

# The Challenges

**W**ho wants to walk up to an ATM, put in \$10,000, and then take out \$11,000? I'm going to go out on a limb here and say we'd all love to do that. In a sense, though, isn't that what trading is? We buy shares of a stock through a small computer program interface to a brokerage firm. Then flip over to your browser and see what's going on at the CNN web site. "Hmm," you wonder, "I can't wait to buy that new suit I was eyeing yesterday with the money this trade will make." Later, we sell the shares and walk away with more money in our account than we started with. Doesn't that feel good?

Of course, we all know better than that. We know that there is a realistic chance that we may only get back \$9,000, or less. And that's not even mentioning that we can't directly touch this magical ATM, which is the financial markets. There's a guy standing in front of the ATM, and he's going to operate the ATM for you. He's also going to take a small piece of that \$10,000, going in and coming out.

So the real question is, "Do most people really know what's going on inside the magical ATM?"

Before we get to that, though, it's important to keep in mind that if you actually succeed in taking out \$11,000 after you have put in only \$10,000, some other poor soul is getting back only \$9,000 on his \$10,000 deposit. The only way a person makes money in the financial markets is if someone else loses money. This means your task is to take someone else's money. If this concept bothers you, then maybe active trading is not your brand of coffee. If that's true, then give your money to a mutual fund manager and let him attempt to grab someone else's cash. Most beginning traders don't realize this and your broker—online or flesh and blood—is in no hurry to tell you this, or the rest of what you will read in this chapter.

Trading is a battle, a competition, a game with no second place. If, at the end of the week, you realize that your trading account is \$500 lower, there isn't anyone who's going to console you or tell you that everything's going to be okay. That person is busy eating lobster and celebrating the good week he had taking money away from a bunch of poorly

prepared retail traders. That person is an institutional trader with a support staff of quantitative analysts who provide him with high probability strategies and resources.

My intention is not to scare you away from trading. Trading financial markets is a wonderful and often rewarding experience. Indeed, with the well-deserved death of “buy and hold,” and the ever-increasing rise of systemic risk, it’s the best way to get decent returns in the market. Whether making money or losing it, anyone who experiences trading will walk away an improved person. She may be richer or she may be poorer, but she will have improved in some way. She will most definitely understand things about herself she did not know before. Everyone will learn things about the world that they would not have known otherwise.

The purpose of this chapter is to give you an accurate and honest understanding of what any trader is competing with when he puts on a position. You are going to need to understand what’s out there. These are facts that the retail trading industry does not want you to know. There’s an entire industry in place to help you trade and charge you for it. Some of this industry is legitimate and will help you become successful.

Unfortunately, most of these trading industry vendors are more interested in your money than your success. Your online broker spends fortunes on television and print advertising trying to convince you that you can single-handedly achieve your financial goals. All you need to do is open a brokerage account with their company and use their software tools, although their print copy and commercials are sufficiently filled with enough content to legally cover themselves when someone loses his shirt. Incidentally, their software has the same technical indicators that are publicly available on the Internet for free. There are a multitude of software companies that will sell you a technical trading system that claims to ensure that you will rule the markets, with seemingly no risk.

Meanwhile, getting back to reality, here’s what the business actually is, and a very serious business it is. It’s the ultimate game of mind versus minds. You’re not up against one MIT graduate; you are competing with thousands of them. You can’t see the other minds you are up against. You don’t know who they are or what they look like. At least when a fighter steps into the ring, he’s entitled to a good look at his opponent.

So before we dive into the enlightening world of volatility-based technical analysis, let’s understand the most important challenges you face. The pages that follow will briefly discuss some very eye-opening truths about the markets, which you will likely find both fascinating and disturbing. Use the sections that follow to better understand what awaits you when you step into the trading pits, and keep in mind that there is a specific solution for each of these challenges. I identify the solutions in Chapter 2, and explore them in the body of this book.

## **THE BRAIN POWER**

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*Today all traders, and that includes you, are competing with the best and the brightest minds that the world has to offer.*

Perform an Internet search and look at a job advertisement for a trading development analyst at a large institutional trading firm. The job qualifications and educational requirements are lengthy. Every type of quantitative and financial modeling methodology imaginable is housed within these firms. Many of these firms have mathematical talent in-house that could rival NASA when the United States won the space race.

