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How to Start Day Trading Futures, Options, and Indices

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To Mark Morgan,
With our love and gratitude

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Preface

You've heard of people making fortunes day trading. Some of them had never placed a trade before in their lives. But they had computers, signed up with online brokers, and quit their jobs a few weeks later. Sounds better than exciting and, if they can do it, why can't you? However, you've also heard of day traders (as well as futures and options traders on any time frame) losing everything in their brokerage accounts and more. Some hit a key one too many times and an order goes in to buy 500 shares rather than 50. Others get caught up in the compulsion to beat what can often seem like an online video game with a trading theme. Fear tempers your initial excitement. You know there's a chance to make some serious money, but you don't want to jeopardize all that you've worked so hard to save.

By opening this book, you've just taken the first step toward being one of the winners. Why? Not because we are promising to reveal the secrets of success (although we do hope to point you in the right direction), but because you have shown that you know it is necessary to study and prepare yourself for the challenges ahead. As with any other form of trading, day trading requires knowledge of the markets and trading strategies, as well as discipline to control your emotions, stick with what you know, and keep within your monetary limits. Many of the catastrophes people have heard about in day trading are due to minor, easily correctable mistakes. We

will help you to understand, recognize, and avoid these mistakes. While you will hopefully have fun (and make money) as a trader, you will learn to channel your enthusiasm wisely. For example, if you feel compelled to place a trade, but you are not finding one you have confidence in, then play a *simulated* trading game, which won't deplete your account.

Another reason you have just taken a step in the right direction by opening this book is because it is on futures and options. Contrary to what many believe, using futures contracts or options is *not* the riskiest thing a trader can do. Such instruments can make it possible for you to increase the profit potential of your trades and they can buffer you on the downside so losses are minimized. We will show you how this is possible, provide you with a full understanding of futures and options, and teach you how to use these instruments correctly to achieve your goals.

Whether you are just getting started day trading, are already day trading (or trading on a longer-term, end-of-day basis) and want to move into futures and options, you will find this a very practical guide. It was written by the perfect team. Katz is an expert in the field and teaches options strategies at the New York Institute of Finance. McCormick is a novice, learning about day trading options and futures as we wrote along, asking the kinds of questions all beginners ask to learn a subject thoroughly. Therefore, we explain everything from the ground up. You will learn all the basicsfrom the hardware and software you need, to selecting a good brokerage firm, to the kinds of trading orders that are available and how to place them. We explain futures and options in detail, what they are, how they differ from, for instance, trading stocks directly, and how to use them to get the maximum out of your trades. Even experienced traders will learn some new techniques for trading options and futures. This book will help you improve your odds in unexpected ways.

The "Introduction" covers the basics of day trading, from dispelling the myths to briefly recapping the history. Futures and options are also defined. Chapter 1, "Futures and Options As Day

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Trading Instruments," covers these subjects in greater depth to provide full understanding. Their characteristics are discussed, as are options valuation models (e.g., Black-Scholes) and the so-called Greeks. Chapter 2, "Hardware and Software," describes everything you need to create a trading station. Shopping tips are presented and suggestions made for simply upgrading existing equipment. Chapter 3, "Getting Connected," will help you understand and select internet service providers, data vendors, and direct access trading providers (or brokerages).

The remaining chapters all deal with the how-to aspects of day trading, as well as futures and options. Chapter 4, "The Mechanics of Day Trading," explains the orders used to place trades, how to confirm and cancel those orders, how they are processed, and how to avoid surprises and respond to various events. A discussion of money management (risk control), capturing profits, using orders to minimize risk and maximize gain, how to sense the ebb and flow of the markets, as well as practice trading are all in Chapter 5, "The Fundamentals of Day Trading." In Chapter 6, "Profit-Grabbing Strategies," you will learn about strategies involving ask-bid spreads, momentum, swing trading, arbitrage, spreads and straddles, playing the news, technical analysis, and advanced techniques. Some of the best strategies for day trading futures and options are elaborated in Chapter 7, "Day Trading in Action," where detailed examples are given of these methods in action. Issues involved in trading index instruments are discussed in Chapter 8, "Trading Index Options and Futures." The final chapter, "Advanced Trading Techniques," will introduce you to such esoteric system development techniques as neural networks and genetic algorithms in an easy-to-understand manner. The Appendices provide a wealth of reference information, from suggestions for further reading, to a very useful table containing the demographics of the most popular commodities, to lists of data vendors, software providers, websites of interest to traders, and more.

It is our sincere wish that your efforts to day trade futures and options are successful. And we hope that, by the end of this book,

we will have helped make it an easier, safer, and more profitable endeavor.

An Invitation

To continue to learn about trading, the authors would like to invite you to visit their website: *http://www.scientific-consultants.com*. There you will find much useful, frequently updated information that will help you hone your trading skills and keep you abreast of all you need for that extra edge.

You are also welcome to email us any questions or comments you have: *katz@scientific-consultants.com or mccormick@scientificconsultants.com*.

JEFFREY OWEN KATZ, PH.D.
DONNA L. MCCORMICK

Introduction

You are watching the September S&P 500 futures contract on a tick-by-tick chart. Each tick represents a few seconds of market activity. Your trading model, or system, has just indicated that the market is probably near a turning point. You have already entered the specifications for a trading order in an order entry screen. When your system finally signals an entry, you click on a button and actually send the order to GLOBEX or to the S&P 500 trading pit for immediate execution. Several seconds later a confirmation that the order was filled appears on the screen. You watch the activity of the market on your monitor. You are now looking for a good moment to exit the trade. Meanwhile, the market begins to move against you. You immediately close the trade to keep the loss small. On your next trade, you are lucky and the market behaves as anticipated. You ride the wave until it looks like an opportune time

to take profits. Again, while waiting for this moment, you set up the specifications for an exit order to close out the trade. When the time is right, a click of the mouse sends the order into the market for execution and, a few seconds later, you are out with a hefty profit. The entire trade may have only lasted a few minutes. You then watch for the next opportunity to pounce on another quick profit. A few moments in the life of a day trader. If this sounds exciting and lucrative, then day trading may be for you.

Day trading is defined as short-term trading in which all positions are closed out by the end of the trading session. Prior to around-the-clock global markets, day trading referred to trading in which positions were only held during the trading day and no positions were carried overnight.

High-speed electronic day trading, as illustrated above, has only been possible in the last several years. Before that, the average investor could only day trade in a more traditional way that involved making repeated telephone calls to a broker (who served as an intermediary to the options clearinghouse, futures trading pit, or GLOBEX) throughout the day. With a conscientious broker and under good conditions, fills could be obtained within about 30 seconds. More typically, in our experience, up to 90 seconds could elapse before a trade was executed. Talk about stress! Picture the market moving against you, producing ever larger losses, while you wait for your broker to answer the phone, and then wait some more until your exit order is finally taken and verified.

But, thanks to the technological revolution, electronic day trading is now an available and preferred alternative. The broker is eliminated as an active intermediary. Instead of agonizing periods of waiting, a click of the mouse sends your order directly from your computer through your broker's routing system to the trading pit, the options clearinghouse, one of the electronic communications networks (or ECNs), or an automated order matching system such as GLOBEX. Barring the occasional internet glitch, system overload, or telecommunications network failure, modern, electronic trading is fast and efficient.

But isn't day trading dangerous?

You probably have heard horror stories about day trading being a high stress, risky venture that requires substantial capital. In truth, these stories mostly apply to naive traders who overtrade, are poorly versed in techniques for controlling risk, and consequently have large swings in capital. Such individuals are more like gamblers than speculators or professional traders. High levels of risk and large equity swings are not intrinsic to day trading. Instead, they are due to trading an excessive number of contracts or shares, and to using inappropriate orders that allow unanticipated price changes to cause catastrophic losses. For a constant number of contracts or shares, shorter trades actually mean reduced exposure and lower risk. Because the risk from a short-term trade on a per-contract basis is less, the money needed for day trading is less than for longer-term, "position," trading. This is reflected in the margin requirements for many futures contracts, where the overnight margin is significantly higher than the within-the-day margin.

There are other reasons that risk is less for the day trader than for the position trader. Day trading permits a fairly quick response to market behavior. Because of the speed with which the trader can act, the continuing loss of capital caused by a market moving in the wrong direction can quickly be curtailed. And, since positions are not held overnight, the risk incurred from overnight gaps is eliminated.

Not only is there the potential for lower risk, but many trades can be taken in a very short period. This means that the trader will experience frequent feedback, or, equivalently, many rewards and punishments. He or she will, therefore, be able to quickly learn the art of profitable trading. In a sense, what might take years of longer-term trading experience can be condensed into a few weeks or months.

There is some danger in day trading for the knowledgeable and disciplined trader, but it is not the one that most people fear or read about. The danger is a possible slow death through attrition. This

risk derives from the same features of day trading that provide the benefits. Small moves that occur over short periods of time not only mean lower per-trade risk, but also smaller per-trade profits. With smaller per-trade profits, commissions and slippage can impact trading quite significantly. The smallness of the moves, and the impact of commissions and slippage, can make it more difficult to achieve an edge. Consequently, although any one trade may involve little risk of serious loss, large numbers of mildly losing trades can gradually devastate an account. The constant drain of slippage and commissions can easily lead to a steady stream of small losses (e.g., $25 to $50 per trade) if one's trading is close to random. Given the frequency of trading by the day trader, these small losses can add up. This means two things. One, as in any form of trading, the day trader needs a statistical edge, something that provides a better-than-chance batting average that is sufficient to overcome the costs of trading. And, two, it becomes extremely important to minimize, to the greatest extent possible, all transaction costs: Commissions must be cut to the bone, and various techniques must be used to minimize slippage and get good prices. Commissions can be reduced by carefully selecting the brokerage that will route your orders to the markets. Brokerage firms vary widely in their commissions, as well as in the quality of their fills. Controlling slippage and getting good fills will be discussed in subsequent chapters in the context of trading strategies and order use.

Day Trading is Nothing New

Despite the recent hoopla, day trading has been around for decades, at least in its nonelectronic forms. The floor trader in the futures pit is an active day trader, as was the customer in the "bucket shop" of the 1920s. The bucket shops, however, disappeared around the time of the Depression for a variety of reasons, including changes in the laws. As a result, day trading became less accessible to the general public, especially in equities (stocks), where it was virtually impossible, given the commission structures and other characteris-

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tics of major brokerage houses. However, the day trading of futures contracts was practiced during the 1980s and 1990s by a proportion of the public via telephone connections to efficient futures brokerage houses. The arrival of powerful desktop computers, various online communications networks, and especially the internet, have dramatically changed the scene. The following is the history-in-a-nutshell of day trading.

Starting in the late 1800s and peaking in the 1920s, "bucket shops" served the needs of day traders. They were essentially betting parlors, analogous to off-track betting sites. A blackboard was updated moment-by-moment with new quotes as they were read off the ticker. The parlor's patrons would place orders (make their bets), watch the postings, and plan their next moves. Only small amounts of money were needed to trade, commissions were low, and response time was fast. The bucket shops disappeared around the time of the 1929 crash. The "Dark Ages" followed until the reemergence of day trading in the early 1980s.

The seeds for the reemergence of day trading were sown in 1971 with the appearance of NASDAQ (National Association of Securities Dealers Automated Quotation system), the first electronic market. NASDAQ was a system in which brokers and market makers could communicate their bids and offers and have them matched by computer. In essence, it was a kind of electronic auction to which brokers and market makers had access. Another step toward direct access electronic trading for the public was a result of the 1987 crash. During the crash, many brokers did not answer their clients' calls. This and related problems led to an SEC (Securities and Exchange Commission) investigation and subsequent intervention. The National Association of Securities Dealers was forced to allow the public more direct access to NASDAQ, which was done through the creation of the small order entry system (SOES). At that time, however, the SOES was hardly ever used, except by brokers attempting to get good deals in their own trading.

Undoubtedly, the biggest impetus for the reemergence of day trading by the public was the development of the personal computer

(PC) in the early 1980s and, later, the internet. With the advent of PCs came vendors of real-time quotes (e.g., SIGNAL), which helped open the world of day trading to the public. One of the essentials for day trading, a quick flow of live quotes, became accessible and affordable. Also a variety of software packages designed with the intraday trader in mind hit the market. These packages could display real-time charts and even issue alerts based on user-specified criteria.

The reduction of commissions and other trading costs was also a factor in the increasing popularity of day trading. Discount brokerages emerged and competition among brokers grew fierce. Commissions plummeted, especially in the futures industry, and continued to decline into the 1990s. In general, commissions for commodities were substantially lower than for equities. This was especially noticeable in the mid-1990s, when a round-turn commission for a futures trade was under $30 and could even be obtained by a frequent trader for $15. In contrast, during the same period, commissions for stock trades (even with discount brokers) were much higher (e.g., $25 per transaction or $50 per round turn). Another factor that made futures more amenable than stocks to day trading by the public were the tight ask-bid spreads. Since futures were more efficient and less costly for the public to trade, many people began day trading them.

Additional elements contributed to the growing popularity of futures day trading. During the mid-1980s and 1990s, most brokers could execute trades in one to five minutes, sometimes less. Limit, stop, and other kinds of orders were accepted. Finally, the leverage and volatility of commodities futures allowed sufficient movement in a day trader's time-frame to actually achieve reasonable profits.

Then came the electronic communications networks (ECNs) for equities traders and electronic markets like GLOBEX for futures traders. The 1996 investigation by the Justice Department and the SEC of the unscrupulous behavior of some NASDAQ market makers led to sanctions that produced smaller ask-bid spreads and more accessible markets. Along with these changes came a reemergence

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of the bucket shops, which now took the form of electronic trading parlors for day traders of equities.

Today's bucket shop boasts a bevy of computers connected by reliable, high speed lines into the SOES and various ECNs. As in the old days, traders go to these shops to trade and to experience the excitement of a room full of other traders. Some shops offer courses, and may require training before allowing customers to trade (Friedfertig and West, 1998). Currently, such shops are not available for electronic trading of commodities and options.

Only recently has the commodities day trading world gone electronic. In the mid-1990s, ZAP (the first online futures brokerage) and GLOBEX (GLBX) helped launch electronic direct access trading (E-DAT) in the futures and futures options markets. GLOBEX is associated with the Chicago Mercantile Exchange (CME), and is an automated electronic trading network that automatically matches orders and executes trades. It provides a live market in which almost anyone can now participate. Direct access trading on GLOBEX by the public is a recent phenomenon, as is direct computer access to TOPS, the order routing system used by brokers to transmit orders to the pits.

Another milestone for the electronic day trader of commodities was the introduction of the E-Mini, a popular index future that trades exclusively on GLOBEX. Buy and sell orders for the E-Mini are matched by the computer in a kind of direct participatory auction. There is no pit, or floor trader acting as a middleman, and execution is nearly instantaneous. Even for the trader using an internet connection, market orders are often filled within three to five seconds.

Since 1997, there has been an explosion of direct access electronic futures day trading. Many exchanges now offer direct electronic trading. The New York Mercantile Exchange, with its NYMEX and COMEX divisions, has established an after-hours electronic trading network known as "ACCESS@." The Chicago Board of Trade (CBOT) has also developed a direct electronic trading platform, referred to as PROJECT-A (PRJA). Moreover, almost

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all brokerages offer online accounts. Right now, day trading in futures is about where day trading in equities was several years ago.

As far as options are concerned, they did not exist as readily tradable instruments until 1973, when they became standardized and exchanges formed where they could be traded. There are now live data feeds for option quotes, and order routing systems exist, but even when options are traded electronically, clearinghouses still serve as middlemen. In addition, many options have liquidity problems and may trade only 10 or fewer contracts per day. This can make it tricky for the day trader of equity options. However, many index options are extremely liquid, the OEX being a good example. The problem is that index options are frequently overpriced. Traders like to buy them but, because of the high levels of risk involved and the outrageous margin requirements, they are averse to selling them.

Day Trading Futures and Options

Most traders are familiar with stocks and, these days, many have had some experience day trading them. Fewer are familiar with day trading futures and options. Yet, in some ways, futures and options are superior day trading vehicles. High levels of leverage and low margin requirements give the trader the ability to extract significant profits from small swings, employing only a minimum of capital. And, used correctly, options can help the day trader minimize the risk of serious adverse movement in the markets he or she is trading.

There are certain issues that arise when trading futures and options, however, that are not present when trading stocks. Already mentioned are the issues of leverage and margin. In addition, both futures and options are subject to expiration; stocks, on the other hand, only "expire" when the company goes bankrupt. Finally, unlike either stocks or futures, options decay: They are wasting assets.

Futures and options are considered highly "leveraged" instruments. *Leverage* refers to the ability to control large amounts of a

commodity, or many shares of an option's underlying stock, with a small amount of up-front capital. For example, trading a contract that controls 100 ounces of gold worth $30,000 might only require a $1620 margin deposit. If the price of an ounce of gold moves only a few dollars up or down, hundreds of dollars can be gained or lost. A large gain, or loss, from a small move is an aspect of leverage. In futures, leverage can be incredible. Options also offer large amounts of leverage. A call option purchased for $5 may control a share of stock worth $50. Should the stock rise to $70, the option may climb to $20. Although the stock has risen only 40 percent, the option holder has earned a return of 400 percent, an example of the tremendous profit potential inherent in options.

Leverage and "margin" are interrelated. In futures trading, brokers require a good faith deposit (*margin*) to cover any losses that might ensue. Buying and selling a futures contract is merely making a commitment. Futures are traded completely on margin. In contrast, in equities trading, margin is a loan that is specifically used to increase holdings. While in futures small amounts of margin can control huge amounts of assets (commodities), at the present time leverage is limited to 100 percent in the world of stocks. In other words, in a typical margin account, $10,000 worth of equities can be controlled with $5000. With futures, the ratio is more like ten to one, rather than two to one. A ten-to-one ratio might sound excessive, but just remember that the average homeowner uses this kind of leverage when buying a house: A $300,000 home may be purchased with only a $30,000 deposit and the commitment to make relatively small monthly payments. Although margin almost invariably implies leverage, leverage does not imply margin.

Another difference between equities, futures, and options, is that the latter two have *premium*, a component of the price of a futures or options contract. In the case of futures, premium is related to interest rates and "carrying charges." In options, it also takes the form of "time" or speculative value. Premium exists because futures and options are *derivatives*, or financial instruments that trade on top of some other security. Futures generally trade on top of un-

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derlying commodities; for example, gold futures trade on top of gold bullion. Equity options trade on top of individual stocks.

Unless a company goes bankrupt, its stock does not expire; however, futures and options do. *Expiration* refers to the fact that a futures contract or option has a limited lifetime during which it can be traded. At some point before the expiration date, the futures or options contract must be "exercised," or the long or short position must be "rolled over" or offset.

In the case of options, premium decays rapidly with time; hence the term *time value*. In this sense, an option is a *wasting asset*. When purchasing an option, the trader must consider not only movement in the underlying security, but also the erosion of the option's value from the passage of time. Since the value of an option may be nothing more than its time premium, options can eventually become worthless. It is estimated that 70 percent of all options are worth nothing at expiration. This clearly differs from stocks, where time itself does not destroy value. Stocks are not wasting assets. Futures fall in between options and stocks as far as time is concerned. A futures contract may experience a small decline in premium (hence in total value) over time, but its value is never merely its time premium. Consequently, a futures contract never becomes worthless, even at expiration. The issues of premium and time decay affect the day trader much less than the position trader, and, for the most part, can safely be ignored when trading on an intraday time frame.

Risk, Reward, Leverage, and Margin

Options and futures have the reputation of being very risky investments. You have probably heard of the dreaded *margin call* that happens when account equity dips to such an extent that the broker is forced to offset or cancel the trader's positions, even at great loss. In truth, neither futures nor options have higher inherent risk than stocks. When compared to certain stocks, many futures, especially those related to tangible commodities, are quite a bit less dangerous.

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Some highly volatile stocks can move several hundred percent within the space of several hours or even minutes. Such stocks can be infinitely more risky than futures.

The risk that some traders experience with futures and options is usually due to the excessive use of leverage or margin, not to the instrument being traded. The S&P 500, for example, characteristically moves only 1 or 2 percent on any given day. Rarely does it move more than 5 or 10 percent. If the S&P 500 was bought at cash value, the risk would be minimal; however, an S&P 500 futures contract involves the use of immense leverage. The margin required for trading an S&P 500 contract intraday may only be $20,000; however, with that single contract, $375,000 worth of stock is being controlled. A 1 percent move in the S&P 500 at 1500 would represent a move of 15 points. At $250 per point, a $3750 gain or loss would be experienced. A 10 percent move in the wrong direction could more than wipe out a $25,000 account. In this way, the S&P 500 is highly leveraged. However, it is not necessary to use maximum leverage when submitting trades. In fact, for any single trade, risk should be kept small, perhaps one-twentieth to one-tenth of the total account. Every trader should adjust the amount of leverage to bring risk and potential reward to appropriate levels. If the standard S&P 500 contract is too big, trade the smaller E-Mini. Of course, such things as good money management, for example, through the use of stop orders, can permit the use of somewhat more leverage without substantially increasing the risk.

The concern when trading should not be the amount of leverage per se, but rather the "dollar volatility" and "time frame" of a given trade. When thinking about risk and leverage, think in terms of dollar volatility. *Volatility* is simply a measure of the swings or movements that may be expected or have been observed in a given tradable. It must be considered relative to a specified time frame. *Dollar volatility* is the amount of movement, represented in dollars lost or gained, typical in a given amount of time. Actual measures of dollar volatility are based on recent historic market behavior.

Because many commodities show a much smaller percentage of

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volatility than many stocks, the leverage of a futures contract does not necessarily imply that the risk is higher than for a stock. Risk should be judged in terms of dollar volatility per unit of time. A stable commodity with high leverage may be significantly less risky than a highly volatile stock purchased in a cash account without leverage or margin. In itself, leverage is neither good nor bad; it is all a matter of using the right amount. When trading, the amount of leverage can be controlled by adjusting the number of contracts and the size of the contract (e.g., E-Mini versus S&P 500, Mid-American Gold versus COMEX gold). When leverage and trade size are adjusted appropriately, the factors that give futures and options such a bad reputation can be avoided. Even selling "naked" options, a sport considered very dangerous, can be safe and profitable, if handled correctly. It is all a matter of strategy and knowing how to trade smartly. One way to trade smartly is to aim for a dollar volatility that is high enough to allow good trades to overcome their transaction costs and be profitable, but not so high as to allow bad trades to seriously damage the account.

You might think that extreme leverage is required to make significant money. With day trading, the secret is not to get rich fast by taking mammoth risks like a reckless gambler, but rather to use your unique capability of moving quickly. By taking large numbers of small trades that yield small profits, a fortune can be rapidly accumulated. It is not necessary to trade big, just frequently and profitably. If you have a real edge, a good plan or a system, profits will grow with more certainty and speed than you can imagine. Large numbers of small trades will allow your statistical edge to bear fruit, while small numbers of large trades will give the vagaries of chance the upper hand.

Consider, for example, a $10,000 account: Even small $100 trades taken five times a day can double the account within a month. If this consistency can be maintained for a year, the account will grow to over $40 million. Of course, long before the account gets there, difficulty executing trades will be encountered. The large number of contracts being traded will influence the market and

make it difficult to obtain good fills. This demonstrates why it is unnecessary to take big risks on any single trade to make a killing. The day trader's strategy involves making many small profits, many small trades. If you take this approach and trade small and frequently, you need never suffer the dreaded margin call. The profits you make should allow you to withstand strings of small losses and make numerous mistakes without being thrown out of the game. Day trading should be a profitable and fairly safe venture.

What have we learned?

Electronic day trading is directyou no longer need a broker to place your orders for you. This saves time and helps minimize risk, since you can enter and exit trades more quickly.

Day trading is risky when trading excessive numbers of contracts or using inappropriate orders.

In day trading, the brevity of the trades results in the minimization of exposure to the market, and, consequently, risk. The day trader has no exposure at all to the losses that can be incurred from overnight gaps.

Day traders learn about trading more quickly, since the frequency of trades provides lots of feedback about what works and what does not, and what they are doing right and wrong.

Since the profits on any one trade are small in day trading, it is essential to minimize transaction costs (slippage and commissions).

Day trading is not new. In its nonelectronic form, it has been around for more than a century.

Electronic day trading began in earnest for the general public in the 1990s, when the National Association of Securities Dealers was forced by the Securities and Exchange Commission to allow more public access to NASDAQ, the first electronic market, through the SOES.

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When used correctly, options can reduce downside risk and increase profit potential.

Futures and options are highly *leveraged* instruments. This means that large amounts of a commodity or many shares of a stock can be controlled with capital that is only a fraction of their worth.

Margin refers to a kind of loan or to a good faith deposit. It is necessary when trading futures.

Time premium is a component of the price of a futures or options contract. In futures, it is related to interest rates and carrying charges. In options, it is related to time or speculative value.

Futures and options are *derivatives* in that they trade on top of other securities (commodities and stocks, respectively).

Futures and options have limited lifetimes, that is, they *expire*. The time value of options decays rapidly as time progresses (they are *wasting assets*) and about 70 percent expire worthless. Futures lose some value but never become worthless. Because of the short-term nature of day trading, time premium and decay are not of great concern.

Excessive use of leverage or margin can make day trading riskier. As a rule of thumb, never risk more than 10 percent of your account on any single trade.

Volatility is the amount of variation expected or observed in a tradable. When considered in terms of the price of a security, it is called *dollar volatility*.

Aim for a dollar volatility high enough to overcome transaction costs, but not so high that bad trades can severely deplete your account.

Day traders should strive to make many small profits on many

small trades. You should not take big risks in an attempt to make a big killing on any one trade.

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Chapter 1
Futures and Options as Day Trading Instruments

Anything traded in readily accessible markets that offer sufficient volatility and liquidity can be day traded. Everyone is familiar with stocks, otherwise known as "equities," which are the most popular tradables. Some equities are good day trading vehicles. Futures contracts on everything from such traditional commodities as wheat and gold to such financial indices as the S&P 500 can also be day traded on various exchanges. Other popular and liquid instruments are bonds, "leaps" (a form of long-term option), and a variety of options. There are markets for options on equities and on futures, both of which can make effective day trading vehicles. This book focuses primarily on futures, and on stock and index options. In our view, these are great instruments for day trading.

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What makes a good day trading instrument?

The two most important characteristics for profitable day trading are liquidity and volatility. *Liquidity* is the extent to which transactions can be quickly and easily executed. It involves the ability to move merchandise, that is, to trade without impedance. Imagine trying to day trade real estate. It often takes several months to sell a house. You cannot decide to sell and immediately do so. This is the absence of liquidity. Even in a hot market with greater liquidity, several weeks might pass before a sale. Stocks are decidedly more liquid than real estate. A broker can effect a stock transaction rapidly, especially if the stock is actively traded. Sellers will find ready buyers, and buyers will find sellers. Less liquid are the less actively traded "small cap" (low capitalization) stocks, for which it may be harder to quickly find a buyer or seller at the desired price. On the other hand, the S&P 500 and E-Mini futures contracts are exceptionally liquid: Trades can be executed within seconds, since there are almost always buyers and sellers to take the opposite side. Liquidity is usually found in markets on which standardized contracts are traded and in which there is a large amount of active participation.

For the kinds of markets (stocks, futures, options) under discussion, one of the biggest determinants of liquidity is *trading volume* that is, the number of trades, or contracts traded, per unit of time. Markets more actively traded are more liquid than those infrequently traded. It must be understood that liquidity is not an invariant characteristic of a market; it varies from day to day, month to month, and year to year. During the fever of the late 1970s, gold was a very dynamic, liquid market. In the 1980s, gold lost its luster and liquidity declined. In contrast, the S&P 500 has become one of the most liquid markets, fueled by a frenzy of stock and index trading.

Liquidity is the lubricant, but *volatility* is the engine that drives the profit machine. Without volatility it is hard to make a profit. And, the shorter the time frame being traded, the greater the volatility necessary if there is to be any chance of success. Volatility

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concerns the amount of movement in a security's price per unit of time. The S&P 500 is both a highly liquid market and a highly volatile one. Its movements can cause thousands of dollars to be made or lost in minutes. On the other hand, some quiet commodities and stocks may move so little during the course of a typical day that not even an accomplished day trader using the leverage inherent in options or futures would be able to make enough profit to cover transaction costs. Volatility is essential to the day trader. Prices must gyrate sufficiently within the day to allow profitable trades to be made.

There is an interesting relationship between volatility and liquidity. A market that is highly volatile but not equally liquid can be dangerous. In such a market, a trade can quickly turn sour, while the trader struggles, unable to exit the position. This can happen with futures that *lock limit* (when trading is temporarily halted by the exchange because of excessive volatility). Before trading a highly volatile market, check to see that the market is also adequately liquid and not prone to limit moves or *fast market conditions* (when trades are delayed because of excessive movement and order flow). Ideally, if something goes wrong, the trader should be able to exit quickly at the click of a mouse, and thereby limit the potential damage.

Liquidity and volatility are two essential characteristics of instruments suitable for day trading. Day traders must focus on markets that are highly liquid and at least moderately volatile. Balance the liquidity so that it is sufficient, given the volatility, to permit getting out with an acceptable loss, rather than a devastating one, should a trade turn bad. Since futures and options can qualify as excellent day trading instruments, we will discuss them, and their relevance to day traders, in detail.

What are futures?

A *futures contract* is an agreement between a buyer and a seller. It obligates the buyer to take possession of a specified amount of a given commodity or financial instrument and to do so by a given

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date. Likewise, it obligates the seller to deliver (sell) a specified amount of a given commodity or financial instrument by a given date. The specified date is the *expiration date* of the futures contract. Futures contracts lock in current prices, that is, the prevailing prices at the time the contracts were bought or sold. This protects both the buyer and seller against the risk of price change between the moment of the contract transaction and the time of delivery (the expiration date). Futures contracts can be bought or sold at any time by anyone and they can change hands any number of times before expiration.

Related to the expiration date is the *first notice date*. This is the date after which the contract holder may be required to take possession (if long) or to deliver (if short) the specified quantity of the underlying commodity. If short one or more contracts at the expiration date, the trader is obligated to take possession of the underlying commodity or financial instrument. After first notice date, those who are long futures contracts can demand delivery and those who are short may be required to deliver. Futures speculators who want to maintain a position past first notice date "roll over" their contracts to others that have later expiration dates. For example, if a trader is long a September S&P 500 and wishes to remain long past first notice date, he or she will sell the September contract and buy a December one. A trader who is short the September S&P 500 would buy back or "cover" the September contract and short the December contract. Usually, the speculator trades the nearest (closest to expiration) contract that is not yet past first notice date. Such contracts are usually the most liquid and actively traded.

Futures contracts may be used in several ways. For example, producers of commodities use them to hedge risks. A grain producer may have 10,000 bushels of corn that will be ready on a given date, and he or she wants to lock in a specific sales price on that date. Locking in the price with a futures contract avoids the risk of vagaries in the corn market. Consequently, the use of futures allows the producer to budget and plan, knowing what price to expect on delivery. The way the producer ensures the price is by

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selling futures contracts. The buyer of the futures contract is then obligated to take delivery of the corn on a given date, at the specified price.

For the speculator or day trader, futures contracts are used purely as trading instruments. They enable profits to be made from correctly anticipated price changes. For example, a trader expecting stocks to rise can profit from the anticipated move by going long an S&P 500 or E-Mini futures contract. To avoid acquiring the commodity and then having to turn around and sell it, speculators generally do not hold futures contracts past expiration or first notice date.

Today, futures trading on modern exchanges is highly standardized. Future contracts have fixed expiration dates and contract sizes (the amount of the commodity to be delivered), and each contract is identified by a unique symbol. Specifying a futures contract, such as when requesting a quote or placing an order, requires knowledge of the month in which the contract terminates or expires (also referred to as the *delivery month*), and the root symbol used to identify the contract series. The ticker symbol for the desired contract is normally constructed by appending, to the root symbol, a letter that identifies the expiration month. For example, SPU specifies the September S&P 500 contract. Since most contracts expire on a particular day of the month, usually the third Friday, only the month need be indicated. Sometimes the last digit of the year is tacked on, as in SPU9 for the September 1999 S&P 500 contract. The root symbols or "tags" for some popular contracts, the expiration months available, and the exchanges on which these contracts are traded can be found in Appendix A. Table 1-1 lists the letters that commonly identify expiration or delivery months.

Characteristics of Futures

As previously stated, all futures contracts have a defined size. However, for any given commodity, index, or financial instrument, there may be several distinct series of contracts, each with a different size. For example, every standard S&P 500 futures contract controls the equivalent of 250 shares of

Table 1-1. Expiration Month Codes for Futures

Month	Letter	Month	Letter	Month	Letter
January	F	May	K	September	U
February	G	June	M	October	V
March	H	July	N	November	X
April	J	August	Q	December	Z

the S&P 500 spot (cash) index. For every point the S&P 500 index moves, the futures trader wins or loses $250. The E-Mini, which trades electronically on GLOBEX, also has the S&P 500 index as its underlying security. But this contract is one-fifth the size of the standard S&P 500 futures contract. It controls the equivalent of 50 shares of the S&P 500 index, and moves $50 with each point of index movement.

Besides contract size, in the sense used above, futures have a *tick size*, or minimum fluctuation. This is the smallest change that can occur in the price of a particular futures contract. For example, the S&P 500 before the October 1997 split had a tick size of .05; that is, the contract traded in increments of .05; since the split, it trades in increments of .10. The *tick value* is the value, in dollars, of a minimum fluctuation. For the S&P 500 prior to the split, the value of a tick (a move of .05) was $25; the value of a 1-point move was $500. After the split, the value of a tick remains at $25 but, because the ticks are larger, the value of a 1-point move is now only $250.

Not only do futures contracts differ in tick size and value, they also differ in dollar volatility. As discussed in the previous chapter, dollar volatility is the amount of movement, measured in dollars, that may be expected in a given amount of time, for example, a typical trading day. Some contracts, like the pit-traded S&P 500, can swing thousands of dollars in the space of a few minutes! Others, such as oats, rarely move more that a few hundred dollars during a whole day. Measures of dollar volatility are based on recent historic market behavior. Although not part of a contract's formal definition, and

varying with market conditions, dollar volatility is, nevertheless, an important characteristic for traders. Appendix A contains tick size and tick value information as well as suggested rollover dates, recent intraday dollar volatility levels, and other contract-specific data for popular, electronically tradable futures contracts.

