess graphs and data on subjects such as economic data and P/Es. From time to time I have even seen analysis on graphs of the Producer Price Index (PPI) or the Consumer Price Index (CPI), for example. Perhaps the most respected technical analyst here in Australia analyzed a graph of P/E ratios for the ASX200. She drew a moving-average line, for example, and in her own words told readers, "Look at this chart as if it were a stock—would you be buying it now?" She continued, "A break below the 14 level would confirm a continuance of the bear cycle."

Granted, one part of the P/E ratio (namely price) is influenced by market participants and is therefore open to psychology analysis; however, the earnings part of the equation is in no way influenced by traders' and investors' sentiment. Similarly, surely we are not to believe that economic data such as the PPI and CPI can be analyzed with the "human psychology" tools of technical analysis.

As I was actually writing this chapter, I read a research report from the technical analysts at one of the world's largest financial institutions. In this particular piece, they show charts, complete with trendlines and other such features, on subjects such as U.S. initial jobless claims, U.S. unemployment rate, U.S. CPI, building permits, and so on. Under the graph of U.S. nonfarm payrolls, for example, they comment, "Once a trend sets in, counter trend moves tend to be an aberration."

If indeed technical analysis is an investigation into market psychology, then why should it be applied to such data, which are not instruments traded by humans? If patterns and breaks of moving averages and "important" levels are the result of human psychology, then they will not be replicated in data in which humans have no direct input. Or if they are, then surely it will just be by chance. If I graph the data of rainfall in Liverpool, I am sure that there will be patterns such

as rounded bottoms, double tops, and head and shoulders too, yet there is no human influence here.

Of course I am well aware of the ample evidence of the relationship between P/E ratios and share prices,[3] and I will always look at P/E ratios when analyzing a stock. However, to actually analyze a chart of P/Es and draw in "important" moving-average lines is taking things a step too far.

I believe that the fact that technical analysts are now applying their tools to non–human-related data shows that we are not dealing with an investigation of human psychology, but rather with an analysis of patterns that, seeing as they appear in all kinds of data, not just human-related ones, may actually be the result of chance or at the very least have little to do with human psychology. Certainly by applying their tools to such non–human-derived data, technical analysts are weakening the case for their methods and raising the possibility that drawing trend lines and seeing patterns is just the way this type of person disseminates information and makes decisions.

HINDSIGHT CHARTING
AND RELATED QUESTIONS

One particular problem area in relation to chart patterns is that many can be truly identified only well after they have been formed. For example, a double top cannot be described as a double top until after the contract has fallen. After all, a triple top is a double top that has failed. If, after the possible double top has developed, the contract actually rises, then the previous action would be attributed to consolidation. Thus many technical analysts will refer to "possible" double tops or head-and-shoulders formations.

How is this helpful to us? Well, it isn't, is the simple answer. For a trader to learn about what happened yesterday is akin to deciding one day whether or not the weather will allow a game of golf the previous day. The forecaster predicted the possibility of showers, so we wait until the next day to see if he was right.

To add further intrigue, let's look at the two patterns in Figure 3-2, which, although they were drawn by me, I believe are fair examples of the kind of situation that we can be confronted by.

On the left we have a possible head and shoulders forming, but it does not actually materialize and the contract heads higher. As the neckline (shown by the dotted line) has not been breached, chartists

FIGURE 3-2
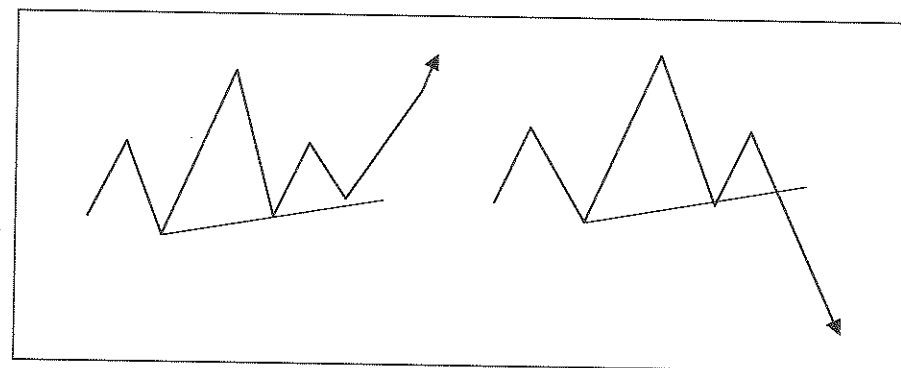
will tell us that a head-and-shoulders pattern has not been properly formed, and so it has not actually failed. I am sure all traders have seen this kind of pattern on many occasions.

On the right is a similar pattern, except in this example the neckline has been breached; the contract heads lower, and the chartists will tell us that the head and shoulders has been formed and has worked. Once again, I do not deny that I have seen this type of event occur.

However, let's look again at the two examples. Until the final part of the graphs, what is different about these two examples? The answer is nothing. They are (almost) identical. Therefore, how can a technical analyst claim that the move lower in the right-hand example is a result of the preceding pattern? The fact is, the preceding head-and-shoulders pattern has nothing to do with whether the contract falls and breaks the neckline or not. Sometimes the contract falls after this pattern; sometimes it rises. Whether the contract rises or falls at the neckline after the right shoulder depends on what is happening at that point and thereafter. For technical analysts to argue that the pattern on the right is a head and shoulders and the pattern on the left is not is incompatible with the notion that the patterns are created by psychology. If patterns are created by psychology, then why is the pattern on the left different from that on the right? The same can be said of double tops and other patterns. With concepts such as nonstationarity at work, this should not be surprising.

This idea that patterns may not be created by psychology can also be shown with the following example. Below is Figure 3-3, which is another type of graph that we would regularly see.

FIGURE 3-3
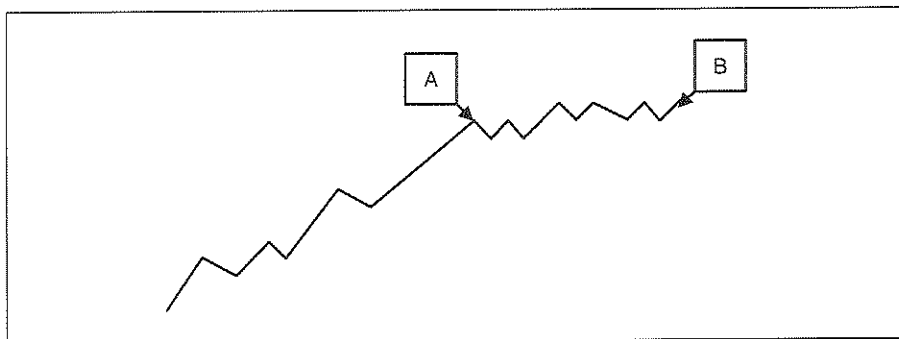
It shows a contract (let's say it is a currency rate) that was in an uptrend but has traded sideways between points A and B. This period AB could be either a period of consolidation before a continuation of the rally or a period of distribution before a fall, according to technical analysts. Because this is a currency, there is no volume to consider, and although some technical analysts would try to predict which way the market might go, many would be undecided.

But surely there must be a huge difference psychologically between a market that is consolidating before a rally and one that is about to fall. If a graph and the patterns on it helped to show us the psychology of a market, we should not have to wait until after the contract finally moves one way or the other to decide what is happening. Yet that is exactly what many technical analysts do; if the market rallies after point B, they will call the period AB consolidation, and if it falls, they will call it distribution or a top. This type of analysis is not studying market psychology; it is finding a story to describe the market's actions with the added benefit of hindsight. While a range of indicators that are supposed to help us with this decision making have been invented, their effectiveness, as we shall see in Chapter 4, is far from clear cut.

Of course, another result of confirming a head-and-shoulders top or double top only after the market has moved is that this strategy is bound to have a very high success rate. When I hear that a properly formed head and shoulders has a very high success rate, I am not surprised (although my findings in Chapter 4 were a shock). I too have a 100 percent success rate in describing how the market traded yesterday.

OTHER PROBLEMS THAT TRADERS ENCOUNTER

For private traders in particular, there can be many other problems with some aspects of technical analysis and some of the related trading techniques. For example, for those who are taught to trade using moving averages (perhaps with volume filters too), what happens when the "system" experiences a losing streak? As the individual has only educated himself or herself in one aspect of trading, he or she will be forced to buy another course. Education costs during such a person's trading career could become substantial.

This incorporates another concern about using a system or style of trading that has been developed by someone else. That is, the individual does not know why he or she is making or losing money. People are told that the system works, and they may even do some data snooping (sorry, back testing) before they trade, but they can never be sure what the real causes of their results are. If a system has been shown to be successful, say with back testing, and then a trade is established and loses money, without knowing the context of the market, how will the trader find out what has changed in the market that has made the system fail? Should she continue with the same system? After all, one failure will not alter the back-testing results too much.

I have already described how the risk analysis and back-testing techniques of many technical systems are actually of little use to traders, but they carry another risk, too. If a trader is told or believes that a system works, that trader is often less likely to keep a tight stop-loss order in place. I realize that many technical teachers advocate a disciplined approach to trading, but the reality often is that individuals who are told that a method has been proven to work may be less likely to exit a losing trade early. They "know" that the strategy is successful, and so they may be persuaded to stay with the trade until the "inevitable" profit comes. As all professional traders should tell you, holding losing trades is a cardinal sin of trading.

With many technical tutors suggesting to their clients that fundamental analysis is irrelevant, many traders and investors enter the market with little knowledge of its basics and go straight into using a charting or technical package. However, they will be ill equipped to decide on the risks or possible rewards of a trade without such knowledge. I find it amazing that people can be persuaded to spend thousands on a technical course or system without first learning the basics

and mechanics of the market. Technical tutors who tell clients that they don't need to understand such matters are once again misleading their clients.

THE IMPORTANCE (OR OTHERWISE) OF VOLUME

Volume, we are told by technical analysts, is an important indicator. Larger than normal volume suggests more substance to a move, trend, or pattern. I must say that I too, where possible, will look at volume, although once again I try to put it into context. In today's markets, high volume can be the result of many factors, which I will discuss in more detail in Chapter 6. Dow Theory, which incorporates some of the core rules of technical analysis, states, "Volume must confirm the trend."

Not including volume in a study is also one of the primary criticisms made by technical analysts of negative studies of their field. So if a study is released showing that the crossing of moving averages or some other indicator does not work as a successful trading tool when analyzed by a computer, technical analysts will almost always claim that although on its own this might be the case, using a volume filter to select moves on larger volume will create different and better results. This is indeed one area of criticism that a technical trader, Gary Smith, leveled at a study by Dr. Gary Hirst. Dr. Hirst concluded, "Statistically and mathematically all these tools—stochastics, RSI, chart patterns, Elliott Wave, and so on—just don't work. If you code any of these rigorously into a computer and test them they produce no statistical basis for making money; they're just wishful thinking."

Writing on the Web site www.realmoney.com, Smith countered by asking, "Did a rise in volume accompany the breakout, or was the breakout based on price alone?" This is the standard retort from technical analysts when their field is shown to be unsuccessful. Individuals are often taught to incorporate volume as a vital component in their analysis.

With this in mind, what has intrigued me so much is the fact that so many technical analysts study the foreign exchange markets, which are over-the-counter markets in which the volume traded is not known. If volume is so vital, then any conclusions drawn from technical studies on currencies must be viewed as unreliable. This is rather similar

to the study of economic data; although the stated beliefs of technical analysts suggest that they should not analyze such information, the fact that they can spot their favorite patterns and apply their indicators proves too enticing. Perhaps FX analysis should come with a disclaimer along the lines of, "In the absence of volume the analysis of currencies may be less reliable than that of other products."

In fact, in the foreign exchange markets, even the actual trading prices are not disclosed. All we can see is the bid/ask spread. I find it quite intriguing that so much price analysis is done on markets where the price and volume are not known.

WE CAN SEE YOU!

I have earlier described how many futures "locals" used to note down levels of support and resistance every day. Similarly, almost every brokerage house and investment bank sends out "important" technical levels, if not every day, then every week. As a result, a good number of market participants are aware of these levels, but they use them in different ways.

One of the favorite techniques of the locals, for example was to hunt out the stop-loss orders from technical traders. As the technical levels were quite simple for all to see, the locals knew that stop-loss orders would often be placed around these points. There were often good rewards to be made from activating these stop-loss orders. Even though most markets are now screen-based there are still many traders who like to trigger technical stop-loss orders. Shaking out such easily visible traders is too good an opportunity to miss.

Some technical tutors advocate placing stop-loss orders a few points away from the actual level to counteract this; however, I have seen little to suggest that this has any benefits. Experienced traders know this and rarely stop at the level itself.

One style of trading in particular that makes technical traders easy to spot is generating trades from the previous day's activity or closing price. This can occur when a contract breaks through and closes above an "important" level, posts a bullish or bearish engulfing day, or provides a similar signal. Technical traders should realize that this information is available for all to see and can make them sitting ducks for larger traders. I also do not think that there can be any "edge" from such information, unless, of course, a positive-feedback loop develops.

FIGURE 3-4
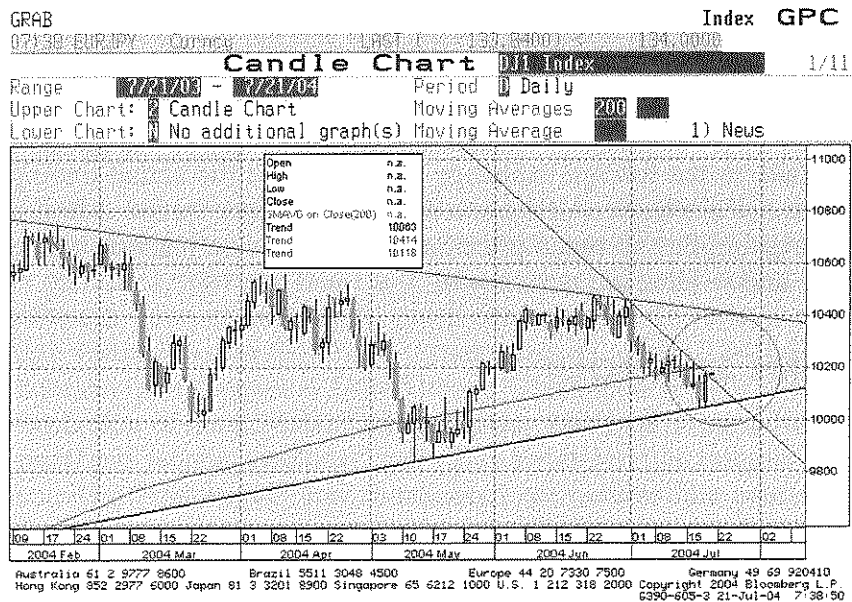
Let's look at a classic example of the futility of trading from yesterday's move. Before the open of the Dow Jones Industrial Average (DJIA) on the July 21, 2004, I was sent the following technical research.

> DOW JONES FUTURE has given a number of bullish signals after last night's Greenspan comments [see attached chart (Figure 3-4)] . . . is the recent downtrend over for now???
>
> 1. Double bottom at 10048
> 2. Held longer term uptrend
> 3. Bullish engulfing day
> 4. Break of short term downtrend
>
> Initial target would be the 10,420, followed by the longer term wave targets of 11,000 . . . there's a clearly defined stop level to exit longs below the 10048 double bottom.

So we have four very plausible technical reasons to buy the DJIA when it opens on July 21. I, and I would assume most traders, would therefore have expected some technical buying on the open, as the supposedly bullish price action of the previous day was easily seen. Indeed, on the open, the market did trade higher, helped by many market-on-open buy orders. Yet by the end of the day the DJIA had fallen by over 100 points, or roughly 1 percent. So rather than being the precursor of a rally, these four bullish technical indicators were actually followed by one of the largest falls in the DJIA within a period of a few months.

While I am not suggesting that showing one failure necessarily means that these indicators do not work, technical traders must understand that on days such as these, they are easy to spot. Possibly a trader or account with a large opposing order might be encouraged to use the technical trades as a source of liquidity to trade out of the position. For example, in this example, we can see that the DJIA had been weak for the preceding couple of weeks. Any trader(s) wishing to exit a large position(s) may well have been unable to do so in this environment without causing a sharp fall. So the knowledge that there will be good technical buying on the opening on July 21 could well persuade the trader(s) that there will be enough buyers to sell to without forcing the market down. Having managed large positions, I can assure readers that professional traders do consider these issues when deciding when to enter or exit a trade.

Therefore, rather than giving traders an edge, using chart-based techniques can make traders too easy to spot.

THE REACTIVE NATURE OF TECHNICAL TRADING

Maybe it's just me, but I like to make my own decisions in life. Whether I am buying a car or a TV or a share, the fact that other people are buying it is not, on its own, enough to persuade me to do the same. I realize that in life there are many people who buy things to "keep up with the Joneses," but I see this as a character flaw and one that I have no interest whatsoever in adopting. If everybody is buying a certain brand of car, I do not necessarily infer that the brand in question is superior in quality or value for money. I like to do my own research and make my own decisions. This, I guess, is another reason why most forms of technical analysis do not appeal to me. The often-used techniques of trend following in essence lead traders to enter

trades just because others have done so. I find this approach far too reactive, and also dangerous, because I have seen just how wrong other participants can be. If I cannot understand why others are buying or selling, then I will not follow suit. To leave my entry points and subsequent exit points in the hands of other participants is also something that I am very uncomfortable with. I want to make my own decisions based on my own research. I believe that by doing so, I have a much greater chance of understanding the reasons behind any profits or losses that result. Only by knowing why I was right or wrong can I improve my decision making and improve my trading.

One could argue that there are three types of market participants. The first are the knowledgeable, who make their own decisions based on all information available. In this group I would include investment bank and hedge fund traders and the more knowledgeable private traders (who are few in number).

Then we have the more experienced technical traders, who may see trends more quickly than others, possibly because they actually use some of the same analysis processes as those in the first group, although they do not admit this to their followers. However, they are still reactive traders who cannot trade without the prior decisions of the first group.

Then we have the final group, which consists of the majority of private traders, whether they are trend followers or rely on other technical indicators or are just "mom and dad" investors relying on any form of noise to trade with. I group them all together because they are all extremely reactive in nature. They will trade only after the first two groups have traded, and they might even be buying from participants in the first two groups who are now taking profits. From time to time they will have successes, but at other times they will be too late on the trade and will suffer large losses. I cannot see why anyone would want to be in this group. I believe that either we should try to gain an understanding of the markets so that we can join the first group or, if that is too difficult for us, we should not enter this business.

THE RISKY NATURE OF TECHNICAL ANALYSIS

As I pointed out in Chapter 1, we often see technical analysis described as being able to show us or forecast tops and bottoms and

market reversals. This all plays into the hands of many private traders who are looking for ways to "beat the markets." The problem is that the reliability of these reversal indicators is at best debatable and at worst poor. The example that I used about the Dow Jones in the section "We Can See You!" is an illustration of what can happen. What I want to illustrate is that trying to "sell the high" or "buy the low" sounds like an impressive strategy, but it is actually very risky in nature, especially when we are using methods of analysis that are unreliable or ill-conceived.

Rather like Shiller's description of media reporting as being based on records, technical analysts tend to look at markets from the perspective of highs and lows or possible highs and lows. It is said that economists have predicted eight out of the last three recessions, but as I write this in mid to late 2004 during the recent surge in oil prices, technical analysts have already predicted the top for oil on numerous occasions over the past few months. Any reversal day or week is seen as the top, with no regard for why the oil price might be rising or falling and, more importantly, for what the potential outcomes over the next period might be.

Looking for tops and bottoms is a complete red herring. We should just be interested in trading the markets as we see them at that moment and base our decisions on sound information and risk/reward analysis. If that leads us to buy a stock that looks like it has formed a top on a graph, then so be it. If it means we sell a contract that has possibly formed a top, then fine, but, as I will show in the next chapter, the reliability of these patterns and indicators is questionable and there are many benefits from trying to make our own decisions.

I will outline the findings of many studies of technical trading in the next chapter, but what is clear is that the methods of technical analysis are far from proven. In reality, traders who use such methods really need to factor in a new risk: the risk that they are using an unreliable method of analysis. What is even worse is that they will not be able to find out *why* it is unreliable.

LET'S JUST LOOK AT THE NUMBERS

From my discussions with private client brokers in London over 10 years, through reading industry magazines and journals, and from chats with brokers here in Australia, it appears that the failure rate of

traders has changed little over the years and is similar from country to country. So let's look at some figures that are widely talked about throughout the industry.

Across all markets, the number of traders and investors who lose money is estimated to be around 80 percent. Among futures traders, the failure rate is believed to be above 90 percent and possibly close to 95 percent. What is particularly interesting here is that, as I have already mentioned, industry estimates in Australia suggest that around 80 percent of futures traders rely on technical analysis. This is higher than the percentage of technical traders across all markets, which include moms and dads holding privatization shares and those acting on tips and rumors. So if we took a sample of 1,000 futures traders in Australia, roughly 950 would be losing money, and 800 of the 1,000 would be using technical analysis. Out of these 800, a maximum of 50 will be making money, and that is only if all the winners are technical analysts, which of course is not necessarily the case. The figure could therefore be lower. That is a maximum of a little over 6 percent of technical traders that are making money from their analysis, hardly proof of a successful and robust form of analysis. The fact that the failure rate of futures traders is higher than the industry average and that futures traders are more heavily reliant on technical analysis actually suggests that this type of analysis is a disadvantage to traders. A broker here in Australia who did not wish to be named admitted to me that many of his clients were members of the Australian Technical Analysts Association (ATAA), and, in his words, "virtually all of them were losing money." It is widely spoken and written about by professionals from within the futures industry that a vast majority of private traders lose money and that most futures traders use technical analysis, yet no one seems willing to admit the possibility of a link, let alone recognize that at the very least, technical analysis does not seem to give good results for futures traders. For people who regard themselves as good at recognizing trends and spotting correlations, they seem to be blind to an obvious one.

The usual explanation for this poor performance of futures traders given by brokers and technical analysts is a lack of funds. A couple of years ago I read an article by one broker who said something along the lines that he had never seen a small account make money. He inferred that it was the size of the trading account that determined whether a trader would make money trading futures. As we shall later

on in this book, this will often be the case for traders who use technical tools because the reliability of these tools is so poor. They need to keep using the tool, and "in the long run" they will make money. But this is not a reliable or robust trading technique; it is trading on hope, and for most of those who use it, there will be no long run. Therefore, it is not the size of the account that is the problem, but the reliability of the trading technique.

Let's also relate this back to what we saw in Chapter 1. Most of the books, Internet sites, trading courses, and other such material leave us with the belief and expectation that technical analysis is a highly successful form of analysis. Yet is easy to see that the real story is somewhat different. This is how powerful the effect of survivorship bias can be.

NOTES

1. From Olsen Web site, www.olsen.ch.
2. By Marc Levitt of High Frequency Finance Inc. in his March 1998 study "Market Time Data—Improving Technical Analysis and Technical Trading." This firm's software calculates Market Time, where each trading period depends on what the market or instrument is doing. The time scale, measured in physical time, expands and contracts based on market activity.
3. There is some good work on this by John Mauldin in his book *Bull's Eye Investing* (New York: John Wiley & Sons, 2004).

Studies of
Technical Analysis

Having discussed some of the concerns that I have with technical analysis based on my own experience as a trader, in the next two chapters I will analyze findings from two different areas. In Chapter 5 I will explain the topic and findings of behavioral finance, one of the most exciting areas in the investment industry. In this chapter I will discuss a few of the many studies of technical analysis that have been conducted.

I could have easily just used some of the many studies that have tested technical trading tools and found them to be of little use, or indeed tried to find some that appear to be supportive of such methods—there are many examples of both. Instead, what I have done is to find an interesting group of studies that can help explain *why* technical analysis might or might not work. Some of these studies are well known, others less so, but they all offer an interesting insight into where the problems in technical analysis might lie. Some of the studies, on the face of it, suggest that some technical tools do work, yet when we look at them more closely, the story is not quite so simple.

Importantly, from an impartiality perspective, nearly all of the studies that I have used are by neutral authors from respected institutions, such as universities and the Federal Reserve Banks. There are

dozens of negative studies on technical analysis from authors who were known to be against it prior to the study or from people who are affiliated with institutions that are known to be anti–technical analysis. I believe that I have not used any of these in this chapter. The authors of these studies are not trying to sell a course or system; they are simply attempting to study whether markets are efficient or not and whether the technical rules that are so widely used are actually beneficial.

I have also tried to concentrate on studies involving large sample periods that stand up to more rigorous scrutiny. For the most part, this means that I use studies from the mid- to late 1990s onward that incorporate techniques aimed at producing more reliable and trustworthy results. However, studies such as these are still fraught with potential problems, which I will discuss in the chapter.

By trying to understand why and when technical trading rules might work (if at all), we can start to see whether the concerns that I expressed in the previous chapter are valid.

For anyone who is worried about data snooping in some of these studies, some were conducted in real time and so did not just test past data. Furthermore, the more recent studies have tried to incorporate techniques to adjust for data snooping.

EFFECT OF TRANSACTION COSTS

The first study we will examine is the one by Sullivan, Timmermann, and White (STW),[1] as it has applied techniques to try to adjust for the effects of data snooping and so is possibly one of the most reliable studies available. STW's study is an expanded version of a study conducted by Brock, Lakonishok, and LeBaron (BLL)[2] in 1992, which applied 26 trading rules to data on the Dow Jones Industrial Average from 1897 to 1986. BLL had found that some trading rules had shown quite significant success; however, the authors were aware of the possibility that data snooping might have distorted their results.

So, using a new technique, STW applied the same trading rules to the same data. They then also tested nearly 8,000 technical trading rules on these data and tested both sets of rules on data from 1986 to 1996, which obviously were not available at the time of BLL's study. So we can see that this is a comprehensive study on a large number of technical trading rules, conducted over a large sample period with an attempt made to adjust for data snooping.

BLL found that the most successful strategies were those based on long moving averages (50, 150, or 200 days), and the best performer was a 50-day variable moving average, which yielded an annualized return of 9.4 percent (as opposed to 4.30 percent for just buying and holding). STW found that the best trading rule using the increased sample size of 7,846 rules was a standard five-day moving average, which produced a mean annualized return of 17.2 percent. On the face of it these are impressive findings for moving average supporters.

However, these studies do not account for transaction costs. In the more robust STW study, the best trading rule would have generated 6,310 trades, or 63.1 per year. In order for the trading rule to be profitable after transaction costs, these costs would need to have been lower than 0.27 percent per trade. The authors believe that transaction costs may well have been above that level at the start of the sample period but below that toward the end. So as far as U.S. traders are concerned, the authors were unable to conclude with this study whether or not the methods were successful after transaction costs.

To help them make a decision on the whether the trading rules would be profitable after transaction costs in the United States, the authors conducted their tests on the S&P 500 index futures, as costs are more transparent with this contract. They found that over the 13-year history of the contract, there was "no evidence that the trading rules outperform the benchmark (after costs)."

So perhaps the most reliable and comprehensive study of technical trading rules ever completed suggests that although some rules perform extremely well before transaction costs, if we include these fees, the profits disappear. As fees are an unavoidable part of our business, we have to factor them into our analysis. It is a bit like me knowing that if I could source or make solid gold watches for $100, I could make a great profit on them. But I cannot make them or source them that cheaply, so there is no point in thinking about it. I would also expect that if a time should come when I could make or source them at that price, others would spot the opportunity, too; it would not last long. Therefore we should not consider such a trading strategy, which is profitable only if unobtainable transaction costs are assumed, to be realistic or successful. Indeed, BLL themselves, in their conclusion, suggest that careful consideration of transaction costs is needed. Bessembinder and Chan, in their 1997 paper "Market Efficiency and the Returns to Technical Analysis," conclude that real transaction costs

would probably have been higher than the breakeven costs required for BLL's best trading rules, and therefore the results of BLL's study do not prove the effectiveness of technical rules.

There are a couple of important points to make about studies such as this. First, there is no guarantee that some of the trading rules that we use now and have applied in these studies will actually have been known about or used when the sample period started. In addition, there is a real possibility that the rules that were applied are affected by survivorship bias. Remember, we are testing only rules that we know are good because they have survived 100 years or more of use. Some of the technical rules that were being used 100 years ago would have been discarded because of poor performance. So the results that we get testing today's best rules on yesterday's data may help to show us how today's tools would have performed over the period, but they do not tell us how our actual trading performance would have been over that period because we might have at times been using poor trading rules that are no longer used. STW have tried to use rules that they can prove were used for at least a large part of their study period, but most studies do not take this into account.

Furthermore, to achieve STW's best result of 17.2 percent (before costs), we would have needed to have known at the time which of the 8,000-odd rules available would be the best. I think it is fair to say that if we took a sample of 1,000 traders and offered them nearly 8,000 trading rules, the number who would have chosen the one that turned out to be the best would be very few indeed. As even this best rule may not have yielded positive results after costs, we can see that the vast majority of traders would almost certainly have lost money (after costs) using these rules.

USING THE BEST PERFORMER IN THE PAST DID NOT WORK

Expanding on this last point, STW recognized the problem of how a trader could have determined the best technical rule prior to entering into a trade. So they constructed a new trading strategy whereby on each day of the experiment, they first determined the best-performing trading rule up to that date and followed that rule on the following day. This is, in essence, what back testers are doing. STW note, "At each point in time only historically available information is exploited so

this trading rule could have been implemented by a trader" (if the trading rule was definitely known at the time). The result of this test is arguably the most important in the whole study for us traders.

They found that using this approach significantly lowered the performance of the rule, "reflecting the fact that investors could not have known ex ante the identity of the ex post best performing trading rule." Basically, there is little benefit for a trader from using this back-testing approach. Here we have further proof (for those who needed it) of the lack of success of back testing. What had performed well in the past did not perform well in the future.

The idea that while it is obvious that we can find winning technical trading tools with the benefit of hindsight, but questionable whether these could be predicted in advance is taken up by Mark Ready of the University of Wisconsin–Madison in a paper entitled "Profits from Technical Trading Rules" in 2002. Ready employs a genetic algorithm technique developed to find the best trading rules over a period, which would then be used to trade with over the following period. Again this is effectively what back testers are doing, except that, as with STW, Ready probably tests far more rules. He also tests the BLL results using this technique to once again test their robustness to data snooping.

