Technical Analysis Exposed

Why most technical analysis traders lose

ABOUT THE AUTHOR

Gary Norden's trading career started at the age of just 18 at a major Japanese Investment firm; he was the youngest ever trader for that firm. At 19 he was given control of one of the largest trading books at his bank as he had established himself as the most profitable trader in his department.

Aged 21 he moved to the trading pits of LIFFE as an options market maker, concentrating on German interest rate options.

At 23 he was asked by the UK's biggest bank, NatWest to head its LIFFE options team. Under his leadership they became the dominant firm in short term interest rate options.

A few years later he was approached by Credit Lyonnais Rouse to start up an options trading desk for them.

Gary later returned to the LIFFE floor to become a market maker in FTSE options. When LIFFE markets became computerised, Gary started to scalp futures.

In 2000 he joined ING Financial Markets as a market maker of Japanese Convertible Bonds before moving to trade the firm's proprietary CB book.

In 2003 Gary moved to Western Australia and since then he has traded and consulted to institutional, professional and a small number of retail traders. He has written for trading publications and internet sites around the world and been a keynote speaker at many trading events.

In 2020 he launched NN^2 Capital, a hedge fund.

Gary taught traders at every investment bank that he worked at and has developed an international reputation as a trader and educator of traders. He is known for his frank views and criticism of some aspects of the retail trader education industry.

Gary has written a futures scalping course manual which is only available from Jigsaw Trading at www.jigsawtrading.com/market-making-scalping-manual/

He is also the author of An End to the Bull

For more information visit:
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PREFACE

CHALLENGING THE HERD

I started writing Technical Analysis and the Active Trader a year or so after I left the City of London and moved to Australia. From when I first entered the business until I moved to Australia, I had only ever been involved in the professional side. I either traded for Investment banks or in the trading pits of LIFFE. I had very little idea how the retail industry operated.

That changed when I picked up a trading magazine in 2004; a magazine aimed at retail traders. I read through each article and could not believe my eyes. What I read in this magazine bore no resemblance to the industry I had been involved in for 15 years since the age of 18. So I bought more magazines and then attended seminars where the writers of these articles sold technical analysis products to retail traders. These were not the real junk operators; they weren't the ones promising easy millions from trading. These were some of the most reputable people in the retail trading education business, both in Australia and abroad. I knew that I needed to investigate further.

I know it can be hard for traders (particularly retail traders) to believe, but during my 15 years in the City of London I didn't work with one trader who used charts or technical analysis to trade. Sure, banks employed technical analysts but they were employed as sell-side people (more on that in my other book An End to the Bull). Similarly, technical analysis was popular among brokers too but they are also sell-side people. Traders have to think very differently to sell-side people. I know that many retail traders didn't know the difference between the buy side and sell side, they think that anyone who works for a bank must know how to trade.

However, I will acknowledge that things have changed in the professional world over the past 15 years or so. The biggest change, perhaps is that banks just don't employ as many traders nowadays. In fact, trading rooms of all descriptions have been in decline. An increasing percentage of business has been automated. One ramification of this is that trading skills are being lost; professional traders such as they are, have few, skilled traders to learn from. In my recent experience, the trading skills of many current bank traders and even many hedge fund traders leaves a lot to be desired. They are great at quant style analysis etc but they lack basic, yet essential trading skills. This is one reason why so many of them have a similar P+L profile nowadays to retail traders; they make money when conditions are easy or bullish and they lose as soon as conditions become volatile.

With the proliferation of online trading since I wrote the first version of this book, a whole new generation of traders has emerged. However, unlike the 'old days' when it was easier to work out who was a real professional and who was an amateur; online trading has blurred that picture. There are now so many people who call themselves professional traders it is impossible for new traders to really know who is a professional and who isn't. In reality, the real professionals can usually see through the fake people by the way they talk about trading and the words and phrases they use. But newbies don't have that ability to differentiate.

The other major change that has come about with the increase in online trading has been the growth in the 'education' business. It is undoubtedly the case though that the technical analysts have been the ones to exploit this. In turn as more and more 'education' is technical analysis based, I can see why new traders think it must be successful. As I will show though, the facts are clear that technical analysis is not a reliable form of analysis and most who use it fail. I explore the advertising of technical analysis early in this book.

I think we have reached a point where even many professionals (some of whom would never have used technical analysis back in the day) now think they have to incorporate it. It is now so widely used that people think it must have validity. Those like me, who suggest it has no basis at all are told that we must be wrong. However, I think the assumptions and philosophy that underlie technical analysis are inherently flawed so I can't consider using that style of analysis.

In this book I aim to dismantle the case for technical analysis in a number of ways. I will explain how the assumptions that underlie it are not valid; they do not fit with how markets work. I will show a number of research papers that study various aspects of technical analysis and demonstrate it's failure. Some even offer hints as to why it fails and as we shall see, those hints fit with my analysis of the flawed assumptions. I will demonstrate that the large majority of technical analysis traders lose. In fact though, this isn't an opinion, it is widely known. Technical analysis supporters though usually claim that these people aren't doing it right.

I show how technical analysts themselves do things that invalidate their methods. I will explain how behavioural finance shows that technical analysis and charting are types of short cuts that people use to help them make decisions; rather than being robust forms of analysis. I will finish by showing an example that I used in the original version of the book that I believe demonstrates the ideas I have suggested.

I wrote the first version in 2005/6 and while I am aware that many technical analysis supporters don't like what I said, so far none have offered counter arguments to the ones I make. Not one technical analysis supporter or user has been able or willing to challenge my points. I still gladly await such arguments. However, I will not accept as a valid argument the line 'X person uses technical analysis and he makes money so it must work.' It proves nothing of the sort. If I give a completely useless tool to 1,000 traders, some will make money. It has nothing to do with the tool, it is due to the number of people using it. Taleb explains this type of situation very well in Fooled by Randomness.

In this book I group technical analysis and charting together. Some people here would say 'but I don't use chart patterns I only use XX indicators' and vice versa. However, the key point is that the assumptions behind both types of analysis are the same, that is why it is valid for me to do so.

Finally, it was never my intention when I started trading to dislike technical analysis. In fact quite the opposite. Like many traders I took the time to study it. In fact I studied under two very well known technical analysts. I took 'in person' courses with them over many sessions. I would imagine very few traders have gone to that length and expense. However, what came through time and again was that the ideas that

underpinned their teachings didn't fit with how I saw markets operating. Having been a market maker in a number of markets, I saw first hand how markets really operated. I traded with, for and against the biggest traders in the world. The assumptions that underlie technical analysis did not match up with how I saw markets trade.

As I continued in this industry I witnessed first hand the high failure rate of technical analysis traders. Then, when I saw the articles and adverts aimed at retail traders I felt I had to study this more. After all, if technical analysis is reliable I would be a fool not to use it. Hence why I spent two years gathering research and information from across the world. I was surprised by how much information was out there; the problem was it was all stuck in academia. In this new version I have included some further, more recent studies.

I should warn that you will need to approach this book with an open mind and be prepared to challenge what you have been told. But don't be afraid to be different and to challenge accepted wisdom. As I say to my players in my junior soccer team, 'If we do what everyone else does we can only be average. To be the best you must be different.'

Best
Gary

CHAPTER ONE

THE GROWTH OF TECHNICAL ANALYSIS

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

There is little doubt that over the past twenty 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 its success. Surely if a method of analysis and trading did not work it would not gain in popularity? However I believe that the growth in the sector can be attributed to a number of factors other than it being reliable. In this Chapter, I will describe why new and existing market participants might be drawn into this area while in Chapter Two I will go on to describe just why technical analysis can show successes for reasons other than it is a robust and accurate trading and analysis tool.

To begin with we must look at a few of the important factors that have had large influences regarding the way that financial markets have developed over the past twenty or so years. 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. In the 2000s futures markets have mainly moved away from pit trading to screen trading too and volumes have soared as a result. New products such as CFDs and Retail Foreign Exchange have been established allowing individuals to trade (on margin) commodities and even currencies which were also for so long, 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 for individuals than ever before.

As a society our attitude to risk has changed greatly over the past generation or two. Having witnessed first hand 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 etc. Furthermore as a society we more readily embrace other riskier situations such as self-employment and less social security 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 then corporations and into the hands of individuals. This shift in risk though has been 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 realise that while they might be doing well out of the current situation it is partly a result of them carrying more risk.

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

Finally the influence of the media on society as a whole but more importantly for us also 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 based programs and virtually all news programs now recap the days' main market news. Moreover the tone of financial reporting has changed too. Previously newspapers in particular would report market and company news in a more fact-based manner which would have appeared bland and difficult to understand to the general public. Nowadays reporting of this sort of news regularly includes tips and opinions designed to make the story more appealing to the public. 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 solely dedicated to trading (as opposed to investing). On the internet there are millions of trading and investing related websites 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. With super-bullish analysts, financial advisors and stock brokers appearing on our TV screens telling us how markets always go up in the long term and that buying shares is a 'no-brainer'. We also see adverts in newspapers and on the internet in particular from firms who have found the 'secret' to making money trading the markets.

Share trading is no longer such a costly business requiring a relationship with a stuffy stock broking firm. Place a few thousand dollars in an account and with a few clicks of a mouse we can become the proud owner of any stock we wish, no paper work, no hassles. Furthermore markets such as futures, commodities and currencies can now be traded more cheaply and transparently and by anyone who wishes. CFD and retail FX forms in particular, spend vast sums on advertising to entice new people to trade. Following privatizations and 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 with learning to trade. I am not suggesting that they will

all look for such education but a decent proportion will. So just what is the range of alternatives out there?

If you search for trading education online you will find thousands of responses. The vast majority of which though are some form of technical analysis/charting. Even if you are not searching directly for technical analysis education, if you are just looking for general trading education, you are almost certain to be shown a large majority of technical analysis services.

There's also a difference in tone between adverts for technical analysis course and the few you will see on say, value investing or other more fundamental styles. The technical analysis based courses tend to be more upbeat and suggesting that trading profits are more easily within your grasp. The same goes for the many books that are available; the charting based ones have very catchy titles often aimed at suggesting wealth is on its way!

Words like 'forecast' and 'predict' are very commonly associated with technical analysis materials. They fit with retail traders' views of what trading is about as they think it is business of predicting future prices. Whereas in fact trading is far more complex than that. Concepts such as risk management, money management etc are also crucial ones to understand and in fact, many of the best professional traders don't even care about market direction; there are some smarter ways to trade.

Both online and in print (the two most likely ways people will seek information to learn), the technical analysis resources are by far the most widely available and also are the more suggestive that beating the markets is quite straight forward. So, anyone wanting to learn how to trade is more likely to learn technical analysis just because it is by far the dominant form of trading 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.

In recent years the expansion of FX markets into the retail environment has made this situation even worse. Almost every FX 'educator' that I could find or have come across teaches some form of technical analysis. I could actually write a whole chapter on the retail FX industry, suffice to say that retail traders need to be very careful when entering it. I am well aware that many retail traders actually start trading due to the claims and adverts of FX firms and 'educators'. In general, the aggressively marketed CFD and retail FX providers themselves also mainly offer chart based 'education' including free materials to new clients.

So typically, new retail traders will either take no education or technical analysis education. I saw this first hand when I gave a series of presentations to retail traders around the time I was writing the original book. I asked two questions before each seminar. The first asked about the relationship between bond yields and prices. The second showed a chart pattern and asked which one it was. Only around 5% of the audiences correctly answered the bond question but almost everyone correctly answered the chart pattern! I suppose I shouldn't have been surprised but I was disappointed. These traders believed that they didn't need to understand basic market information such as bond yields but chart patterns were something they needed to learn.

Compare this to the training programs that Investment Banks put their trainees through. They will last on average around two-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 they are comfortable reading financial statements), corporate finance (so 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 bonds, corporate and government, currencies etc). Banks try to give their trainee traders as rounded and comprehensive training as possible in the belief that to enjoy a sustainable trading career will require various forms of knowledge and an understanding of how the markets and the industry works.

One of the biggest carrots that technical analysts dangle before retail traders when they are trying to attract them, is that technical analysis doesn't require an understanding of all that 'fundamental' stuff. No need to understand data, economics, settlement procedure, company information etc. It is all irrelevant for traders. The only thing that is important to them is the price. Further, these charting tools are relatively easy to learn and understand. This sales pitch is warmly welcomed by time-poor retail traders who are eager for short cuts. If you offer them a way to avoid learning lots of new information, many will grab it with both hands.

But ask yourself, if all that 'fundamental' type information isn't needed, why do almost all the bank and hedge fund traders bother to learn it? Why do they spend every working hour they can trying to find good trades, analyse risk and reward, analysing liquidity and all the other myriad of information they digest, when all they have to do is refer to a price chart?

For those who didn't take education and found themselves losing money, technical analysis then offers a second incentive. It is common for technical analysts to describe their methods as mathematical or even scientific in nature. This provides traders with the incentive that by learning this new information they will become smarter traders and who doesn't want to be a smarter trader? Fibonacci levels, stochastics, relative strength etc all give the impression of this math/science basis. But as any decent quantitative trader will tell you, there is no real mathematical or scientific basis to technical analysis. It is pseudo-science and often involves the misapplication of mathematical ideas.

In the original version of this book I referred to an Australian firm which advertised widely in newspapers here. They were possibly at that time the largest trading 'educator' in Australia. I wrote how the client results that firm were posting in their adverts and the claims they were making didn't add up. The firm only taught technical analysis and probably taught several thousand people. They closed down a couple of years after my book came out. Similarly other prominent firms and 'educators' have come and gone in Australia over the years. They tend to have two things in common; they teach technical analysis and both they and most of their clients ultimately fail.

In my other book, An End to the Bull, I develop the theme of this education and sales side of the industry which I refer to as the financial junk food industry. I call it that because, as with the real junk food industry, this financial one sells convenience and

easy to swallow information to a time starved population who crave a quick fix. Yet this convenience comes at a health cost; in this case a financial health cost. In An End to the Bull I explain some more ways that this financial junk industry misleads new retail traders.

As I explain in that book, this is a two-way process. The junk industry exists in part at least, because retail traders want easy to understand indicators/patterns that they believe will be a quick fix. It is far easier and more lucrative for the industry to cater to this need for an easy solution rather than correct this desire for simplicity and offer something more reliable.

RETAIL TRADERS LIKE CERTAINTY AND TECHNICAL ANALYSIS OFFERS IT

Nassim Taleb, Daniel Kahneman and others have explained that the general public like simple and clear messages. Retail traders are no different. In An End to the Bull I explain how the sell-side of this business is very good at providing that. People who appear in the media always seems so certain of their views. Likewise, technical analysts when making their forecasts sound impressively confident in their views. They'll say things like "if the market holds 3700 it will head higher, but if it breaks then we should look to short as it goes lower", or "the market is in an uptrend now, look to buy on a retracement to X". Regarding the first statement, I will show that this is one of those 'can't be proved wrong but is bulls*@t type of statements. But the point is these types of statements are quite clear, concise and to less knowledgeable traders appear to show a high level of understanding. New traders are attracted by this and would like to learn how to read markets in the same way.

But real traders don't really operate like this. For us, trading is about assessing risk and reward, perhaps more than anything else. It often isn't even about judging direction. Setting price levels, targets etc with such conviction are not part of the game. Targets, stop loss levels/exits etc are more typically set according to risk assessment rather than these market levels. Real traders don't always tell you what you want to hear. Real traders don't try to make the business sound easy because it isn't.

So, for new traders, hearing and seeing the technical analysts with their supposed insight into market psychology, providing clear and apparently robust, confident claims, technical analysis will be very appealing. And all this is done without the need for real risk analysis, fundamental information such as yield curve moves and without caring what news and data is about to come out.

SUMMARY

So, I suggest you first need to understand that you are being led towards technical analysis, not because it is successful but because it is by far the predominant form of trader 'education' and it is easy to teach. The bigger the technical analysis 'education' industry has become the more likely it will grow. Not because it is successful in creating winning traders but because new traders perceive that only a successful form of analysis can grow. It is an inaccurate perception. You will need to see through the

sales pitches, and abundance of technical analysis (mis)information to find the nuggets of real knowledge that are hidden around.

When you look at the really lowest of the junk 'educators' those who promise easy millions, Ferraris and luxury yachts, how many of those teach some form of technical analysis? The answer would be almost all of them if not actually all of them. Why do they choose technical analysis? Because it is easy to teach and appeals to retail traders.

Even before we delve further into the performance and assumptions behind technical analysis, ask yourself, is there any evidence that the success rate of retail traders has improved in any way since technical analysis become so prominent over the past twenty years?

In the next Chapter I will explore why technical analysis looks plausible even when it is clearly an unreliable form of analysis for most who use it.

CHAPTER TWO

WHY TECHNICAL ANALYSIS CAN LOOK PLAUSIBLE

So we have seen that for new traders entering the business, the majority of material they will come across will be technical analysis. This in itself, is a reason why many will start to use it. However, there are a number of other reasons why technical analysis looks plausible, particularly to new traders. Any of these might help to convince traders to learn and use technical analysis. Yet as we shall see, they can be very misleading.

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 everyone who uses technical analysis loses. 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 tens-or hundreds of thousands 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 later in the book), 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 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 if we tested a thousand systems that we knew were poor, some would still make a profit.

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

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 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. Fisher

Black believed that *"if they expect to make profits from noise trading they are incorrect"*.

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, the sheer numbers alone will result in some successes. We need to consider the possibility that at least some of these successes might be due to luck.

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.

In the first version of this book I mentioned 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. I met with him again several years later and he had lost substantially more. While I didn't take him on as a client I did give him some pointers regarding order flow trading and scalping which he decided to take up. He finally started to make money. What I found particularly interesting about him was that when we first met, he was absolutely certain that I was wrong about technical analysis. When we met again, he was quite apologetic about his attitude at our first meeting and he admitted that originally he had been completely convinced by the technical analysis 'experts'. I have though, met many others who continue to use and support technical analysis even though they have lost large sums using it.

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 survivorship bias that these individuals believe that their losses must be due to something they are doing wrong.

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. So much so that I doubt that many new students of technical analysis ask for any proof of its reliability (I relate a story later in this Chapter).

What's more, people seem to believe that if a system can be found that yields good results, then even if it is sold to thousands of 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."*

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 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 grey 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. But probability is a very simple form of 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."

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 License, 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 S&P 500 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 only employ such analysts 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 so many technical traders, 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.

As Sunstein and Thaler note in their book 'Nudge', firms have far more incentive to

cater to irrational practices than to eradicate them. For one thing, it is far easier.

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 can be 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.

I'm not saying that insider trading has been completely eliminated but it is very rare. Yet interestingly, my experience of retail traders is that many still think there is a 'they' controlling the market. Particularly when traders lose they say things like 'they squeezed all the little guys out'. Who do they think the 'they' are? Do they really think the investment banks and hedge funds are colluding rather than competing? The idea of a 'they' acting against small traders has no basis in fact; it's just a conspiracy theory. It gains momentum because the failure rate of retail traders is so high they think the big players must be doing something on purpose against them. In reality, two things are at play here. First, the big traders use their better knowledge and skills to play a very different game. Second, the methods of the retail traders make them very easy to spot for the smaller professional traders who do target them. These traders aren't big enough to influence the underlying market sentiment but they do employ techniques to pick off the poorly educated and predominantly technical, retail traders. It actually forms the basis for the market making style scalping techniques that I use and teach.

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 analysing 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 realise that these aspects might be difficult to teach or unappealing to clients, so they don't teach or tell them. After all, it is often the belief that trading can be made easy through chart analysis that attracts people to charting.

For example, a trader I once worked alongside now runs a daily technical analysis newsletter. Every day he sends out today's levels etc. Yet when I worked alongside him he never used charting. Instead he understood market liquidity, order flow and these more professional styles of techniques. I suspect he still applies those for his own trading but to create a popular daily newsletter requires using analysis that appeals to a wider audience.

TECHNICAL ANALYSISAS 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. 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 it 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."

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

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. An 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 materialise 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."

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 influence market action 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 canteen. 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!)

So, some 'real' professional traders will use technical levels in their thinking but again, not in the way that amateurs do. Sometimes they want to find areas of potentially higher liquidity, usually so they can trade against it. Knowing where the retail money is also provides an avenue of potential profits for pros but again this is achieved by trading against them. Some traders, perhaps at hedge funds, will incorporate this information but in addition to robust risk management tools and other tools.

BUT IF TECHNICAL ANALYSIS IS A SELF-FULFILLING PROPHECY DOESN'T THAT MEAN IT WORKS?