Large hedge funds, mutual funds, and investment banks are staffed with incredibly bright, well-educated, and highly paid individuals. These are typically quantitative analysts and computer programmers with an aptitude for finding a single needle in five hundred haystacks. Suffice it to say these people are not paid to play with trend lines and Fibonacci grids. They use advanced quantitative methods to find inefficiencies in the markets, and develop trading strategies to capture them. They have access to the finest software programs and enormous computing power. They work with ultra-high-speed data that go way beyond high-low-open-close and volume. Market declines and financial industry layoffs have not reduced the effects of these individuals. Periods of ultra-high market volatility conveniently provide data, which enable them to more finely hone program trading algorithms.

Here are a couple of sample job requirements for the talent behind the trading strategies that are created inside the institutional firms with which all traders are competing:

#### **Senior Quantitative Analyst—Salary/Rate: 300K+**

Essential skills, experience, and qualifications:

- Two to four years of relevant quantitative research, or trading experience.
- PhD or equivalent degree in Math, Financial Mathematics, Physics, Engineering, or Computer Science.
- Very strong analytical, mathematical, and problem solving capabilities.
- Excellence in probability theory, stochastic processes, statistics, partial differential equations, and numerical analysis.

Experience in any of the following:

- Interest rate derivatives modeling.
- FOREX modeling.
- Credit derivatives modeling.
- Commodity modeling and research.
- Grasp of PDEs and Monte Carlo.
- Very good understanding of quantitative models for pricing and hedging derivatives.
- Outstanding C/C++ programming skills.

#### **Statistical Arbitrage Quantitative Analyst / \$120K+**

New York, United Kingdom

Quantitative Analyst with sound skills in statistical arbitrage needed

Requirements:

- Honors degree followed by a post-doctorate degree in mathematics, finance, statistics, or similar.
- Knowledge of SAS or other statistical packages.
- C++/MATLAB and VBA along with strong quantitative skills.
- Experience in implementation of quantitative trading systems.
- Experience in high frequency algorithmic trading, P&L, and various other quantitative tasks.

Do you think you're smart now? That increase in sales you achieved last year at your job was a pretty good feat. The way you opened that new location in an up-and-coming part of town before your competitor did was a real accomplishment. The promotion you received this year was a genuine triumph over your peers. Now imagine what you could have done if you had had at your disposal a team of rocket scientists such as those just described. Just as important, suppose your competitors had access to that team of geniuses last year and you did not. Would you still have that promotion, sales increase, or competitive advantage?

Here's the question that is just screaming for an answer: Does anyone think an institutional trading firm would spend a couple of million dollars annually paying a team of Ph.D. graduates to perform technical analysis using publicly available technical indicators?

It's almost comical to imagine a room full of MIT graduates staring at computer screens, drawing trend lines and Fibonacci grids, and sending buy recommendations to the traders based on a stochastic oversold indicator. It's like something out a Far Side comic frame.

## THE HORSE POWER

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*Institutional market participants with deep pockets have a technological infrastructure advantage.*

Try to buy some of the advanced analytical software and data feeds that institutional trading firms use. You would not be able to justify the cost because you're not in the club: the billion-dollar institutional investment business. You don't manage a three-billion dollar fund. I believe you have just as much right, however, to eat steak in first class as the club members do. You will be able to see how in the chapters to come.

Inside these institutional firms real-time super computer systems run 24/7, monitoring price and volume movements, implied volatility levels, trading pairs and correlations, foreign exchange rates, right down to the tick, on every tradable financial security and instrument. The software they are executing is created by the sum of the mathematical brainpower of the most amazingly sharp minds in the entire world. As has been shown, these minds are highly paid; nothing less than six figures!

Vendors such as Thomson Reuters provide international market data feeds that propagate data into high speed databases that drive programmed trading execution. For

example, their FastTick analytics suite can capture, sort, and archive 100,000 tick transactions per second in real time. These data are then used instantaneously by quantitative trading algorithms. This same vendor connects the institutional client directly to the trading exchange by T3 communication lines for automated order execution. This is a process that measures its end-to-end performance in milliseconds.