It must be understood that nothing is really bought or sold when trading futures. Only a commitment is made. No money changes hands until a position is closed or a round turn is completed. *Margin*, however, must be deposited with the futures broker or clearinghouse. Margin is essentially a good faith deposit to cover expenses if a position moves against the trader and a loss is incurred. A *margin call* occurs when a position moves so far against the trader that the current margin (deposit) is inadequate. At such a point, the brokerage or clearinghouse can close the position on its own to prevent further losses.

Unlike stocks, futures contracts have a *premium* or carrying charge. The price of a futures contract is usually slightly above the price of the underlying commodity or index. For example, the S&P 500 index might be trading at 1080, but the S&P 500 futures may be trading at 1091. The difference of 11 points is the premium. The premium in a futures contract decays over time, reaching zero at expiration. Although premium is usually positive, it can occasionally go negative, a kind of "reverse premium." The two primary influences on premium are interest rates (or carrying costs), and the bullishness or bearishness of those trading the contract.

Figure 1-1 shows the relationship between the price of a futures contract and the price of the underlying commodity or index. Three futures contracts are illustrated. The bottom curve represents a typical contract that is at or near expiration. The top curve represents a contract with a large amount of time to expiration. The middle curve is of a contract with an intermediate amount of time left. As can be seen, the price of a futures contract varies linearly with the price of the underlying security. In addition, the decay of premium with the passage of time only affects the placement, but not the slope, of the curve depicting the price relationship. The difference

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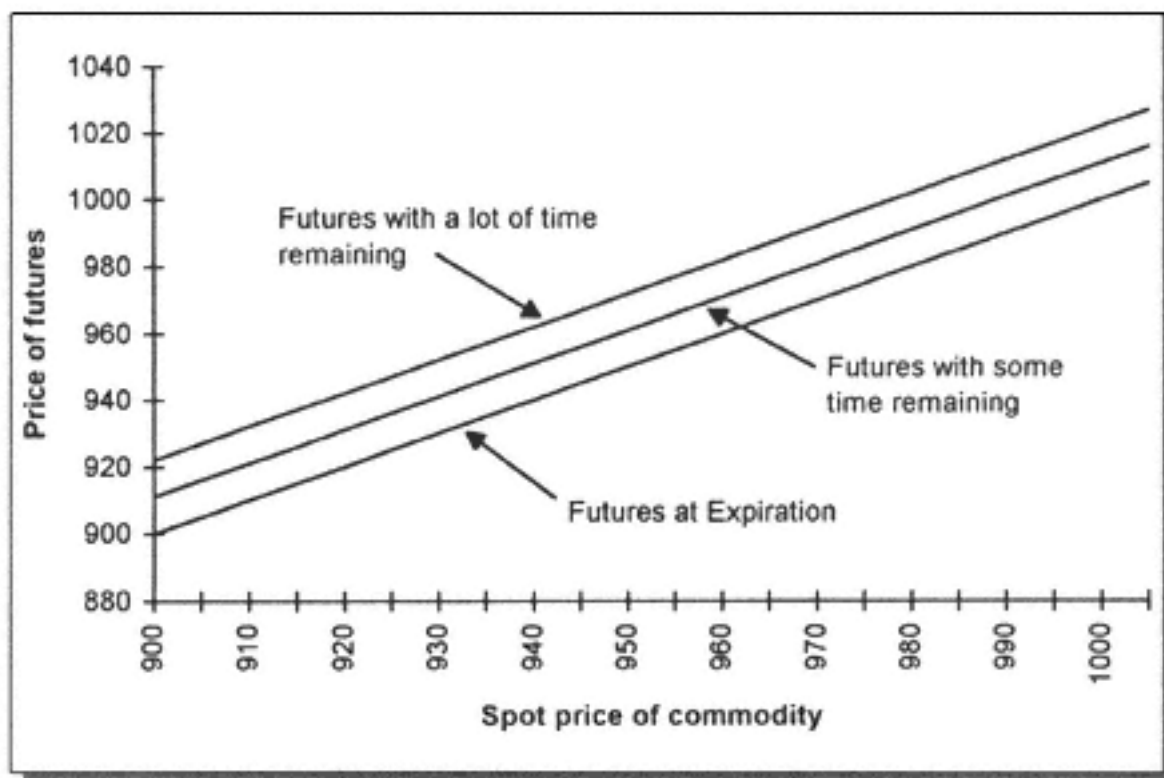
Figure 1-1.
Relationship between price of commodity and price of futures contract.

between the curve that represents a contract that is at expiration and the curves for contracts with varying amounts of time remaining reflects the premium. The premium in Figure 1-1 is positive, which is the normal situation. Recall that premium derives from carrying charges or storage costs, and interest rates. However, depending on the bullishness or bearishness of market participants and on other factors, premium will expand or shrink, and may even go negative. Nevertheless, the relationship between the price of a futures contract and the price of the underlying entity is fairly direct, and the effect of time is generally much smaller than with options. Moreover, time decay is linear with futures, whereas with options it is nonlinear and accelerating.

Finally, some futures are subject to being *limit locked*. This is when trading is halted by the exchange in response to excessive movement within a given period. The expression "limit up" refers to when a market rises so fast that it becomes limit locked, impos-

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sible to either buy or sell into; "limit down" is the same except that the market is in decline. A trader who is short a futures contract when the market is limit up may face a major loss, yet be unable to exit the position. Likewise for a trader with a long position in a limit-down market. Some markets experience frequent limit moves and this can be a serious problem. Limit moves only rarely occur in other markets. And a few markets simply do not cease trading under highly volatile conditions so limit moves never happen.

What are options?

Like futures, options are contracts. Options come in two flavors: calls and puts. A *call* is an agreement that gives the buyer the right to "call away" from the seller the underlying futures contract or stock at a specified price and at any time prior to the call's expiration date. When the buyer of a call actually calls away the seller's futures contract or stock, it is said that the call has been "exercised." Seen from the seller's point of view, being short a call means having given someone the right to call away a futures contract or stock in exchange for immediate cash (the amount for which the call was sold). A *put* gives the buyer the right to force the seller to purchase a given number of futures contracts or shares of stock at a specified price and at any time prior to the expiration date. As with a call, a put may be exercised at any time. A trader who is short a put has an obligation to purchase the underlying futures contracts or stock at the specified price should the buyer of the put exercise it.

A trader who sells a *covered call* already owns the underlying security. For example, the owner of 100 shares of IBM might sell an IBM call which entitles the buyer to call away the seller's stock. Selling a *naked call* is when the call is sold without owning the underlying stock. If the call is exercised, the seller of the naked call is obligated to purchase the stock at the current, prevailing price and provide it to the buyer of the call at the call's *strike price*. The meaning of the term strike price is illustrated by the following: Buying an IBM call with a strike price of 150 and an expiration 3

months into the future means having the right to get from the seller the specified number of shares (with stocks, 100 shares is the norm) of the underlying security at 150, regardless of current market value. The strike price of a put is the same except that the buyer can force the seller of the put to purchase a specified number of futures contracts or shares at the option's strike price, regardless of the current market value of the underlying security. Options are specified by strike price, expiration date, and underlying security (e.g., futures contract, stock, or bond).

Like futures, calls and puts have been standardized and are traded on regulated exchanges. Like stocks and futures, they are identified by ticker symbols. For stock options, the option ticker is usually constructed by appending two letters (see Table 1-2). to the stock symbol, or to some abbreviation thereof when longer than three characters (as with NASDAQ stocks). The first of the two appended letters specifies the strike price. The second letter indicates the expiration month, and whether the option is a put or a call. As with futures, options generally expire on the third Friday of the expiration month, so the full expiration date need not be specified.

Two simple examples of option ticker symbols are IBMGT, for a July 100 call option on IBM stock, and OEXRF, for a June 830 put option on the OEX index. A more complex example is the June 730 put on the OEX index, which has the ticker symbol OEZRF, in which the root symbol has been modified to permit differentiation. Another such example is ODUCE, for an Excelon (EXLN) March 25 call. Here the root symbol has been completely altered, a not uncommon practice with NASDAQ stocks. Most online brokers have a feature that allows the user to request information, including quotes and Black-Scholes pricing, on all options trading on a particular stock or index. Do not hesitate to use this feature to select options and to obtain correct ticker symbols!

Characteristics of Options

Strike price, expiration date, and the underlying security are all characteristics of options, in the sense

TABLE 1-2. EXPIRATION MONTH AND STRIKE PRICE CODES FOR EQUITY AND INDEX OPTIONS

Month	Call	Put	Code	Strike Prices			
January	A	M	A	5	105	205	. . .
February	B	N	B	10	110	210	. . .
March	C	O	C	15	115	215	. . .
April	D	P	D	20	120	220	. . .
May	E	Q	E	25	125	225	. . .
June	F	R	F	30	130	230	. . .
July	G	S	G	35	135	235	. . .
August	H	T	H	40	140	240	. . .
September	I	U	I	45	145	245	. . .
October	J	V	J	50	150	250	. . .
November	K	W	K	55	155	255	. . .
December	L	X	L	60	160	260	. . .
			M	65	165	265	. . .
			N	70	170	270	. . .
			O	75	175	275	. . .
			P	80	180	280	. . .
			Q	85	185	285	. . .
			R	90	190	290	. . .
			S	95	195	295	. . .
			T	100	200	300	. . .
			U	7.5	37.5		
			V	12.5	40.5		
			W	17.5	47.5		
			X	22.5	52.5		
			Y	27.5	57.5		
			Z	32.5	67.5		

of being aspects of the option contract itself or specifications thereof. For the trader, there are other characteristics that are relevant. These concern the way options behave in trading: how they respond to volatility, price change, and time. Here we have such things as premium, time decay, and the so-called Greeks.

The price of an option, its *premium*, can be broken down into two components or kinds of value. Let's first discuss *intrinsic value*.

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If you have an IBM call with a strike price of $100 and the stock is trading at $105, the option will have an intrinsic value of $5. This intrinsic value derives from the fact that, if you exercise the option, you can buy the stock at $100 from the option's seller, then turn around and sell the stock for $105, pocketing a $5 profit. Options also have another kind of value, which has to do with where the stock might go at some point in the future. Assuming the option has several months of life before expiration, its total worth would be greater than $5; it may, for instance, be trading at $7. The extra $2 is the *time value* or *time premium* of the option. This time value comes from what might happen in the future. Down the road, the stock might go to $200, in which case the profit that could be made from holding the option would be at least $100. On the other hand, the stock could drop to $20, leaving the option holder with a nearly worthless option. But, if the option has any time remaining, it will still have value, since at some point prior to expiration, the stock could again surge to over $100.

As might be expected, the excess over intrinsic value that is known as time value is highly influenced by volatility: The more volatile the underlying security, the greater will be the time value in any specific option. Time value is also determined by the period remaining before expiration: The longer the time remaining, the greater this component of an option's worth. If there is a longer period ahead, there is more time for the stock to potentially reach a price level that would yield a high profit for the option holder. In a sense, time value might be referred to as *speculative value*. As expiration approaches, speculative value decreases, a phenomenon known as *time decay*. At expiration, an option will only have intrinsic value remaining; its speculative value will have declined to zero.

The so-called *Greeks* (named for the Greek letters used in the equations) are measures of actual or theoretical aspects of option behavior. Among them are "Theta," which represents the rate of time decay, and "Delta," which is how much an option can be ex-

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pected to move in response to a given movement in the underlying stock, future, or index. Technically, Delta (also known as the hedge ratio) is the slopeor, in the language of calculus, the derivativeof the option's price response curve (see Figures 1-2 and 1-3). Theta is the slope, or derivative, of the time response curve (see Figure 1-4) and represents the decline in an option's worth per unit of time. Both Delta and Theta vary with stock price, as well as with other factors that influence an option's worth. As a practical example, the IBM option discussed earlier might have a Theta of .2 and a Delta of .5. This means that, given IBM's current price and volatility, and the option's strike price and time left before expiration, the option could be expected to lose $.20 per day because of the eroding effect of time (time decay), and that a $1 move in the stock could be anticipated to yield a $.50 move in the option.

Options have a theoretical "fair value." *Fair value* is what an option should cost given the current price and volatility of the underlying security, time remaining to expiration, prevailing interest rates, and other factors. Estimates of fair value can be obtained from the classic Black-Scholes formula or from other, more modern "option valuation models." *Option valuation models* are theoretical models based on certain assumptions regarding the way options should behave. They express, in a precise mathematical manner, the relationship between an option's worth and factors such as time left before expiration and volatility of the underlying security. As an example, the Black-Scholes equation for fair value has as its inputs the risk-free interest rate, time to expiration, volatility, strike price of the option, and the underlying security's current price. The output from the equation is the theoretical fair value of the option. When computing fair value, the question answered is what the option would be worth under the assumption that the market is a "random walk" with a known probability distributionlog normal for the Black-Scholes pricing model.

Besides fair value, liquidity is an issue with options. Liquidity is often a serious consideration because many options trade "thinly,"

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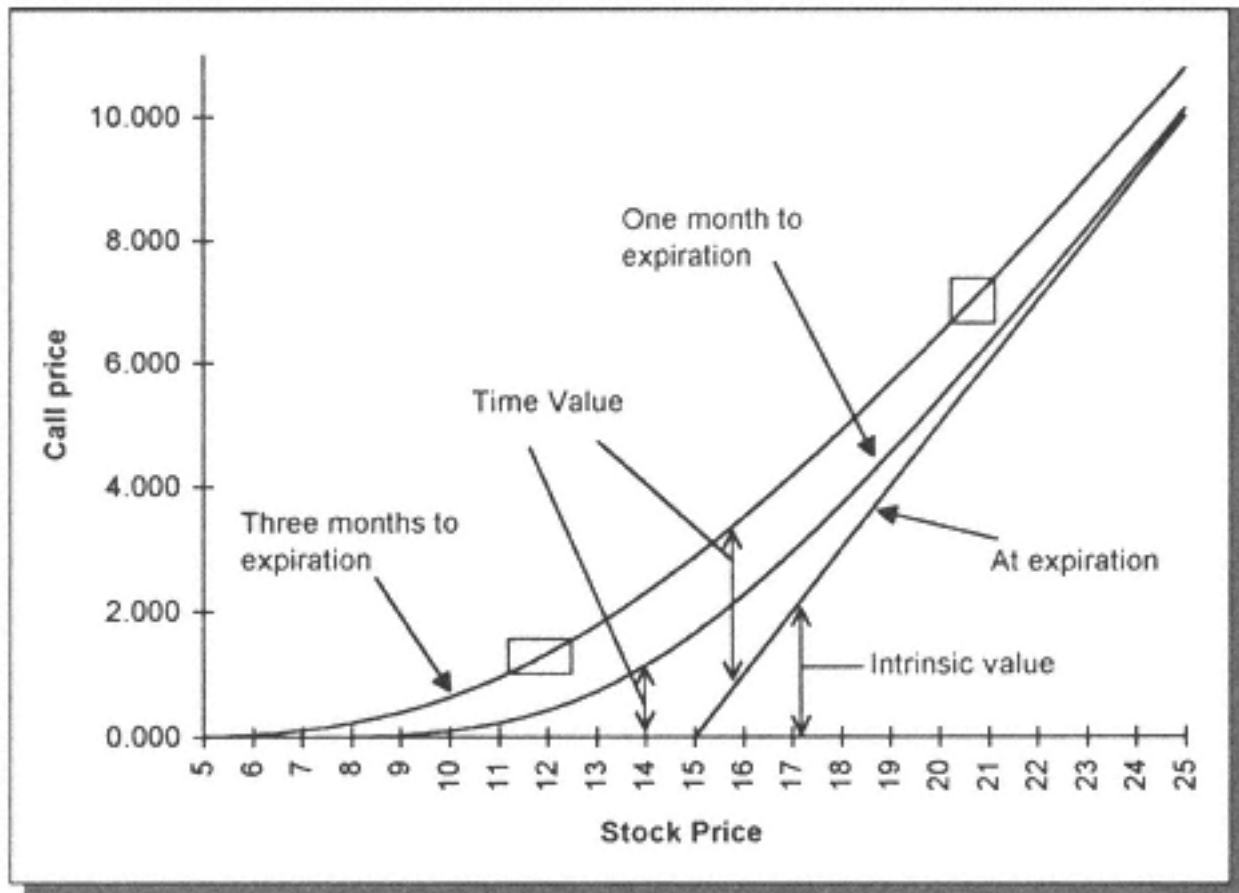
Figure 1-2.
Price of a call option as a function of price of the underlying security.

Price of a call option as a function of price of the underlying security.that is, have very low volume. If you look through *Investor's Business Daily*, you will find many options that, on any given day, traded only 5 or 10 contracts, or perhaps did not trade at all.

Options are said to be "in the money," "at the money," or "out of the money." These terms describe the relationship of the strike price of an option to the underlying price of the security. A call option that has a strike price that is lower than the current price of the underlying security is referred to as an *in-the-money* option. An option with a strike price above the price of the underlying security is described as *out of the money*. The exact reverse applies to puts, where a strike price above the underlying security is in the money and below is out of the money. An option with a strike price close to or the same as the price of the underlying security is *at the money*. As evident from the discussion above, in-the-money options are those that have intrinsic value, as well as speculative or time
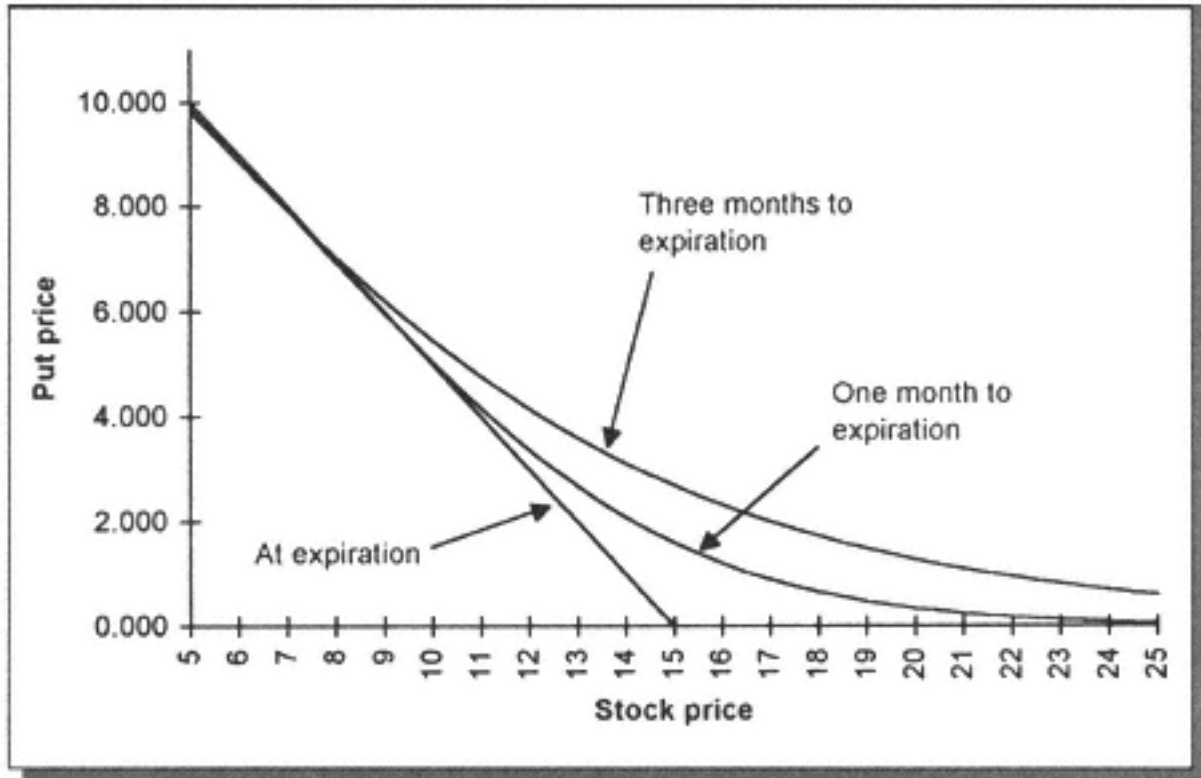
Figure 1-3.
Price of a put option as a function of price of the underlying security.

value. Out-of-the-money options only have time value. In most cases, the further in or out of the money an option becomes, the less time or speculative value the option has. The total price of an option is the sum of the time or speculative value component and the intrinsic value component.

Figure 1-2 illustrates how the value of a call option is affected by the time remaining before the option's expiration and the price of the underlying stock, index, or future. In the chart, the theoretical fair price for a call with a strike of $15, and three different amounts of time left before expiration (3 months, 1 month, and 1 minute), is shown as a function of the price of the underlying stock. A volatility of 95 percent, not unusual for a NASDAQ stock that has come into play, and a risk-free interest rate of 5 percent, close to the prevailing rate when this was written, were used in the Black-Scholes calculations on which Figure 1-2 is based.

In Figure 1-2, the call that is about to expire (bottom curve) is

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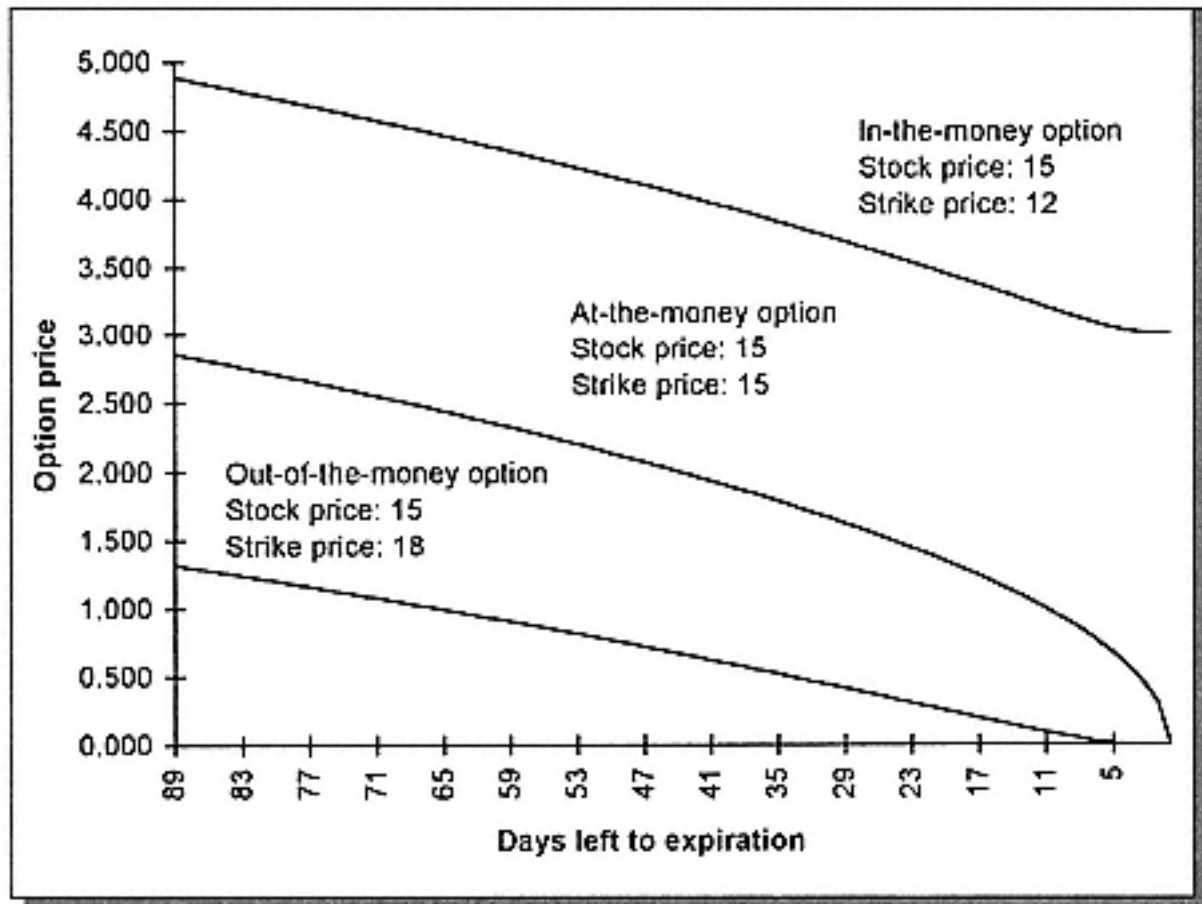
Figure 1-4.
Price of a call option as a function of time remaining before expiration.

worthless for any stock price lower than $15. Its value moves one-for-one with the stock price as that price rises above $15. For a stock price of $20, the call would be worth $5; for a stock price of $25, the call would be worth $10. This is because, at expiration, the option has only intrinsic value, no time value. The middle curve illustrates an option with 1 month remaining before expiration. Along each point, this curve is higher than the bottom curve. This is because the middle curve reflects the presence of some time value, while the bottom curve only reflects intrinsic value. If you choose a point on the x-axis, a stock price, and measure the distance at that point from the bottom curve to the middle curve, that distance represents the time value in the option. As can be seen, the time value is greatest when the stock price is roughly equal to the

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strike price of the option, or $15. As the stock price declines, and the option is further out of the money, the time value approaches zero. Likewise, as the stock price rises and the option becomes highly in the money (right side of the graph), the time value declines, as shown by the this curve approaching ever more closely the at-expiration curve. The top curve is for an option that has 3 months left before expiration. This curve is more flush with time value than the middle one, but otherwise similar. Again, the time value component is the difference between this curve and the bottom, at-expiration curve.

The small rectangles drawn on the 3-month response curve in Figure 1-2 are there to help clarify the meaning of Delta. Delta is, essentially, the height of the rectangle divided by its width. By comparing the two rectangles, it is easy to see that Delta varies with stock price. Since the curve is sloping up, Delta is positive.

The example in Figure 1-2 demonstrates how the decay of time value can turn an option trade in which the underlying stock performs favorably into a loser. For example, if you purchased the 3-month option when the stock was $13, it would have cost you about $1.78. Two months later, the stock moves to $15, and the option has 1 month remaining (middle curve), making it worth about $1.65, a small loss. Perhaps it takes 3 months for the stock to move to $15. In that case, the expiring option is worthless (bottom curve) and the trade is a total loss despite the stock's appreciation.

Time erosion can be very damaging. However, for the short-term trader, the effect of time decay may not be very significant. For this kind of trader, there are many benefits to trading options, rather than the underlying stocks or futures. One easily observed benefit is that an option reduces the impact of adverse movement in the price of a stock or index, and magnifies favorable movement. As can be seen in the chart for the call option, a move down causes less of a loss than the same move up causes gain. This is especially noticeable with options near expiration, when very little speculative value remains.

Figure 1-3 is identical to Figure 1-2, except that its curves rep-

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resent the fair value of a put (rather than a call) with a strike price of $15. These curves are very close to being mirror reflections of those for the call option. In Figure 1-3, the put at expiration (bottom curve) has no value for stock prices greater than $15, but has a value that rises one-for-one with the stock price as it goes below $15. The space between the bottom curve and either of the others represents the speculative or time value. Just as the call cushioned the trader against a decline in the stock price and amplified an incline, the put amplifies the profit from a decline, while cushioning the holder against a sudden rise. The purchase of a put is an excellent way to trade an anticipated decline in a stock's price, or to cash in on a crash.

As previously mentioned, the Black-Scholes model was used in constructing Figures 1-2 and 1-3, and it was assumed that interest rates were at 5 percent and that the stock had a volatility of 95 percent. Higher levels of volatility have roughly the same effect as do increasing amounts of time left in the option. That is, the higher the volatility, the greater the speculative value. This brings up the point that it is generally good to buy options when one expects an increase in volatility.

As should be evident, to bet on a stock that is rising, buy a call or sell a put. To bet on a stock falling, buy the put or sell the call. For the day trader, it generally makes more sense to purchase options than to sell them, since no attempt is being made to capture time value from the buyer as the option decays.

Figure 1-4 illustrates the decline of speculative premium with the approach of expiration. As with the previous two figures, a volatility of .95 was assumed, as was a strike price of $15. The stock was also fixed at $12 (out-of-the-money), $15 (at-the-money), and $18 (in-the-money), and the curves represent the cost of a call option as time remaining goes from about 3 months (left) to none (right).

For additional information about options, we recommend the book *All About Options* (McCafferty, 1998). The definitive, more

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advanced work on options is *Options As a Strategic Investment* (McMillan, 1993).

What should you trade?

Futures and options each have unique characteristics. They respond differently to time, to changes in price of the underlying security, and in other ways.

Futures are good to trade if you are looking to capitalize on moves that may take some time to develop. They are also efficient in the sense of closely tracking movement in price of the underlying commodity. Many futures are highly liquid so good fills can be obtained with little slippage. Commissions are low. However, with futures, you must limit risk by quickly exiting positions that move against you. Although good for day trading, futures are not the instruments of choice if you need to hold onto a position during potentially adverse moves while waiting for the final profit. This is because futures move point for point with the underlying market; unless you exit, the losses can grow, causing margin calls. Futures can be traded long or short, depending on whether you expect the underlying index or commodity to rise or fall in price.

Unlike futures, options are subject to substantial time decay. However, they can limit downside risk. The holder of a put or a call can only lose the original cost of the put or call, while the upside potential is unlimited. This makes options useful for trades in which the market may move substantially against you before moving in your favor. The cost of this downside cushioning is that options are a wasting asset, subject to time decay. Therefore, options are best when speculating on moves that are expected to take place quickly and when it is desirable to hold on to a position, even through momentary adverse swings. Since a day trader is only concerned with short-term moves, options are excellent for day trading.

Gutsy traders can sell "naked" options. Why does it take guts? Because, as with futures, one opens oneself to (possibly) unlimited

risk. However, in return, one can capture the constantly eroding time value, obtaining profits (albeit small) even if the underlying security remains flat. Actually, the risks are not as fearsome as they are sometimes made out to be. There are strategies by which the risk can be controlled, and catastrophes prevented.

For example, instead of a naked call, consider selling a covered call. Should a stock make a bull run or be subject to a takeover bid, the surging value of the call will then be offset by the rising value of the underlying stock. At some point the stock may be called away, but the trader gets to pocket some profit in the stock, as well as the premium from the call. Instead of facing a major loss, the trader makes a small profit. The seller of a naked put risks having to purchase the underlying stock at the strike price of the option, regardless of the stock's current value. In this case, the risk is limited to the strike price of the option minus the premium garnered from its sale. Should the stock decline and the put be exercised, the loss would be no worse than what the trader would have experienced had he or she simply purchased the stock. However, the option seller gets to keep the premium pocketed from the sale of the put.

Because options are very sensitive to volatility, they can be used to profit from anticipated changes in the volatility of the underlying security. For example, if a stock suddenly becomes highly volatile, one might consider selling overpriced, out-of-the-money options. When volatility is high, these options will be rich in speculative or time value. As volatility returns to more normal levels, the premium will shrink and a profit will be made. This is true even if the underlying security remains unchanged in price. Unlike options, futures cannot be used to speculate on changes in volatility.

Finally, the decision to trade futures or options must be based on the underlying markets. For the day trader interested in bonds, currencies, grains, livestock, and the weather, futures are probably the way to go. One can speculate on oil, gold, and the overall stock market using either futures or index options. There are futures on heating oil, gold, and the S&P 500 market index, and index options

on oil stocks, gold stocks, and the OEX. A wide variety of index options are available. These are great for speculating on trends in various stock market sectors from biotech and health care to semiconductors, internet services, and telecommunications. Action in individual stocks can be day traded with standard equity options.

Summary

There are many instruments suitable for day trading: stocks, futures, options on stocks, options on futures, and options on market indexes. The concern of the day trader should be with whether the particular option or future is sufficiently liquid and has adequate leverage to enable profits to be made on a day trader's time frame. Beyond that, the choice of instrument should be based on the trader's strategy, previous experience, and market conditions.

What have we learned?

Day traders need to trade markets that are liquid and highly volatile.

Liquidity is the extent to which merchandise (e.g., options) can be traded quickly and easily. It is found in markets with high trading *volume* (number of trades per unit time), like the S&P 500 and the E-Mini. The liquidity of a market can vary over time.

Volatility is the amount of movement in a tradable's price per unit of time.

A *futures contract* is an agreement between a buyer and a seller to purchase and sell (respectively) a given amount of a commodity, or other financial instrument, at a given price, by a given date (expiration date).

To identify a futures contract, you must know the letter of the month it expires (*delivery month*) and append it to the root symbol used to identify the contract.

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Futures contracts come in different sizes, determined by the amount of the underlying they control.

The *tick size* is the smallest change in price that can occur in a futures contract. The *tick value* is the dollar amount of the tick size.

A *margin call* is what happens when a trade moves against the trader to the extent that there are not sufficient funds in his or her account to cover it. When this occurs, the brokerage may request additional funds or close the trader's position.

The price of a futures contract is usually greater than the price of its underlying. The difference between the two is the *premium*, which decays over time.

Futures markets can become *limit locked*, that is, the exchange stops the trading because of excessive movement within a certain time period. *Limit up* is when limit lock occurs because of excessive upward movement; *limit down* is the reverse.

Options are also contracts. A *call* is when the agreement gives the buyer the right to "call away" a specified amount of the underlying at a specified price (*strike price*) at any time before the expiration date. A *put* gives the buyer the right to force the seller to buy a given amount of the underlying at a given price (strike price) at any time before expiration.

A *covered call* is when the seller already owns the underlying. A *naked call* is when the seller does not own the underlying and so must buy it, and give it to the buyer, should the buyer exercise his or her call option.

To identify a stock option, append two letters to the stock's symbol (or abbreviation thereof). The first letter will indicate the expiration month and whether the option is a put or a call. The second letter will represent the strike price.

An option's premium can be broken down into its intrinsic value and its time value.

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Time value decays (*time decay*) as an option nears expiration, but increases with volatility.

Day traders should generally buy options, not sell them, since there is little profit to be gained from the decay of time value in such short-term trading.

The *Greeks* are measures of option behavior. *Theta* is the rate of time decay. *Delta* is the extent an option is expected to move in response to movement in the underlying.

The *theoretical fair value* of an option is an estimation of what its cost should be given the current price and volatility of the underlying security, the time remaining to option expiration, the prevailing interest rates, and other factors.

For calls, an *in-the-money* option has a strike price lower than the price of the underlying security. If the strike price is above the price of the underlying, the option is *out of the money*. The reverse of both conditions applies to puts. If the strike price and the underlying are the same, or nearly the same, the option is said to be *at the money*.

Futures are good to trade to capitalize on moves that may take time to develop, but quickly exit positions that start moving against you. They are not good if you need to withstand an adverse move while waiting for a profit.

Options are better if you suspect the market might go against you before going in your favor. They are also good for speculating on changes in volatility of the underlying security.