Ready concludes that a trader could not have known pre-1963 (the start date for BLL's study) that the best moving-average performer was going to do so well. The same tool was a poor performer both before the study and after the study period (post 1986), and Ready states that the BLL results could well be "a spurious result of data snooping." Even with the genetic algorithm method, which is free to choose any strategy that had previously performed well, the best technique on past data did not perform well in the future. These results fit well with my views expressed in the previous chapter. What we see in a graph or past data is the actions of past traders, which we can use only either if we know the context of these actions or if future price action exactly resembles that of the past, something that is almost (but not quite) impossible.

The results of Ready's study and that of STW are vitally important to anyone who has been persuaded to use or is contemplating using a back-testing approach. Of course, if we look back at past data we can find a trading tool that has worked well and that will be successful if we then test it over the same period, but this does not in any

way mean that this tool will make money in the future. First, the testing process is heavily influenced by data snooping, survivorship bias, and confirmation bias in that the testing period is often one in which the tester knows the tool has worked (I will give an excellent example of this in Chapter 11). Second, the future is highly unlikely to resemble the past, and it is very dangerous to draw too many conclusions from the past.

What I find particularly interesting is that all over the world, in disclaimers and product disclosure documents, investment firms are obliged to write something along the lines of "past performance is no guarantee of future performance." There is good reason for this; it is because it is true. Yet back testers and technical analysts in general appear to believe the opposite.

PERIODS OF ERRATIC OR POOR PERFORMANCE

During the 100-year period from 1897 to 1986, certain technical trading rules were observed to produce significantly positive results excluding transaction costs. When fees were included, their success was not so obvious. However, the results changed considerably when STW tested the trading rules in the period from 1987 to 1996. STW conclude:

> In this sample the results are completely reversed and the best performing trading rule is not even statistically significant at standard critical levels. This result is also borne out when data on a more readily tradable futures contract on the S+P 500 index are considered; again there is no evidence that any trading rule outperforms over the sample period.

They therefore suggest, "There is scant evidence that technical trading rules were of any economic value during the period 1987–1996."

Although this sample period is shorter than the original, it is still long enough to believe that its results are credible and usable. In fact LeBaron (of BLL) performed the same tests as BLL for the period 1988–1999 and found that the trading rules performed much worse in this period.

Furthermore, these are not the only studies to report such findings. A common feature of many studies, whether they support tech-

nical trading rules or not, is that during the 1990s the performance of technical trading rules deteriorated. Even where technical analysis had been shown to be profitable prior to the 1990s, the profits dropped substantially in most cases and in some cases disappeared entirely from this period onward. (I discuss why this might be the case in the next section.)

As well as the problem that the results of testing retrospectively can be distorted by survivorship bias, just analyzing the average returns over a long sample period can also hide some important information. In particular, it is important to find out whether there were any periods of significant losses during the overall study period.

For example, in a study by Neely[3] that has favorable findings on some technical trading rules, Neely notes how there were periods of significant losses. For instance in a period of 149 days in 1995, one rule lost 28.2 percent. So, although over the whole study period of March 1974 to March 1997 that trading rule yielded positive results, during a short period in 1995, a trader who was using it would have lost nearly 30 percent of his capital. This is a significant drawdown and one that might well in reality cause a trader to change his trading technique. In fact, in the second year of Neely's study the return on one of the moving-average rules fell sharply toward zero, and this excludes transaction costs. Once again I would suggest that after returns such as these, the chances that a trader would actually continue to use the same technique are quite low. The trader would probably look for a different method. So again, perhaps the overall conclusions of the study are not as favorable as at first glance. They assume that even after a poor trading year, a trader will continue to use the same methods.

STW break the results of their 100-year study only into still quite large periods of around 20 years. Thus it is difficult to find out if there were any similar examples of large drawdowns. It might take only one period of significant losses to persuade a trader to change her technique, and so even if she was using the best technique (which, remember, we know only with the benefit of hindsight), if she had had even one six-month or one-year period of negligible or negative returns (including transaction costs), the trader would probably have changed her technique.

However, within the results of STW's study, there are some very interesting data. The authors show the number of winning trades and

losing trades that were generated with the best rule. Out of a total of 6,310 trades, there were 2,501 winners and 3,809 losers. The good news for technical analysts from these data is that the risk/reward ratio of the trading rule seems good, with the profits from the winners far outweighing the losses from the losers. However if we analyze this from the perspective of a trader who was using this rule, with so many losing trades, there would have been a very high possibility of encountering a string of losses. Once again, faced with this type of trading activity, many traders would have given up on this technique. Remember, this is the best rule, and it is correct in predicting market direction less than 40 percent of the time; just think how bad some of the other indicators were! Granted, some of the poorer performers may have had a higher percentage of winners, but many would undoubtedly have had a lower percentage. Furthermore, even with a higher percentage of winners, we know that after fees these rules were not profitable.

With such a long study period, we cannot take these findings lightly. The market can either go up or go down, be in our favor or be against us (if it initially does not move, then we would have no need to close the position until it does move). In theory, then, we have a 50-50 chance of being on the right side, yet over such a large sample, the best trading rule was right only 40 percent of the time. This type of performance is supported by other studies, including the Market Time study that I quoted from in the previous chapter. One could therefore argue that rather than increasing our ability to predict future price movement, these technical tools actually are very poor indicators.

Let's relate this back to how we see technical analysis advertised and described. Few of the books, seminars, and courses that I have come across portray technical analysis as a poor predictor of market direction. On the contrary, we are told that it can help us to predict and forecast future direction; indeed, we are told that this is why we should be using it. It is obviously important that we are aware that even the best of these indicators are wrong more often than they are right, and even then, as I hope to show in this book, the end results are inconclusive, to say the least.

It is this more in-depth analysis of these studies that will highlight such issues as the number of winners and losers compared to just studying the data for the whole 100-year sample period or analyzing it on solely a mathematical basis. As a trader, I am only interested in how I would have performed if I had used the trading rule in question dur-

ing the whole period in question. I think it is fair to say that most traders, if they were faced with a succession of losses or a significant drawdown in their capital, would reconsider the trading approach they were using. Thus just analyzing the long-term performance of any trading rule or chart pattern will not give an accurate reflection of a trader's performance. Readers should be able to see by now just how many pitfalls there are when analyzing past data. There are so many considerations (not to mention flaws) that it is by no means as straightforward as we are often led to believe.

HYPOTHESIS: WHY THE PERFORMANCE OF TECHNICAL TRADING MAY HAVE DIMINISHED IN THE 1990S

I have said that many studies of technical trading have shown that its performance dropped during the 1990s,[4] and it is worth considering why this might be the case, as it could help us analyze the origins and limitations of technical analysis.

From the evidence available, it is very possible that during the period when many of these trading rules were first discovered, they could have appeared to show predictive power. However, it is highly unlikely, as we have seen, that they would have remained profitable after accounting for transaction costs. Perhaps some of the larger private traders or bank traders might have been able to exploit an opportunity, but for most private traders, such opportunities were beyond their reach. Some of these professional traders would have been the originators of these technical rules and would have written books explaining their success. However, it is wrong to think that these trading rules are successful, because they assume transaction costs that are unavailable to most. Transaction costs are an unavoidable part of this business and must be factored in.

Although many people who followed these rules would have lost money, there would have been some successes, and besides, because these traders could "prove" that their technical system worked using data that excluded fees, it would have been hard to argue with them. Those who lost money using the technical rule might well have blamed themselves rather than the tool.

So in theory we are looking at technical trading rules that appear to have good predictive powers, but in reality, high transaction costs

would have prevented most traders from benefiting. In fact, high transaction costs were only one of the problems that private traders would have faced. The success of the technical rule assumed that short selling was available to all, yet this was not the case for many private traders until fairly recently. Slow communications would have meant that the difference between the price that a trader wanted to trade at and the price that he actually did trade at (slippage) would in many cases have been quite different.

Importantly, just because a certain technical rule performed well during these times does not necessarily mean that we can conclude that the rule itself was the source of the success. For example, legislation against insider trading and market manipulation was first introduced in the United States in the 1930s. Prior to that time, such practices were believed to be widespread; after all, that was why the laws were introduced. Perhaps it was this activity that the technical rules picked up. Once again, the context of the period must be known before we can make any claims about a strategy.

Indeed, an article written by Charles Dow in 1901 does suggest that his methods were influenced by the fact that manipulation and insider trading were taking place. He wrote, "The market is always under more or less manipulation. A large operator who is seeking to advance the market . . . puts up two or three leading stocks either by legitimate buying or by manipulation." Anyone who has read any of the books on Jesse Livermore, who was a trader around the same period, would be aware that there were times that he and other large traders could "corner" a market. While I do not claim that such practices have disappeared completely, in today's market, with global liquidity and a host of derivatives on most products, it is far more difficult and therefore rare indeed for such practices to occur. Besides, legislation has outlawed many of these practices, and regulatory bodies are now in place all over the world to enforce these laws.

While the earlier state of affairs remained in place, technical analysis would have built up its reputation, and certainly the success stories of certain individuals who devised technical measures have been widely chronicled. In fact, the methods of these individuals are still the basis of many technical studies today.

However, as I discussed in Chapter 1, our markets began to change substantially in the late 1980s. Transaction costs fell substantially, and liquidity, information, and communications improved dra-

matically. Numerous pieces of legislation had been introduced since the 1930s, and the influence of regulatory bodies around the world increased, resulting in far fewer dubious trading activities. Now even the average private trader could try to benefit from these technical tools. Is it a coincidence, then, that the performance of these tools dropped so much during the 1990s? Perhaps, but perhaps the markets behaved as many would expect them to. That is, as soon as a pattern becomes clear and traders are in a position to act on it, they will do so, and any profits and predictive powers that the pattern, or in this case the technical tool, had will disappear.

STW discuss this possibility and state,

> It is possible that, historically, the best trading rule did indeed produce superior performance, but that, more recently, the markets have become more efficient and hence such opportunities have disappeared. This conclusion certainly seems to match up well with the lower transaction costs and increased liquidity in the stock market that may have helped to remove possible short-term patterns in stock returns.

If this is true, then what we have is a collection of technical trading rules that may have picked up inefficiencies in liquidity, information, and transaction costs, but were not analyzing market psychology, as we are led to believe. They could have been interesting measures in their time, but not anymore. The recurring problem that we face when analyzing technical analysis is that the source of the returns can never be known for certain. So we may never know why these rules appeared to show predictive powers. This should be a major concern for anyone using technical analysis; he or she can never know exactly what a study appears to be exploiting and so can never know when it might stop working, if indeed there is any explanation of the profits other than luck or randomness.

The concept that the technical trading rules that have been in existence for decades are no longer valid in today's markets is not a new one. It is often suggested and subsequently dismissed by technical analysis supporters. The usual grounds on which technical analysts dismiss the suggestions are that theirs is a study of market psychology, and market psychology has not changed. But can they really be certain that theirs is truly a study of market psychology? I gave many examples in the previous chapter of discrepancies between technical analysis and what I have seen market psychology to be. In the next

chapter I will discuss the discrepancies between the findings of behavioral finance and technical analysis, behavioral finance being studies of how people actually go about the decision-making process. Perhaps the decline in the performance of technical indicators beginning in the 1990s, coming as it did at the same time that markets became easier and cheaper to trade, was purely a coincidence. But there is a possibility that in fact any benefits that these indicators might have had may have come about because the indicators exploited (or their performance was exaggerated by) certain liquidity problems or market manipulation, in which case they would have little use in most of our markets today. While I am not necessarily claiming that markets today are efficient in a classical economic way, liquidity and transaction costs are no longer barriers to entry for most traders. If we believe, as I think most of us do, that the psychology of market participants has changed little over the years, then there is no reason why the performance of a psychology analysis tool should deteriorate so much since the 1990s. If we consider that many of the technical tools currently used were first applied to stocks in the early part of the last century, then we must consider that they picked up on market inefficiencies that existed then and in that market, but they may not apply now and to all other markets, especially as we have strong evidence to support these claims. There is also the possibility that as these technical tools have become more popular and access to markets easier, they have become self-destructing. Even some supporters of technical analysis believe that charts are ultimately self-destructing.

This is only a hypothesis, and it is needed only if there are any positive results of the studies of technical analysis that are not the result of data snooping. If, as Ready suggests, even the positive results are due to the effects of data snooping, then such a hypothesis is not really needed. In addition, even if technical tools can with hindsight pick up on previous market inefficiencies, this offers us no basis for making judgments on the future, but can be viewed only on a historical level.

Actually, there is the distinct possibility that rather than picking up and profiting from market inefficiencies or liquidity problems, the performance of technical tools was distorted by these issues. Many of the trades that would appear in back testing to be successful were actually unavailable to most traders because of lack of stock borrowing ability, short selling restrictions, and so on.

Furthermore, whether these tools did pick up on liquidity problems or not, as we shall see in the next few paragraphs, they still required strong trends and resulted in more losing than winning trades.

STRENGTH OF TREND AND VOLATILITY MIGHT BE IMPORTANT

I have explained my view that some technical analysis techniques may work to some extent in some market conditions but not in others, especially in more volatile, falling (stock) markets. An interesting study that analyzes this possibility was conducted by Boswijk, Griffioen, and Hommes (BGH).[5] BGH applied over 5,000 technical trading rules to cocoa futures trading on two different exchanges, LIFFE and CSCE, as well as the sterling/U.S. dollar exchange rate.

BGH found that the trading rules produced good results for LIFFE cocoa futures but poor results for the CSCE contract, results that they suggest are "surprising, because the underlying asset in both markets is more or less the same." The results for the sterling/dollar exchange rate were mixed. While the trading rules often showed good predictive power, after transaction costs there were no profits.

After further analysis, BGH discovered that there was a link between the volatility and strength of trends of the contracts and the success of the technical trading rules. The LIFFE contract exhibited strong trends, which were easily picked up by the trading rules, and also high volatility, which helped to generate returns in excess of transaction costs. The CSCE contract showed weak trends and high volatility. The authors believe that the volatility was too high relative to the trends and that the technical rules were therefore unable to uncover these trends. The sterling/dollar exchange rate had weak trends and low volatility. Here, technical rules could pick up the trends, but the low volatility meant that returns were small and did not cover costs. Interestingly, BGH also found that the performance of all the rules diminished during the 1990s.

There is also strong evidence from the STW study that strong trends are needed for technical rules to be profitable. The STW study reported that there were far more losing trades than winners, but that the profits from the winners were large enough to compensate for the losses. In order for this to be the case, two situations would need to occur. First, the trader would need to be disciplined and cut her losses,

and second, the move on the profitable trades would need to be large enough to cover the losses, which means that the trend would need to be bigger. In their study, STW hold each position for a predefined number of days (5, 10, 25, and 50, so they repeat each signal four times). In the study, the technical tools were wrong in predicting the trend or direction of the market 60 percent of the time, but we can deduce that on the other 40 percent of occasions, the tools did pick up on stronger trends and therefore produced good profits. Because no proactive, stop-loss-type disciplines were applied, we can be more satisfied that it was the strength of the move that was responsible for the overall performance.

So BGH's study shows that in order to be profitable, technical trading rules need the trend to be strong relative to the market volatility, and the STW study might point us toward the same conclusion. The author of the Market Time study also explained that technical analysis relies on profits being larger than losses, as opposed to the tools themselves being accurate and reliable. Yet I would suggest that any trader with a decent understanding of the markets would be able to pick up and profit from strong trend-type movement without needing to apply technical trading rules. One of the reasons that technical analysis is supposed to be helpful is that it is believed to show changes in trend. These studies appear to show otherwise, at least some of the time. They suggest that some technical studies might work in some market conditions (strong trends), but not in others. If there is no reason or trend behind a move, or if the trend is only short-term or small in nature, then the evidence suggests that technical tools offer us no help. Of course, the problem is that there is no way of knowing before we put the trade in whether the correct conditions are in place, or indeed whether the trend is the result of participants exploiting some new information or just the result of other momentum buying. So I find it hard to draw the conclusion that the technical tool itself is a good indicator of trend change (if one actually believes in trends). Technical tools just appear to spot a change in market direction that may or may not continue into the future, depending on outside factors—not much to go on really.

The strong trends that these tools need are usually the result of one or both of two situations: either there are some strong fundamental reasons or a positive-feedback loop has developed, often based on a misguided concept. Such a concept might include technical analysis

itself. If enough participants see the trend and become trend followers, then the trend can continue and become stronger, as I discussed in Chapter 2. So we must consider the possibility that the occasions when the technical tools are profitable are the result of positive-feedback loops or the self-fulfilling nature of technical analysis, which may of us believe do occur.

Indeed, BGH actually suggest,

Technical analysis may pick up sufficiently strong trends in asset prices, without knowing or understanding the economic forces behind these trends. It seems wise however that a technical analyst does not trust his charts only, but also tries to trace economic fundamentals which may cause or reinforce detected trends. If both the technical charts and fundamental indicators point in the same direction technical trading can be successful; otherwise failure seems a real possibility.

The BGH study further suggests the possibility of a direct link between volatility and profitability, which is important to us for two main reasons. First, technical analysts tell us that their analysis can be applied to all markets. In fact, a leading technical analyst in Australia suggested, "Never has technical analysis been more important [because] markets are becoming too hot to handle." Second, as I have previously explained, graphs and the typical data of open, high, low, and close that are collated by technicians are a poor way of analyzing volatility. Even the historical volatility measure that is commonly used is poor because it relies on the same data as the technical analysts. That is to say that the standard calculation for historical volatility involves using each day's range or high and low. But from an option trader's perspective, using just the daily range in this way will not necessarily give an accurate volatility figure. Option traders who understand this can sometimes have a big edge over the majority who just accept the historical volatility figure and base their decisions on it.

IN TESTS ON STOCKS, THERE WAS A DIFFERENCE IN PERFORMANCE BETWEEN LONG AND SHORT TRADES

Another aspect of the technical trading rules that stood out in the studies where the information was available was that there was a

clear difference in the performance of longs and shorts on stock trades.

For example, in the STW study, the average return per long trade was 0.39 percent compared with an average return for short trades of 0.19 percent. This is a significant difference, showing long trades as being more than twice as effective as short trades. Both types of trades had more losers than winners, but short trades had almost twice as many losers as winners. This again leaves the possibility that a trader might have encountered a string of losing short trades and would have abandoned the rule for such trades. We should also note that the low return of 0.19 percent per trade gives most private traders worldwide almost no scope for profits after fees.

Both the BLL study and the later study by LeBaron found that returns from longs were less volatile than returns from shorts. In the BLL study, buy signals were followed by an average 12 percent return at an annual rate, and sell signals were followed by a 7 percent *loss* at an annual rate, quite a significant difference.

Once again we are faced with results that conflict with what technical analysts tell us. We are told that technical analysis will work in all market conditions, yet there is considerable evidence that its performance on short-sale trades is far inferior to that on long trades for stocks. This would support my view and the view of many other experienced traders that shares can trade in a different manner depending on whether they are falling or rising. Trend following in falling stock markets can be a far different proposition from trend following in a rising stock market. To use the same tools or methods of analysis for both rising and falling shares does not seem to have any basis.

GERWIN GRIFFIOEN

Gerwin Griffioen may not be known to many traders, but his Ph.D. thesis, "Technical Analysis in Financial Markets," is one of the most impressive and comprehensive studies in existence. In the short space that I have in this book, I cannot do his study justice, and I would encourage all interested readers to visit his Web site (www.geocities.com/gerwingriffioen). As well as the cocoa study that I have already discussed, Griffioen tests 787 technical tools and indicators on

the Dow Jones Industrial Average, the constituent stocks of that average, the Amsterdam Stock Exchange Index and its constituents, the Global MSCI Index, and 50 indices from around the world. All results are tested for data snooping and are adjusted for risk. Griffioen further uses the back-testing approach of applying the best previous indicator to each test.

For the Dow Jones index and each of its constituents, there were no significantly positive results for the technical indicators, including using the back-testing approach. For the Amsterdam index, the results were poor, but there was a group of stocks within that index that returned very positive results; some, in fact, were extraordinarily good. However, using the back-testing method, only when transaction costs were very small did the technical tools show a decent profit.

For the 50 local indices, the results were also mixed. On average, over the whole group, the results were positive, but there were some interesting observations. The technical rules showed no profits for North American, Western European, and the more liquid Asian indices. The overall average positive result was bolstered by the results from the indices in countries such as Chile, Russia, Brazil, and Egypt. The problem here is that the author had to make assumptions about transaction costs and also assume good liquidity in these markets. If, for example, transaction costs were raised from his estimate of 50 basis points to 100 basis points, then the results were positive only for the Egyptian index. It is very likely that in many of these smaller markets, either transaction costs or liquidity or both were not what the author anticipated. I think it is likely, therefore, that the returns suggested are higher than a private trader would be able to achieve. Certainly the split in results between liquid and less liquid markets is clear and suggests some sort of liquidity issue. Perhaps the two main explanations are either that technical analysis exploits these liquidity issues or that the results are exaggerated by them. I strongly favor the second explanation. Besides, if the first were true, then it seems pointless for traders to use technical analysis on more liquid markets.

The following table shows some of the results so that readers can see the stark differences.

Index	Performance (after Risk Adjustment, Not in Percentage Terms)
U.S. DJIA	−4.15
U.S. Nasdaq	−11.64
Germany DAX 30	−7.37
Japan Nikkei 225	−3.61
Peru Lima General	+41.18
Russia Moscow Times	+83.13
Brazil Bovespa	+22.78
Egypt CMA	+26.45

LET'S COMPARE STUDIES ON STOCKS WITH THOSE ON CURRENCIES

We have seen that when technical trading rules are tested on stock markets, their performance is hardly impressive when transaction fees are taken into account. Furthermore, the performance of these rules seemed to depend on a number of factors that of course would not be known when the trades were originally entered into. Let's now look at the findings of some studies conducted on foreign exchange markets and see if there are any clues in these.

Initially, studies on the performance of technical trading rules in the foreign exchange markets seemed to suggest that over medium- to long-term time horizons (i.e., not intraday), these rules could generate significant returns after fees.[6] However, as some of these studies were conducted prior to the 1990s and we have seen evidence from the studies of stocks that the performance of technical rules diminished in the 1990s, it is more important to analyze studies that were conducted in the 1990s.

Neely's study of 1997, which was generally supportive of technical rules except for some large drawdown periods, did find some evidence that the rules' performance deteriorated in the 1990s. For example the 1, 10-day moving-average rule for the U.S. dollar/deutsche mark exchange rate had posted a negative return since 1992, yet it had previously been positive. So a trader who had back-tested this cross rate in 1992 and found that the 1, 10-day moving-average rule had performed well in the past would have lost money using it over the next period.

In their study of currency futures conducted on data between 1976 and 1990, Levich and Thomas also found support for techni-

cal rules, but when they split the results into five-year periods, "on average the profitability of some trading rules declined in the latest period."

A study of technical rules on the Forex market intraday[7] showed that the rules' performance dropped quite significantly in the 1994 data sample compared to the 1989 sample. While the author's own view is that the poorer results in the 1994 sample might be the result of weaker trends during that sample period, perhaps the changing market dynamics that I have highlighted might also be a factor in these findings. Both of these views would be consistent with what we have seen in the studies on stocks.

In fact, we should expect the change in market dynamics to have affected stocks more than currencies. This is because individual investors and traders have a larger impact on the stock market than they do on the Forex market. The major participants in the latter have always had easier and cheaper access. Perhaps the fall in performance may be due to the fact that more participants were using technical analysis, as its use had increased over this period (Chang and Chinn reported in 2000 that the proportion of traders using technical analysis was rising). Although we have seen that initially the self-fulfilling nature of technical analysis can sometimes lead to success, there is conjecture that its performance deteriorates over time. This could be due to the increased volatility that can be the result of its use (as small moves are picked up by technical traders and amplified) or to the patterns being recognized by too many participants, reducing their profitability.

When the authors of the study "Do Technical Trading Rules Generate Profits?" analyzed the results for each currency, they found further evidence that the size of the trend was important. There appeared to be a direct link between the strength of the trend and the success of the technical rules. This is the same thing that we found in the BGH study. So, as the authors conclude, "This, however, does not make the task of generating profits any easier; in order to derive profitable returns from technical analysis one not only has to pick an appropriate rule, but must be able to identify the start points of sustained trends." The problem for us traders is that we can know neither of these in advance.

Carol Osler, formerly of the New York Federal Reserve (and now at Brandeis University), conducted many interesting studies on technical

analysis. She too found that some methods were successful in currency markets, particularly support and resistance levels. There were some particularly interesting findings in her paper of July 2000 entitled "Support for Resistance: Technical Analysis and Intraday Exchange Rates." Contrary to the other studies of intraday use of technical levels mentioned, Osler found that support and resistance levels showed good predictive powers for intraday trend changes. One fascinating point to come out of this study was that 96 percent of all the support and resistance levels in the sample (which were provided by six firms) ended in either 0 or 5. This suggests that the users of these levels round their estimates up or down to 0 or 5. At this point I will acknowledge that many technical analysis supporters do espouse the belief that round numbers are more important than others, and whether this is rational or not, this study supports that view.

In this study, Osler also found that in the second half of the study (the whole study was conducted between January 1996 and March 1998), the performance of the levels was no longer "statistically significant." Again the difference between the first and second halves of the study appeared to be one of volatility. Volatility was low in the first part, but although it was higher in the second half, it was actually at historically normal levels, so this period cannot be said to be one of high volatility. Therefore, there should be concerns here for users of these levels.

Osler also investigated whether the suggested strength or importance of the level did indeed have any significance for the performance of that level. As with the levels that local futures traders used to download, the firms that supplied support and resistance levels gave each level a rating of 1, 2, or 3, with 3 being the strongest or most significant level. It was found that the rating had no effect on how successful the level was; in fact, there was even found to be a negative correlation between the importance of the level and the frequency with which the market reacted to it. Therefore, so-called major support and resistance levels, which would include levels such as 52-week highs or lows, 200-day moving averages. and so on, appear to be no more important than any of the other technical levels. These levels are claimed by technical analysis supporters to be more psychologically important, which is why they weight them so highly, so one would assume that such psychologically important levels would show more of a reaction than they do. Therefore, we cannot discount the sugges-

tion that I made in the previous chapter that it is not why the level was created that is important, but rather it is the mere fact that the level is considered important that causes it to be successful. Thus the psychological arguments for using these levels are misguided, and there is a distinct possibility, if not a probability, that any success resulting from trading of these levels is caused by their being self-fulfilling. This is especially plausible with products such as currencies, where we know that a high proportion of traders use technical analysis.

In fact, if we think about how markets work, it is very possible that if a large enough majority use certain levels, those levels will become important. This is because the role of the bank traders who act as market makers and liquidity providers is to trade and profit from the flow of business in their market. If client orders are clustered around technical levels, then those are the levels that will see the most action. That is why those who work as flow traders (as I did in the futures markets) need to understand technical levels. However, a flow trader's role is to take small profits from the liquidity in a market, and therefore, although he will be trading around those levels, he will not always be trading in the same direction as the technical trader.

So far, we could generally conclude that after transaction costs, the performance of technical rules appears to be better on currencies than on stocks. Although there does appear to be some evidence that their performance might have deteriorated by the late 1980s and into the 1990s, as was found in the studies on stocks, this evidence is not as strong as with stocks. This is most likely because the changes in share trading have been far more dramatic than those in the Forex market.

As with the findings of BGH study, there does seem to be a link between the performance of the technical rules and the strength of the trend. So once again this would suggest that rather than being good predictors of major trend changes, these technical tools pick up on many changes in direction, most of which have little follow-through. There also seems to be a link between volatility and the performance of technical tools, suggesting again that technical tools can be fooled by volatile markets.

However, I must point out that we are not comparing like with like. The number and nature of the technical rules used in the two sets of studies are different, as are the sample sizes. In general, the studies on stocks, such as those by STW and Ready, are more thorough than those I have seen conducted on currencies.

When we look at the performance of long versus short positions, there does appear to be a difference between the studies conducted on stocks and those conducted on Forex. Most of the reports on Forex that I have studied do not mention any particular difference between the performance of long and short positions, which I take to mean that any differences were not that great. In the study by Curcio, Goodhart, Guillaume, and Payne, however, the authors report that for the 1989 data, for some currencies, short trades performed the best, and for others, long trades were the most successful.

These results and the general differences between the performances of technical tools on equities and currencies would seem to agree with my view that these are completely different types of product and should not necessarily be analyzed in the same way. For the former, the vast majority of participants are holders or buyers, whereas the latter is a two-sided market with participants usually more evenly spread. So if we took a snapshot of participants in a stock, we would find that over 90 percent are trading it from the long side, but if we took a similar snapshot of the U.S. dollar-yen exchange rate, the number of participants who are taking long dollar positions would be far less and the number of traders who are actually taking the other side of our long dollar trade (holding a short dollar position) would be greater. This would seem to support my view that these two types of market are different and that therefore there is no explanation for using the same analysis tools on both. Even from a psychological point of view, the difference in participants' psychology on a down move in a currency and a down move in a share would be very different. So not only does the claim by technical analysis supporters that their form of analysis can be used on all markets seem unreasonable, but there is also considerable evidence that it is untrue.

Technical analysts tell us that because they are studying market psychology, we can use their methods for analyzing data in any time frame, from one-minute charts to yearly graphs. Yet results conducted on technical analysis in the Forex market suggest otherwise. We have seen the results of Neely's study of 1997, which appeared supportive of some technical tools, although with some weakening in performance later on in the survey. Neely later conducted a study with Weller[8] on using technical tools for intraday trading of currencies, and they found that "when realistic transaction costs . . . are taken into account, we find no evidence of excess returns to the trading rules."

In their study of intraday Forex trading, Curcio et al. reached a similar conclusion, saying that especially taking transaction costs into account, there was nothing to suggest that these technical methods were profitable.

Neely and Weller discussed the fact that the Forex market displayed different characteristics depending on the time horizon. They discussed whether this might be related to trading activity, in that most Forex trades are conducted intraday rather than over longer time horizons. Perhaps "[it is] a consequence of the uneven division of capital allocated to financing trade at different horizons." Even if this were to be the case, it is not directly linked to market psychology.