All captured tick data are routinely used to adapt and update the algorithmic trading models as markets change. For instance, the seamless integration of these tick databases with the MathWorks MATLAB application enables the quantitative analyst to model accumulation and distribution strategies quickly. The strategies are then executed by automated algorithms over increasingly shorter periods of time; days instead of weeks. This is largely responsible for the erosion of chart pattern effectiveness. These strategies are preempting their formation behavior, and post-formation behavior through recognition of the opportunities in advance of most market participants. Price action that previously signaled demand is vanishing because of arbitrage strategies and hyper-efficient programmed trading.

Do you like to trade news releases? You might want to think again. Thomson Reuters and Bloomberg offer high speed news feeds. Everyone knows that, but did you know this: Thomson Reuters, for instance, offers a software product called NewScope, which reformats the electronic news document with meta tags, which are codes that a computer program understands. It processes the document in less than 300 milliseconds; that's one third of a second.

The meta tags mark and specifically classify the pertinent facts and figures in the document so that an automated trading program can quantify that new story's effect on specific asset classes. Targeted securities are then bought or sold in real time, based on the algorithm's logic. These trading algorithms are created by those bright MIT-level graduates discussed in the previous section. This automated trading of news events happens without human intervention. Using this methodology, trades in response to news events are routinely executed within one to three seconds. Before the private trader even thinks about the news event, bid and ask spreads on actionable securities are widened and price has begun to move. By the time the individual trader is buying in response to the news event, the automated algorithm is selling and booking profit.

This is computer logic that never sleeps, does not go on vacation, and is not subject to fear, greed, or other emotions. It has access to data that aggressive individual traders can often only dream of. Don't make the mistake of trying to beat it at its own game. A butter knife will not help you much in a gun fight.

## **OPTIONS AND VaR ASCENDANCY**

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*Current technical analysis leaves the individual and private trader ill-prepared to participate in today's markets because it does not adequately utilize volatility measurement.*

Are you basing your technical analysis methods on the correct underlying dynamics? Or, more importantly perhaps, the question should be, why is such intense talent needed in-house at large institutional firms? These two questions are linked in a most important way. The answer to them both is simple yet subtle. Trading has changed, but no one bothered to tell the private trader-investor about it.

Trading is no longer just buying and selling of stocks. Today, the major influencers of stock prices are options trading, and the effects of Value-at-Risk (VaR) on modern portfolio theory. We look at options trading first. A careful historical examination of this volume and type of trading brings to light the forces causing this underlying market-moving shift.

Figures 1.1 and 1.2 together illustrate the tale of the equity trading metamorphosis. Here are the underlying causes for this dramatic fundamental market change:

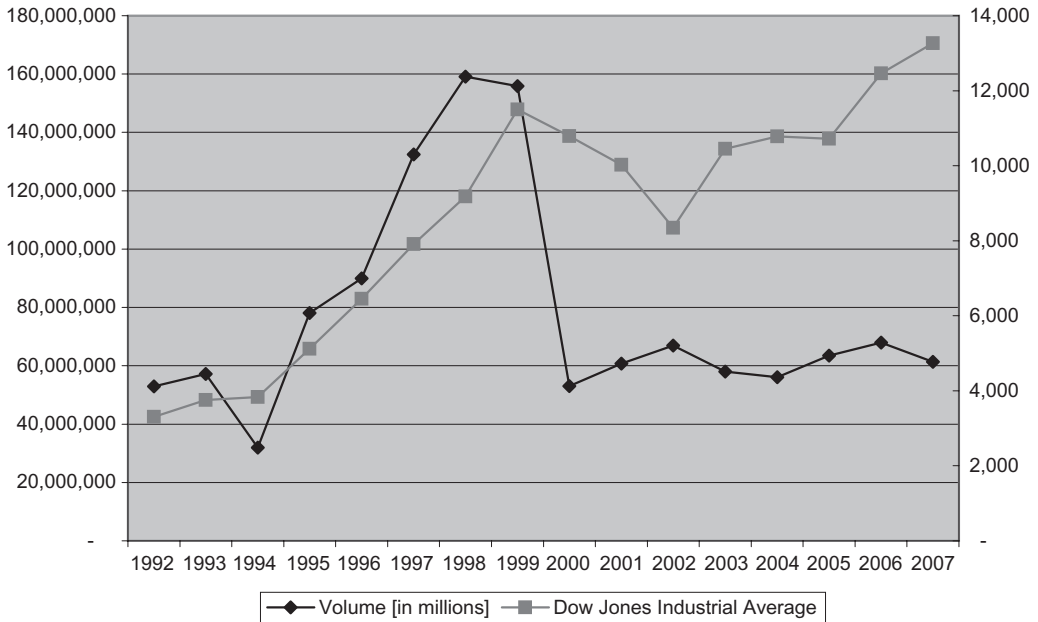
- Although options have been traded since the early 1970s, the markets in recent years are experiencing a large divergence in the volume of options trading relative to direct buying and selling of stocks.
- Figure 1.1 shows that the Dow Jones Industrial Average has achieved significant price gains between 2002 and 2007. Its actual equity trading volume, however, has remained flat year over year. Taken alone, this is an illogical divergence.
- By contrast, Figure 1.2 shows clearly that between 2002 and 2007 the U.S. total equity options contract volume has increased by almost 200 percent.
- These data imply clearly that larger market-moving institutional players are executing their strategies with a heavier reliance on options than on direct equity trading. Option valuation is now a primary underlying influence of supply and demand in equity trading. Note that not all stock indexes show as dramatic a change in equity trading volume as the Dow Jones Industrial Average does. However, it is clear that indexes more heavily comprised of option capable stocks reflect this trend most.

This incredible shift to options trading has been largely attributed to the rise in the number of hedge funds, since, not coincidentally, the year 2000. The amount of assets under management at hedge funds grew from \$300 billion in the year 2002 to more than \$2 trillion in 2007.<sup>1</sup> An increased reliance on leverage, and the use of complex hedging strategies, have caused options to be the market's primary instrument of choice.

The reason all this is important is that options pricing and valuation is based on volatility. Determining the probability of what a stock's price may reach, higher or lower, within an ever-decreasing time window is almost entirely based on volatility. Of even greater importance is that technical analysis as it exists today rarely uses volatility in its algorithms. Rather, current technical analysis commonly available to retail traders is based on calculations of linear price movements and two-dimensional data. It depends heavily on chart pattern analysis and fixed pricing levels of support and resistance. In short, classic technical analysis delivers what the eye can see on the chart, while what is needed is only that which the microprocessor can see.

The other massive influence of volatility on stock price movement is the current use

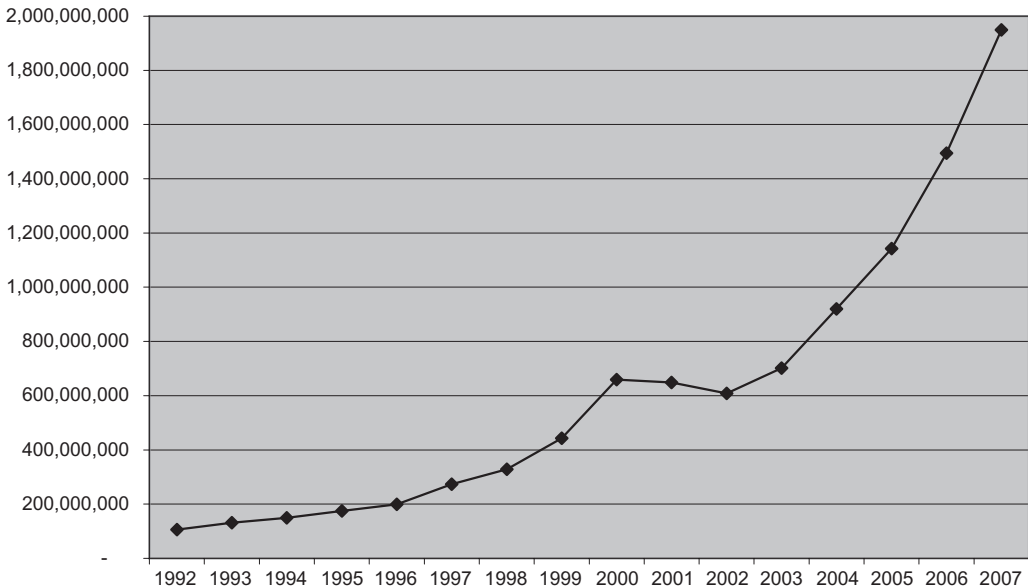
## Dow Jones Industrial Average vs. Trading Volume