To a great extent, as a day trader, whether you trade futures or options depends on the markets or indices you want to trade, the liquidity of the markets, the desired cushioning effect, and other factors that are discussed more fully in later chapters.

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Chapter 2
Hardware and Software

Day trading the markets requires certain hardware and software. You probably have most of what is needed already, but may have to upgrade or purchase additional components for your trading station. On the hardware side, you will need one or more computers, one or more monitors, at least one modem, two free phone lines, and perhaps a sound card and speakers. On the software side, an operating system that allows your computer to function is required, as are general purpose applications (e.g., a spreadsheet), analysis and charting software to use when making trading decisions, general communications and internet tools, and perhaps custom software that works with the direct access trading providers that will connect you to various trading venues or markets.

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Hardware

Consider the computer first. Day trading requires a standard personal computer (IBM type) with a 266-megahertz (or faster) Pentium processor or the equivalent Macintosh. Given that most of the software available is aimed at IBM-type systems, such a machine is probably a better choice. Also, make sure you have at least 64 megabytes of RAM (random access memory). Memory is cheap and plentiful nowadays, so there is no reason to skimp. Inadequate memory in the system can cause serious delays in processing, sometimes at critical moments. This is especially true when analyzing large tick databases, following large numbers of stocks and options, or running several different applications programs at the same time. When getting a new computer, remember that hardware quickly becomes obsolescent. Therefore, buy a system with the fastest processor and largest amount of memory that you can afford. In this way, you will not find yourself having to upgrade in a year or so.

The computer should be equipped with a high speed CD-ROM drive, a hard disk with at least several gigabytes of storage capacity (the more the better), a fast, high resolution video card, and a reliable backup system (a tape or Zip drive). If you are in a location where the electricity is uncertain, it would be wise to acquire an uninterruptable power supply. A power surge can damage your computer, and having to reboot in the middle of a trade due to a minor glitch is not something you want to face. It doesn't matter whether the computer is a laptop or desktop. Speed and disk storage, however, are critical.

When selecting a monitor, think large and clear: Remember, you will be sitting in front of it for hours at a time. Inadequate monitors can produce eyestrain, headaches, and electromagnetic radiation poisoning. Do not take chances with your health. Get a low radiation NMR-II certified monitor. Today, this kind of equipment is fairly inexpensive.

It may be necessary to set up two computers. The second com-

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puter does not have to be as powerful as the first. We have this kind of two-computer arrangement for system-based trading. Our trading systems are very computationally intensive and display continuously updating graphs based on data processed from a high speed satellite feed. One computer collects the high speed, real-time data and saves it to a database. It also simultaneously analyzes the data and generates charts and trading signals. If this computer were burdened with an internet connection, and the screen space occupied with web pages or other displays, such as those involved with order entry, a number of problems would arise, such as missed ticks in the real-time data feed, and web pages overlaying important trading signals or analytic information. Instead, one computer is logged onto the internet and displays the order entry pages, while the other computer performs the data collection, analytic, and charting functions. When we see a signal on the analytic system, placing an order is only a mouse click away, since order entry has already been set up on the other system.

You might also want to consider an audio card and set of speakers. Traders often find it helpful to listen to the activity in the pits via so-called squawk box services, usually available over the internet, often free to brokerage clients.

Data is usually received in one of two ways: via satellite or over the internet. We obtain real-time data from a satellite dish that is connected to a receiver box, as supplied by DTN (Data Transmission Network). Consequently, the analytic system does not need to be connected to a modem, only to the DTN receiver box, which provides a steady flow of tick-by-tick data on all the indexes, commodities, and options of interest. However, the connection to the internet required for the placement and confirmation of orders requires a high speed modem, as would any internet connection delivering real-time data. At a minimum, get a 56K modem, which will work acceptably with well-designed web pages or proprietary order entry software. Higher speeds are desirable but not currently available in standard modems. A 3Com U.S. Robotics Sportster 56K modem is an excellent choice.

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Avoid so-called Win modems, or those that do not have their own coprocessor on board. These modems rely on the main system processor for their operation and, consequently, hog system resourcesnot something you want when speedy response is important. Moreover, these modems only work with Microsoft's Windows. Since you may someday wish to switch to another operating system (e.g., LINUX), don't limit your choices. Standard modems are compatible with all operating systems.

If you are considering high speed ISDN or DSL connections, know that a specialized modem or interface hardware will be required. These items are often sold or furnished by the telephone company providing the service. A further discussion of modems and connections can be found in the next chapter.

Last, but not least, pay attention to ergonomics. Above all, make sure you have a comfortable chair. In the fast-paced world of the day trader, the last thing you need is distraction. Discomfort and injury are easy to avoid.

Software

Every computer needs an operating system. Currently, the most popular ones are Windows 95, Windows 98, Windows NT, and LINUX on IBM-type PCs, and the MAC-OS for the Macintosh. For reasons of compatibility, it is probably best to stick with Windows 95 or Windows 98. By the time you read this, Windows 2000 will have been issued, but we strongly suggest not upgrading to the latest Microsoft operating system, since it usually takes a while for the bugs to be cleaned up and the system to become stable enough to be usable. Following this advice may help avoid crashes in the midst of a trading day, not to mention problems getting a variety of software packages to work correctly. We recommend Windows 95 or Windows 98, since these operating systems have been in use for some time and are the platforms for many trading software packages, including Omega Research's TradeStation, Equis International's MetaStock, and Worden Brothers' TC2000, as well as cus-

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tom packages offered by various trading service providers and brokerage firms.

It may be a surprise, but LINUX is well on its way to becoming an alternative to Microsoft's operating systems. LINUX is a flavor of UNIX. It has the reputation of being exceedingly stable, reliable, and fast. Netscape's internet browser, high performance spreadsheet software, and other tools and applications are already available, and lots more are on the way. No doubt, charting and analysis packages for traders will soon follow. While internet browsers, spreadsheets, and various other basic kinds of software are available for Macintosh systems, few specialized trading packages can be obtained.

In addition to the operating system, various applications packages are essential for the day trader. The most important of these is a good set of internet access tools, such as those found in Netscape's Navigator or Microsoft's Internet Explorer. Both packages contain browsers that can be used to surf the web, as well as to connect to online trading providers and brokerage firms. They also contain other internet tools, such as those required for sending e-mail, transferring files using ftp (file transfer protocol), and similar functions. We tend to prefer Netscape. It is a generic package, compatible with several operating systems, and many add-ons are available for it. Specialized software that is designed to connect to online brokerage or trading providers is sometimes needed. For example, Lind-Waldock has its "classic" blue-screen software, as well as its web-based, online trading environments.

In addition to tools for dealing with the internet and various communications tasks, an assortment of analytic applications is essential. If you are interested in developing mechanical trading systems, and in backtesting them to determine how well they performed in the past, a program like TradeStation is necessary. With TradeStation, historical and current real-time data can be charted, and trading ideas can be expressed in a simplified computer language that allows them to be systematically tested and traded. For more advanced system developers, Scientific Consultant Services has a turbo-powered toolkit called the "C-Trader Toolkit." The sys-

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tematic backtesting of systems must be performed to avoid losing money in today's competitive markets. Any mechanical system you are planning to trade should prove profitable in historical tests. For basic charting, such other packages as MetaStock and CQG are also available.

Finally, every trader needs a general purpose spreadsheet with a good scripting language. The Excel spreadsheet from Microsoft is popular, effective, and quite reasonable. If you can program, it is easy to use the built-in Visual Basic language to manipulate data and backtest trading systems. Cells in the spreadsheet can be linked (via DDE, or dynamic data exchange) to various real-time data feeds so trading models will generate analyses on-the-spot. This is a slightly more difficult approach that requires technical knowledge beyond the scope of most TradeStation users. Those experienced in Fortran, Pascal, or C++ can acquire a good, easy-to-use programming tool like Borland's Delphi or C++ Builder. These products greatly simplify Windows graphics and database programming. Our own trading systems are written in Borland's Delphi and work well with DTN's data feed.

Less critical, but still useful, are portfolio managers, word processors, and databases (other than those specifically required for real-time data feeds, historical market data, and related analyses). For the most part, excluding TradeStation and prebuilt charting packages, this kind of software is available for Macintosh computers.

When you total it all up, hardware and software should cost less than $3000 to $4000; this is in exclusion of TradeStation, which is very expensive (in 1999, around $2000). As far as the hardware goes, don't hesitate to buy "clones," rather than brand names. You do not have to purchase the best-known brands, which often cost more, but contain the same components as any other IBM-compatible personal computer. We have been using clones for years and have very rarely experienced a hardware failure. The few failures we have experienced have been hard disk crashes involving brand-name drives (Quantum and Seagate). When problems arise,

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they are more often due to software glitches and bugs, which appear in operating systems and in many other software products. Manufacturers of products like Windows and TradeStation keep adding bells and whistles at the expense of proper quality control. The software becomes bloated and is often so bug-ridden as to be a real nightmare to use.

Tips for Buying Hardware

When shopping for hardware, consider reports published in magazines like *Byte* and *PC Magazine*. These provide performance and quality ratings for complete computer systems, as well as for components that make up the computer (e.g., motherboards, disk drives, and video cards). Base your evaluation on the components that are being used, rather than on the computer's brand name. And, if you don't need around-the-clock service contracts or other special amenities, go for the lowest price. For IBM clones with SCSI (small computer systems interface) disk drives, insist on an Adaptec SCSI controller card. Adaptec controllers are compatible with every operating system and perform consistently well, which cannot be said of some other brands. Most of the time the adapter card will not be an issue. The vast majority of computers do not use SCSI; instead, they use IDE (integrated drive electronics) interfaces to connect the motherboard to the disk drives.

Regardless of the type of computer system, seek compatibility with third party products, add-ons, and industry standards. In other words, avoid having everything integrated and proprietary. Make sure, for example, that the motherboard has at least a few free PCI slots and perhaps a standard ATA slot. This will permit the use of a wide array of add-on cardssound cards, high performance disk controller cards, adapter cards for special backup devices, network interface cards, and more. Buying compatible, standardized hardware helps reduce the insane rate of obsolescence, and permits cheap and easy upgrades to be made by swapping componentsa better alternative than replacing the entire computer.

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Most IBM-type computers contain a Pentium II or III processor. You will not go wrong with one of these. The AMD 7 processor from American Micro Devices is also a good choice. But stay away from the Intel Celeron. It is a less expensive, handicapped processor that lacks the built-in memory cache present in the others. In many tasks, the Celeron processor runs significantly slower than a standard Pentium or AMD 7. The cost difference is negligible, so there is no point in buying a machine with the cheaper processor.

Our vote for the best modem is the 56K Sportster (external) or Faxmodem (internal) from 3Com U.S. Robotics (*3com.com*). All modem modems adapt to telephone line quality by reducing their speed to the extent that telephone connections are noisy or less than perfect. Modems are designed to maintain a valid, error-free connection and, if speed must be reduced to achieve this, so be it. In realistic tests (Morgan and Patz, 1997) utilizing noisy telephone lines, the 3Com modems showed the least degradation in performance. Certain other brands evidenced a very significant loss of speed. The tests revealed that many of the 56K modems were actually operating at less than 16K baud! Worse, some of those tested had a tendency to drop the connection. 3Com U.S. Robotics modems have consistently performed best in comparative reviews, as well as in our experience.

Tips for Selecting Software

There are four major concerns when selecting software. Does it perform the function needed? Is it stable and reliable or full of bugs? Is it compatible with other programs, add-ons, and software components? Finally, is it extensible? Compatibility is one of the reasons to stick with Windows 95 or Windows NT. Most trading software is designed to work with these operating systems. Extensibility means that functionality can be added to the software either by writing code or purchasing third party add-ons. Excel, for example, can be enhanced with third party add-ons for everything from training neural networks to analyzing options. In addition, the

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Excel spreadsheet contains a version of the Visual Basic programming language that makes it possible to write analytic routines and other add-ons yourself. TradeStation was also designed with extensibility in mind: Additional indicators, trading systems, and other analytic routines can be written in its built-in Easy Language (a programming language based loosely on Pascal), and routines that reside in DLLs (dynamic link libraries) can be called. DLLs that are compatible with Excel and TradeStation are available from many sources and for many purposes. Everything from genetic optimizers, global variables, and advanced mathematics to millisecond time stamping can be obtained. Moreover, an experienced programmer using any standard programming language can write custom DLLs that can extend these products.

Software bugs are a major problem and one that has become more serious in recent years. This is partly due to the complexity of modem operating systems and software packages, as well as to efforts by software companies to reduce costs. To some degree, the complexity derives from an excessive number of infrequently used features and layers added to the software to increase ease of use, but that actually make it unusable. Poor design, poor quality control, and sometimes nefarious efforts to interfere with third party software also contribute to the proliferation of bugs and software glitches. There is often a trade-off between compatibility and reliability. According to most reports, LINUX is by far more reliable than any version of Windows. Currently, however, there are far fewer software packages designed to operate under LINUX than under Windows.

If You Already Have Hardware . . .

Does your current system meet the minimum specifications above? If not, then one route to take is an upgrade. A 266-megahertz (or faster) processor is best, although you can probably get away with a 166-megahertz one. A system that already has this will not need a motherboard transplant. Are there at least 64 megabytes of mem-

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ory? If not, call a distributor of quality memory and purchase enough of the appropriate kind to bring the system up to a minimum of 64 megabytes, preferably up to 128 megabytes. You can install the memory yourself, if you feel comfortable with hardware, or a service technician can do it for you. Is the disk drive's capacity sufficient for today's bloated software? Aim for nothing less than 4 gigabytes; 12 gigabytes is better. If necessary, purchase a new hard drive and possibly a controller card. Like memory, hard drive prices have come down and are extremely reasonable. If the system lacks a CD-ROM drive, get one. Better yet, get a CD-R drive that can record as well as read CDs. Make sure its interface is compatible with the controller card. For example, if the system has an Adaptec SCSI controller, get an SCSI drive.

Check your serial ports. Are they high speed, high performance ports capable of at least 119,000 baud? If not, get a serial port card that is compatible with the machine's slots and do any necessary reconfiguration. This should only cost about $40. If you are (or will be) using an internal modem, and do not need to connect your computer to a satellite receiver box, you may not require the serial port.

Hopefully, you have a modem, high-resolution monitor and a video card with at least 1024×800 pixels resolution. Likewise, if you don't have a 56K modem, get oneor, perhaps, a DSL modem. These upgrades should get you to the point where you are ready to begin day trading. Depending on your preferences, you may wish to add speakers and a sound card.

If you plan to replace your computer, complete systems (plug in and you're ready to run) are available from mail-order discounters that advertise in catalogs. Usually the operating system and some applications (e.g., Microsoft's Word and Excel) will already be loaded. You will have to install specialized trading software yourself. Catalog shopping is as good or better than walking into a retailer: Just tell the mail order vendor what you want and you'll be quickly set up, while saving hundreds of dollars.

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What Have We Learned?

Hardware Requirements

Two telephone lines.

Personal computer with 266-megahertz (or faster) Pentium or equivalent Macintosh (preferably the former).

64 to 128 or more megabytes of RAM (random access memory).

High speed CD-ROM.

Hard disk with at least 4 gigabytes of storage.

High resolution video card.

Good backup system (tape, recordable CD, or Zip drive).

Uninterruptable power supply.

Large, low radiation NMR-II certified monitor, video card with 1024×800 or better resolution.

High speed (minimum 56K) modem.

Possibly a high speed ISDN or DSL connection.

Possibly a second computer, which does not necessarily need to be as powerful as the primary one. If you are getting a new one, the old one can serve as the second machine.

Possibly an audio card and speakers for, say, squawk box services.

A comfy chair.

Save money without sacrificing quality by buying clones, rather than brand names.

Read *Byte* and *PC Magazine* for quality ratings of equipment.

Make sure hardware is compatible with third party products and the software you want to use.

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Software

If using Windows, use Windows 95 or 98 (until the bugs are worked out of the 2000 version and software vendors update their products to be compatible).

Good internet access tools, like those found in Netscape.

Sometimes brokerages require that you install their specialized software to access their services.

Analytic software to help develop and backtest mechanical systems (e.g., TradeStation or C-Trader Toolkit).

Charting package (sometimes included in analytic packages) such as TradeStation, SuperCharts, MetaStock, or CQG.

Spreadsheet with a good scripting language, like Excel.

Make sure software is compatible with other software and addons.

Software has to be stable and reliable.

Ask a lot of questions and be sure that the software does what you need it to do.

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Chapter 3
Getting Connected

Now that you have the necessary hardware and some of the software, the next task is to get connected with internet service providers, data vendors, and online brokerages, as well as to acquire other information resources.

Internet Service Providers

There are many internet service providers (ISPs). Some are heavily advertised, national providers like America Online (alias AOL). Others are regional or independent ones like Panix. Even telephone companies now offer internet connections and services, as do some local libraries and universities.

The older independents originally catered to a technically sophisticated user. Many of them continue to offer special services

(e.g., full UNIX server access) not available elsewhere. Virtually any web browser, ftp (file transfer protocol) client, newsreader, or other internet tool can be used with these ISPs. There are no limits. In contrast, most of the big providers cater to the general public. They focus on the neophyte and emphasize ease of use. They also display advertising on their subscribers' computers. Because of this, for example, AOL once required proprietary software and was not designed for open systems flexibility. However, with the everincreasing popularity of the internet, AOL service can now be used with a wider range of standard internet software, but many limitations still remain. Such limitations can interfere with online trading platforms and, consequently, may cause problems with certain brokerages.

Even with the above aside, not all internet service providers are alike. Each of them has different features that may be useful to you personally and as a trader. When evaluating ISPs, consider whether they have the features you need and whether they are reliable, especially under stress (e.g., heavy use times).

Some providers, for instance, maintain a newsgroup server that allows clients to easily read and post messages on the more than 28,000 bulletin boards that comprise USENET. *Newsgroups* are public forums where people with common interests can communicate. A drawback to newsgroups is that they are "spam" targets (junk postings, usually high pressure advertising). Still, newsgroups can be quite valuable sources of information, and they do provide a venue where traders can discuss topics of mutual interest. Table 3-1 is a list of some groups that pertain to trading.

It is important to consider whether the connection offered by the ISP allows certain kinds of internet communications protocols to operate correctly. Some online day trading providers use special internet communications protocols or have other requirements. For example, certain online brokerages are not compatible with AOL because AOL caches frequently accessed websites. This caching process plays havoc with updates, since the cached version may not correspond to the most recent version.

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TABLE 3-1. NEWSGROUPS FOR TRADERS

alt. agriculture.commodities	misc.invest.canada	misc.invest.options
air.invest	misc.invest.futures	mist.invest.stocks
alt.invest.penny-stocks	misc.invest.misc	misc.invest.technical
aus.invest.	misc.invest.mutual-funds	uk.finance

For traders, the internet service provider's reliability is of particular concern. Have there been serious interruptions in service? Has the service been subjected to mail bombs, denial of service attacks, or other overload-producing events? Find out. Otherwise you could be facing a frozen screen in the middle of an important trade.

ISPs must also be able to perform well under stress. Everyone using the net has experienced times when response rates slow to a crawl. This is due to the traffic load, which varies over time and tends to peak during certain hours. The bottleneck can occur at the computer (the specific website) to which you are trying to connect, at the intemet service provider's system, or elsewhere along the path. Unfortunately, this phenomenon often occurs during trading hours. Traffic from online internet trading has actually exceeded that from internet porn sites. So much trading is taking place that many employers have become concerned with preventing trading-addicted employees from spending hours of company time trading stocks on the net! All such activity contributes to overloads and delays. Service providers should be able to furnish statistics regarding outages and slowdowns. Also, pay attention to reviews of internet providers, especially those that appear in independent sources (e.g., internet newsgroups or computer magazines).

Connecting to ISPs

There are different ways of connecting to internet service providers. The oldest, most common, and still popular is the standard dial-up connection, which involves nothing more than an ordinary tele-

phone and a modem. Such connections make use of ppp (internet point-to-point protocol). Almost every ISP offers access in this manner.

The modem used to connect to the ISP can either be internal (a card in a slot in the computer) or external (a small box that sits near the computer and is connected to it with a serial cable). In either case, the phone line must be connected to the modem and internet access software must be installed. With an external modem, the serial port may also need to be configured.

Internet access software consists of two essential layers. The lower layer is the so-called sockets layer, which implements the internet communications protocol. This layer is accessed by any additional application software (e.g., a web browser) that is in use. It is the layer through which such software communicates with the external world. Sometimes this layer is provided as a component that comes with the operating system. The sockets layer might need to be updated, but it is not difficult to download the necessary component from the internet. For example, when using Windows 95, the latest version of Windows 95 sockets from Microsoft can be downloaded at no cost.

The upper layer consists of applications packages, such as web browsers, e-mail programs, ftp clients (which allow files to be transferred over the internet), and other internet tools. These, too, can often be obtained for free. Get a friend who has an internet connection already established to download the current version of, say, Netscape, which is about 17 megabytes and requires about 10 to 15 floppy disks. Many computers come with such software already installed. Microsoft's Internet Explorer may already be on your system. Some internet providers also supply the required software. Today, getting connected to the net is extremely simple. No one should have a problem getting online.

For a faster connection, you may want to consider an ISDN or DSL line. ISDN (integrated services digital network) is offered by many phone companies and provides access speeds up to 128K baud (512K with compression) together with simultaneous audio

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(telephone) capability. The special ISDN modems and hardware required for this kind of connection are usually available from the phone company. Certain phone companies, like Bell Atlantic, sometimes offer discounted ISDN connections and provide clients with a compatible modem free of charge. At the time of this writing, ISDN's popularity is fading as faster and more useful technology becomes available. The DSL (digital subscriber line) is a warp speed connection. The speed achieved depends on the distance between the client and the nearest central office (CO) of the telephone company supplying the service. At best, a DSL connection can be 150 times faster downstream (incoming information), and 30 times faster upstream (outgoing information), than a standard 56K modem! As with ISDN, DSL connections are reasonably priced. Unlike a regular telephone or ISDN line, DSL is always onyou will not get disconnected, so you won't have to waste time redialing during a trade.

Other ways of connecting to ISPs include satellite and cable. In our view, these are less appropriate internet connections for a variety of reasons. A comprehensive discussion of the choices available can be found in the article "Broadband" (Del Rizzo, November 1999).

Rapid and reliable connections are essential when placing trades over the internet. These qualities are especially important when simultaneously acquiring real-time data (such as tick-by-tick price streams) over the internet from such companies as eSignal or on NASDAQ Level II screens from a brokerage. Speedy lines also help when dealing with trading service providers (brokers) whose order entry screens and web pages may be poorly designed and, therefore, slow to load. We currently use Panix and are happy with the service provided, which has largely been fast and reliable.

Data Vendors

Day traders of futures or options require a steady supply of (preferably) tick-by-tick pricing data on the instruments being traded, as

well as a good historical database that can be used for simulated trading and backtesting.

Real-time data feeds are available over the internet or via satellite. Among the companies providing such data are DTN (Data Transmission Network), eSignal, CQG (Comprehensive Quotes and Graphics), and Knight Ridder. Various brokerages and trading service providers can supply Level II NASDAQ screens, data on fundamentals, detailed options chains, and other important information. Although satellite feeds were once preferred for the reception of clean, high speed data, the internet is now the most popular means of acquiring quotes. For example, DTN originally transmitted data only by satellite. DBC provided data via satellite or FM sideband signals, broadcast along with FM radio signals, from which data could be extracted using special receiver boxes. Both companies have since added internet-based delivery systems.

Historical tick data, required for backtesting trading systems, can be obtained on floppy disks or CD-ROMs from Tick Data Corporation and Genesis Financial Services. This data can be occasionally updated by telephone or over the internet. Although day trading takes place within a short time frame, longer time frame data helps create a context or perspective for the intraday activity. End-of-day futures data can be purchased from Pinnacle, CSI, or Technical Tools. End-of-day stock data, necessary when day trading equity options, is available from Worden Brothers. CompuServe and Dial Data offer historical options prices for both equities and futures. Additional, delayed, and historical data can also be obtained for free from the websites of major exchanges (e.g., Chicago Board of Trade or *cbot.com* and Chicago Mercantile Exchange or *cme.com*).

In our experience, data varies greatly in quality. Low quality data is commonand often chock full of bad ticks, missing periods, and other problems. Fairly clean, high quality data is rare and hard to find. Perfectly clean data, of course, simply does not exist. Usually bad data (e.g., an isolated bad tick or wrong quote) is easy to spot on a chart. We highly recommend Pinnacle's end-of-day

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futures data, which is quite clean and very reasonable. For reliable, inexpensive end-of-day stock data, needed when trading stock options, you cannot go wrong with Worden Brothers (TC2000), an excellent source we use for our own trading. Tick Data Corporation had some problems but is one of the few sources for historical tick-by-tick futures data, required when backtesting and simulating day trading systems.

When dealing with real-time data feeds, timeliness, as well as cleanliness, is an important issue. Data from certain vendors can lag the market by a minute or more. When trading a volatile or fast moving market like the S&P 500 or E-Mini futures, such delays are intolerable. The data from DTN, which we use in our own trading, appears to be timely. Because of the need for timeliness and the tendency of the internet to periodically slow, we obtain our own real-time trading data via satellite.

Data vendors differ in their pricing. In addition to speed, we chose DTN on the basis of cost. It pays to shop around. More expensive data does not necessarily mean that it is cleaner or faster. In some cases, price may have to do more with issues of demand. For example, some data vendors are compatible with highly popular software and can, therefore, charge more for their quotes.

Many brokerages offer free delayed quotes, even to those who are not their clients. However, as a day trader, you will want to have a quickly accessible and steady feed of up-to-the-moment data, so it is best to sign up with a reliable provider. However, those interested in trading the E-Mini or GLOBEX should keep in mind that the Chicago Mercantile Exchange is currently providing live quotes on its website *cme.com*.

What does real-time tick data look like on a chart? Figure 3-1 shows what we see on our analytical computer when trading the S&P 500 or E-Mini futures. This chart depicts every tick of the S&P 500 contract over the time period shown, about 30 minutes from left to right. It also shows the contract premium (drawn to fit the same scale as the price), a moving average intended to highlight price trends, the NYSE tick index (number of stocks ticking up
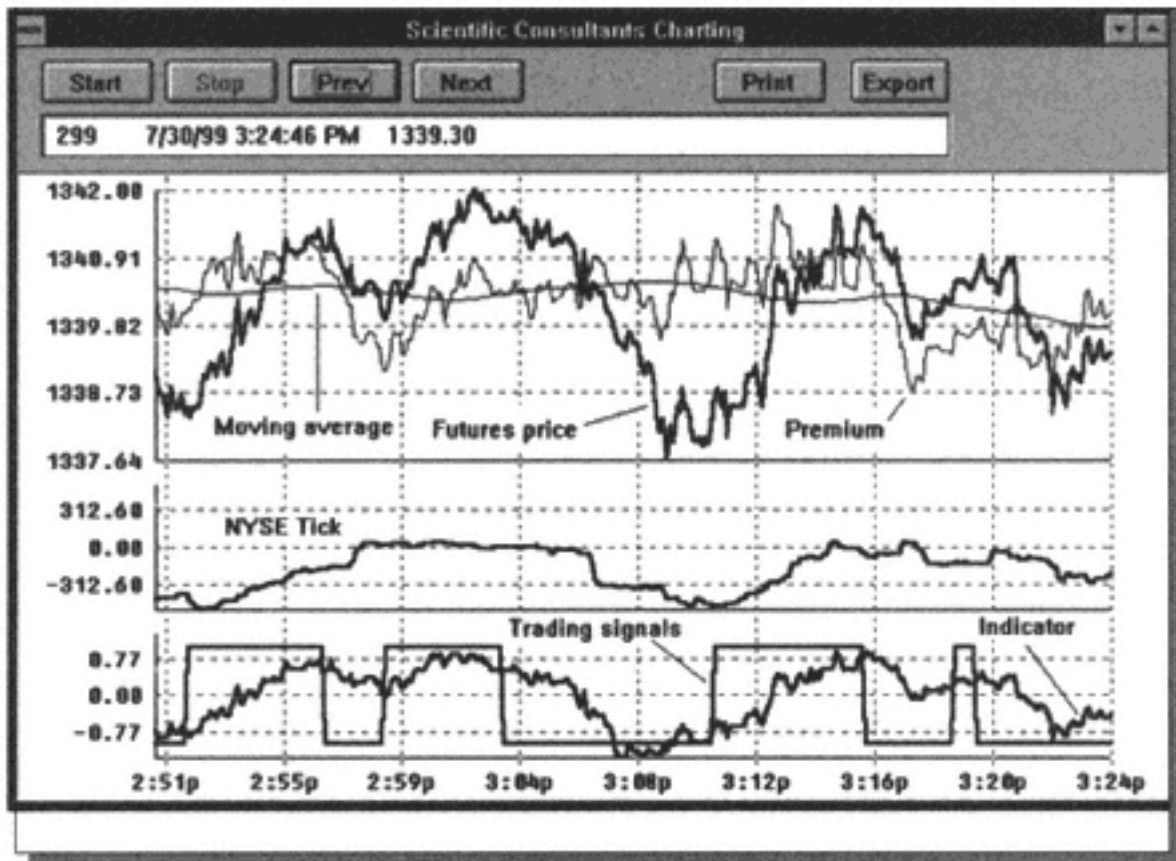
Figure 3-1.
C-trader screen showing 34 minutes of tick-by-tic S&P 500 market action.

minus the number ticking down), a leading indicator (one that tends to lead price), and trading signals. The trading signals on this chart are in the form of a line plot that tells the trader whether to be long (line is at +1.0) or short (line is at -1.0) the S&P 500 or E-Mini contract. Note that there are no high-low-close bars shown. When the resolution is such that every tick is visible (i.e., when the bar size is a tick), a simple line chart shows everything.

Observe how much action and potential profitability there is in the S&P 500, even on a very short time frame like that shown in Figure 3-1. Some of the rolling movements in the chart take place within a period of several minutes and could easily yield several hundred dollars per contract, if effectively traded. In just the halfhour period shown, several such trades could have been taken.

Many day traders will not be operating on this short a time frame, nor require data with the level of resolution illustrated in

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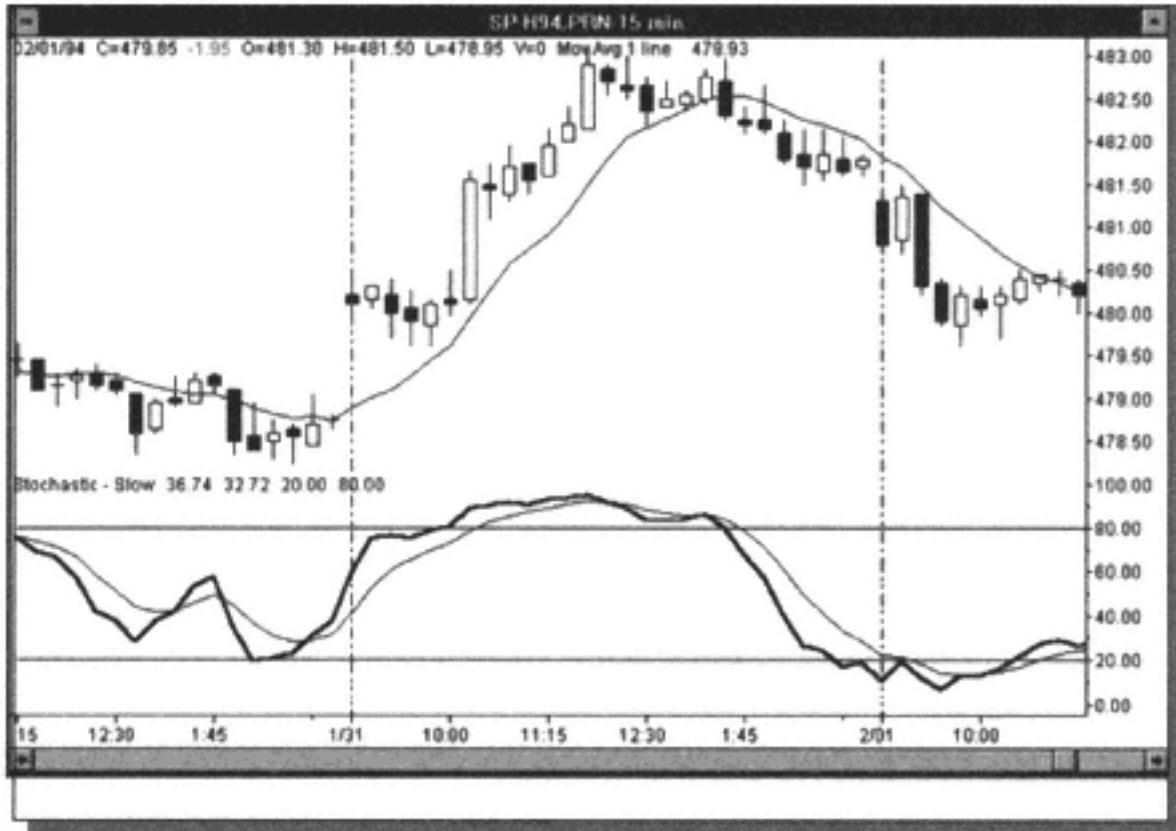
Figure 3-2.
Tradestation chart of the S&P 500 futures with 15-minute candles.

Figure 3-1. More traditional charts with 1-, 3-, 5-, or even 15-minute bars or candles will often be used. TradeStation generated the example that appears in Figure 3-2. The screen shows a "candlestick" chart comprised of 15-minute price candles, a moving average, and an indicator (Lane's Slow Stochastic). Dotted vertical lines separate the days. Intraday data on this kind of time frame appears similar to the end-of-day data familiar to almost every trader or investor.

Additional information on data vendors, including web addresses and telephone numbers, can be found in Appendix B.

Getting Connected to Data Vendors

One way to receive data is via the internet through a modem. If you have already connected to an ISP, all that is necessary is to establish an account with a data vendor. Load charting and analysis

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software, configure it to work with the selected data provider, and you are ready to go.