Countering these negative studies on the intraday performance of technical tools are the studies by Carol Osler that show positive results for support and resistance levels in currency markets. However, we cannot discount the idea that successes are self-fulfilling in nature, and there is still a link between the effectiveness of these levels and market volatility.

At the very least, while in general technical tools appear to produce a better performance on currencies than on stocks, whether these tools are useful over all time frames, as we are told by technical analysis supporters, is less clear and certainly not proven.

The difference in performance of technical tools between currencies and equities also leaves open the possibility that their reliability is only a result of their self-fulfilling nature. This is because we know that there is a higher percentage of technical traders in the currency markets than there is in the equity markets. Furthermore, we are told that volume is extremely important in making a decision on a contract's psychology, yet volume is not published for currency crosses; in fact, even the trading prices are not published.

A further word of caution for those who think the studies on currencies provide evidence of the effectiveness of technical analysis for those markets and want to go out and use them: First, just because a large number of traders are using technical analysis and it can be self-fulfilling at times does not guarantee that most users are making consistent profits. We know that in the futures markets, most private traders use technical analysis and most are failures. Second, even some supporters of technical analysis believe that technical or chart levels can in the end be self-destructing, especially the well-followed ones. Furthermore, there is significant evidence that traders using

technical analysis add to the noise of a market and increase its volatility, and we have seen how poorly technical tools perform in volatile markets. This again points to the possibility of technical analysis–created bubbles developing and subsequently bursting.

ADJUSTING FOR RISK

In recent years, many authors have highlighted the importance of adjusting the results of their studies for risk. This is actually a very important area and one that few technical analysis supporters look at. Technical analysis supporters tend to show us the basic results of a system or tool, but the question of whether any profitability was the result of holding risk is an important one. We will be rewarded for holding risk sometimes, but if we try to make a career of holding risk, we will struggle. Also, making money from holding risk will not disprove the belief that markets are efficient.

Virtually all the studies that I have discussed in this chapter have used at least one risk adjustment measure, and in some cases they have tried more than one. In another study by Neely entitled "Risk Adjusted, Ex Ante, Optimal Technical Trading Rules in Equity Markets" (Federal Reserve Bank of St. Louis, 2001), he concludes that "risk adjustment techniques should be seriously considered when evaluating trading strategies." As an aside, this study also finds that on equities, using the best past performer for future trades is not profitable when adjusted for risk.

STUDIES ON MOMENTUM AND VOLUME

Research in behavioral finance (discussed in the next chapter) has suggested that underreaction and overreaction may well be functions of our markets. This obviously leads to the belief that momentum trading may well be a viable strategy, particularly if markets initially underreact. So in recent years a few good studies on momentum trading have been constructed, and in particular the link between momentum and volume that technical analysis supporters believe exists has been examined.

In 2000, Lee and Swaminathan released a paper entitled "Price Momentum and Trading Volume"[9] that contained some interesting conclusions. Their study was conducted on all NYSE and AMEX stocks between January 1965 and December 1995. While the authors

believe that there is a link between momentum and volume, it is not as straightforward as technical analysis supporters would have us believe.

There was a distinct difference in how volume affected rising stocks and how it affected falling ones. The authors found that early momentum in rising stocks was accompanied by *low* volume and that a rising stock with high volume was likely to be late in the momentum cycle, and so from a trading point of view, we should avoid buying it. This is because over time, this momentum effect completely reverses, so a rising stock with high volume was likely to soon start to fall.

For falling shares, the situation was reversed; there was higher volume early in the cycle and lower volume later in the cycle and preceding a change of direction.

This leads to some interesting points. First, one of the main reasons why we are told to follow volume is that it is believed that high volume confirms the trend. One common story told by technical analysis supporters is that the increased volume acts as fuel for the trend, and that without the fuel, the trend is less likely to continue. Yet this study finds that this is not the case as far as rising stocks are concerned, but is true only for falling shares. So buying stocks with high volume may mean that we are late in the cycle and will therefore be likely to lose.

Second, once again we see a stark difference between how rising and falling shares trade. In this case, the difference is in the accompanying volume. While it is true that some more classical technical analysts do suggest that falling stocks might be accompanied by low volume, many others, in particular the new breed who push systems and software, tell their clients to use rising volume as an important indicator for both rising and falling shares.

The authors, however, make one further warning, and that is that these findings are generalizations and that individual stocks do not necessarily exhibit all the same characteristics. They further state, "The turning point [in the cycle] for individual firms may appear random and difficult to pinpoint." This is where such authors differ from many technical tutors. I am sure that many of the latter, faced with the same evidence, would simply suggest a set of trading rules that in reality would be no better than a rule of thumb. This is how I believe many technical and mechanical courses are started, and many traders are happy to just follow them.

Many believe that momentum effects, with or without volume, are actually the result of investor underreaction to news such as earnings. For example, a study by Scott, Stumpp, and Xu[10] suggested that this was the case. (This is the only study that I have used where it might be claimed that the authors could have a vested interest in the result because they work in the investment industry. But I believe the study is a good one, and its authors' views are supported by many others.) If this is the case, it seems to me that the best way to be early into the trade is to follow the news and data. Trading after the momentum has been established makes us susceptible to being late in the trade. This is the scenario that Hong and Stein[11] described in which early momentum buyers can be profitable, but later ones will lose as the stock will have overreacted to the news.

Putting these studies together with behavioral finance studies, we can generate a hypothesis that is based on how people have actually been observed to trade. When positive new information or data hit the market, because many traders use trading approaches based on past action and in general cling to previously held views, the stock will underreact. Over time, more people will spot this new trend or momentum, and the stock will rally further, and now volume will increase, too. However, the stock has now probably overreacted to the news and may shortly reverse. These latecomers, who of course do not know that they are latecomers because they are told to follow only trends, not news or fundamentals, will more than likely end up as losers.

For falling stocks, the situation is slightly different. After some bad news, there is initial selling by rational and informed traders, creating increased volume, but then, as many traders are prone to loss aversion and cannot face up to selling (described in more depth in the next chapter), the volume of such a stock will decrease over time, although it will still more than likely be falling.

Not only is this hypothesis backed up by many studies, including behavioral ones, it also more closely resembles the way I have seen market participants react. However, I must give one important warning similar to that of Lee and Swaminathan: these are only generalizations, and to make better than rule-of-thumb trading decisions, we need to know more about the context of the stock. Furthermore, if we follow and react to the news and data as they are released, we do not need to worry about trends, volume, or other such factors; we just trade what

we see. What we need to do is to weigh what is being priced in and work out whether the trade looks good (discussed in Part 2).

WHAT ABOUT THE EFFECTIVENESS OF CHART PATTERNS?

So far we have looked only at studies involving technical filter rules such as moving averages and price breakouts, so let's now look at research into chart patterns. The effectiveness of chart patterns is more difficult to assess using computers, but two studies in particular have been conducted that appear to have solved the problem. Both studies (which are primarily from the same author) analyze the head-and-shoulders pattern, the pattern that most technical analysts and books tell us is the most reliable.[12] Figure 4-1 is a diagram of a head-and-shoulders pattern.

In the first study,[13] using technical analysis reference books such as Edwards and Magee (*Technical Analysis of Stock Trends*, 1966) and Murphy (*Technical Analysis of the Futures Market*, 1986), the authors developed a system that was capable of identifying head-and-shoulders formations and that would enter into a trade only if the neckline was breached. The system also allowed for the contract to move back toward the neckline after the trade was established without triggering a stop-loss order, as many books indicate that this

FIGURE 4-1
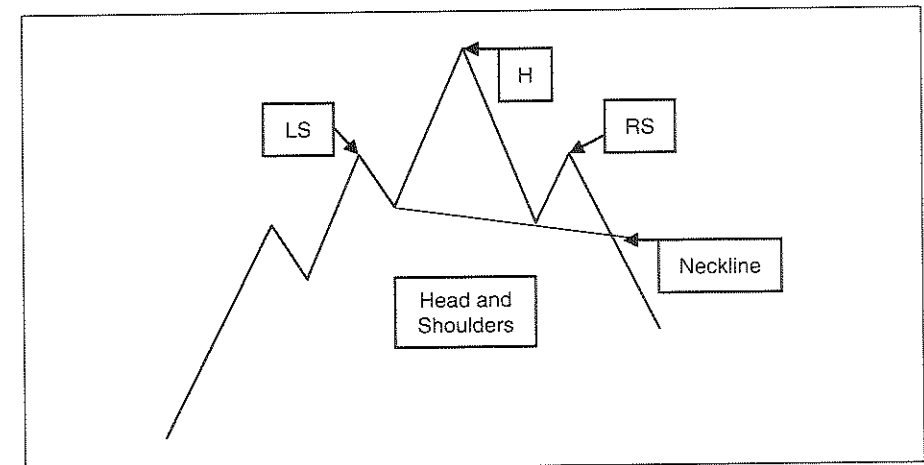
can often happen. Also, one method of exiting the trade that was used was to carry the trade as long as possible until the move had ended, again mimicking how a real technical trader would trade. The study was conducted on six currencies during the period March 1973 to June 1994.

From the title of the study, "Head and Shoulders: Not Just a Flaky Pattern," we would obviously conclude that the study was broadly supportive of the head-and-shoulders pattern, yet the real story is not that simple. In fact, the head-and-shoulders pattern resulted in profits for just two of the currencies and losses in the other four. The authors reached the conclusion that the pattern did have some predictive powers based on the premise that if a trader had traded in all six currencies simultaneously, then he would have made a profit. Yet in reality, how many of us would carry or even think about carrying positions in six different currencies at the same time? This is especially true when we consider that all the currencies used were quoted versus the U.S. dollar, so that effectively we might have had multiple positions, but of the same trade, either long or short the U.S. dollar. Once again when we analyze the results from our perspective as a trader, we might find that we reach a different conclusion.

Again, it is also worth looking at the number of profitable and loss-making trades. In all, 164 trades were generated, of which 90 were clear loss makers, only 59 had clear profits, and 15 had profits or losses of about zero, and so, including transaction costs, I would assume them to be losers. Even if we use only the clear losers, they amount to 55 percent of the trades,[14] with a further 9 percent of trades generating no clear profit. Once again the percentage of winners is small; here only around one-third of the trades showed clear profits, showing us that the head-and-shoulders pattern does not necessarily signify a clear market reversal. The authors themselves state "that head-and-shoulders patterns are certainly not reliable."

It might be easier at this point to look at the results from two of the currencies, the German mark and the Canadian dollar (Figures 4-2 and 4-3).

Figure 4-2 shows the profits and losses from the head-and-shoulders pattern on the German mark. The dots above the line are profits, and those below the line, losses. The mark was actually one of the two currencies that, over the whole study period, showed a profit for the pattern.

FIGURE 4-2
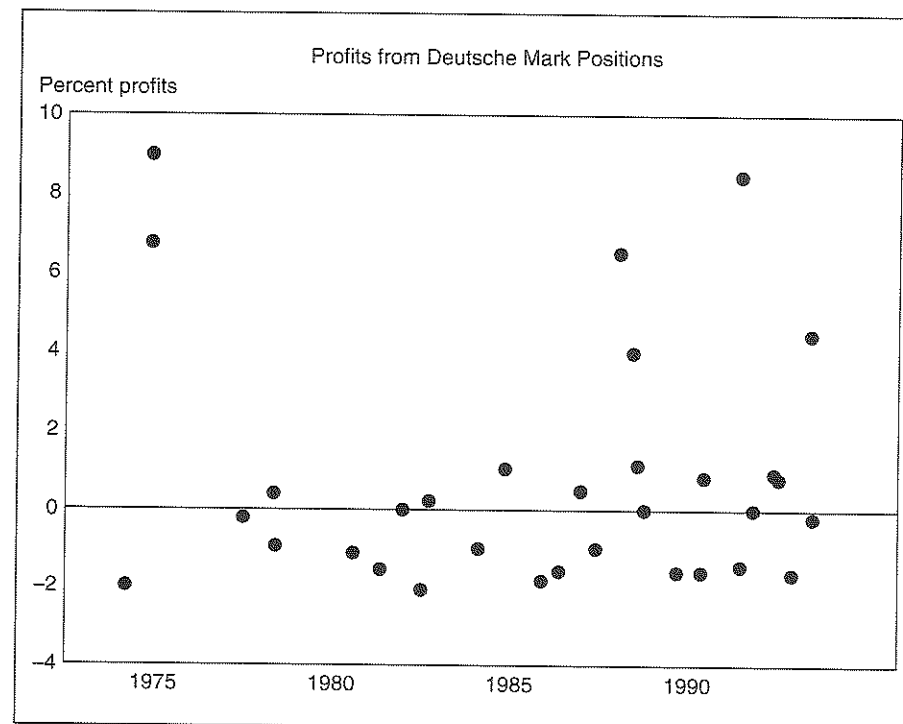
We can easily see that there are more clear losses than clear profits and that there are half a dozen or so trades that yielded negligible profits even before fees. The other interesting fact to come out of these results is that for a period of about 10 years between roughly 1977 and 1987, out of 14 trades that were entered into, none gave profits of any substance as far as a trader is concerned, especially if we factor in transaction costs. The reason why the pattern was successful over the whole period was not because it was a reliable indicator of trend reversals but because there were a few moves of significant magnitude that more than covered the losses.

Let's now compare these results to those from the Canadian dollar, which are shown in Figure 4-3.

The Canadian dollar was one of the four currencies that showed losses from using the pattern. As with the mark, there are more losses

FIGURE 4-3

FIGURE 4-4
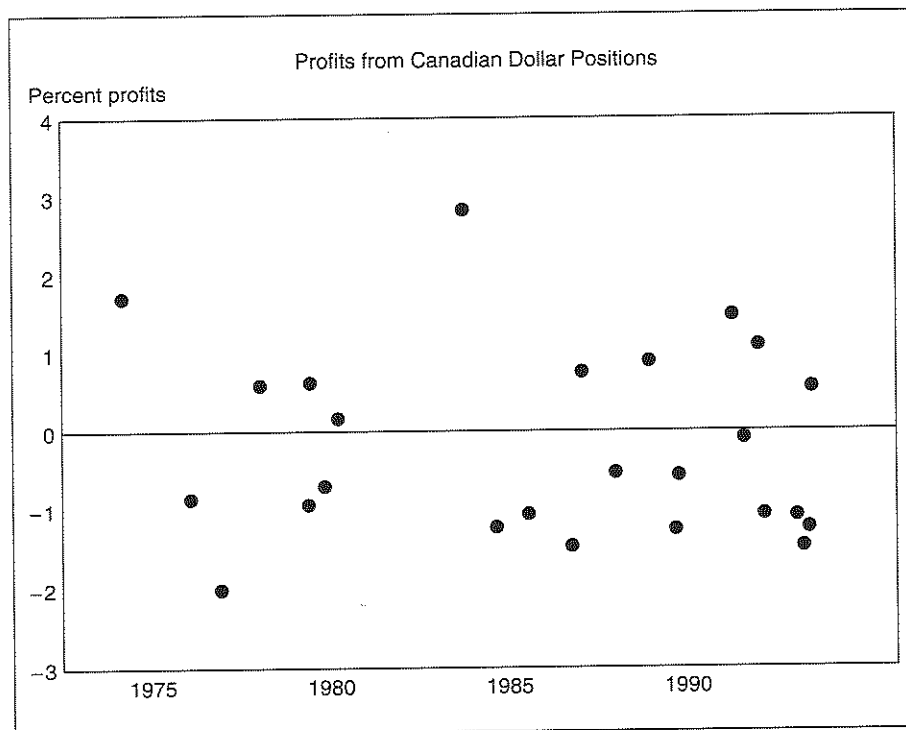
than profits; however, here there are no large profits, so overall, the pattern is seen as a loser.

Again we are faced with a study showing us that a chart-based tool has less reliability than tossing a coin; it is wrong more often than it is right. It is therefore the size of the move and/or the discipline of the trader that is of most importance for profits to be made from the pattern. Although we can control our discipline, is there any way of knowing in advance what the size of the move indicated by the head-and-shoulders pattern could be?

Many technicians suggest that the vertical distance from the neckline to the head represents the target distance once the neckline is broken (see Figure 4-4), so the authors of the study also tested this claim. They found absolutely no evidence to support it. In fact, 73 percent of the patterns failed to meet their objective, and for all currencies
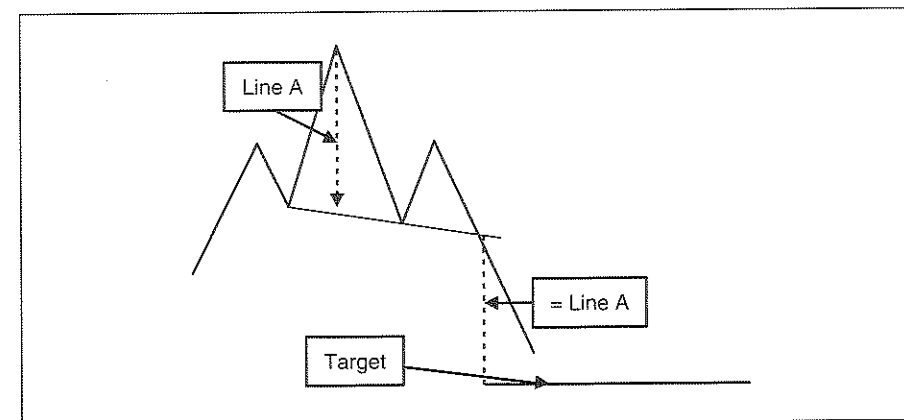
except the yen, the average move was well below the target. In some cases the move was barely more than half the expected level.

So, contrary to the claims of technical analysts, the head-and-shoulders pattern is not in the least reliable, and the target levels that we are told about are not backed up by the study, either. I'll repeat, *this is supposed to be the most reliable pattern*; as a trader, I would hate to see the results of the less reliable ones!

Thus, anyone wishing to use this pattern should be aware of the following problems. First, there can be long periods when it does not make any money. Second, it appears to be wrong more often than it is right, so get used to holding and dealing with losing positions. Third, even if you are disciplined, whether or not you make a profit (and that is over the long term) will depend on the strength of the move, and, contrary to what technical analysts suggest, this cannot be forecast in advance. Some readers should at this point have major doubts as to whether a strategy whose success depends on so many variables can lead to a sustainable trading career. Of crucial importance to us is the fact that we cannot improve our performance over time because the reasons for our performance are out of our hands.

One of the authors of this study then went on to conduct another study involving the head-and-shoulders pattern a few years later.[15] This is a fascinating study into whether noise traders actually do exist, whether they can influence a contract's price, and whether they are

profitable. The author (and many others) argues that technical traders are good candidates to be considered noise traders for three main reasons. First, there is an "absence of reasoned cause and effect in adherents' explanations for the supposed profitability of technical trading." Second, technical trading is used by many participants. Third, because most technical traders look at the market in similar ways, their trades can tend to be correlated.

Again the author uses the head-and-shoulders pattern as the form of analysis to be studied, which would seem to be a very good choice. The author has also had experience testing this pattern. It is viewed by chartists as a reliable pattern, and it is widely known and used, so if the pattern is formed, there should be a good chance of noticing any increase in volume. One difference between this study and the previous one is that this one tests the pattern on equities rather than on currencies, but as chartists tell us that their analysis works on any markets, this should not matter. The study period is over 31.5 years, from July 1962 to December 1993, and uses 100 stocks.

As before, the author used entry triggers that were suggested by a number of technical training manuals and then also looked at the volume of the stock on the days when the technical traders would have been expected to establish their positions (that is, after a closing price below the neckline). The author discovered that volumes on these days were significantly higher than normal, suggesting the involvement of technical traders. In fact, there may well be more traders who participate in this pattern but on different days, depending on the graph that they use.

The author then looked at the volume three days before and three days after the neckline was breached and noticed a clear peak in volume on the day the neckline was broken, with volume then gradually declining over the following days. This not only indicated the presence of technical traders but suggested that they did wait patiently for the decisive break of the neckline and few preempted the break. Furthermore, a small proportion waited a day or two longer before trading. Further studies confirmed that this type of volume and trading activity was evident only around the time of the formation of the pattern and also confirmed the accuracy of the computer program to pick out the strategy.

So to sum up these first findings: the author finds that head-and-shoulders trading is clearly visible and that most traders are disci-

plined in establishing their positions. She further suggests that such trading could indeed be classified as noise trading.

As for the profitability of using the pattern: the average performance per position was a *loss* of 0.24 percent, suggesting that the head-and-shoulders pattern is not profitable.

One other interesting finding of the study was that, following the initial break of the neckline, the stocks were forced in the direction of the break, showing that this type of technical trading did qualify as positive-feedback trading. So initially there was a self-fulfilling element to this trading, and this was dependent on the volume or size of the stock. Again this is contrary to what many technical advocates tell us; they often refuse to believe that this can be the case. To quote from the course cited in the preface (note 1), "The main criticism leveled at technical analysis is the self fulfilling prophecy. We believe this to be UTTER RUBBISH."

However, after the initial pressure from the technical traders, which lasts a few days, their influence diminishes slowly and completely. Interestingly, the initial price effect of the technical traders disappeared far more rapidly in the second half of the sample period, suggesting again that the profitability of the pattern has been very low since 1977.

So let's sum up the findings of this study, which used data from a period of more than 30 years and was conducted on 100 stocks. In terms of performance, the head-and-shoulders pattern actually led to losses. Trading as a result of the pattern was clear to see, and initially this activity could be seen to put further pressure on the stock in the direction of the break, i.e., it had a self-fulfilling nature. However, the technical traders' influence diminishes over time, and in recent years this effect and the performance of the pattern overall have diminished. Furthermore, because of its being unprofitable, this trading is deemed to be noise trading, i.e., traders are acting on noise rather than information in the false expectation that they can make money from it.

Another study of the pattern by the same author for the *Economic Journal* in 1999 (entitled "Methodical Madness: Technical Analysis and the Irrationality of Exchange Rate Forecast"), while finding the pattern to be profitable, concluded that using it was irrational because other, more simple strategies yielded better results.

When looked at together and analyzed in detail, the failings of the head-and-shoulders pattern seem obvious. From a trader's perspective,

I cannot see anything in these studies to make me want to use this strategy. It has a very low reliability, and its profitability is certainly not clear. It therefore seems to be a poor predictor of trend reversals, and whether or not it is profitable would appear to be due to factors unrelated to the pattern itself. This is nothing like the head-and-shoulders pattern that we are taught about.

It is again interesting to note the differences between the performance of the pattern on stocks and on currencies. While I would argue that it is a poor performer on both, there are at least a few successes for the pattern on currencies. Taking into account all the evidence we have seen, we must consider the possibility that the better performance of the pattern on currencies is a result of the fact that a high proportion of currency traders use charting and technical analysis, and that at times it can be self-fulfilling.

So why do traders use it? Partly it could be for the reasons that I have already introduced. Not everyone will lose money using it, even if it is a poor strategy, and the people who make money might go on to write books, give courses, and so on. Perhaps when it was first used in the early part of the last century, it did work better, maybe because of market inefficiencies that existed then. Some further explanations may be offered by behavioral finance, which I will discuss in the next chapter.

HOW DO BANK TRADERS APPLY TECHNICAL ANALYSIS?

In a study in 1992 called "The Use of Technical Analysis in the Foreign Exchange Market,"[16] Taylor and Allen found that over 90 percent of the foreign exchange dealers that they surveyed in London claimed to use some form of technical analysis to inform their trading decisions for short time horizons. As the trading time horizon lengthens, the percentage falls, and for time horizons greater than a month or so, more emphasis is placed on fundamentals.

It is partly because such a high number claimed to use technical analysis that so much research has been conducted in this field. Many authors have noted this study, and as so many traders use charting, we must investigate the possibility that it might be profitable.

However, from my experience, although many Forex and futures traders know chart levels, most would not actively enter into a trade

because of them. They need to know the technical levels because others use them, but their profits are generally generated by other means, such as being able to set the bid/ask spread. In 1998, R. Lyons published a study called "Profits and Position Control: A Week of FX Dealing" in the *Journal of International Money and Finance*. Having examined the behavior of a Forex dealer over a week, he found that the vast majority of profits that the trader made were from trading off the spread; less than 10 percent could be attributed to speculation. In a paper for the Economic Society of Australia in 2003, Tiffany Hutcheson asked traders in Sydney to select the most important factor that determines exchange-rate movements in three different time horizons. For intraday trading, which is what most of these traders do, the number one factor given was order placements, again suggesting that trading off the spread or flow trading was most important.

I am not suggesting that the findings of Taylor and Allen's report are wrong, but that although bank traders make themselves aware of technical levels, they do not necessarily actively enter into trades on the basis of them. Indeed, one of the respondents to the study replied, "Knowledge of chart signals is essential to all operators as they have a bearing on the actions of many market participants." In the same way, even though I do not believe in these forms of analysis, when I trade products such as futures that have a large number of technical traders, I must be aware of their important levels. This also ties in with how I described futures pit traders using chart levels.

Another study by Taylor and Allen in 1989[17] made an interesting point and one that I have come across often. They telephoned a panel of chart analysts every week for nine months to ask their views on three currencies for one and four weeks ahead. They "revealed a significant difference between individual forecasters' accuracy—chartists do not all appear to react in a uniform manner to chart formations." This might lend credence to my suggestion that the reason why some technical analysts appear to do well might be that they combine their analysis with other, more fundamental approaches, but do not convey this to their followers. Clear signals like head-and-shoulders patterns and, say, a 200-day moving average may be spotted and used by all, but on a day-to-day basis, for different technical analysts to come up with different conclusions might suggest that some are using means outside of the technical approach. I would imagine that they all analyze the standard patterns, moving averages, RSI, stochastics, and so on.

SUMMARY

There is a lot of analysis in this chapter, so I thought that a summary would be in order. There are probably thousands of studies of technical analysis in existence, and it is true that I have researched only a few dozen for this book. However, what I have tried to do is to use predominantly studies by well-respected economists, ones that offer an insight into why technical analysis might or might not yield profits and, when possible, ones that have been rigorously tested, especially for data snooping.

One of the most reliable studies is STW, as it tested nearly 8,000 rules on over 100 years of data. The best rule that it found needed transaction costs of below 0.27 percent for the past 100 years to be successful. In reality, an average transaction cost over that period would almost certainly have been higher than this, and so we must conclude that none of the 8,000 rules would have been profitable over the period. This was confirmed by tests on the S&P futures where transaction costs were known.

As far as stocks are concerned, there is considerable evidence that any profitability (before fees) that these technical rules may once have had has diminished considerably in recent times. We must therefore be open to the idea that these rules may have once picked up on or been exaggerated by some market inefficiencies, but that these no longer exist, as markets have opened up and new laws are being enforced. Perhaps "successes" were due to data snooping, or perhaps there were no successes when fees were included.

What is clear is that, for shares, the performance of long trades is far superior to that for short sales, suggesting that there is indeed a difference between rising and falling markets. These rules are supposed to be trying to pick up on market psychology to find changes in trend, yet there seem to be many misjudgments in falling markets. They are therefore not reliable in all markets.

Across all studies, the reliability of the technical tools is poor. STW show a success rate of about 40 percent, and the success rate of the head-and-shoulders pattern was very poor. It appears that discipline, volatility, and the size of the move are all important in deciding whether the trade will be profitable. The truth is that we can never really be certain what the source of the profits or losses is, so it is difficult to know how we could improve our decision making over time. There

are actually many subplots in our markets, in addition to the more prominent ones I have described.

The studies on currencies appear more supportive of charting, but I have to add that these studies were not as thorough as, say, the STW study. As only a few tools are used in most of them, there is the possibility that they are susceptible to survivorship bias because they use only tools that are known to be of better quality. There remains the possibility, though, that because of the nature of the Forex market, reasonable profits can be generated from short sales as well as long positions, so perhaps that is why results are better. There still remains the problem of large drawdowns from time to time and some evidence of diminishing returns in recent years. Furthermore, on an intraday basis, the tools produced conflicting evidence of profitability, further adding to the confusion as to their use and certainly casting doubts on whether technical tools can be used across different time frames.

We have also seen that technical trading does classify as noise trading and can be self-fulfilling. The effect of technical traders after the formation of a head-and-shoulders pattern was clearly evident in the Osler study of 1998. The results of this study lead me to hypothesize that with many forms of technical analysis, there can be an initial period in which they are self-fulfilling, but then any subsequent performance will depend on whether other (more rational) traders see other reasons behind the move. If they do, then a large move might ensue, and the technical trader will be successful. If they do not follow, then there is a strong possibility that the technical trader will lose. The poor reliability that we have seen certainly leads me to doubt whether technical analysts are accurate at predicting the correct market direction.

I think that part of the problem may lie with the belief that markets always move in trends. As we shall see in the next chapter, it is part of our psychology to believe in this type of concept, yet perhaps the financial markets are not the place for these instincts. In reality, there are lots of short-term moves in our markets that often have little reasoning behind them. If we use only technical tools, we are in danger of reading too much into these moves. As we have seen, when a technical indicator picks up on a trend or trend reversal, more often than not, it is wrong. In particular, we should expect such tools to perform badly under volatile conditions, and indeed we have seen evidence of this, especially in the BGH study.

I think part of the reasoning behind this type of trading dates back to the era of Charles Dow, Jesse Livermore, and others like them, when manipulation and insider trading were common. There were more grounds for believing that others new best and it would be worth following them in those days. In today's markets, which are possibly more influenced by the psychological flaws in their participants and where such malpractice is far less common, following others' actions is not necessarily a good thing to do.

Technical analysts may argue that they will accept the poor reliability of their studies if they prove profitable over the long term. Well, first, there is no conclusive evidence that these methods are profitable after fees in the long term. Second, if we use a system with such poor reliability, we have a very good chance of experiencing a series of consecutive losses. It is not good enough to tell users of these tools to carry on trading because the good times will come. The traders might have run out of capital by then, or they might be struggling with the psychological problems associated with so many losses. No wonder so many technical tutors talk a lot about understanding our own psychology. Trading with someone else's tools, not understanding why and when they are profitable, and having to accept a succession of losses, again without understanding why they have occurred or when they will stop, must be very difficult to cope with. It takes a very strong person or a complete fool to trade on these terms. Remember that in the first Osler study into the head-and-shoulders pattern, even with the mark, which was a success for the pattern, there was a 10-year period without any kind of significant success. Other studies too showed large drawdown periods or periods of consecutive losses. The technical teacher's answer to these periods is generally to go and do some data snooping and find another tool. If she had enough money, a trader could go on doing this ad infinitum, as there are so many tools, yet she would never be learning anything about the market (other than the fact that it is good at taking her money) and would not be improving her decision making.