I imagine at this point many of you are thinking that if technical analysis is self-fulfilling then it must work. The reality though is more complex. First, it would need there to be lots of technical traders on the particular contract you are trading. It can only be self-fulfilling if they are large in number. For example, if you take a very large cap stock which sees huge flows from big pension funds etc, technical traders will be a small percentage and may not be able to influence it at all. In my experience, as I have said, some contracts do trade more around these technical levels and some don't. But even the ones that do see some action at those levels, it isn't always the case. As we will see, this is a common problem with technical analysis; it is very hit

or miss.

As I will show though, studies suggest that even when there is some effect from technical traders, it is short lived and the results are small. So only the really early ones can make a profit and these profits are small. After transaction fees they will be negligible or non-existent. In reality, at these 'technical levels' whether the market behaves as the technical think or not really comes down to market sentiment at that time. My strong view is that you are far better off trading just based on the sentiment at that time rather than using the technical trading rules.

For example, there is an old market maker saying 'There is no support in a falling (equity) market)'. It relates to the fact that during equity market crashes anyone who tries to use support levels etc is doomed. If sentiment is weak at that time, the 'support level' will be useless. And here lies one key issue, technical analysis assumes that those who traded at previous levels sometimes months in the past, will do so again now. I'll go more into this in the next chapter but I call bulls*#t on that belief. If you buy at a 'support level' thinking that those who bought there last time will do so again you are taking a huge (and likely losing) leap of faith. In reality the only way you can win is if enough people believe the same as you; that is, you can only win consistently if technical analysis is self-fulfilling.

Many of those who, today, use and study technical analysis are not actually aware of the origins and basis behind how the pioneers in that field explained it's use. The pioneers of technical analysis strongly refuted any suggestion that it was self-fulfilling. They understood that to agree that technical analysis was self-fulfilling would weaken or even destroy the case that it was an accurate measure of market psychology. To only work because so many people use it, is a completely different reason than 'it works because it measures market psychology'.

One of my technical analysis teachers (a well known technical analyst from the1990s) writes in his course manual the idea that technical analysis is a self-fulfilling prophecy is "UTTER RUBBISH" (his capitals).

Yet today there are many technical analysts, even prominent ones, who support the idea that technical analysis can be self-fulfilling. Some even use it as a reason why traders should learn it – everyone else uses it so it is bound to work so you must use it too. These individuals have no idea that they actually weaken the whole premise for using charts. They have no idea of the origins of technical analysis. They are just using any argument they can to sell their product. Technical analysis is supposed to be measuring market psychology. If it works it is because it does so accurately NOT because so many people use it. If the latter were true, if I give any tool or level to enough traders then it will work.

Having laid that argument out for you to digest, in fact we can clear this up easily. For if technical analysis was successful by being self-fulfilling, we would see that over time, as more people use it, it's success rate would improve. In fact, as I shall show, we see the opposite. It has become less successful over the years; or rather its poor performance gets even worse over time.

THE PATTERNS REAPPEAR SO THEY MUST BE VALID

Technical analysts typically point to the recurring nature of chart patterns to 'prove' their usefulness. The view is that because we see the same patterns again and again at tops and bottoms for example, they must be telling us something. Again though, this idea is not robust. If we chart any data, say sunlight hours, rainfall, number of goals scored by the mighty Liverpool FC etc we will see patterns. And guess what? We will see the same patterns, even though there is no psychology in these data. Why do we see the same patterns? Because in charts there are only so many patterns that can be created. Of course some will re-appear. Any data that turns from a low point to a higher point will create a pattern and there are only so many variants. The patterns didn't predict anything or measure psychology, they appear because they have to. As long as you chart data you will get recurring patterns. So the fact there are recurring patterns in financial charts does not validate them as predictors of market psychology.

LEVELS SEEM TO WORK

There's a guy on Twitter who posts 'levels' for the S+P 500 every day. He has (or should I say, he bought?) around one hundred thousand followers. He claims to be using order flow but as someone with decades of experience as an order flow trader I very much doubt that is what he uses. His posts are simple; every day his posts prices and says 'if the market is below X I will sell and if it is above Y I will buy.' Every day he reminds people when his levels work. To many people it looks like this person has a real talent/gift/skill for picking levels and trading off them.

In fact many technical analysis tools involve using levels. There are so-called support and resistance levels, major highs and lows, pivot points etc. The way of using them is similar to the Twitter guy.

Let's take a so-called support level. We are told that the market should hold above it but if it breaks below and stays below, it is negative for the market and we should short sell. Again, these claims often seem to be realised, they seem to work. So perhaps it is not surprising that people are impressed and think that technical analysis is plausible if not accurate.

But there is a major problem with these 'levels' and how they seem to work. To explain, let's examine the following statements:

'If the market stays above 36, it is going higher but if it breaks 36 and remains below, it is going lower.'

Now this:

'If the market holds above 37, it is going higher but if breaks 37 and stays below it is going lower.'

Can you start to see the point? I could make this claim for any and every price level for every contract and it will always be true.

Of course, if the market holds above 36 it must be higher and if it holds below 36 it must be lower. The same goes for 37, 38, 39 etc.

The success has nothing to do with the 'level', it is due to the way the statement is framed. If you want to make a name for yourself as a predictor of markets this is actually a simple yet very effective way to do so.

This type of technique is actually very common in another dodgy industry that is supposedly based on reading people's psychology and predicting the future, namely the world of psychics and horoscopes. These people, far from being great predictors or readers of people's minds, actually use a technique called Cold Reading. They have many ways to appear to be accurate when they are nothing of the sort.

One of those methods is called the Rainbow Ruse (from the Full Facts book of Cold Reading by Ian Rowland). A Rainbow Ruse is a statement that credits a person with both an attribute and its opposite. For example, 'You appear to others as a strong person but sometimes criticisms can hurt you.' Here the person is both strong and has feelings that can be hurt. Statements such as these apply to most people and are hard to prove wrong. But clients of these 'readers' are often impressed. The trick is to make a statement that is hard to prove wrong and can work both ways. The 'psychics' do this and so do the market 'level' predictors.

I'm sure many technical analysts will be angry at me for the comparison with psychics but I feel in this example the comparison is more than justified. Both groups try to predict the future and both use methods and statements that apply to all situations and are hard or impossible to prove wrong. If we return to the chart patterns, the idea that they recur is said to be 'proof' that they must be real and accurate. But it is not proof at all; these patterns must return because all charts of all data have these patterns. So the statement appears correct and is hard to prove wrong even though it is actually meaningless. Yet it tricks many people into believing the forecast.

FINDING PROOF

While I'm not a fan or big user of Twitter, from time to time some technical analysts seem to pop up on my timeline, usually with something bordering on nonsensical. I have to say that the technical analysts that I met and knew twenty years ago were far more knowledgeable and smarter than the current crop. Some of the things the current group say would make their predecessors heads shake. One of my favourite technical analysis Tweeters recently posted an article from 2018 where someone predicts that

"Some day, maybe next year, maybe in 2020, the economy will take a swan dive and the market will take the plunge with it"

"(Our) consensus is that the bad times will arrive in 2020"

The technical trader stated "so the argument of 'no one could have seen this coming' doesn't cut it".

The inference of course is that the person making the prediction got the market right because it crashed in 2020. This therefore supports the view that some people can forecast the future.

But the 'prediction' does nothing of the sort. First, the person says "maybe next year,

maybe in 2020" which is in itself a bit vague. Sure there is the 'consensus' that it will be 2020 but there is wriggle room on that one. Second, the prediction isn't entirely accurate anyway. The (US) economy only slowed due to an unforeseen pandemic, until the pandemic it wasn't on track to crash.

But these are just moot points. The biggest issue here is that every year people make predictions; some say the market will rally, some say it will fall. There are always doomsayers saying the markets will crash sometime in the next few years just as there are always these saying it will make new highs. Bringing one or two of these out after the event doesn't prove anything except that we can find a prediction for everything. Out of the tens of thousands of predictions, our technical analyst found the ones that 'predicted' the crash in 2020. This person then uses this as 'proof' that people saw the crash in advance. This is just another form of data snooping. It is a meaningless form of analysis and provides no proof whatsoever except that the technical analyst doesn't know how proof works.

While the prediction here isn't using technical analysis, the point is the lack of 'proof' that a well know technical trader will accept. Note too that the technical trader is trying to validate the idea that markets can be predicted. This is a common theme among technical analysts and appeals to retail traders. Yet for real professional traders, prediction is not really the game they play.

I have found this type of situation so often in recent years. Technical analysts using one off correct forecasts among the thousands that are made and then call that proof of the success of their form of analysis. It is nothing of the sort. I realise the example above isn't about technical analysis however my point is how the technical analyst uses the prediction. This kind of pseudo-proving though is not understood by many people who then believe it is real evidence that we can all learn to predict the markets. This in turn is used to promote technical analysis.

There used to be a well know technical analyst whose claim to fame was 'predicting' the 1987 crash. It didn't matter how many times this analyst was wrong in future years, they always referred to themselves as the person who predicted the crash.

Of course most predictions of technical analysts don't come true but we have now learned that survivorship bias means we don't hear or see those ones. The Twitter example above is just another form of survivorship bias.

In the first version of this book I provided another example from an internet trading forum (I don't like these forums either!!). A technical trader created a thread about a new tool he had developed which he claimed had been making him profits for the past few years. A senior moderator and supposedly experienced technical analyst and trader subsequently commented that he had tested this tool and indeed it had made money over the past few years. He then suggested this was proof that the method was profitable. This type of 'proof' is nonsense. It is highly unlikely that the originator went onto the forum with a tool that he didn't know had 'worked' over the period he suggested. Of course though, any backtesting can find previously profitable trades, it doesn't mean they will be profitable going forward. More rigorous testing needs to be then adopted. However, all the moderator did was test the tool on exactly the same data as the originator so of course he came up with the same result! Many people then went on to reply that they had started to use the tool. Unsurprisingly, the strategy

suffered losses over the next six to twelve months.

It is no surprise therefore that people will accept ideas such as technical analysis if they are happy with such poor proof of success. If you think there is anything scientific or mathematical about technical analysis then their methods of proving success such as the examples in this section should demonstrate that they are nowhere near scientific.

IF ONE LINE/INDICATOR DOESN'T WORK, USE ANOTHER

As we all know, they are many different indicators, studies, moving averages, patterns. We can draw different trendlines and use different timeframes. The possible combinations are endless. As we shall see, perhaps the hardest thing for technical traders is to decide which set of tools should be applied at any time. In reality, I think we shall conclude that it is impossible to know in advance which ones will work. It is interesting though to see how even well known technical analysts struggle with this.

One thing I find particularly poor, is how it is common for technical analysts to draw lines, use indicators etc to show that X move is likely and then when the market does the opposite, they redraw their lines or suggest a different indicator actually predicted the move. So, technical analysis is never wrong, they just used the wrong tools at the wrong time. In fact, we hear this a lot; the idea that technical analysis works it's just that people don't use the right tools or lines at the right time.

In reality, this line of argument leads us to a similar place to the 'level' predictors. The analysis can never be 'proved' wrong because there will always be a successful indicator or tool somewhere. But this argument is nonsense. There are tens of thousands of possible tools. Of course, after the event, in hindsight, we can find the winning one but this does not prove the success of technical analysis. If you can't find the tool beforehand then this form of analysis is all but useless to a trader who wants to work out market sentiment or direction. Fortunately, as we shall see, there was a study that investigated around 8,000 technical analysis told and indicators on 100 years of data so we will see how difficult it is to find a winning strategy even for someone who can scan through 8,000 tools.

Below is a typical type of comment taken from Twitter from a reasonably well known technical trader. I should add, that I am not being critical of this person in particular, it is just an example of what many using this analysis are doing. However, the analysis they are using and the hindsight view is NOT trading.

this is how the DAX unfolded 1 week after it set up as a nice double top. Rebellious $DAX decided it doesn't want to double top and went into a sideways channel

From Twitter

I have so many issues with the lines in this chart but one important point to make about trendlines such as the ones towards the left of this chart in particular is that they can only be drawn after the event; they are hindsight driven. Initially we were told that a Double-top had been created (the 'trader' was negative at that point) but then the contract didn't meet the targets of Double-top and proceeded to head higher.

This particular person has regularly commented on how a pattern or trend has developed but then adds a caveat that we have to wait until after the move to find out if it works. So we only know after a market has gone up if it is going up; again this is nonsense. These are not viable or valid forms of analysing markets. They are just a series of statements that make out they are predicting direction but do no such thing. There's usually a get-out clause which is typically only triggered in hindsight. As I will discuss later, if patterns such as a Double-top are supposed to be measuring market psychology as we are told they are, then once formed in this case the market should fall as predicted. There really shouldn't be any equivocation to a statement such as the market psychology is weak. If the situation now is that the market psychology is weak but the market may go higher and if it does the previous pattern/indicator was wrong then we can (as I suggest we should) just say that patterns are not good at measuring market psychology.

Nowadays I hear many technical analysts make statements such as "the patterns/indicators/tools suggest a probability...". The key word here is probability. So they are moving away from saying these are good at measuring market psychology and now they provide probabilities. First, even probabilities are no decent form of risk analysis even if the probabilities we are being shown are accurate (which of course they are not). Further, this probability argument is absolutely NOT what the originators of technical analysis were explaining when they told us that we should use

their tools because they measure market sentiment. We are not, for example, told that after the formation of a head and shoulders top pattern, the market may move lower with X probability or it may move higher with Y probability. We are told that once formed, the head and shoulders top means the market will fall. We are told that the pattern is an indicator of bearish market sentiment and is formed because of that bearish sentiment. (We shall investigate whether those claims are valid later.)

On another occasion a very prominent technical analyst (at the time) drew some trendlines and made his predictions on market direction. The market subsequently did the complete opposite and he then proceeded to draw new lines after the new move. When I re-tweeted that this was a classic example of using hindsight and a completely useless form of analysis for traders, the analyst criticized me for being 'personal'. I was being nothing of the sort. I was just pointing out that one day the trendlines were in one place, predicting one thing; the next day they were somewhere else predicting something else. In both instances they were essentially following where the market had been. Interestingly, this person while still an analyst, nowadays focuses far more on what most traders would call, fundamental information with considerably less attention to technical. I know he has read An End to the Bull and I hope it had some influence on him!

I shall end this sub-section with the commentary below taken from a technical analyst. It is again a classic example of hindsight 'trading'. We are being asked to look back to help us work out what was going to transpire. Again, this is not trading; it's a useless exercise in hindsight analysis. Sure, as traders we need to go back over our trades and learn from them. However, we must learn what we did wrong with particular focus on the things that are under our control. Looking at a chart in hindsight to find the supposed predictive pattern/indicator that can only be found in hindsight is simply nonsense. The process explained in the commentary below is NOT trading. Yet, many retail traders don't understand this and therefore find the commentary from these technical analysts to be seductive.

how $DAX unfolded 27th April .. it is really useful to look at how the trade unfolded and then look back to identify what could have helped you identify the potential direction the price action took.. #tradingpsychology

From Twitter

THE PRISONER'S DILEMMA

As we see so much technical analysis around us, a study actually investigated how its growing popularity might affect traders' decisions to use it. 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 to George 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-feed- back 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 view, that trade may be a dangerous one to hold and have a poor expected return. Again, we shall see that over time, the effectiveness of technical tools has diminished.

I personally think this Prisoner's Dilemma scenario has become particularly applicable now that technical analysis is so popular. I can understand why new entrants think they have to learn it because so many others use it. In fact, that is the reason why I studied technical analysis. I both wanted to see if the ideas were robust and also, as a market maker, wanted to understand as many market participants as I could. Of course, I didn't go on to use technical analysis as it was taught to me because I thought the underlying assumptions were wrong. But most new traders wouldn't realise that. It is though, one thing to learn what others are doing (in my case so I can profit from them) it is very different to actually decide to trade like them too.

SUMMARY

In Chapter One we saw that for those looking for trading education, technical analysis is far and away the most likely form of training they will find. In this Chapter I have explored further why people can be attracted to technical analysis. I have laid out a variety of different reasons because in reality, different people will be attracted by different things. The topics covered in this Chapter all contribute to adding to the plausibility of charting even though it has no basis in either market psychology or as a more scientific approach.

As will be the case throughout this book, I don't expect readers to agree with me on every point and some arguments are stronger than others. But if you truly want to succeed as a trader you'll need to be able to question what you hear and see even if it seems many people are saying the same thing.

Remember, the vast majority of traders lose. So you don't want to be doing what the majority do.

As I have noted, it is particularly common for technical analysts and traders to use price levels and say 'if the market goes above X it goes higher and if it goes below X it goes lower'. I hope to have shown that this approach is more of a sneaky sales pitch than market forecast because it can't be proved wrong; but is also applicable to any price level which further diminishes its predictive powers. Speaking of markets in that kind of way makes the technical guys appear to be knowledgeable particularly to new traders but it actually requires very little knowledge.

In terms of finding proof, I have provided a couple of examples of technical analysts being impressed by what they consider to be proof of analysis but which actually do nothing of the sort. I have continually found over the years, that technical analysts ask for or require very little proof of the reliability of their tools before deciding to use them. I'm sure many of you will be shocked by the findings of research into technical indicators that I will present later in this book.

On the topic of proof, many years ago I was asked to contribute a chapter to a book on trading. The publisher had asked a number of different people to write a chapter each. All of the other writers were prominent technical analysts as was the consulting editor. For my chapter I decided to lay out some of my arguments against technical analysis. During the editing process I continually received questions from the editing team along the lines of "can you prove that?' or "can you please show the evidence for that statement?". Of course I was always able to. One day I asked the editor if she asked the technical authors to provide proof of their claims such as chart patterns are reliable tools. Of course she answered in the negative but suggested that she didn't have to because as so many people used technical analysis and all the other contributors were technical analysts, that was surely good enough evidence. It was another interesting insight into how people just believe things without questioning. To finish the story, my chapter was scrapped from the book as the other authors all complained about it! I took it as a compliment that I must have been making valid points.

CHAPTER THREE

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 why technical analysis might seem plausible even if it is unreliable. In this Chapter I will describe other concerns about charting and technical analysis which have been raised during my trading career. It was these issues that led me to examine just what evidence was available from both studies into technical analysis and studies into how people actually approach the decision making process when trading (these are discussed in Chapters Four and Five). 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 indeed this philosophy has helped me on many occasions when trading. One of my core beliefs, which I teach all my students, is after establishing a trade, to always look out for new information and if this information casts doubt over the original trade then we should exit. In effect I am always looking to find out why I might be wrong, which I know from experience and from the studies which I describe in Chapter Five, is a different approach than most traders adopt.

So in this Chapter let's investigate the reality of markets; how they really work and relate that back to technical analysis.

THE IMPORTANCE OF CONTEXT

PART 1: RISING & 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 joined the Japanese market just before the crash. I started on the desk in November 1989 and the mood in the market was buoyant. Within only a few weeks this all 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 discussions 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. In today's markets these are like the times when Central banks come in to the market to buy. I was then told that we had seen a 'Bullish Engulfing Day' or 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 up 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 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 equity markets as I have been able to witness just how different markets can be when they are falling to when they rise. Many traders can trade for years in just bull market conditions and then get a rude awakening when markets fall or volatility picks up. Particularly when falling sharply such as in 2008 and 2020, equity markets can see higher volatility than when they rally, say as in 2018/19.

There can be real market dynamics reasons for this too. As a vast majority of share traders/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. In most equity markets around 95% of participants only ever trade from the long side. A fall in share prices, especially a significant one, can be very damaging to the morale of these traders, not to mention their P+L and might explain some of the increase in volatility that is often associated with falling prices. As we shall, see, people behave differently when they are making money to when they are losing money, particularly if they are losing a lot of money.

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. Market makers use the term '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 only apply 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 drawn me to the conclusion that if/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/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 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 now 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 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.

But even more simply, the idea that support and resistance levels work in the same manner suggests that all markets and market participants behave in the same way whether markets rise or fall. It is not just my view that this isn't correct, there is lots of evidence to the contrary.

Therefore having seen a rising share market trade differently to a falling one I can see no reasons as to why the trend reversal patterns should be the same for both. The fact that chartists believe in Double Tops and Double Bottoms and Head and Shoulders Tops and Bottoms etc suggest that the same decision making process is taking place among participants in both situations. I cannot agree with such thinking and believe therefore that if such patterns have been seen to occur it must be either due to chance, the interpretations of the chartist themselves or because of the self-fulfilling nature that can occur with technical analysis. Of course there might well be another suggestion namely that in fact these patterns are no where 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 viewed 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+P500 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 how a 5% month-on-month drop in the S+P 500 was associated with a 30% increase in implied volatility but a 5% month-on-month rise in the S+P500 Index was associated with an 8% 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 work the same. They also want us to believe that both support and resistance levels are formed in similar ways and are equally as valid yet why should this be the case for shares especially if volatility on down moves is far greater than volatility on rallies? We must at least begin to consider that if such levels do work they can only be either as a result of a self-fulfilling aspect of technical analysis or by chance rather than as a result of accurate analysis of market psychology.