**FIGURE 1.1** In the first decade of the twentieth century, the Dow Jones Industrial Average achieved significant price gains, while direct trading of its individual equity components experienced negative volume growth.

*Data source:* Reuters QuoteCenter.

## Total Equity Options Contract Volume



**FIGURE 1.2** By contrast, total equity options trading has increased by almost 200 percent since the year 2002.

*Data source:* Chicago Board Options Exchange, 2007 Market Statistics Report.

of Value-at-Risk (VaR) modeling on modern portfolio theory (MPT). Most stock is owned by large institutions: mutual funds, hedge funds, endowments, sovereign wealth funds, and so forth. These organizations balance and diversify their stock portfolios based on VaR calculations. VaR, first developed by J. P. Morgan in 1994, is primarily a risk-modeling methodology based primarily on, you guessed it, volatility. It therefore forces volatility measurement to be a primary driver of the institutional accumulation and distribution of specific equities.

Volatility in the world of finance is usually expressed as the standard deviation of the change in value of a financial instrument with a specific time horizon. Its largest use is that of option premium pricing and quantification of risk. Volatility in its two distinctly different forms, historical and implied, are the primary inputs for determining a stock option's premium price. Simply put, volatility measurement is the key input that determines equity valuation, through the underlying stock's option pricing. The subject of volatility is quite deep and is one of the most misunderstood financial measurements.

Here's the answer, though, to why there is the need for expensive rocket science talent at large institutional trading firms, mutual funds, investment banks, and hedge funds. Volatility analysis requires the higher use of mathematics. Only quantitative mathematicians can really work in-depth with it, and to its highest degree.

In the chapters to come you will learn ways that the private trader, without advanced degrees, can work with and analyze stock volatility using today's programmable technical analysis software. There are other methods to measure it that don't require quantitative mathematics. It's one of the most important disciplines that will make you successful. Once you become an opportunist of volatility measurement, instead of a casualty of it, you will be able to see and capture market inefficiencies that were previously invisible to you.

Here is a sneak peak at how you can have volatility-based technical analysis work for you. Figure 1.3 shows us a weekly chart of Cephalon Incorporated (CEPH). The chart time span is 2007 to 2008, which was a very difficult and volatile market environment. The upper and lower trading bands are based purely on volatility measurement. Their peaks and troughs project forward key levels of support and resistance, which are shown on the chart as dashed horizontal lines. You will learn more about these technical components in the chapters to come.