This point was being talked about on a discussion board that I strayed into recently (apart from researching this book, I try to avoid these chat rooms). One private trader mentioned that he felt that he was not learning or improving by using chart tools and that he thought the future for him lay outside that area. In reply, a trader who calls himself Tech/A stated that he did not care why he was making money;

as long as his system was working, he was happy. I, for one, could never take the view of Tech/A.

What I hope is clear by now is that this form of analysis is far from proven. Also, the claims of many of the technical tutors and courses that we saw in the first chapter cannot be justified. Even the widely known "fact" that the head-and-shoulders pattern is reliable no longer seems credible. There is good evidence that technical analysis does not work equally in all markets and across all time horizons. We must therefore have large doubts as to whether it really is a credible study of market psychology and whether we are prepared to risk our capital using this analysis.

There is also clear evidence that using the back-testing approach of finding a previously successful indicator for use on future trades does not work. This would seem to agree with my concerns in Chapter 3, such as the issue of nonstationarity in markets. We should therefore have serious concerns as to the merits of back testing without an understanding of context.

With the reliability of technical indicators being quite poor, leading to the probability that they are not good at predicting real changes in market direction, we must face the distinct possibility that profits from technical trading are the result of holding risk. Large drawdowns, long periods of little or no profits, and a high number of losing trades might all suggest that most users of this system of analysis will be driven out of the business. It would seem that any winners might be rewarded for having deep pockets or holding risk, or even that they were just the lucky ones. None of these possibilities seem attractive to me.

While researching this book, I have read dozens of studies, papers, and books, and the most positive conclusion that I can draw about the case for technical analysis is that it is inconclusive. That in itself is not what we hear from technical analysis supporters. Even among the more positive studies, though, there is a common thread that serves as a warning to traders. Profitable trading using technical tools requires low transaction costs and deep pockets; if you do not have these, your chances of making money using technical tools are very remote. In fact, many authors of studies of technical analysis suggest that only bank and floor traders really stand any chance of profiting from technical tools. As I discuss later in the book, a trading system that relies on the trader's having deep pockets is neither robust nor reliable; it is hope-based trading.

It is also interesting to compare these conclusions with what we know from the futures market. The studies suggest that if we use technical tools, we need deep pockets if we are to survive, and that most traders will struggle. This is exactly what we see in the futures industry; a majority of private traders who use technical analysis lose money. Furthermore, brokers often claim that their failure is a result of their having only a small trading account. So we can see that the results of these studies actually fit well with what we see in the real markets.

NOTES

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13. C. L. Osler and P. H. Chang, "Head and Shoulders: Not Just a Flaky Pattern," Federal Reserve Bank of New York, 1995.
14. The authors actually note that negative or zero returns occur more than 40 percent of the time, and I assume that by this they mean that anything over 40 percent losses means low reliability rather than that the losses themselves were 40 percent. I mention this because the figure of 55 percent clear losses that I use is based on the figures that they show in their report.
15. C. L. Osler, "Identifying Noise Traders: The Head and Shoulders Pattern in US Equities," Federal Reserve Bank of New York, 1998.
16. M. Taylor and H. Allen, "The Use of Technical Analysis in the Foreign Exchange Market," *Journal of International Money and Finance*, vol. 11, 1992.
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Behavioral Finance and Technical Analysis

Over the past 30 or so years, arguably the most exciting developments in economics have come in the field known as behavioral finance. For the first time, psychologists Amos Tversky and Daniel Kahnemann and then economists such as Richard Thaler and Andrei Shleifer have actually studied what influences people when they make decisions concerning profits, losses, and risk. What they have found is that in order to make decisions of this type, humans rely on certain heuristics or rules of thumb. We use these heuristics to cut through all the information and noise that surround this decision-making process. This is because we have not evolved with the purpose of making such decisions, and the rules of thumb are effectively shortcuts that help us reach conclusions more easily. In addition to identifying these rules of thumb, these economists have also found that the way that a situation is presented or framed can influence our decision.

What is important to remember is that these rules of thumb are actually flaws; they are hindrances to our making good decisions. They lead to irrational decisions and may explain why so many people lose money when they trade and invest. Of course, as we have already seen, not all of these irrational or noise traders will lose

money, and at times, if there are enough of them, they can actually influence the market direction for a time. However the inference is that in order to be more successful in this business and to make better decisions, we need to avoid making decisions using these rules of thumb.

To begin with, let's look at the concept of framing and then study some of these rules of thumb. I will then explain how these concepts tie in with technical analysis.

FRAMING AND PROSPECT THEORY: WE TREAT LOSSES AND GAINS DIFFERENTLY

In the investigations that later formed the basis of their prospect theory, Tversky and Kahnemann discovered that the way in which a problem is framed or presented has a large influence on the decision that a person will reach. Of particular note to us is that whether the context of the problem is a gain or a loss is of crucial importance to the decision maker. What they found was that people are far more prepared to take risks with losses than with profits.

This style of thinking contradicts classical economics, which assumes that people will always make the decision that will lead to the best return. Tversky and Kahnemann's prospect theory, which had as its core the idea that the decision would be based on whether the person was faced with a gain or a loss, led to much debate within economic circles. It also led some economists to try to apply the theory to the financial markets to see if it offered a better explanation of how markets worked than the more classical fundamental approach.

There are many examples of how framing influences decisions, but for the purposes of this book I do not think that I need to expand on this idea. What we can say, though, is that the context of a decision is important when analyzing the result. As I have stated, chartists have little regard for context, and, indeed, a chart or data are not a good method of trying to analyze context. Technical analysts look at the past because they believe that traders will react in the same way when faced with the same decisions, and therefore they ignore context and framing.

Furthermore, we have seen that whether people are facing gains or losses is also of paramount importance when they make their decision, which also goes some way toward explaining why stock markets in particular trade differently when they are rising from the way they

trade when they are falling. So these findings also seem to support the view that the decision-making process when a stock is rising will be different from the process when it is falling, and therefore to believe that the same chart patterns will be formed in both circumstances is misguided. We might well see the same patterns from time to time, but we would see these with any set of data presented in a graph. The success rate, or otherwise, of the head-and-shoulders pattern also suggests that the pattern itself is a poor predictor of a change in market trend. The same can also be said of other technical indicators, such as moving averages. We also saw how returns from short-sale trades for stocks were far worse than those for long trades and were more volatile, too. To believe that we can use the same type of tools for weak stocks that we use for strong stocks is to ignore the findings of prospect theory. Granted, it is only a theory, but at least it is based on the way people have actually been observed to make their decisions rather than on viewing the outcome and assuming that we can deduce the reasons behind it (technical analysis) or assuming that people always make rational decisions that are expected to net them the best return (technical analysis and classical economics).[1]

We can also see that this type of decision making is not rational and will not lead to the best outcome as far as trading and investing are concerned. It partly explains why many traders run losses and take profits when in fact they should be doing the opposite. This particular irrationality is further explained by other aspects of behavioral finance that I will explain later. It is true that most people exhibit these flaws, so in order to do better than them, we need to overcome these flaws and learn to think in a more rational way.

So, already, we can start to see that analyzing other people's actions and following them (trend following) will not always be the right thing to do. As we look at more of the biases uncovered by behavioral finance, this point will become even clearer.

ANCHORING

Tversky and Kahnemann found that when faced with making a decision on an issue with an uncertain outcome, people would grasp at any, even unrelated "information." For example, they ran an experiment using a wheel with numbers from 1 to 100. Participants were asked a question such as what percentage of U.N. countries were African, and

then the wheel was spun to produce a number. However, the wheel was rigged to stop at either 10 or 65. The median response from those who were shown 10 on the wheel was 25, and for those who were shown 65, the median response was 45. People were grabbing at whatever numbers were around, even though they were irrelevant to the conclusion. This process is called anchoring; the answers that were reached were anchored by the data that were available.

In the markets, anchoring has been noted as a significant rule of thumb. For example, when most traders try to determine the future value of a stock, their answer will be anchored by the current price. They assume that the current price is fair because other people are trading the stock at that price. Others might look at the P/E ratios of other stocks in the same sector and apply those to the stock that they are analyzing. In effect, once again, there is no determination of context. The stock we are looking at might be far superior or inferior to the others in its sector. So most people use anchoring as a shortcut to working out a fair value for a product.

Someone looking at JDS Uniphase in early 2000 would have taken a value of around US$140 as an anchor; by early 2001 such a person would have used $40, and today the person would use around $2 if he or she had done no further research, yet the intrinsic value of the company has not really changed by such a huge percentage (98 percent). How does this affect our trading decisions? Along with the fact that anchoring can be irrational, it can lead to poor decisions, especially with regard to risk. Without an understanding of the context behind the price, we can try to find out if the market price is justified and get an idea of the risk of a trade. By accepting the current price as a fair one, both technical traders and other unknowledgeable participants will treat each situation as the same. So they might have committed the same capital following a buy signal on JDS Uniphase in 2001 as they would following a buy signal now.

Even investment bank analysts are guilty of anchoring; they are human, after all (despite what they say!). When making company forecasts, they tend to be anchored around the previous set of company numbers. You will notice that when a company announces a bad set of results, analysts will then downgrade their future earnings forecasts. They use the current poor earnings as an anchor and ignore the possibility that the company might have learned from its bad period or that it might return to normal in the next period. In his book *Bull's Eye*

Investing, John Mauldin shows that analysts are actually extremely poor forecasters of future earnings. Both the bank analysts and the technical traders are placing too much emphasis on the past or current price and making little or no attempt to weigh possible future outcomes or probabilities. This is partly the result of anchoring and partly the result of two other biases, conservativeness and representativeness.

Belief in support and resistance levels can be traced to anchoring, too. Levels at which people bought and sold in the past are assumed to have relevance today as well, despite the distinct possibility that the traders who generated those levels may no longer be in the market. Those levels will be important today only if traders choose to use them, but it seems irrational to apply yesterday's trades to today's market. However, again, using these support and resistance levels makes it easier to make trading decisions and will therefore appeal to many people if the theory is presented in the right way and backed up by evidence of success.

Anyone who has been around a futures trading pit after a major economic number has been released will testify to the mayhem that can ensue. As a large number of market orders are placed during this period, can we really place that much emphasis on the levels generated at these times? Nowadays this mayhem is handled by servers at electronic exchanges, but the situation is the same. Thousands of market orders may be placed at one time, generating a certain market price, but was this price chosen by participants and will it be relevant in the future? I have severe doubts on both counts. I choose to consider these levels as the results of that day's activity only and to refer to them only in context when I trade in a future period. In addition to the irrationality of anchoring to past actions, the problem of alternative histories also affects these situations.

CONSERVATIVENESS

Conservativeness is closely linked to anchoring. It is the tendency for people to cling to a view. Once they have formed a view, they are very slow to change their opinion, and this can lead to underreaction to new information. Conservativeness can also be caused by overconfidence, which we shall examine further on.

Interestingly, conservativeness should mean that markets will take time to change direction or trend, which one would assume would

make things easier for trend-reversal tools. Yet, as we have seen with the head-and-shoulders pattern, such tools seem to have a low reliability rate. So either they are not good at finding trend reversals or there are not as many trends and trend reversals as we are led to believe and these tools are often fooled by small, perhaps random market moves.

REPRESENTATIVENESS

Representativeness is a bias that leads us to estimate the likelihood of something happening based on how closely it resembles something else, whether it is information or noise that we already know or something that has previously happened.

The main effect that the representative bias has on people when they trade is that they can place too much emphasis on a small amount of recent data. For example, if a company's share price has risen strongly over a couple of weeks, traders will assume that this will continue without looking at the bigger picture, the context of the move, or analyzing the probabilities of future moves.

So the representative bias, a shortcut that we use to try to make a judgment on an uncertain outcome, can lead us to look for trends and believe that these trends will continue. Rather than weighing various possible outcomes, we will look at the recent history and just expect it to continue. As Robert Shiller explains in his book *Irrational Exuberance*, "People tend to make judgments in uncertain situations by looking for familiar patterns and assuming that future patterns will resemble past ones, often without sufficient consideration of the reasons for the pattern or the probability of the pattern repeating itself."

If we add this bias to the market manipulation and insider trading that existed in the early part of the twentieth century, the origins of technical analysis are more easily understood. After all, the essence of technical analysis is the idea that trends exist and that we must try to identify them and when they change. Those who are prone to representativeness want trends to exist and think that they do exist because it makes trading decisions easier to formulate. By suggesting that markets always move in trends, technical analysis appeals to this rule of thumb that many people have. By simplifying the market into trends, technical analysis makes it easier to trade and make decisions.

Furthermore, the previous price data are believed to contain the information that we need in order to do this.

This is a clear example of the representative bias, but remember, these biases are flaws in our decision making, and we should actually try to avoid using them if possible. The unreliability of technical tools and patterns suggests that market moves and changes in direction can be more random than we might like to acknowledge, but at least we can start to understand why we look for trends; it is part of our flawed decision-making process. In fact, many of the biases that I will discuss have come about because of our dislike of randomness. We try to find reasons and patterns in everything because we are unable to cope with randomness when making decisions. We also find it difficult to cope with the concept of regression to the mean; this, too, is all around us. Strong stocks do not rise forever, and neither do housing prices; they will move back toward a mean value at some point. If an athlete is criticized for a bad performance and then runs well in his next race, it is assumed that the criticism had the desired effect of motivating him. We find it hard to cope with the idea that his performance has merely reverted to normal.

In fact, another well-documented aspect of the representative bias is that it *can* actually lead to people seeing patterns and reasons behind truly random events. People assume that events or information that looks the same must be correlated. This is, of course, not necessarily the case, but we cannot deal with the idea of randomness. Now we can understand why analyzing chart patterns became popular. Traders were looking for patterns because finding them would create a shortcut when making decisions. They found a few that were sometimes followed by a certain move and put two and two together. Unfortunately, the answer they came up with was not four, despite what they tell us. The reliability of the head-and-shoulders pattern as shown in the Osler studies confirms this.

Looking for patterns and correlations is something that is practiced in all walks of life. We all know people who talk about their "lucky shirt," and we have read about athletes who always wear a particular pair of shoes or dress in a certain way. Such irrationality is said to be superstition, but initially these practices were the result of looking for a pattern or correlation. The football player wore an old pair of shoes and gave a game-winning performance, so the next time he plays, he wears the same shoes again, believing that they had an influence on the performance. He struggles to accept the idea that there

might be no identifiable reason for his performance. He may continue to wear the shoes, but obviously his performance will not always be as good, and so he might look for other correlations when his performance drops—perhaps putting on his shoes in a certain order. Looking for patterns like this helps him get through an uncertain process.

In fact, as well as seeing this natural desire to find patterns in events, we can also see that the athlete is doing his own form of data snooping. He is looking at past performances to look for ways to improve his future performance, with no regard for the fact that his past performance may have been affected by a whole myriad of factors, including chance. When this eventually fails, he looks again at his past performance for other patterns that might exist. If a technical analyst or supporter of back testing was his coach, he would suggest that the athlete is applying different tools to different markets. There is little, if any, difference between our football player and technical traders, yet while we can clearly see that the football player is being irrational (superstition seems to be the word we use to explain irrationality based on a loose correlation), it seems to be harder for the public to draw the same conclusion concerning technical analysts.

The representative bias does not mean that we will always be wrong; sometimes recent moves will continue and sometimes moves after certain patterns will be repeated, and these will be instances in which the technical tools will show profits. However, like many of the biases, representativeness has not evolved to help us make *better* decisions, it has been developed to help make the decisions *easier*. There is a big difference.

Further evidence that people see patterns and correlations that don't exist can be seen from the work of L. J. and J. Chapman.[2] They conducted a test in which they showed a pair of words to a subject every two seconds. On the left-hand side, the word would be "bacon," "lion," "blossoms," or "boat," and on the right-hand side it would be "eggs," "tiger," or "notebook." Each word and pair of words were shown with equal probabilities, so when "bacon" appeared on the left, "eggs" was paired with it a third of the time, "tiger" a third of the time, and "notebook" a third of the time.

Yet when subjects were asked about the frequency of the pairings, they replied that when "bacon" appeared on the left, "eggs" was paired with it 47 percent of the time, and when "lion" appeared on the left, "tiger" was the word that appeared most often. So the word pairs

that were more familiar to the subjects were believed to have appeared more often than they actually did. The authors called this *illusory correlation*. This might explain why technical analysts believe that the head-and-shoulders pattern is very reliable despite evidence to the contrary. Having always been told that the pattern is reliable, they overweight the times when it is correct and believe that it is right more often than it actually is. Illusory correlation can also lead to overconfidence, which I will discuss later.

OVEROPTIMISM

Overoptimism is a trait that may serve us well in other aspects of life but is a hindrance to our becoming successful traders. If a teacher asks a class of students who will finish in the top half of the class, on average 80 percent will put their hand up; clearly 30 percent will be disappointed, but being so optimistic helps them through the year.

The two main reasons for this overoptimism are *self-attribution bias* and the *illusion of control*. Self-attribution bias is the tendency for people to attribute good outcomes to their own skill and bad outcomes to bad luck. I have already mentioned that this is evident among traders, especially technical traders, who attribute profits to their technical tool or pattern and suggest that losses are the result of unforeseen events. Such people cannot learn from their mistakes, but perhaps this is fitting for technical traders because, as we have seen, the source of their returns cannot be known and so it is hard for them to learn from their performance.

The illusion of control is that people feel that they are in control of a situation far more often than they actually are, resulting in overoptimism. For example, people prefer to choose their own lottery numbers rather than use the computer-generated ones, as if they have some kind of influence over the outcome. In an experiment, Langer[3] took two groups of people. Subjects in one group were asked to choose a $1 lottery ticket, while those in the other were given a ticket (i.e., they had no control over the ticket). All subjects were then individually approached and asked how much they would sell their ticket for. Those who chose the ticket gave a mean answer of $8.67, whereas those who had no choice over their ticket gave a mean answer of only $1.96. Tests such as these tell us that people fail to distinguish between chance events and those that require skill. If the subjects in Langer's

experiment had any control over the lottery, then their decisions would be valid, but of course they didn't. The fact that those who chose the card wanted a higher price for it reflects an illusion of control.

OVERCONFIDENCE

As well as being overoptimistic, people are also generally overconfident. They think that they are right in their forecasts far more often than they actually are. Overconfidence can be the result of a number of biases. Conservativeness, representativeness, and anchoring can lead to overconfidence, as can illusory correlation.

Hindsight bias can also lead to overconfidence. Hindsight bias is the tendency for people, after the fact, to believe that they predicted the outcome beforehand. For example, today everybody says that he or she knew that technology shares were overvalued in 2000, yet there were obviously buyers all the way down.

Confirmation bias can also lead to overconfidence. This is the tendency for people to find information that agrees with their view and ignore contradictory information. Back testers practice a form of confirmation bias. They believe that their analysis is good and will test and retest data until they find results that give them positive results. Many traders and investors, when faced with evidence suggesting that they could be wrong, dismiss such evidence as unimportant or a "blip." Confirming evidence is given a higher weighting.

In fact, the only way of testing whether a hypothesis or system actually works is to try to falsify it—in other words, to look for evidence that it is wrong. Those who suffer from confirmation bias do not do this. In *Bull's Eye Investing*, John Mauldin shows a great example that examines whether we are prone to confirmation bias. He uses four cards showing E, 4, K, and 7, respectively. He then states that each card actually has a letter on one side and a number on the other, and that if a card has a vowel on one side, it must have an even number on the other. He asks which two cards must you turn over to see if he is telling the truth?

The only correct answer is E and 7. If you thought E and 4, then you are prone to confirmation bias.

In 1960, P. Wason was a pioneer in this field. He showed people a three-number sequence such as 2, 4, 6 and asked them to discover the rule to which this sequence conformed. They could generate their

own sets of numbers and would be told whether their sequence conformed to the rule. At any point, the subjects could stop when they believed they had discovered the rule. In order to correctly work out the rule, subjects would need to look for disconfirming evidence. If they thought the rule involved even numbers, they would need to use a sequence of odd numbers. Just finding 5, 10, 20, or even 100 conforming sequences of even numbers does not prove that this is the correct sequence. Wason's subjects were asked to stop when they thought they had worked out the rule. In fact only 6 of 29 subjects found the correct rule the first time they thought they had done so.

Not only is confirmation bias harmful to back testers, but it is evident in other technical traders too. For example, if we think that the head-and-shoulders pattern is a reliable trend-reversal indicator, then showing us 100 or even 1,000 successful patterns does not prove this. If we can find even one pattern that contradicts this statement, then we must doubt its validity. The fact that Osler found such a high percentage of disconfirming patterns must give us grave doubts as to the pattern's usefulness.

Confirmation bias can lead people to what has been termed the *illusion of validity*, whereby they think that their views are more valid than they really are. H. Einhorn and R. Hogarth suggest that people succumb to the illusion of validity because they tend to look for confirming evidence rather than disconfirming evidence. I would argue that from the evidence that I have presented in this book, back testers and technical traders suffer from this. Possibly as a result of a combination of the biases that I have described so far, these traders believe that their analysis is far more robust than it really is. It is not necessarily their fault that they think this way; we all tend toward some of these biases. What we need to do is to acknowledge that they exist and that in order to become better traders, we need to try to overcome them. Far from helping us to do this, technical analysis is actually a further expression of how we use these shortcuts to deal with making decisions on uncertain events.

The same can be said for all the glowing testimonials that we read in the advertisements for technical or any other courses. These advertisements play on people's confirmation bias. The marketers realize that many people will place great weight on advertisements in which the company's claims are backed up by a few testimonials. Such testimonials do not prove that the firm's course or product is good; they

just show that there have been some successes. Yet, as I have shown, even a poor system will have successes.

So, from studies that have been conducted, we can see that concepts such as the illusion of control, confirmation bias, and even representativeness lead to overoptimism and overconfidence in all walks of life, including trading. With regard to trading and investing, the most important result of this is that traders will understate the risks of their trades and be too confident that they will be successful. These findings go some way toward explaining why, despite a failure rate of around 80 percent for all products and over 90 percent for futures, people still enter the trading business.

COGNITIVE DISSONANCE: HOW WE FACE UP TO WRONG DECISIONS

Another aspect of our psychology that has been examined and is of great interest to us as traders is how we cope with evidence that our beliefs are wrong. What psychologists have discovered is that being faced with evidence that we are wrong causes mental conflict, which has been termed *cognitive dissonance*. We actually try to avoid facing up to the possibility of our being wrong and are therefore bad at facing up to losses.

There has been a lot of research into how and why cognitive dissonance affects traders and investors in particular conducted by Hersh Shefrin and Meir Statman. We have already seen that in prospect theory, people treat losses and gains differently, and we have seen that people are more willing to gamble with losses than with profits. Statman has found that this gambling with losses occurs because we cannot bear to cope with a loss, so we will do anything we can to avoid it. This has also been called *loss aversion*. Conversely, selling a profitable position leads to happy feelings, and so people are keener to sell winners. Shefrin and Statman called this phenomenon the disposition effect, arguing that people were predisposed to holding losers and selling winners.

We have all heard people who are faced with losses say things like, "It will be all right; the market always comes back" or "It's not a loss until I sell." Here we see examples of loss aversion called the *status quo bias*. The psychological benefits of doing nothing and avoiding a loss are strong, and so we do nothing. Classical economics,

though, would have us believe that as rational individuals, we would take the loss.

Actually, many brokers are well aware of this loss aversion among investors, and the way they get around it is through framing. In share markets that are falling, volumes can often be low, and stockbrokers can find it tough to generate business because their clients are holding on to losses and are loath to cut them. So what some brokers do is to frame the decision in a different way. They tell their clients to reallocate their capital into a better-performing asset. This is a more positive decision than cutting a loss and is more likely to lead to the client's trading. The client can tell herself that she has not taken a loss, she has reallocated her capital. She is therefore less likely to experience the regret associated with taking losses, a process that we find hard to take.

So we can clearly see that people do not like taking losses and, more importantly for this book, we can see that there are clear differences in the decision-making processes when we are winning and when we are losing. Not only are we prone to gamble more with losses, but we go through considerable mental conflict when we are faced with losses. Conversely, taking profits makes us happy (obviously). However, to believe that the same patterns apply to both tops and bottoms of stock markets does not fit these findings. Those beliefs assume that market participants go through a similar decision-making process in both situations. I can see no evidence at all of this in the studies on cognitive dissonance.

AVAILABILITY BIAS

Tversky and Kahnemann found that people often assess the frequency or probability of an event by the ease with which instances or occurrences can be brought to mind. For example, when people were asked whether it is more likely that an English language word starts with the letter K or has K as its third letter, nearly 70 percent of respondents replied that words with K as the first letter are more probable. However, there are actually about twice as many words with K as the third letter as there are with K at the beginning. We find it easier to recollect words with K at the beginning. In 1993, S. Plous[4] asked people whether being killed by falling airplane parts or by sharks was the more likely cause of death in the United States. Most people replied

by sharks, yet in reality the chances of bring killed by falling airplane parts are 30 times greater than the chances of being killed by a shark. However, as shark attacks get widely reported and are easier to remember, we have the false impression that they occur more often than they really do.

In this way, we can once again see similarities with how we view the head-and-shoulders pattern. Since we have always been told that it is reliable, a combination of the illusion of validity and the availability bias would lead most of us to answer if questioned that this is a very reliable pattern. In fact, the results of Osler's study on the pattern showing such low reliability were a big surprise even for me.

The availability bias is though, not as straight forward it may appear. As Einhorn[5] suggests, it can also be influenced by how we frame the decision. For example, consider the question, Which has a higher probability, being killed by lightning or dying from emphysema? We could quite conceivably develop a rule of thumb that consists of thinking about all the people we have personally known who have died from either cause, and I imagine most of us would choose emphysema. However, if we chose a rule of how many cases of each we have heard or read about, we could easily reach a different conclusion.

IN WHAT OTHER WAYS DOES BEHAVIORAL FINANCE AFFECT TECHNICAL ANALYSIS?

It is fair to say that the findings of behavioral finance have caused a considerable stir in economics circles. The accepted view among economists was that humans made rational decisions in their quest to achieve the best returns. Furthermore, in the late 1960s, strong evidence was presented that seemed to show that markets worked in an "efficient" manner, with new news and information being digested and acted upon instantaneously by participants, and it was concluded that it would be impossible to make money from existing information. It was also assumed that irrational or noise traders would not last long because they would incur losses from their style of trading.

By showing that the existence of biases such as representativeness and anchoring, the concept of framing in relation to gains and losses, and cognitive dissonance, the behavioral finance economists argued that markets did not digest new information instantaneously, and also that participants were not always making rational decisions.

Because investors were anchored to certain prices, looked for confirming evidence, looked at past data and viewed them as representative of how the future would be, and struggled to face up to contradicting evidence, they could be slow to respond to news that was contradictory and could overreact to supportive news. So behavioral finance economists suggested that perhaps there could be ways to make money from existing information as a result of participants' flawed decision making. They also showed what appear to be clear examples of inefficient markets. Furthermore, some models showed how noise trading could sometimes be profitable, despite being irrational. We have seen evidence of this last point in previous chapters, perhaps most clearly with the studies into the head-and-shoulders pattern.

So there are now doubts in many economists' minds as to whether our markets really are efficient and whether new information is quickly digested. However, this should also have ramifications for technical analysis. One of the core principles of technical analysis is that everything is in the price, which is to a large extent the same belief as that held by the efficient market hypothesis (EMH) economists. The subtle difference between the two is that supporters of the EMH believe that as all information is in the price, we can't make money from existing data, and effectively the market is a random walk. News enters the market randomly, is quickly digested, and we move on; no one can outperform the market.

Technical analysts believe that we *can* use past data to make money. Here is a quote from www.stockcharts.com that illustrates why:

> Price Discounts Everything: This theorem is similar to the strong and semi-strong forms of market efficiency. Technical analysts believe that the current price fully reflects all information. Because all information is already reflected in the price, it represents the fair value and should form the basis for analysis. After all, the market price reflects the sum knowledge of all participants, including traders, investors, portfolio managers, buy-side analysts, sell-side analysts, market strategists, technical analysts, fundamental analysts and many others. It would be folly to disagree with the price set by such an impressive array of people with impeccable credentials. Technical analysis utilizes the information captured by the price to interpret what the market is saying with the purpose of forming a view on the future.

Notice that in order to believe that technical analysis works, we need to assume (as EMH supporters do) that the prices that we see on the graph reflect everything that all the market participants know. If we believe in the existence of biases and rules of thumb, then it is actually highly likely that this is not the case. Many participants will not be accurately factoring in all information, and if we just follow them, then we run the risk, as they do, of being wrong. If we believe that the current (or past) price does not always accurately reflect all available information, then there seems to be little point in using technical analysis.

In fact by now we can actually understand why technical analysts believe that we should use current and past data to look for trends and try to predict the future. First, when many technical systems were first developed, perhaps markets were sometimes "ahead of the game" as a result of insider trading and market manipulation. Second, and more important, using technical analysis fits in very well with the rules of thumb that we have developed to cope with making decisions under uncertainty. We like to look for patterns and can develop a false impression that they are more predictive than they really are. We like to look for and believe in trends because simply believing that recent actions will continue is far easier for us to cope with than trying to work out why the moves have happened and weigh all possible outcomes. We also tend to give little weight to evidence that contradicts our views and can develop a false belief that our views are robust.

CONCLUSION

The field of behavioral finance is relatively new, and its findings are only just beginning to filter down into the private trading sector. The first point to make is that not everybody will agree with these findings, and I am not claiming that they are law or completely proven. But as a positive study, that is, one that examines how individuals actually make their decisions, I believe that they should be taken very seriously. I believe that almost all readers would agree that they have come across at least some of the biases that I have discussed.