THE IMPORTANCE OF CONTEXT

PART 2: STATIONARITY

Technical analysts would have us believe that by analysing 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 make-up is constantly changing. There are new entrants, existing participants leave, new data and information comes to the market etc. 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 non-stationarity.

As an example we need only look back at the internet share frenzy which existed in the late 1990s. A whole new wave of participants entered these 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 these 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 those trading say in 2003 or later other than being an interesting story from history. The only way that past data such as this can affect todays or any future day's price action is if enough participants use it as a reference.

Although I have used an example of non-stationarity 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 stabilise the market. Some technical indicators, candlestick chart methods etc would see this as a reversal of the weak conditions and gave 'buy' signals. Yet this public money was just a short term measure, sometimes just taking place over one trading day. It was certainly not an indication that the market was turning around or that new buying interest has entered the market. In order to truly understand what is happening in the market we need to look at information which a graph cannot show us so that we can understand the context of the price moves. Those who only look at graphs and believe that price tells us everything will not see the whole picture.

Therefore any study into past prices is purely that, a study of past prices. This is similar to how, in sport, the fact that one team beat another in a previous encounter may help in predicting the outcome of a new game only 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 pitch 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.

Coming back to the reality of markets, as a market maker of Convertible Bonds I would sometimes be told by my firm's salespeople that a particular hedge fund might be a buyer of a certain bond at a certain price below the current one. However, there was always an understanding that if something extraordinary happened or market conditions changed dramatically, for example some news on that company or change to the credit market, that the client may not be willing to buy. We would always ask the question first, does your client still want to buy? Often the answer is 'no'. Similarly, funds who bought that contract previously in different conditions may well not want to buy right now. Frankly, if the market was melting down and I went to a

salesperson and said 'hedge fund XYZ bought these bonds before at 104 do they want them now?' my salesperson would rightly get angry. As context changes so do the views of market participants. To expect people who may have been willing to buy a contract a few weeks ago in stable market conditions, to just simply buy there again if conditions today are very different, is unrealistic. But support/resistance levels etc assume just that.

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 non-stationarity 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 will not necessarily be the same even under the same conditions. In this way our markets resemble sport, another area of unpredictability.

Let's take a sporting example again and use a game of soccer. If we have two games played between two teams with the same players in both games with the same pitch 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 sport, even with the same teams, outcomes can vary from game to game. It is the fact that people will make different decisions in what looks like similar situations that makes sport 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 over-hit the past or…or…or….

Therefore if the result of one game is a 3-0 win to one team does this mean that the result of the second game will also be 3-0 to the same team with the game following exactly the same pattern even with the same players and conditions? Of course not. If we analyse the play and results of the first game what we are looking at is one possible outcome of 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 second time around. Even with the same participants there could have been many alternative histories.

Exactly the same 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 25 participants (including officials), markets have thousands, therefore the scope for alternative histories are 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 inputting 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. Just a delay of 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 likely. In 2004 Greece, who were 80-1outsiders at the start of the tournament, won the European Soccer Championships beating much higher ranked teams along the way. Should you therefore bet on them 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 contemplate that there might have other possibilities 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 believes 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 sport (that's why we love watching it) 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 the first reading of this can easily accept the sporting examples yet might not accept 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 daily high or low which are direct results of just one possible outcome. The fact is that we must accept that in all aspects of life, including the markets, sometimes unlikely outcomes can materialise 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 they were 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 analysing a trade we must try to work out what are the possible future outcomes and 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 may try avoid the trade. A chart will not be able to tell us the worst possible outcome, it only shows us one previous outcome and technical analysts want us to believe that because it was the winning one it was the most likely. This is not the case.

This is exactly the same with back testing. I described in the previous chapter how the results of back testing might only be valid if all the conditions of the back testing period are the same yet we can now see how even this is not the case. If some of the data that is analysed is 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 can only base their decisions on the visible outcome and believe that that was the only 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 out 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 who 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 will come to completely different conclusions. The one who just saw the result would believe that the Australian was the best skater and would probably want to bet on him. The person who watched the race may think that the Australian is actually very unlikely to repeat the feat and would bet on one of the other competitors. Which one is making a better decision? Which one is likely to have a longer career? The one who understands context.

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 up the possible outcomes of a given trade for the future. Obviously a chart cannot tell us this, what is required is an understanding of the markets and the context of the events taken 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 there are simple methods of making consistent and sustainable profits is deluding themselves. Many traders will look for short cuts through all this but in the trading and investing business there can be significant drawbacks to using such short cuts. As I shall show later on these short cuts 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 and one which can be applied to all markets. However having traded markets as diverse as small-cap Japanese shares and US 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. All 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 etc) claim that they too understand that markets are different and 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 analysing 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/she finds some data that 'proves' what he/she wants it 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 than say a biotechnology stock. The former will be traded by large hedge funds, central banks, large corporations and export firms hedging their currency risk etc. 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 failed to witness so far any evidence that the second group of participants will in general have similar trading techniques and beliefs as the first. In particular we can see large differences in how we should analyse these instruments if they are falling in price.

Let's use US Dollar-Yen as an example and compare it with Coca-Cola stock. With the Coca-Cola shares a large majority of its 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 either be long of Dollars or long of 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 behavioural finance perspective in Chapter Five). However if the price of Dollar-Yen drops the situation is not necessarily the same. Some participants will be holding losses 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 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 why we can be told that if a double bottom forms in both markets than 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 them to behave in different ways. Why should we believe that any pattern means the same in these two markets?

As all 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 into market psychology then why should the same patterns be applied to all markets? Sure, they are seen in all markets but as we have learned, the same patterns will be seen in all data.

Even within a sub-group such as shares I cannot analyse all contracts with the same analysis. When analyzing a trade involving a stock I will want to know what its P/E ratio is for example as this can help me decide on how risky a trade might be or how much capital to commit. I will not treat a trade involving a stock trading on a P/E (Price/Earnings Ratio) of 80 in the same way as one involving a stock trading on a P/E of 12. They are different types of products pricing in different expectations and possibly with different types of participants. For example small cap technology or biotech stocks can attract a different style of trader to a blue-chip Bank.

There is significant evidence that small and micro cap stocks can see far higher volatility than large caps; they are very different types of markets. 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.

Indeed being able to analyse completely different markets using the same methods is actually claimed by technical analysts to be an advantage of their field. They see no problem in using the same techniques to analyse markets with completely different participants experiencing 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 behaviour.

Also some contracts have a defined market size while 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 to the number of contracts that can be created and traded and this is also true of the options which can be exercised into these futures contracts.

The ability to borrow stock and short sell it also comes within the topic of supply. In order to short sell a stock the seller has to borrow the stock from a holder so he can meet settlement obligations. While large cap stocks are usually easy to borrow and short, small and micro cap stocks are either hard or even impossible to borrow. They are therefore either difficult or impossible to short sell. Again, the market dynamics are different; the demand and supply dynamics are different between small and large cap stocks. If traders think a large cap stock is over-valued they can short sell it. However, if they think a micro cap stock is overpriced, they cannot short sell it. Of course there are no short-sell type restrictions with major currency crosses or futures contracts. So these micro cap stocks have very different market dynamics. Yet technical analysts look at them in the same way they would for other contracts. Sure, they create the same patterns etc because all data creates patterns. But the psychology is very different.

When cryptocurrencies started to trade, technical analysts jumped all over it, again claiming that their tools would be great for these markets (possibly because they had blown up so many futures and FX traders!). However, if we look at how Bitcoin for example is created, it has a completely different supply line than any financial contract. Bitcoin are created by an algorithm and over time it becomes harder to create (mine) them.

At the end of the day, markets move on demand and supply. Supply therefore is an important factor and in some circumstances 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 or contracts like Bitcoin which are a combination of both. 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 which has a set issue size is tightly held (that is a large percentage of the issue size is held by a few groups or individuals) the price moves in such contracts might only reflect the trades of the remaining small outstanding issuance 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 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 into market psychology then I would want more evidence why their analysis is relevant to a particular market. They will need to demonstrate an understanding that markets are different, with different psychology and therefore the approach to analysing them should be different Otherwise I really do not care if certain patterns have been witnessed during the past. After all, if I don't look for any patterns then I will not find any.

THE IMPORTANCE OF CONTEXT

PART 5: MARKET POSITIONING

I have already approached this topic in previous paragraphs but I thought it also deserved a section on its own.

When you trade as a market maker or in an investment bank or trading floor one of the most important aspects of your decision making is market positioning. I recently listened to a podcast interview with a former Goldman Sachs FX trader and he was asked which type of analysis did he mostly use? The interviewer assumed the answer would be either fundamental or technical but the trader replied that market positioning was the most important analysis for him. I think most professionals would concur. Indeed George Soros' idea of reflexivity is a way of explaining how market positioning can affect contracts.

However a chart on its own does not show positioning, it just tells us direction. It can help us to decide how market participants are positioned but there are omissions and also a difference in how the information is used.

In terms of omissions, charts don't tell us the long and short positions for the contract. For futures and options we may look at open interest, in some countries we can get short selling information on stocks too. I acknowledge that some technical analysts do look at this type of information too.

In terms of how the information is used though, the differences can be clear. The assumption behind technical analysis is that the market is ahead and we follow what others are doing. Sure there are some indicators which are supposed to tell us whether a contract is overbought or oversold but these are very unreliable. Contracts can stay 'overbought' or 'oversold' for quite a long time. Further I have spoken to some technical analysts who even claim these indicators are reverse indicators, that is we should buy overbought contracts in the short term at least.

With market positioning, professional traders start to work out what is being priced in and what outcomes could then occur (because of the market positioning). We do not just buy because a market has been rallying.

For a more subtle difference, let's consider two stocks that have been rallying. Let's say that both charts look the same. For stock GAZ, short sellers have sold short 20% of its market cap, a large amount to be short. For stock MAN, there are no shorts. These two stocks could look the same on a chart; they could generate the same signals

using technical indicators; they could generate the same chart patterns; they would backtest the same in terms of risk/reward calculations etc. But they are not the same. The difference may be subtle. Whether or not it makes a difference and by how much will depend on a number of factors. However, if you want to try to make better decisions you should take this positioning into account. If stock GAZ keeps rallying, there are a large number of shorts who may be forced out; this could create a sharp rally. If stock MAN reports bad news, everyone is badly positioned and the stock could fall sharply. These are just two possible scenarios. Note that the first scenario (involving the short squeeze of GAZ) does not apply to MAN. So the potential outcomes, risks/rewards etc for these two stocks are different no matter how similar the charts looks. If you use charts alone, you will not see this.

Of course, it requires much more work to go through the market positioning analysis. It is far easier to just say 'the stock is rallying' and to not worry about market dynamics or positioning. But by taking the easier route you are making simplistic and possible wrong assumptions and decisions.

PART 6: DERIVATIVES

Today, some contracts have a range of derivatives available on them while others will have none. The effect of derivatives can sometimes be substantial and once again I find it hard to believe that the same patterns will be of use when analysing a contract which has derivatives and one which doesn't. Technical analysis assumes that derivatives have no effect on the underlying market. Why can I say that as a statement? Because technical analysts apply the same tools and indicators to all markets irrespective of whether they have derivatives.

Similarly most traders would say that today's markets with so many derivatives are very different to markets of say 100 years ago (when some technical studies started out). 100 years ago, people bought stocks they liked and sold stocks or contracts they didn't. Today, with derivatives, traders sometimes hedge positions and so will buy or sell just to keep the hedge, not because they particularly like or dislike a contract. So today, not everyone who buys a contract or stock does so because they think it is going higher, some buy because they have to in order to remain with the same hedge ratio. This is a process called delta-hedging and it is common today.

To technical analysts, today's markets look the same as those form 100 years ago but that's because they look at them the same way, through charts. Markets today though, are very different.

We now know for example that futures and options expiry can affect the underlying contract. So-called triple witching days when we see the expiry of futures and options can sometimes lead to increased volatility because of the effect of the derivatives. But again, I ask, is there any evidence that technical analysts analyse these contracts differently to say a biotech stock that has no derivatives. Further, if you accept that derivatives can influence the underlying contract, shouldn't you incorporate that into your analysis after say triple-witching is over. If you believe that the derivatives were placing influence on the underlying contract as they drew closer to expiry then surely once they have expired, they no longer influence that contract. So the psychology etc created when those derivatives were live must be different now they have expired.

But again, is there any evidence that technical analysts redraw lines, or start again after such expirations? The answer is of course, no.

THE IMPORTANCE OF CONTEXT A SUMMARY

The last few subsections have outlined different topics which all come under the wider area of context. Different markets have different personalities, participants, derivatives etc. Indeed the situation for each individual market is constantly changing. I therefore find it hard to be convinced that I should be solely analysing data and price action created by participants who may no longer exist. Furthermore the data is always old.

I believe that context is very important when looking at past data. I see little relevance to analysing 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.

For a more recent type of example, let's say that, after some market turmoil, a Central bank announces it will buy high yield bonds (which has actually occurred). From that moment the market for high yield bonds has changed. Do we really want to still use the 'levels', trendlines, patterns etc that were created under different circumstances? Or indeed other types of data from that preceding period? For one thing, we have a new market participant and a major one at that. This will affect demand and supply. Further, do you think the people who acted before the announcement will act the same again given the new information? Technical analysis does because it still uses the 'resistance' levels etc. They don't just start all their indicators and patterns again from the moment of the announcement. Their approach simply isn't credible to me. From the moment the Central Bank decides to act, the market has changed and I must change my risk/reward decisions and all other analysis accordingly.

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 viewed in different markets and that they will continue to be viewed but without sufficient evidence that they really do highlight a psychological aspect to the price data I remain a sceptic.

Some technical analysts will argue that they realise 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 chart pattern believers use the same patterns in all markets.

In short I think in order to truly understand market sentiment or psychology and to be able to fully understand what past price data means, requires 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 losses stocks would fall. If they moved

closer to Baghdad they rose. It is important to understand this if we are looking at a stock which is for example trading at a resistance level generated during these times. The worries and concerns which may have resulted in participants selling then do not apply now. Therefore I see less importance and relevance in making trading decisions today based on decisions or prices made then. 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 only important if I want it to be and if I tell others that it is important too.

To use a more recent example we can examine the early stages of the Covid-19 pandemic. Equity indices saw wild swings of limit up and limit down depending on the news-flow. Additionally liquidity was low and volatility extremely high as lots of 'market' orders were trading into the thin liquidity. Going forward a few weeks or months, should traders really use the 'levels' etc that were created at this time? I certainly wouldn't.

The concepts of stationarity and alternative histories are particularly important to understand. Even on their own they offer a powerful and convincing argument against technical analysis. Not being a mathematician or scientist it was not training in these fields which led me to believe in these concepts. I have witnessed them first hand and they have formed an integral part of my trading for some years now. Thus it was from experience not a text book 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 'there are no descriptions on a scorecard'. This is because let's say two golfers are playing the same hole, a par four of 350 yards. One of them mis-hits his tee shot 60 yards, then mis-hits 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 four. The other player hits his tee shot 250 yards, then hits a lovely iron shot to leave his ball 15 feet from the flag and two puts for his par four. Both scorecards show the same score a par 4 but if they played the hole again who is the most likely to repeat the score? By only studying the scorecard, 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 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 is 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 CPI 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 trading or investing and are just content to buy what others have bought and sell what others have sold. In the market making/scalping manual that I wrote I develop this concept further to help traders understand the difference between price and value. If you can understand and trade value rather than price then you have a much more robust base to trade from. (Please note that value as I teach has no relation to studies such as market profile or volume profile or similar tools which I actually consider to be different forms of technical analysis)

One of the main selling points for technical analysis is that it can be used to analyse any market. Thus a trader can move from a trading a bond to a stock to a currency and use the same analysis technique. I cannot find any justification for this whether it is empirical or psychological or even from a logical perspective. These markets are different, with different participants, different mechanisms and different demand and supply issues. The only reason to analyse them all in the same way is that it is easier to do so; you are looking for a short cut. In trading, short cuts are usually short cuts to failure.

THE EFFECT OR OTHERWISE OF ALGOs AND HFTs

Without question another major change in markets over the past decade or so has been the rise (and to be fair, slight fall) of algorithm and High Frequency Trading. Today too, we now see more Artificial Intelligence trading too. I'm not going to delve into the merits or otherwise of these style or trading, I'm just going to pose a couple of simple questions to you. Do you think that AI, algos and HFTs trade with the same psychology as humans? Do you think they suffer the same mental anguish as humans when they are executing their trades?

Technical analysts believe they behave exactly the same as humans because they still use the same analysis tools for markets with many algos. Perhaps the belief is that as the algos are programmed by humans the psychology is the same. However, as these are fast-paced, high frequency algorithms, are they really reacting with the same psychology and thought process as humans? Again, of course the same patterns will be seen in markets with algo and markets without them. But the same patterns will be seen in weather data. Some moving averages or other tools will appear to 'work' on these markets just as they appear to work on others. But these are found with hindsight and by data snooping.
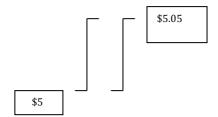
WHAT IS A CHART?

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 chart. Until recently whether or not the chart itself accurately represented the market activity was not questioned but now there is an increasing number of traders casting doubt on this. I have described how the public can learn 'wrong' facts and most people seem unwilling to challenge '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 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 an easy way for us to look at information? Let' look at a simple example.

Example B1

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 of importance at this point. According to the bar graph the opening price in both periods was $5 the high was $5.05 and these two prices were also the high and low for the period. Most people 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 which will not be shown in the graph. For example consider the following sets of data where the bid/ask spread for both contracts is 5.00-5.05;

	D1				D2	
	Price	Volume			Price	Volume
Open	5.00			Open	5.00	
	5.00 x 100,000				5.00 x 100,000	
	5.05 x 100,000				5.00 x 75,000	
	5.00 x 100,000				5.00 x 100,000	
Close	5.05 x 100,000				5.05 x 3,000	
					5.00 x 70,000	
					5.00 x 50,000	
				Close	5.05 x 2,000	

Both these sets of data would generate bar graphs as shown in Example B1 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 D2 than in D1 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 during one period there were only two trades 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.

D1 shows the activity of a contract which is seeing two-way activity with neither more buyers nor 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 how the bar of D2 would be the same as D1 we can now see how D2 in fact is a contract trading in a completely different way to D1. D2 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 D2 may 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.

So D2 is completely different to D1 yet looks exactly the same on a chart. This should be a huge concern to technical traders.

In fact during my years in the business I have seen literally thousands of occasions when the closing price in particular has had little reflection of 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 which 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 D1 and D2 generate the same bar graphs yet are completely different in nature. For those of us who trade options, a contract such as D1 can be more volatile than D2. 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 analysing a contract's volatility. Knowing how volatile a contract is can and should influence our choice of trade.

In this respect of misrepresenting data 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 and receive the data trade by trade and to analyse 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 analyse and we have already seen how they 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 similar to 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 analysed trade by trade compared to using a chart. Those of us who have worked within the industry as a market maker can truly appreciate this. As an active market participant, I have witnessed many occasions when the chart of period has looked very different from the market that I actually traded.

In fact there is a growing interest within the industry for market data which is not expressed in the standard chart form but 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.' In order to conduct this form of analysis Olsen has developed a method of presenting data which 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 behaviour 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 but rather what we see is purely relevant to that particular contract and how its participants are behaving. Therefore this will vary from contract to contract.

There are now other firms offering different styles of charts based more on trade by trade data. While I am not yet sure as to 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 judgement) it certainly appears to be a superior way of looking at market data than the graphs that are currently used. Importantly this form 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 charts, is not adequate and a new approach is now being trialed and used. Of course some traders will then just use the currently available technical tools and apply them to this 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 (by Mark Levitt of Market Time) where 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% success rate using the Market Time

™ data and a 42% 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.

In fact, if we are going to examine charts let's examine the two axis that are used namely Price vs Time. I have asked a number of technical analysts why they use Price vs Time as the two axis. Why do I ask that? Because in traditional economics, when we are trying to determine value and demand and supply equilibrium we use Price vs Volume as the two axis. So far, not one technical analyst has been able to explain to me why they use Price vs Time. It seems that they just accept this style of chart without question. I find that deeply unscientific and poor practice.