Another way to receive data is via satellite. Data vendors that provide satellite feeds (e.g., DTN) supply their clients with hardware and instructions. A typical setup for a high speed satellite feed requires a small (about 3 feet in diameter) satellite dish positioned so it will receive a strong signal from the correct satellite. You can do the installation and alignment yourself, if you have some technical skill, or someone more experienced can do it for you. The satellite dish must have an unobstructed view (no trees or buildings, etc.) of the southern part of the sky, if you are in the northern hemisphere, or the northern part of the sky, if you are in the southern hemisphere. The location is determined by the communications satellite, which can be found in a geostationary orbit (always in the same position in the sky) around the equator. Coaxial cable (the kind that connects a television to a cable television company) must be run from the satellite dish to a small receiver box. DTN's box, for example, is about 4 inches high and 1 foot wide and deep, has an LED readout panel that provides information on the quality of reception, and features buttons that allow the user to initialize and shut down the unit. It also has several connectors and a light that indicates when a signal is being received. Once the dish is correctly positioned and connected to the receiver, the next step is to connect a serial cable (the kind used to connect a computer to a modem) from the receiver box to an enhanced serial port on the computer. The DTN receiver requires a serial port capable of up to 119,000 baud. If the computer has an older serial port, limited to 19,000 baud, an adapter card that supplies faster serial ports will be needed. At the time we set up our own satellite dish, DTN had one of the fastest feeds around.

Once you are connected, it may be necessary to configure the serial port for the proper baud rate, parity, and other characteristics. The way this is done depends on the operating system. In some versions of Windows, you go to the control panel and choose the serial ports option, which opens a window where serial port char-

acteristics may be set. If you are not sure how to do this, consult the help system or read the manuals.

Once the port is set correctly, software can be loaded. The software package that comes with the satellite feed is usually inadequate for actual trading, but it will verify the system's operation. When the operation of the system is verified, it's time to install the software that is going to be used for trading. We mostly use software we wrote in Borland's Delphi, the same software that generated Figure 3-1. You can also use Omega Research's TradeStation, or even feed the data into an Excel spreadsheet through a dynamic data exchange (DDE) link. Many traders find Excel a convenient tool for both implementing and testing trading systems. Charts and trading systems can then be set up and watched in real time to track the market.

Direct Access Trading Providers

Traditional brokerage firms and others provide direct internet access to the exchanges or venues where trading takes place. Just a few years ago, the world of futures only had one such provider, ZAP. Back then, traders complained of problems with the ZAP system, including delays and poor fills. Many believed it was better to stick with a good firm that provided traditional, telephone-based trading. More recently, service has improved as companies scramble over one another to provide direct electronic trading. Almost every major, established futures brokerage has entered the ring, and many new companies have formed to provide electronic trading of equities and equity options. Among those now offering direct internet futures and futures options trading are Lind-Waldock, Ira Epstein, PMBe, and Robbins Trading. Those offering electronic trading in equities and equity options include Datek, A. B. Watley, and M. B. Trading. More are listed in Appendix C. When looking for a good brokerage for direct online options trading, consult *Trade Options Online* (Fontanills, 2000). A number of firms have free demonstration offers that allow prospective clients to experience simulated

order entry and other aspects of trading using their services. To lure new customers, others offer commission rebates or a number of zero commission trades. Most firms reduce commissions for active traders.

Signing up with an online brokerage is an extremely straight- forward process. After you establish a trading account and deposit funds, the brokerage provides you with a user name, password, and perhaps proprietary software. For web-based service, all that is required is the account password and user name, which permits access to order entry and related pages. The steps involve nothing more than going to a log-on page, entering the password and identifying information, viewing your account, obtaining quotes and other data, and placing trading orders. If proprietary software is required, you can usually download it from the brokerage's web or ftp site.

Since we already had a traditional account with Lind-Waldock and were satisfied with the service, when we first decided to begin cybertrading, we signed up for the direct internet access service called Lind-Online. Although differing in the details, other providers (like ZAP and PMBe) work basically the same way. Figure 3-3 shows Lind-Waldock's web-based order entry form, the same kind you may be using to place your trades. In addition to the web-based system, there is the classic "blue screen" software, which provides a fast, clean, and easy-to-use interface for direct electronic day trading. Regardless of the software used, Lind-Waldock claims that orders posted through its internet system are routed directly into electronic venues such as GLOBEX, ACCESS@, and PROJECT-A, or into the pits using the TOPS order routing system. The result is speedy execution.

Lind-Waldock provides another interesting item on its trading website: The P.R.O.F.I.T. System. This is essentially a front-end service that routes orders to Auditrack for simulated trading. Simulated trading (sometimes referred to by the old term "paper trading") is extremely beneficial in that you can get a feel for the order entry process, and examine the behavior of a new trading system or approach without risking real capital. In short, it allows you to

Figure 3-3.
Lind-Waldocks's web-based order entry screen.

iron out all the kinks in your methodology before actually trading with real money. This service is free for 30 days to Lind-Waldock's clients; after the trial, the cost is about $40 per month.

Other brokerages (e.g., ZAP) offer simulated trading services free to their clients. In some cases, the simulated trading takes the form of a game or competition, where, at the conclusion of a fixed time period, traders are ranked by performance and the best are announced; monetary and other prizes are often awarded. There are even websites that are largely devoted to providing simulated trading services. These websites (which are listed on *thewebinvestor. com*) include *tradecomp.com, Simutrade.com*, and *tradingpaper. com*.

Traders of stock options occasionally need to trade the underlying stocks along with the options. There are a number of popular internet brokerages that provide online stock and option trading with automated access to NASDAQ's SOES, as well as to such ECNs as Island and Instinet. Datek is one firm popular with day traders; however, as of this writing, it only handles equities. Whether or not you are already a client, these online brokerages often provide real-time (albeit, delayed) and end-of-day quotes for any option or stock. Only those with an account, however, can place orders. Figure 3-4 contains a typical option order entry screen.

Most online brokerages that handle equities can provide Level

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Figure 3-4
A typical order entry screen for equity and index options

II NASDAQ screens. These may be adequate on their own for trading stocks. However, if you trade futures or options, or use trading systems that require additional data, a separate real-time feed is necessary. Futures brokerages generally do not provide real-time, tick-by-tick data on futures contracts, and there are no equivalents to the Level II screens in the world of futures. Tick data is required by charting and trading system software (e.g., TradeStation). For

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stock and equity options, the time series data needed for charting and trading software will probably not be available from the brokerage; if it is, it will not be in the correct format. Therefore, if you plan to use such software or trade mechanical systems, you must sign up with an independent data provider like DTN.

Clients connect to brokerages with a standard internet web browser (e.g., Netscape Navigator or Microsoft's Internet Explorer). Alternatively, the trading service provider may supply clients with custom software that uses direct telephone linkups (with a standard modem) or standard internet protocols to establish the connection.

There are several important issues to consider when selecting a direct access trading provider. Foremost is whether you can trade the instruments you want to trade and whether you can access the appropriate trading venues. For example, Datek is of no use to the individual who wants to trade the E-Mini on GLOBEX. Similarly, Lind-Waldock is not the place to be when trading options on individual stocks or such equity indexes as the OEX. Different firms specialize in different venues and trading instruments. Lind-Waldock is for traders of futures and futures options, and provides access to such venues as GLOBEX, ACCESS@, and PROJECT-A. Stocks can be traded on Datek, which furnishes a direct link to the SOES and various ECNs. Other brokerages can route options orders to the appropriate destinations. In some cases, if you are going to be trading more than one instrument, you may need to establish an account with more than one provider. Even if you are only trading a single kind of tradable, it may be wise to do this for safety's sake: If one provider is having problems, you can switch to another.

Sometimes it is necessary to find a provider that allows you to trade two kinds of instruments with one account. As already mentioned, when equity options are traded, there is the occasional need to simultaneously trade the underlying stocks and to do so in the same account. Case in point: selling covered calls. A short call is not "covered" unless you are long the stock and short the call in the same account. Finding a single brokerage account in which both instruments can be traded may require a compromise. For example,

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Datek provides better access to the various ECNs and a low commission of only $9 per transaction, regardless of order type, but it deals only in stocks. E*Trade handles options as well as stocks; however, this firm has higher commissionsS15 for market orders on equities, $19 for limit orders, and $29 for any orders involving options. High commissions are particularly unpleasant for day traders.

Because day traders try to capture small moves over short periods of time, it is absolutely essential to cut commissions to the bone. Even small variations in commissions can make the difference between success and failure. This is especially true for the smart trader who wants to trade in smaller lots to avoid excessive risk on any one trade. When smaller numbers of options contracts are traded, commissions become a larger proportion of the total trade, making it harder to turn a profit. For instance, trading a five-lot (five options) via E*Trade will cost you the same $29 commission as trading one. With one option, a profitable trade would make only one-fifth of what it would with five options. In other words, income from the one option trade has dropped by a factor of five. Of course, so has the risk. But the commission remains unchanged, and, consequently, takes a much larger bite of the profit, perhaps even pushing the trade into the red.

Given the current level of competition between brokerages, the day trader is at an advantage. Some firms offer special services like free squawk box transmission. Others lure new clients with commission rebates and free books or videos. Many promise to reduce commissions when you become a frequent trader (what is meant by "frequent" varies across brokerages). While such benefits are nice, the bottom line is keeping costs down and that means consistently low commissions. It pays to shop around, checking the competition's rates from time to time even after you have opened an account. For example, when doing research for this book, we stumbled upon Interactive Brokers (*interactivebrokers.com*). They charge an unheard-of $1.95 commission per options contract (one contract minimum!) and require only $3500 to start a stock and options

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margin account. For a futures-only account to trade the E-Mini, the start-up minimum is $6575, with only a $4.95 per contract commission.

In addition to commissions, the two major issues when selecting a brokerage are speed and quality of execution. These characteristics can vary drastically between firms. Before signing up with a brokerage, check on the kinds of experiences other traders have had there. This can be done by, again, posting queries on internet newsgroups. Also, be sure to pay a visit to Don Johnson's Online Investment Services website (*sonic.net/donaldj/*). You will find an abundance of frequently updated information on brokerages and their services. The brokerages are ranked in terms of cost and quality. Revealing quotes by current and former clients are also provided.

When you are trading very short time frames, speed is of the essence. Trade orders that sit for minutes before hitting the market can spell disaster for the day trader. Uncertainties about speedy access mean a loss of control, since prices can move extremely fast in the volatile markets that day traders find most attractive. In a finance column in *Newsday,* Brenner (1999) warned of such dangers by citing the case of a naive trader who spent $150,000 more than he expected on a trade because a market order for a stock he estimated would cost between $15 and $20 per share was executed at $90 per share! Although a move this large usually doesn't happen so quickly, sizable moves can and do occur in brief periods of time.

With the direct participation of electronic day trading, quality of execution is less a function of the brokerage than of the trader's ability to work the markets. This differs from the situation with a traditional brokerage. Assuming the provider offers direct routing into, say, GLOBEX, a trader's order goes into the system just as a broker's would. Consequently, except for network bottlenecks, the trader's order should get roughly the same treatment as any other order being fed into the system. In direct electronic trading, the best way to get good executions is to use limit orders. This strategy will be discussed in a later chapter.

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Reliability is another issue of concern when selecting an online brokerage. We again suggest consulting the website of Online Investment Services, and visiting some of the internet newsgroups to read about the experiences of other traders.

The final consideration in making your choice is the "ease of use" of the electronic brokerage. This can have different meanings. There is ease of use for the neophyte, which might mean being guided every step of the way. Some consider ease of use to be flashy screens that have lots of activity and, more often than not, advertising; this, in our opinion, does not really constitute ease of use, since the distractions make it hard to extract the relevant content. And then there is ease of use for the practiced trader. Each of these varieties involves very different designs of, for example, quote pages and order entry screens. The only kind of ease of use you should worry about is the one relevant to the practiced trader. By the time a week has passed, most day traders have posted numerous trades. Such traders have plenty of practice using the order entry screens provided by their brokerage service and soon become fluent in their use. Ease of use for the practiced trader means screens that (1) load really fast; (2) cram as much information as possible into the smallest space to avoid the need to scroll or jump from screen to screen; and (3) make it easy to set up parked orders that can be executed as needed with a click of the mouse. Such screens will use abbreviations and rather cryptic symbols, which are acceptable (if not desirable) as long as they are used consistently. Anything goes if it makes access faster and smoother for those who post trading orders hundreds or thousands of times a year. Screens with extensive frills and graphics load slowly, and possess anything but ease of use for the experienced trader.

Additional Information

To obtain additional information about the markets, you may want to get a squawk box. To get traders interested in this service, several websites (e.g., *los. net* and *realtimefutures.com*) offer squawk box

transmission free for a 2-day trial period; after that, it costs around $100 per month. Many brokerages offer their clients free access to live sound from the pits (e.g., Lind-Waldock and ZAP). Some traders may find that hearing live activity in the pits helps their trading. Of course, this is meaningless when directly trading GLOBEX because the trading is electronicall you would hear would be the hum of computers, not very informative or psychologically charging. However, since these two markets track one another very closely, if you are trading the E-Mini at times when the big S&P 500 is open, the sounds from the S&P 500 pit may help.

Finally, many traders keep a nearby television tuned to CNBC. This station provides a source of news and coverage of many markets. Information from markets that you are not necessarily trading can still have some impact on your own efforts. CNBC also has a constant ticker (albeit delayed about 15 minutes) at the bottom of the screen that runs during most of the trading day.

What Have We Learned?

Internet Service Providers (ISPs)

Be sure they are reliable, can handle heavy volume (especially during trading hours), and have not been the target of too many mail bombs or denial-of-service attacks.

It helps if they provide access to newsgroups, bulletin boards, and chat rooms.

Their communications protocols should be compatible with those of your brokerage.

You connect to them through modem, satellite, or cable.

Consider whether you need the speed of an ISDN or DSL line.

Data Vendors

Day traders often need real-time (not delayed), tick-by-tick pricing data for the markets and indices they wish to trade.

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Therefore, it is probably necessary to sign up with a data service.

Access to historical data is also useful, especially for those who plan on system development, backtesting, and conducting trading simulations.

Real-time data feeds can be obtained through the internet or via satellite.

End-of-day data can be useful to the day trader, since it provides a context in which to judge current market behavior.

Some data can be obtained free over the internet from brokerages and exchanges.

Clean data, relatively free of bad ticks and missing chunks of time, is necessary for traders. Vendors vary in the quality of the data they provide.

Timely data is essential. The real-time feeds from vendors can sometimes lag the market a minute or more. Satellite feeds seem to be faster. Again, timeliness varies among vendors.

Shop around. More expensive data does not necessarily mean that it is cleaner or more timely.

Direct Access Trading Providers (Brokerages)

Again, it pays to shop around. Commissions can vary greatly for the same quality of service, as can the minimum amount required for margin accounts.

Take advantage of free demo offers to acquaint yourself with the ease of use and range of service of several brokerages before selecting one.

Make sure that switching between order screens is fast and that you can park orders.

Be certain that the brokerage has all the features you need to trade the instruments you want, as well as to access the appropriate venues.

You may need to establish more than one account, depending on your trading plans. You may also need to trade two kinds of instruments with one account, so be sure the brokerage can accommodate you.

Since speed and quality of execution are essential characteristics in a brokerage, check them out before signing up. Question other clients or independent brokerage rating services, such as those that can be found on the internet.

It is important to know how long it usually takes for your brokerage to confirm an order that has been executed, as well as its policies regarding canceling orders.

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Chapter 4
Mechanics of Day Trading

You have installed the software. You are connected. You have an account with one or more online brokerage firms and when you are not logged on, you want to be. You are itching to start trading.

Preparing to Trade

The first step is to fire up whatever software you will be using to follow and trade the markets. This includes charting and analysis software that works with a real-time data feed, and a web browser (or proprietary software module) that provides access to your online trading account. Together, these software packages will provide you with Level II NASDAQ screens (if you need them), options or futures quotes, charts, fundamental information, and news, as well as order entry and tracking capabilities.

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Most trading software can be personalized, that is, "configured," to meet your specific needs. Hence, the next step is to configure the software so that it provides an optimally functional display for the instruments you are going to trade. Consider, first, the charting and analytic software.

Perhaps you want to trade the E-Mini or the S&P 500 futures. Instruct the charting software to display charts for these markets, and for any other markets or indices that seem related in an important fashion. Indicate to the software how you want the chart to look. Tell it how many bars the chart should contain. Select the indicators that will appear with the prices. Specify how the price bars should be drawnas candlesticks, simple bars, or a line chart. Customize the color schemes and other details to suit your preferences.

Choose your time frame. Do you you want to see tick-by-tick data, 1-minute bars, or 5-minute bars? Chances are you will want to set up charts for multiple time frames to gain a broader perspective. If you are trading the E-Mini on a very short time frame, you might have one chart showing the action tick by tick, and another displaying 15-minute bars. The slower chart provides a context for the faster action depicted on the tick chart.

Customize the display so a quick glance will tell you what the markets are doing at any moment in time. Remember, you are going to watch this for hours at a time and will need to rapidly extract information. Arrange things so that critical events will be immediately noticedyour trading life depends on being able to respond quickly to what is happening in the markets. Become familiar with the software, and comfortable creating and manipulating charts. For the specifics on how to do this, you may need to consult the user manuals that accompany the programs. Figure 4-1 shows the chart layout we use when trading the S&P 500 or E-Mini futures. It contains several charts on two different time frames, a variety of indicators, and even system-based trading signals.

A good charting and analysis package will allow you to set alerts. For example, you can instruct the program to draw normal

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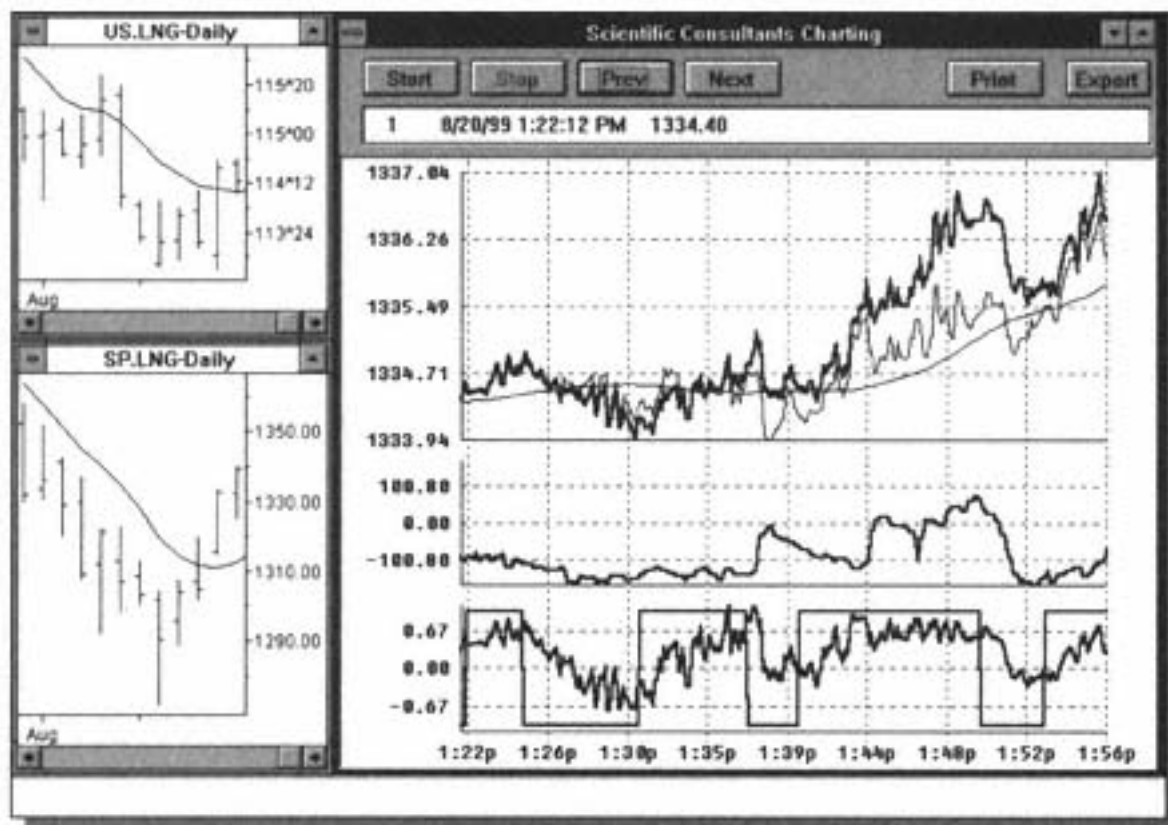
Figure 4-1.
Chart layout used for trading the E-Mini or S&P 500 futures.

bars in green, but to change the color to bright red if and when prices violate a trendline. You can also configure most charting programs to beep or otherwise draw attention to critical events. More sophisticated packages (e.g., Omega's TradeStation) allow the implementation of complete trading systems using special scripting or programming languages. These trading systems can be set to beep and even display windows containing instructions when orders need to be placed or other actions taken. To learn how to set alerts with your software, you will have to refer to the accompanying manuals. Do it! The use of alerts can make the difference between success and failure as a trader.

As you develop skill with the software, become familar with the charts. Spend a few hours watching the market during periods when it is trading actively. The S&P 500 is quite active throughout most of the trading day. Learn to "read the tape," that is, to rec-

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ognize various patterns of activity and their significance. After watching the charts for a while, you will begin to notice recurrent themes. You will also begin to recognize the distinct "personality" of each market, if you follow several, or of the same market at different times. Study these recurrent themes and market personalities. The ability to quickly recognize a theme seen before will stand you in good stead when you begin to trade.

A good way to gain skill in watching and responding to the market is to do a little paper trading. As the charts scroll by, make trading decisions. Note your trades on a form like that in Table 4-1, which can be set up in a spreadsheet. Be sure to record both entry and exit prices. See how your trades pan out. You might also try simulated online trading. Many brokers provide simulated trading services for their customers. These services are great because the environment (composed of navigational tools, order entry forms, quote and tracking screens, etc.) used in the simulation often overlaps the one used for real, money-on-the-line trading. If your broker provides such a service, take advantage of it! Not only will you sharpen your understanding of the market, but you will develop agility with the trading environment.

You now have your charting and analysis software configured and running. The charts are becoming familiar and the software easier to work with. It is time to turn your attention to the software and services provided by your brokerage. The displays and commands may vary depending on what is being traded, and whether proprietary software (e.g., Lind-Waldock's "blue screen" software) or a standard web browser (e.g., Netscape's Navigator) is employed.

If you are trading stocks, you will probably want a Level II NASDAQ screen showing the bids, offers, and other information for the symbols of interest. If you are trading options on equities, this screen may still be useful, since trading in the stock influences the option and since, for some options strategies, you also need to trade the underlying stock. Almost all online brokerages provide real-time quotes, fundamental information, news, and order entry

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TABLE 4-1. SAMPLE PAPER TRADING FORM

Date	Symbol	Entry Time	Entry Price	Exit Time	Exit Price	Minutes in Trade	Long (1) or Short (- 1)	Profit / Loss in $
7/30/99	ES	2.52p.m.	1338.75	2.55p.m.	1340.90	3	1	107.50
7/30/99	ES	3.04p.m.	1341.00	3.10p.m.	1338.70	6	-1	115.00
7/30/99	SP	3.11p.m.	1338.80	3.16p.m.	1340.80	5	1	1000.00

and tracking screens. Some information is even available to non-clients; just explore the firm's website. Real-time quotes from the brokerage are necessary to verify correct prices when placing orders. As with your charts, these screens should, to the extent possible, be configured to suit your preferences. The idea is to make information easy to find, speed order entry, and generally, reduce the likelihood of errors.

What kinds of information do brokers provide that are useful to the day trader of options or futures? One example is the options chain shown in Figure 4-2. Such a chain, which describes data on a whole series of options trading on top of a single index or stock, can be called up for any stock or index on which there are actively trading options. The chain shown in Figure 4-2 is for XAU index calls. These popular options trade on top of the XAU, an index that tracks gold and silver stocks. If you plan to trade XAU index options, the data in Figure 4-2 is indispensable. From a table like that shown, you can learn the available strike prices and expiration dates, correct ticker symbols, current asking and offering prices, theoretical fair value (B-S, or Black-Scholes), and number of contracts traded (volume).

When generating an options chain, you can view and even edit the parameters used to calculate the Black-Scholes fair price estimates. The form used for this purpose is shown in Figure 4-3. Information displayed in the form pertains to the XAU and was used to generate the Black-Scholes estimates appearing in Figure 4-2.

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April 2000 XAU Index Calls

Symbol	Strike	B-S	Ask	Bid	Last	Vol
XAUDJ	50	8.70	8.88	9.38	10.00	0
XAUDK	55	4.64	5.00	5.50	7.25	0
XAUDL	60	1.94	2.50	2.81	2.81	25
XAUDM	65	0.61	1.00	1.25	1.19	198
XAUDN	70	0.16	0.44	0.69	1.06	90
XAUDO	75	0.03	0.06	0.31	0.63	0
XAUDP	80	0.00	-	0.25	0.19	0

May 2000 XAU Index Calls

Symbol	Strike	B-S	Ask	Bid	Last	Vol
XAUEK	55	5.75	6.50	7.00	7.63	0
XAUEL	60	3.20	4.13	4.50	4.13	63
XAUEM	65	1.56	2.88	3.13	3.00	179
XAUEN	70	0.69	1.50	1.75	1.50	71
XAUEO	75	0.28	0.81	1.06	1.13	12
XAUEP	80	0.11	0.63	0.75	0.75	25
XAUEQ	85	0.03	0.25	0.50	0.50	10
XAUER	90	0.02	0.19	0.44	0.44	0
XAUES	95	0.00	0.06	0.31	0.25	0

Figure 4-2
Options chains for XAU index options

Types of Orders

The next step toward trading is to become familiar with your broker's online order entry screen, and with the kinds of trading orders that may be placed. Because of their importance, it is worth repeating a few key points about the three most commonly used orders.

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Figure 4-3
Form used to set black-scholes parameters.

A *market order* is one that will be filled at the prevailing price of the option or future. Because of the market's movement and the potential for delay in execution, a market order may be filled at a price that differs significantly from the price appearing on your chart or quote screen at the time you place the order.

A *limit order* is an order to buy or sell at a given price or better. It is sometimes referred to as an "at or better" order. This is the only kind of order available in certain trading venues where all

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Figure 4-4
Order to sell the S&P 500 should it drop below $1515.

orders take the form of offers or bids. A limit order is a bid to buy or an offer to sell. Sometimes limit orders cost a little more, but using them offers protection against unpleasant surprises and the potential to obtain better prices.

A *stop order* is an order to sell, if the price drops below the "stop," or an order to buy, if the price rises above the stop. The stop price is essentially a threshold at which the trade is intended to execute. Stop orders are sometimes used to buy or sell into momentum. They are also employed to exit trades that have gone awry. These orders are popular when trading futures by way of the pit. Stops are generally not available when trading futures electronically on GLOBEX, or when trading stock options. However, some online brokers accept stops for those instruments and venues: They (or their computer) will watch the market and place a market order when prices cross your stop threshold. This, of course, is no longer direct access trading. As a day trader, you can watch the market and do this yourself, probably with better results. Stop orders are available for futures traded in the pits, such as the S&P 500 index futures.

Figure 4-4 shows a Lind-Waldock order entry screen with a stop order to sell the S&P 500 at $1515 (either to offset a long position

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Option Order Entry

Action:
- ◉ Buy to Open   ○ Sell to Open
- ○ Buy to Close   ○ Sell to Close

Quantity: `5`

Option Symbol: `XAUDM`

Order Type:
- ○ Market
- ◉ Limit . . . .   **Order Price:** `1.25`
- ○ Stop . . . .   `[ ]`

Good Through: ◉ Day   ○ GTC

[Park Order]   [Post Order]   [Clear]

Figure 4-5.
Order to buy 5 XAU April 65 index calls at 1.25 per call or better.

or to establish a short one). At the click of a mouse, the order can be entered into the CME's routing system for immediate execution or "parked" for later use.

Figure 4-5 is a typical order entry screen for options. The form is set up for an order to buy 5 XAUDM (April 65 XAU calls) at 1.25 per call or better (in trader's jargon, "at 1.25 limit"). Because

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the buy order is intended to open a position, rather than to close out or cover an existing short, a transaction type of "buy open" has been specified. The trader would specify "buy close" to cover a short position, "sell open" to establish a short position, and "sell close" to close out a long position. "Good for day" indicates the order should stay in effect until it is filled or canceled by the trader, or until the trading day ends, whichever comes first.

One feature offered by some websites and proprietary software packages is the "parking" of orders. This is an extremely useful feature for the active day trader. *Parking* refers to specifying and setting up a list of orders without actually sending them into the markets. The orders are ready to be sent on a moment's notice, as fast as a key can be hit or a mouse clicked. This saves the time of entering all the details when the moment comes to actually place the order. The result is speed and the ability to respond to an event quickly and without confusion. Think of exiting a trade that is quickly moving against you: You do not want to waste time entering the details of an order. The parked order allows you to act quickly and decisively to stop the loss.

Become familiar with posting and parking different kinds of orders. Most order entry screens confirm the order and require additional action to send the order into the system. Take advantage of this to practice placing different orders in response to market behavior. Post the order and, when the confirmation form appears, simply cancel it. Practice is definitely required before real orders are placed because traders need to respond fluidly, without much thought, when trading. After a few practice runs, you will see that placing an order is not easy to accomplish within the space of a second or two. This is especially true of limit and stop orders, in which prices need to be entered on the order entry form. The task would be easier if traders could pull a price from one screen (e.g., analytics) and copy it automatically into another (i.e., order entry), but this is not always possible because of software limitations.

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Confirming Execution

At some point after placing an order, you may receive confirmation that the order was filled and at what price. Confirmations are not necessarily immediate: They can take up to several minutes. With an E-DAT (electronic direct access trading) platform, market orders execute almost instantly; confirmation may be nearly as fast. Limit orders may not execute immediately: An offer has to match your bid (or vice versa) before a trade occurs and, even after execution, you may have to wait for confirmation. The same is true of stops: Nothing happens until the price threshold is penetrated. And, even when the stop is hit, there may be a delay (resulting in price slippage) before the trade executes. Finally, a delay may be experienced before execution is confirmed.

The delay in receiving a confirmation that an order has executed can sometimes be a serious problem. Let's take the example of a trader attempting to buy ("go long") the S&P 500 using a limit order ("on a limit"). Prices move down into a region where the limit should have executed. Then the market rapidly turns around and reaches a sell level. However, confirmation that the limit was executed has not as yet been received. Should the trader sell to offset a long position? If the limit entry was not executed, no long position exists and a sell order will result in an unwanted short position. Because confirmation was not received, the trader is unable to make an appropriate decision. It is easy to see why a good E-DAT platform should provide speedy confirmations.

Canceling Orders

Trading not only requires the placement of orders; it also requires their cancellation. A ticket number or some other identifier of the order is usually needed to cancel it. There are typically one or more screens available that permit the cancellation of a specified order. Traders often wish to cancel orders (usually limits or stops) before

they are executed. However, not all orders may be canceled. Orders that have already been executed fall into that category. This brings us back to the issue of delayed confirmations: A trader may wish to cancel an order but cannot, since it already has been executed. He or she just does not know it since confirmation has not yet been received. In short, cancellations may fail because of timing.

In addition to manual cancellation, an order may be canceled automatically. In many cases, when a limit or stop is posted, the order remains in effect only until the end of the trading day. If the order has not been executed by then, and has not been canceled by the trader, it dies. Depending on the trading platform and exchange, it may be possible to specify an order as "good till canceled" (GTC). This kind of order remains in effect until it is either filled or actively canceled by the trader. In some contexts, orders may be left in effect for only up to 15 minutes. At least by the end of the trading day, make sure that you know the status of your orders and that those you want canceled are actually gone. The day trader usually wants to end the day flat (no positions held, either long or short) and with no orders pending.

How Orders Are Processed and Filled

In electronic order matching systems, orders go into the system in queues, where they are sorted according to price and time received. A computer pulls the orders (in the form of bids and offers) out of the queues. At each price level, attempts are made to match the oldest orders first. As matches occur, orders are removed from the queue. When all orders on a given price level are matched, the associated queue disappears. Matching then begins to take place at the next price level.

The process of scanning through the bids and offers to generate matches is virtually instantaneous. However, by the time your bid or offer has reached the top of the queueready to be matchedthere may no longer be a bid or offer on the opposite side. This is a common problem in illiquid markets. In such markets, certain

kinds of orders (e.g., market orders) may be costly simply because they may be matched at unfavorable prices, while other kinds of orders (e.g., limit orders) may not be filled even if prices touch levels where a fill would be expected.

As described elsewhere, other systems, such as specialist systems (e.g., NYSE, AMEX) and those of options clearinghouses, although similar in principle, differ greatly in the details.

Avoiding Surprises

The disparity between the price on the screen when a market order is posted and the price at which the order is filled, the time it takes to receive a confirmation, and the occasional problem when canceling an order all contribute to the uncertainty involved in trading. Consider price surprises. When trying to establish a position in an option, future, or equity, you can place a limit order to avoid the unpleasantness of obtaining a fill at a drastically worse price than that expected. However, a limit order entails the risk of not getting filled at all. To exit a position that is moving against you, a market or stop order is appropriate. You want to be certain of a fill. The possibility of not getting filled (which exists with a limit) can be dangerous in this situation. Using a market or stop order, however, may result in slippage, with the exit occurring at a more adverse price than desired. In the next chapter, we will further discuss the management and control of risks having to do with execution and order flow, as well as those associated with the trading instrument or market.

Responding to Events

The game of trading, at least on a concrete, mechanical level, is basically one of analyzing the market and responding quickly and intelligently to observed events. Charts and the various quotes are studied, as is, perhaps, the news. Squawk boxes are listened to. All this is part of the search for trading opportunities signaled by news

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reports, changes in the sound from the pits, or varying patterns of market behavior. These are the events to which a trader responds. The secret to successful trading is learning to recognize important events and to quickly make appropriate responses to them. Like a rat in a Skinner box, the trader must learn how to react correctly to relevant events and how to ignore irrelevant ones.

When the Day Ends

Day traders close out most, if not all, positions when the trading day ends. In fact, to prevent costly oversights, the status of all trades should be checked to ensure that no positions remain and that any pending orders have been canceled. This ensures that there is no exposure to continuing risk. Profits and losses can then be tallied, and preparations made for the next trading day. In contrast to longer-term trading, day traders get fast feedback and, therefore, learn quickly. Instead of being evaluated on a quarterly or yearly basis, performance is examined at the end of each day.

What Have we Learned?

The first step is to install and configure your charting and analytic software.

Instruct the software to display charts for the markets you're following.

Customize the settings for indicators, the number and kinds of bars, and the colors you prefer so that you can get all the information you need from the chart at a glance.

Set "alerts" so the program will immediately indicate changes in market conditions, and possibly to signal entry and exit points.

When first starting out, watch the markets (to develop an understanding of their behavior, to recognize chart patterns, etc.) and execute paper trades.

Familiarize yourself with your brokerage's website and trading screens. Configure them to suit your needs.

Make certain that you understand and know how to use market, limit, and stop orders.