If we accept the idea that there are good grounds for believing in the existence of these biases or rules of thumb, then we must examine how this affects technical analysis and what we are told by its supporters. My own analysis of how behavioral finance affects technical

analysis is that it actually offers us an explanation of why technical analysis is used. Rather than being an investigation of market psychology, it is actually a further expression of the flaws in our decision-making processes and our desire for shortcuts. We can't be bothered trying to figure out why something is moving, so we just assume that everybody else is right and that the present move (or trend) will continue. We have seen that a certain pattern, perhaps a crossing of two moving averages, was followed by a move, and we assume that the move was caused or predicted by what we saw because that is easy for us to understand and to use again in the future. We use this type of analysis in all walks of life, but it is less useful when making trading or investing decisions. It is very likely that technical analysis is a further expression of this behavior that has been adapted for use in the financial markets. Our inability to accept randomness or to weigh many possible outcomes leads us to look for patterns in even random data. I have already shown how technical analysts can look for patterns even in economic data, such as the unemployment rate, because of their belief that spotting patterns can make it easier to make decisions.

It is possibly true that technical analysis may provide help when conservativeness and representativeness are the prevailing biases. In these situations, it can be possible for trends to develop. However, these are just two of the dozen or more biases that have been discovered. They will affect the markets sometimes, but not always, yet technical analysis suggests that trends are always in place. As I have stated elsewhere in this book, the poor reliability of technical tools and patterns suggests that either they are not good at finding trends and trend reversals or the markets do not always move in trendlike ways.

Prospect theory, with its belief that decision making is highly influenced by whether the trader faces a gain or a loss, confirms the view that many traders have, that rising and falling stock markets trade differently. To believe that a similar decision-making process takes place at the end of a fall in share price as occurs at the end of a rally is false. Therefore, why should we expect the same patterns to indicate reversals in both situations? Such a belief is better explained as a way of using a rule of thumb that was once thought to have worked. When we see just how unreliable the head-and-shoulders pattern is, for example, it does not appear that it accurately identifies a trend reversal at all.

If we look at another example of technical analysis, we can also see how it seems to disagree with behavioral finance. Under the theory of support and resistance, once a support (or resistance) level is broken, this will induce selling (or buying) by participants. Yet the studies of cognitive dissonance and loss aversion indicate that there is considerable anguish in investors' minds when they are faced with losses, anguish that leads to irrationality and an inability to take losses. So why should we believe that the break of a support line for a stock will persuade investors to sell? This suggests discipline and rational thinking in the face of losses, the opposite of what has been shown (remember that most stock market participants hold long positions). It would seem, once again, that support and resistance theory is an interesting rule of thumb that has little basis to it.

Initially, the idea that the market price might not accurately reflect all current information cast doubt on EMH and has resulted in a fierce debate among economists (I am not sure if *fierce* is the right word to use where economists are concerned!). In fact, this conclusion has led some to believe that the case for technical analysis could be stronger. If markets are not efficient and participants behave in a predictably irrational manner, then perhaps this is what technical analysis picks up and explains. Indeed some supporters of technical analysis suggest that the biases of behavioral finance do explain what chart patterns and technical indicators pick up. I disagree strongly; to believe this would seem to assume that technical analysis works, yet we have seen that its reliability is generally lower than 50 percent. If behavioral finance does explain how traders and investors make decisions, then any tools that use it should be more reliable. What is perhaps more likely is that people are beginning to develop behavioral descriptions to suit the already known chart patterns and technical tools; they are finding the story that fits the answer, a bit like data snooping and other aspects of technical analysis.

I suppose that technical analysts could argue that their analysis does accurately reflect the behavior of participants; it's just that market participants are wrong more often than they are right. There might be some basis in this, yet it brings up two main points. First, it suggests again that maybe when the tools were initially used, participants were right more often than they are now, perhaps because of insider dealing. Second, if participants are wrong more often than they are right, then why should we follow them as our method of trading?

There is no comfort (in my opinion, anyway) in failing along with everybody else. We should try to make our own decisions and understand the context of moves. We know that most people lose money in this business, and that includes most traders who use technical analysis, so why should we follow them? In order for us to improve as traders or investors, we must improve our decision making and learn from our mistakes. This can be more easily achieved if we make our own decisions. We cannot learn from others' mistakes if we do not know why they made their decisions.

Studies by S. Asch and M. Deutsch and H. Gerard have shown that people believe that a large group cannot be wrong and so go with the herd even when the herd is obviously wrong. Such an instinct may be fine in other areas of life, but it is fraught with dangers for traders. Sometimes it may be beneficial to go with the flow, as we saw with positive-feedback loops. Other times, though, this is a risky and dangerous approach. Either way, just trading on the back of others' decisions is a poor method of trading, if only because there is no analysis of why the others are trading in that way and what the possible risks can be.

I believe that the concept that market price does not accurately reflect all available information because of our biases is just as important for the debate on technical analysis as it is for the debate on EMH. If the market price is not a reflection of everything its participants know, then, as the technical analysts themselves admit, we should not use it. If we take an example of a falling stock, then, because of factors such as confirmation bias and loss aversion, the share price does not reflect the available information but rather reflects the biases and hopes (rather than the expectations) of a large group of participants.

Therefore, in my opinion, the most logical implication that behavioral finance has for technical analysis is that it helps to explain why it was developed and why so many traders are attracted to it. When faced with such decisions, we resort to rules of thumb that make the decision easier. However, these rules of thumb are flaws in our decision-making process, and so we must try to eliminate them rather than use a form of analysis that is a further expression of them.

One particular problem with trying to formulate a system aimed at understanding and analyzing the rules of thumb that we use is that we can never be sure when a certain heuristic is being used or will be used. We can see with the availability bias how a just slightly different

approach can lead to a completely different answer. Any model or tool that we design in reality will be just a simplified version of what might be happening.

In fact this situation is similar to what Alan Greenspan told the market in a speech a few years ago that is excellently summarized by John Mauldin in *Bull's Eye Investing*. Greenspan basically advised bankers and economists against reading too much into what their models were telling them because in reality the markets were just too complex to be analyzed in this way. For example, any number of unseen subtrends might be influencing another, more visible trend. Furthermore, he explained that new relationships develop and old ones disappear and evolve, so just because something worked or correlated in the past does not mean that it will always work. These are very fair points, and I suggest that they apply equally to us when we analyze the markets.

It would be nice and easy to apply past behavior or correlations to the future, and it would certainly appeal to our biases, yet our markets just do not work like this. I explained in Chapter 3 why effects such as stationarity and alternative histories make using only past data to formulate decisions a poor approach; now we can understand why it appeals to people.

The illusion of validity is a very credible further explanation of why people still believe that technical analysis is reliable, despite so much evidence to the contrary. The tendency to look for and overvalue evidence that confirms our own views is probably the main cause of this. Technical analysis is also prone to a kind of self-attribution bias; when a pattern or technical tool works, it is said to be because of the tool, but when it fails, it is often attributed to an unforeseen event.

One final point before we leave the topic of psychology. When discussing market psychology, most tutors mention that markets are affected by greed and fear. This notion predates behavioral finance and has come to be accepted wisdom. However, although it might go some way toward explaining sentiment at extreme circumstances, such as bubbles and panics, it is really a simplified and unrealistic description of how most individuals make decisions on a daily basis. In due course, I believe that knowledgeable traders and investors will move away from the idea of greed and fear and focus on some of the biases discussed in this chapter.

Is it really greed or fear that stops people from getting out of losing positions? Or are loss aversion and status quo bias more plausible explanations? Having worked closely alongside hundreds of traders over the years, I would suggest that the biases of behavioral finance offer a better explanation of how and why traders and investors make decisions.

The next time a market guru explains the influence of greed and fear, ask him if he has read any of the Nobel Prize–winning work of Tversky and Kahnemann.

NOTES

1. I suggest that technical analysts assume that people make rational decisions in the same way that economists do because of their failure to incorporate alternative histories into their analysis. By accepting the outcomes on the charts as the most logical, they must assume that issues such as framing are not important

2. L. J. Chapman and J. Chapman, "Test Results Are What You Think They Are," *Psychology Today*, vol. 19, November 1971, Ziff-Davis Publishing.

3. Described in Ellen Langer, "The Illusion of Control," *Journal of Personality and Social Psychology*, vol. 32, pp. 311-328, 1975, the American Psychological Association.

4. S. Plous, *The Psychology of Judgement and Decision Making* (New York: McGraw-Hill, 1993).

5. H. Einhorn, "Learning from Experience and Suboptimal Rules in Decision Making," *Cognitive Processes in Choice and Decision Behavior* by T. Wallsten (Lawrence Erlbaum Associates Inc., 1980).

How Markets Affect Price

The core rules of technical analysis are that "everything is in the price" and, further, that this information can be used to help forecast future moves. Technical analysts tell us that there is no need to analyze the context of the data because this has already been done by the other participants; all we need to do is to interpret the trends that these participants set.

However, we have seen in the previous chapter that studies in psychology suggest that market participants can sometimes react slowly to new information, which casts doubt on the idea that the market price always reflects all available information. Therefore, following others' decisions or believing that others are right without any further analysis is a false and dangerous approach.

Now I wish to show a few further examples of how market prices or data can be distorted, or at least reflect an outcome that might not be expected to be repeated. Many of these are caused by the mechanics of today's markets, markets that also bring up new varieties of and reasons for trading. The result of these is that simply taking a graph or a set of data at face value without any further investigation will sometimes lead to misconceived trades.

TICKER-SYMBOL CONFUSION

In a study,[1] Michael Rashes investigates examples of ticker-symbol confusion, where traders trade the wrong contract because of similarities in ticker symbols. The focus of the study is the case of MCI and MCIC. The ticker-symbol MCI represents a closed-end fund called Massmutual Corporate Investors, which invests mainly in corporate debt products such as convertible bonds. MCIC was the symbol for the large telecommunications company MCI Communications before it was bought out. Rashes found a clear increase in trading activity for MCI on days around the days on which there was news out on MCIC. It seems that some traders wrongly thought that MCI Communications' ticker symbol was MCI and traded the wrong stock.

Shares in the Castle Convertible Fund, ticker symbol CVF, fell as much as 32 percent the day after a negative story in the *Financial Times* about the Czech Value Fund, which it abbreviated in the story as CVF.

When AT&T agreed to buy Tele-Communications Inc., the stock of TCI jumped by 4.3 percent and volume jumped by more than 37 times its three-month daily average. Unfortunately, the symbol for Tele-Communications Inc. was TCOMA; TCI was the symbol for Transcontinental Realty Investors Inc., a real estate investment trust. In fact, the highest-volume day for TCI was five years earlier, on the day that Bell Atlantic Corporation announced that it was buying Tele-Communications Inc.

While the moves in the wrongly traded stocks were of course corrected at some stage, these sorts of moves will be misinterpreted and misused by anyone in the future who just analyzes past price action. If we think back to the concept of alternative histories, particularly when weighing risks and possible outcomes, these wrong moves were clearly not the most logical outcome for the contract on the days when they appeared. There is only a small probability that they will be repeated. What is even more important is, why should we place any importance on highs or lows that were created under these circumstances?

If we take TCI as an example, anyone analyzing its graph purely from a technical-analysis perspective will draw all sorts of conclusions about resistance and support levels based on its previous price action. Unless lots of other traders believe in the same levels, why should we expect them to have any significance?

Back testers who just download data on a variety of stocks and run them through their software are susceptible to making decisions based on flawed data. Their usual method of filtering out poor data is to set a minimum volume requirement, yet the ticker-symbol mistakes that have been described would all have shown up as large moves on good volume.

This is a good opportunity to revisit an issue from Chapter 3, namely, the problems associated with the graphs that are used. Most traders would accept the idea that markets can be more prone to large moves during periods of low volume, or when the bid/offer spread is wider than usual, or both. Sometimes periods such as these will appear during a day—for example, at lunchtime. In fact, I can recall many market openings and lunchtimes when a lack of liquidity led to unusual and large moves. In terms of whether these were the most logical moves for the markets, the answer is no. The fact that they occurred should not lead us to believe that they would occur again.

However, when we examine a bar or candlestick chart at the end of the day, as long as the volume for the whole day is normal, there is no way of telling whether the high or low was created under circumstances of this kind. They will just be accepted and used in the future to make judgments on support and resistance levels and the like. We can again see the benefits of the Olsen-type approach of taking each trade at a time and expanding prices created on large volume and contracting prices created on small volume.

The point that I am trying to make about both the ticker mistakes and the prices created during thin markets is that if we use technical analysis, we must believe that market participants are rational people who analyze news and data and respond in a logical way. But markets are made up of humans who sometimes make mistakes, and markets can be prone to large moves for no apparent reason other than a momentary lack of liquidity. Neither of these events is the most probable outcome, and neither can be expected to be repeated if the contract revisits the prices created during those periods.

As George Soros writes in his book *Open Society*,

> [Technical analysis] treats the stock market as a closed system where only what happens within the market is relevant. That removes the element that renders each instance unique. There are many sophisticated technical indicators, and there are many people who make a living by

studying them. But there is a flaw in this approach. The market is not a closed system. It affects reality, so that the probabilities that prevail today are not the same as they were on previous occasions. Sometimes this matters, other times not.

THE INFLUENCE OF DERIVATIVES

The use of derivatives in our markets continues to grow at an impressive rate, and there is an ever-growing range of products available. Some of these products are listed and traded on exchanges, and so are transparent for all to see; others are traded "over-the-counter," usually among investment banks and hedge funds, and are not necessarily reported to the exchange or to the market.

Many of the professional (i.e., bank and hedge-fund) derivative traders practice what is called *delta-neutral hedging*. In order to remain neutral to the market direction, they offset the direction risk of their derivative trade by buying or selling the underlying contract, thus hedging, or reducing to zero, their exposure to market direction. As the underlying contract moves, these traders need to adjust their hedge position in order to remain neutral, which they do by buying or selling more contracts of the underlying asset.

For contracts that have a large number of derivatives, the effects of delta-neutral hedging can sometimes be large. Furthermore, there have been many instances where increased volatility in an underlying security has been attributed to the use and influence of derivatives.

The use of derivatives has a few ramifications for technical analysis. First, we should see that our markets no longer consist solely of traders buying because they like a contract and selling when they don't. There are a whole host of other reasons behind transactions today, such as the hedging or rehedging of a derivative or other position. In this way, the markets of today are clearly vastly different from those of, say, 100 years ago. To believe that we can use the same analysis tools today that were used then does not seem plausible. Let's also remember that we now know that after transaction fees, the profitability of these technical tools was questionable even then.

Should we use the same tools on products with many derivatives that we use on those with none? I find it hard to believe that the same tool can be as effective or predictive for both.

If a product has a new derivative or range of derivatives added to it, should we still expect the old levels and patterns to be valid? Here we see the problem of stationarity at work again; the new derivatives will add a new wave of participants in that product. I saw this clearly when I traded convertible bonds. The issuance of a convertible by a company often had a significant impact on how the underlying stock traded, in particular its volatility. Stock traders began to realize that convertible traders were important participants in their markets and watched for signs of convertible-linked activity such as delta-neutral hedging. Meanwhile, technical analysts would have continued to analyze the market in the same ways that they had always done, with no regard for the new type of player. Once again, their view of the market as a closed system leads them to ignore new influences such as these. We now know that volatility has a negative influence on the performance of technical tools, so these effects should be important to technical analysts. However, to admit to the influence of derivatives would be an admission of nonstationarity, a concept that is at odds with technical analysis.

Many technical analysts are now using data on derivatives when analyzing a contract, particularly for futures contracts. For example, a rule of thumb that is now widely used is that in the lead-up to options expiry, the underlying contract may be attracted toward the strike price with the highest open interest.[2] For example, suppose the options on the Bund future had the following open interest let's say a month before expiry with the underlying trading at 114.60.

Strike Price	Open Interest
113	25,000
113.5	22,000
114	30,000
114.5	28,000
115	45,000
115.5	25,000
116	20,000

In this example, some traders and analysts might expect the Bund future to trade toward 115.00 as the options approach expiry (remember, this is by no means a certainty or even necessarily the most probable outcome—it is another rule of thumb that is beginning to get accepted in technical analysis). While technical analysts might argue

that they are now using the derivatives in their analysis and so are incorporating new methods into their analysis, I would suggest that the reason they are doing so is to look for more patterns or rules of thumb, which may or may not be valid.

Furthermore, this again brings up the issue of stationarity and how technical analysts ignore it. In this example, if the contract does indeed trade toward 115.00, or even if the analyst thinks that the option open interest is a major influence on the underlying security, then after the options have expired, these influences will not exist unless and until the next range of options approaches expiry with the same strike price having the highest open interest. Therefore, why should we place any emphasis on the levels and patterns that were created during the life of the previous options?

In our example, if the Bund future moves toward 115.00 and stays around there until the options expire, the 115.00 level will become a support/resistance level. Yet in the next series of options, the 115.00 strike price may or may not be important. There is no reason to believe that the market will necessarily have any reason to stay around 115.00. Thus the activity of the past couple of weeks or so represented just that, the activity of the past couple of weeks, with its own specific set of influences. Now that these influences have disappeared, we are left to look at an interesting history, but one that offers us clues to the future only if future conditions are the same as the past, an unlikely eventuality.

Further evidence of the effect of derivatives can be seen on days when index and stock futures and options expire, especially on the so-called triple-witching days. These are days that see the expiration of both index futures and options and options on individual stocks. In the minutes just prior to expiration, most outright (that is, nonderivative) traders will cancel orders and cease trading until the expiration has passed. During that period, bank and hedge-fund arbitrage desks will unwind trades that consist of baskets of stocks positioned against futures and options. They will send orders to the market to either sell or buy all the index constituents and simultaneously exit the derivative trade. These periods can be volatile and will obviously create prices in all the various contracts, including the underlying stock index and the individual stocks, both of which will continue to trade after the derivatives have expired.

Anybody who has witnessed how the various contracts can move during these periods will be aware that it is as close to randomness as

one could possibly expect. There is no semblance of participants working out a fair price or performing any similar analysis. The arbitrage desks just send orders to sell all the index stocks or buy all the index stocks and at the same time trade out of the futures contract.

Yet after the expiration of the derivatives, all prices and levels created during this process will be analyzed and used in the same way as all other prices and data. In fact, those who place more credence on prices with higher-than-average volume might be inclined to overweight these prices, as volume can be very high on such days. Even if a trader on the actual day or a few days later is aware of the effect of the derivatives' expiration and analyzes the data accordingly, someone looking at a graph or data a few weeks or months later is unlikely to be aware of it.

In truth, these are just some of the effects that derivatives can have on markets. There are also, for example, well-documented cases of knockout options causing large and volatile moves in currency markets.[3] What I have tried to show are further examples of how context and stationarity, this time resulting from derivatives, damage the case for technical analysis.

STOCK BORROWING

In order to sell shares short, it is necessary to borrow stock from a long-term holder so that the trade will settle in the clearing process. However, not all shares are borrowable, and this leads to a few interesting thoughts.

First, as I have already suggested in Chapter 4, when we test technical or other trading techniques on stocks, we assume that we can enter into short-selling trades as easily as buy trades. But this assumption is far from certain. While the ability to borrow stock and sell short has been around for some time in some countries, it is only relatively recently, with the advent of products such as Contract for Differences, that the majority of private traders have been able to sell stocks short in the same way that bank traders can. So it is likely that the returns suggested in studies, particularly for periods early in the last century, may not have been possible for most private traders; they were available only to bank traders, if they were available at all. And as we have seen, the returns themselves for stocks were far from desirable after transaction costs.

Even today, the process of selling a stock short is not straightforward. While in general most large-cap stocks are easy to sell short, the same is not always true of medium- to small-cap stocks. There are many such stocks that are difficult or impossible to borrow, and this has major implications for all traders, especially technical ones.

The chart and price of such a stock will not reflect the sum of all the views on that stock because those who are negative on it cannot express themselves by selling it short. Thus, the chart will reflect only one set of participants, those who like the stock, and this is a dangerous situation. Trend followers who assume that the participants are buying because they "know something" and therefore that the market is heading up are wrong in that assumption and can easily buy into an over-priced stock or one where disappointment is around the corner. In Part 2 of this book, I discuss the idea that rather than being ahead, markets "price in" certain outcomes and will be disappointed if that outcome does not eventuate. These smaller stocks that are not borrowable could well be prone to such shocks. In Chapter 1 I showed how it appears that many technically trained traders are attracted to smaller-cap stocks. In the absence of short sellers, it is highly probable that these stocks will exhibit strong trends and attract trend followers, but it is also likely that any reversal of these trends, perhaps because of bad earnings, will be sharp and costly. These are among the unforeseen events that from time to time hit trend followers hard and cause many to leave the business.

We can also see that there is a distinct difference between how these stocks will trade and how a currency rate, which has no borrowing problems, will trade. The data for both types of contract will generate a graph that chartists will analyze in the same way, but the information contained in each graph is vastly different, as is the psychology. So the assumption that patterns are created by psychology is again seen to be weak. Both small-cap stocks and currencies will create the same patterns, but the psychologies of the graphs are profoundly different. Again we are faced with the idea that if we graph any data, we will get patterns that will recur regardless of the psychology involved.

OTHER EFFECTS OF TODAY'S MARKETS

For a century or so, many technical analysts studying the U.S. stock market have included analysis of the advance/decline figures for the

New York Stock Exchange (NYSE). They have looked for rising markets to be confirmed by more stocks advancing than declining and vice versa.

However, once again, this is an area that has changed since the analysis was first used. Over half of the stocks listed on the NYSE today are actually true companies (in the sense that they are firms that primarily produce goods or services and whose share price will be predominantly affected by the company's performance; the traditional profile of a listed stock on the NYSE). Most of the rest are what is termed *interest-rate-sensitive*, including some stocks and closed-end funds such as bond funds. The result is that on days when there is weak economic data, such as a weak GDP figure, the main stock indices may fall, but, because bond yields fall too, the advance/decline figures may not necessarily indicate many more declining than advancing stocks.

A friend who subscribes to Richard Russell's Web site has told me that Richard has mentioned this to his subscribers, yet I am sure that many technical analysts have not picked this up. Furthermore, it is another indication of how our markets are changing and how forms of analysis that might once have been interesting are no longer valid.

The move away from floor trading to screen-based trading has also resulted in participants finding different ways to trade, ways that were not possible in open-outcry trading but that have been made possible by computer-based trading. This should once again warn us that markets are evolving, and that even if technical tools did explain market psychology or sentiment previously, this may not be the case now.

For example, the following is taken from the *Financial Times* on April 19, 2004, and concerns the activities of a trader known as "the Flipper."

> German-Swiss derivatives exchange Eurex is to change its rules following complaints by traders about a player known as the Flipper. . . . The Flipper, a Dublin-based trader, specialises in trading the Schatz. Rival traders complain that he is "gaming" the market. He offers to buy or sell at large volume at a particular price. The offer attracts other traders who decide to post their own, usually smaller, buy or sell offers at that price, believing it to be backed by big volume. The Flipper then quickly withdraws his offer, flips to being a seller and profits by hitting the traders at their posted price.

While the actual style of trading that the Flipper used is not new, the speed with which the maneuver could be executed and the computer program needed to achieve it are both examples of how markets are evolving. If the Flipper had been trading on the floor of an exchange, such trading would not have been possible. Former floor traders who have made the transition to screen trading will testify to the fact that their markets trade differently from the way they did when trading was done on the floor.

Technical traders who just look at graphs or daily price data will probably not pick this up, but for those who are involved at the sharp end, for example, in flow trading or market-making activities, the changes are evident. Indeed a common quote from technical analysts is, "Markets never change." If you always look at the markets in the same way, i.e., through a graph, then this appears to be true; the market *looks* the same. Yet in reality our markets are changing, and in order to see the changes and try to interpret how they might affect us, we need to look beyond, outside, or through the graph.

N O T E S

1. Cleverly titled "Massively Confused Investors Making Conspicuously Ignorant Choices (MCI-MCIC)," *Journal of Finance*, vol. 56, no. 5, pp. 1911-1927, 2001.
2. Open interest for futures and options is the amount of open positions. As new positions are opened, open interest will rise, and if positions are closed out, then open interest will fall. The strike price or exercise price of an option is the price at which the option holder can exercise the option and either buy or sell the underlying security (depending on whether the holder owns a put or call).
3. For example Soros writes about one such instance in *The Crisis of Global Capitalism.*

Making Better Decisions

Before I begin this chapter I should explain that I am not a big fan of the "How to ..." books on trading, and I have no interest in writing one of that genre. I believe that it is very likely that the writers of many of those books will have made money from trading due to reasons other than their skill or systems, if indeed they do actually trade. As I point out to people when I give presentations, this business is not like gambling at the casino or horse racing; the odds in trading are far better, and we have a 50 percent chance of being correct when we trade. With such odds it is highly probable that there are many "winners" who were doing no more than riding their luck. Although they will attribute their success to their system or chart pattern, we now know that such techniques are unlikely to yield profits for the majority who use them, and behavioral finance has explained this self-attribution bias and how it can lead to an illusion of validity.

I also explained in Chapter 2 how I believe that many technical tutors know and use fundamentals a lot more than they suggest to their followers. As well as this being one possible source of their superior performance, I will suggest that there could be another reason; although they are likely to be prone to the representative bias, they

might be less likely to use some of the other heuristics than their followers. In particular if they can cut losses quickly without any feeling of loss aversion then this discipline alone will help them substantially. So perhaps their success can be in some way attributed to their psychological make up and discipline rather than to the robustness of their analysis. I have offered three alternative suggestions (the third being that they are the winners among a large group of losers) for the success of the technical tutors other than their patterns and indicators, and I would claim that each is perfectly plausible.

I should also add that I do not claim to be a "super trader" or anything other than a person who enjoys trading and tries to learn from my and others mistakes. I do not have a specific trading technique but incorporate some of the ideas in this section with other philosophies and analyses. As I have always maintained, I do not believe that everyone can be a successful trader or investor or that everyone has the ability to act in a rational manner and ignore the biases and heuristics described in Chapter 5. Suffice to say that if anyone is looking for hard and fast trading rules in this section they should stop reading now.

However, during the writing of this book it was pointed out to me on many occasions that if I was going to write about the deficiencies of technical analysis, readers would expect at least the basis of what I thought a better approach might be. For this reason I have added this part of the book. I hope that although I do not offer a specific trading plan over the coming pages I will at least suggest areas in which traders and investors can improve their decision making. Trading is all about decision making, and to some degree the search for hard and fast trading rules, entry and exit points, and so on is itself a mistake for traders. I strongly believe that the better traders that I have encountered have a flexible approach to trading, make few assumptions, are well disciplined, and have a thirst for knowledge. I will show and explain a few examples of some ideas using times when data are released; however, I do so only because these ideas are more clearly seen at these times. I certainly do not want readers to think they should go and develop trading strategies based purely around these situations or even that I am suggesting that these periods offer straightforward methods of trading. By thinking in this way we run the risk of developing a rule-of-thumb trading that I am obviously vehemently opposed to.

I do not doubt that many forms of technical analysis help traders to make decisions more easily often based on predetermined assump-

tions; trades such as buying on an up-trend line with a stop loss placed on a close below the trendline. While traders who make decisions on these imaginary lines and on beliefs that a trend is the path of least resistance can argue that they have a disciplined set of trading rules, their ideas are more the result of our behavioral heuristics than of rational trading decisions based on how the markets are trading right now. Although they can construct plausible explanations for their beliefs and actions, I believe it is possible to make better decisions, decisions that are not based on rules of thumb or the past actions of past traders but that are based on the here and now and what might be. Traders who do not care how or why they make or lose money but simply want to construct a set of rules that they can apply time and again may want to continue using technical rules and hope they are among the few winners. However, those who want to improve their decision making and trading over time and want to understand why and how they make or lose money and also want to be able to trade in any market condition should ignore charting and many aspects of technical analysis.

While I have not covered money management and disciplines in this section it is not because I do not think that topic is important; rather I do not think these topics belong in this book, and if they were included would place the book more into the "How to …" genre. In this section I want to focus more on improving our decision making and avoiding rules of thumb. Money management is very important though, and there are some good techniques explained in Van Tharp's book *Trade Your Way to Financial Freedom.* It is very evident that many of the money management techniques now being taught are really aimed at technical traders and those who use systems that they believe give them an edge over the long term but that can exhibit periods of successive losses. Because I do not believe that past data can be used to forecast the future performance of a contract in the way technical supporters believe, some of my ideas on money management are very simple. For example, I prefer to keep quite tight stop losses, because if the reason for my trade has not materialized in the way expected, I do not want or need to be 8 or 10 percent wrong before I get out. I was either early or wrong but either way very little damage has been done to my account, and I can continue to monitor events in a reasonable frame of mind and try to learn from what has happened. It is crucially important though to keep stop loss levels at a fraction of

your target, otherwise your profits may be the result of holding risk. The technique of choosing targets is one that should improve over time for those who have the necessary attributes. Suffice to say I also believe that private traders should never risk more than 2 percent of their overall trading account on any one trade even if they are using CFDs or other margined products. As far as this book is concerned that is as far as I want to go with that topic.

As you will no doubt be aware by now I do not believe that many of the trading methods currently being taught to private traders will help them. As I shall explain, the now commonly held belief that a system that has shown long-term profitability, albeit with a low probability of success for each trade, is a good system is not that clear cut. Actually, when I speak to groups of technical traders, I sometimes suggest that rather than try to design and test fancy systems they merely throw a dart at a financial newspaper and whichever stock it lands on they buy with a 2 percent stop loss order and a 6 percent target. I suggest that their performance as a group may not be much worse than it currently is.

As I have stated in earlier chapters, there is the distinct possibility that with a low probability per individual trade approach a trader will run into a succession of losses. Certainly it seems to be more popular among technical supporters to tell followers to ignore the outcome of one trade, which after all might be random, and concentrate on using techniques that appear to have been successful over a large study period. Followers are told that by doing this they are trading in a probabilistic manner and one that will lead to success over a long period. While it is all well and good to tell traders to just continue with the system since all will turn out well in the long run, it is not only very difficult psychologically for many people to do this, but unless traders have deep pockets, there will be no long run for them. And that is only if the (technical) techniques they are using really are as successful as the traders are led to believe, a point that is far from being probable, as we found out in the first part of this book. Because of this, the edge that traders think they have (over the long term anyway) may actually be (excessive) risk. While both edge and risk may lead to profits, only one should lead to sustainable profits.