The fact is that markets don't operate on a Price vs Time basis. They operate trade by trade. This is a big reason why the chart in Exhibit B1 is misleading. By cutting the market into time intervals, whether it is 1 minute, 5 minute, 1 hour or whatever, the chartist is dividing the market action in a subjective way that bears no resemblance to how the orders entered the market or were executed. Did the order enter the market as 'good for 1 or 5 or 30 minutes'?. Most likely no. So why does it matter how the market opened or closed a particularly 5 minute period? If markets operated on a 1 minute or 5 minute basis it would make sense to look at them in that way. But they don't!

I have outlined a few problems of charts 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 trading activity. Just because these charts are used by everybody else or we are told that they are an accurate means of displaying data or 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 Five using charts actually fits in well with the biases and rules of thumb that behavioural 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.

IF IT MOVES, CHART IT!

To quote from one of the technical analysis courses that I attended;

"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 and reoccur is due to 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 understand market sentiment through the analysis of participants' psychology via patterns in charts and data.

It is therefore interesting and somewhat confusing to see technical analysts assess charts and data on subjects such as economic data. From time to time I have even seen analysis on graphs on Producer Prices (PPI) or Consumer Price Indices (CPI) for example.

As I was actually writing this chapter in the original book 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 etc on subjects such as US Initial Jobless Claims, US Unemployment Rate, US CPI, Building Permits and so on. Under the graph of US Non-Farm 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 do then surely it would just be by chance. As I explained earlier, if I graph the data of rainfall in Liverpool I am sure there will be patterns such as rounded-bottoms, double-tops and head and shoulders too, yet there is no human influence here.
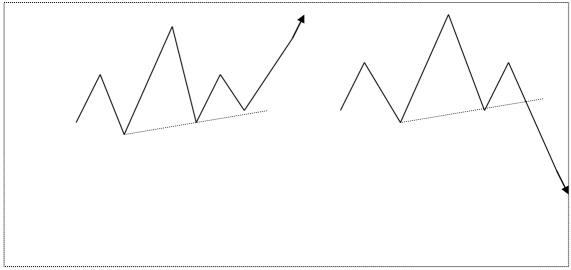
I believe that the fact that technical analysts apply their tools to non- trading related data shows that we are not dealing with an investigation of human psychology but rather an analysis of patterns which, seeing as they appear in all kinds of data not just human related ones, may actually be the result of chance or at the very least have little to do with human psychology. Certainly by applying their tools to such non-trading 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 make decisions. As we shall see, this type of heuristic (short cut) is indeed something that humans are prone too.

HINDSIGHT CHARTING AND RELATED QUESTIONS

One particular problem area in relation to chart patterns is that many can only be truly identified 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 which 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.

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 following two patterns which although were drawn by myself, 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 which does not actually materialize and the contract heads higher. As the neckline (shown by the dotted line) has not been breached, chartists will tell us that a head and shoulders 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.
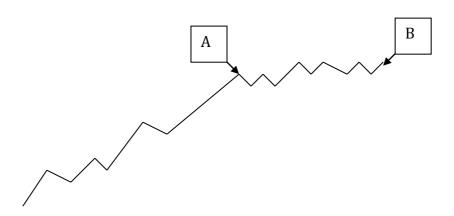
On the right is a similar pattern except in this example the neckline has been breached, the contract heads lower and the chartists will tell us that the head and shoulders has been formed and has worked. Once again I do not deny that I have seen this type of event occur.

However let's look again at the two examples. Until the final part of the charts, 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 on the right 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, or breaks the neckline or not. Sometimes the contract falls after this pattern, sometimes it rises. Whether or not 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 non-stationarity at work this should not be surprising.

Essentially, the pattern is irrelevant. We can ignore it completely and focus on something that I teach my students; trade the 'now'. The contract on the right in the examples above fell because of what was happening at that time. The contract on the left rallied because at the moment it approached the humanly drawn neckline, the underlying conditions were more bullish. The preceding pattern had no effect on the outcome.

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

Exhibit C

It shows a contract, let's say it is a currency rate, which was in an uptrend but has traded sideways between points A and B. This period of A-B could either be a period of consolidation before a continuing of the rally or a period of distribution before a fall according to technical analysts. Because it 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 which is consolidating before a rally and one which is about to fall. If a chart 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 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 A-B consolidation and if it falls they will call it distribution or a top. This type of analysis is not studying market psychology but is finding a story to describe the markets actions with the added benefit of hindsight. While a range of indicators have been invented which are supposed to help us in this decision making their effectiveness as we shall see is far from clear cut.

Of course another result of only confirming a head and shoulders or double-top etc after the market as moved is that it should have a very high success rate. When I heard from technical analysts that a properly formed head and shoulders has a very high success rate I was not surprised (although my findings in Chapter Four were a shock). I too have a 100% success rate in describing how the market traded yesterday!

THE TECHNICAL ANALYSIS STYLES ARE A FORM OF CLOSED LOOP

In Matthew Syed's excellent book Black Box Thinking he explains how in order to improve we need to learn from our mistakes in what he terms an open loop process. An open loop learning process is one where we can question what happened to a loss

or mistake and are able to improve on it. In a closed loop type process, we can't learn from our mistakes and will be prone to continuing them.

As an example of a closed loop style of thinking Syed recalls the use of leeches in medicine. For centuries, leeches were used as a form of bloodletting by doctors to 'cure' patients. Their use was basically unquestioned by its practitioners. If a patient recovered after the bloodletting, the doctor would declare that the bloodletting worked. If however, the patient died, the doctor would suggest that the patient was so sick, even bloodletting couldn't save them. This type of thinking is closed loop thinking and is a factor both in the inability to learn from mistakes (the doctor here will simply continue to use bloodletting) but also why others take up this form of medicine. Under the thought process explained above, bloodletting essentially never fails. Even if the patient dies, it wasn't the fault of the treatment.

I suggest that the way people are taught to use technical analysis is very similar. If you use a certain combination of moving averages to make a trade decision, perhaps even couple them with chart patterns or other indicators, if you enter a trade and lose you are told that it isn't your analysis is wrong, you just didn't use the right combination this time. So if it works, it is because your analysis was good but if it doesn't it wasn't the fault of your analysis, you just needed to use something else and luckily technical analysis has so many indicators you can't ever run out!

The question is, how can you really learn from this next time? If your system has backtested well you may be loathe to change it after one loss as described before. The processes that technical analysts teach though are nothing more than hindsight evaluations and are essentially a form of closed loop thinking. You cannot respond to the feedback you are getting properly; you cannot improve to become a better decision maker and trader using the methods they teach.

ITS HARD/IMPOSSIBLE TO LEARN AND IMPROVE

Continuing on the last point, it is essential not just for traders but for any decision maker to be able to learn from mistakes. However, as I have already suggested, the technical analysis approach makes this very difficult. For example if you see a perfectly formed double top (as we did earlier in the book), you trade it exactly as told and then you lose, how do you improve? What do you do next time?

There is a very unscientific nature to technical analysis. If we go back to the discussion on using 'levels', I explained how it is hard to falsify statements such as 'if the market stays below X it is going down'. Building a robust, scientific type case for any hypothesis or analysis is about being able to falsify a claim. No amount of confirmation proves a hypothesis. Yet in my experience, technical analysis has been built on confirmation; on people seeing the same things again and again rather than being built on people trying to test or falsify its claims. In this book, I hope to show that if we actually test the assumptions behind technical analysis they actually fall down quite easily.

Adding to the inability to learn from past losses, is the tendency for technical analysts to reframe the situation after a loss. Again, go back to the double-top example earlier in the book. After it failed, the situation was reframed and the market was now in a

'sideways channel'. In Black Box Thinking, Syed recalls a study when some researchers joined a cult who were predicting the end of the world. When the apocalypse didn't occur, one would have thought that the cult members would have doubted their beliefs. However, instead they simply reframed the situation. The world would have ended but the higher being decided to save it because of the actions of these few cult members. As people struggle to face up to mistakes or bad decisions (losses for traders) they face cognitive dissonance (mental anguish) and it is easier to reframe the situation as a win rather than try to learn from the mistake which requires admitting the mistake.

Go back to the Tweet about the failed double-top and the new sideways channel. If the trader really wanted to learn from this, one of the first things they would need to acknowledge was the fact that the double-top had failed. But that would question the whole approach to using chart patterns so the trader doesn't do this. They prefer to reframe the situation. Interestingly the trader in question is actually someone who describes themselves as a trading psychology expert and trading coach. The double-top situation is one of many examples I have seen from this person. A continued theme is an unscientific approach, reframing of losses after times when they are wrong and inability to consider that the patterns and analysis they use may be misguided (hence the reframing).

If you don't know why your system or trade loses money then you can't learn from mistakes. If you can't learn from mistakes then you will struggle to improve in a sustainable way. As traders, we get constant feedback from the market and our trades and we need to be able to respond accordingly. This is a significant part of the scalping style that I teach. In fact, this is how professionals across a range of sports and businesses operate. Constantly responding to feedback. But they need to know what went wrong in order to respond properly. Technical analysis traders simply can't do this which is why I do not think it is a professional style of analysis.

Reframing is a constant theme of technical analysis. Someone who learns chart patterns yet doesn't become profitable will be told to learn more technical tools. They might add Fibonacci levels, moving averages, then perhaps Bollinger bands, RSI. As any one or combination of them fails they will be drawn into learning more. This isn't education or learning, it is reframing. Of course, if we learn dozens of tools with thousands of combinations we will always find one in hindsight that 'worked' but this isn't trading. It's bulls@*t hindsight analysis.

In the first two Chapters we saw that new entrants are told that technical analysis is successful. This creates a huge problem for them. If they start to use some technical tools and find that they lose money (which most will) then what should they do? They will be less inclined to cut losses or stop this form of trading because they have been told by a powerful industry that technical analysis is successful. I have spoken to many losing technical traders who won't give up on the it because they 'know' it will work eventually. Some of these individuals have lost tens of thousands of dollars. They are in a very difficult position. If they knew the truth about technical analysis they may give up on it a lot quicker and also cut losses more quickly.

Traders who just learn technical analysis and have little real knowledge of markets, market structure, proper risk analysis etc will have little ability to understand why

their trades are failing let alone how to fix them. Remember that they are told to ignore the fundamentals so they are unaware how market conditions are affecting their trades. This is a dangerous position.

A common theme across Matthew Syed's books 'Bounce' and 'Black Box Thinking' is the need for and use of feedback. Not only is this essential in order for us to improve but the more feedback we get the better and more quickly we can learn. As I read through his books I was pleased that these concepts that he discusses, concepts that are adopted by some of the most successful people in their fields, fits well with the ideas behind scalping that I teach. However, they are often at odds with technical analysis. For example, a trader who uses chart patterns may only see them properly develop every few weeks or months. Such a trader therefore is not getting constant feedback; the feedback is irregular and can be weeks or more apart. As Syed explains, it is hard to become proficient in any area with such little feedback. The same goes for moving averages etc, they cross very irregularly.

To illustrate my point, imagine a professional golfer who practices one drive or putt every few weeks. Now compare him to a golfer who practices hundreds each day. Which one gets more feedback? Which one will learn quicker? This is the same approach I teach with trading. Technical traders tough, will get fewer trades, less feedback and therefore it will be harder and take longer to improve, even if it was more of an open loop process where learning was possible (which it isn't!).

THE IMPORTANCE OR OTHERWISE OF VOLUME

Volume, we are told by technical analysts, is an important indicator. Larger than normal volume we are told, 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 including derivative trading as discussed earlier in this Chapter. Dow Theory which incorporates some of the core rules of technical analysis states 'Volume must confirm the trend.'

Not including volume into a study is also one of the primary criticisms made by technical analysts towards negative studies of their field. So if a study is released showing that the crossing of moving averages etc does not work as a successful trading tool, technical analysts will almost always claim that although on their 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 website 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 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 belief of technical analysts suggests they should not analyse it, the fact that they can spot their favoured 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.

Similarly when technical analysts draw trendlines from highs and lows or use support and resistance levels, do they check the volume at the points they are using? I have not seen one technical analyst seek out volume data when using those points. So a trendline may be drawn from a top of a particular day's range yet what if the market only traded a hundred shares or 1 lot of futures at that price? If you are going to claim that volume is important to confirm moves then shouldn't you use volume to confirm support levels and trendline points?

CLOSING PRICES ARE YESTERDAY'S NEWS

One of the most important days of my trading career came after I had been trading for a few months at a major Investment Bank; I was just 19 years old. There is a video on my YouTube channel called 'The Day I Became a Trader' which discusses the day in question more closely. In short it was the day that I discovered that using closing prices was not a good way to determine either the value of a contract or what it would do the next day.

Looking back it should seem obvious that yesterday is just that, yesterday; it is history. As traders we need to trade the now and be able to look ahead. I say it is obvious but for many technical rules it is far from obvious. For, many technical rules use the previous close as an important rule for the entry of a trade. Whether it's a daily close, weekly close or whatever time period you use, we are told that the market must have closed above/below a certain point. Closing prices are very important to technical traders and their rules. Yet yesterday's closing price is old news; it literally is yesterday's news. That's even without getting into the ins and outs of the type of trading that takes place around the close (often a combination of junk and rebalancing).

Let's take an extreme example, stock GAZ closes above many key levels, short term moving averages close above medium/longer term ones etc; whatever criteria you use based on closing price. They all trigger buy signals. But after the market closes, stock

GAZ issues a big profit warning. What effect will those technical tools have? At this point, if you are suggesting 'but of course I would use the fundamental information' or 'this is an extreme example', you are missing the point. The point is that your signals are using old information. The next day, when you come to trade, if you are using yesterday's information whether that's closing price or whatever, as the basis for your trade then you are trading on old information. You are not trading the latest information, you are not trading the 'now'. If you are saying that in the example of GAZ you wouldn't use the old information of yesterday's closing price once you see the new information then you agree that the closing price is old. In that case you should be prepared to follow that process every day and be less likely to use any closing price.

In the first version of the book I showed an example when a technical analyst explained a number of reasons to go long US equities. There were many criteria, most based around the market having broken a down-trendline (closed above), a bullish engulfing day, closing above previous levels etc etc. The next day US equities had one of their weakest days for weeks. All the various indicators based on closing prices were useless when conditions changed the next day.

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 equities the fact that other people are buying it, on its own is not 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 Jones' but I see this as a character flaw and one which 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 or agree why others are buying or selling then I will not simply follow suit. To leave my entry points and subsequent exit points in the hands of other participants by using 'levels' is also something that I am very uncomfortable with. I want to make my own decisions based on my own research. In doing so I believe I have a much greater chance of understanding the reasons behind any profits or losses that I encounter. Only by knowing why I was right or wrong can I improve my decision making and improve my trading. This also touches on the ideas of open/closed loops and responding to feedback.

One could argue that there are three types of 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 'mums and dads' investors relying on any form of noise to trade with. I classify them all together because they are all extremely reactive in nature. They will trade only after the first two groups have traded and that might even be buying from participants from the first two groups who are now taking profits. From time to time they will have successes but they will encounter times when they were too late on the trade and they will face large losses. I cannot see why anyone would want to be in this group. I believe that we should either try to gain an understanding of the markets so that we can join those in the first group or, if that is too difficult for us, we should not enter this business at all.

THE RISKY NATURE OF TECHNICAL ANALYSIS

As I pointed out in Chapter One we often see technical analysis described as being able to show us or forecast tops and bottoms and market reversals. This all plays in to 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. What I want to illustrate is that trying to 'sell the high' or 'buy the low' sounds like an impressive strategy but is actually very risky in nature, especially when we are using methods of analysis which 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 3 recessions but technical analysts can be prone to prediction too. Trading is not about predicting; it is a matter of weighing up outcomes and risks.

Looking for tops and bottoms is a complete red herring. We should just be interested with 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 which looks like it has formed a top on a graph then so be it. If it means we sell a contract which 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 in trying to make our own decisions.

I will outline the findings of many studies into 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.

THE WISDOM OF CROWDS (hat-tip to Matthew Syed again!)

Supporters of technical analysis point to the idea of 'The Wisdom of Crowds' as a reason to use their tools and indicators. The Wisdom of Crowds is indeed a powerful concept and one supported by significant research. The premise is that the knowledge of the crowd is greater than the knowledge of an individual. Therefore crowds make better decisions. As I say, there is merit and supporting research to this idea.

But! The premise behind the Wisdom of Crowds is that each individual in the crowd makes his own decision without knowing the views of the others. For, example if you wanted to guess the weight of a bull in a field so we ask one thousand people to provide their guesses but each is made in secret. The Wisdom of Crowds suggests that the average response of the crowd will be quite accurate, far more accurate than the views of one person. So many technical analysts argue that by examining the views of the crowd through charts etc, they are using that collective wisdom.

However, in markets, people are not making their guesses in secret; they are showing everyone what they think. Why does this matter? Because the suggestion of one person will influence the next person and so on. If we return to the example of trying to guess the weight of the bull; if the first person to guess stood in front of the others and stated his guess, this will likely influence the second person and so on...This process is likely to just amplify the views of the early guessers. It is a very different process to the actual one suggested in The Wisdom of Crowds. The two processes will deliver very different results.

In financial markets, we see the views of others; many people will use those views to guide their own. In fact technical analysis through 'levels' etc does just that. This process is not The Wisdom of Crowds.

GAP THEORY

My first few years in this industry were spent as a market maker of various products. Every day I and my fellow market makers would set the prices for the contracts/products we traded. We were the traders that hedge funds, pension funds and other big traders came to when they wanted a price to buy or sell the contract. We literally set the prices.

Some days market conditions had changed (sometimes dramatically) and so we had to adjust the prices of our contracts quite a lot. Doing this, I now know creates 'gaps' between today's opening price and yesterday's closing price. Yet for many years I had no idea about 'gap theory'; the technical analysis theory that markets will want to close gaps. Further, as a market maker I had no predisposition to wanting to close this gap or for thinking the market wanted it closed at some point. As a market maker my job is to make the best price possible and to create a price that reflects the current market conditions.

I was first taught about gap theory by a broker and then further explanations came from technical analysts. Yet their explanations didn't fit at all with what in reality I and my market making colleagues had been doing. This looked to me like a classic

situation of people who didn't understand how markets work, coming up with (misguided) explanations for what they saw.

At the start of a new day or after some major news, markets will 'gap' but this is just a repricing. In terms of markets 'wanting' to fill that gap, the idea is pure nonsense. Does that mean that gaps won't be filled? Of course not. Of course gaps will be filled one day through market action but it's not because the market has any inclination to do this. It's like me going into a restaurant, pointing to a table and saying 'someone will sit at that table'. I didn't say when it would happen; it might be today or it might be a three weeks time. At some point though I will be 'proved' right. I have seen technical analysts talk about gaps closing after months and sometimes years! This is nonsense. Like my restaurant table guess, when it comes true it has nothing to do with my guess. It's just part of the day to day randomness and volatility of people's decision making added to the conditions of the time.

REMEMBER, THE LINES AREN'T REAL!

The way that some technical analysts talk about trendlines etc you'd think the lines were real rather than being arbitrary lines drawn by people who seem some kind of pattern or trend. Remember the Dax lines from earlier in the book. The lines are really just a reflection of what one person sees when he looks at a chart. It is one reason for the variation in views and levels etc as different people see different patterns. But these lines and patterns aren't real they are what people see when they look at a chart.
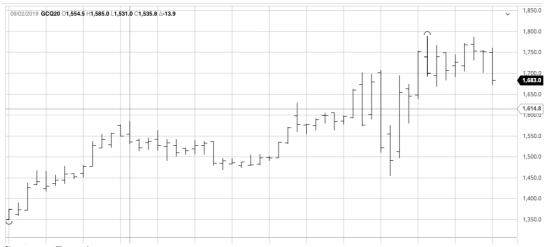
Look at Chart G below;

Chart G

Source: LinkedIn timeline (Unsure of source of chart)

The technical analyst looked at this weekly chart of Gold and saw a flag type image and constructed his lines and targets accordingly. The Gold contract had broken out of the formation to the upside so he notes this with the word 'break' and shows us his target.

Chart G2 below shows us what happened;

Chart G2

Source: Barchart.com

Obviously we can see that Gold did not break higher towards his target and actually fell quite sharply. The 'buy' signal was almost near the market high which would always be the case if you buy on a 'breakout' and the market didn't head higher.

I'm not just showing this example to try and prove that such patterns don't work although clearly in this case it didn't.