Learn how to "park orders" using your brokerage's trading platform. Such orders are specified and set up on a parked orders screen. The orders are not actually placed in the market, but are ready to be placed on a moment's notice.

Gain fluency in posting orders by entering them on the trading screen and canceling them before execution.

When you actually do place orders, see how fast they are confirmed. Confirmation is necessary so you know what further action to take in a trade. For example, if your order doesn't get filled, you have no position to exit.

Make sure you know how to cancel orders you place.

Find out your brokerage's default order cancellation policies. Can you specify "good till canceled" (GTC) orders? Are open orders automatically canceled at the end of a fixed time period unless otherwise specified?

Electronic order matching systems place orders in queues at the different price levels. Within each queue, older orders get matched (filled) first.

Limit orders can be used to avoid surprises, so you don't get filled at a price substantially worse than the one you want. The trade-off is that you might not get a fill.

Before closing down for the day, make sure to close out all your positions (unless, of course, you intentionally want to carry them over until the next day).

Chapter 5
Fundamentals of Day Trading

The engine of profit is volatility. The option ticks up, the option ticks down. The greater the swings in price and the shorter the time in which they occur, the greater the opportunity for profit. In other words, the greater the volatility, the greater the profit potential. For the day trader especially, relatively high levels of volatility are essential. There has to be enough movement in a short period of time or the day trader cannot make money. The idea is to go in and out of the market quickly, capturing small profits repeatedly throughout the day. Obviously, markets that have large and numerous intraday swings (e.g., the S&P 500) make good day trading vehicles.

Money Management

With volatility comes risk. Not only can rapid movement bring a profit, if the trader is positioned correctly, it can also deal a loss.

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One reason many people are attracted to day trading is that the short time frame provides an illusion of greater control. There is some truth in this illusion. Since the trader operates on a short time frame and can respond quickly to events, it is often possible to curtail the losses from trades that have gone wrong. If a trade moves in an unfavorable direction, a click of the mouse can send an exit order into the market to terminate the trade before much damage is done. The trader is then ready to go on to the next trade. The truth in the idea of greater control is that a skilled trader can effectively control losses much of the time. More truth resides in the fact that the day trader avoids the risk of large overnight gaps and usually attempts to deal with a larger number of small trades. The sense of control becomes illusory when the trader cannot exit a bad trade as quickly as desired. As stated in the previous chapter, a market or stop order may be filled at a price that is quite different from the one expected. This can easily happen during fast market conditions, when the market can move significantly before the order is executed. Under such circumstances, a large number of other traders may have already sent their orders into the queue, so your order may be waiting in line, unexecuted, as your account dwindles.

The real danger in day trading is when the trader acts on the illusion of total control and trades an excessively large number of contracts or shares. If a day trader were to trade the same number of shares or contracts as a longer time-frame trader, exposure to risk would be significantly less. The shorter exposure period in day trading means less opportunity for the market to move large amounts, and the quick response times offer a greater, but not complete, degree of control. Because of the greater control, the experienced day trader can indeed trade more contracts or shares on an intraday basis, but needs to make a realistic assessment of the likely level of risk according to the volatility of the market being traded. If trading 500 shares on a 2- to 3-week time frame provides an appropriate level of risk, it might be safe to trade between 1000 and 5000 shares intraday, but almost certainly not safe to trade 50,000 shares. Of course, we are not considering the effects of

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frequent trading in terms of commissions. It is more costly to day trade because the large number of trades taken throughout the day leads to cumulatively greater transaction costs (slippage and commissions). The astute trader can minimize these costs by selecting a good deep-discount broker or trading service provider, and by not giving up the spreadthat is, by using correctly placed limit orders rather than market orders.

Although the risk of a sudden wipe-out is drastically less for the reasonably knowledgeable and cautious day trader, the likelihood of making a profit is also less than for the longer-term trader. In the stock market, the constant upward bias in recent years makes it easy to succeed. But, in day trading, the secular market trend provides intraday movement that is generally insufficient to overcome transaction costs. There are, however, techniques that can help the day trader be consistently profitable. Because of the frequent feedback and reinforcement they receive, day traders have a much greater chance to learn from their mistakes. The short time frame also provides the opportunity to exploit the small, repeated inefficiencies that are found in most markets.

What are the essential ways to control risk? The main one is having the discipline to unhesitatingly kill trades that move against you. Many people have a tendency to hold on to a losing trade in the usually mistaken belief that prices will reverse and the trade will turn profitable. In fact, holding on to a losing position is one of the gravest mistakes a trader can make. Think about it. When is it best to exit a losing trade? Is it after the position has moved just a little against you? Should you wait a bit more than that? Or should you wait until you receive a margin call, or until the trade has eliminated your entire account? Almost every successful trader knows that willingness to unflinchingly exit a losing trade is the most essential part of trading. If you still believe that the market will turn around, you can always get back in later, probably at a better price, since the market is almost certain to provide a number of opportunities for reentry. Don't worry about the added transaction coststhey will amount to far less than losing everything.

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Having cut your losses quickly, you will be around to try again. If you have any edge at all, chances are the next trade will be a winner. On average, there should be enough winning trades to make up for the losing onesif the latter are not permitted to grow unchecked.

A decision about when a trade has gone wrong can be based on a number of different principles. Perhaps some trendlines on the chart suggest that, if prices move beyond a certain level, the future or option is behaving differently than anticipated, prompting a quick exit. Another principle used to determine when to exit a trade is based on volatility. The movement of the market at a given time might be thought of as being composed of a trend component and noise: If the future or option moves against the trade more than expected statistically, the trade should be closed out. The conservation of time is also particularly relevant. Day traders usually deal with short time frames. Any anticipated behavior should develop rapidly. If a trade languishes, get out and move on. Why be exposed to potential risk, not to mention miss opportunities that may exist elsewhere, by staying in a trade that is not producing profit? All of these things have to do with managing risk, preserving capital, and surviving to take the next trade. Never underestimate the curve balls the market can throw. Things can happen very quickly. In the next chapter, on trading techniques, we will discuss additional methods by which risks associated with different kinds of trades can be controlled.

Capturing Profit

Assuming you survive to take the next trade, which is what managing risk is all about, your next goal is to capture some profits. Great traders have a saying: "Cut losses short, but let profits run." Almost everyone agrees with the notion of attempting to ride a good wave until it starts to fizzle. The day trader needs to be a little more active and aggressive, yet it is a balancing act. Get out too soon and possibly miss large profits. Get out too late and be exposed to excessive risk or see profits turn to losses. The key idea is to sell

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when others are still buying and to buy when others are still selling. For example, you buy IBM calls with a strike price of 95 for $5. Five minutes later, the calls hit $6 on high volume. Buyers are very much in evidence. Unless there is a compelling reason not to, this is the time to sell. Why? Because now is when you will get the best price. There is great demand. The seller is the supplier. What is being sold is quickly grabbed by others. Once the market begins to hesitate, getting a good fill becomes more difficult and uncertain. The long-term trader can afford to wait until momentum slows because a point or two of slippage is not going to have much impact when dealing with large, long-term moves. However, since day traders capture small, rapid moves, an extra half, quarter, or even eighth of a point makes a big difference. Selling into demand or buying into supply can provide that extra eighth, quarter, or even half a point. Therefore, when day trading, exit while momentum remains, before the market slows.

When you are using limit orders, buying into supply or selling into demand results in a greater likelihood of getting filled. In fact, one sophisticated way to exit a trade, especially if there is some projection of future price, is to place a limit order at the projected price and let it sit. This guarantees an exit at that price or better. Traders using Fibonacci ratios, as well as support and resistance, can sometimes exit almost precisely at the top or bottom of a move using this technique. Again, getting a good price is a very important aspect of being a successful day trader because the moves are fairly small. Another way to take a profit from a trade involves repeatedly placing and canceling limit orders: Place an order, cancel it, place another, cancel that one. Repeat the process until an order gets filled. Of course, if momentum begins to dry up or their is any indication of a reversal, stop this game and place a market order for an immediate exit.

Moving limit orders around does not cost anything in terms of transaction fees, unless the order executes. In the world of electronic trading, posting and canceling orders simply means pushing around electrons, bits and bytes. Only when an order is actually filled, and

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a transaction takes place, are costs incurred. Trading this way non- electronically (i.e., over the phone) will irritate your broker, since you are giving him or her a lot of work with no reward. After a period of time, the broker may even refuse to accept certain kinds of orders from you. We experienced such a problem when trading the S&P 500 with a very short-term, mathematically based trading model. Within a week, the brokers rebelled and refused to accept anything but market orders! When we complied and only submitted market orders (even though they made the system less profitable because of the increased slippage), the brokers became sloppy and may have intentionally delayed trades. With electronic trading, this problem does not exist. Computers do not care how many orders they attempt to route or match. The computer will not complain, even if several orders are placed every few minutes. This provides a great edge and is one of the best reasons for moving to electronic, online trading. It allows the trader to operate in a more sophisticated and savvy manner without such impediments as unhappy brokers.

In conclusion, place as many orders and take whatever actions necessary to maximize your edge. Never let a profit become a loss. Never let a small loss grow into a large one. Even when a future or option shows very little activity, limit orders can be used to make small profits by attempting to buy near the low end of the spread and sell near the high end of the spread. Only a sixteenth or an eighth of a point per trade may be captured, but cumulatively such trades can be quite lucrative.

Using Different Order Types

Many kinds of orders can be used in trading. The most common are the limit order, the market order, and (for some markets and in some venues) the stop order. Professional day traders mostly work with market and limit orders.

Limit orders translate directly to offers or bids. When you say you want to buy 100 shares of IBM at $96 limit, it means that you want to buy those shares at the price of $96 or better. In other

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words, you are placing a bid for IBM shares at $96. Similarly, if you want to sell 100 shares at $96, you are placing an offer. In a sense, therefore, the limit order is the native or primary order type. The main property of a limit order is that it will only be filled if it can be matched with another order at the appropriate price. Returning to the IBM example, if you place a buy at $96 limitthat is, bid $96 for 100 shares of IBM stockyou will only be filled if another trader has posted an offer at $96 or better for 100 or more shares. Keep in mind that, with a limit order, there is a risk that you may only obtain a partial fill, so you might not get all the contracts or shares you want.

Limit orders do not necessarily guarantee instantaneous fills. For example, if IBM is currently offered at $96, but it is bid at $95, and you place a limit order to buy at $95.25 or better (inside the spread), at that moment there is no other offer that can be matched to your bid. Someone, however, might see the bid and be willing to sell you the stock at your price. In active markets, the bids and offers keep shifting. It is not unlikely that, within a few minutes or less, your order will be filled, especially if it is for a small number of shares or contracts. By using the limit order, you will have obtained a price significantly better than the current offer. For this reason, the limit order is generally a good order for day trading. As mentioned earlier, an extra quarter, eighth, or even sixteenth of a point can help you achieve profitability. The mechanics of placing a limit order are covered in the previous chapter, where illustrations are provided.

Market orders are those that you put in without specifying price. In general, at any given time, there is a higher price at which shares or contracts are offered, and a lower price at which they are bid. When a market order is placed, the order is filled at the best current offer (if buying) or bid (if selling). Basically, you are buying the ticket price instead of negotiating. In trading parlance, this is "giving up the spread." Unless there is justification, such as needing to exit in a hurry or to jump into a developing trend, day traders should shun market orders. In the above discussion, we spoke as if market

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orders are filled instantaneously and completely at the current offer or bid. However, the number of contracts or shares currently being offered or bid may be insufficient or there may be several orders ahead of yours that are waiting to be executed. Your fill may, therefore, be worse than expected. Bids and offers move around continuously and sometimes very rapidly. As orders get matched, certain bids and offers disappear, while new ones come into the market, perhaps at different prices. However, most of the time, market orders are executed within a few seconds.

Stop orders require the specification of a price. You sell short or exit a long position if prices drop below a sell stop, and buy or exit a short position if prices rise above a buy stop. Stop orders are traditional in the futures pits, but are not an intrinsic feature of many direct access trading venues, like the SOES, the various ECNs, or GLOBEX. These venues do not in themselves accept such orders. If your online broker has a screen that allows stops to be entered for these venues, the stop order is probably routed to the broker, who then watches the market on your behalf and, hopefully, quickly places a market order when prices penetrate the stop. There is no reason you cannot do this yourself. Since, as a day trader, you are actively watching the markets, place a mental stop or set it as an alert in your charting program, and enter a market order at the appropriate moment.

Although stops generally are not used by day traders in equities or equity options, they are used frequently with commodities. However, there is a need to be wary, especially when the stops are close to the market. When stops are placed in the market, others (i.e., floor traders) become aware of their presence and may try to "gun" them. That is, traders on the floor may try to match your order even though it is outside the current market. This can cause you a loss, and provide the trader on the opposite side of the trade with a gain, when the market returns to the prevailing price. With E-DAT, it is probably best to simply post market orders yourself when the market penetrates a desired stop. To be protected in case of an emergency, a stop loss order can be placed far away from the market,

well out of reach of gunning. This "wide" or far-out stop will only serve as insurance, while mental stops provide basic risk control and money management. Using this approach, if something happens that you cannot react to (e.g., if your internet connection goes down or your computer crashes), you are, at least, somewhat protected. At the same time, you have not given away your hand, since the real stops that form part of your trading plan cannot be seen by others.

Stop orders are usually used for two purposes: (1) to enter a trade in the direction of momentum; and (2) to control losses or lock in paper profits. In both cases, do not feel inhibited about adjusting the stops in response to market action. For instance, to lock in an increasing paper profit, trail the market with your stop. This may require moving your stop several times. As part of good trading practice, get in the habit of moving the stops as you see fit, without worrying about the irritations experienced by brokers or floor traders. Remember, you are in the business of making a profit out of this game, not making it easy for others at your own expense.

Sensing the Ebb and Flow of the Market

To get a sense of the ebb and flow of the market, start by calling up a chart of the S&P 500, E-Mini, or perhaps an at-the-money option on your favorite internet or oil stock. Set these charts to show activity either on a tick-by-tick or 1-minute time frame. If you have done other kinds of trading and are familiar with certain indicators, put these up on the charts as well. Indicators that are used by end-of-day traders, such as moving averages, the MACD (moving average convergence-divergence), and stochastics, are also useful to day traders. On another screen, you may want to have live market numbers: Level II NASDAQ quotes, the most detailed quotes available for the underlying security, or the equivalent kinds of market quotes for futures, such as the S&P 500 or E-Mini. Then sit and watch the markets to get a feel for the kind of movement to expect.
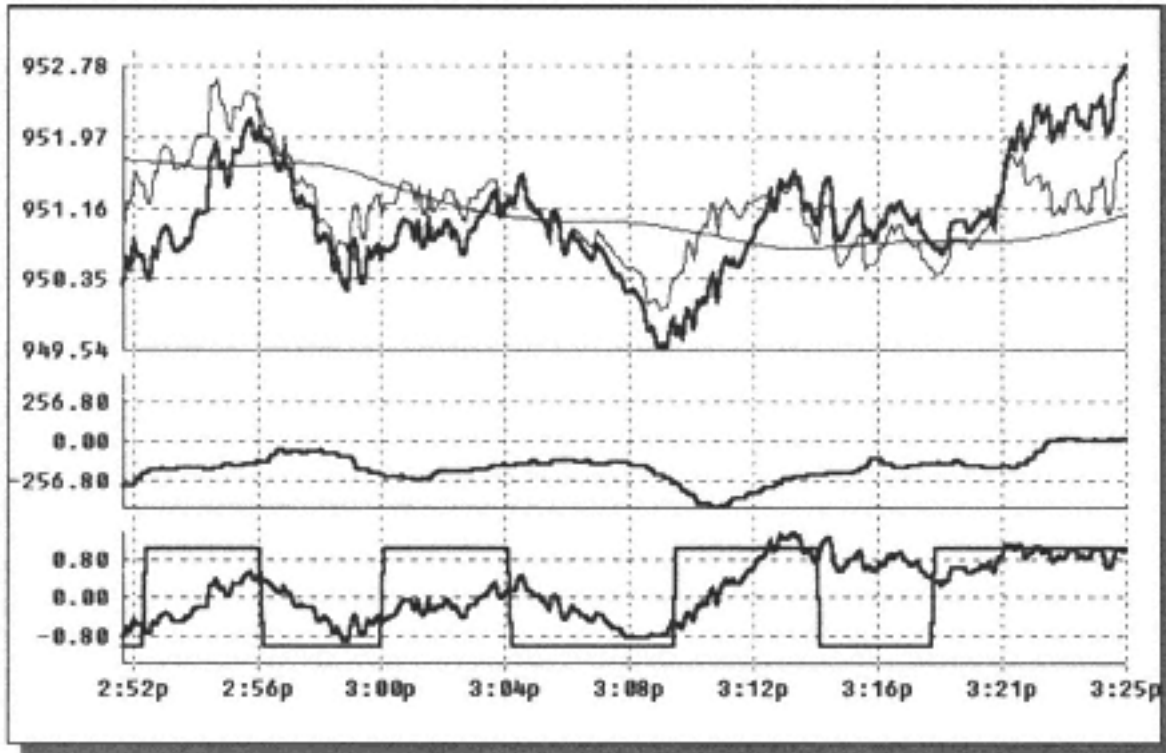
Figure 5-1.
Tick chart of the S&P 500 exhibiting a rolling trading-range personality.

Figure 5-1 shows tick-by-tick activity for a 30-minute period (time runs along the bottom of the chart) and depicts the tick price (thick, jittery line, upper subgraph), a moving average (smooth line, upper subgraph), the premium on the futures rescaled to fit the price chart (thin, jittery line, upper subgraph), the NYSE tick index (middle subgraph), a stochastic-like indicator (rolling curve, lower subgraph), and trading signals (rectangular curve, lower subgraph).

If you have called up the S&P 500 on a tick time frame, the chart on your monitor may look similar to the one in Figure 5-1. What do you notice about this chart or the one on your own screen? In Figure 5-1, you can see rolling waves with troughs about 10 minutes apart. This rolling pattern represents one of the several personalities or modes of the S&P 500 market. Perhaps you will see something like this or maybe the market is acting in a different fashion. Sometimes the S&P 500 goes into a trending mode and, instead of rolling waves, there is directional movement, as illustrated in Figure 5-2.
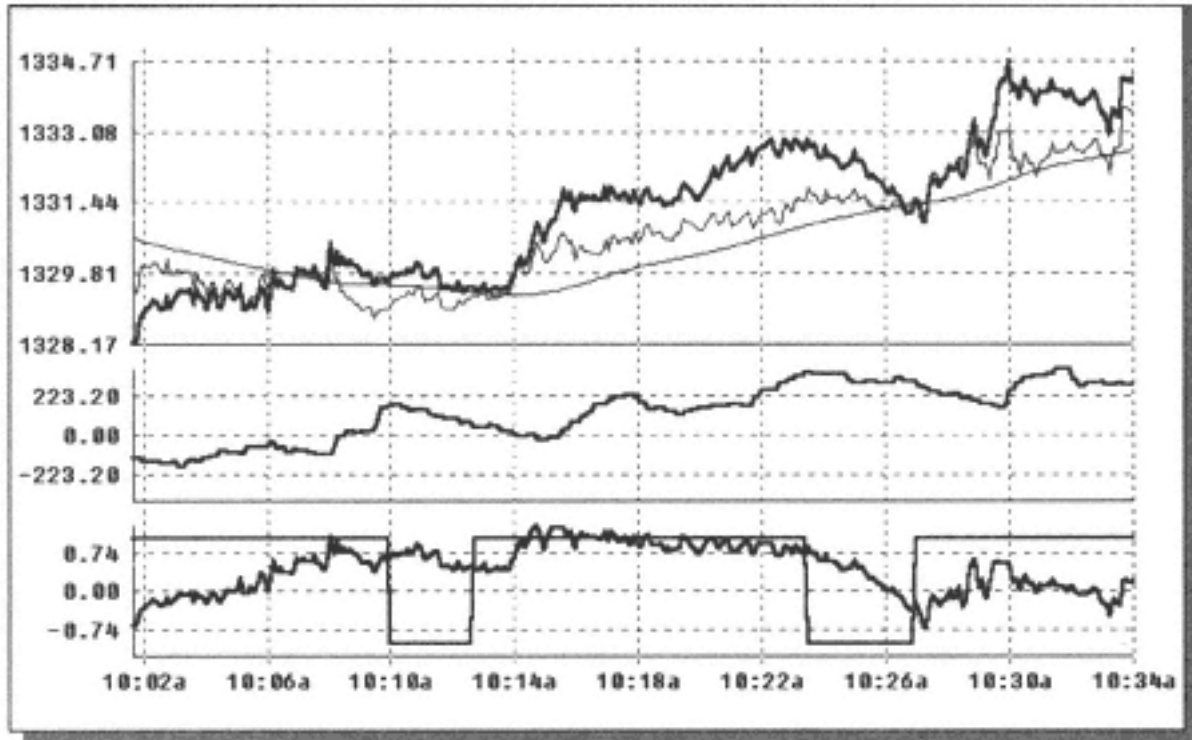
Figure 5-2
Tick chart of the S&P 500 in trending mode.

As you examine various securities, you should be able to develop a feeling for the kind of personality the particular market is exhibiting at any given point in time. The idea is to watch the market in an active, involved fashion for a long enough time to develop a sense of its current mode or personality and to be able to anticipate what it will do next. Is it in wave mode and reaching a bottom on its way to the next crest? Is it trending in a steady fashion? Is it behaving randomly? Or is it thrusting in steps, forming a kind of staircase? Small cap stocks, of interest to traders of equity options, frequently exhibit a staircase pattern in which quiet plateaus are punctuated by prices that surge on increased volume. A 5minute bar chart for Amkor Technology (symbol AMKR), which appears in Figure 5-3, illustrates this pattern.

In your quest for deeper understanding, try changing the time frames on your charts, or calling up additional charts with longer time frames, to get a different perspective on the same markets. As you watch the markets, try to determine if there are any recurrent patterns of behavior. Do certain configurations keep appearing?

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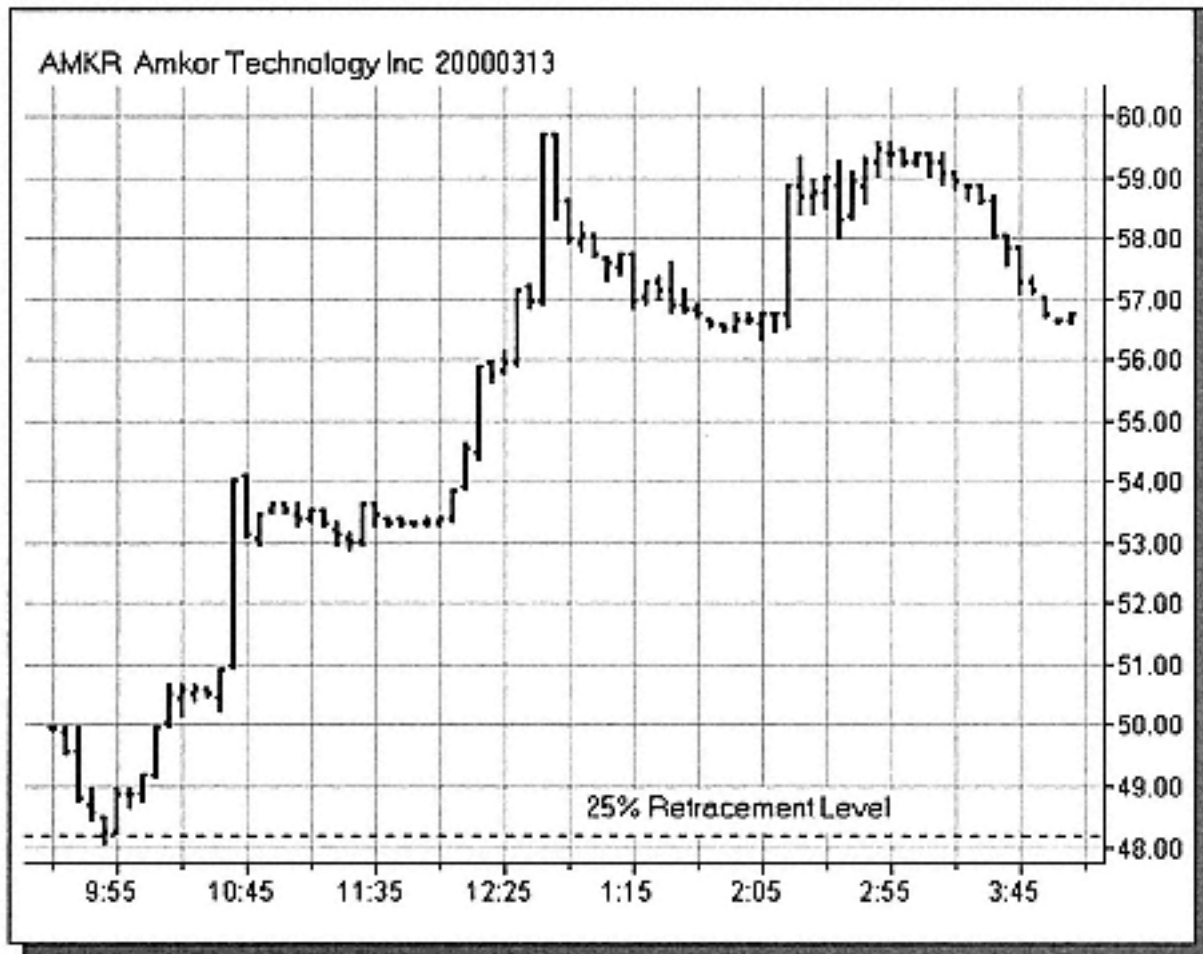
Figure 5-3
A 5-minute chart for Amkor Technology illustrating staircase pattern.

Does the market repeatedly seem to bounce off a moving average or trendline? An excellent book to familiarize yourself with is the *Encyclopedia of Chart Patterns* (Bulkowski, 2000).

If you are also listening to the sounds of the pit, which is possible for markets like the S&P 500, do you notice any relationship between what you hear and price action? Perhaps the volume of shouting increases at major market tums or at the start of trends. Maybe quiet periods are marked by rolls like those in Figure 5-1. Only by watching the charts while you listen to the pit will you learn the trading significance of the various sounds.

In addition to looking at charts and listening to a squawk box, you may want to examine market activity on a real-time quote screen. Although not usually worthwhile when trading futures, the

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quotes are beneficial when trading stocks or stock options. Pay particular attention to the ask and bid prices, and, if available, their sizes. Also, consider the last few transactions and, if possible, the number of shares or contracts involved. If the information on who has posted the offer or bid is not available, try to make some kind of inference. Was it a specialist, a market maker, or some other trader? Does the price of the last transaction keep flipping back and forth between the ask and the bid? This suggests a market maker buying from and selling to the public. All such data provide insight into current market activity, including support and resistance levels, and where the best day traders (e.g., the specialists) think they can make money as middlemen by buying on the bid and selling on the ask (a strategy you can also employ in certain markets).

Once you are familiar with how to call up and customize charts and quote screens, as well as how they appear and update in real time, start paper trading. You will need to learn how to respond to the markets, not merely to observe them but to sense their ebb and flow. To begin this process, take a sheet of paper and imagine that you are going to trade the market you are watching. As the chart scrolls, you see a point where the market seems to be reaching the bottom of a wave. On the basis of the market's prior behavior, you have an impression that it is beginning to reverse its downward journey and is ready to rise. Place a buy, together with the price and time, on the paper. Keep watching. Are you getting nervous? Perhaps the market has continued its descent, causing a paper loss. Is it time to get out to stop the loss or should you hold on? Maybe you should get out now before the loss grows; if so, make a paper exit and note the price and time. Maybe the market began to move in favor of your trade soon after you noted it down. You decide to hold on. As the market moves more in your favor, you become increasingly nervous. You would like to sell to take your profit. Should you? You waver in your decision and cannot come to a conclusion. Maybe you should hold on and capture a potentially large move. Then again, maybe the market will reverse, causing your paper profit to turn into a loss. Confusion. Paralysis. You now

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see the lightthe need for a thought-out trading plan. Oh, no. The market appears to be reversing. You finally decide to sell. Note the sell (exit), as well as the time and price. You are now out of the market. Your position is "flat." You have made a paper trade.

Keep watching for another entry opportunity. Then do it again. Perhaps this time you go short, expecting the market to drop. You go through the same procedure of waiting and reacting, only now it is with the intention of buying to offset your short position, in other words, to exit.

After paper trading several times, review your trades and see how well you have done. Don't be surprised if you have lost money. To make the situation more realistic, return to the times when you exited or entered your trades and adjust the prices you noted to reflect not the price present at the time of the trade, but the worst price that occurred within a minute following the trade decision. In other words, assume that the market has given you slippage. Remember, in this experiment, you weren't using limit orders, just market orders, so slippage would be expected in actual trading. When you recalculate your trades, you will find that the losses have grown. For an even greater sense of panic and disappointment, subtract commissions. Don't be too upset. As you practice, your trading will improve.

Maybe this is not the scenario you experienced. Perhaps your trades were astoundingly profitable. Good for you. But don't let it go to your head. Your good fortune may be due to beginner's luck and the first actual trade you place may be a loser. Then again, it might not. You may have a real sense of the market. Even so, be cautious. You still have a lot to learn. A standard form for paper trading appears in the previous chapter.

Practice Trading

After paper trading for a while, try a service such as the one provided by Auditrack, or trade with real money, but in small lots. If, for example, you have a $50,000 account and expect to trade 10 or

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20 options contracts at a time, or several thousand shares of stock, begin practice trading with only one contract or 100 shares of stock. Trade small enough so that, even should you lose and make many mistakes, you won't get hurt. The idea is to gain experience at something as close to real, live trading as possible without incurring the risks. If you need to actually engage in small-scale live trading for this process, your losses will be somewhat greater than they might otherwise be. For example, when you trade on a small scale, commissions can be a serious problem. But, at this stage, do not concern yourself about such costs. The idea is to get live, handson practice with minimal risk. If you take small losses from commissions, consider it a training expense, like taking a course. You can minimize these costs by using a deep-discount brokerage, something you should be doing anyhow. Once you have learned the ropes and can trade consistently, you can gradually increase the trade size.

Practice trading is absolutely critical to developing the ability to trade profitably. At first, you may find it difficult to respond to the market with speed and accuracy. You may be clumsy in posting and verifying orders, taking substantially more time than optimal. Do not rush. It is better to be somewhat late than to post an order that is seriously wrong. With practice, you will gain grace and speed. After enough simulated or small, real trades, the mechanics will become second nature, and your sense of the markets will further develop.

For commodities day traders, Auditrack is one of the best services available for practice trading. Some brokers (e.g., Lind-Waldock) offer access to Auditrack using screens in the form of web pages, similar to those used for real trades. At the time of this writing, Lind-Waldock offers a free, 1-month trial of its P.R.O.F.I.T. system, which provides access to Auditrack. After that period, the subscription fee is around $40 per month, whether or not you have an account with Lind-Waldock. Auditrack provides an opportunity to practice trading in an environment close to the one you will use when actually trading. It is a complete, detailed simulation of the

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entire trading process. Auditrack even keeps a verifiable record of every trade. When paper trading, you have to keep a written record yourself, which could detract from your timing. Auditrack, however, maintains a simulated account and, over the net, sends its clients statements that even include deductions for slippage and commissions. It provides a very complete and realistic simulation of the entire process, including the details. You feel as though you are trading and experience emotions as if money was on the line. Use of such a service also allows you to easily evaluate your progress as a trader. Auditrack is currently available for futures and futures options, but not for stock options.

There are other ways to gain experience in practice trading. One way is through participation in an online trading game or competition. We most frequently rely on a simulation we developed (through Scientific Consultant Services) and use as a teaching tool at the New York Institute of Finance: "The Trading Game." Unlike many of the trading simulators mentioned above, this game fills the screen with price charts, not just numbers. The charts include moving averages, stochastics, and a variety of indicators. It also includes options simulations, using synthetic option prices generated with the Black-Scholes model, from the prices on the underlying stocks or futures. The game allows you to enter a trade (using assorted kinds of orders) and follow its progress tick by tick on the chart until you decide to exit. It keeps track of the number of trades placed, profit per trade, average profit, and other statistics that inform you of your performance. You do not need a live data feed to play this game, but you do need historical data. It can be played on any market, and on any time frameintraday, end-of-day, whatever your preference. The game makes an excellent training tool, especially for those interested in studying charts and using pattern recognition (it even includes several filters to help out). System traders also find it very valuable.

To be maximally effective, practice trading must provoke experiences of fear and greed, confusion and paralysis. Unless you are a natural, you will discover the need for a trading plan, a system,

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and other aids to guide you in your trading decisions and to help you know what to do in any situation. The idea is to develop a good, intuitive feel for the market, as well as the ability to act decisively and objectively on the basis of your observations without the damaging impact of emotions. This kind of skill and ability can be gained by extensive practice trading, as well as by having or developing a good trading plan or methodology, as discussed in the next chapter.

What Have We Learned?

Relatively high levels of market volatility are essential to day trading.

Markets can move substantially, in a very short time, when volatility is high. Therefore, it is necessary to minimize the potential risk of the market moving quickly against you.

When deciding about the number of contracts to trade, consider the risk potential should extreme adverse movement occur.

Rapidly exit trades that begin to move against you. You can always reenter later. The extra transaction costs are better than the extra loss of capital from hanging on to a bad trade.

Trendlines can help determine whether market behavior has changed in an unanticipated way.

Market behavior that is expected should develop rapidly. If a trade languishes, exit; the market has probably changed. Why expose yourself to unnecessary risk?

Although you don't want to cut a good trade short, it is best to sell while others are still buying into the trend. You will get a quick sale and a good fill. Slippage may work in your favor.

One good way to exit is to keep placing limit orders at or just above acceptable profit targets. You can always cancel them and place higher ones if you feel the trend is strong enough.

Limit orders are bids to purchase or offers to sell at specific

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prices. Such an order will only be filled if a trader on the other side of your position matches your price.

There is no guarantee of an instant (or any) fill with a limit order. However, in active markets, the likelihood of a fill is greater.

Market orders are placed without a specific price. You are placing an order to buy or sell at the current market price, which (by the time the order gets filled) may be quite different from what you expected (depending on the volatility of the market). They are usually filled in moments.

Unless you need to jump into a fast-developing trend or to exit a bad trade quickly, market orders should be avoided, especially by day traders.

Stop orders also require the specification of a price. You sell short (exit long) if prices drop below the stop order, and buy (exit short) if prices rise above it.

Stops are used when trading futures or commodities, but not equities or equity options. The SOES, some ECNs, and GLOBEX do not accept them.