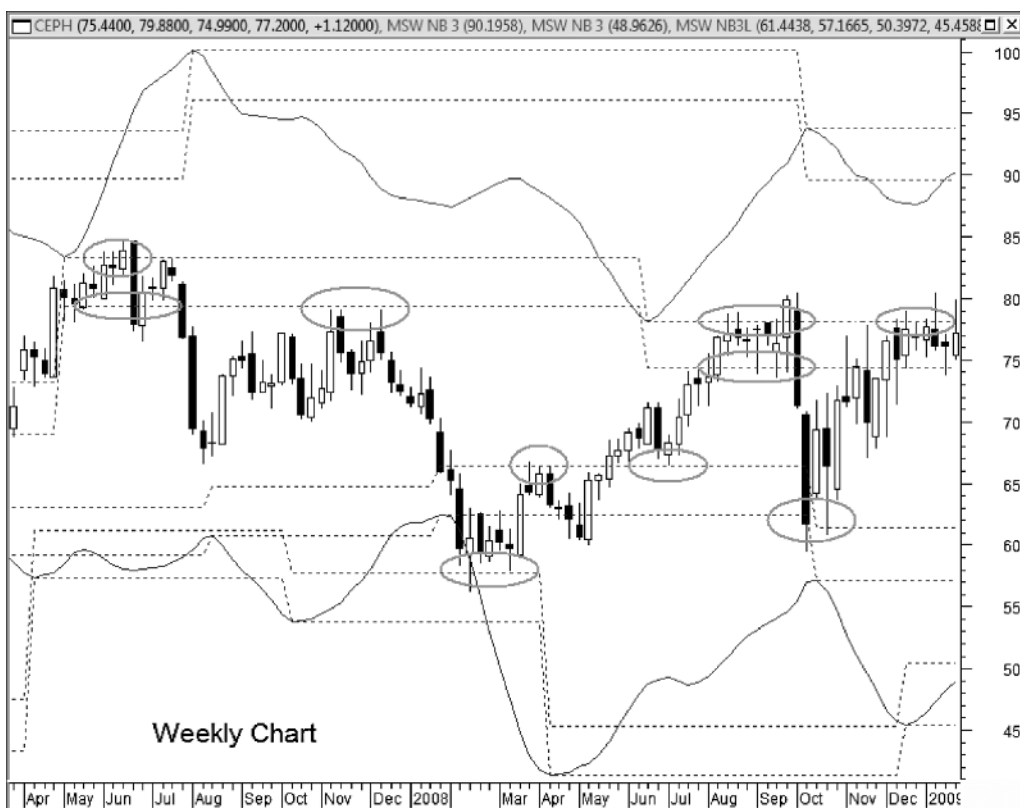
The circled areas on the chart show how these volatility-based levels of support and resistance were instrumental in causing price to reverse or pause. The lines are usually determined weeks in advance and exist in most time frames. The foreknowledge of these support and resistance levels, and the best practices of their use, can be a vital part of the edge that you need to overcome the challenges faced by individual traders. This is a clear advantage of volatility-based technical analysis.

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## **RAIN CLOUDS OR URINE?**

*The individual retail trader is largely unprepared to trade, but is swayed to believe just the opposite by an industry that seeks mostly the contents of the trader's wallet.*





**FIGURE 1.3** This weekly chart of Cephalon Incorporated (CEPH) shows how the foreknowledge of volatility-based support and resistance can give the individual trader an advantage.

Chart created in MetaStock. Chart uses the MetaSwing Add-on, by Northington Trading, LLC. All rights reserved.

As Judge Judy Sheindlin is fond of saying, “Don’t pee on my leg and tell me it’s raining.” And that brings us to the fourth challenge that aspiring traders face today. According to an entire business sector of retail brokerage firms and software products, cool-looking technical indicators are all you, the retail trader, need to garnish dramatic returns in the stock market. The television commercials that bombard us are outrageous with oversimplification.

If you have recently entered the trading arena, you have no doubt read articles in today’s trading periodicals that discuss the usage of indicators to achieve success. Many people are fascinated by looking at oscillators of all types, chart patterns, moving average strategies, Elliott waves, and multiple intersecting trend lines. “Surely,” their intellect reasons, “I’ve found the way to buy low and sell high.”

That would be an incorrect conclusion. In truth, they have found one of the keys to buying low and selling high 15 years ago; but not today. To be clear on this point, though, it is vital to understand the discipline of technical analysis, both past and present. The

volatility-based technical analysis that can make it possible for you to be a profitable trader today is not all that different from so many great forms of classic technical analysis used in the past. Therefore, a thorough grasp of it can be important.

Do you ever wonder why the traditional methods of chart pattern trading are experiencing reduced effectiveness? Simple breakout methods that made many wealthy in the 1990s do not render the same performance, largely due to programmed trading. Every known and unknown chart pattern and technical indicator that we have all been taught to use is recognized immediately by the microprocessor.