I want readers to look at Chart G2 where I have not drawn any lines and ask, 'Do you see the flag?' Some of you may but I suspect some may not. Perhaps you can understand more clearly, my point that these lines are just one person's interpretation of what he sees. Of course, if we don't look for patterns we won't be drawn into drawing these lines; this would be the better approach in my opinion.

LET'S JUST LOOK AT THE NUMBERS

From my discussions with private client brokers in London over decades, through reading industry magazines and journals and chats with brokers here in Australia and around the world 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 which 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%. Among futures and FX traders the failure rate is believed to be above 90% and possibly close to 95%*. What is particularly interesting here is that industry estimates suggest that around 90% of retail futures and FX traders rely on technical analysis. This is higher than the percentage of technical traders across all markets which include mums and dads holding privatization shares and those acting from tips and rumours etc. So if we took a sample of 1000 futures or FX traders,

roughly 950 will be losing money. 900 of the 1000 will be using technical analysis. Around 50 to 100 maximum will be making money. Even if all the winners were taken from the technical analysis traders (unlikely) that gives us a win rate of between 5.55% and 11.11%; hardly proof of a successful and robust form of analysis.

The fact that the failure rate of futures and FX traders is higher than the industry average (e.g. share traders) and that futures and FX traders are more heavily reliant on technical analysis actually suggests that charting is a disadvantage to traders. In fact we will see a study that shows just that.

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 and FX industry that a vast majority of private traders lose money and that most of them 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 good at recognizing trends and spotting correlations they seem to be blind to an obvious one!

The usual explanation given by brokers and technical analysts to this poor performance of futures and FX traders 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 trading account that could determine whether a trader would make money trading futures. As we shall later on in the book, this will often be the case for traders who use technical tools because their reliability 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 account which is the problem but the reliability of the trading technique.

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

*In his book "Noise" Alex Preda examined an FX platform of 77,000 active traders where only 1.31% of traders were making profit on at least 50% of their trades. On another FX platform they calculated that the probability that at a trader would be profitable on any given day was just 14%. Remember this is essentially a 50-50 business. Very few retail FX traders use fundamentals or for example are able to use the 'carry trade'. Most retail FX traders use some form of technical analysis and many were introduced to FX trading by technical educators. Clearly not only are the tools they use unreliable but the majority of the traders fail.

CHAPTER FOUR

STUDIES OF TECHNICAL ANALYSIS

So far we have examined my own concerns with technical analysis, concerns which stem from my experience as a trader and questioning the rules and assumptions that lay behind charting. It was clear to me back in 2004 when I first thought about writing this book, that I would need a lot more evidence than just my own views, no matter how strong some of the arguments were. So I started to investigate what sort of independent studies had been conducted into this area.

I spent nearly two years writing to institutions, downloading studies and research reports and working methodically through them. I was actually astounded by how many studies existed which got me thinking why these hadn't got out into the public domain earlier. Later on, I worked with an Associate Professor from the University of Western Australia to go through my findings and make sure I wasn't misrepresenting the research.

One particularly intriguing point came up during this research process and my discussions with the Associate Professor. Namely that studies into technical analysis had increased considerably into the 1990s and beyond usually for a very particular reason. The world of Economics at that time was dominated by those who supported Efficient Market Hypothesis (EMH). EMH is in simple terms, the belief that, as information hits markets randomly, you cannot beat the markets. The reason why this relates to technical analysis research is that if economists could prove that there were patterns that were not random or people could make consistent profits from markets using certain tools or indicators, then this would diminish or even demolish the case for EMH. Therefore, there were many people who perhaps were hoping their research would lead to positive results for technical analysis.

What I have done in this Chapter is to find a robust group of studies which 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 more closely at them the story is not quite so simple.

Importantly, from an impartiality perspective, 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 to institutions who are known to be anti-technical analysis. I believe that I have not used any of these in this chapter. The authors of the studies I have used are purely attempting to study whether markets are efficient or not and whether the technical rules which are so widely used are actually beneficial.

I have also tried to concentrate on studies involving large sample periods and which stand up to more rigorous scrutiny. For the most part this means that I use studies from the mid-late 1990s onwards which 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 during 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 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.

NEARLY 8,000 TECHNICAL TOOLS, SURELY ONE WOULD BE PROFITABLE?

The first study we will examine is the one by Sullivan, Timmermann and White from the London School of Economics (STW) as it has applied techniques 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) in 1992 which applied twenty-six trading rules to 100 years data on the Dow Jones Industrial Average, from 1897-1986. BLL had found that some trading rules had shown quite significant success however they 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 eight thousand technical trading rules on this data and tested both sets of rules on data from 1986-1996 which was obviously 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 in their original study found that the most successful strategies were those based on long moving averages (50-150-200 day) and the best performer was a 50-day variable moving average which yielded an annualized return of 9.4 % (as opposed to 4.30% for just buying and holding). STW found that the best trading rule using the increased sample size of 7,846 rules was a standard 5-day moving average which produced a mean annualized return of 17.2%. 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 their best trading rule would have generated 6,310 trades or 63.1 per year. In order to be profitable after transaction costs these costs would need to have been lower than 0.27% 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 towards the end. So as far as US traders are concerned the authors were unable to conclude with this study whether or not the methods were successful after transaction costs. (In my opinion for most of the 100 years period, transaction costs would have been significantly above 0.27%).

To help them make a decision on the whether the trading rules would be profitable after transaction costs in the US, 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 ever completed on technical trading rules suggests that although some rules perform extremely well before transactions 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 can source or make solid gold watches at $100 I know that I could make a great profit on them. But I cannot make them or source them that cheap so there is no point in thinking about it. I would also expect that if such a time occurred 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 only profitable if unobtainable transaction fees are assumed, to be realistic or successful.

Indeed BLL themselves, in their conclusion, suggest that careful consideration of transaction costs is needed. In fact Bessembinder and Chan in their 1997 paper 'Market Efficiency and the Returns to Technical Analysis' conclude that real transaction costs would likely have been higher than the breakeven costs required of 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. Firstly 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 studies that were applied are affected by survivorship bias. Remember we are only testing rules which we know are the better ones 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 due to poor performance. So the results that we get testing today's best rules on yesterdays data may help to show us how today's tools would have performed over the period but 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 which are no longer used. STW have tried to use studies that they can prove were used for at least a large part of their study period but most studies do not account for this.

Furthermore, to achieve STW's best result of 17.2% (before costs) we would have needed to have known at the time, which out of the 8,000 odd studies 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 which 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 how the vast majority of traders would almost certainly have lost money (after costs) using these rules.

But of course the few who did win, would claim that technical analysis works.

USING THE BEST PERFORMER IN THE PAST DIDN'T HELP

Expanding on this last point, STW recognized the problem of how a trader could have determined the best technical rule before 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 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 –GN).

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 using this back testing approach. Here we have further proof (for those who needed it) of the lack of success for 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 could these 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 will 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 uses far more rules to test from. He also tests the BLL results using this technique to 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 their 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 which 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 chart or past data are the actions of past traders which we can only use if we either know the context of these actions or if future price action exactly resembles that of the past; an almost (but not quite) impossibility.

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

any way mean that this tool will make money in the future. Firstly 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. Secondly 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 AND POOR PERFORMANCE

So during the 100 year period of 1897-1986 certain technical trading rules were observed to produce significantly positive results excluding transaction costs. Including fees, their success was not so obvious. However the results changed considerably when STW tested the trading rules in the period of 1987-1996. 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 useable. In fact LeBaron (of BLL) performed the same tests as BLL for the period 1988-99 and found that the trading rules performed much worse in this period.

Furthermore this is not the only study to report such findings. A common feature of many studies, whether they support technical 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 totally from this period onwards.(I discuss why this might be the case in the next section Hypothesis- why the performance of technical trading may have diminished in the 1990s)

WOULD DRAWDOWNS AND AMOUNT OF LOSING TRADES FORCE YOU OUT?

As well as the problem that the results of testing retrospectively can be distorted by survivorship bias, just analysing 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 study period.

For example, in a study by Neely which has favourable 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%. So, although over the whole study period of March 1974 until 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% of his capital. This is a significant drawdown and one which may well in reality cause a trader to change his trading technique. In fact in the second year of Neely's study the return of one of the moving average rules fell sharply towards zero and this excludes transaction fees. 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. They would probably look for a different method. So again, perhaps the overall conclusions of the study are not as favourable as at first glance. They assume that even after a poor trading year a trader will continue to use the same methods.

STW only break the results of their 100 year study 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 only take one period of significant losses to persuade a trader to change technique and so even if he was using the best technique (which remember we only know with the benefit of hindsight) if he had had even one, six month or one year period of negligible or negative returns (including transaction costs) the trader would probably have changed technique.

However within the results of STW's study there is 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 this data is that the risk reward of the trading rule seems good with the profits from the winners outweighing the losses from the losers. However if we analyse 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 run 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% 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 down, in our favour or 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 of nearly 8,000 technical tools, the best trading rule was right only 40% of the time. This type of performance is supported by other studies including the Market Time ™ study that I quoted from in the last chapter. One could therefore argue that rather than increasing our ability to predict future price movement, these technical tools actually are very poor indicators.

Yet 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 that is why we are told 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 will hopefully 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 when analyzing it on solely a mathematical basis. As a trader I am interested in how I would have performed if I had used the trading rule in question during 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 for example would reconsider the trading approach they were using. Thus just analysing 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 analysing past data. There are so many considerations (not to mention flaws) that it is by no means as straight forward as we are often led to believe.

HYPOTHESIS – WHY THE PERFORMANCE OF TECHNICAL ANLYSIS DIMINISHED FROM THE 1990s ONWARDS?

I have said that many studies into technical trading have shown that its performance dropped during the 1990s and it is worth considering why this might be the case as it could help us analyse 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 powers. However it is highly unlikely as we have seen that they would have remained profitable after accounting for transaction fees. 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 for 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 fees that are unavailable to most. Transaction fees are an unavoidable part of this business and must be factored in.

Although many of their followers would have lost money there would have been some successes and besides, because they could 'prove' that their technical system worked using data which 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 which appear to have good predictive powers but in reality high transaction fees would have prevented most traders from benefiting. In fact high transaction fees were only one of the problems

that private traders faced. The success of the technical rule would have 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 US in the 1930s. Prior to that such practices were believed to be widespread, after all that would have been why the laws were introduced. Perhaps it was this activity that the technical rules could pick up? Once again the context of the period must be known before we can make any claims on 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. 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 enforcing these laws. If you truly believe that there is a trader, or group of traders who are illegally manipulating the market you are trading then you shouldn't trade it. I know that many retail traders still talk about a 'they' who are supposedly moving prices against the poor retail guys. I have yet to see evidence of this as the norm aside from an occasional instance of impropriety.

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 some technical measures become widely chronicled. In fact the methods of these individuals still form the basis of many technical studies today.

However as I discussed in Chapter One, our markets began to change substantially in the late 1980s. Transaction costs fell substantially and liquidity, information and communications improved dramatically too. Numerous pieces of legislation had been introduced since the 1930s and the influence of regulatory bodies around the World increased too resulting in far fewer dubious trading activities. Now even the average private trader could try and 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. 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 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 than what we have is a collection of technical trading rules which may have picked up inefficiencies in liquidity, information and transaction fees but were not analysing market psychology as we are led to believe. They could have been interesting measures in their time but not any more. The recurring problem that we face when analysing 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; they can never know what exactly their study appears to be exploiting so can never know when it might stop working, if indeed there is any explanation to the profits other than luck or randomness.

Park and Irwin examine the performance of numerous technical rules on twelve futures markets for the periods 1978-1984 and 1985-2003. One interesting point about this study is that the researchers apply different transaction costs over time; they apply higher transaction costs in the early years and reduce them over time, in line with what a real trader would have faced. They too find that technical rules performance declined over time and the tools were not profitable in the later sample. Futures markets were much harder to access for retail traders back in 1978 compared to say 2003.

Fang, Jacobsen and Qin also tested BLL's technical rules on data from 1997-2011. They found no evidence that the technical tools wee profitable. Interestingly, they also tested the tools on data from 1885-1986 and found that the tools weren't profitable then either. Obviously getting data from that far ago is difficult and I have not read any other studies using such old data. These results though, would suggest that popular technical rules may never have been profitable.

The concept that the technical trading rules which 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 supporters. The usual grounds on which technical analysts dismiss the suggestions are that theirs is a study into market psychology and market psychology has not changed. But can they really be certain that theirs really is a study into market psychology?

I gave many examples in the previous chapter of discrepancies between technical analysis and how I have seen market psychology to be. In the next chapter I will discuss the discrepancies between the findings of behavioural finance and technical analysis - behavioural finance being studies into how people actually go about the decision making process. Perhaps the decline in performance of technical indicators from the 1990s coming as it did at the same time markets became easier and cheaper to trade was purely a coincidence. But there is a possibility that in fact any benefits these might have had may have been because they 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 fees are no longer barriers of entry for most traders.

If you believe, as technical analysts 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 in stock markets but 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.

A 2005 study by Hsu and Kuan tested nearly 40,000 technical tools including chart patterns on the S&P500, DJIA, NASDAQ and Russell 2000 Indices from 1990-2002. The S&P500 and DJIA were both mature markets whereas the NASDAQ and Russell were much younger markets particularly in the early years of that study. They find that the technical tools perform badly on the more mature S&P500 and DJIA Indices but perform well on the NASDAQ and Russell 2000. This study adds support to the argument that perhaps as markets mature and more people trade them, technical tools can be self-destructing. I should add though, that with the Hsu and Kuan study they present the results for the best rule but for a trader, you would have had to have known which out of the 40,000 tools would be the best one!

The results of the tools on the NASDAQ are interesting, remembering that we are seeing the results of the best tool from the 40,000:

(Note: When looking at the performance of the best technical rule on the NASDAQ make sure you compare it to the Buy and Hold that year).

Year	Best Rule After Transaction Costs on NASDAQ	Buy and Hold
1990	58.6%	-17.8%
1991	56.6%	56.9%
1992	25%	15.5%
1993	30.8%	14.8%
1994	23.7%	-3.2%
1995	32.4%	39.9%
1996	30.3%	22.7%
1997	45.8%	21.6%
1998	15.9%	39.6%
1999	-3.1%	85.6%
2000	-8.7%	-39.3%
11 year average	27.9%	21.5%
2001	19.3%	-21.1%
2002	-22.4%	-31.5%

One thing that stands out to me about the NASDAQ results is how they clearly deteriorate over time. From 1998 to 2002 the performance of the best technical tool doesn't come close to the 11 year average. What do we know about the NASDAQ during those years? It attracted many new traders to it.

The self-destructing hypothesis is therefore an interesting one to think over.

So we must consider the real possibility if not probability that rather than picking up and profiting from market inefficiencies or liquidity problems, the performance of technical tools was distorted by liquidity or accessibility issues. Many of the trades which would appear in back testing etc to be successful were actually unavailable to most traders due to lack of stock borrow, short selling restrictions etc. In addition even if technical tools can with hindsight pick up on previous market inefficiencies this offers us no basis for making judgements on the future but can only be viewed on a historical level.

An interesting more recent study sheds further support to this view. Marshall, Sun and Young (MSY) test technical trading rules on 866 NYSE stocks and 199 NASDAQ stocks from 1990-2004. Again, the technical tools perform poorly but they do find some small improvement in performance on the less liquid stocks,

"There is some evidence that these trading rules are more profitable on small, illiquid stocks, but this result is not strong"

This study is of note to use because it appears to show that even in today's markets, technical analysis tools can perform better in less liquid markets where investors may find it more difficult to act on the signals. Or they may have to pay wider spreads to do so (more slippage) which may not be factored into the modeling. Therefore, technical analysis may be showing profit potential that doesn't exist because it can't be acted on.

STRENGH OF TREND AND VOLATILITY ARE 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 which analyses this possibility was conducted by Boswijk, Griffioen and Hommes (BGH). BGH applied over 5,000 technical trading rules to cocoa Futures trading on two different exchanges, LIFFE and CSCE as well as the Sterling/US Dollar exchange rate.

BGH found that the trading rules produced good results for LIFFE cocoa futures but poor results for the CSCE contract, results which 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 the technical rules were therefore unable to uncover these trends. The Sterling/Dollar 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 the profits of the winners were large enough to compensate for the losses. In order for this to be the case, two situations would need to occur. Firstly the trader needs to be disciplined and cut losses and secondly the move on the profitable needs to be sufficiently large enough to cover the losses which means that the trend needs 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% of the time but we can deduce that on the other 40% of occasions the tools did pick up on stronger trends and therefore made 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 towards the same conclusion. The author of the Market Time ™ study also explained how technical analysis relies on profits being larger than losses as opposed to the tools themselves being accurate reliable tools. Yet I would suggest that any trader with a decent understanding of the markets is able to pick up and profit from strong trending 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 under some market conditions

(strong trends) but not in others. If there is no reason behind a move or 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 there is no way of knowing before we put the trade on whether or not 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 belies in trends). Technical tools just appear to spot a change in market direction which 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 on chapter two. So we must consider the possibility that the occasions where 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. Other feedback loops include the dotcom bubble of the late 1990s. Again, I don't think we needed technical tools to tell us that internet stocks were rallying.

Indeed BGW 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 BGW study suggests the possibility a direct link between volatility and profitability which is important to us for two main reasons. Firstly 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.' Secondly as I have previously explained, graphs and the typical data of open, high, low and close that is collated by technicians is 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 decisions around it.

There can be confusion among retail traders and sell-siders as to what (high) volatility really is. They tend to think any big move is a sign of volatility. As I explain in An End to the Bull, (high) volatility is essentially the opposite of trend. In a trend, the market moves mainly in one direction. High volatility means the market goes up and down (often violently) and there is no trend. So we should not be surprised that trend

following tools and technical analysis in general performs poorly when volatility is high. However, I haven't found any technical analysts who stop using their tools when volatility increases. In fact, as we saw above, technical analysts often say that during highly volatile times we should be drawn to their analysis.

I'll say again, high volatility is the opposite of trend. If any trend follower or technical analyst suggests using their tools when volatility is high then you should ignore them. They clearly do not understand either their own form of analysis or what high volatility means. It's like a plumber coming to your house and using a hammer to fix a washer just because that's the only tool he has!

STUDIES ON STOCKS SHOWED A DIFFERENCE IN PERFORMANCE BETWEEN LONG AND SHORT TRADES

Another aspect of the technical trading rules which stood out in the studies where the information was available, was that there was a clear difference in the performance between longs and shorts on stock trades.

For example in the STW study, the average return per long trade was 0.39% against an average return for short trades of 0.19%. This is a significant difference showing long trades over twice as effective as short trades. Both types of trades had more losers than winners but short trades had almost twice as many losers than winners. This again leaves the possibility that a trader might have encountered a string of losing short sell trades and would have abandoned the rule for such trades. We should also note how the low return of 0.19% 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% return at an annual rate (before fees) and sell signals were followed by a 7% loss at an annual rate, quite a significant difference.

Once again we are faced with results which 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 sell 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 to trend following in a rising stock market. The psychology of falling shares markets where most people are losing, is vastly different to the psychology if rising equity markets where most are winning. To use the same tools, patterns or methods of analysis for both rising and falling shares does not seem to have any basis.

GERWIN GRIFFIOEN's PhD

Gerwin Griffioen may not be known to many traders but his PhD 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 seek it out. As well as the

cocoa study which I have already discussed, Gerwin tests 787 technical tools and indicators on the Dow Jones Index, the constituent stocks of that Index, 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. Gerwin further tests the back testing approach of applying the best previous indicator to the next trade.

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 are poor but there were a group of stocks within that Index which returned very positive results, some in fact were extraordinarily good. However using the back testing method, the technical tools only showed a decent profit when transaction fees were very small.

For the 50 local Indices the results were also mixed. On average over the whole group the results were positive but there are some interesting observations. The technical rules show no profits for North American, Western European and the more liquid Asian Indices. The overall average positive result was augmented by the results from Indices from countries such as Chile, Russia, Brazil and Egypt. The problem here is that the author had to assume transaction fees and 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 only positive for the Egyptian Index. It is very likely that in many of these smaller markets either or both transaction fees and liquidity were not as might be anticipated by the author. 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 as being a major contributor to the P+L. Perhaps the two main explanations are either that technical analysis exploits these liquidity issues or 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.

Table GG below shows some of the results so that readers can see the stark difference in results.

Table GG

Index	Performance (after risk adjustment, not in percentage terms)
US DJIA	-4.15
US 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

We earlier also saw the results from MSY's study which showed that technical rules performed better on illiquid stocks. So the idea that technical analysis appears to work better on more inaccessible or less liquid markets has further evidence.