If you are going to use stops, don't enter them as orders. Simply keep the figure in mind as a threshold for action to buy or sell when prices near it.

It is wisest to place a stop order with your brokerage only for catastrophe insurance purposes, so that your position will be immediately closed out if something happens (e.g., your computer crashes) and you cannot respond quickly enough to market behavior. Usually such stops are placed relatively far outsomewhat beyond where you would really want to exit.

Do not hesitate to frequently adjust stops as market conditions change.

Before actually trading with money, watch the markets of interest to get a feel for them and the kinds of behaviors they typically exhibit.

After you have a sense of the markets from studying them, try

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paper trading, then simulated trading and/or trading games and competitions. This will not only help you understand the markets and how to mechanically place trading orders, but will also give you insight into your own trading style and behavior.

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Chapter 6
Profit-Grabbing Strategies

Now that you are familiar with tracking the markets and with the mechanics of placing orders, you are ready to start day trading. The goal in day trading is to grab quick profits from the markets by pouncing on small discrepancies or "inefficiencies." When a market is inefficient, it is predictable and can be profitably traded. Inefficiencies can take many forms, such as prices that are somewhat out of line, ask-bid spreads that allow you to play the side of the house or market maker, and news or momentum that you respond to before the majority of the public does. The whole idea is to be ready to take advantage of any such transient inefficiencies, since they tend to disappear rapidly. And, more than any other form of trader, the day trader has the ability to profit from small inefficiencies before they vanish. By repeatedly grabbing small profits from the little inefficiencies that momentarily appear in almost every market, and

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doing so repeatedly throughout the day, day traders can profit handsomely. The many small profits that are accumulated can add up impressively.

To effectively capture profits from small inefficiencies, it is essential to learn to work the market with the appropriate orders. Because the profits you are going after are small, trades must be filled at the best possible prices. Unlike a naive end-of-day trader who simply says, "Buy me 500 shares of IBM" (essentially a market order that is likely to be filled at a poor price), you need to say, "Get me 500 shares of IBM at 95 1/4 or better." If you cannot get them at that price, but still feel that there might be some potential in the trade, you can make an effort to buy them at 95 3/8.

There are three basic kinds of orders that you will use when trading the options and futures markets. They are market, limit, and stop orders. As a savvy trader attempting to get good prices, you will use limit orders frequently. The limit order is an order to buy or sell a futures contract or option at a specified price or better. You will occasionally use a stop order to obtain catastrophe insurance or to buy into a momentary trend. However, the stop order often incurs a significant amount of slippage, which is to be strenuously avoided given that you are usually gaining only small profits from your trades. Slippage can destroy your edge. Sometimes you will want to use market orders. They are useful when, for example, a trade has gone wrong and it is necessary to exit quickly. Under such circumstances, you don't have time to haggle by working a limit order. You need to get out *now* so you place a market order to be executed immediately. When using market orders, you will not be filled at the best price but, in all likelihood, you will be out of the trade quickly, hopefully before much damage has been done.

There are many angles to using the different kinds of orders to work the markets and grab profits. We will discuss some of these methods later in this chapter. For example, in some markets, you may not want to leave your limit orders posted for any length of time for others to see. NASDAQ is one such market because of its open book. Sometimes trading is like playing poker: If others see

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orders placed at certain prices, it may give them an idea of where the market is going and affect their moves; you may not want this to happen. Therefore, in certain markets, working the orders (trying to get good fills on buys or sells) may involve the repeated posting and canceling of orders. For example, if a limit order does not get filled in a very short period of time (say 1 or 2 minutes), cancel it to remove it from view. If the option or future still looks worth playing a few moments later, you can put the order in the market again. Perhaps you will have to cancel it again, only to place it back in later. This process may repeat several times, each time involving a quick foray into the market that is followed by a retreat. A discussion of these techniques can be found in such books as *Electronic Day Trader* (Friedfertig and West, 1998).

We have just illustrated one reason you must develop speed and fluency in the use of your particular software and order entry screens. Placing and canceling orders must become an automatic process that requires little thought. In this way, you can focus exclusively on the market.

Although the goal of day trading is to grab profits from minor discrepancies in market prices, or from momentary responses made by the markets to news or other factors, you can improve your edge substantially by gaining a longer-term perspective on the options or futures and their underlying equities or commodities. The purpose of taking a longer-term perspective is to develop a sense of the overall trends in the options or futures you are trading. You will also gain familiarity with the likely range of prices, as well as major levels of support and resistance. The likelihood of success is increased when you play your short-term game in consonance with the longer-term trend. If you have a very strong or positive longterm outlook, and only trade in the direction of that perspective, you have the flexibility of converting some of your shorter-term day trades into longer-term ones, perhaps even into overnight positions. Regardless of whether you hold positions overnight, the longer-term perspective can be beneficial.

There are many kinds of market phenomena that can be turned

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to your advantage. There are many trading strategies. The one to use depends on the behavior of the particular future or option you are planning to trade, the underlying stock or commodity, as well as what is generally going on in the markets. Again, think of poker or chess. Different hands or positions require different strategies, offer different opportunities, and need to be played in different ways. A number of these strategies are discussed in detail below.

Trading the Ask-Bid Spread

Regardless of what you intend to day trade, you will encounter the *ask-bid spread*. This is simply the difference between the lowest price someone is willing to accept for the instrument, the "ask," and the highest price someone is willing to pay for it, the "bid." If a bid and ask match, a trade takes place, and that bid and ask vanish from the market. Consequently, there is always a spread.

In highly liquid, actively traded markets, the spread tends to be very small. In heavily traded stocks, for example, one speaks of "teenies," referring to 1/16 of a point. Therefore, you might find a large stock like IBM trading 91 1/16 ask and 91 bid. The ask-bid spread also tends to be small in popular futures and index options markets like the S&P 500 index futures and the OEX index options. Here, one does not speak in terms of sixteenths, which may be considered the tick size of many stocks, but in units of. 10 for the S&P 500, or 1/32nds for bond futures. Sometimes the spread can be larger, for example, two ticks instead of one. Usually, however, it is quite small. With less actively traded entities (such as many equity options, futures options, and less popular futures contracts), the spread between the current ask and bid can be larger.

Sometimes you can trade the ask-bid spread. However, don't expect to be able to easily make money by simply attempting to buy slightly above the bid or sell slightly below the ask. Many other traders have that idea and so, in most cases, you will find it very difficult to make a profit. However, by attempting to acquire futures contracts or options at a price that is better than the current asking

price, or to liquidate them at a better price than the current bid, you can improve the odds of success. Trading within the spread can dramatically reduce transaction costs, although doing this might not be profitable when it is your main trading strategy.

To determine whether trying to buy at better than the ask and sell at better than the bid can improve your trading, imagine that you take five trades a day (not an unreasonable number for an active day trader). In one month, this would amount to approximately 100 trades. Assume that you are trading options with ask-bid spreads around 1/2. Such large ask-bid spreads are not uncommon in the world of options; they may even be found on some small capitalization stocks that are not currently "hot." If you are trading single equity option contracts (options on 100 shares of stock), and simply accepting market prices, you would be spending $5000 per month ($50 per trade) on the difference between the ask and bid. The cost of "giving up the spread" is worse, in this case, than the cost of commissions charged by many discount online brokerage firms. Even the sixteenth of a point encountered in liquid stocks will cost approximately $600 to $700 per month. On a bad day, or at slow, illiquid times during the day on the S&P 500, a spread of. 10 will cost $50 per trade. The spread may even widen to .20 in this market. Obviously, you can lose a lot of money to the spread by trading "at the market." Such scenarios are typical of what happens when placing market ordersthat is, buying at the ask or selling the bid and thereby *giving up the spread* (buying and selling at the worst prices by placing market orders). You will definitely give up the spread, and possibly more, when using market orders.

If you were trading on a long-term time frame (weeks, months, or years), looking for extremely large moves and taking only a few trades per month, the issue of giving up the spread would be insignificant. However, for the day trader, giving up the spread without good reason is tantamount to throwing away money. Because the day trader deals with small moves over short periods of time, all per-trade costs must be kept as low as possible. As well as minimizing the effects of the ask-bid spread, you need to keep com-

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missions low because they can drastically eat into profit. Everyone realizes this, even the electronic brokers and access providers who want to keep your business and will often reduce commissions for frequent traders. However, with direct electronic trading the spread is mostly under your control and that of the market, not under the control of the broker.

Smart day traders frequently avoid giving up the spread by "working the market" through limit orders. For example, if you see an option trading at 5 bid and 5 1/2 ask, and you want to buy this option, you could attempt to purchase it by bidding 5 1/4. Depending on the level of trading activity, and on options market makers, you may or may not get filled. If you do get filled, however, you will have saved $25 on a one-contract transaction. You could even go further, and perhaps try to buy on the bid (the highest current bid price) or 1/16 above it. By doing this, you will lower your chance of being filled significantly; however, depending on market conditions and also on statistical "noise" in the market (small changes in price over time), you might get a fill. If you do not get filled, but still want the option, you can always raise your offer, a little at a time, until you get filled. The main idea is to always try to set the price, rather than accept the price that the market offers. By doing this whenever possible, you will greatly improve the likelihood of success in your trading. Remember, even a small reduction in costs, or a small increase in profitability, can make a vast difference to the short-term day trader.

Another way to reduce costs is to shop around. In the world of stock trading, there are a number of venues on which electronic trading and order matching take place. We have already mentioned the SOES and the various ECNs. When attempting to get a good price, examine different venues. In one venue, you might not be able to get filled at the price you want; however, you might in another venue. With the SOES, the other side of the trade is normally taken by market makers. Unless they anticipate movement, they may not be willing to give up as much of the ask-bid spread as you would like them to. However, Island ECN (its symbol is ISLD) has many less astute retail traders. An offer placed there

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might be matched by a seller from the public. To put it bluntly, you may be trading against less sophisticated traders from whom it is somewhat easier to take money. Depending on your direct access trading service provider, you will probably be able to access several different venues, if you are trading stocks. The number of venues for equity options, futures options, and futures is currently more limited and, therefore, shopping around may not always be feasible. Just remember, regardless of what you are trading, you can always attempt to set the price rather than accept it. This can be done by using a limit order (at or better than the current market price) rather than a market order, and by setting your price inside the spread (below the ask and above the bid).

There are times when you will simply want to do the opposite of what we suggested above, that is, to buy at the ask or sell at the current bid. This depends on market conditions, whether you are entering or exiting, and the kind of trade you are working. For example, you notice a trend developing (i.e., momentum). You want to jump aboard quickly. Speed is of the essence. In this situation, you should probably not attempt to enter using a limit order. A limit order is unlikely to be filled because the market will probably run away from any price you set. However, once you are in, you may want to set a price target that defines where you are going to get out. As the prices move toward that target, you can place a limit order for your exit. Because you are selling into a buying frenzy, the limit order becomes more likely to be filled, even if it is on the high side. In other words, the offers are rising with the trend; sooner or later some offer will match your asking price and your trade will be completed, hopefully with a profit.

You might also want to use a market order if you are in a position where the market starts moving against you. Under such circumstances, you do not have the luxury of haggling over the price. You need to get out and do it fast. Place a market order and be filled at the current bid. However, when markets are fairly flat (just jiggling up and down a little), you definitely want to work them using limit orders and perhaps shop around.

We also suggest using limit orders, and attempting to buy below

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or sell above the market, when you can identify clearly defined points of support or resistance. Perhaps you use Fibonacci ratios or some other method that allows you to set precise price points at which the market is likely to reverse. If you are attempting to buy, place a limit order fractionally above the critical price point. If you are attempting to sell, set the limit order fractionally below the critical price point. If your critical price points have validity, you will obtain excellent fills that are close to the exact tops and bottoms of the market's swings. Such price point predictions are unlikely to be highly reliable. However, if they succeed only a proportion of the time, and if you act quickly to curtail losses when they are wrong, you can do very well. In this case, you are placing limit orders outside the spread or "out of the money." For these orders to be filled, you must wait until market movement brings the prices to where your order is placed. This may take time.

There were times in the recent past when the strategy of playing the ask-bid spread could, by itself, yield a mighty profit. This was in the era of the SOES bandits. Because of increasing participation in the electronic markets, and investigations by the SEC (discussed in the "Introduction"), this is no longer the case. The ask-bid spreads have narrowed to the point where it is difficult to consistently profit by playing them. However, working the market and setting the price, although not generally capable of providing a profit on their own, can reduce trading costs and help make other strategies more profitable. Trading the ask-bid spread is given extensive treatment in the book *Day Trade Online* (Farrell, 1999).

Trading Momentum

The goal of the momentum player is to buy strength or sell weakness. In systems trading, this is exemplified by *breakout models*, which buy when prices move above, or sell when they move below, some threshold. The idea is to buy into movement that is expected to continue long enough to make a profit. Grabbing profits as a

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momentum trader involves jumping onto a developing trend quickly and then jumping off before the trend dissipates.

An advantage of momentum trading is that you know the market is strong and moving in your favor at the time of entry. Assuming that the movement persists, you are assured of a profit, that is, if you exit before the trend reverses. Frequently, the profit can be substantial. A problem, however, is that you are likely to encounter large amounts of slippage or get on board too late in the course of a move. Many end-of-day traders have seen a stock rise 20 to 30 percent in 1 or 2 days. If you wait until the next day to place your order, the move will most likely be over. In fact, the market often peaks at the open on the day following a strong thrust. Your risk will be high and your profit potential low. In short, for a momentum trader, speed is critical.

A disadvantage of momentum trading is that you generally cannot work the market using limit orders as a means of eliminating slippage and reducing costs when entering positions. Using a limit order is like trying to jump aboard a fast-moving train as it speeds away from you. Limit orders at prices you like are unlikely to be filled, since the option or future is moving beyond the limit too quickly. Without any hesitations or retracements, the price you have set in your limit order will never be hit. For exiting momentum trades, however, limit orders can be used effectively. Even so, you must be careful when using limit orders to exityou may cut very large profits short. Some thrusts or bursts of momentum can carry a market very far. You don't want to jump off too early, before the movement begins to slow, and miss out on a continuing trend that could yield additional profit.

The specific inefficiency that the momentum trader tries to capture is the tendency for market movements to persist. In a totally efficient market, predictable persistence of movement would not exist. However, this is one of the ways in which real markets are frequently inefficient. In the terms of statistics, a positive serial correlation exists between successive returns.

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In momentum trading, it is important to exit before the move is completely over. There should still be a sufficient number of traders to take the opposite side of your trade, that is, to buy what you are selling. If you exit at the appropriate time, slippage should work in your favor, not against you, even with a market order.

The trick with good momentum trading is not to merely spot movement, but to recognize patterns that suggest there will be a strong follow-through. Since you are buying high or shorting low, you are already at a slight disadvantage. You want to see protracted movement. You do not want to see reversals. There is no fun in buying at the exact top or selling at the exact bottom. In our experience, patterns can be found in the prices of stocks and stock options that indicate whether or not a burst of momentum is likely to have the follow-through necessary for a profitable trade. Many of these patterns can easily be seen on standard charts by the trained eye. Some of them are discussed, and illustrated with price charts, in the next chapter.

When you are momentum trading options, another factor must be considered: time. It is important that moves follow through quickly. The profit must overcome the time decay inherent in the option. Time decay is not much of an issue for day traders and luckily, in momentum trading, significant movement often quickly follows entry. This makes momentum a good approach when day trading options. However, because momentum (in the sense of a sudden thrust) implies increased volatility, options premiums may inflate. If the momentum declines, the premiums shrink. Therefore, the momentum trader may, under adverse conditions, be buying "fat" options and selling "thin" ones. The market may move favorably yet, because of the loss of volatility as momentum fades, the trade may not turn a profit. In our experience, this is not a frequent problem. Options prices might be inflated but, as momentum builds, volatility increases and the premium swells, adding to the profits.

Momentum trading is discussed in further detail in the next chapter. Additional information can be found in *The Strategic Electronic Day Trader* (Deel, 2000).

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Swing Trading

Swing trading is the opposite of momentum trading. In momentum trading, the idea is to find a developing thrust and then climb aboard, hoping the movement will carry you to a prosperous conclusion. In *swing trading*, the idea is to enter trades either against the direction of current movement, in expectation of a reversal or "swing" point, or just after the market has reversed its direction, but before it has built up steam.

Volatile options and stocks can reach high and low extremes in price during the day, as traders push prices first in one direction, then in another. As a trader, you can attempt to anticipate when prices have moved an excessive distance from their expected value and are likely to snap back. You can try to buy into momentary dips and sell into momentary rallies. This is also known as *countertrend trading*, at least in the short term. Anticipating turning points, however, can be quite difficult.

Many times, an option or a future that is down will continue its descent, while one that is high will continue to move up. You could get burned. However, if you can, occasionally, correctly predict a turning point, you can do extremely well because you will be entering the market at an excellent price.

There are many ways traders attempt to determine when reversals or swings are due. Some use oscillators, such as Lane's Stochastic, in an attempt to recognize "overbought" or "oversold" conditions in a market. Others use the tools of classical technical analysis, such as levels of support and resistance. Some simply look for a longer-term trend and then attempt to buy during pullbacks or sell during rallies, always trading, however, in the direction of the trend observed in the longer time frame charts. Using notions like support and resistance can offer an additional benefit beyond the prediction of turning points: knowing when the trade has gone wrong and at exactly what point to exit.

Countertrend or swing trading marries well with the use of limit orders. In most cases, it is easy to get good fills at desired prices

because you are not trying to buy into an avalanche of movement. Instead, you are buying when the crowd is selling or selling when everyone is buying. This kind of trading also ties in well with the *contrarian philosophy*, which suggests that you do the opposite of what the majority of traders and analysts would do on the basis of their expectations of market behavior.

It is generally harder to swing trade successfully than to trade momentum. In most markets, fewer success stories can be found for this kind of trading. The continuation of moves in markets is frequent, while reversals are less so. Therefore, to a small extent, the odds favor the momentum trader. However, the better fills may overcome that small statistical edge that momentum traders have.

One example of an often successful type of swing trade is when a news story comes out overnight, triggering a buying frenzy at the open. In such a case, a stock will often open drastically up, as all the buy orders hit the market at the opening bell. During the morning, however, a sell-off will occur, bringing the prices back down to a more appropriate range. In such an instance, one could sell short at the open, looking to cover during the sell-off. These kinds of trades can be fairly reliable. However, it is necessary to find a situation that will lead to an avalanche of buying that momentarily drives prices far beyond appropriate levels.

Cycle enthusiasts are often attracted to swing trading. If you can identify reliable cycles, you can attempt to buy anticipated cycle bottoms and sell anticipated cycle tops. This can be accomplished by eye, or by using sophisticated software such as TradeCycles (by Scientific Consultant Services), a maximum entropy spectral analysis package that runs in Omega Research's TradeStation.

When levels of short interest are very high and a stock dips, it might be a good time to buy. This is because, at some point, the shorts will want to cover and take their profits, thereby providing a large amount of buying support at the low end.

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Arbitrage

Arbitrage is the act of profiting from disparities in prices between trading instruments that are related in some way. For example, consider the E-Mini and S&P 500 futures contracts. The underlying for both is the S&P 500 index. The S&P 500 is the traditional futures contract for this index. Currently, its value is $250 for every point of movement. As with any futures contract, although its price closely tracks the underlying, there is a premium that expands and contracts, depending on the buying or selling pressure on the contract. The S&P 500 trades in the pits of the Chicago Mercantile Exchange. The EMini, which also trades on the S&P 500 index, has a value of $50 per point. It is a smaller contract that trades electronically on GLOBEX. If you think about it, you will realize that both of these futures contracts should trade at roughly the same price. Except for the difference in scale, they both track the S&P 500 index and they both have the same theoretical premium. Sometimes, however, one of these futures will get out of line with the other. For example, during a strong move, the E-Mini may move up faster than the S&P 500, leaving a gap of several points between the two. One sure way to profit from this, assuming you act quickly enough and get good fills, is to simultaneously sell the more expensive of the two futures contracts and buy the cheaper. In this case, you would need to take scaling into account. Since the E-Mini is one-fifth the size of the S&P 500 contract, you would buy five E-Minis for each S&P 500 that you sold, or sell five E-Minis for each S&P 500 that you bought. Sooner or later, the inevitable happens: The discrepancy in prices between the two contracts disappears and prices are again in line with one another. When this happens, you close out your positions at a profit.

How does it work? Let's take a concrete illustration. The S&P 500 contract is trading at $1001. The E-Mini is trading at $1000. You sell one S&P 500 contract and you buy five E-Mini contracts. At some point, the prices converge. Perhaps by late afternoon both are trading at $1003. At this point, you sell the five E-Minis and

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buy back the S&P 500. On the E-Minis, you take a profit of three points ($1000 became $1003), at $50 per point. This works out to be a profit of $150 per contract, or $750 total. The S&P 500 (that you sold for $1001 and that is now $1003) has cost you two points at $250 per point, for a total loss of $500. Your net return from these transactions is a $250 profit ($750 profit minus $500 loss).

Arbitrage has many variations. The beauty of this approach is that you are guaranteed to winprices must eventually come back in line. However, most of the time arbitrage trades are not practical for the individual trader. The discrepancies are too small to make a profit (given the transaction costs to the public) or disappear too quickly to successfully execute the required trades. However, occasionally, you will see an arbitrage opportunity that you can profit from, if you are nimble.

The arbitrage game is often played between the underlying stocks that make up the S&P 500 cash index and the futures contracts on that index. Futures contracts trade at a theoretical fair value above the cash index. Sometimes, however, the actual price of the futures contract moves sufficiently away from its theoretical fair value to allow a reasonable profit to be made. This is an opportunity for arbitrage. Let us say that the S&P 500 futures contract is trading sufficiently above its theoretical fair value to permit profitable arbitrage to occur. An arbitrageur will sell the overpriced S&P 500 contracts while simultaneously purchasing shares, in proper proportions, that represent the underlying S&P 500 index. When the S&P 500 futures contract returns to fair value in relationship to the index, the arbitrageur will buy back the futures and sell off the stocks, making a profit. This kind of arbitrage keeps the S&P 500 stock index in line with the futures, that is, it keeps the futures trading at a premium close to theoretical fair value. The so-called "program trading," which became an issue after the 1987 crash, is precisely this kind of arbitrage. Massive orders to buy and sell large quantities of stock were posted through the DOT order-routing system, causing short-term volatility in the markets. The kind of vol-

atility seen in the crash, however, was almost certainly not due to the effects of arbitrage, although arbitrage may have increased the speed at which the drop took place.

Another variant of arbitrage, *risk arbitrage*, may provide more frequent opportunities for the electronic day trader. In ordinary arbitrage, there is no uncertainty. You know your eventual return precisely. In risk arbitrage, positions are not necessarily perfectly balanced and, therefore, some risk is present. However, there is the expectation that the return of prices to their normal relationships will bring a profit. An example is the S&P 500 day trader who front-runs a program trade for a quick profit.

Arbitrage may also be possible when options are either overpriced or underpriced relative to their theoretical fair value, as can be estimated using the *Black-Scholes* equations. When an option is overpriced, one can sell it and buy the underlying stock. When the option returns to the correct price, one reverses the actions (trades) for a profit. Here, however, things like time decay, Delta, the nonlinearity of options, and other factors must be taken into account. We are moving from pure arbitrage, which is essentially certain, to risk arbitrage, where the arbitrageur exposes himself or herself to uncertainty in an attempt to make a profit from a disparity in prices. An example of full-blown risk arbitrage is either selling an overpriced option or buying an underpriced option on a stock that is flat, moving neither up nor down, and expected to remain that way. The arbitrageur can reverse this position, when the pricing returns to normalcy, and take a small profit. Of course, should the stock move significantly while the arbitrageur waits for the price disparity to normalize, a loss or gain can occur, resulting in exposure to risk. However, the arbitrageur is exposed to less risk than the individual who is simply trading predictive movements in the underlying instrument or option. The arbitrageur has a slight edge because prices that are excessively high or low in some precisely definable manner will inevitably return to more normal levels. This kind of arbitrage can be done by virtually any savvy trader who keeps an eye open

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for disparities to trade. Such arbitrage alone may not be consistently profitable for most traders, but, combined with other more speculative strategies, it enhances the likelihood of success.

This leads to a strategy (mentioned earlier) that can be used by the really fast trader on the S&P 500, that is, *front-running* programmed trades. This was a more workable approach in the past when interest rates and, hence, S&P 500 futures premiums were high, and market swings produced by programmed trading were larger. Today's lower interest rates mean smaller premiums and, consequently, smaller price disparities. Because of this, there is less program trading and the swings produced are less frequently of a sufficient magnitude for practical trading.

One thing to keep an eye out for are *speculative frenzies*. These can cause prices to get way out of line and thus lead to opportunities for the arbitrageur (especially the risk arbitrageur). Currently, it is not difficult to find a stock around which a speculative frenzy has developed. Takeover rumors and other such events can yield rampant speculation, pushing prices far out of line. It is not unusual to see calls selling for astronomical prices on stocks that have come into play. The risk arbitrageur can sell a call and wait for the frenzy to pass. Of course, there is risk of prices continuing to rise, but the mathematical expectation favors the arbitrageur.

Spreads and Straddles

Although not very useful for day traders, multioption positions such as spreads and straddles can be useful for longer-term options trading. A *spread* involves the purchase of an option at one strike price and expiration date, and the sale of another option on the same underlying stock or future at a different strike price and/or expiration date. In a *debit spread*, the trader buys a more in-the-money option and sells a further out-of-the-money option against it. This can help reduce the cost basis of a trade, but it does so at the expense of greater transaction costs and a restriction in profit potential. In a *credit spread*, a more in-the-money option is sold, and

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a further out-of-the-money option is bought to hedge an otherwise naked position. Such a position can make time decay work in the trader's favor while avoiding the unlimited risk of selling a naked option. A *straddle* involves the purchase of a put and a call, often with the same strike price and expiration date, on the same underlying stock or future. A straddle allows the trader to profit from movement of the underlying in either direction. However, to overcome the multiple transaction costs and double time decay, the move must be sizable and rapid.

In our view, these strategies are not appropriate for the short-term day trader. They require multiple transactions and have the effect of reducing the Delta, that is, the responsiveness of the position to a change in the price of the underlying. When day trading, it is essential to minimize transaction costs. It is also essential to get the maximum "bang for the buck," that is, to trade instruments that are highly responsive. Remember, the day trader tries to generate frequent profits from small moves. He or she can afford neither to engage in a multiplicity of transactions to capture these small profits nor to reduce the average profit with techniques that attenuate a position's Delta or responsiveness to price change.

We suggest that day traders avoid spreads and straddles. To establish positions, stick with simple options strategies like buying a call or put or, in some cases, selling a naked put.

Playing the News

There are many wayssome unexpectedto grab profits from the markets on the basis of news reports. You have probably heard the expression "Buy the rumor. Sell the news." Stocks will often begin to rise just before a rumor develops. The stock continues rising until, one day, a news story that confirms or negates the rumor hits the press. Then the stock mysteriously plummets, even if the news story is favorable. What happened? Early on, "insiders" began buying, knowing the rumor would fuel additional buying by the public, which would, in turn, drive up the price. By the time the news story

hit, the savvy buyers, already long, begin to sell. Why sell now? The news story creates a flood of naive buyers. It is easy to sell at a good price when there are many buyers on the opposite side of the trade. This last flurry of buying by the naive public in response to the news occurs as those "in the know" are busy taking their profits to the bank. As smart, successful traders sell to the last wave of public buyers, the prices begin to drop. There is no one left to buy. Finally, as the last buyers panic and begin to sell, the decline accelerates. In other words, once news is released and widely disseminated, the inefficiency in the market disappears. Therefore, the time to play the news is *before* it happensthat is, when there is just a glimmer of a newly developing rumor.

Sometimes, however, a fast day trader can enter a trade in response to certain kinds of news stories, but this has to be done very quickly and not necessarily in an obvious manner. For example, let us say that news appears that Microsoft has lost its case with the Justice Department. By the time that story hits, it is almost certainly too late to sell Microsoft short or to buy puts on that company's stock. In fact, Microsoft has probably just bottomed and might make a good, short-term buy. However, an astute trader might reason that, since Microsoft has taken a severe blow, computer users will start looking for another operating system. Where will that action be? How about Red Hat LINUX, a flavor of UNIX that is achieving wide popularity as an operating system for Intel platforms? Obviously, the more trouble Microsoft has, the more people are likely to move to LINUX. Or think of the report that there are over 63,000 bugs in Windows 2000. Surely such news will make many corporate users feel they should investigate other operating systems. So, instead of selling Microsoft short, the savvy trader might buy calls on Red Hat LINUX, or on the stocks of other LINUX vendors and consulting firms. The hope is that the response to the Microsoft news will not immediately be incorporated into the LINUX prices, that there will be a brief period before other traders get the same idea and purchase stocks in LINUX-related companies. In other

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words, there may be some time to act before prices move in response to the newsan inefficiency to pounce on.

Another time to consider news is when entering a momentum trade. If movement has begun, the *absence* of news may be a good sign. Insiders have begun to buy or sell. But the last of the public buyers or sellers have not yet come into the market. This leaves room for continued buying or selling and, therefore, for continued momentum. If you are about to play a stock or option on momentum, and you discover that there has just been some news consistent with the direction of movement, beware: The move may be at its end and a reversal imminent.

Other kinds of news include reports that occur on known days, such as crop reports and government reports about interest or employment rates. Before the reports come out, see if the markets are exhibiting any activity that might indicate inside knowledge. You can attempt to make inferences regarding the knowledge underlying the market's behavior and trade on the basis of them. Of course, try to exit such trades before the report is finally released. When the report is disseminated, you might consider fading (trading against) any response that looks like an overreaction.

There are additional ways to use the news. Consider an extremely negative report about the economy in general, a specific stock, or a specific commodities market. You examine the stock or commodity and find that it has not reacted as expected given the story. More concretely, news comes out that the CEO of XYZ Corporation has just been arrested on criminal charges. Their stock, however, rises in the hours following the report. This suggests that the underlying stock is actually very strong and might be a good buy. Remember, the news has already been incorporated into the price and discounted. The fact that the stock is rising despite the news suggests that sellers have already done their selling. It further suggests that insiders know that the news is not significant for longer-term prospects and are probably buying from the panicked public, producing demand and causing prices to rise. Or consider

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the opposite situation: Great news comes out about a company but the stock starts on a downward slide. Watch out. Do not buy the stock or the calls. Instead, buy puts. The news has already been discounted and there are no buyers left, leaving room for the sellers to emerge. And the stock does not have the strength to resist the effect.

To gain a feel for how news affects the markets, watch CNN, CNBC, Bloomberg, or some other business news channel while studying markets of interest. Observe what happens when certain kinds of news hit.

Since the impact of news applies to all time frames, you can prepare end-of-day charts for your favorite stocks. Then determine on which dates various news stories appeared. Mark these dates on the charts so you can see how the stock responded to the news. Many brokerages provide both stock charts (even intraday charts) and the ability to access recent news reports (along with the time and date of their release) about the listed companies. You can also visit the website of the stock you are interested in and read various reports and press releases. Build a database of charts with news stories marked on them.

Technical Analysis

Classical technical analysis provides many tools that are useful to the day trader. For example, technicians can identify trendlines and look for prices to "break." The same is true for support and resistance levels. Certain configurations, such as the head-and-shoulders formation, double tops, double bottoms, and triangles, may also signify forthcoming events and lead to profitable trades for the accomplished technician.

Included in the domain of technical analysis is the use of moving averages, oscillators, and other so-called indicators. Here we enter the world of the stochastic and the MACD (moving average convergence-divergence) oscillator, of the commodity channel index (CCI), the random walk index (RWI), and much more.

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Indicators attempt to highlight or make more visible certain aspects of market behavior, such as momentum, strength of trend, and overextended (i.e., "overbought" or "oversold") conditions from which the market is likely to snap back to a more normal state. *Moving averages* are one popular indicator often depicted on stock and futures charts. They make evident the overall trend or direction in the prices of a given stock, option, or future. Sometimes moving average lines behave as levels of support or resistance, with prices bouncing off them. If you have used a product such as Omega Research's SuperCharts, Equis International's MetaStock, or Worden Brothers' TC2000 when trading stocks end of day, you have probably encountered moving averages, as well as a number of the other indicators mentioned.

Much of the time technical analysis will be used not on its own but in support of one of the trading strategies mentioned earlier. For example, momentum traders should be highly attentive to the slopes, and changes in the slopes, of moving averages. They also should attend to momentum-revealing oscillators, trendlines, and levels of support and resistance when planning trades. Support and resistance points may be used to determine the placements of stops and profit targets, and to decide when momentum may stall.

In the next chapter, we will demonstrate technical analysis in the context of examples of how to actually trade using the strategies discussed above.

Rocket Science

Like technical analysis, "rocket science" tools are useful when trading. Up until now, we have been discussing *discretionary trading*, when an individual is the source of the intelligence and makes the trading decisions, unaided except perhaps by charts and relatively simple indicators. However, when rocket science comes into the picture, it opens up a world of trading based on computer algorithms. This is the world of *mechanical trading systems*. It is also the world of *artificial intelligence* (AI), including neural networks

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and simulated evolutionary processes. Some technical analysis methods, such as those involving "pattern recognition," can be performed using AI. The tools of rocket science may be used as part of an advanced mechanical trading strategy or in support of discretionary trading.

Many of the trading strategies already mentioned (e.g., momentum and swing trading, arbitrage, and trading the news) can be implemented as mechanical trading systems. In some cases, artificial intelligence is also required. It sounds complicated, but the effort is often worthwhile because of the great benefits that result. One such benefit is that it is possible, with mechanical trading systems, to perform backtesting, that is, to objectively evaluate a method's trading behavior on historical data.

AI technology can also be used as an aid to human intelligence for the discretionary trader who is directly involved in making trading decisions. For example, the output of a neural network that predicts the probable direction of the future or option can be depicted on a chart and assist the trader in making better decisions. Or the neural network may indicate whether a particular spurt of momentum has already carried the market too far and is, therefore, unlikely to persist. Neural networks and other AI-based techniques can provide support for the discretionary trader and serve as components in mechanical trading systems.

A discussion of mechanical trading systems, and of the use of AI and such other advanced techniques as cycle forecasts based on maximum entropy, can be found in Chapter 9: "Advanced Trading Techniques."

What Have We Learned?

The goal of day trading is to recognize and quickly respond to small market inefficiencies.

To get the best possible price, try to use limit orders, especially for entry.

Do not let limit orders sit, visible to other traders, for more than

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a few minutes. It is better to cancel and reenter such orders if market conditions still look good.