When most traders and institutions can see the same trade setup, the past predictable outcome of that strategy is rendered ineffective by arbitrage. This is readily evident when consistent reading of today's technical analysis magazines reveals one after another classic setup and pattern trading strategy now produces statistically insignificant trading performance; virtually random results. Furthermore, these still currently promoted trading methods produce inferior results when compared to a buy-and-hold baseline.<sup>2</sup>

Here's the bottom line on this dilemma. As a retail trader, there is no end to the number of services and products that all communicate to you that you are well prepared to take on the financial markets. The only hitch is that you must pay them money for their information, software, stock picking advisory service, training and coaching services, black box system, or some other type of secret weapon. Then, if that's not enough, they then tell the hopeful trading neophyte to "Trade with confidence!" An entire industry wants you to believe that trading profits can be purchased. This is simply just not true. Trading profits can't be bought.

Profits can only be attained when you learn to trade within a viable system framework. Successful technical trading components and methods can only come to you in two ways:

1. The first is your ability to trade in your own original way, using volatility-based methods and setups that you create, with no one else privy to them. To achieve this, you must learn to think in unconventional ways when looking at the stock chart.
2. License volatility-based algorithms from a credible source, which limits their use and thereby their exposure to the markets.

## NEWS FOLLY

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*An abundance of news media today feeds the private investor-trader an endless stream of inaccurate corporate news bits, convinces her that it's true, and then convinces her that it is actionable.*

How about the other road: the one most traveled? Trading based on accurate fundamental information is the purview of the insider. Current laws and accounting practices allow publicly traded companies to do everything but tell the truth. C-level executives

at today's publicly traded companies are under enormous pressure to show positive results every quarter. These corporate leaders are obscenely motivated by stock option incentives. As sure as they are human beings, and thus subject to temptation, the truth will be stretched or fall victim to *spin*.

One or two financial quarters later, that previous white lie has to be stretched even further; at this point it's based on fiction. Most often, the ugly truth ends up coming out as a complete surprise to analysts and financial commentators in the media. This is why stock prices drop so much faster than they rise. It's the "Oh, crap!" factor.

Picking stocks the old-fashioned way may seem possible, but the reality is that Warren Buffett has access to much more inside information about a company in which he invests than you could find out in 20 years. Nevertheless, the financial markets are filled with individual traders who will try to emulate the methods of market barons with only the information they hear on CNBC or read in the *Wall Street Journal*. Here's a good rule of thumb: If you think you know some valuable piece of inside information, but trading on it is not enough to land you in prison, then the information is almost certainly insignificant or too old.

One very popular news source promises its subscribers the advantage of knowing if a stock is being accumulated or distributed by mutual funds. In truth, the source of the information comes from SEC filings, which are three to nine months old. By the time the subscribers see these numbers, the mutual funds are scaling out of their positions. It's hard to tell which party benefits more, the service that sells the subscriptions, or the mutual funds that are easily able to take profits because the subscription service helped make a market for the stocks they are selling. People eat this stuff up without question. A good way to look at this is that it's okay; the mistakes of others are where some of your future profits will come from.

## EYES ON THE GOAL

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If you've gotten to this point and you still want to pursue trading, then congratulations—you don't scare easily. While your market opponents and their capabilities appear daunting, as an individual trader you actually have some significant advantages on your side. A more level playing field can be attained by embedding volatility measurement into core technical analysis methodology. This makes it possible for your trading talents to be much more effective when you choose the right opportunities.

The great Henry Ford once said that "Obstacles are those scary things you see when you take your eyes off your goal." It's important to be completely aware of your market competitor's strengths. But if you focus only on those very scary strengths, then you won't know how to beat him. It is therefore equally as important to understand his weaknesses, and your advantages.

Imagine yourself as a speedboat pilot. You are fast and agile. You can enter a trade and exit it all within a minute. A professional money manager at a mutual fund is the equivalent of a freighter captain. The adage that "big ships make slow turns" is seldom

more applicable than in large fund portfolio management. It's not able to respond to the market nearly as quickly as you can. It can sometimes take weeks for a large fund to scale out a position.

The opportunities that a retail trader can exploit in today's markets are numerous. There are almost limitless inefficiencies available once you approach trading with the right thought processes. Also virtually all of the components and methods I will discuss apply to futures and FOREX trading. The best news of all is that you only have to create and master one or two unique methods. The next chapter discusses the spectrum of opportunities available for the private trader.