COMPARING STUDIES ON STOCKS WITH THOSE ON CURRENCIES

We have seen that when tested on stock markets the performance of technical trading rules is hardly impressive taking transaction fess into account. Furthermore the performance of these rules seemed to depend on a number of factors which 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. However as some of these were conducted prior to the 1990s and we have seen evidence with the studies into stocks that the performance of technical rules diminishes in the 1990s, it is more important to analyse studies which are 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 moving average rule for the $-DM 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 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 1976-1990 , Levich and Thomas too found support to technical 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, showed that the rules' performance dropped quite significantly in the 1994 data sample compared to the 1989 sample. While the authors own view is that the poorer results in the 1994 sample might be the result of weaker trends during that sample period, perhaps changing market dynamics which I have highlighted might also be 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 of 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 in 2000 reported 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 because the patterns are recognised by too many participants and their profitability reduces.

When the authors of the study 'Do Technical Trading Rules Generate Profits?' analysed 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 as 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, when she worked at the New York Federal Reserve, 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 titled "Support for Resistance: Technical Analysis and Intraday Exchange Rates". Contrary to the other studies mentioned on intraday use of technical levels 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% of all the support and resistance levels in the sample (which were provided by 6 firms) ended in either 0 or 5. This suggests that the users of these levels round up or down their estimates to 0 or 5. At this point I will acknowledge that many technical 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 is conducted between January 1996 and March 1998 the performance of the levels were 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. So 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 on the performance of that level. As with the levels that 'local' futures traders used to download, the firms who supplied support and resistance levels gave each level a rating of 1, 2 or 3 with 3 being the strongest or more 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 high or low, 200 day moving average etc appear to be no more important than any of the other technical levels. These levels are claimed by technical supporters to be more psychologically important which is why they weight them so

highly. One would assume that such psychologically important levels would show more of a reaction than they do. Therefore we cannot discount the suggestion that I made in the previous chapter that it is not why the level was created that is important but the mere fact that the level itself 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 probability that any success of these levels are caused by them being self-fulfilling.

In fact if we think about how markets work it is very possible that even 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 most action. That is why those of us who have worked as flow traders (in my case in the futures markets) need to understand technical levels. However a flow trader's role is to just 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 fees the performance of technical rules appears to be better on currencies than stocks. Although there does appear to be some evidence that the performance might have deteriorated by the late 1980s and into the 1990s as occurred with the studies on stocks but this evidence is not as strong as with stocks. This is most likely because the changes to share trading have been far more dramatic than those in the Forex market.

As with the findings of BGH study there does though 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 a good predictor 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 both sets of studies is 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 longs versus short positions there does appear to be a difference between the studies conducted on stocks and those on Forex. Most of the reports which I have studied on Forex 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 for the 1989 data that for some currencies short sell 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 to currencies would seem to agree with my view that they are completely different types of product and should not necessarily be analysed in the same way. For equities, the vast majority of participants are holders or buyers whereas FX markets are a two-sided market with participants usually more evenly spread. Therefore this

would seem to support my view that these two types of market are different and 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 share would be very different. So technical supporters claim that their form of analysis can be used on all markets not only seems 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 analysing data on any time period from one minute charts to yearly graphs. Yet results conducted into 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 into 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 the study of intraday Forex trading the authors reached a similar conclusion saying that especially taking transaction costs into account there was nothing to suggest that these technical methods were profitable. For those of you who are at this point saying 'but my FX platform doesn't charge any commissions', if you buy and sell using their spread then you are paying a transaction cost: the spread.

Neely and Weller discuss the fact that Forex market displayed different characteristics depending on the time horizon. They discuss whether this may 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 with market psychology.

Countering these negative studies on the intraday performance of technical tools are the studies by Carol Osler which 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 there appears to be a better performance for technical tools on currencies than on stocks whether these tools are useful over all time frames as we are told by technical supporters, is less clear and certainly not proven.

The difference in performance of technical tools between currencies and equities also leaves open the belief that their reliability is only a factor of their self-fulfilling nature. This is because we know there are a higher percentage of technical traders in the currency markets than there are in equity markets. However, the results of STW's

tests on futures offers us some contradictory information as futures trading too has a high percentage of technical traders.

Furthermore and importantly, we are told by technical analysts that volume is extremely important for us to make a decision on a contract's psychology. Yet volume is not published for currency crosses, in fact even the trading prices are not published. Isn't it odd that the technical tools appear to do better on contracts where volume isn't seen?

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 away and use them. Firstly just because a large number of traders are using technical analysis and it can be self-fulfilling at time 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. Secondly, even some technical supporters 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. Ultimately though, the he failure rate of technical traders on retail FX platforms suggests that using chart based methods to trade FX is a losing proposition for most who try it.

The biggest problem you will face though is just trying to find the right tool in advance. I'm certain I can find great technical tools for yesterday's markets, the question is can I find the right one (out of hundreds) for tomorrow's?

ANALYSING ACTUAL P+L FROM DIFFERENT STYLES OF TRADERS

I have mentioned how many brokers have told me that the large majority of their clients who use technical analysis lose. It is actually quite a widely known fact in the industry but as these traders are large in number and quite active, the industry is happy for them to stay (plus they feed profits to the market making firms they trade against). If you are in any doubt and want some independent analysis, in 2014 Hoffman and Shefrin were given access to the trading records of around 5,500 traders from a brokerage firm . The data was interesting to them because each trader had been asked to classify themselves as either technical, fundamental or other (other might include trading off tips etc).

Their findings were summarised as flows,

"We find that individual investors who use technical analysis and trade frequently make poor portfolio decisions, resulting in dramatically lower returns than other investors."

"The marginal cost associated with technical analysis is approximately 50 basis points of raw return per month."

So, not only did the technical traders perform poorly, they were significantly worse than either more fundamental traders or those who use other reasons to trade. As a study of around 5,500 traders, we should not just dismiss it's findings lightly.

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 which few technical 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 from holding risk we will struggle. Further, making money from holding risk will not prove that markets are inefficient or can be exploited.

So virtually all the studies that I have used 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 titled "Risk Adjusted, Ex Ante, Optimal Technical Trading Rules in Equity Markets" 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 Behavioural 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 under react. So in recent years a few good studies on momentum trading have been constructed and in particular the link between momentum and volume which technical supporters believe exists has been examined.

In 2000 Lee and Swaminathan released a paper titled "Price Momentum and Trading Volume" which 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 straight forward as technical supporters would have us believe.

There was a distinct difference in how volume affected rising stocks to 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 them. This is because over time this momentum effect completely reverses so a high volume rising stock 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. Firstly 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 supporters is that the increased volume acts as fuel to

the trend, 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 only true for falling shares. So buying stocks with high volume may mean we are late in the cycle and will therefore be likely to lose.

Secondly once again we see a stark difference between how rising and falling shares trade. In this case the difference is with the accompanying volume. It is of course, far easier to tell people that any tool needs good volume to support it; this is an easy story to tell.

In case you are about to go away and create trading strategies based on this study the authors provide a warning. That these findings are generalisations and that individual stocks do not necessarily exhibit all the same characteristics. They further state that,

 "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 many of the latter, faced with the same evidence, would simply suggest a set of trading rules which 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 suggested this was the case (this is the only study that I have used where it might be claimed 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).

This being 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 leads us to be susceptible to being late in the trade. This is the scenario which Hong and Stein described as 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 behavioural finance studies we can generate a hypothesis which is based on how people have actually been observed to trade. When positive new information or data hits the market because many traders use trading approaches based on past action and in general cling to previously held views, the stock will under react. 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 over reacted to the news and may shortly reverse. These late comers, who of course do not know they are late comers because they are told to only follow 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.
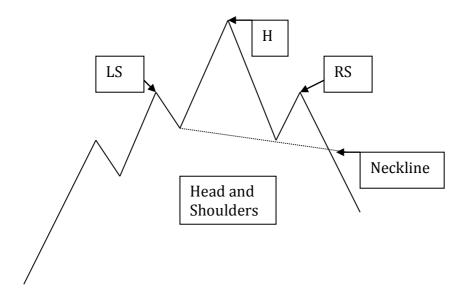
Not only is this hypothesis backed up by many studies including behavioural ones it also more closely resembles how I have seen market participants react. However I must place one important warning similar to Lee and Swaminathan; these are only generalisations and to make better than rule of thumb trading decisions we need to know more about the context of the contract.

Furthermore if we follow and react to the news and data as it is released we do not need to worry about trends or volume etc, we just trade what we see. What we need to do is to weigh up what is being priced in and work out if the trade looks good, a process I describe in An End to the Bull.

HOW EFFECTIVE ARE CHART PATTERNS?

So far we have only looked at studies involving technical filter rules such as moving averages, RSI 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 which appear to have solved the problem. Both studies (which are primarily from the same author) analyse the head and shoulders pattern a pattern which most technical analysts and books tell us is the most reliable. Figure HS1 is a diagram of a head and shoulders pattern.

HS1

In the first study using technical analysis reference books such as Edwards and Magee (1966) and Murphy (1986) the authors developed a system capable of identifying head and shoulders formations and one which would only enter into a trade if the neckline was breached. The system also allowed for the contract to move back towards the neckline after the trade was established without triggering a stop-loss

order as many books indicate that this 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.

When we look at the title of the study "Head and shoulders: Not just a flaky pattern" we would obviously believe 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? Especially when we consider that all the currencies used were quoted versus the US Dollar so effectively we might have had multiple positions but of the same trade, either long or short of the US Dollar. Once again when we analyse the results from our perspective as a trader we might find that we reach a different conclusion.

Also again it is 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 were clear profits and 15 had profits or losses at +- zero and so including transaction costs I would assume them to be losers. Even if we only use the clear losers, they amount to 55% of the trades with a further 9% 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.

GM1 Taken from "Head and Shoulders: Not just a Flaky Pattern" Osler & Chang
1995

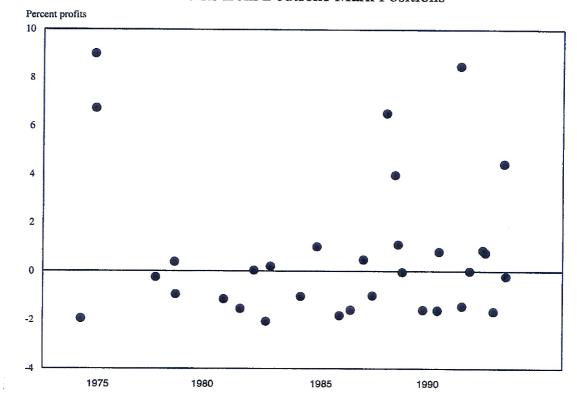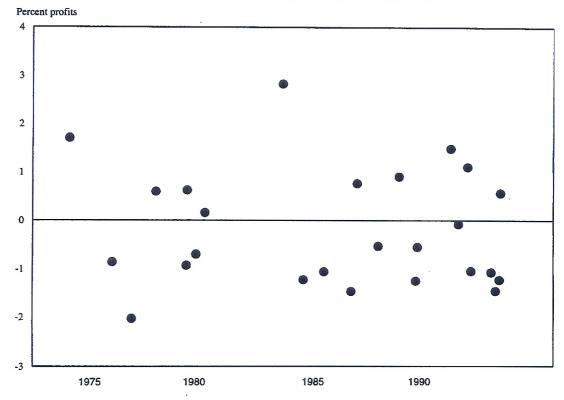## Profits from Deutsche Mark Positions

Percent profits

Figure GM1 above 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 which, over the whole study period, showed a profit for the pattern.

We can easily see that there are more clear losses than clear profits and that there half a dozen or so trades which yielded negligible profits even before fees. The other interesting fact to come out of these results is that for a period of about ten years between roughly 1977 and 1987 out of fourteen 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 to more than cover for the losses.

Let's now compare these results to those from the Canadian Dollar which are shown below in figure CD1
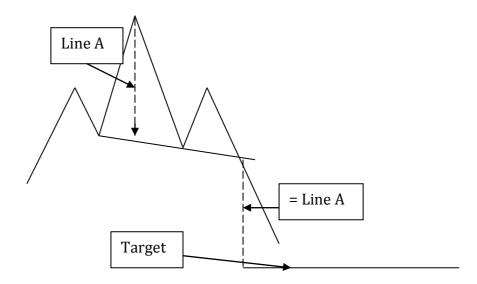
Profits from Canadian Dollar Positions

The Canadian Dollar was one of the four currencies which showed losses from using the pattern. Like the Mark there are more losses 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 reliability less 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 which 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 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 HS2 below), so the authors of the study also tested this claim. They found absolutely no evidence to support this at all. Seventy-three percent of patterns failed to meet their objective and for all currencies except for the yen the average move was well below the target. In some cases the move barely exceeded 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. Firstly there can be long periods when it does not make any money. Secondly it appears to be wrong more often than it is right, so get used to holding and dealing with losing positions. Thirdly 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 can not be forecast in advance. Some readers should hopefully 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. This is a fascinating study into whether noise traders actually do exist, whether or not they can influence a contract's price and whether or not they are profitable. The author (and many others) argues that technical traders are good candidates to be considered noise traders for three main reasons. Firstly there is an *"…absence of reasoned cause and effect in adherent's explanations for the supposed profitability of technical trading."* Secondly it is used by many participants. Thirdly 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 had also had experience of testing this pattern. It is viewed by chartists as a reliable pattern and it is

widely known and used and 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 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 as 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 and volume would then gradual decline 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 pre-empted the break. Furthermore a small proportion waited a further day or two before trading. Further studies confirmed that this type of volume and trading activity was solely evident 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 were disciplined in establishing their positions. She further suggests that such trading could indeed classify as noise trading.

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

One other interesting finding of the study was that, initially following the 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 a technical analyst "The main criticism leveled at technical analysis is the self fulfilling prophesy. We believe this to be UTTER RUBBISH (original author's capitals)."

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 over a period of greater than 30 years and was conducted on 100 stocks. In terms of performance the head and shoulders pattern was actually loss making. 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 has diminished. Furthermore due to it 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 (titled "Methodical Madness: Technical Analysis and the Irrationality of Exchange Rate Forecast") found that using the head and shoulders pattern was said to be irrational because other more simple strategies yielded better results.

When looked at together and analysed in detail the failings of the head and shoulders patterns 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 influences unrelated to the pattern itself. This is nothing like the head and shoulders pattern that we are taught about.

HOW DO CANDLESTICK SIGNALS PERFORM?

Earlier I explained the failure of the candlestick signals that were generated by the experienced candlestick analyst at the Japanese bank that I worked at. Candlestick theory remains very popular among many technical analysts. When I wrote the first version of this book I could not find any good studies on candlestick signals however since then a very good study was conducted by Marshall, Young and Rose from Massey University in New Zealand. They test a large range of candlestick signals including Hammer, Engulfing, Harami, Doji etc. The study the constituent stocks of the Dow Jones Industrial Index over the years 1992-2002. They test and adjust for data snooping etc.

They find that the candlestick signals are not profitable over that period. They add,

"Neither bullish or bearish candlestick patterns provide market timing signals that are any better than what would be expected by chance. Basing one's trading decisions solely on these techniques does not seem sensible…"

As an example of the more detailed findings, only one of the bullish reversal patterns yielded positive returns more than 50% of the time. Interestingly too, they weren't just poor at forecasting direction and direction changes, another point of note was that candlestick patterns were more often associated with smaller than normal market moves after their formation.

HOW DO BANKS AND BANK TRADERS USE TECHNICAL ANALYSIS?

In a study in 1992 called "The use of technical analysis in the foreign exchange market" by Taylor and Allen, over 90% of 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 so 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 into the field. Many authors have noted this study and as so many traders use charting we must investigate the fact 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 needed to know the technical levels because others used them but their profits were generally generated from other means such as being able to set the bid/ask spread. In 1998 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 behaviour 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% could be attributed to speculation. In a paper for the Economic Society of Australia in 2003, 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 from 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 which have a large number of technical traders I sometimes make myself aware of their important levels (note I have gradually phased this out in recent times). This also ties in with how I described futures pit traders using chart levels. However, I like most professional day traders that I know, trade order flow not price levels or technical levels. One of our many advantages is that we can trade on any price, not just the few selected 'important levels' so we have far more opportunities to trade.

Another study by Taylor and Allen in 1989 showed an interesting point and one which I have come across often. They telephoned a panel of chart analysts every week for 9 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 because 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 used by all but on a day-to-day basis, for different technical analysts to come up with different conclusions might suggest some are using means outside of the technical approach. I

would imagine that they all analyse the standard patterns, moving averages, RSI, stochastics, etc.

SUMMARY OF THIS CHAPTER

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 into 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 predominantly use studies by well respected people, ones which offer an insight into why technical analysis might or might not yield profits and when possible, ones which have been rigorously tested especially for data snooping. I am confident though that I have examined many more studies into technical analysis then almost all chartists. This updated version of the book also includes new research and studies with further information for us.

One of the most reliable studies is STW as it tests nearly 8,000 rules on over 100 years of data. The best rule that it found needed transaction costs of below 0.27% for the past 100 years to be successful. In reality an average transaction cost over that period would almost certainly have been higher 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) these technical rules did have, has diminished considerably in recent times. We must therefore be open to the idea that these rules may have once picked up on or have been exaggerated by some market inefficiencies but that these no longer exist as markets have opened up and new laws enforced. Perhaps 'successes' were due to data snooping or including fees there were no successes.

What is clear is that, for shares, the performance of longs is far superior to that for short sell trades 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 seems 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%. Even 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 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 so many sub-plots etc in our markets in addition to the more prominent ones I have described.

The studies on currencies appear more supportive for charting but I have to add that they are 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 only use tools which are known to be of better quality. There remains the possibility though that due to the nature of the Forex market, reasonable profits can also be generated from short sells 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 as to whether technical tools can be used across different time frames.

We have also seen how technical trading does classify as noise trading and can be self fulfilling. The effect of technical traders after the forming of a head and shoulders pattern was clearly evident in the Osler study of 1998. The results of this study lead me to hypothesize whether with many forms of technical analysis, there can be an initial period where they are self fulfilling but then any subsequent performance will depend on whether other (more rational) traders see other reasons behind the move (market fundamentals). 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 they 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 which often have little reasoning behind them. If we only use technical tools we are in danger of reading to much into these moves. As we have seen, more often when a technical indicator picks up on a trend or trend reversal it is wrong. In particular during volatile conditions we should expect such tools to perform badly 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 etc when manipulation and insider trading were common. There were more grounds to believe that others knew 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 malpractices are far less common, following others' actions is not necessarily a good way to be.

Technical analysts may argue that they will accept the poor reliability of their studies if they prove profitable over the long term. Well, firstly, there is no conclusive evidence that these methods are profitable after fees in the long term. Secondly, if we use a system with such poor reliability we have a very high chance of experiencing a series of consecutive losses. It is not good enough even 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 in the first Osler study into the head and shoulders pattern how even with the DMark 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 long 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 he had enough money a trader could go on doing this ad infinitum as there are so many tools, yet he would never be learning anything about the market (other than the fact that it is good at taking his money) and is not improving his decision making.

Hopefully what should be 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 Three such as the issue of non-stationarity 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 any profits from technical trading are the results of holding risk. Large drawdowns, long periods of little or no profits and a high number of losing trades might all suggest a system of analysis where most users 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.

During the researching of 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 which serves as a warning to traders. Profitable trading using technical tools requires low transaction fees 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 into technical analysis suggest that only bank and floor traders really stand any chance of profiting from technical tools.

It is also interesting to compare these conclusions to what we know from the futures and retail FX markets. The studies suggest that if we use technical tools we need deep pockets to survive and that most traders will struggle. This is exactly what we see in the futures and retail FX industry; a majority of private traders who use technical analysis lose money. Furthermore brokers often claim that their failure is a result of only having 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.

If you are still wondering why you can easily find profitable technical analysis tools when you overlay them on past charts/data it is simply because you are data snooping. You already know the answer so you keep looking for a tool among the many available until you find one. The point is that you could not have found it before the

move, only in hindsight. Kuang, Schroder and Wang for example in their paper "Illusory profitability of Technical Analysis in Emerging market Foreign Exchange Markets", investigated nearly 26,000 technical analysis tools including patterns on ten emerging market currencies. Their conclusion,

"...we find that the best rules can sometimes generate an annually mean excess return of more than 30%. Based on standard tests, we find hundreds to thousands of seemingly significantly profitable strategies. Almost all these profits vanish once the data snooping bias is taken into account."

What they are saying is that when you conduct analysis in the way that almost all technical analysts and retail traders do, you can find lots of seemingly winning tools. But they can all only be found with the benefit of hindsight through data snooping.