The point about making it to the long run was clearly illustrated on the bulletin board of a trading educator here in Australia. During a discussion about a new book by one of Australia's more prominent

educators, one trader recounted how he started off in this business by following this "guru's" methods precisely and found the approach resulted in losing money. The trader concluded that the educator's techniques were far from reliable. The owner of the Web site and moderator of the bulletin board queried the trader's conclusion and asked how many trades the trader had executed using the approach. The moderator argued that if only a dozen or so trades had been made, then the conclusion was not justified; a far larger sample of a number of hundred trades would be needed before any conclusions could be made. The trader simply replied that although he had only made perhaps a few dozen trades, by that stage he had run out of capital, so any future successes were meaningless to him. Herein lays a huge problem: traders who use such techniques can feel justified with their approach and can certainly show they might be successful over the long term, yet in the real world this is of no use for most private traders. It is no different from suggesting that when playing roulette one should pick a number and if one loses then keep doubling up on the bet. Eventually we should make money. However, few of us have the necessary money to bankroll such a strategy, so if we adopted this approach we would be relying on hope to make us money, not on a reliable betting strategy.

In effect traders who use these technical or mechanical methods that have low success rates per trade but show overall profitability will also be hoping that initially at least they will avoid a succession of losses. But hoping is all they can do, for they have no way of knowing prior to committing to the trade whether or not it will be profitable, and rarely if ever can they work out what really separates a winner from a loser. To me this approach is not trading; it is gambling, and is as reliant upon luck as it is upon skill or knowledge.

I was interested that Mark Douglas mentions the studies conducted on monkeys earning random rewards in his book *Trading in the Zone*. In these well-known studies, some monkeys were rewarded every time they completed a task, and others were rewarded randomly. When the rewards were stopped, the first group, having associated the reward with the task, quickly stopped performing the task. However, because the second group did not associate the reward with the task even when the rewards stopped, they continued to perform the task indefinitely. While Douglas correctly argues that traders must not get addicted to random rewards, traders who use a systems approach

to trading run a far greater risk of doing so. For they do not know when their system (which they believe will be profitable in the long run) will win and when it will lose. As a result their rewards will be random. I suggest that traders who use this type of approach face the prospect of becoming like the second group of monkeys. While it is all well and good to suggest to these people that they avoid becoming addicted to random rewards, in reality it is far harder for some people to do this. I therefore believe that it is important for traders and investors to try to understand the reasons for their successes and failures. Not only may there be psychological benefits to this, but they should hopefully be able to improve their decision making and trading over time.

Interestingly the traders that I have encountered at investment banks who have not made the grade have almost all decided that trading was not the right business for them and moved into different careers. Because they had been expected to make their own decisions based on their own analysis for each trade, they had realized that their decision making was not good enough and therefore that they had no long-term career prospects as traders. However, since I have started talking to private traders, I have noticed that even in the face of big losses and poor decision making some will continue in this business. I suggest that in some cases anyway, these individuals are behaving like the second group of monkeys, which, in turn, is due to the way they are taught to think about trading. Being taught that a system proven through back testing can lead to a good career in this business has led these traders to have false expectations. If they were taught that their success or failure depended solely on their own decision making for each trade, then they could start to understand cause and effect and realize that any failures might be the result of their own lack of ability. Because most people are employees and are used to receiving instructions, perhaps they are more comfortable with trading someone else's views or system; making their own trading decisions or formulating their own trading strategies is outside their comfort zone. Being a trader is similar to running a business, and while it is widely acknowledged that the majority of people are not cut out to be CEOs, the same views are not held for trading despite the very high failure rate. I will say again that I do not think that everyone can be a successful trader.

Another problem with the technical or mechanical approach to trading is that although these traders believe they have an edge (over

the long term anyway) due to their system, many are actually very aware that markets can change (as I suggested in Part 1 of this book) and some will give up the system before the long run if they think the market has changed. Either way I think the flaws in using such a system when trading are immense. Not only do I not believe that you can gain an edge from applying technical tools to past data or that by doing this you are studying the "psychology" of the market, but the psychological implications are too hard for most to cope with no matter how often they are told just to keep persevering. Traders like me need to know why we are making or losing money, otherwise we feel that we cannot learn from our mistakes and successes. We feel that the best way to improve our performance is by learning from our actions and not by looking for new systems every time we fail. My years working in investment banks have probably added to this too in that there is so much competition among traders and that we also need to report to seniors to whom we need to justify our actions. There will be plenty of traders ready to pounce on any poorly thought out trade. Having such competition, while being a pressure, certainly helps keep all traders on their toes. However, private traders only need to justify their actions to themselves, and this can mean that the level of justification required is often low.

When I first started trading as a "local"[1] under the guidance and backing of a wonderful options and futures trader, Wade Vagle, Wade impressed upon me the fact that now that I was outside of an investment bank my career was reliant upon the capital that I or my backer provided. He stressed that over the long run one could make significant profits from trading, but in order to make it to the long run required an approach that guaranteed making it through the short term. Having witnessed firsthand many traders having short careers in this business, I would suggest that this should be the first rule for any trader.

We also saw examples of this in the studies conducted on technical analysis. It is possible for the supporters of these tools to claim that in some cases if one had used them over the long term one would have made money. First, we now know that relatively few trades appear profitable after accounting for fees, and second, we know that even these trades often had periods of large drawdowns or long periods of no profitability. In these instances, for the vast majority of traders who use them, there would be no long term. In this business we must try to see through the survivorship bias and try to find out how the majority

of traders who have used this approach have fared. We must avoid the overconfidence that makes many people think that they will not be among the failures and instead, when faced with the facts that most people who use a certain approach lose money, draw the conclusion that it is more likely that we would fall in the majority. This way we should look for more robust methods and ones where we can understand the source of profits and therefore learn to improve over time and not rely so heavily on hope or luck.

We should also focus on making more rational decisions and avoid the irrational biases and heuristics highlighted by behavioral finance. For many traders, if they did nothing else but avoid loss aversion by cutting losses quickly, their performance would improve, and in some cases would do so substantially. We should all be aware of the shortcuts we are prone to and learn ways of combating them, if indeed that is possible. For many, improving this psychological aspect of their trading will be as important as improving their analysis, and, as I have already stated, it is very possible that the source of success for at least some technical traders will be their discipline rather than their analysis.

However, I am yet to be convinced that everyone can change their psychological approach to trading. I have seen on numerous occasions how traders can be faced with clear evidence that a trade is wrong and yet they cannot bring themselves to cut the position. I have discussed loss aversion already and will approach the topic again later in this section, but from the traders whom I have seen who suffer from this, few are able to change their ways even though they know they are wrong.

In particular, during my time on the LIFFE floor, I saw that traders who "blew up" once would often do so again if given more capital. I have stood next to, worked with, and chatted with such traders and would strongly suggest that these people have an inability to think rationally in some situations and will always be prone to large losses. From time to time they can make substantial profits (I have seen such traders make a quarter of a million dollars plus very quickly) but often the profits were a result of holding risk, and the profits were usually reversed over a period of time. These traders would sometimes trade under an umbrella group and would discuss (as most of us did) their positions and views, yet when faced with a potentially bad position they almost seemed to freeze. They knew they should cut the position, they were told they should cut the position, but it was

almost as if doing so was a physical impossibility. This is why I cannot discount the possibility that their problems are linked to how their brains are wired and are thus far more difficult to overcome than just visiting a mentor or psychological expert.

When I read books about Jesse Livermore it appeared that he had sound principles and disciplines yet his problems often arose because he failed to stick to his disciplines. Furthermore, Jesse, like the traders I have witnessed, "blew up" on more than one occasion. Interestingly, if you viewed these traders at certain points during their careers, they would appear to be very successful, and if they ran trading courses, they would attract many followers. Personally I am extremely wary of traders who have suffered large losses in the past and now claim that they have learned their lessons or that they now employ better techniques. If the reasons for their inability to cut losses are due to the way their brains work, then perhaps they should apply an approach similar to alcoholics. Rather than claim to have beaten their problem, they should always view themselves as having the potential to "blow up" again and remind themselves and face up to this possibility every day. Or perhaps just accept that trading is not for them and try a different career.

NOTES

1. A "local" was/is a pit trader on a futures exchange who puts up his or her own capital and pays for a seat on the exchange in order to trade in the pit. They were/are usually short-term flow traders.

Know the Fundamentals

I am dismayed that I feel the need to write this chapter, but it certainly needs to be written. In particular, many technical analysis tutors actually tell their clients that they do not need to understand any fundamentals, and a good proportion of private traders are prepared to accept this, as it appears to make their task easier. However, it is plain wrong for anyone to believe that he or she can enjoy a long-standing career as a trader or investor without learning and understanding the basics and fundamentals of the markets and the products that he or she is trading. Gathering knowledge should also be an ongoing process. With new products being created and listed almost every year and access to markets all around the world becoming easier for everyone, we should take the time to stay informed and educated about the latest developments. The more products we understand and follow, the more opportunities we are likely to see, and we will also be able to select the most appropriate product for the trade that we have in mind.

It seems to me that there are many private traders and investors who spend more time and effort researching which model of television to buy than where they invest $10,000 in the stock market. Interestingly, some of these people can be persuaded to buy a stock

just because others have bought it, yet when they are buying the TV, they will compare brands, prices, and so on to make sure that they are getting a good deal. If they applied even this form of research to share trading, it would be at least a small improvement.

During the expo that I described in Chapter 1, I handed out a questionnaire to visitors to try to gauge their level of knowledge about trading and the markets. One of the questions concerned bonds. I asked,

If interest rates rise, the effects on bonds will be

1. Price rises and yield rises.
2. Price rises and yield falls.
3. Price falls and yield falls.
4. Price falls and yield rises.

I thought this was a fairly straightforward question, but the results confirmed my suspicions about the level of education among private traders. When I spoke to people as they answered the questions, most of them told me that they considered themselves to be quite experienced traders and investors, yet only about 6 percent answered this question about bonds correctly. These results are obviously staggeringly poor and really highlight the lack of knowledge among private traders. I am sure that the 94 percent who answered incorrectly would not trust their money to a fund manager who could not answer such a question, yet they are happy to trade or invest themselves just using their knowledge of chart patterns or momentum indicators. In a subsequent presentation at the expo the following year, I again asked the question about bonds and also asked those present to name a chart pattern that I had drawn. Again fewer than 10 percent answered the bond question correctly, yet *all* correctly identified the chart pattern.

Bond markets are a huge part of this business, and they can sometimes offer us a different perspective from the stock market. Even traders who trade or invest only in stocks should understand government bond markets and follow them closely; this is really just basic. Yet the results of my questionnaire suggest that there may be huge numbers of private traders who know nothing about these markets. What other basic areas of this business do these traders know little or nothing about?

So I suggest that before people start trading or investing, they take the time to educate themselves on as many aspects of the markets

as possible. Being able to recognize a head-and-shoulders pattern is nowhere near as important as understanding how bond markets work and what they might be telling us. Perhaps now that I have exposed how unreliable chart patterns and other technical indicators are, more private traders will be inclined to improve their basic knowledge.

We should also educate ourselves about the actual product or contract that we are trading or about to trade, a process that I refer to as due diligence. Over the years I have seen too many examples of both private and bank traders losing money for reasons that could have been avoided with such research.

For example, a group of traders who had been very successful arbitraging between LIFFE German Bund futures and Eurex German Bund futures saw huge profit potential when a U.K. Gilt future was listed on a European futures exchange at a price that was quite different from the price of the contract listed on LIFFE. They established a very large position of long one contract and short the other, expecting the prices of the two contracts to converge. Unfortunately, these Gilt contracts were very different from Bund futures; the new contract had completely different deliverable bonds, which meant that although the prices of the futures contracts were very different, they were the same in yield terms. These traders lost large sums of money as a result of a lack of research.

There must be tens if not hundreds of thousands of private traders in particular who know little or nothing about the contracts they are trading. Many technical traders are taught to scan hundreds of stocks, for example, and select the one that best fits whatever strategy they are using. Since they do no further research, they will almost inevitably end up trading something that they have little knowledge of. Sometimes there will be a reason why the trade only appears to look so good. They are persuaded to accept assumptions such as "everything is in the price" and "the market is ahead," but I have shown a few examples, such as the variances in stock borrowing, that might make these assumptions dangerous.

In fact, it is not just private traders who are prone to this. At the last investment bank where I worked, the head of my department (in the face of large disagreement from us senior traders) moved two extremely intelligent individuals from their positions as a researcher and head of systems development, respectively, to run trading books. Both were essentially quant-based traders who believed that their

knowledge of math and programming alone would ensure their success. However, what became apparent over the coming months was that a large proportion of the trades that these guys selected through their back testing and programs were not quite as great as they seemed. In most cases, there were more experienced and knowledgeable traders above them, and so these traders did not fare as badly as they might have (although one still managed, with the aid of our head of department, to lose a few million dollars). On closer inspection, there were usually reasons why the trades they had picked up looked so good. Perhaps a difficulty in borrowing stock made selling the stock short too risky for most of us, or perhaps there was not enough liquidity for us to be comfortable with a position of any great size. Occasionally the ex-researcher in particular did establish positions, but during the year and a half that I worked with him, he had very few winners. More often than not, it was his lack of due diligence that led to his downfall (together with his "I am right; they are all wrong" attitude), not just getting market direction wrong. Perhaps this is further evidence of the poor reliability of a back-testing approach.

As an aside, this trader also created a system to rehedge our convertible bond positions using a computer-generated back-testing technique. Every day the computer would generate the "optimal" levels for us to buy and sell at, based on how the stock had been trading. My fears that, in effect, we would be trading yesterday's market seemed well placed, as during the time we used this system, our profit from rehedging diminished markedly, despite the fact that market volatility increased significantly—a scenario that we should have profited from. Even an inexperienced trader managed to significantly outperform this system by using techniques such as weighing possible outcomes (discussed in the next chapter) to create the rehedge orders.

Due diligence does not necessarily mean analyzing company balance sheets, but it certainly entails understanding how the company we are trading actually makes its money. So we should know that GM and Ford make little or no money from manufacturing cars; rather, any profits they make are nowadays more usually the result of their finance division. Because of this, many bank analysts and traders now consider these companies finance companies, not manufacturers.

While many technical tutors suggest that all markets are similar and that we can apply similar techniques to all markets, as we saw in Part 1, this is a huge simplification. I would not consider applying the

same trading or analysis techniques to a large-cap stock with a P/E of 12 as I would apply to a small-cap stock with a P/E of 70 and little or no stock borrowing. These two markets operate in different ways, and, for example, we should not necessarily respond to sell signals in both markets in the same way.

All traders and investors should also educate themselves about economic data. I will explain my own views about how we can sometimes use these data in our decision making, but there are many traders who do not understand these numbers, and they will sometimes find themselves at the mercy of more knowledgeable traders. Once again, they are sometimes encouraged to ignore this basic area by many technical tutors, who suggest that "everything is in the price," so they need not be concerned with such fundamentals. I will expand upon this area, too, in the next chapter, but for now I will suggest this: there is a reason why they are called fundamentals, and that is because they are a fundamental and unavoidable part of this business. We may not always use them as the basis of our trading, but we must have knowledge of them. As I wrote at the very start of this chapter, it saddens me to think that this chapter needs to be written, but the idea that traders do not need to understand the fundamental aspects of this industry has become so ingrained in technical analysis that there appears to be a whole generation of private traders who have been convinced that they should totally ignore fundamentals. Investment banks still understand the need for such learning, and nowadays (unlike when I entered the business), at most banks, all new employees are put through an intensive training program covering all aspects of the business. Part of the edge that bank traders have over many private traders is simply their knowledge of the markets. I am not suggesting that we should all be purely fundamental traders (there are other aspects to consider, too, which I will expand upon), but I am amazed that some technical tutors can get away with telling people to ignore this area. Once again the public is learning wrong "facts."

In fact, Charles Dow, whose ideas form the basis for a lot of technical analysis, had no real interest in chart patterns and other such indicators, but espoused investing based on sound fundamental principles. It is doubtful whether Dow would support many of the methods that technical analysts have created.

The process of due diligence is one that may lead to our spotting opportunities, but, more importantly, I feel it can help us avoid poten-

tial losses. It is my belief that avoiding losses is just as crucial as taking profits, especially for private traders. Returning to the start of this section, failure to make it to the long run can only be the result of incurring losses, and so avoiding losses should be a far higher priority than it is for many traders. Losing money on a trade where the pitfalls should have been foreseeable because we had little or no knowledge of the contract is certainly one scenario that we must try to eliminate—especially when we consider that many private traders can afford to lose their trading capital only once, and then they will be out of the business forever.[1]

I must also add that fundamental analysis includes anything that might affect the demand and supply of a contract. This incorporates analysis of how participants are positioned and whether there is a significant change in the type or number of participants in a market. The former will be examined in the next chapter, "Pricing In," but, in short, the belief is that we should understand whether participants might be positioned wrongly for a certain outcome, as this could affect how that contract will trade if that outcome occurs. An example of the latter would be the large influx of new bullish traders during the dot-com share boom of the late 1990s.

NOTES

1. I realize that some traders will lose their accounts and earn money from their occupation and therefore be able to continue trading. But many others will not be so lucky or will give up after one attempt.

Pricing In

To state that the market is ahead, as technical analysts do, suggests that markets are very good at digesting information and that by following the trend, we will be on the winning side. Yet behavioral finance suggests that market prices also reflect all sorts of irrational thinking, such as anchoring and availability bias. Anchoring, representativeness, and conservativeness contradict the view that the market is ahead and instead suggest that at least at some times, traders are making judgments based on past data, something that technical traders also do. I find it hard to believe that a market whose participants are using past data and irrational thought processes can always be ahead. So we should already have some doubts as to what the market price might be reflecting. From my experience, I suggest a view that is slightly, yet importantly, different.

To me, markets appear to "price in" certain expectations. Perhaps in the days of insider trading, when technical analysis was being developed, some participants did know certain information in advance, but I can assure readers that in the vast majority of cases, this is not the case now. I have heard that some technical tutors tell their students that bank traders have access to certain information that is not in the public

domain, but this is not the case. For the most part, people who suggest this have never worked in the industry, and their beliefs are often based on misguided perceptions rather than experience and fact.

When traders buy (sell) a contract, it is because they think that future news, earnings, data, and so on will be good (bad) and the contract will rise (fall). However, they do *not* know this; they use whatever analysis methods they believe in to reach a conclusion, and as we have seen, some of these methods will be poor and irrational. When news or data such as company earnings come out, the participants find out whether they were correct in their decisions. However, they are not always right, and even when they are, the returns are not always that great, especially for the latecomers.

For this reason, our markets can be said to be like a roulette table (although with better odds). Traders place their bets, and when any news or data comes out, it is like the ball hitting the table and we find out who has won. I suggest, though, that there is one slight difference between the markets and the roulette table. In the markets, there is a kind of maximum payout, so that if lots of people have the same bet, the payout will be smaller; the larger the number of bets, the smaller the payout. Whereas in roulette, if 100 people all back 20 and 20 comes in, they will all do very well.

This is where two crucial techniques come into play, two techniques that are more difficult to teach and learn than technical indicators, but that, in my experience, can make a big difference between a good and bad decision. These two techniques should always be used by traders, but in particular they should go hand in hand when data are due.

The first is trying to understand the context of a move, a topic that I have already highlighted and discussed in the first part of this book. It might sound like there is a bit of work involved, but I hope I have explained that in this business, using shortcuts is usually a shortcut to failure. To anyone who believes the advertisements that claim that we need to spend only a few minutes a day to make a living from trading, I wish them good luck and hope they don't mortgage the house in order to trade.

The second technique is weighing possible outcomes. We should always try to do this, but it perhaps becomes easier as we approach data such as company earnings. In this situation, what we are trying to weigh is, what happens if . . . ? If we go back to the analogy of the mar-

ket being like a roulette table with a maximum payout, then if a stock has risen considerably since its last earnings report, we might decide that it is pricing in good news. If the next earnings announcement is good, the stock may not rise much more, as everyone is positioned for this. If it is bad, the stock may fall sharply, as expectations were proved wrong, and in this case the few who had opposite positions would do well.

At this point I should elaborate on what I mean by good and bad news, as this can be an area of confusion for many. By good (bad) news I mean that the data are better (worse) than market participants had priced in. This does not necessarily mean that the data themselves are good (bad) or even that the data are better (worse) than analysts had expected. For example if a stock has fallen substantially preceding its earnings, which are estimated by analysts to be 20 cents a share, this would suggest that investors believe that the real data will be worse than 20 cents. A figure of, say, 18 cents a share may grab media headlines as being below expectations, but the stock may not actually fall that much. It is below analysts' expectations, but these expectations were expressed weeks or months ago. However, such a number may not be too far from investors' expectations. Similarly, a figure of 20 cents may be called "in-line," but these may prove to be better than the market's expectations and could cause a rally. So there is a difference between market expectations and analysts' expectations; the market may price in different expectations to the analysts.

What we must understand is that market participants do not know what the earnings will be, so we really should consider the chances of good or bad earnings as 50-50. If we work out the expected return from being long a stock that has risen considerably as we approach its earnings and compare it to the expected return from being short, we will find that the expected return usually favors being short, i.e., there is a negative expected return associated with being long.

For example, suppose that stock XYZ has rallied 15 percent since the last earnings report. We might decide that when the earnings are announced tomorrow, if they are good, the stock will rise by about 2 percent, but if they are bad, the stock might fall by 7 to –8 percent or more. Even though the stock has been strong, the chances of either eventuality are really 50-50; no one actually knows the numbers. The expected return is therefore as follows:

$$+2\% \times 0.5 = 1\%$$

$$-7\% \times 0.5 = -3.5\%$$

$$\text{Expected return} = +1 - 3.5 = -2.5\%$$

Notice here that, although the stock is in an uptrend, I would argue that as we approach its earnings, the path of least resistance may actually be on the downside. Certainly, in my opinion, being long this type of stock is the wrong trade. Some traders may not feel comfortable with selling it short (the contrarian route, which many are uncomfortable with—not myself, I should add); perhaps the company will announce other positive news as well as earnings, such as a merger or some other positive event. In this example, short selling may certainly have risks higher than those we took into account, but if we created a short position through the purchase of a put, then we would not be too concerned about this. (It is also, of course, possible for the company to announce other very bad news.)

I am in no way suggesting that the company news *will* be bad; I am just saying that the expected return from buying this stock is likely to be negative, which is a completely different conclusion from the one that most technical traders will reach. Our difference in opinion is primarily due to two main reasons. First, I believe that data are important and can move markets. Second, I am weighing information and views that are not in the graph or previous price data. As I wrote in Chapter 3, technical traders can make decisions based only on what they see; what they don't see cannot show up as an option. On the occasions when the data are good and the stock rallies slightly, the trend followers will feel justified in their trades, but I would argue that the small profit that they will make is a result of holding risk, and that if they continue with such trades, then they are doomed. I would suggest that on the occasions when the company announces bad results and the stock falls sharply, many technical traders will attribute their losses to an unforeseen event; after all, nobody could have known that the results would be bad. While the last point is true, any event will be unforeseen if we don't look for it, and if it hasn't happened in the past, technical traders will not be looking for it.

Furthermore, at this point we will no doubt find many technical and mechanical traders reviewing past trading data to find out which indicator(s) and tools predicted or signaled the result that we now

know. They may refer to this process as back testing, but to me it is simply data snooping.

The processes of weighing context and possible outcomes are by no means straightforward and are disciplines that can be improved upon over time. They require knowledge, which we can all get, and some skill, which, unfortunately, I do not think we all possess. I do not think that everyone has the potential to become a great trader, and this factor, along with our behavioral biases, possibly shows up as the main difference between the best and the rest. But anyone who is looking for hard-and-fast rules in this business is letting him- or herself in for a major disappointment. As I wrote at the start of Part 2, I do not like "how to" books, and I am not trying to write one. I am just offering some general and alternative ideas. There is no way I could write a book explaining exactly how I trade, and I do not intend to try, but these chapters give just a few approaches that I think are improvements for many traders.

There is one further interesting point to make here, and that is that, contrary to the conventional wisdom, trading is not just about getting market direction right. I suppose that many technical traders will agree with this, because they are happy to accept techniques that have a low success rate but that they feel (wrongly, in most cases) will make them money over time. What I am saying is that even when we think that there is a high probability of a particular move, if we judge the outcome of that move to be small, then it might be that the expected return suggests we do nothing.

The topic of probabilities is a very interesting one and one that Nassim Nicholas Taleb writes well about in *Fooled by Randomness*. I hear and read a lot about how this business is based on probabilities, and while I agree in part, it is not a clear-cut situation. If we use an approach that has a low probability of success on an individual trade, such as a technical indicator, but that appears to be profitable over time, we run the risk of facing a succession of losses and not making it to the long term. However, if we use a technique that we believe, rightly or wrongly, has a high probability of success, but where the magnitude of the low-probability event is so great that it could wipe us out, then again we might not expect a long career in this business. This is one reason why we need to be flexible in our trading approach and consider each trade and decision on its own merits. Anyone who simply makes the same type of decision again and again faces the distinct

possibility of incurring large and possibly otherwise avoidable losses, often from unforeseen events that may not actually have been unforeseeable.

By adopting the approaches of understanding context and weighing possible outcomes in our trading, what we are trying to do is to focus on making better decisions rather than just focusing on making money; there is a difference. If we try to make good decisions, then positive results should follow, and they should be more likely to be sustainable. Those who focus on making profits might be more prone to using shortcuts and may inadvertently take on risk and poor trades.

We are also focusing on making decisions on the information that is available here and now and the information that is about to become available. By doing this, we are not basing our decisions on previous information, and therefore we are less likely to fall victim to the conservative and representative biases. In the absence of any new market information, such as earnings, news, or movement in the sector, many traders rely on technical techniques to make decisions—techniques such as, the market has been rising, so I will buy. But these techniques are nothing more than rules of thumb, and we do not need to use these when we trade. In any given year, there will usually be enough opportunities to make money from applying real information to how the market is positioned. We should not think that there are understandable or tradable reasons behind every move in our markets or that by studying market data, we can find an indicator or a set of indicators that predicted a certain move. Our markets are both more complex and more random than this much of the time. However there are times when by understanding context, understanding the market's positioning, following and understanding new information, and weighing possible outcomes, there are opportunities to make money.

A good example of the difference between my views and those of a private technical trader was illustrated after I had given a talk to a group of traders in Perth, Australia. It was just after the U.S. elections of 2004, and I was using the election as an example of how we should weigh expected return. In the days just prior to the election, George W. Bush's lead grew slightly, and as he was the candidate favored by the market, the U.S. indices rallied. The feeling in the markets (rightly or wrongly) was that a Bush victory would be better for the markets than a Kerry win. Yet although Bush's lead had grown, it was still relatively small, and a Bush win was by no means a certainty. Just prior to the

election, most traders that I spoke to analyzed the possible outcomes in roughly the following way:

Bush win = 55%	Market move: +2%
Kerry win = 45%	Market move: −4%

Expected return = $(0.55 \times +2) - (0.45 \times -4) = -0.7\%$

So even though they thought Bush would win, most decided that it was not worth running a long position with a negative expected return over this uncertain time. As it turned out, the election was very tight; Bush won, and the market rallied a little initially, but I explained that even after knowing the outcome, the policy of having no trade was the right one. In an election in which roughly 100,000 voters in Ohio held sway, there is no way that the markets could know Bush would win; they *thought* he would and priced that in.

A couple of days later, on the group's Internet forum, one technical trader (we shall call him Mr. A) took me to task over this suggestion. He wrote that the technical indicators clearly pointed to a rally, which happened, and therefore I was wrong.[1] Perhaps technical traders think that "everything is in the price" includes the idea that all participants are weighing possible outcomes in the manner that I have suggested. Having worked alongside hundreds of traders over the years, I can tell them now that this is not the case. In essence, this trader's argument was that the end justified the means, partly because he never took the time to find out what the means were. I maintain that his trade of being long has a negative expected return, and someone who trades in this way can expect a career in this business only with a fair amount of luck. Unfortunately, there are some such people. They think they are making money because of their analysis, but it is highly likely that they are making money because they are assuming risk. If you assume risk, you should expect some reward, but you are likely to run into some big losses at some stage. By analyzing expected return, we can understand some of the risks of a trade and then decide whether or not we want to go ahead with it. We are also judging each trade on its own merits and not falling into the trap of believing that because a trade has worked in the past, it will continue to work in the future.

So I believe that the concept of pricing in is far different from the assumption that the market is ahead that technical traders must make. If you agree that pricing in is a better explanation of how markets work, then you should be less likely to simply use technical methods

FIGURE 8-1
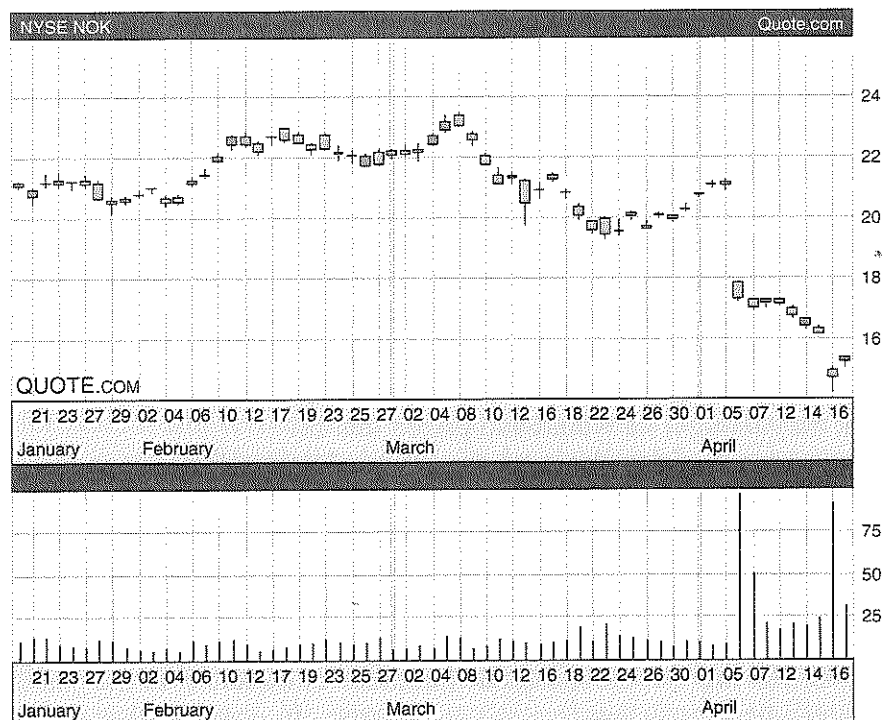
such as trend following and should consider techniques such as weighing possible outcomes. I understand that the second process is more difficult, but if the first is fundamentally flawed, as I suggest it is, then its being easier to use is of no advantage.