Understand the markets you are trading by also studying them from a longer-term perspective.

The *ask-bid spread* is the difference between the lowest price someone is willing to accept for the instrument ("ask") and the highest price someone is willing to pay for it ("bid").

Ask-bid spreads tend to be small in active, highly liquid markets.

Attempt to acquire contracts at prices better than the current ask and to liquidate them at prices better than the current bid.

Giving up the spread means buying and selling at the worst prices by placing market orders. This can decrease profits and increase risks. Instead, try to work the markets using limit orders.

Shop around different trading venues to get the kinds of fills you want.

In *momentum trading*, you buy (or sell) into a strong, unidirectional market movement that is expected to continue long enough to make a profit.

Breakout models exemplify momentum. They buy when prices move above, or sell when prices drop below, some threshold.

In momentum trading, it is important to exit before the trend reverses.

Because it is often difficult to get limit orders filled quickly, momentum traders sometimes need to use market orders for quick entry into the trend. Limit orders are usually more effective when exiting momentum trades.

Momentum traders usually are buying high or selling low. Therefore, it is important to try to recognize patterns in the market's behavior that suggest there will be movement of a long enough duration to profit.

In *swing trading*, you try to enter trades against the direction of current market movement because you believe a reversal is about to occur or is in progress.

Technical analysis (e.g., oscillators, trendlines, support-resistance points, and cycle analysis) can help you spot reversals.

Limit orders can effectively be used in swing trading, both for entries and for exits.

In *arbitrage*, you try to profit from price discrepancies between trading instruments that are related. However, it is not always practical for the individual trader, because such discrepancies are often too small to trade profitably.

Arbitrage is often played between the underlying stocks that comprise the S&P 500 cash index and the futures contracts on that index.

Frequently, risk arbitrage is possible when options are either overpriced or underpriced relative to their theoretical fair values.

A *spread* involves buying an option at one strike price and expiration date, and selling another option on the same underlying stock or future at a different strike price and/or expiration date.

In a *debit spread*, the trader buys a more in-the-money option and sells a further out-of-the-money option against it.

In a *credit spread*, a more in-the-money option is sold and a further out-of-the-money option is bought.

A *straddle* involves the purchase of a put and a call on the same underlying stock or future. These options often have the same strike price and expiration date. A straddle allows the trader to profit from the movement of the underlying in either direction.

News stories can help provide information about what to anticipate in the behavior of an instrument, often in the sense of "buy the rumor, sell the news."

Sometimes news about one company can help you anticipate market behavior of another related company or industry.

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Technical analysis can help you forecast and respond to market behavior.

Indicators are useful in that they make certain aspects (e.g., strength of a trend) of market behavior more evident.

Moving averages indicate the overall trend or direction of a given stock, option, or future. They sometimes act as levels of support or resistance against which prices bounce and/or break through.

In *discretionary trading*, the individual is making the decisions about the trade.

In *mechanical trading*, computerized trading systems generate signals as to when, and at what price, to enter and exit trades. Even if used with partial discretion, mechanical systems can be a great aid to traders.

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Chapter 7
Day Trading in Action

In the previous chapter, we discussed a number of ways traders grab profits from the markets. Some of these techniques are rather impractical for the commission-paying trader. For example, in recent years, the ask-bid spreads on most stocks and futures have narrowed and become difficult (but not impossible) to trade. Arbitrage plays that involve disparities sufficient to overcome trading costs do arise, but most of the time the price discrepancies are too small for the individual trader to make a profit. Such strategies are extensively covered elsewhere (see References and Suggested Reading) and so will not be discussed further. Other schemes, however, like momentum, swing, and news trading, can be used by the individual and lead to profitable trading. These are the methods we prefer for our own trading.

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Momentum Trading

Almost all trading strategies can be classified as either trend-following or countertrend. Momentum trading is the most direct form of trend following. On the buy (long) side, the trader looks for a stock option or a future that is "strong"one that is on the move, accelerating, and perhaps breaking through to new highs. On the sell (short) side, the trader looks for an instrument that is evidencing "weakness"on the decline to new lows. It is easy to find a stock or a future with developing momentum. Why talk about stocks when this book is about futures and options? Because we might want to trade options on stocks.

The first step in finding and executing a momentum trade is to examine a large collection of charts in search of stocks or futures that look promising. You may already have some criteria that steer you to likely candidates. This may require screening for certain fundamental or technical characteristics, like accelerated earnings growth, a rising moving average, or the presence of new highs or lows. You look through the charts for a *setup*, that is, a chart on which the momentum has started to accelerate. Exclude stocks or futures that may have already exhausted their potential for further movement or that exhibit configurations (e.g., head and shoulders) that warn of imminent reversals.

As part of the process of picking stocks or futures to follow intraday, examine charts and other information on an end-of-day or longer-term time frame. Look for instruments that have large daily ranges so there is sufficient movement from which to make profits. Try to find stocks or futures evidencing strong trends that are likely to carry through into the next trading day. Some expert traders make use of advanced technologies (such as neural networks) to help anticipate the direction of movement throughout the day. In momentum trading, the anticipated movement should be either strongly up or strongly down during the next day's trading. By picking stocks or futures this way, traders will have several to follow intra-

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day that have been preselected for the optimal characteristics for this kind of trading.

If you intend to trade options, be they on futures or stocks, there are other end-of-day considerations in preparing for your trades. These include whether options are available that have sufficient trading volume to provide the necessary liquidity, and whether there are strike prices that will yield the desired leverage and cushioning against adverse movement.

If the behavior of the future or stock during the day is consistent with continued momentum, attempt to buy the future or the stock option early in the day during a pause. By buying during a pause, you can obtain a better fill and reduce slippage. Because of the pause in movement, there is enough time to "work the market" using limit orders to get the best price possible. Once a position is established, hold it until after the next spurt of movement. Then close out the position before the motion stalls. In other words, sell into the remaining demand. An alternative strategy is to post a limit order in the form of a profit target immediately after entry into the market is confirmed. The limit order will automatically close your position when a thrust in the desired direction occurs. At that time, you can move to the next trade. It would also be prudent to protect yourself against an excessive loss by use of a stop order, one that is either kept in mind or else placed in the market. Please note: Although the discussion has been formulated in terms of buying and then selling, the logic above also applies to selling short and then buying to cover.

Some markets are very amenable to momentum trading. It is fairly easy, for instance, to find stocks that are good vehicles for momentum trades. In futures, the currencies and energy markets often evidence persistent trends. The S&P 500 futures market, on the other hand, frequently exhibits a great deal of intraday countertrend activity, moving first one way then another. Occasionally there are strong momentum-type moves, but these can be tricky to detect before the fact and, therefore, to profit from sufficiently to

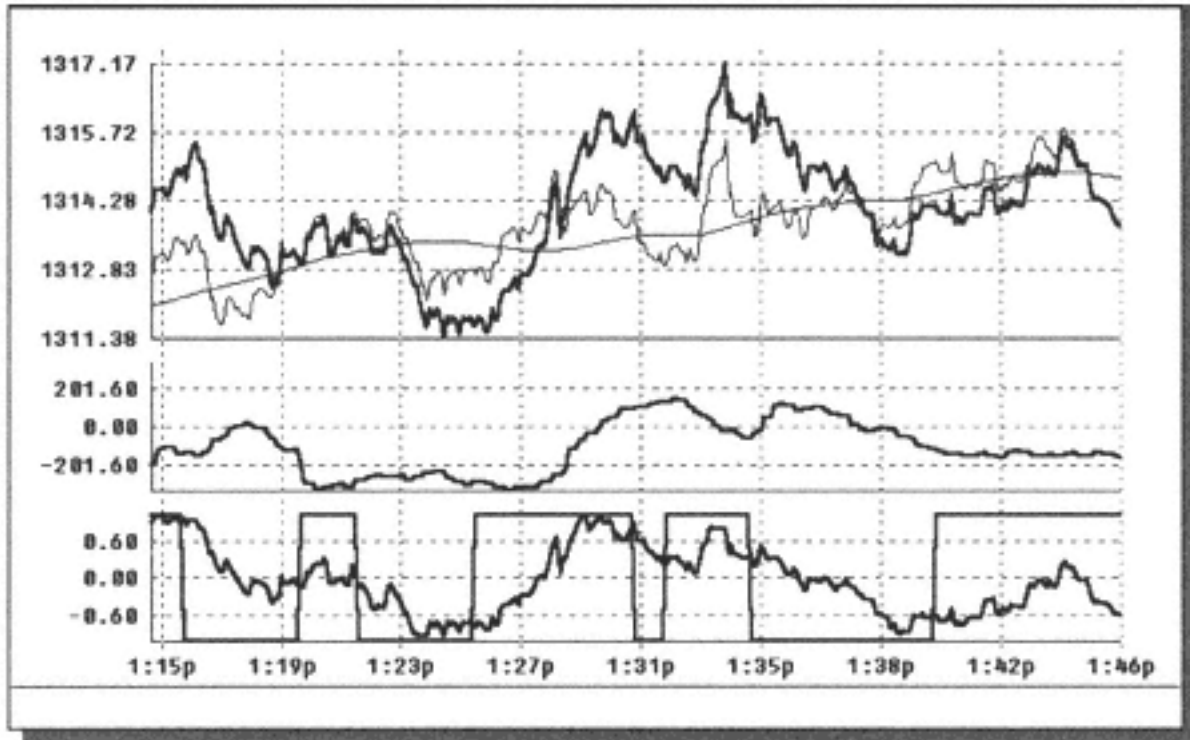< previous page   page_137   next page >

Figure 7-1
Tick chart of the S&P 500 showing countertrend activity

overcome the losses that can be incurred during countertrend activity. Figure 7-1 is a tick chart for the S&P 500 that illustrates the difficulties of momentum trading this market.

The chart in Figure 7-1 might give one the idea that it is possible to enter just after a reversal, as short-term momentum builds in the opposite direction. However, the slippage is often too great to make a profit doing this, even with fast E-DAT trading. Although the S&P 500 is, in our experience, not a great market for momentum trading, there are other futures markets that do exhibit tradable trends.

In conclusion, the first step when conducting a momentum trade is to examine end-of-day charts. It is critical to keep in mind that there must be enough daily movement to turn an intraday profit. In other words, the daily range (a measure of volatility) should be sufficiently large. The amount of directional movement per unit of time (the momentum) should also be great enough to yield a profit on the day trader's time frame. Therefore, look for stocks or futures that are moving up or down at a rapid pace.

If you are trading options, the next step in carrying out a momentum trade is to locate an appropriate option that will allow you to take advantage of the anticipated, continued movement in the underlying stock or future. Remember, although you have looked through stock charts to find the setup, you are going to play the derivatives (i.e., the options). When selecting an option, two things must be considered: the time left to expiration and the strike price. Day traders should not be too concerned with time decay or option life span, since trades will last, at most, several hours. Therefore, go for the option that has the minimum amount of time left, that is, the option with the nearest expiration date. Such an option will provide the greatest potential return for the least cost. Selecting an appropriate strike price involves a consideration of such things as Delta, volatility, and other factors discussed below.

An option's *Delta* is an estimate of how much the price of the option will change in response to a given change in the price of the underlying security. It is influenced by the relationship between the option's strike price and the price of the underlying (in the money, at the money, out of the money), as well as by volatility and time left to expiration.

The Delta has to be large enough to make a profit (after slippage and commissions) from the anticipated intraday move. If you expect to profit from a 2-point move in a stock, plan to trade five options (a "five-lot"), and anticipate (worst case) commissions of about $30 each way, plus slippage (which, for an inactive option, might be about 1/4 point), then look for a Delta of at least .4, preferably greater. With a Delta of .4 (often seen in at-the-money or slightly out-of-the-money options with several weeks to expiration), a $2 move in the stock would produce a $0.80 move in the option. This would amount to a $400 profit, not accounting for slippage or commissions. After $250 of slippage and $60 of commissions are subtracted, only $90 in profit would remain. This is too close to the edge for a trader who plans to stay in business. An option with a Delta of .6 would yield a $600 profit for the same-size move or $290 after transaction costs are subtracted. A deeply in-the-money

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option would have a Delta near 1, as would a slightly in-the-money option just about to expire, and either would provide the maximum amount of return for a given move in the underlying stock. If the stock moved the expected 2 points, the trader would make almost $1000 in gross profit, or about $690 net. However, a deeply in-the-money option is likely to be less liquid and provides less cushioning against adverse movement. Such an option costs more and, consequently, a larger loss will result should the stock move against the trader. In our experience, at-the-money options as close to expiration as you can get them usually offer the best risk-to-reward ratio.

When selecting an option, look for reasonable trading volume and an acceptable price relative to theoretical fair value. An option that has reasonable trading volume will have more liquidity and a tighter ask-bid spread. Highly active options often have spreads of 1/8 or less. This means less slippage and better fills. Avoid overpriced options, if possible, but do not obsess with finding underpriced ones. An underpriced, but highly liquid, option may provide an edge in that it will have a tendency to return to fair value over time, but it may be underpriced for a reason. Perhaps insiders know the stock is about to plummet and are selling their holdings, driving down the price.

The final step is to initiate the trade. In any trade, money is at risk. Therefore, prior to entering the market, decide how much adverse movement can be tolerated before it is necessary to close the trade with a loss. Also, determine when to exit with a profit, but realize that this determination may need to be deferred. It may be necessary to wait until momentum begins to stall. If possible, exit into movement, which provides the best chance of a quick fill at an excellent price.

The discussion above defines the steps involved in momentum trading. When stock options are involved, such trading is not as fast as the style of E-DAT trading described in books like *Secrets of the SOES Bandits* (Houtkin and Waldman, 1998) and *The Electronic Day Trader* (Friedfertig and West, 1998). The process is slower than day trading active stocks because of the generally lower liquidity

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of options and, consequently, the need for larger amounts of movement to make a profit. The slower pace is not necessarily a disadvantage, since the trader needs time to look up both the stocks and the options, to find the appropriate options to play, and to place orders, as well as to perform a number of other tasks. As mentioned above, with options, it is usually necessary to seek somewhat larger moves on a slightly longer-term time frame, with trades lasting anywhere from 10 minutes to an hour or more, depending on the behavior of the markets. Because options are not as liquid as the underlying stocks, it is usually impossible to profit from teenies or eighths.

There are, however, plenty of opportunities for capturing large profits during the day as many stocks move $10, $15, or even $20. In today's market, such stocks can often be found among the "dotcoms" (internet-related stocks) as well as in the pharmaceutical and semiconductor industries. The particular sectors in which such activity and momentum occur change over time. Recently, oil and gold stocks have become active. By studying end-of-day charts, you can discover the currently active sectors, and the hot stocks within them.

In the world of futures, trading can be done on the extremely short time frames familiar to E-DAT stock traders. Trades can be executed on GLOBEX in seconds, and there is enough movement (not to mention high liquidity and low commissions) in futures like the electronically traded E-Mini to make profits in trades lasting only a few minutes.

Examples of Momentum Trading Stock Options

Now that we've discussed the general principles of momentum trading, we will illustrate the process with some examples. The steps are similar to those covered above. We turn on our computer, down-load current end-of-day data from Worden Brothers, and fire up our charting and analysis software. We are going to search through numerous end-of-day charts looking for several stocks in which there may be an opportunity for a momentum trade the following day.

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Our example involves day trading options on the selected stocks. We are looking for a pattern of accelerating end-of-day momentum. We want a stock that is hitting new highs or new lows. We are also looking for a sufficiently wide daily price range, especially in the most recent 2 or 3 weeks that are visible on the end-of-day chart. In other words, we want a stock that is likely to exhibit enough intraday activity to yield a good profit. In a nutshell, the ideal stock should have high volatility and appear to be on the move. Finally, we examine the charts for blow-off tops, head-and-shoulders configurations, trendline or moving average breaks, and any other pattern that might signify a cessation or reversal of momentum. We want to avoid stocks that display any of these patterns. By doing all of this, we give ourselves the best chance for a good trade.

While scanning optionable NASDAQ stock charts after the close on Friday, March 10, we came across OLGC (Orthologic Corporation). Its chart (Figure 7-2) exhibits a reasonably good pattern of upward momentum occurring within the context of a slight pullback. However, we decided that OLGC would not be a good stock for an intraday options trade because its daily price range is too small. The move that might be expected, even if favorable, would perhaps yield $50 trading the stock. Given a Delta between .3 and .6, this represents a $15 to $30 range in the option and, therefore, a $10 to $20 trade given realistic entry and exit points that are not the exact tops and bottoms. Even trading five options (a "five-lot") would result in only a $50 to $100 profitnot enough to safely cover transaction costs. Although not a good choice for an options trade, the stock did move in the expected direction, from $6.44 at the open to $7.13 at the close, on Monday, March 13.

Later in our scan, we found two stocks that did appear to be good candidates for a momentum day trade the next day. These were RATL (Rational Software, see Figure 7-3) and QGENF (Qiagen N.V., see Figure 7-4). For both stocks, the charts portray strong momentum with prices pushing through to new highs. In addition, the rightmost bar of QGENF shows a further spurt of upward mo-
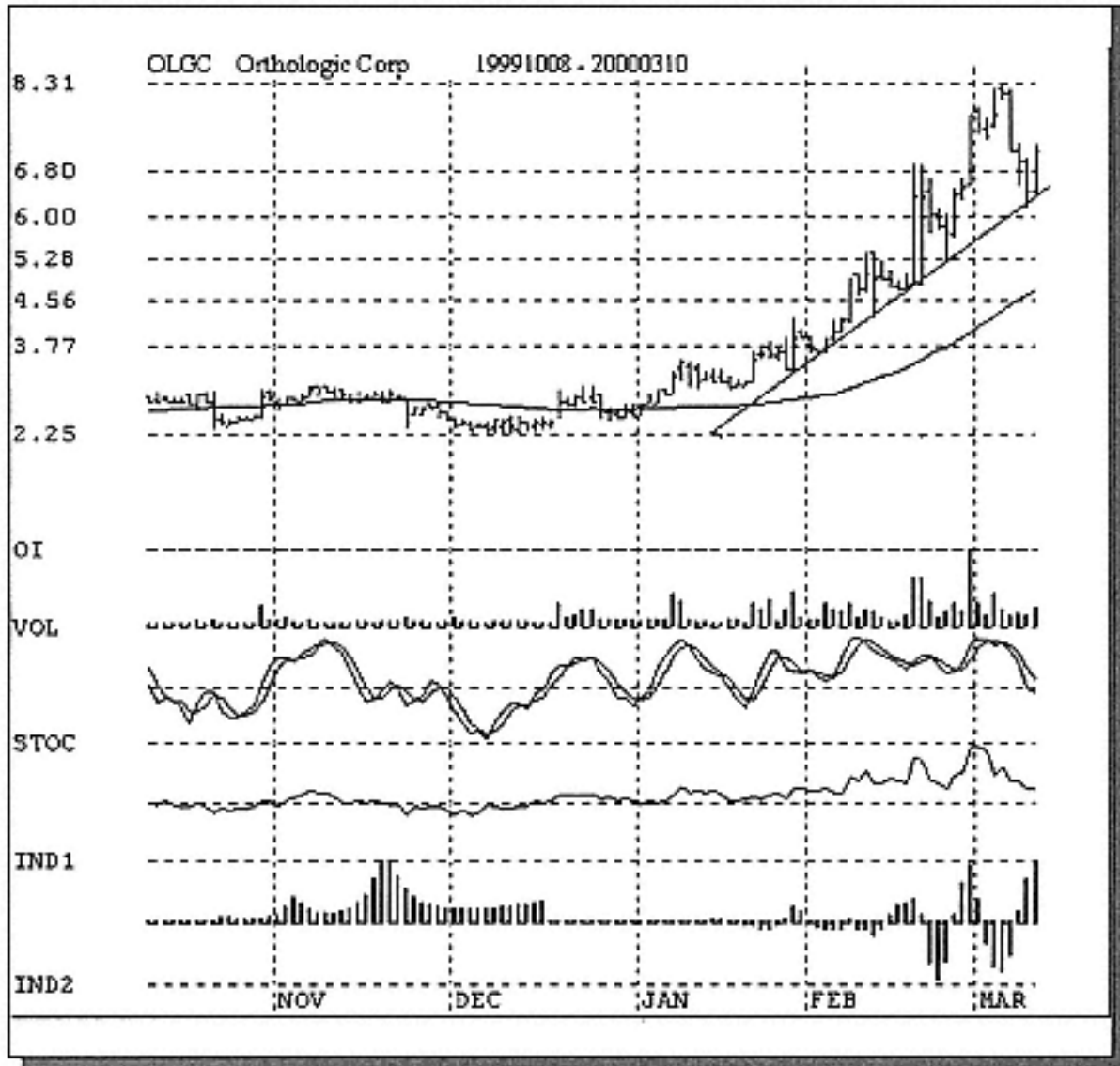
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Figue 7-2.
Chart showing good momentum setup but inadequate daily range.

tion. In our experience, such spurts often persist for two or three bars (days), suggesting that this stock is an excellent candidate for day trading the next day. Both stocks exhibit sizable daily price ranges, sufficient to produce good profits from short-term trades.

As is easily seen in the charts, the trend for both stocks is consistently up and accelerating. The moving average line highlights the acceleration of movement, as does the break above a resistance trendline that appears on the chart for Rational Software. If we play these stocks, we will be definitely following an old trading maxim: "Trade with the trend." The stochastic oscillator (STOC) is also near

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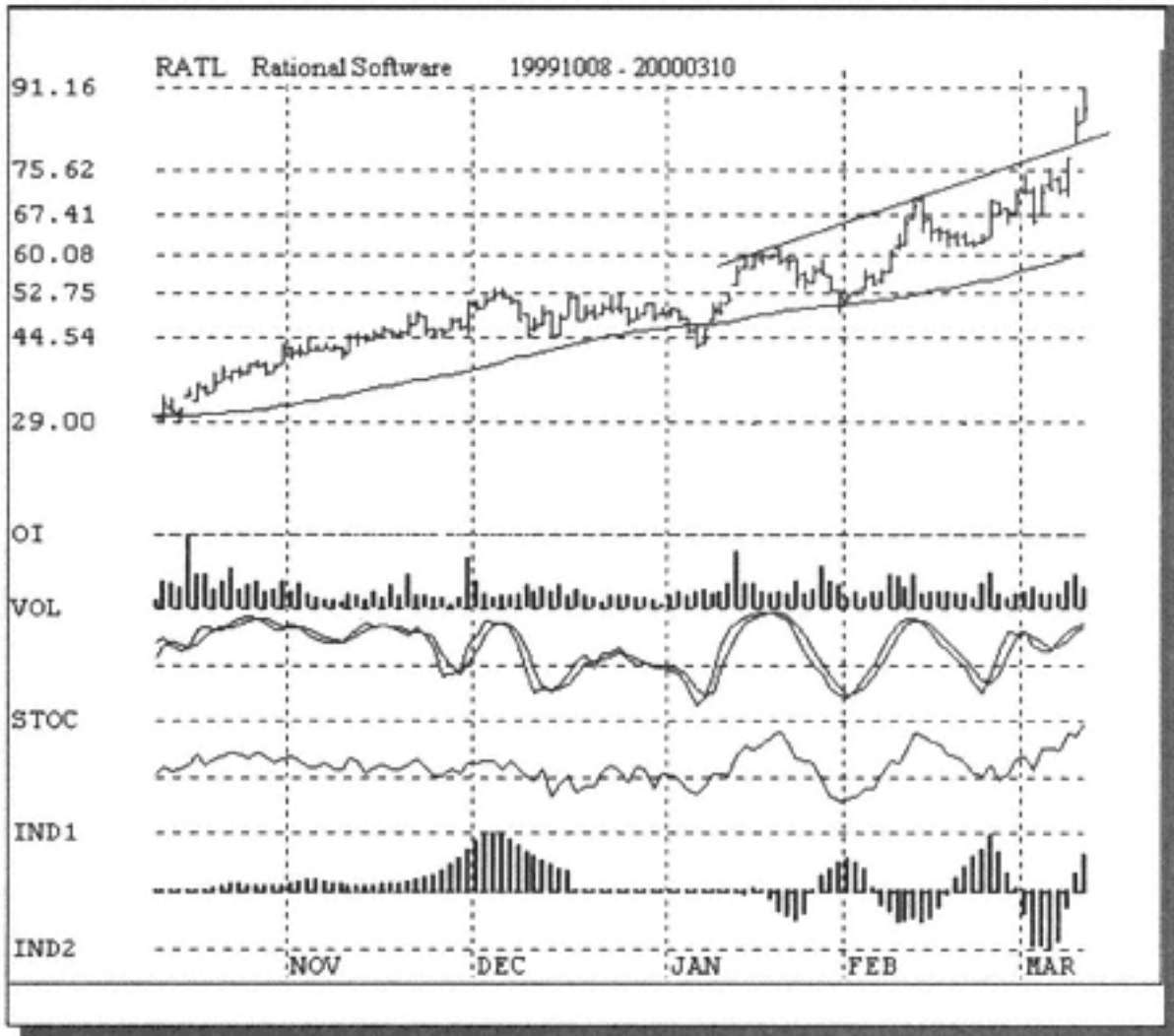
Figure 7-3.
Chart of rational software with excellent momentum setup for Mondays's trading.

the top, as is the 14-day momentum or rate of change (IND1). For QGENF, the 14-day rate of change is positive, a good sign. In the case of RATL, the rate of change is also positive; moreover, it is on the way up, indicating accelerating momentum. Finally, for both stocks, there is rising volume associated with increasing prices, suggesting that the movement will continue. The volume probably represents buyers coming into the market.

Now that we have some stocks that are in the running for tomorrow's trading, we set up our real-time charting and analysis software (custom developed to run with data from DTN, or Data Transmission Network) to analyze and display data for the selected

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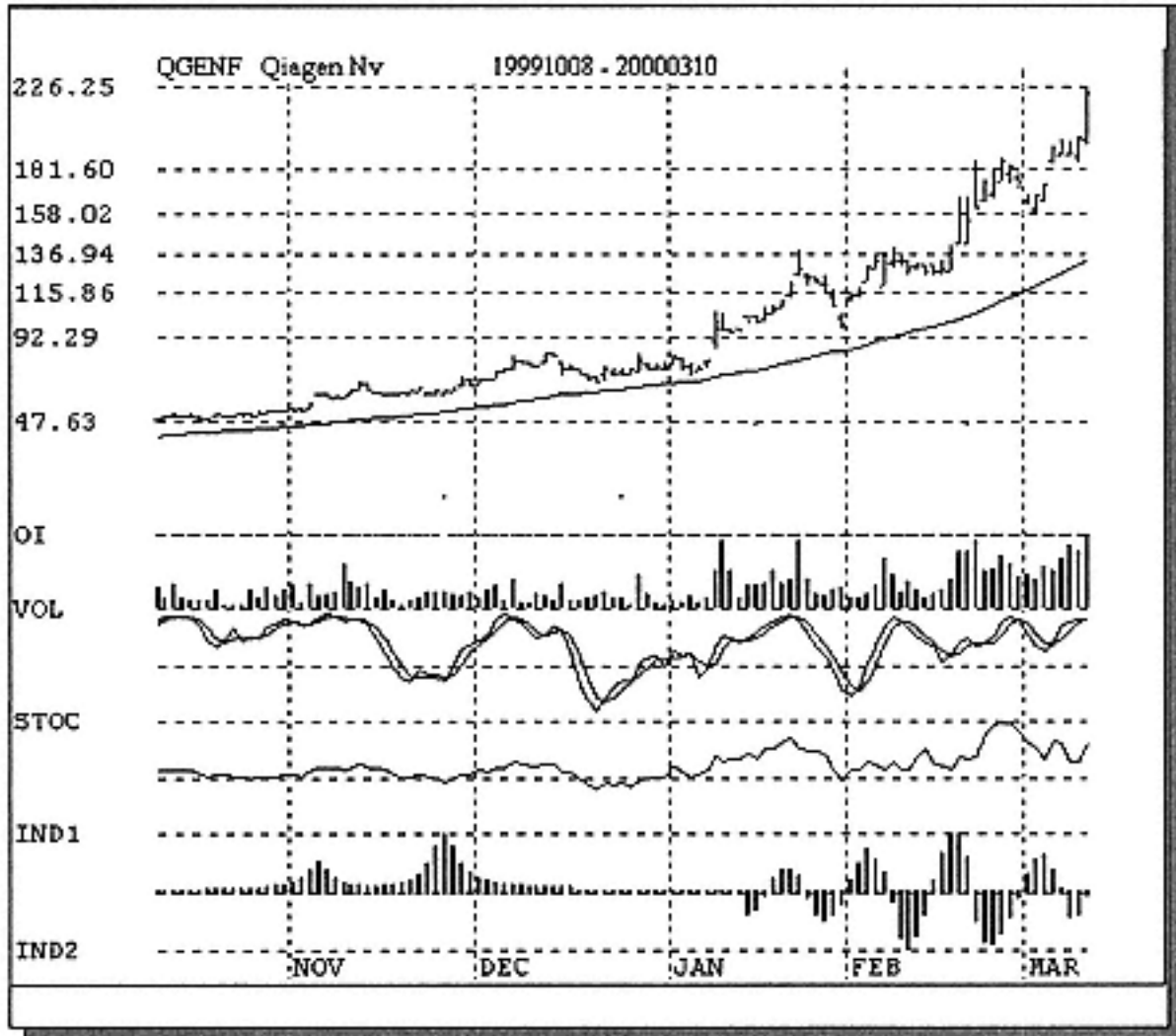
Figure 7-4.
Chart of Qiagen N.V. with good momentum setup.

candidates. We will also be monitoring relevant options data and calling up charts and news on the internet. When the market opens tomorrow, we will be ready to follow the action in QGENF and RATL.

Figure 7-5 shows a 5-minute price chart for QGENF on Monday, March 13, 2000. Within minutes of the open, the stock was trading at $191down sharply from Friday's close at $222. This, surprisingly, can be a good sign for reasons discussed later on in the context of news trading. It also illustrates why it can be risky to place market orders to buy or sell at the open. In this instance, many traders placed sell orders overnight, causing the market makers to open the stock low. Such low prices often bring out bargain

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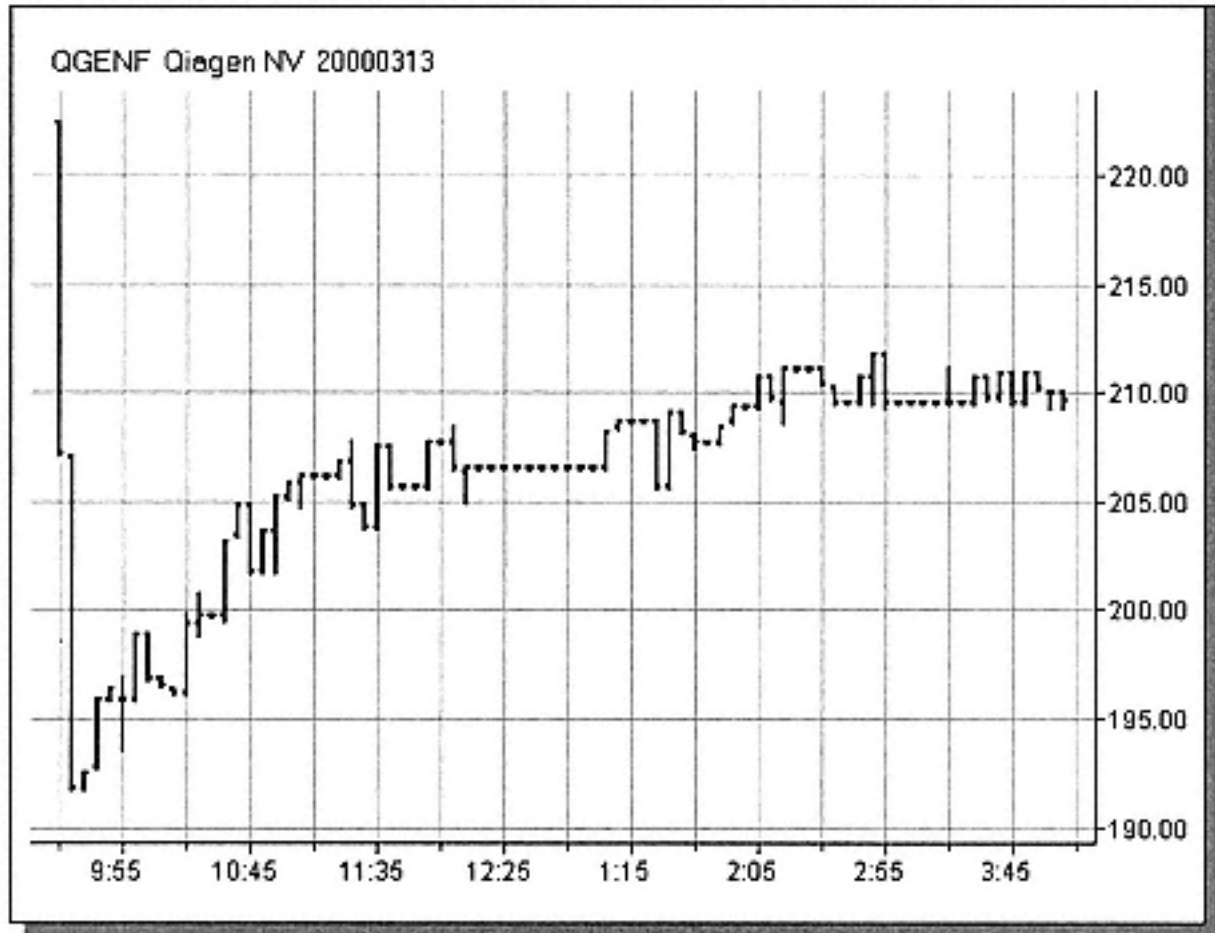
Figure 7-5.
Itraday Chart for Qiagen N.V.

hunters. The buying drives prices back up to more reasonable levels. Seeing the low opening price, we waited until the selloff appeared to be over and buyers entered the market, causing the stock to resume its upward movement.