CHAPTER FIVE

BEHAVIOURAL FINANCE AND TECHNICAL ANALYSIS

Over the past thirty or so years, arguably the most exciting developments in economics have come in the field known as behavioural finance. For the first time psychologists Amos Tversky, Daniel Kahneman and then economists such as, Richard Thaler and Andrei Shleifer have actually studied what influences people when they make decisions which concern 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 which surround this decision making process. This is because humans have not evolved with the purpose of making such decisions and the rules of thumb are effectively short cuts which help us reach conclusions more easily. As well as these rules of thumb, these behavioural 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 and are hindrances to us 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.

When I wrote this Chapter for the first version of the book back in 2004/5 behavioural finance was still a new concept for the retail trading industry. In recent years books such as Thinking Fast and Slow by Daniel Kahneman have made this topic more mainstream. I obviously welcome that. However, I have found one very interesting repercussion.

As behavioural finance has become more popular and perhaps 'in vogue' I have witnessed some technical analysts now claiming to be behavioural finance experts. Some now claim to be trading psychology experts. I suppose I shouldn't be surprised. Whenever a new product is launched (e.g. retail FX, CFDs etc) technical analysts are quick to jump in and claim to be expert traders and so this is a continuation of that. What I find interesting though is, as we shall see in this Chapter, the findings of behavioural finance are completely contrary to the assumptions of technical analysis. In fact, as we shall see, the use of chart patterns for example is a clear example of one of the most well know, irrational decision making short cuts. I therefore cannot understand how someone can call themselves an expert in behavioural finance and then use charting as a method of analysis. It's like saying you're an atheist who attends church every Sunday or a vegetarian who eats meat!

To begin with we'll look at the concept of framing and then we'll study some of the rules of thumb that plague decision makers and hurt their decisions. I will then explain how these concepts tie in with technical analysis.

FRAMING & PROSPECT THEORY – WE TREAT LOSSES AND GAINS DIFFRENTLY

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

This style of thinking contradicted classical economics which assumes that people will always make the decision which will lead to the best return. Tversky and Kahneman'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 loss led to much debate within economic circles. It also led some economists to try to apply their theory to the financial markets to see if it offered a better explanation of how markets worked to 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. What we can say though, is that the context of a decision is important when analysing the result. As I have stated, chartists have little regard for context and indeed a chart or data is not a good method of trying to analyse context. Technical analysts look at the past because they believe that traders will react in the same way when faced with the same decisions therefore ignoring 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. This goes some way to explaining why stock markets in particular trade differently when they are rising to when they are falling. Investors will make different types of decisions and take more risk when they are losing money which for most of them is when equities are falling. When equities rally, most people are making money and will act differently.

So the behavioural finance findings also seem to support the view that the decision making process will be different when a stock is rising to when it is falling. Therefore to believe that the same chart patterns will be formed by market psychology 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 sell 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 falling stocks as we use for strong stocks is to ignore the findings of Prospect Theory. I would suggest though that most real professional traders know that equities trade differently when they rally to when they are falling, particularly if they are falling sharply. But technical analysts use the same tools in both conditions and believe that market psychology is similar in both too. If you use head and shoulders tops and bottoms,

double tops and double bottoms etc you are saying that the psychology of traders at both tops and bottoms is the same.

We can also see that this type of decision making (taking risks with losses) is not rational and will not lead to the best outcome as far as trading and investing is 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 behavioural finance which 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.

ANCHORING

Tversky and Kahnemann found that when faced with making a decision on an uncertain outcome people would grasp at any, even unrelated 'information'. For example they ran an experiment using a wheel with numbers from one to one hundred. Participants were asked a question such as what percentage of UN countries were African and then the wheel was spun to produce a number. However the wheel was rigged to stop at either ten or sixty five. The median response to the general knowledge questions from those who were shown ten on the wheel was twenty-five and for those who were shown sixty five the median response was forty five. People were grabbing at whatever numbers were around even though they were irrelevant, to form a conclusion. This process is called anchoring; the answers that were reached were anchored by the data that was 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 it at that price. Others might look at the P/E ratios of other stocks in the same sector and just apply those to the stock which they are analysing. 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 short cut to working out a fair value for a product. Anchoring is an important reason why the Wisdom of Crowds doesn't apply to financial markets; people are anchored by other people's views/trades.

How does this affect our trading decisions? As well as the fact that anchoring is irrational, it can lead to poor decisions especially as regards to risk. Only through an understanding of the context behind the price can we try to find out if the market price is justified and how get an idea for 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.

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 learnt from its bad period or that they might revert back to normal in the next period. In his book "Bull's Eye Investing" John Mauldin shows

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

Belief in support and resistance levels can be traced to anchoring too. Levels where people bought and sold in the past are just assumed to have relevance today too despite the distinct possibility that the traders who generated those levels may no longer be in the market. Those levels will only be important today 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 backed up by evidence of success. I would say that support and resistance levels are clear example of traders looking for an anchor (short cut) to help them make a decision. When I trade, I don't use any 'levels' in my trading. I can trade on any and every price' they all provide potential opportunities. Not only do I have more opportunities than traders who only trade around 'levels' but I am not anchored to any price.

Note how in Tversky and Kahneman's wheel experiment, people didn't use the exact number shown on the wheel; they knew that would seem irrational or foolish. But they still chose a number close enough to it. Similarly, technical analyst often teach us not to place our stops exactly at the support and resistance levels because that is too obvious. They tell us to place stops a few ticks away. It's essentially the same process as the people in the 'wheel' study.

Anyone who was around a Futures trading pit after a major economic number will testify to the mayhem that ensued and 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 only the results of that day's activity and to only refer to them in context when I trade in a future period. In addition to the irrationality of anchoring to past actions the problem of alternative histories affects these situations too.

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 can therefore lead to under-reaction to new information. Conservativeness can also be caused by over-confidence which we shall examine further on.

Interestingly conservativeness should mean that markets should take time to change direction or trend which one would assume would make it 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.

As traders we need to be open to changing our mind; clinging to an opinion particularly when you are losing money can be costly. I studied technical analysis with two different, prominent, teachers because I wanted to find out if their view had validity. I was open to changing my mind about using charts. After the first course which left many more doubts, I went on the second course just in case the first teacher missed things out or misrepresented charting.

REPRESENTATIVENESS

Representativeness is a bias whereby we estimate the likelihood of something happening by how closely it resembles something else we have seen whether it is information or noise.

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 weighing up the bigger picture, the context of the move or analysing the probabilities of future moves.

So the representative bias, a short cut that we use to try and make a judgement on an uncertain outcome, can lead us to look for trends and believe that these trends will continue. Rather than weigh up various possible outcomes we will look at the recent history and just expect it to continue. As Robert Shiller explains

"…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."

Note Shiller's use of the word 'pattern'; he specifically states that people use patterns as a form of short cut to make a decision. Remember these short cuts are irrational and they are short cuts to poor decisions.

By simplifying the market into trends and patterns, technical analysis makes it easier to trade and make decisions. Furthermore the previous price data is believed to contain the information that we need to do this. I can see no clearer use of representativeness in financial markets than the use of chart patterns and drawing lines. Perhaps you can understand why I am so troubled by behavioural finance 'experts' who use chart patterns; behavioural finance literally tells us that drawing patterns is a poorly designed short cut.

The unreliability of technical tools and patterns does suggest that market moves and changes in direction can be more random than we might like to acknowledge but at least we can understand why so many traders look for trends or patterns; it is part of our flawed decision making process. In fact many of the biases that I will discuss are used 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 for ever, they will revert back at some point towards a mean point. If an athlete is criticised for a bad performance and then in his next race he runs well, 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 back 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 look the same must be correlated. This is, of course, not necessarily the case but we struggle to deal with the idea of randomness. Now we can understand why analysing chart patterns became popular. Traders were looking at patterns because finding them would create a short cut when making decisions. They found a few which 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 (un)reliability of the head and shoulders pattern as shown in the Olsen studies supports this.

Looking for patterns and correlations is something practiced in all walks of life. We all know people who talk about their 'lucky shirt' or have read of sportsmen who always wear a particular pair of shoes or who dress in a certain way. Such irrationality is said to superstition but initially they were the result of looking for a pattern or correlation. The footballer wore an old pair of boots and he gave a match winning performance so the next time he plays he wears the same boots again believing they had an influence on the performance. He struggles to accept that there might be no identifiable reason for the performance. He might continue to wear them but obviously his performance will not always be as good and so he might look for other correlations if his performance drops; perhaps putting his boots on in a certain order. Looking for patterns like this helps him get through an uncertain process.

In fact as well as this natural desire to find patterns in events we can also see that the sportsman 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 the past performance may have been affected by a whole myriad of reasons including chance. Then when this eventually fails, he looks again at the past performances for any more patterns that might exist. If a technical analyst or supporter of back testing was his coach he would suggest that the sportsman is applying different tools to different markets. There is little if any difference between our footballer and technical traders yet while we can clearly see that the footballer 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 for 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 when the technical tools will show profits. However, like many of the biases it has not evolved to help us make better decisions it has been developed to help make the decisions easier. There is a big difference. Remember, markets can either go up or down so any trade should have a 50% chance of success. Even a poor trading tool will be right sometimes but then a broken clock is right twice a day!

Further evidence that people see patterns and correlations that don't exist can be seen from the work of L.J and J Chapman. They conducted a test where they showed a pair of words to a subject every two seconds. On the left hand side the word would be one of; bacon, lion, blossoms or boat and on the right hand side either 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% 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 over-weight the times when it is correct and believe that it is right more often than it actually is. Illusory correlation can also lead to over-confidence which I will discuss later.

OVER OPTIMISM

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

The two main reasons for this over-optimism are self –attribution bias and the illusion of control. The self-attribution bias is where people attribute good outcomes to their own skill and bad outcomes to bad luck. Such people cannot learn from mistakes but perhaps this is fitting for technical traders because, as we have seen, as the source of their returns cannot be known 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 are resulting in over-optimism. 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 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. For those who chose the ticket the mean answer was $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 which 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.

We have seen evidence of both the self-attribution bias and illusion of control among technical analysis traders. I have mentioned how technical traders tend to attribute their winning trades to their tools but losing trades are often the result of 'unforeseen'

events. When you can't learn the specific reason for your losing trade it is certainly much harder to correctly attribute the blame or indeed learn from the loss.

Relating the illusion of control back to what we have seen, if we consider the use of 'levels' such as support and resistance levels they give the traders the impression that they have more control over what happens at these levels. They are not seen as being the result of randomness and they do not include the possibility that the conditions for their creation no longer exist. Traders will therefore place too much importance on trades created at these 'levels'.

OVER-CONFIDENCE

As well as being over-optimistic, people are also generally over-confident. They think that there are right in their forecasts far more often than they actually are. Over-confidence can be the result of a number of biases. Conservativeness and representativeness and also anchoring can both lead to over-confidence as can illusory correlation.

Hindsight bias can also lead to over-confidence. Hindsight bias is the tendency for people after the fact, to believe that they would have predicted the outcome beforehand. For example how everybody knew that technology shares were overvalued in 2000, yet there were obviously buyers all the way down.

Confirmation bias can also lead to over-confidence. This is the tendency for people to find information which 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 which give them positive results. Many traders and investors when faced with evidence suggesting they could be wrong, ignore 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 look for evidence that it is wrong. Those who suffer from confirmation bias do not do this. John Mauldin in "Bull's Eye Investing" shows a great example which examines whether we are prone to confirmation bias. He shows four cards showing, E, 4, K, 7 respectively. Each card actually has a letter on one side and a number on the other and further explains that if a card 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.

Wason in 1960 was a pioneer in this field. He showed people a three number sequence such 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 if their sequence conformed to the rule or not. At any point the subjects could stop when they had discovered the rule.

In order to correctly work out the rule subjects would need to look for disconfirming evidence. So that if they thought the rule involved even numbers they would need to use a sequence of odd numbers. Just finding five, ten, twenty or even a hundred 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 six of twenty nine subjects found the correct rule the first time they thought they did.

Confirmation bias is not only harmful to back testers but 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 1000 successful patterns does not prove this. If we can find even one pattern which contradicts their statement then we must doubt its validity. The fact that Olsen found such a high percentage of disconfirming patterns must give us grave doubts as to the patterns usefulness.

Confirmation bias can lead people to what has been termed the illusion of validity whereby they think their views are more valid than they really are. Einhorn and 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, technical traders suffer from this. As a result possibly of a combination of biases that I have so far described, 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 will all tend towards 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 and overcome them. Far from helping us to do this, technical analysis is actually a further expression of how we use these short cuts to deal with making decisions on uncertain events.

How many technical analysts have actually tried to disconfirm their views on charting? How many have taken the time to think in depth about the assumptions that underlie technical analysis and/or seek out independent studies on charting?

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

If you are over-confident you are less likely to see warning signs for your trades and more likely to accept too much risk. I would argue that the vast majority of technical analysis traders re over-confident in their analysis and their chances of achieving success. They suffer this over-confidence because the technical analysis industry and each individually has not conducted sufficient testing of their hypotheses.

COGNITIVE DISSONANCE – HOW WE STRUGGLE TO FACE UP TO WRONG DECISIONS

Another aspect of our psychology which 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 being wrong and are therefore bad at facing up to losses.

There has been a lot of research conducted into how and why cognitive dissonance affects traders and investors in particular by Shefrin and Statman. We have already seen that in Prospect Theory people treat losses and gains differently and we have seen how people are more willing to gamble with losses than with profits. Statman has found that this gambling with losses is because we cannot bear to cope with the loss so we will try 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 when faced with losses say things like 'it will be alright, 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 which are falling, volumes can often be low and stock brokers can find it tough to generate business as their clients are holding on to losses and are loathe 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 trading. The client can tell himself that he has not taken a loss but has reallocated his capital. He is therefore less likely to experience the regret associated with taking losses, a process which we find hard to take.

I have already shown examples of reframing earlier in the book and in realty we see it a lot from technical analysts. If a certain trendline breaks they will redraw the line (re-frame). Similarly I showed a technical analyst who reframed a failed double-top into a channel.

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 losing. Not only are we prone to gamble more with losses but we go through considerable mental conflict when faced with losses. Conversely taking profits makes us happy (obviously).

Relating this back to technical analysis, to believe that the same patterns apply to both tops and bottoms of stock markets again does not fit with the concept of cognitive

dissonance. Those technical analysis assumptions are that market participants go through a similar decision making process in both rising and falling markets; when they are winning and when they are losing. Particularly for equities, I can't see how this is the case.

AVAILIBILITY 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 their 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% 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 it at the beginning. We find it easier to recollect words with K at the beginning. Plous in 1993 asked people whether being killed by falling airplane parts or by sharks was the more likely cause of death in the US. Most people replied 'sharks' yet in reality the chances of bring killed by falling airplane parts are thirty times greater than 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. Having 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 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 lightening or dying from emphysema? We could quite conceivably develop a rule of thumb which consists of thinking about all those we have personally known to have died from both causes and I imagine most of us would choose emphysema. However if we chose a rule of, how many cases of both have I heard or read about we could easily reach a different conclusion.

OTHER RAMIFICATIONS FOR TECHNICAL ANALYSIS FROM BEHAVIOURAL FINANCE?

It is fair to say that the findings of behavioural 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 which seemed to show that markets worked in an 'efficient' manner where new news and information was instantaneously digested and acted upon 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 as well as the concepts of framing in relation to gains and losses and cognitive dissonance, the behavioural 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 it as representative of how the future would be and struggle to face up to contradicting evidence, they could be slow to respond to news which was contradictory or perhaps overreact to supportive news. So behavioural finance economists suggested that perhaps there could be ways to make money from existing information due to 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.

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.

EVERYTHING IS IN THE PRICE

One of the core principles of technical analysis is that 'Everything is in the Price' which is actually similar to a principle of Efficient Market Hypothesis (EMH) . The subtle difference between the two is that the EMH supporters believe that as all information is in the price, information comes randomly and we can't make money from existing data. Effectively the market is a random walk. News enters the market randomly, is quickly digested and we move on; no-one can out-perform the market.

Technical analysts believe that we can use past data to make money. Here is a quote from www.stockcharts.com which 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 strategist, 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 how 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 its participants know. If we believe in the existence of the biases and rules of thumb then it is actually 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.

Note too that the explanation suggests the Wisdom of Crowds logic which I have already explained is not relevant to markets.

In general, behavioural finance experts do not agree with the idea that the current price of a contract always represents the best or most rational or logical outcome. As Richard Thaler states in Misbehaving "...the price is often wrong and sometimes very wrong". Many behavioural experts such as Thaler have spent many years debunking the idea that 'the price is right'. Again, I can't understand why so called behavioural finance trading experts would use technical analysis.

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. Firstly when many technical studies were first developed perhaps markets were sometimes 'ahead of the game' due to insider trading and market manipulation. Secondly, and more importantly, 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 weighing up 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 TO THIS CHAPTER

The findings of behavioural finance are only just beginning to filter down into the private trading sector. The first point to make is that not everybody will agree with the 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 it 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 that these biases or rules of thumb exist then we must examine how this affects technical analysis and what we are told by its supporters. My own analysis of how behavioural finance affects technical analysis is that it actually offers us an explanation of why it is used. Rather than being an investigation of market psychology, technical analysis is actually a further expression of the flaws in our decision making processes and our desire for short cuts.

We can't be bothered trying to figure our 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 or perhaps a crossing of two moving averages were followed by a type of market move and 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 other 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 behaviour that has been adapted for use in the financial markets.

Our inability to accept randomness or weigh up many possible outcomes leads us to look for patterns in even random data. I have already shown how technical analysts

can look for patterns in even economic data such as the unemployment rate such is their belief that spotting patterns can make it easier to make decisions.

Prospect theory, with its belief that decision making is highly influenced by whether the trader faces a gain or loss confirms my suggestion that rising and falling stock markets trade differently. To believe that a similar decision making process takes place at the end of a share price fall 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 traders 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 shows a trend reversal at all.

If we look at another example of technical analysis we can also see how it seems to disagree with behavioural finance. Under the theory of support and resistance once a support (or resistance) level is broken it will induce selling (or buying) by participants. Yet under the studies of cognitive dissonance and loss aversion, there is considerable anguish in investors minds when faced with losses; anguish which leads to irrationality and an inability to take losses. So why should we believe that a break of a support line for a stock will persuade them 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 which 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. In fact, this conclusion has led some to believe that the case for technical analysis could be stronger. If markets were not efficient and participants behaved in a predictably irrational manner then perhaps this is what technical analysis picks up and explains. Indeed some technical analysis supporters suggest that the biases of behavioural 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%. If behavioural finance does explain how traders and investors made decisions than any tools which use it should be more reliable. What is perhaps more likely is that people are beginning to develop behavioural 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 behaviour of participants; it's just that market participants are just wrong more often than they are right. There might be some basis in this yet it throws up two main points. Firstly it suggests again that maybe initially when the tools were used participants were right more often than they are now, perhaps due to insider dealing. Secondly, 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 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 Asch and Deutsch and 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 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 in 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 by the admission of technical analysts themselves we should not use it. If we take an example of a falling stock then, due to factors such as confirmation bias and loss aversion, the share price does not reflect the available information but rather the biases and hopes (rather than expectations) of a large group of participants.

Therefore, in my opinion, the most logical implication that behavioural 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 which 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 which is a further expression of them.

One particular problem with trying to formulate a system aimed at understanding and analysing 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 could see with the availability bias just how a 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 once told the market in a speech. 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 analysed in this way. For example any number of unseen sub trends 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 equally apply to us when analysing the markets.

It would be nice and easy to apply past behaviour 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 Three why effects such as stationarity and alternative histories

make only using 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 as to why people still believe that technical analysis is reliable despite so much evidence to the contrary. The tendency to look for and over value evidence which 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 due to an unforeseen event.

CHAPTER SIX

CHALLENGING THE ASSUMPTIONS AND BELIEFS

Over the past few Chapters we have examined technical analysis in some depth. I now want to come full circle back to the beginning in some ways; to examine the assumptions behind technical analysis using the information we now have. If you are going to use technical analysis then you MUST believe these assumptions. If you have any doubts about any or all of them then you should not use charting methods in your trading.

Assumptions can be deadly for traders. I have seen numerous occasions where traders have lost significant amounts of money due to assumptions. Often the biggest weakness in any trading model are the assumptions that underpin it.

Sometimes, more detailed analysis and due diligence can highlight incorrect assumptions. For example back around 2000 a group of arbitrage traders who were making the transition from floor trading to screen trading lost huge sums due to a lack of due diligence and false assumptions. They had previously arbitraged between the screen traded Eurex German Bund and the floor traded LIFFE German Bund. While the contracts were not exactly fungible so weren't a true arbitrage, they had similar specifications. So they basically traded at almost identical prices.