When you follow the markets closely, you will find that markets are not always correct in what they price in and are certainly not always ahead. While I am aware that no amount of examples will prove my suggestion, please remember that I am not trying to develop a rule or law; I am just trying to explain the concept of weighing up possible outcomes.

Figure 8-1 shows Nokia in the run-up to and immediately after its earnings announcement in April 2004. In this example, in the three months prior to Nokia's Q1 2004 earnings, its shares were roughly unchanged. In the few days immediately preceding the announcement, there was a rally of just under 10 percent, but on balance investors were probably undecided on the company, and I imagine that both technical

traders and myself would have had little to base a judgment on here, even with the benefit of hindsight. Working out the expected return on Nokia prior to its earnings would have given us a figure of about zero, so we should have had no trade. As it turned out, Nokia missed expectations, and its shares, as we can see, fell by roughly 20 percent.

However, the situation becomes interesting if we analyze how Motorola shares performed immediately after Nokia's announcement. Nokia and Motorola had correlated closely until this point, and by following Motorola, we can see just how different the techniques that I espouse are from reactive technical ones. Figure 8-2 shows Motorola prior to and after its earnings, which came out nearly two weeks after Nokia's.

Nokia's results came out on April 6, and we can see that, despite the fact that Motorola had been in an uptrend until that point, its shares started to fall. Rightly or wrongly, this is how I would expect the stock to perform, given what had happened to a closely correlated

FIGURE 8-2
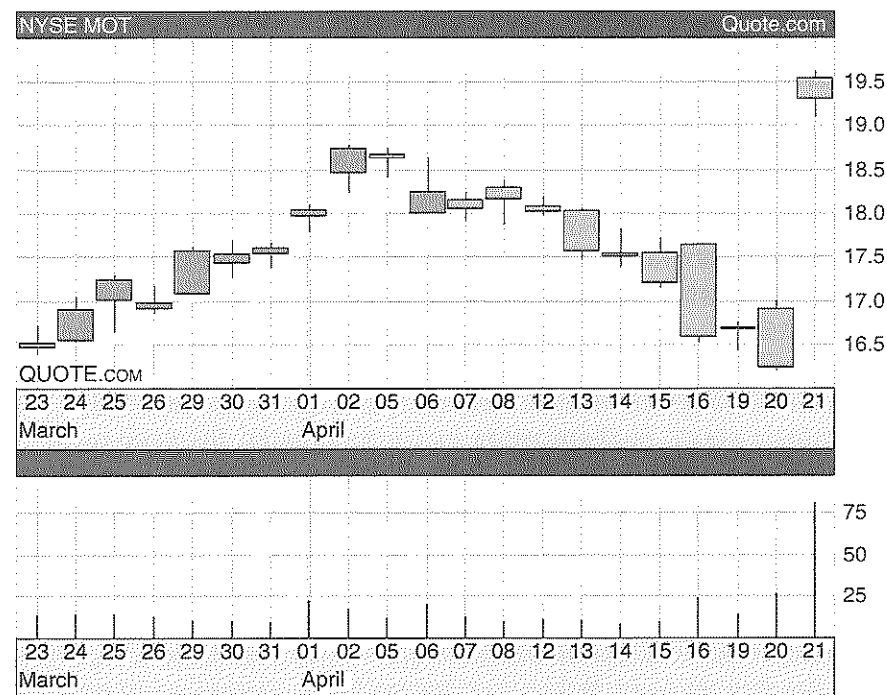
stock. The previous history of this graph is just that, history. It is the actions of past participants, who I am quite sure would have traded differently if they had known what they now know. For those of us trading on April 6 or 7, it is highly dangerous to make the assumption that Motorola is going up because past traders have bought and they are correct in their assessment; after all, Nokia investors were also buying over the same period, and they are now sitting on substantial losses. On April 6 the situation is completely different from what it was on April 5, and the past trend is no longer of use. We must trade on the most recent information available, not on the past actions of past traders. By the time many technical indicators suggest that a change of direction is occurring, it may well be too late, as we shall see with this example. What we should be saying to ourselves is that there are many holders of Motorola out there who may now be a bit nervous. It might not be in the chart, but almost all bank traders that I have worked with would want to be only one way in this stock over the next few days, and that's short.

Motorola fell over the following two weeks or so until its own earnings announcement. So we have seen that the market was not ahead, and the charts gave little or no indication of how Motorola should trade, yet I claim that those who follow news and data and have an understanding of how markets operate would at least have known that they should avoid a long position and possibly would even have entered into a short sale.

But as we approach the day prior to Motorola's earnings report, for those of us who weigh possible outcomes, the situation changes. Motorola's shares have dropped by about 12 percent, as investors are concerned that Motorola will announce figures similar to Nokia's. Whether this is rational or not, it is probably prudent and I can perfectly well understand this. However, they are now effectively pricing in bad news. Remember that Nokia fell about 20 percent, but this was a complete shock, and investors had not prepared themselves. If we work out the expected return from holding a position in Motorola when its earnings are released, we get a figure along the following lines.

If results are good, Motorola shares should at least recoup the 12 percent that they have fallen. The probability of this should be estimated at 50 percent, for no one knows what the results will be, despite what has happened to Nokia. Furthermore, the market's perception of

what constitutes good results may have changed after Nokia's results, and even in-line numbers may be viewed in a positive light.

If results are bad, then Motorola shares might fall by only a small margin, because this is the scenario that is already priced in. Motorola's shareholders will not be as shocked as Nokia's were.

So the expected return would be something like

$$50\% \times \text{rise of } 12\% - 50\% \times \text{fall of } 3\% = +4.5\%$$

The expected return favors being long Motorola, and a short trade that has been good until now becomes a poor one. Once again there is little or nothing in the graph to show this, and in fact, now that Motorola has been falling for about two weeks, many technical indicators will be suggesting that the stock has entered a downtrend. Many moving average–based systems, for example, will be recommending short trades.[2] Yet by understanding why Motorola has fallen and weighing possible outcomes for an event whose timing we are sure of, we will come to a completely different conclusion.

Whether or not to go long and how to do so is up to each trader. Motorola could, of course, announce some other bad news at the same time, in which case our expected return numbers are wrong, but by buying call options or putting in place a guaranteed stop-loss order, which some brokers now allow, we can cover this scenario. But at least we should be able to understand that a short position is actually a poor one, contrary to what many technical traders might be thinking.

As we can see, Motorola announced good numbers, and the stock immediately rallied by nearly 20 percent. While this jump is higher than I might have expected, perhaps there were many traders holding short positions. With the stock falling on increased volume in the few days immediately preceding the results, this is quite plausible. We should notice, too, that back-testing methods would have been of no use in these circumstances, for they work on the same premise as other technical methods, namely, that the market is ahead, so we should follow the past traders' actions. Remember the quote from Mr. A in the note 1: "Mr. Market knew all along and put his grubby cash on the table. Follow the $$$ money." Well, unfortunately, like many assumptions that I have come across in these markets, that is a dangerous belief, yet it is in essence a cornerstone of technical analysis. To trade using past actions as a basis requires the assumption that past traders are right. I cannot even contemplate using such an assumption.

Perhaps this also helps to illustrate my belief that news and data are important and that we must follow them. Amazon.com shares fell roughly 15 percent after its earnings announcement in February 2005; in 2004, as I have shown, Nokia fell nearly 20 percent after its earnings were announced; and there are smaller reactions to news and data almost every week. Technical traders who ignore these periods are leaving themselves open to losses. Remember, these announcements are not random; we know in advance when they will occur, and we should plan accordingly. Just following the herd because we assume that they are ahead and are correct in their collective decision is a rule of thumb, but nothing more. The participants are pricing something in, but they do not know the outcome.

With the Motorola example, some technical analysis supporters might suggest that the longer-term trend was still positive, and, unlike short-term traders, longer-term technical traders might still have held the stock. My feeling on this point is that if traders are willing to accept drawdowns that in this case are 12 percent (in fact, I know that some courses accept up to 40 percent drawdowns), then any success they have may be as much a result of holding risk and having deep pockets as it is a result of a reliable trading strategy. Again, most traders either will not accept such terms or will quit the system when faced with such large drawdowns. Furthermore, the long-term chart for Nokia was almost identical, yet that stock performed far worse. If remaining long on Motorola was a good trade because its long-term trend was strong, then remaining long on Nokia would have appeared to be a good trade, too. It is only with hindsight that we can separate the two stocks.

Data such as earnings and economic data are perhaps easier for us to trade because we know in advance when they will be announced, what is expected by analysts, and what the market is pricing in. However, there is a constant stream of news and information being released that is not known in advance—news such as takeover announcements, changes of directors, and even geopolitical events. This is part of the randomness that efficient market hypothesis supporters suggest means that we cannot profit from past price history. While it may be true that sometimes the conservative and representative biases mean that markets can be slow to react to news, this is not always the case, as we saw with both Nokia and Motorola. In this instance, the market reacted immediately to the earnings data. Similarly, when, for example, in late 2004, an investigation of insur-

ance firms was unexpectedly announced, their share prices dropped immediately. We cannot just ignore these types of incidents, because they are always with us in this business.

Considering this, believing in trends and believing that the trend is the most likely direction of a contract seems to suggest either that all news in known in advance or that news is unlikely to have an immediate impact on a contract. The contract will be slow to change direction, and we will have time to exit a trade. This is where all the reversal indicators and patterns are supposed to be useful. But this is a huge oversimplification and nothing more than a rule of thumb.

Rather than believing in trends, which I have already suggested is a form of representativeness, we should judge each day or each moment on its own merits. We should ask ourselves the question, "How does the market or contract look right now?" as traders who have been trading this contract in the past did not know what we know now; they were only making guesses. That's why there are so many "surprises" in our business; people just assume that the market is always right. As I discuss later, all assumptions are dangerous. This is also why I do not believe in the predictive power of long-term trends. Sure, if we plot a graph of a contract, we are likely to see the appearance of long-term trends, but I suggest that the trend is a culmination of a succession of individual decisions and days rather than some kind of collective thinking in which traders early in the trend "knew" something. For this reason, I think it is far safer and better for traders to concentrate on shorter-term trades of no more than about a week or so to begin with, based on news or information that we know. If others want to take the "trend" further, then we will ride our winner as long as possible, but we should keep a tight stop-loss order for protection.

It is also interesting to revisit my claim in Chapter 3 that the head-and-shoulders pattern could not have been created by market sentiment because both a completed and a failed pattern were identical until they reached the neckline. That one breached the neckline and the other bounced from it must therefore be the result of whatever was happening on those particular days and not before, so the history is irrelevant. Furthermore once the contract has breached or bounced from the neckline, whether or not it keeps moving in the same direction will depend on what happens each day thereafter.

In the same way, it is worth looking at the similarity in the trading of Nokia and Motorola prior to their announcements in the context

FIGURE 8-3

Source: www.bigcharts.com.

of what happened later. Figure 8-3 is a comparison chart of the two stocks together with some technical indicators for Nokia.

We can see in the top graph that Nokia and Motorola shares had basically correlated very closely until Motorola's announcement. This being the case, both stocks would have generated very similar results on almost all technical indicators during this period. Yet, as we can see, the outcome for these two stocks could not be more different. Was the market ahead? What can we claim about the effectiveness of these tools? There appears to be a big discrepancy between these two sets of results, one that can perhaps be explained by the suggestion that markets are not always ahead and that they price in expectations that can sometimes be very wrong. What we are seeing is a situation similar to the head-and-shoulders explanation: the two contracts are trading almost identically, yet the outcomes are very different. The technical indicators cannot be assumed to be predicting anything. Therefore

using only indicators such as these and not understanding context should be viewed as very dangerous.

While, of course, someone looking back after the event may be able to find an indicator or some other technical tool that appears to work for each stock, the fact is that up until the earnings announcements, both contracts were trading in the same way, and so it would have been almost impossible for someone to look at both sets of indicators or charts and decide that for the future, they would need to use completely different tools. This ties in with the evidence we saw in Chapter 4 that the tool or indicator that had worked the best in the past performed poorly in the future. As I have already stated, it is only with the benefit of hindsight that we can separate these two stocks.

There is actually a third discipline that we should use in addition to understanding context and weighing possible outcomes, and that is to look for information outside of the contract we are trading or considering trading. Many technical traders do not believe this is necessary because everything is in the price, yet we have seen that Motorola was affected by news from another stock that would not have shown up in the graph until well after it was announced, and we shall see further evidence of this in the next chapter. When we are analyzing a trade, we need to look for disconfirming evidence, and this will be found only outside of the graph or data we are reviewing.

FREQUENCY OF TRADING

To make more rational trades, we need to forget about buying and selling just because a contract has been going up or down and concentrate on the occasions when we understand why the contract has been moving, what is influencing it, and what might happen in the coming days or weeks. Sure there will be far fewer of these situations, but I firmly believe that there are far fewer opportunities than most traders think. What many traders see as an opportunity is likely to be risk or noise. This is actually a very important point, as overtrading among private traders in particular is well documented. With so many technical patterns and indicators available, those who have received technical tuition will find many more reasons to trade than I will. However, many of their trades will be based on noise rather than information or properly reasoned analysis. If weighing possible outcomes and expected returns leads to your trading less frequently, then this is probably a change for

the better. I do not want or need to trade every move in a contract, nor do I believe that all moves are rational or the most logical one.

Of course, to work out a figure for expected return, we must have a realistic idea of the profit potential for a trade. Not only have we seen that technical tools are poor at predicting market trends, but we saw evidence in the studies on the head-and-shoulders pattern that target levels suggested by technical supporters are far from accurate or realistic.

Working out the profit potential of a trade requires an understanding of why the trade is being established, what are the reasons for the trade, and what are the prevailing conditions. Obviously, once a trade is established, it should be reevaluated at least every day, and possibly the original estimate of profit potential will have to be adjusted. If this occurs, then we need to work out a new expected return figure and decide whether the trade is still worthwhile. But as the contract moves, the expected return is likely to change, and we must be aware of this.

Working out a realistic target and expected return should also be the main determinant of our stop-loss orders. I read a lot (mainly from technical tutors) about how we should back-test a contract and then set stop-loss levels in relation to how the contract has traded previously, using technical measures such as average true range (ATR). I therefore often see traders and tutors recommending stop levels such as three times ATR as the most effective.

But I have two major concerns with this type of analysis. First, there are my concerns with back testing itself and the fact that we are establishing positions, and in this case stop-loss levels, based on yesterday's market. If tomorrow's market is different, as it inevitably will be, our results are almost meaningless.

Second, in my opinion, the stop-loss level should be directly linked to the profit target and nothing else; by doing this, we make sure that the risk/expected return is in our favor. So if we believe that a trade could make us 7 percent, our stop-loss level initially should be a fraction or percentage of that number, say 1.5 or 2 percent. By doing this, we know that we are not risking too much in relation to what we expect to gain.

Because technical indicators are such poor predictors of market moves and the targets are often poor too, if a trader enters a trade just wanting to run the trade as far as possible and then sets a stop-loss level of say three times ATR, there is a distinct possibility that his risk may not be in proportion to his reward. Let's say his stop-loss level is

5 percent and he ends up with a profit of 5 percent. While he may be pleased with his profit, risking 5 percent to make 5 percent is not a great trade. It has a poor expected return, and this trader may find it hard to have a sustainable career.

I understand that working out a realistic target and expected return may seem difficult to begin with, but these are techniques that can be improved over time. No one should expect to become a great trader overnight, and if we set ourselves a target of improving every year and making better decisions every year, we stand more chance of reaching our own potential, however great or otherwise that may be. Of course using other people's assumptions, such as trend following, entry and exit points, and target levels, will make it easier for us to trade and will especially appeal to new traders who want to get up and running quickly, but as we have seen time and again in this business, easier is not necessarily better.

SUMMARY

I want to reiterate a couple of final points. First, although the process of understanding context and weighing possible outcomes is more easily illustrated for earnings announcements, we should use the processes for every trade we do, not just when faced with such data. Information and news hits the markets on a steady basis, and although only trading at these times will lower our frequency of trading, I believe that as long as our analysis of context and possible outcomes is correct, these are better times to trade and offer opportunity rather than risk.

Second, I do not want readers to go away with the impression that they can construct a trading style along the lines of selling a stock that has risen sharply ahead of its earnings and vice versa. This would again be a rule-of-thumb trading style. Every trade requires an understanding of context and due diligence in order to avoid poor rule-of-thumb conclusions.

An interesting thing that I have found over my years in the business is that a great many good traders that I have encountered are also good gamblers, especially in sports spread betting. In fact, many of the originators of sports spread betting were traders who wanted to combine their love of sports with their ability to trade and at the same time have the added benefit of taking the other side of the general public's bets, a sure-fire way to generate consistent profits. One of the major

factors that separates professional gamblers such as these and the people who spend all day in betting shops is that the former do not bet on every race or even every day; they place a bet only when they have a good knowledge of the event and are happy with the expected return on the bet. I have often heard statements such as, "I think Arsenal should win the game, but at 3/10, the odds are not worth it." These guys are betting not on outright probabilities but on expected return, and they bet only when they see an opportunity, which may not be that often. Those who spend all day in betting shops obviously think that there are opportunities to make money, but in reality there are not that many clear opportunities on any given day. Many of this group, too, have systems that they use, but in reality these are no more than excuses to bet (actually, they are excuses to overbet).

Similarly, for day trading purposes, while technical traders like to pick the levels to trade from, I, like many bank flow traders and futures pit locals, prefer just to scalp or flow-trade the business that inevitably enters a market. By doing this, we are acting like bookmakers; we try not to have too much at risk on the outcome of an event, but rather try to trade in and out of other people's money. If a bookmaker receives lots of bets on a certain horse, for example, he will usually lay some of those bets off with another bookmaker. Sure, at times he has to carry some risk (although we as flow traders do not have to), but most of the time the bookmaker makes his living from trading in and out of gamblers' money. In recent years, banks too have recognized that with such good volumes going through our markets, there is no longer a need to take on great risk, and more consistent profits can be made just from trading the flow of business.

PRICING IN AND EMH

The notion that rather than being ahead, markets price in certain expectations actually fits quite well with a description of efficient markets given by Christopher Neely of the Federal Reserve Bank of St. Louis in his paper "Technical Analysis in the Foreign Exchange Markets: A Layman's Guide." Neely suggests that the term *efficient markets* "means that at any point in time, asset prices represent the market's best guess, based on all currently available information, as to the fundamental value of the asset." Here the phrase "the market's best guess" is important, for this incorporates both rational and irrational

analysis. For example, if there are enough trend followers, then the market's best guess will include their representativeness. As we saw with the Motorola example, if we can understand why the market is guessing that a certain outcome will occur, we can try to make a better judgment. But because of irrationality, lack of knowledge on the part of some participants, and other such factors, the market's best guess may not be very accurate. The boom and bust of dot-com stocks was a classic case of this. Those traders who drove the shares up to ridiculous levels did not know anything; they priced in their expectations, which were too high. For various reasons, it was not possible for rational traders to arbitrage them away.

NOTES

1. His exact reply to this point was as follows:

   > "[H]igh risk market conditions like the election of the US President."
   > Unlike all the stupid dumb polls, the Iowa futures were always predicting a win for shrub.
   > For some weeks before Nov.2 there was definate [sic] bullish divergence and
   > subsequent price action on the Dow and SP.
   > Mr.Market knew all along and put his grubby cash on the table.
   > Follow the $$$ money

   I maintain that the market could not have "known" that Bush would win when his victory came down to 100,000 votes in a state of 5 million (which, incidentally, was Ohio, not Iowa. Iowa was close but had only seven electoral votes). But this is a clear indication of how such technical traders think differently from the way I think. I am not sure if this trader has ever worked in the industry, but from my dealings with fund managers, hedge fund managers, bank traders, and the like, I do not recall any ever knowing the outcome of elections or earnings in advance. They might speculate based on whatever analysis they do, but speculation is about all it is.

2. I am sure that out of the hundreds of technical indicators, there will be one or more that "predicted" both the fall and the subsequent rise in Motorola shares, but there is no doubt that right after Nokia's results, Motorola would not have been picked as a short by most technical indicators, and similarly, the day before its earnings, most indicators would have seen it as starting a downtrend.

Which Market Is Ahead?

Technical analysts teach that the market is ahead and we should follow the trend created by the participants, but what happens if, as often happens, we get conflicting views? Figure 9-1 is a graph of the FTSE index from September 2004 to February 2005.

We can see that from the September-October period onward, the U.K. stock market has witnessed a substantial rally, and if we take the view that the market is ahead, then the situation looks bright for the U.K. economy and U.K. companies.

Yet if we look at yields on U.K. government bonds, we see a completely different picture. Figure 9-2 shows that these yields have fallen considerably over the same period.

Yields on 10-year U.K. government bonds have fallen from 5 percent to 4.5 percent over the same period (30-year yields are down to 4.35 percent), and with the Bank of England's overnight lending rate at 4.75 percent, the yield curve has become inverted. For those who have not studied bond markets, an inverted yield curve is the bond market's way of telling us that a recession could be looming. For bond investors to accept a yield of 4.5 percent for a 10-year loan when overnight rates are 4.75 percent suggests that they think that rates will be falling. The usual cause of this is a slowing economy.

FIGURE 9-1

FIGURE 9-2

So it appears that stock and bond investors have completely different views, and this would again appear to contradict the idea that everything is in the price and the market is ahead. Which market is ahead? Do stock prices reflect the recessionary views of the bond market and do bond prices reflect the positiveness of shareholders? Traditionally the bond market has been viewed as the more reliable indicator, but this is by no means set in stone. In mid to late 2003, U.S. bond prices fell sharply because bond traders had wrongly expected the U.S. economy to slow down.

At the time of writing, all I can say is that the assumption that participants monitor and price in all information is not so straightforward. Over time, we would expect one set of investors to be wrong, but at this point we cannot draw any conclusions as to which set.[1]

I have already shown that it appears that many private traders may have little or no knowledge of bond markets. While I do not doubt that going with the uptrend in U.K. stocks has been profitable, there is a distinct possibility that traders who do so are being rewarded for taking on risk. While the market that they are looking at (and that they believe is

pricing everything in) is pointing to a continued strong economy, the markets as a whole are undecided. Once again, the markets look completely different to me from the way they would look to someone who is just trading the FTSE. If it turns out that shareholders are wrong, then those who are long are relying on any change of direction being slow so that they can exit their trade without too much damage.

I can hear many readers at this point saying, "But being long the FTSE has made money, so it has been right to follow the trend." But if these profits have been the result of assuming risk rather than trading in a responsible manner, then such traders should not expect a long career. Without a doubt risk can be rewarded, but to succeed over time while assuming such risk will require luck, not skill. I should, of course, add that the same is true of traders holding long Gilt positions.

Buying stocks because the stock market is rising is a form of confirmation bias, which we have seen is a flaw in the way many people make decisions. If we want to make better decisions, we must try to look for disconfirming evidence, which by nature can come only from another contract or product. Technical studies of divergence, volume,

and other such factors have not proved reliable enough in this regard. A better way to find disconfirming evidence is to look at other products and see what the participants in the markets for those products believe. As most stock market participants trade from the long side, it is better to look for clues from a different set of investors, which is where the bond market is so useful. If stocks are rallying and bond yields are also rising, then both sets of investors are in agreement and we can be more confident in both buying stocks and selling bonds. But if, as in the FTSE/U.K. yield example, their views are completely different, then we can draw no conclusions on either product, and we should not trade. Believing that everything is in the price makes many technical traders look at charts in isolation, and this, I suggest, can be a serious flaw. I do not doubt that trend followers have made money up to this point by being long the FTSE or bonds, but my argument is that I want to make good decisions and that only by making good decisions will I be able to enjoy a sustainable career in this business. If I decide to just chase profits, then I may end up making poor decisions or assuming risk. Of course, traders who do not look for disconfirming evidence or, for example, are unaware of the bond markets cannot and will not know that their profits or losses might be the result of assuming risk or a poor decision. They will also be more prone to the "unforeseen" event.

Once again I have seen and read many of the more experienced and smarter technical analysts analyze a market in the context of what is happening in other markets around them, which to me suggests that they realize that each graph may not contain all the information that others suggest it does. In my opinion, either you believe that everything is in the price and the market is ahead or you don't, and if you don't, then you shouldn't follow trends just because they exist.

NOTES

1. There is also the possibility that inflation might rise and the economy slow down, in which case both sets of investors might lose.

Be More Proactive

We know that "everything is in the price" and "the market is ahead" are two assumptions that are behind almost all technical trading, including back-testing methods and trend following. So a stock that is rising is doing so because participants have digested all available information and believe that it is positive for the stock. As perhaps some participants are quicker than others and the momentum will continue, it is suggested that we jump on the trend, as the market is ahead and this is the path of least resistance.

If we go back over some of the evidence presented earlier in the book, we can already start to see some problems with these assumptions, and perhaps we should seek some ways to avoid them. My own experience and some studies, including that of Scott, Stumpp, and Xu,[1] suggest that underreaction to news can lead to the momentum effect. While to some degree some forms of trend following and momentum trading may take advantage of this, we have also seen that momentum traders will not know whether they are early or late in the cycle. More importantly, if we believe that momentum is a result of investor underreaction to news, then surely a way to make sure that we trade early in the cycle is to follow news and data. We can see a kind

of food chain start to develop, one that I have already alluded to in Chapter 3. When news or data are released, bank traders will usually react first. They will be followed by other news watchers and the more knowledgeable technical traders who follow fundamentals as well (but in some cases will not tell their followers this). Finally, we will have the rest of the technical traders, who need to rely on the trend or momentum continuing for even longer in order to make money, something that they will never know in advance (we have already seen that, contrary to what they are told, large volume does not indicate a better chance of the momentum continuing). I suppose that one way to improve their chances is to encourage more traders to trade in the same way; perhaps this is one reason that the tutors teach these methods, as the more followers they have, the more chance they have of making money because the teacher should always be ahead of her students. However, this type of scenario more closely resembles a Ponzi or pyramid scheme than a reliable trading method.[2]

When I analyze the performance of the three groups, it appears that the first group (i.e., bank traders) is the most successful and the last group (private traders, technical and otherwise) is the least successful. While bank traders also make money from client flow, bid/offer spreads, and so on, I still think that this conclusion holds true. Despite what many technical tutors might suggest, news and data are important and are monitored and considered closely by bank traders. My belief is that if we accept the idea that this is true and that, while there might be a momentum effect, we can never be sure how large it will be or how long it will continue, then we are better off trying to move ourselves up the food chain by watching these fundamental aspects and reacting more quickly. I see little long-term reward for always being late on a trade, and the performance of most technical rules that we have studied seems to agree with this. As I have already discussed, not only do most forms of technical analysis seem too hit or miss for my liking, but they are too reactive. My suggestion is that if we cannot move ourselves up the chain, then we should stay out of the business, as there is little chance of achieving long-term success from being in the third group.

Of course there will be occasions when trends or momentum develop without any news or data, so what should we do? We could look for confirming or disconfirming evidence from correlated contracts for clues. But really, if we can't understand the reason for a move, we should not trade it. Having seen that technical methods seem to be little more than rule-of-thumb techniques, we should trade only when we have a good idea of context. As I have outlined already in Chapter 3, I believe that context is a vital element in trading, and as I showed in Chapter 8, understanding context and data can lead us to completely different conclusions from those arrived at by technical analysts.

If we believe that markets can reflect the irrational heuristics described by behavioral finance supporters and therefore are not always ahead but price in certain expectations, then we should not simply follow others' actions. We should try to discover the context of the move and weigh possible outcomes. In essence, what we should try to do is to make our own decisions. Trading and investing is all about making decisions under uncertainty and while I can appreciate why people use all kinds of shortcuts to help them, these shortcuts are more like hindrances. We should try to make our own decisions and find out for ourselves whether we are capable of making good decisions.

We must also remember that the essence of trading is trying to work out how a contract might trade in the future. Too many traders spend long hours analyzing the past, then just assume that past patterns will be repeated rather than spending the time trying to analyze what might happen in the future. No matter what software one has, I do not believe that anyone gets a real edge from analysis of past data without being able to apply those data to the future. However, as I have already explained, doing this requires information that is not on a graph or in past data. In my experience, looking beyond the graph (off the right-hand side of a chart) is often what separates the better traders from the rest.

LEARN HOW TO FISH

Using someone else's techniques, whether they are chart patterns or back testing moving averages, because that person suggests that these techniques have worked in the past is a way of getting out of making our own decisions. The same can be said of all the very popular trading and investing "tip" newsletters. To paraphrase a well-known expression, people would rather be given a fish than learn how to fish. However, it is highly debatable whether they are actually getting fish for their money, while the fishmongers grow ever richer. In fact, I

recently read that two guys who started a trading software firm here in Australia a few years ago are now among the top 10 earners in Western Australia, according to one of those "rich lists" that newspapers like so much. I wonder how many of their clients are doing as well.

Our only protection is to learn how to fish. Learn about as many markets as possible and how they work. Try to understand why markets are moving the way they are. I personally do not think there are explanations for every move in a contract. All contracts may move every day, but, despite what journalists might suggest, there are not always clear-cut explanations for every move. Many traders will be trading on noise rather than bona fide information, noise such as conservatism and representativeness, which includes technical analysis. However, having seen the results of thousands of technical indicators, we should not accept the idea that we should be buying because others are buying and selling because others are selling. We must learn to make our own decisions, and proactive ones at that.

The Nokia-Motorola example in Chapter 8 clearly shows the benefits of this approach, and an early client of mine recalled a similar story. He and many of his friends had bought shares in a small-cap nickel-mining firm that was about to announce the results of a series of drilling tests. There were to be about seven announcements in all, and over the period in which they were being released, the shares rose sharply. With only two announcements left, my client, having read my course manual, decided that the stock price had already priced in good news and decided to sell his shares. He had bought at about 80 cents, and he now sold at around Au$1.80. His friends were mystified as to why he would sell before the final two results were announced, and they seemed vindicated when the shares traded just above $2 a few days later. However, about a week after my client sold, the final results were announced; they were good, but the share price began to fall sharply. In one day the price fell more than 30 percent with very little chance to sell, as there were just too few bids. About two weeks after my client had sold, the shares were trading at around $1. None of my clients' friends had been able to get out during the down move.

My client was rewarded for weighing possible outcomes and making a proactive decision. Sure, some technical indicators may have suggested that the stock was overbought in the short term, but the trend of this stock was clearly positive (I am sure there is always one technical indicator that in hindsight forecasted any move, but there are

just so many to choose from). By waiting to see how the market reacted to the news, his friends were trading like reactive technical traders, and by the time they realized that the market was falling, it was too late to act. It has taken a year and a half for the shares to rally to near the previous highs, and as I write this in February 2005, they stand at Au$1.70.

It obviously takes confidence to make proactive decisions, especially in the face of peer pressure, but this is what we must be prepared to do. I see no comfort in losing just because everyone else loses, too. By making our own decisions, we can see if we are cut out for this business and can also try to understand the reasons for our results and thus try to improve our decision making. It takes time to hone this skill, but no one should expect to become a great trader overnight. However, I would rather set a high target of trying to make such good decisions rather than setting a mediocre target and using a hit-or-miss technical indicator or system. In my experience, it is being good at this kind of decision making that separates the good traders from the bad or the lucky. It is not about who has the best back-testing software or who is the best at assessing chart patterns, and I want readers to clearly understand that for most of them, understanding chart patterns or using back-testing tools on past data will not lead to a long-term career in this business. Making proactive decisions that are a result of weighing possible future outcomes may well mean that we do not sell at the high or buy at the low, but we should not be too concerned by that. I will leave it to those clever chartists to find the tops and bottoms that I am either not clever enough or not lucky enough to pick consistently. Unlike many private and technical traders, we should aim to trade the markets, not beat the markets.

BE WARY OF ASSUMPTIONS

Assumptions are all around us in the markets. We all hear statements such as "stocks always go up in the long run," "the head and shoulders is a reliable pattern," and "the market always rallies in December." However, we have already seen how many of these statements are in fact false, although they have been able to build up an illusion of validity over the years. I would suggest that believing in and using such assumptions and generalizations should play no part in our decision-making process. We should trade only on what is happening at the

time we are trading. If that is against the accepted wisdom, then so be it, but the past is the past, and even if stocks have risen every Friday, October 12, since markets began, this should not be a reason to buy this Friday, October 12, or Thursday, October 11 (please note that I have chosen a random date as an example of the type of thinking I am describing). This again is representativeness and is a poor way of making trading decisions.

I have seen all too often how assumptions can lead to disastrous consequences even for investment bank traders. While trading Japanese convertible bonds in late 2001, I became increasingly concerned that many bonds were overvalued, and I argued fiercely for others to reduce positions. However, those who had traded them longer than I had argued that there had always been buyers for these bonds because of inflows into hedge funds, there had always been a liquid underlying credit market, and concerns that bonds were overpriced because they did not factor in the chance of their being called by the issuing company at a loss for the holder were unfounded because no Japanese CB had ever been called. These were widely held assumptions in the Japanese CB market at the time.

So when, in the midst of these heated arguments, a bond was called by the issuer, the credit market in all bonds dried up, and buying interest disappeared, CB prices collapsed and caused substantial losses to all those who ignored the warning signs. Suggesting that certain events cannot happen in the future because they have not occurred in the past is a fatal flaw in many traders thinking and we must avoid that. Nassim Nicholas Taleb again writes well on this "black swan" problem in *Fooled by Randomness*. Most forms of technical analysis are prone to this because, as we have already seen, they can base their decisions only on past events.

EVEN THE REFERENCE DAY CAN BE IMPORTANT

In 2004, D. Acker and N. Duck of the University of Bristol in the United Kingdom published a fascinating study titled "Estimating Betas and Stock-Return Correlations from Monthly Data: A Warning Note." The authors wanted to test whether for measures such as company betas (basically, how closely a stock tracks its index) and market correlations, the choice of reference day for the period of the data

would have any effect on the final measure. Company betas, for example, are widely published by certain organizations and are accepted and used by fund managers in particular. To my knowledge and that of the authors of this study, it had previously always been assumed that the start or reference point for the data used to calculate the beta would have little impact on the number. It was believed that if we took any given sample period, say one month, and calculated the beta for a stock, the figure generated would be the right beta plus or minus a very small margin of error.

However, the authors of this study actually found that in some instances, the choice of reference day, even during the same period, could lead to significantly different results, even though the difference in reference days could be a maximum of only 27 days. For example, for one U.S. stock, using one reference day generated a beta of −0.41 and using another generated a beta of 3.00, a huge difference. Traders who used different reference points would therefore form completely different opinions of how this stock trades in relation to its index. Furthermore, we can see that no one can truly be sure of what the "real" beta is for such a stock.

Similar results were seen when studying market correlations. For example, in one study of the period 1998–2002, the correlation of returns between the U.S. and U.K. markets would have been about 70 percent if day 12 had been selected as a reference point, but 90 percent if day 23 had been selected.

The ramifications of this study are many and varied, but for now I want to emphasize two. First, once again we can see the dangers of assumptions. Previously data such as betas were assumed to be pretty much accurate, and the choice of reference day was assumed to be almost irrelevant. Even these widely held and used assumptions have been shown to be untrue.

Second, this is further evidence that the results of back testing can be no more than a rule of thumb. Among the many other concerns that back testers should have, they must now test their findings for reference-point discrepancies.

A majority of option traders also assume that the historical volatility figure that they use to analyze an option's worth is an accurate measure of a contract's volatility; in reality, this is not always true. Once again, most people are prepared to just accept what is told to them and are reluctant or disinclined to look outside of the box.

Asking questions can make one appear to be unintelligent, especially if we query basic assumptions, but the number of times I have asked someone to justify a seemingly basic statement, only to be met with either silence or some kind of a bluffed or stuttered reply is amazing. The list of assumptions in our industry is in fact a long one, and perhaps these too contribute to the failure of so many traders and investors.

So not only must we try to factor in events that may not have occurred in the past, but we should question everything we are told. I wrote how surprised I was at just how unreliable the head-and-shoulders pattern proved to be, and the more I have worked in this industry, the less I believe that what anyone tells me is fact. Many people see my continual search for disconfirmation of my own and others' theories as negative and at times cynical, but I am not concerned by this. I have seen and followed accepted assumptions as they have failed over the years, and I have now decided that "buyer beware" is a better belief. This is an industry that is full of vested interests, and we should be wary of accepting assumptions and statements such as those I have described.

NOTES

1. James Scott, Margaret Stumpp, and Peter Xu, "News, Not Trading Volume, Builds Momentum," Association for Investment Management and Research, 2003.
2. A Ponzi or pyramid scheme is one that requires new participants to pay the existing ones. Eventually they reach a certain level and then collapse. While I will not claim that this is exactly what is happening in the technical analysis industry, I do see how this situation can develop to some extent, as I have explained with the idea of technical analysis being at times a self-fulfilling prophecy. But while I am writing a book that will be considered by many to be controversial, I might as well bring up the idea.

CHAPTER 11

Learning from Behavioral Finance

I introduced the biases and heuristics of behavioral finance earlier in the book, and I now want to revisit this topic to find more ways to improve our decision making. We must remember that our aim should be to make sound and rational decisions, and the inference from behavioral finance is that we need to avoid biases if we want to do this. What I found interesting when I was studying behavioral finance was that its findings were not a surprise to me. I have seen these flaws firsthand in many traders over the years. I can also remember many poor decisions that I have made that were the result of using a heuristic, and it quickly became apparent to me that the better techniques that I had used and witnessed over the years avoided the biases and rules of thumb. So in this chapter I will revisit some of the heuristics and suggest ways of avoiding them.

REPRESENTATIVENESS

I explained representativeness as a bias that leads us to estimate the likelihood of something happening on the basis of how closely it resembles something else, whether information or noise, that we already know or something that has happened previously. Robert

Shiller gives a perfect explanation in *Irrational Exuberance*: "People tend to make judgments in uncertain situations by looking for familiar patterns and assuming that future patterns will resemble past ones, often without sufficient consideration of the reasons for the pattern or the probability of the pattern repeating itself."[1]

So we make conclusions such as, "The last time I saw chart pattern A, the market fell, so chart pattern A will help me predict market falls," or "People have been buying; there is an uptrend, and therefore the market will go up." This type of trading, which is clearly how many technical traders operate, is an obvious candidate to be considered as using the representative bias. I consider this type of analysis to be irrational and leading to poor decisions. This does not mean that it will always lead to losses (the odds are too good in this business), but poor decision making will not provide a sustainable career to most people who are prone to it. It can be no more than a rule-of-thumb trading philosophy and is not, as many supporters suggest, a robust or reliable trading technique.

We should not make such conclusions, but instead should try to understand the context of the past actions and weigh possible outcomes. As I showed with the Motorola example, by doing this, we can sometimes reach a completely different conclusion from that arrived at by technical traders. I also showed in Chapter 3 that the head-and-shoulders pattern, for example, could not be the result of sentiment, but rather whether or not the contract moves below the point regarded as the neckline is dependent on what happens at that point; the pattern itself has predicted nothing.

A further example of chartists exhibiting the representative bias can be seen by examining an Australian retail stock, Coles Myer, in late 2004. Coles Myer had been in an uptrend lasting many months as a strong domestic economy resulted in strong retail sales. Against this strong economic backdrop, the Australian bond yield curve had a positive shape, as 10-year yields were quite significantly above 2-year and overnight rates.

By late November 2004, however, 10-year bond yields had fallen sharply and the yield curve had become flat. Clearly the bond market was starting to price in some concern about the local economy, yet Coles Myer reached its high on December 6. Interestingly this was the day before an Australian retail sales number was released a number that turned out to be far worse than expected. Coles Myer had obviously

priced in positive data (I imagine that many traders were ignorant of the warning signs from the bond markets), and the stock began to fall.

While some technical analysts had previously stated their belief that the stock was overbought in the days and weeks leading up to the retail sales data, it is their analysis after the event that I want to concentrate on. As is typical of all chartists, their trading decisions, stop-loss levels, and so on were influenced by past prices and data. So we heard statements such as, "The old high of 28/02/02 offers some support" (this from a chartist in an Australian magazine in March/April 2005). However, these levels were created under a completely different set of circumstances. While some traders may believe that if they place buy orders around the previous high with a stop-loss order below it, they are trading in a disciplined manner, their method of trading is not based on what is happening in the here and now, it is based on the past actions of past traders acting under different conditions. The yield curve in Australia stayed flat to inverted over the next few months, retail sales data slowed, and the previous high did not hold. To believe that Coles Myer is likely to rally or hold certain levels because it has rallied or held those levels in the past without any consideration of context is using the representative bias. I wholeheartedly believe that by understanding context, weighing possible outcomes, looking at the here and now, and looking for disconfirmation from other markets, we can make better decisions.

I can certainly understand that using the representative bias makes decision making easier, but it leads to poor decisions. Our goal should be to make better and more rational decisions. We should also not be concerned if most traders we know employ this sort of representative-based analysis, for most traders in this business lose money. I am perfectly happy to have my views regarded skeptically by most private traders because I know that most of them will fail, and so I am pleased that I think in a different way. It is another interesting angle on the idea that we should follow the herd because it is assumed that the herd is right. We know that most fund managers underperform the benchmarks and most private traders lose money, so why should I follow them?

CONFIRMATION BIAS

Once traders have an idea for a trade, we know that they often look only for confirming evidence, believing that this will prove their idea. This is simply not true; the only way to prove an idea is to try to disprove it.

So when we trade, we should look for reasons why we might be *wrong* and should constantly reevaluate our trade objectively in this way. Until we find a reason why we are wrong, we can continue holding the position (while of course maintaining a stop-loss order as backup). The more knowledge we have about different markets, the better our chances of finding disconfirming evidence, if indeed there is any. In a way this process also helps to keep us humble and therefore avoid overconfidence, which is another behavioral flaw.

I came upon a great example of confirmation bias that showed, in particular, how it can lead to technically thinking traders developing mistaken notions. The example is taken from a popular Australian bulletin board. It involves a trading strategy described by one trader and eagerly followed by many others, as it seemed to be performing well. The originator of the trade wrote that he had started using this system in late 1999. The trading strategy itself basically involves buying stocks before earnings and dividend announcements, and with trading on margin and the effects of some tax implications, the strategy appears to be a winning one. (I do not want to cover the strategy in detail, but I think I have outlined the basics of it.) Without going into the merits or otherwise of the strategy (although it does seem like a bull-market strategy), I want to show how the moderator of the board went about proving the system.

Basically, in order to test the validity of the system, the moderator back-tested it for the years 2000 to 2004. But the originator had already told us that he has used this strategy since late 1999. The fact that by late 2004 he came onto a bulletin board and had established his own Web site suggests that this system has made money over this period. I doubt that he would be telling the world if he had developed a losing strategy; this is how the survivorship bias works. So if we test the system over the same period during which its originator has been making money, of course it will show excellent results. But this does not prove that the system works; this is confirmation bias at work. Others on the forum were highly impressed by the positive results, and for many it appeared that the system had been proven by this back testing. This is, I suggest, a typical example of how a technical or mechanical system can be accepted through misguided analysis.

The first step to proving whether the system works would be to conduct an out-of-sample test, that is, to test the system over a completely different time period, say 1970 to 1975. Perhaps the system is

making money now for reasons other than its being a good system. To prove the system, we need to look for periods and reasons why and when it doesn't work. I am not suggesting that the system doesn't work; what I am saying is that the moderator's tests do not prove it.

Once again, the overall performance of the system looked outstanding when viewed over the whole period, but this was not the whole story. For example, there was a period of one year in the raw results during which the system made little or no profits. During this period, the system produced 67 trades, which would have incurred commissions plus funding costs, as it is recommended that the trades be entered into on margin. To state that the system would have delivered outstanding profits over the period, which is what many on the board now seem to believe, suggests that even though a trader made no money for a year, he would have continued using it. It is only with hindsight though that we could reach such a conclusion. Only a very small percentage of traders would keep trading a system that has been unprofitable for a year, and they would need deep pockets and probably an alternative source of income. We are back into the scenario of any strategy might work if you have enough money to make it to the long run, but if it fails in the short term, then for most traders there will be no long run.

Most traders would have moved on to another system, and although those who had not lost their capital using the new system would be free to return to the dividend-based system after it became profitable again, their true profit is unlikely to resemble the back-tested figure. There is little use in finding a strategy that has worked in the past unless we can prove that it was possible to predict in advance when that strategy would make money. As we saw in Chapter 4, there is scant evidence that we can do this with technical indicators. Analyzing trades in this way is referred to as using hindsight bias and is another well-documented flaw in traders. One of its major implications is that it leads to overconfidence, and in this industry overconfidence is highly dangerous.

Another demonstration of confirmation bias and survivorship bias at work was illustrated in a magazine. Once again, it was one of Australia's most prominent supporters of technical analysis who, when writing about a Gann conference she had just attended, wrote of "two actual trading statements, one with over $500,000 profit and the other with over $1,000,000 profit from trading the most recent bull

market in soybeans using Gann analysis." The writer seems to think that these two statements help to prove the value of Gann analysis, but in fact they mean nothing. They are the ones we see because they are the winners, but what if over the same period there were 10,000 statements showing losses of even just $5,000? Two, even highly profitable, trading statements in no way whatsoever prove a system's worth unless we know that they were taken from a sample of three or four.

Examples such as those I have shown here perhaps help to explain why and how technical analysis techniques have been so widely accepted. They are being accepted and used based on the flimsiest of proof, and as long as enough people use them, there will always be some winners claiming that their success was a result of the technique.

Jesse Livermore showed that he could overcome confirmation bias in a story that was recounted in Edwin Lefevre's classic book *Reminiscences of a Stock Operator*. Livermore had been given a "tip" that a stock was being cornered and was set to rise. Over the next few days he proceeded to sell short large amounts of the stock. When he was revisited by the "tipster" and asked why he was short selling the stock in the face of the information he had received, Jesse replied to the effect that the only way to test whether there was truly good buying interest in the stock was to short sell it; buying the stock would prove nothing.

CONSERVATIVENESS

Conservativeness describes the tendency of many traders to cling to a view and be slow to change their opinions. It is closely linked to representativeness and confirmation bias. In order to avoid this flaw, we need to watch out for disconfirming evidence and then be willing to act if necessary, which could mean changing our opinion. I have seen and heard it suggested that changing one's opinion quickly is a sign of weakness or irrationality, but the reverse is actually true. Clinging to opinions when circumstances may have changed is an example of the conservative bias and should be avoided.

By reacting quickly to news and data or any disconfirming evidence, we are also making sure that we are acting on the most recent information. We should not be discouraged that we might have to exit a trade; rather, we should be grateful that we have spotted a potential

danger in a timely fashion. We should not hold any assumptions or trading philosophies or styles as 100 percent valid and should maintain a flexible and open-minded approach toward our trading.

ANCHORING

One way of avoiding anchoring to irrelevant levels is to understand the context of previous price action. If we know why a price was created, we may not rely too heavily on it the next time around. Also, if we believe in the concept of nonstationarity, we will not place too much emphasis on the past action of past traders. These past actions will influence only traders who choose to be influenced by them, i.e., technical traders. The use of support and resistance levels seems a good candidate for anchoring. They help make deciding on entry and exit points easier, but, as many studies have shown, they do not necessarily help us make better decisions. Anchoring in this way is a flaw in our thinking and must be avoided.

OVERCONFIDENCE AND OVEROPTIMISM

No matter how successful we are in this business, we should always conduct ourselves in a humble way. The markets are bigger than all of us, and we should never think that we have cracked them. In *Bull's Eye Investing*, John Mauldin succinctly writes, "You know less than you think you do," and I suggest that everyone heed his advice.

Statements such as "the head and shoulders is a reliable pattern" when it is probably far from being reliable will lead to overconfidence. The back-testing methods that many traders employ will lead them to be overconfident, too. These methods are influenced by hindsight bias, and, as I have explained, any probabilities that we find from back testing will be valid only if the future exactly resembles the past. This is almost (but not quite) an impossibility.

In an industry in which a majority of people fail, it is foolish to think that we know more than all the others or that we are more intelligent. We should remain humble and do our best, but we should enter the business with realistic expectations. Having such a mindset should encourage us to keep learning and to be flexible in our methods. This is one of the reasons why I dislike the "how to" books that embellish traders' reputations. The traders who write and star in these generally

attribute their successes to themselves and do not contemplate the idea that other forces may have been at work. They certainly do not consider the fact that many hundreds or thousands of other traders may have been trading in a very similar way, but with different results. We should try to read more books about where people have gone wrong in this business. Granted, these are more difficult to find, but there are some out there.

LOSS AVERSION AND COGNITIVE DISSONANCE

Having realistic expectations includes understanding that losses are an unavoidable part of trading and investing. While they are not nice, they are inescapable, and we must accept the fact that they will occur. If you cannot accept losses, you should not trade. Unfortunately, many traders and investors, especially overconfident ones, struggle to come to terms with losses. When we play contact sports, we don't like to take hits or suffer injuries, but we have to accept the fact that they will occur. Just as injuries are an unavoidable side effect of contact sports and those who do not want to suffer them may decide to play noncontact sports or just to watch others play, anyone who feels that she or he cannot face up to losses should forget about trading.

Actually, it is more than just facing up to losses; we need to face up to bad decisions and quickly admit our mistakes and rectify them. If you are one of those people who, when faced with a mistake, says, "Don't worry; I'm sure things will work themselves out," you could be in trouble. In trading and investing, we see this in statements such as "the market always comes back" and, after a trade starts to lose money, "I'm in it for the long term." There may not be a long term for these traders. So in this way, cognitive dissonance is linked with conservativeness, and the suggestion is that if we are flexible and open-minded, we will see that exposing our previous mistakes is a positive, not a negative, technique. We should congratulate ourselves on finding a potential flaw in a trade rather than focusing on facing up to a previous bad decision. We should always aim to make the best trade we can based on the information that we have at the time. If we discover new contradictory information or if new information is released after the trade, this does not necessarily make the original decision a bad one, but now that we have new, disconfirming information, we should exit the trade.

One important discipline is to maintain a tight stop-loss order. It is one thing to suggest that we accept losses, but if those losses are large, then this is hard to do. So if we keep our losses small, we will not be too distressed by them. I always say that I am happy to take small losses because it means I shouldn't have large ones; it's the large losses that obviously cost careers.

Cognitive dissonance must also be more of a problem for technical traders because they do not know when or why their techniques will make money. Someone who trades after a head-and-shoulders pattern or as a result of back testing and subsequently loses money cannot learn why the trade failed, especially as technical traders are told to ignore fundamentals, news, and so on and look only at the chart. If we can learn from our losses, we will not be so troubled by them. That is why I believe that trying to understand why we are making or losing money is so important. I cannot understand traders such as Tech/A, who, as I described earlier in the book, says that he doesn't care why he makes money just as long as he does. I think the idea that the ends justify the means is a foolish one, and I also struggle to see why traders do not want to understand the source of their profits or losses.

During and after writing this book, I delivered presentations on my views and findings to groups of private traders in order to get firsthand feedback and, hopefully, to get an idea of where I would be challenged. While I have been encouraged that most of the feedback I have received has been positive, I have obviously attracted criticism from some technical analysis supporters. In this epilogue, I will discuss the areas where I have been challenged and my responses.

When I wrote in Part 2 of the book that we must challenge everything we are told, I include my own work. I have already stated that I am always looking for reasons why I might be wrong, and thus I openly encourage direct feedback and constructive criticism. I reply to all e-mails and telephone calls and warmly embrace debates on this topic.

Until now, I have actually been disappointed with the response (or lack of it) from technical supporters. I was really hoping for interesting and intelligent counterarguments, but so far the criticisms that have been made have been quite poor. The most often made and at the same time most general criticism leveled at me is that I misrepresent charting and technical analysis, that technical analysis is not what I suggest it is.

I will approach this criticism from a couple of angles. First, when I have attributed a claim to technical analysis, I have almost always tried to include a statement supporting the claim from a well-respected technical analyst, publication, or Web site. Second, I do not think that anyone who has read charting or technical literature can be in any doubt that we are told to believe assumptions such as, the market is ahead, chart patterns are formed as a result of investor psychology, the head and shoulders is a reliable pattern, and so on. So I maintain that most, if not all, of the claims that I attribute to technical analysis supporters are valid.

I realize that many technical analysis supporters and tutors acknowledge that their methods do not offer an easy way to profit from trading, but I am trying to explain why their methods of analysis might be flawed. There are, however, also many trading "educators" who *do* suggest that people can trade profitably by performing relatively simple analysis, and I hope that, using some of the arguments in this book, the general public can ask these firms to substantiate their claims under more intense scrutiny.

Another criticism that I have received is that I confuse technical and mechanical trading methods, and that they are very different. To this I say that, rather than confusing them, I am arguing that both in fact have flaws. While in this book I cover technical, mechanical, and charting techniques because I classify them all under the general heading of technical analysis, I hope I have shown arguments against each of them on its own as well as all of them as a group. Many traders who use more mechanical methods have acknowledged my arguments against chart patterns and the so-called psychology behind them, but argue that what they do is very different. While I agree, I still think there are severe limitations to their approach and to back-tested techniques.

One supporter of technical analysis claimed that my argument against the head-and-shoulders pattern being the result of psychology because of the similarity between a failed and a successful pattern is false because I did not include volume, and volume is very important in determining a real head and shoulders. Once again, I counter this argument about the importance of volume by suggesting that if volume is so important, then these techniques cannot be applied to the currency markets. Yet technical analysis and charting are heavily used in Forex markets; in fact, they are used more often in the analysis of currencies than they are in the analysis of equities.

Because I tell my audiences that I do not use technical analysis, I have been accused of knowing little about the subject. So I would like to reiterate that I have studied the subject under very highly rated tutors from both the United States and the United Kingdom, and during my time in the futures market, I was also heavily exposed to technical analysis. As a matter of fact, it was during my time in the futures industry that I first became aware of just how poor the results of technical analysis were for most people who used it. With regard to more mechanical methods, I have explained that I have seen traders apply

these methods on some bank desks that I have worked on, and that not only did I regard these techniques as poor, but when they did fail, it was usually quite straightforward for a senior experienced trader to understand why. For those who argue that in that case, couldn't the senior trader program this information into the system, the answer is not always that simple. Context and weighing possible outcomes, for example, are not that easy to develop a system around (from what I have seen so far). But I do not discount the possibility that in the future we may develop better programming skills and may therefore develop more flexible systems. Technical analysis will thus always evolve and may improve, but I believe that in the years to come, many of the techniques and indicators that are used today will be discarded. I want to restate, though, that I never set out to be anti–technical analysis; it is just that my experience of the markets and then the research for this book have led me to believe that there are better methods of trading and investing.

Another common criticism, and also the most infuriating to deal with, is that certain techniques cannot be that poor because some well-known traders are on record as claiming that they make money from them. I have heard this claim about all aspects of technical trading, but in particular about well-known traders and hedge fund managers who employ techniques that prove profitable even though the reliability of each trade is only around 40 percent. First, we must always remind ourselves that we see only the winners. I do not doubt that some traders make money using all sorts of techniques, but we must concern ourselves with how the majority fare and how large the sample size is. Hearing about a few traders who have made money using a certain approach is *not* proof of that technique's reliability or success. Besides, we cannot be totally sure that the trader stuck rigidly to the technique and did not sometimes incorporate other methods. Second, some of these traders either have second incomes (such as from teaching) or have large amounts of capital behind them (if they are managing a fund), and thus the string of losses that they will almost inevitably suffer may not be so hard to endure. Private traders must ask themselves how they would handle a string of losses that could last for months if they had no idea as to when they would end, only that apparently at some point they should reverse.

It has been suggested to me by some of its supporters that technical analysis only provides a set of guidelines that enable people to

make trading decisions and that any set of rules or trading approach runs the risk of using rules of thumb. I think that the first part of this statement has some truth in it and is a more likely reason for the development and use of technical analysis than the idea that it is a good measure of market psychology. It is a method that helps some people make trading decisions, but I strongly believe that there are better and more rational ways to make decisions. Also, if this is the case, then can technical supporters and tutors please be more realistic in their claims and remind their clients that their views are based on assumptions that may or may not be valid? Can they omit the words *forecast, simple analysis*, and so on from their literature?

As for whether any set of guidelines runs the risk of becoming a rule of thumb, this is a difficult area to debate. What I would say is that the methods that the good traders that I have seen use are based on how they actually observe markets to behave; they rely on few or no assumptions, but rather on the trader's own understanding of what is affecting his or her market. I have already explained my belief that assumptions are dangerous, and, in my opinion, technical techniques rely on too many assumptions. Good traders trade what they see, whether or not that fits with a previously used system or style. They make each decision based on its own merits according to what they see at that time. Applying the same type of techniques or system time and again in the belief or hope that it will be profitable in the long run, while rendering decision making easier, does not lead to better decisions.

At the end of the day, however, the markets are all about different views, and I obviously do not expect perhaps even a majority of private traders to agree with my opinions. I do not wish to become a "guru" with lots of followers; I just want to put some ideas into the public arena that private traders may not be that familiar with. At a presentation that I gave to a group of mainly technical private traders, one stated that many of my opinions directly conflicted with what he and others had been previously told and had used. He inferred that because of this, my opinions must have little validity. My reply was simply that as a great majority of private traders lost money, I was in fact happy to hear that my views and techniques were different from theirs. Similarly, the response from the professional traders who have read the drafts of this book has been one of general agreement with the views stated in it. But long may the debate on technical analysis and charting continue.

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APPENDIX

I have put forward many claims, beliefs, and hypotheses in this book, so I thought I would summarize some of them here.

Technical Analysis Assumption	Challenge
Technical tools and some chart patterns, e.g., head and shoulders, are reliable.	Studies show poor reliability even for the head-and-shoulders pattern.
Technical analysis studies market psychology/sentiment.	So why is it used on untraded data, such as economic figures?
	Is the psychology of a completed head-and-shoulders pattern different from that of a failed one?
	Behavioral finance suggests that technical analysis and charting could well be a heuristic that we use to make decisions under uncertainty rather than a rational or accurate form of analysis.
Volume is important.	Should technical analysis and charting therefore be used to analyze currencies?
	A study on momentum suggests that the link between direction and volume is not as straightforward as technical supporters would have us believe.
Technical analysis can be used on all products.	The psychology and makeup of different markets can be very different, so I do not see why we should apply the same form of analysis to all markets. If technical analysis is supposed to measure market psychology, then the psychology of markets can be very different.
Similar tools can be applied to both rising and falling markets.	Surely the psychology of rising and falling markets is very different and also differs from market to market.
	Studies on stocks also strongly indicate that the performance of technical tools on short sales is vastly inferior to their performance on buy trades.

Technical Analysis Assumption	Challenge
The markets are ahead.	Behavioral finance studies and the methods of technical traders themselves suggest that many traders base their trades on past activity rather than on what is available right at the point of trading.
	Sometimes different markets can show conflicting views; can they both be ahead?
Back testing can help us find strategies that will work in the future and will highlight the potential risks and rewards of those strategies.	Any results from back testing are valid only on the set of data they were tested on and will be a true representation of the risks and rewards only if the future is exactly the same as the past, an almost impossible event.
	Many studies have shown that the back-testing approach is not a profitable one, and that what has worked well in the past does not continue to work well in the future. It is only with hindsight that we can find the optimal trading strategy.
Charts and past data can show us the potential pitfalls and rewards of our strategies.	There are multitudes of other possibilities; because they have not yet occurred, chartists and technical and mechanical traders will assume that they cannot occur. This is a false assumption.

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