I can't recall exactly what the contract was but a second exchange announced it was going to be launching a futures contract for a major European Bond contract that was already trading on LIFFE. The arbitrage traders saw an opportunity. When the new contract launched it traded at a very different price to the LIFFE contract so the arbitragers went to work buying the cheaper one and selling the more expensive one. After making trades in several hundred lots the two contracts remained far apart in price. Then the traders were contacted by their clearing firm (broker). The clearing firm asked them if they knew that the two contracts had very different specifications; they could not be arbitraged. The traders obviously did not know this. There were five traders in the group and they each lost around GBP75,000 that morning.

I'm sure many readers are thinking that this was an amateur mistake; these guys should have done more due diligence and investigation before they traded. So I'll ask, if you have used technical analysis did you conduct rigorous due diligence before you used it?

A second type of false assumptions can be seen from the Japanese Convertible Bond (CB) market in the early 2000s. A number of Japanese CBs had an embedded call option that gave the issuing company the right to buy back the bonds at a predetermined price, usually around 102 or 103. Until 2003 no company had ever called back its bonds. So many traders switched off the call option in their pricing models. This made the bonds look more attractive. For example if you consider a bond trading at 120 that has an option for the issuing company to buy it back at 102, if you factor in the possibility of that bond being called back at 102, on a valuation basis this would lower the valuation of the bond. If you told your model not to value that call option at 102 then the bond is worth more.

So in this instance, traders were aware of the potential call option but decided not to value them because they assumed that bonds would never be called based on decades of history that this had been the case.

Personally, I didn't like the assumption and so I continued to leave the call option in my model which meant that there were many bonds that I couldn't buy; they looked too expensive to me.

Then in 2003, following a takeover, a pharmaceutical firm announced that it was calling (buying) back it's bonds at the predetermined price of 103; the bonds had been trading around 130. Unfortunately some other traders on my desk had been buying these bonds (they ignored the call option) and they (we) lost around US$400,000 on that bond alone. What then happened was that all bonds got revalued based on the call option and the whole Japanese CB universe was re-priced considerably lower. Some major hedge funds lost huge sums.

So assumptions can come in different ways, sometimes even unexpected. In 2004, Acker and Duck of the University of Bristol in the UK 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 organisations and are accepted and used by fund managers in particular. To my knowledge and that of the authors, it has always been assumed that the start or reference point for the data used to calculate the beta would have little impact on the number.

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 only be a maximum of 27 days. For example for one US stock, using one reference day generated a beta to the Index of -0.41 and 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 how no one can truly be sure of what a 'real' beta is for such a stock.

Similar results were seen when studying market correlations. For example in one study period of 1998-2002 the correlation of returns between the US and UK markets would have been about 70% if day 12 had been selected as a reference point but 90% had day 23 been selected.

I have to say that I was astounded by this study; a study which one again shows us the problem with assumptions. In this case, we have a widely used metric namely Beta which, like technical analysis, is rarely if ever examined or challenged by people who use it. So if you have used technical analysis without examining its assumptions, perhaps you shouldn't be too hard on yourself; you are no different to the rest of the industry.

So returning to technical analysis I want to quickly examine two of the main assumptions that underpin it.

EVERYTHING IS IN THE PRICE

This is the belief, similar to Efficient Market Hypothesis, that all information is disseminated by the market. It essentially believes that the market digests the information flow accurately. However numerous studies by behavioural finance researchers have shown many examples where this isn't the case. Further, we know that many traders and investors use irrational/poor rules of thumb to make decisions and at times these can be dominant. So does the market really reflect an intelligent weighing up of information.

Think back to February/March 2020 when equity markets were limit up one day and limit down the next; was this rational processing of information or overreaction and panic? What about the plunge in Crude Oil futures to negative $40; was this a market processing information accurately or did it exhibit irrationality, panic and overreaction?

If you accept that 'everything is in the price' you accept that the price is right. You accept that the price is the result of market participants rationally weighing up all available information.

If you think that sometimes the market works well but at other times it is less rational (for example the oil market in April/May 2020) do you then not use levels and patterns created during those overreacting times? (An interesting point here is depending on what type of continuation chart you use then the negative $40 may indeed disappear from history. In which case it cannot be factored into risk analysis)

The idea that 'everything is in the price' is taken from the Wisdom of Crowds idea; the wisdom of the crowd creates a more reliable price. However, as I have already explained, the Wisdom of Crowds does not apply to situations such as markets where everyone sees everyone else's guesses.

As Richard Thaler states in Misbehaving, after years of studying this concept in markets he has concluded, "the price is often wrong".

THE MARKET IS AHEAD

Following on from 'everything is in the price' is the assumption that 'the market is ahead'. If a market has been trending upwards as people have been buying, this is a sign that it will continue to head higher. We should trade using trendlines, chart patterns etc because the market is forward looking and we should go along with what the market is thinking.

I have even more concerns with this assumption than with the idea that 'everything is in the price'. Perhaps George Soros sums it up best and simplest when he states that this assumption assumes there is a predetermined outcome. If you think about it, to believe that the market is ahead, to follow a trend for example, is to assume that the market knows where it is going. This assumes a predetermined outcome.

Perhaps back in the 1920s when market manipulation and insider trading were more prevalent this idea may have had some merit. Similarly, if you are one of the growing number of people who believe the many conspiracy theories that swirl around social media, you may still believe this.

But actually the idea that the market is ahead can be debunked in a few ways. Soros' view relates to the reflexive nature of markets, that the relationship with market positioning and movement is a reflexive one. It isn't as straight forward as saying 'people are long therefore the market is going up.' I would say that any trader who has seen real, large order flows coming into a market is aware that market positioning is very important. The suggestion that a market is rising therefore it will head higher (it's in an uptrend) is just a rule of thumb, a shortcut. Professional traders will conduct much more robust analysis than that.

Following on from Soros' point, have you ever seen a situation when a stock has rallied (fallen) in anticipation of good (bad) earnings but then completely reversed following the release of the data because the data was not as expected? Of course you have. You would likely have seen hundreds or more. Was the market ahead in these situations? Of course not.

Here is where real professional traders operate differently from technical analysts. They do not simply assume that the market is ahead. They have a different view of markets. They believe that markets 'price in' an outcome and then try to work out what is being priced in and what could happen in the future to examine probabilities of the market being right and wrong and what could happen in either situation. I am going to go through one example later in this book but I examine this topic more closely in An End to the Bull.

The idea that markets 'price in' outcomes dovetails very well with Soros' idea of reflexivity. However, it is a completely different idea to 'the market is ahead'. You may argue that 'pricing in' is also an assumption, it's just a different one. However, I would counter that it isn't an assumption, it is an idea of how markets work. It is a start point for further analysis and investigation. We can't make any simplistic choices by believing that markets 'price in' outcomes, in fact it leads to a more complex set of questions and analysis. Whereas believing that markets are ahead means we can make more simplistic judgments.

Again, think back to the limit up/limit down days of March 2020, were markets ahead or were they trying to weigh up different information and news flow as it came out? High volatility which I have explained is the opposite of a trend, is a time when markets rise and fall, often dramatically. It is hard to reconcile this behaviour with the idea that market participants know what is going to happen. Even if you only accept that markets are not ahead during times of high volatility, do you then not use levels and patterns created during those times.

One final point on the idea that markets are ahead, sometimes if we look at different markets, we see them showing different things. For example, in early 2020 the oil and copper markets had fallen sharply after the start of the pandemic. However, for a

while, equities remained at multi-year highs. Which market was ahead here because oil and copper were saying something completely different to equities?

Isn't a better explanation that oil and copper were pricing in global economic weakness ahead while equities were pricing in continued strength. Relate this back to the assumption that 'everything is in the price'. Was this potential economic weakness seen in oil and copper being priced in by equity investors? It took equity investors some weeks to reach similar conclusions to oil and copper traders. I suggest that the concept of 'pricing in' and the analysis that goes with it are a better way to judge markets than accepting that 'everything is in the price' and 'markets are ahead'.

Simply, if you use technical analysis you are saying that markets are ahead.

If you don't believe that markets are ahead you cannot (should not) use technical analysis.

If you think that markets 'price in' outcomes then you should not use technical analysis.

If you believe in Soros' idea of the reflexive nature of markets, that market positioning can affect where markets go, then you should not use technical analysis.

VOLUME IS IMPORTANT

Technical analysts often say that volume is important to confirm their signals so why do they use charts for FX markets where volume isn't known?

Why do they chart economic data such as unemployment and CPI where there is no traded volume?

We have seen studies suggest that the connection between price, direction and volume is far more complex than just being a case of using high volume as confirmation.

TECHNICAL ANALYSIS STUDIES MARKET PSYCHOLOGY

Again, why do technical analysts chart economic data etc

Why would the psychology of falling share markets be the same a the psychology of rising markets? If the psychology was different then wouldn't they produce different patterns?

Is the psychology behind a failed head and shoulders pattern different to a successful one up until the neckline?

Behavioural finance clearly tells us that people like to use patterns as a short cut when making difficult decisions. We need to eliminate this type of analysis if we want to make better decisions.

TECHNICAL ANALYSIS CAN BE USED ON ALL MARKETS/CONTRACTS

Is the psychology of falling equity markets where over 95% of participants are long the same as the psychology of a falling FX rate?

The structure, participants and market dynamics are very different from market to market, is it really plausible to believe that the same patterns etc can be used to measure psychology in each.

TECHNICAL ANALYSIS CAN SHOW US PROBABILITIES AND RISKS OF A TRADE

No; it can only show us possibilities that have occurred in the past.

It does not consider alternative histories.

TECHNICAL ANALYSIS IS RELIABLE

Independent, thorough studies do not show this to be true.

CHAPTER SEVEN

STILL UNSURE? – HERE'S AN EXAMPLE

While researching and writing the first version of this book I came across an example that not only highlights the flaws of technical analysis but also illustrates the concept of 'pricing in'. One reviewer of that book commented that I should have started the book with the example as it makes my case so powerfully. However, I have kept it until the end again!
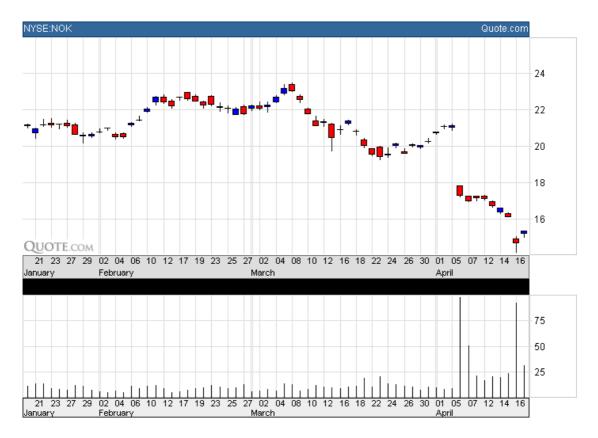
A key point with this example is that we can go through the process of what happened to the stocks involved and see how an understanding of context, pricing in and weighing up what could happen could have led to a trader making better decisions at each stage.

Conversely, those using technical analysis/charts would simply not have seen the same story. They would have generally been trading the past and/or suffering unforeseen losses.

The difference between the two styles of traders is stark.

So let's examine the story of Nokia and Motorola from 2004. You must remember that back in 2004 these were two of the biggest mobile phone manufacturers in the world. For those who say this is an old example, the fact is this situation occurs daily. I am using it again now simply because it is such a good example and I already had an edited version from the first book with permission to use the charts.
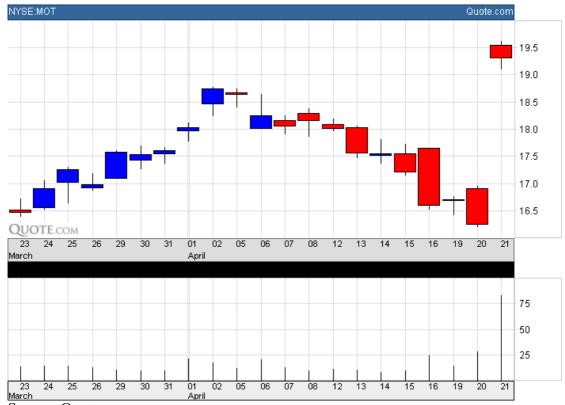
Chart N

Source: Quote.com

Chart N above shows us Nokia's share price in the weeks and months leading up to its earnings announcement in early April 2004 and the days after it. In the few days immediately preceding the announcement there had been a rally of just under 10% but on balance investors were probably undecided on the company going into the announcement and I imagine both technical traders and myself would have little to base a judgement on here even with the benefit of hindsight. The stock had mainly been trading sideways for a couple of months so it wasn't pricing in either good or bad news. As it turned out, Nokia missed expectations quite dramatically and its shares immediately fell by around 20%.

The situation becomes interesting when we examine the shares of Motorola, a similar company to Nokia. Chart M below shows us how Nokia's results affected Motorola's shares.

Chart M

Source: Quote.com

As we shall see later in this Chapter (Chart C), Motorola and Nokia had been correlating quite closely until the release of Nokia's earnings.

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

For anyone trading on the 6th or 7th of April it is highly dangerous to make the assumption that Motorola is going up because past traders have bought, after all Nokia investors were buying too over the same period and they are now sitting on substantial losses.

On April 6th the situation is completely different to what it was on April 5th 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 a change of direction is occurring it might 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 might now be a bit nervous. It might not be in the chart but almost all bank traders that I have worked with would only want to be one way in this stock over the next few days and that's short.

So it was that 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 would trade yet I claim those who follow news and data and have an understanding of how markets operate would have known at least to avoid a long position and even to have entered into a short trade.

But as we approach the day prior to Motorola's earnings, for those of us who weigh up possible outcomes, the situation changes considerably. Motorola's shares have dropped by about 12% as investors are concerned that Motorola will announce figures similar to Nokia. Whether this is rational or not it is probable prudent and I can perfectly understand this. However they are now pricing in bad news. Remember that Nokia fell about 20% but this was a complete shock and investors had not prepared themselves.

With Motorola about to announce its earnings we need to reassess the risk/reward possibilities going forward. Again, I explain this process more in An End to the Bull but will provide a brief analysis here. The analysis may look something like the following:

If results are good Motorola shares should at least recoup the 12% they have fallen. The probability of this should be estimated at 50% as no-one knows what they 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 with expectations' may be viewed in positive light.

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

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

Whether or not and how we might choose to go long 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 buying call options is a way to overcome 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 rallied by nearly 20% immediately. While this jump is higher than I might have imagined perhaps there were many traders holding short positions. With a stock falling on increased volume in the few days immediately preceding the results this is quite plausible. We should notice too how back testing methods would have been of no use in these

circumstances the moves we saw around the earnings announcements were completely 'unforeseen' by past data.

At this point it is worth remembering that technical analysts usually tell traders that fundamentals and data is not important. This is another of the supposed benefits of using technical analysis; traders don't need to understand data as the market does this for us. This is based on the assumptions both of the Wisdom of Crowds and that the 'market is ahead'. In this example, note only can we clearly see that the market isn't ahead but equally clear is the importance of data and fundamentals.

If we look at a chart showing Nokia and Motorola together we can gain further insight into the deficiencies of technical analysis.

Chart C

Source: Bigcharts.com

Chart C shows Nokia as the high/low black bar and Motorola as the orange line graph in the top pane. I also added some technical indicators in the lower panes.

We can see that the two stocks correlated very closely leading up to Nokia's announcement. Even after Nokia's shock bad result, the two still moved together albeit Nokia immediately revalued lower while Motorola fell more gradually. Therefore particularly up until the Nokia announcement but even up until the Motorola data, the two stocks would have generated the same technical signals. Whether you used moving averages, MACD, pattern and trendlines etc they all would have looked almost identical and would have given traders identical signals. Yet we can see that after the Motorola announcement the outcome for these two stocks could not have been more different.

The same set of technical signals were followed by completely different outcomes.

Technical traders can't argue that the data were unforeseen events because their timing are known in advance. Further, technical analysts tell us that we don't need to follow data.

Just as I explained that the psychology of a successful and failed head and shoulders pattern are the same so here, according to technical indicators, the psychology of these two stocks is the same. As the outcomes are completely different, either the technical tools do not measure psychology accurately or (and) trying to gauge past market behaviour in this way is a poor way to make decisions going forward.

Of course, after the event, someone backtesting a bunch of technical tools could have found one which 'worked' for each. The question is could they have found it before the moves? The answer must be 'no' because both traded in a similar manner. What might have worked for one would have failed for the other.

Also worth noting is that to put this picture together we need to know what was happening in both stocks. Someone just looking at Motorola shares in a chart would not have seen what was happening to Nokia. But technical analysis teaches them that everything is in the price, so the market is supposed to do this for them. My point is that by taking this assumption at face value, traders will not know the context for their trades or the contract they are trading.

Go back to my example of the Australia speed skater and the need to understand why he won the race not just the fact that he won. Someone who knew the context would make better decision going forward than someone who just saw the result. It is exactly the same here; someone who knew why Motorola was trading as it was would be able to make much better decisions than someone who just saw and traded off the chart.

In order to put the picture together fully, requires information from other markets that is not in the charts. I explain this process in more detail in An End to the Bull.

CONCLUSION

In this book I have laid out my case against technical analysis. I appreciate you reading it with an open and inquisitive mind. If like me, you are a trader who is always seeking more edge and new angles for your trades you would be keen to know if technical analysis can help or hurt you and why.

I think it is fair to say that most traders who use technical analysis have never deeply considered the underlying assumptions behind it. From following some well known technical analysts it strikes me that many of them do not know why they are using it or what the assumptions are.

Back when I was trading for Investment Banks, it was widely known among traders that charting had no edge and was something more popular with retail traders. At some stage, most banks had tried some forms of technical analysis but almost always the outcome was poor.

In fact one of the banks that I worked at had one of the most popular technical analysts in Europe. His was one of the courses I went on. He was extremely popular with the banks smaller clients. His role at the bank was just to be the technical analyst. However, one day a new head of his department gave him a trading book. The thinking was that why weren't we utilising the skills of the most popular technical analyst in London. The outcome? He lasted less than six months as a trader as he lost too much money. His trades lost money with alarming frequency even though he stuck diligently to the principles he taught. He wasn't sacked though and went back to being a very popular technical analyst delivering courses to new chartists all over the world.

While I have gone into some detail about my concerns with technical analysis and showed results from numerous studies into it, perhaps the Motorola example in the last Chapter explains the failings most clearly. Simply, without an understanding of context, technical analysis is no more than an unreliable short cut.

For most traders who use technical tools, the result will be losses and failure. A lucky few will succeed but they will be a small minority. Perhaps their position management or money management was better than the others; perhaps they used some other knowledge; perhaps they were just lucky.

Essentially technical indicators are only of use of the trend is large (long term) with low volatility. My argument would be that these are the easiest conditions for any trader to trade; one doesn't need technical tools to trade profitably at these times.

We have seen evidence from studies into technical analysis that explains why chartists can find lots of successful signals when they analyse markets; the reason is that they are data snooping. If you adjust for data snooping (as the studies do) and you essentially ask 'could I have found the signal *before* the market moved?' the answer is 'no'. No technical analyst I have ever met adjusts their analysis for data snooping. As long as traders just draw lines on charts or simply test different tools on historical data they will continue to make misguided decisions. But of course, in a universe where

there are hundreds of thousands doing this, some will be chance, be successful sometimes.

At this point I should say that there are alternative, more robust ways to trade. They are not easy. They will take more time to learn and master than charting. They will not appeal to many retail traders. But for those who are happy to take the time and effort I can say that getting rid of charts and levels will be one of the best things you can do.

Contrary to what you may have been told, the choice for traders isn't between technical or fundamental analysis. Share traders don't need to try and work out the valuation of a company. Fx traders don't need to work out interest rate differentials to find undervalued currencies. Real trading is more about weighing up market positioning and I explain this process in An End to the Bull.

As soon as you put the data into a price vs time chart you are making the market information subjective. As you overlay filters, indicators and patterns you exacerbate that subjectivity. However, to make better decision you need to look at the information objectively not subjectively. You need to strip away the subjectivity but understand the context for the current market conditions.

I think I have said enough now! I hope you have found the book interesting and informative and if you have been losing money as a trader, perhaps now you can see why and hopefully start on a better path.

I believe that I have laid out a strong case against using technical analysis and now I rest my case!

I'm happy to receive and answer emails via www.scalpfutures.com

Happy Trading

Best Regards
Gary

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