When the trend resumed, we checked the options that were available on QGENF. It turned out that there were no March calls (nearest to expiration, only 4 days left) with a strike price over $185. This meant that, if we wanted to trade an option, it would have to be one that was somewhat more deeply in-the-money than we ordinarily prefer. Such an option would provide less protection against adverse movement in the stock. However, the Delta would be highthat is, movement in the option would be nearly as large as movement in the stock. At about 10:00 a.m. we checked the options data again. For the stock at its lowest price so far, the Black-

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Scholes model valued the March 185 call as in the $9 to $10 range. A little after 10:00 a.m., when we again did our calculations and reexamined our charts, we found the option trading around $13.50. This was a good time to put in an order to buy the option at the market, since it would probably be filled at $14 (the extra $0.50 due to slippage, the ask-bid spread, time taken in placing the trade, etc.). By 11:00 a.m., the stock was trading at around $206, and the option was around $21.75. This was a good time to sell and take a quick profit. The fill would probably have been at $21.25, and a gross profit of $725 could have been pocketed. Not bad for 1 hour in the market and for an absolute maximum risk of about $1400. A more realistic risk estimate would have been lower: Even if the stock had dropped $10, the option would still have been worth about $4, so the loss would only have been about $1000, not $1400. If we had had the confidence to ride the trend and hold the trade until 2:00 p.m., rather than exit with a quick profit, the option could have been sold for around $25.50. This would have resulted in a $1150 profit for a trade that lasted approximately 4 hours and that involved the same absolute maximum risk of $1400. Such risk-to-reward ratios are one of the allures of day trading options.

The sharp pullback at the open that we observed in QGENF is a pattern we have seen repeatedly in charts and is worthy of attention. Our interest in the stock was piqued when we saw it. However, before entering the example trade, we took time to ensure that the direction of movement was again in our favor, rather than attempting to enter at the exact bottom after the initial decline. This is why we waited until after 10:00 a.m. to buy the call.

You don't always need to jump into active movement, as we thought necessary with QGENF. Instead of sharp pullbacks, many stocks exhibit a series of plateaus in the course of intraday movement. These plateaus make excellent entry points. The fills that can be obtained are often better during the plateaus, especially if you are working the market with limit orders, something not feasible when trying to enter into movement.

How did our other candidate behave? Figure 7-6 depicts a 5-

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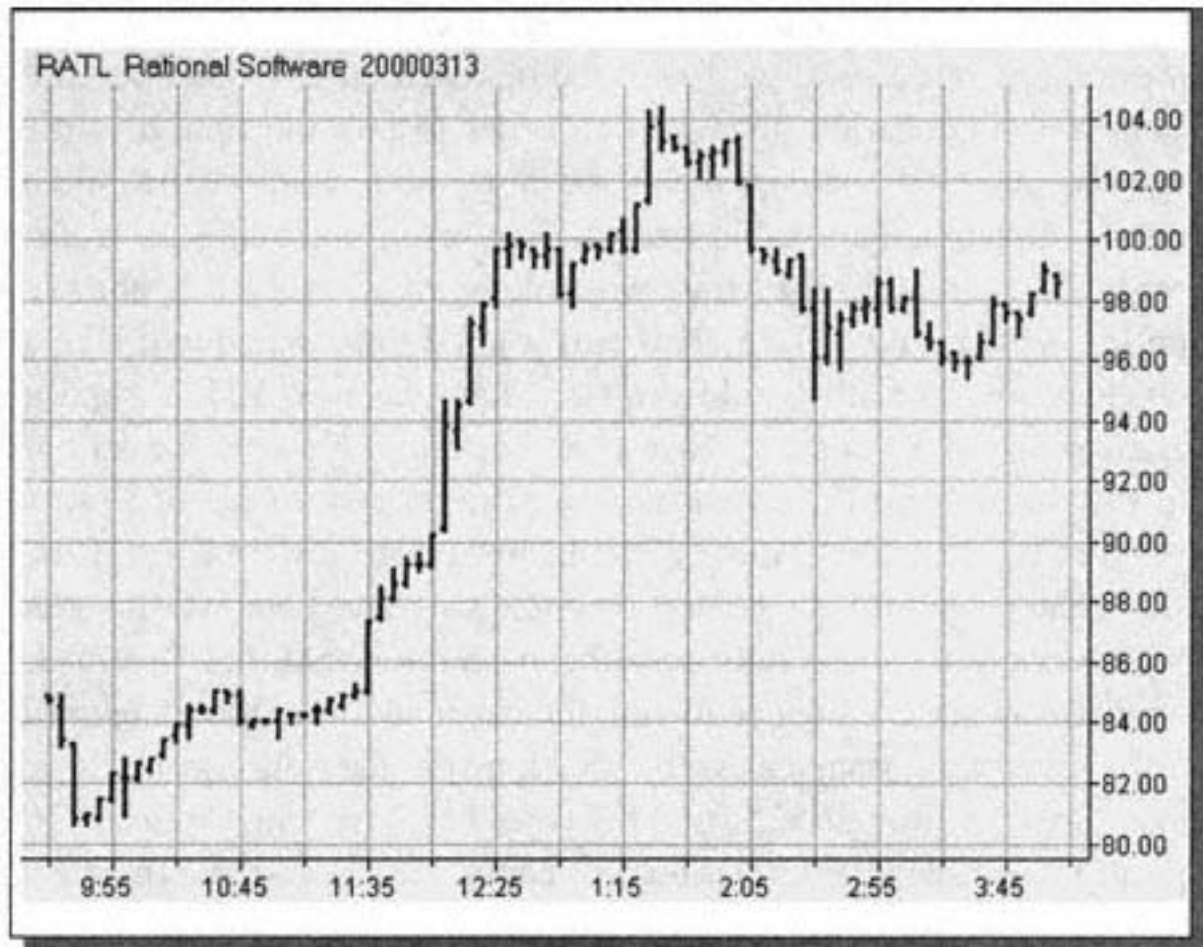
Figure 7-6.
Intraday chart for Rational Software.

minute chart for RATL. Again, the stock dipped after the open and formed a bottom at around 9:45 a.m. There then appeared to be some upward movement, but we held off because we were not yet confident that the trend would continue. At 10:00 a.m., we begin watching the options.

The March 75 call for RATL did not seem to be a bad choice. At around 10:00 a.m. it was trading at about $8 and was, again, somewhat more deeply in-the-money than we prefer. If we had purchased this option at that time, we probably could have obtained it for about $9, given that we would have been buying into movement. However, we decided to wait for either a plateau or additional confirmation of strength.

A plateau on lowered volume occurred between 10:45 and 11:30 a.m. The option was now trading for about $10. Given that

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RATL was in a plateau, the market could have been worked with a limit order and the option obtained for $10. We did not have to wait long for action. The stock started rising, carrying the option along with it. By noon, the stock had already moved up 5 points, and the option was trading at around $15. The high Delta of the deeply in-the-money option was providing a lot of bang for the buck. Between 12:00 and 12:30 p.m., a major thrust carried the stock to $100. Now the option was trading at a marvelous $25, a good time to exit and grab the profit. Prices may have risen further, but, with an option this deeply in-the-money, why risk a reversal? If a market order was placed to sell as quickly as possible, the trader could have sold out at $24.25. The trade yielded a profit of around $1425 in less than 12 hours. The worst-case risk was never more than $1000, the cost of the option, although the practical risk was more like $600 or $700. Although not all trades turn out this well, opportunities appear frequently. Even if the trader had waited for further confirmation of movement, and had entered the trade between 11:40 a.m. and noon (during a small plateau that developed in the course of the stock's movement), he or she still would have been able to purchase the option for about $14, and profited nicely.

One technique not previously mentioned, but which might have been applied to a strong, trending stock such as RATL, would be to roll over the option position to a higher strike price. Had this been done, at some point during the trade, the March 75 call would have been sold and a much cheaper March 95 call would have been bought. In this way, a large profit could have been pocketed, and the trader would still have been in the market to capture additional returns. If a reversal later occurred, causing a loss on the March 95 call, the overall gain from the trade would still have been handsome. However, in the case of RATL, this strategy could not have been used because there were no March calls with strike prices higher than 75.

These two examples illustrate successful, well-defined momentum trades. The end-of-day analysis provided the setup, and the examination of intraday charts and options data helped pull the

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trigger. Profits were grabbed quickly before movement in the stock stalled or reversed.

As often happens, news stories relating to these stocks appeared on the day they were traded. At 8:45 a.m., QGENF was mentioned in a story about Coley Pharmaceuticals, a holding of Qiagen N.V. The report was mildly positive, involving the appointment of two new people to Coley's board of directors, and containing descriptions of new products and research. A drop in a stock after good news is a frequent phenomenon. Traders anticipate good news and buy. When the news finally hits the wire, the sellers emerge and profit by selling into the demand created by the story. With mildly positive news the effect is quickly assimilated, sellers rapidly liquidate their line, and the underlying trend often resumes, as was the case for QGENF. With strongly positive news, however, the stock may open extremely high and the selloff may persist for some time, requiring a contrarian trading strategy.

Examples of Momentum Trading Futures

Momentum trades involving futures contracts can be done as with stocks, that is, using an end-of-day setup followed by an intraday trade. This works well for slower-moving futures markets that have strong trends that follow through during the day. We have recently seen tradable trends of this nature in coffee (in response to frosts) and in the energy complex. But our favorite futures, the S&P 500 and E-Mini, are frequently marked by poor trend follow-through and high levels of countertrend or trading range activity. Nevertheless, tradable trends can occasionally be found in these faster-moving index futures markets.

Because of the way the S&P (or E-Mini) futures market responds, the momentum trading method used differs from the one described earlier. There is no end-of-day setup. Instead, we use the information present in the intraday price activity and in such measures of internal market behavior as the NYSE tick index and the futures premium. It is still necessary to view short-term activity

within a longer time frame, but intraday price charts provide sufficient context information for momentum trading the S&P because of the very short duration of our trades in that market. In contrast to our stock option trades, which frequently last several hours, our S&P trades are often completed within a few minutes. A few hours of context for a 4-minute trade is equivalent to weeks or months of context for a 5-hour trade. When trading index futures like the S&P, we also have the benefit of whole-market behavioral indicators such as the tick index. The *tick index* is a count of the number of stocks on an uptick minus the number on a downtick. A high positive number is indicative of heavy buying and suggests a flow of money into the broad market. A large negative value betokens rampant selling and money leaving the market. Consequently, the tick index is a good measure of the short-term trend.

The chart in Figure 7-7 exemplifies a good momentum setup and trade. At 11:38:55 a.m. prices were well below the moving average, and had just broken below the 11:23:38 a.m. low of 1131.50, a level of support. This signified the beginning of a potential move. By 11:40:00 a.m. (about 2 minutes later) the tick index had broken support and prices had further declined to 1130.80. Although prices leveled off in the following minute, the tick index continued its descent into negative territory, a sign that prices would go lower. In addition, our proprietary momentum indicator was showing strong negative momentum, and the neural network trading model was suggesting a short position. Everything was set for a perfect entry. At 11:41:07 a.m., when the market was trading around 1331.00, we placed an order to short one S&P 500 contract at the market. The order was filled around 11:42:31 a.m., at 1130.60, with 0.40 points of slippage due to order placement and execution delays. In those days we were still using the telephone to call the broker! Today, trading the E-Mini, our order would have been entered and executed within seconds and with much less slippage.

By 11:44:01 a.m. a steep decline had occurred and the S&P was trading around 1329.10. We wanted to sell into any remaining mo-

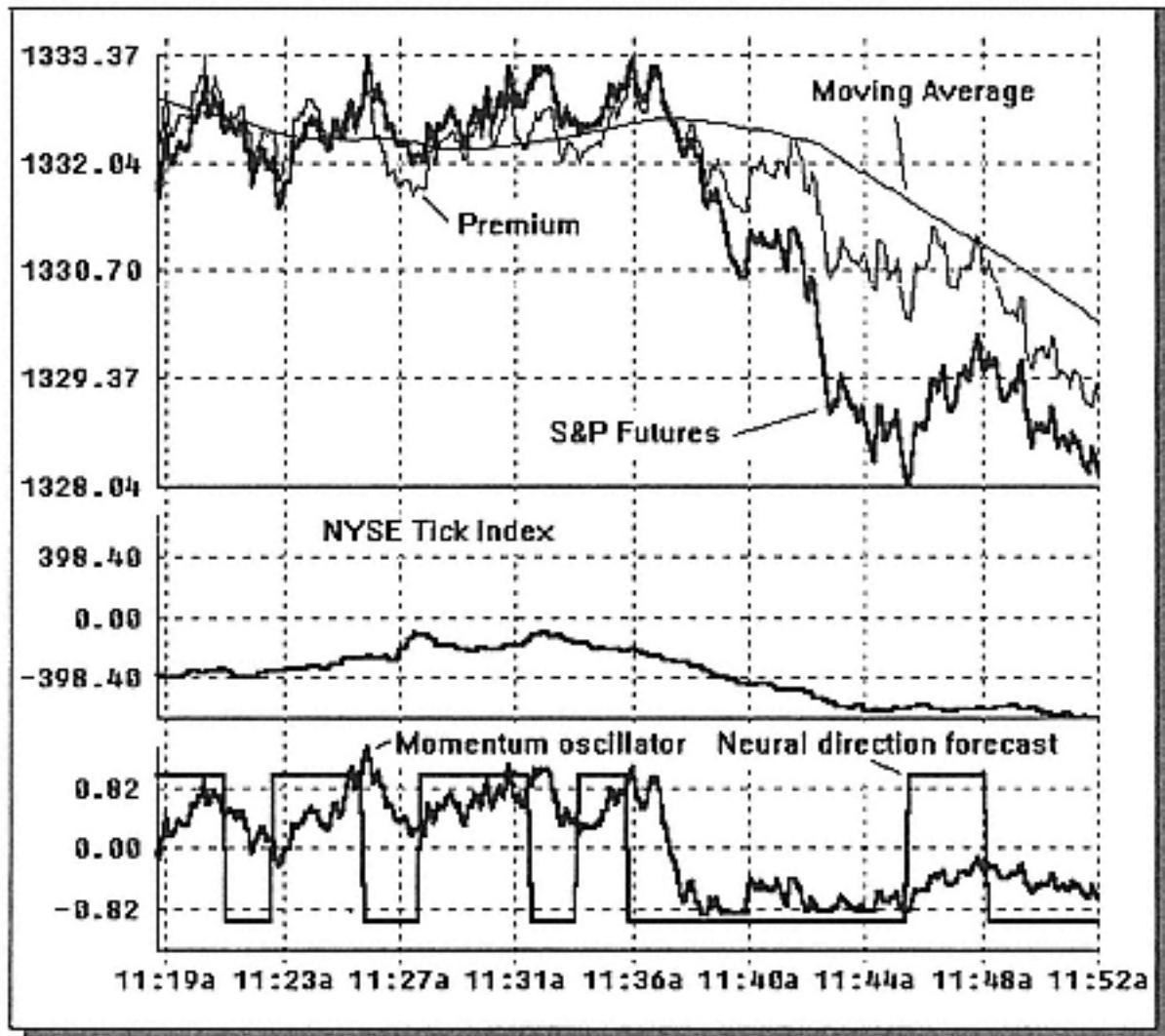< previous page   page_151   next page >

Figure 7-7.
S&P momentum trade on August 4, 1999.

mentum and so decided to cover. The order was executed around 11:45:20 at a price of 1328.60, with slippage operating to our advantage. As stated earlier, better fills result when you exit while the market is still moving in your direction, before it comes to a halt or, even worse, reverses. The trade yielded a profit of $500 in just under 3 minutes! Of course, trades do not always work out this well.

Swing Trading

The central theme of *swing trading* is buying or selling not into existing movement, but into its cessation and reversalthat is,

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when movement in one direction comes to an end and movement in the opposite direction begins. Whereas momentum trading is like jumping on a moving train after it has pulled out of the station, swing trading is analogous to getting on a stationary train at the end of the line, before it begins its return trip.

The big issues in swing trading are (1) locating the end of the line and (2) determining the time the train is likely to arrive there, that is, the price and time at which the tradable is most likely to reverse direction. Traders who follow the works of Gann are fond of the phrase "price and time." The convergence of price and time is critical in swing trading. By pinpointing price levels and extrapolating cycles, the trader can determine price and time windows. The swing trader wants a critical price level at which prices can be expected to reverse, or a narrow time window in which such a reversal is likely to occur, or (even better) both.

Critical price levels involve the notion of support and resistance. Support and resistance points can be determined by using trendlines, by looking for previous highs and lows, and by calculating retracement levels through Fibonacci and other ratios. Even the simple *50 percent retracement rule*, in which a stock or future is expected to retrace 50 percent of its previous movement before reversing, is useful.

Windows of time are often determined by some form of *cycle analysis*. The search for linear cycles can be accomplished by eye or with the help of a comblike instrument (whether mechanical or implemented in software) when working with charts. Mathematical techniques, such as maximum entropy spectral analysis (MESA), can also be used. Nonlinear cycle analysis involves counting days since critical events and sometimes extrapolating such counts using Fibonacci ratios, Gann squares, or other techniques.

There are benefits to having a fix on price and time. With a precise price level, for example, a limit order can be placed and perhaps filled near an exact bottom or top. If prices do not move to the correct level within the time window, the limit order can be pulled out of the market. In other words, the bounds on price and

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time allow the trader to determine whether the market is or is not behaving appropriately, and exactly when and at what price to enter or exit. This approach makes it feasible to logically plan a trade. It is tantamount to having a theory that can be confirmed or disconfirmed, and acted on accordingly.

In addition to price and time, swing trades can sometimes be taken on the basis of specific events. One such example is the kind of opening gap that occurs when a large number of buy or sell orders have accumulated overnight and on which the market makers capitalize at the opening bell. Once the orders have been executed, the market retraces at least some of its excessive movement. News stories often produce this kind of phenomenon and can be swing traded, as described in the section on news trading.

In all cases, however, the idea behind swing trading is to do the exact opposite of the crowd that is moving the market. When others are buying and the market is rising, you sell short. When others are selling and the market is declining, you buy. It is obvious that there is a potential danger in this. If you are buying when the market is declining, there has to be some reason to assume that the decline will stop, that the momentum is not going to carry through. Likewise, in a rising market, there has to be some indication that the rise is likely to come to a halt and reverse. Price and time determinations help justify such contrarian action.

Up to here, the steps involved in swing trading are similar to those for momentum trading. First, scan through end-of-day charts looking for setups. The setups are, of course, different from those used in momentum trading. The search is for a stock or future that is retracing to one of the aforementioned critical price levels, and that looks like it may hit and possibly bounce off that price level the following day. As part of the setup, examine the previous behavior of the stock or future in response to critical price levels of the kind you plan to use. If the stock has behaved appropriately and responded to such levels in a way that makes it attractive, and if it is currently approaching such a level, you have your setup. Also consider cycles and timing when searching for your setup. Is

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a low or high to be expected tomorrow on the basis of the cyclical rhythm (the time element of the price-time equation)? As you analyze cycles, there is no reason not to use an advanced technique of the kind discussed in the next chapter.

After scanning, you will hopefully have several stocks or futures to follow the next day. Examine them during the day to see if their behavior is consistent with your expectations. Hopefully, one or another of them will bounce against one of the critical support or resistance levels. You can even place limit orders to buy or short the appropriate option or future at one of these support or resistance levels. With options there are some subtleties involved in determining the prices at which to place limit orders because the support and resistance levels are obtained from the stock charts, not the options.

Assuming you get filled with a limit order, you need to determine when to exit with a loss and when to exit with a profit. Determining when to exit with a loss is easy to do when swing trading in this manner. If your theory is right, prices should not penetrate very far though the support or resistance level. How far is reasonable can be determined by looking at past instances when that stock or future bounced off similar support or resistance lines. So, if your stock option or future doesn't bounce, get out fast. For exiting with a profit, you can immediately place another limit order, in the form of a profit target, as soon as your entry is confirmed. Because you are both entering and exiting with limit orders, you will be setting prices instead of just accepting them, which will provide you with some edge. If your support and resistance levels are well chosen and have a tendency to hold, you should be able to trade profitably.

Examples of Swing Trading Stock Options

As with momentum trading stock options, the swing trading process begins by searching through end-of-day charts for setups. We are looking for pullbacks that are close to Fibonacci retracements, moving averages, or trendlines (preferably all three) and that might

bounce against such lines when we are actually trading. If possible, we also like to see our end-of-day setups contain some evidence that cyclic activity is in our favor.

On April 12, 2000, we examined numerous charts and found one with a perfect setup for a swing trade the next day. The stock was Dell Computer Corporation (DELL). For this stock, everything we could want in a setup was in place. Prices were approaching a Fibonacci retracement level at around $50.25. A clearly defined trendline extrapolated to April 13 provided support fractionally above that price level, reinforcing the Fibonacci support. And, as can be seen in Figure 7-8, there appeared to be a 5-day cycle, with a cycle bottom projected for April 13. Rarely do we find such a perfect setup. The plan for this trade was to buy the stock on a limit at $50.50 or $50.75, just above the strong support defined by the trendline and Fibonacci retracement level.

What is a *Fibonacci retracement level?* It is an easily calculated price level based on the high and low of the previous swing. As can be seen from Figure 7-8, the stock had a low of $35 in early February, and a high of $59.69 in late March. The Fibonacci retracement level of interest is simply that price that is .618th of the way from the low to the high. In other words, subtract the low price from the high price, multiply by .618, and add the resultant number to the low price. In this instance the result was $50.26 ($50.25 when rounded to the nearest 1/4). Another Fibonacci retracement, also shown on the chart but not relevant in this instance, is the one at $44.43. This would be obtained by going .618th of the way from the high to the low, rather than from the low to the high. The trendline, shown in Figure 7-8, is easy to extrapolate to the next day. Visually identified cycles are also marked in Figure 7-8 by small black squares.

Because we are interested in trading the options and not the stock itself, we need to do one of two things. We can watch the stock until prices are sufficiently close to the level of support, that is, below about $50.50 or $50.75. Such prices were, in fact, seen

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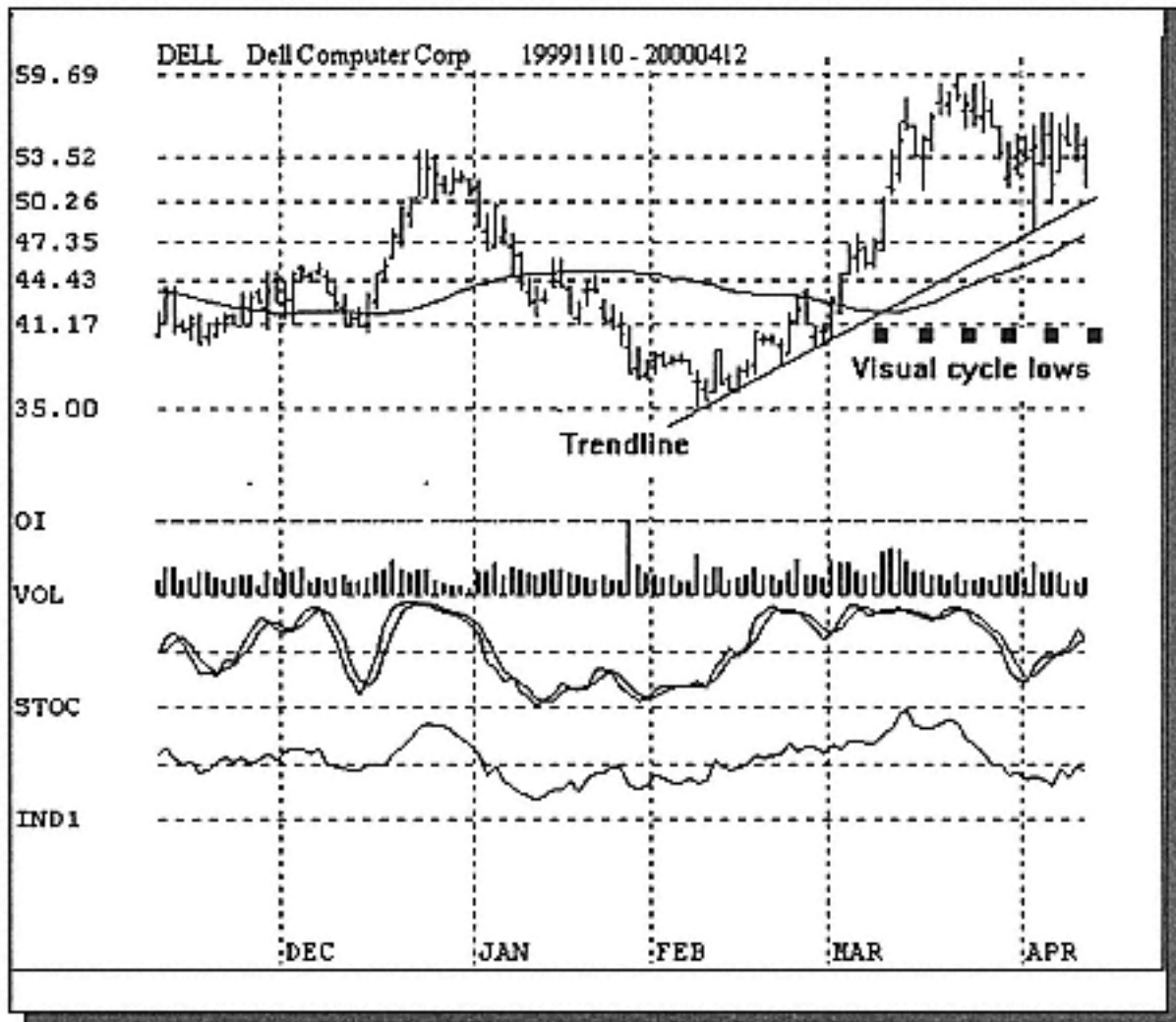
Figure 7-8.
Setup for Dell Computer (DELL) on April 12, 2000.

within 20 minutes of the open. At that point, we could have simply picked an option and entered the trade, perhaps working the market with a limit order. Since option prices cannot always be accurately anticipated from stock prices (they may be overpriced or under-priced relative to an options pricing model), this simple method of keying off the stock for timing may be the way to go. However, using the Black-Scholes valuation model, we could also try generating an estimate of what an option would be worth if the stock was at or near the critical support level. We could then place a "sitting" limit order to buy the option at that price or better and wait for it to be filled. In this instance, the order would be to buy

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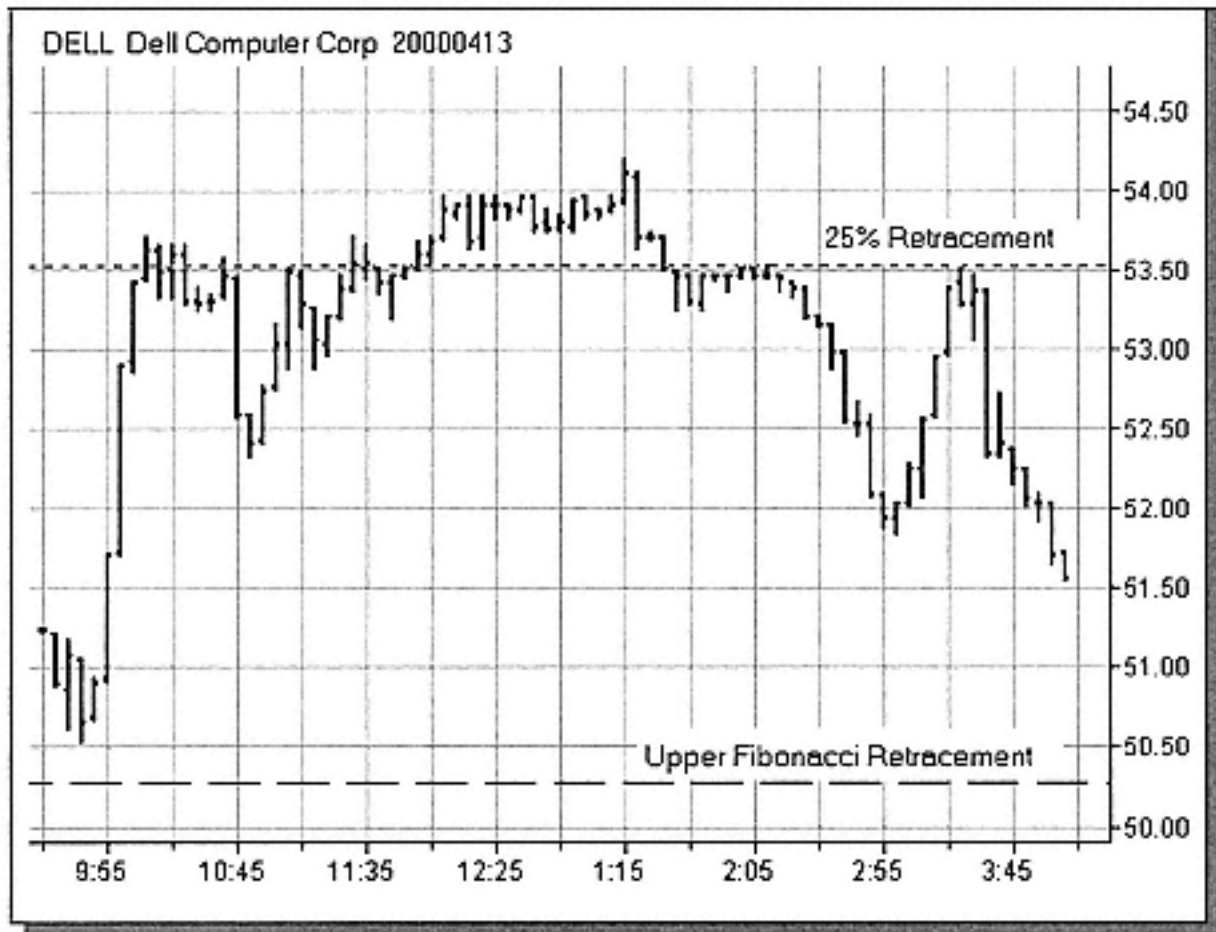
Figure 7-9.
Itraday chart for Dell Computer (DELL) on April 13, 2000.

the option at $2.25 or better. Because the options were trading slightly above the Black-Scholes estimate, it is uncertain whether such an order would have been filled.

For this stock, the best option to trade was the April 50 call, which could have been purchased for less than $2.50 shortly after the market opened. As can be seen from the chart in Figure 7-9, the stock surged rapidly: A little after 10:00 a.m., it was trading around $53.50. At that time, an agile day trader would quickly have taken a profit. The option had already topped $4, yielding $150 per contract. Since Dell is a major, actively traded company, its options are highly liquid and good fills can easily be obtained. This is a nice example of a virtually perfect swing trade involving the use of a setup based on a trendline, Fibonacci support level, and cycle.
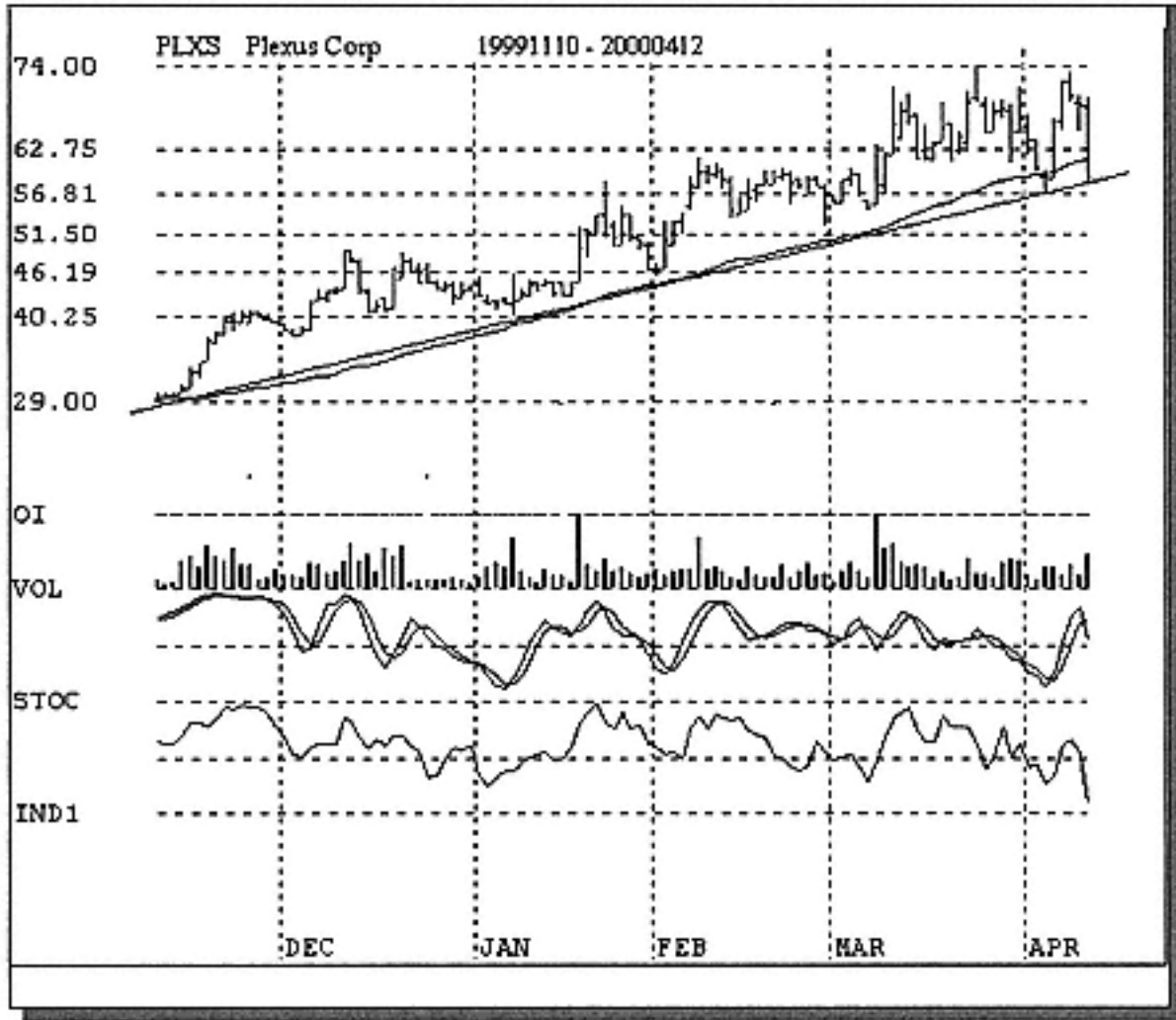
Figure 7-10.
Swing trade setup for Plexus corporation (PLXS) on April 12, 2000

Another stock found on April 12, 2000, was Plexus Corporation (PLXS). As can be seen in Figure 7-10, both trendline and Fibonacci support fall close together on April 13, the planned day for the trade. There is some evidence for a rolling cyclical pattern, but it is much more tenuous than in the previous case. In favor of the trade, the Fibonacci retracement level has, in the past, repeatedly acted as both a support and resistance level.

We would aim to buy this stock at $57 on a limit or, playing the options, buy the April 60 calls on a limit of $2.50, based on the option valuation model. An alternative would be to simply wait for the stock to reach a base near the desired price level and then

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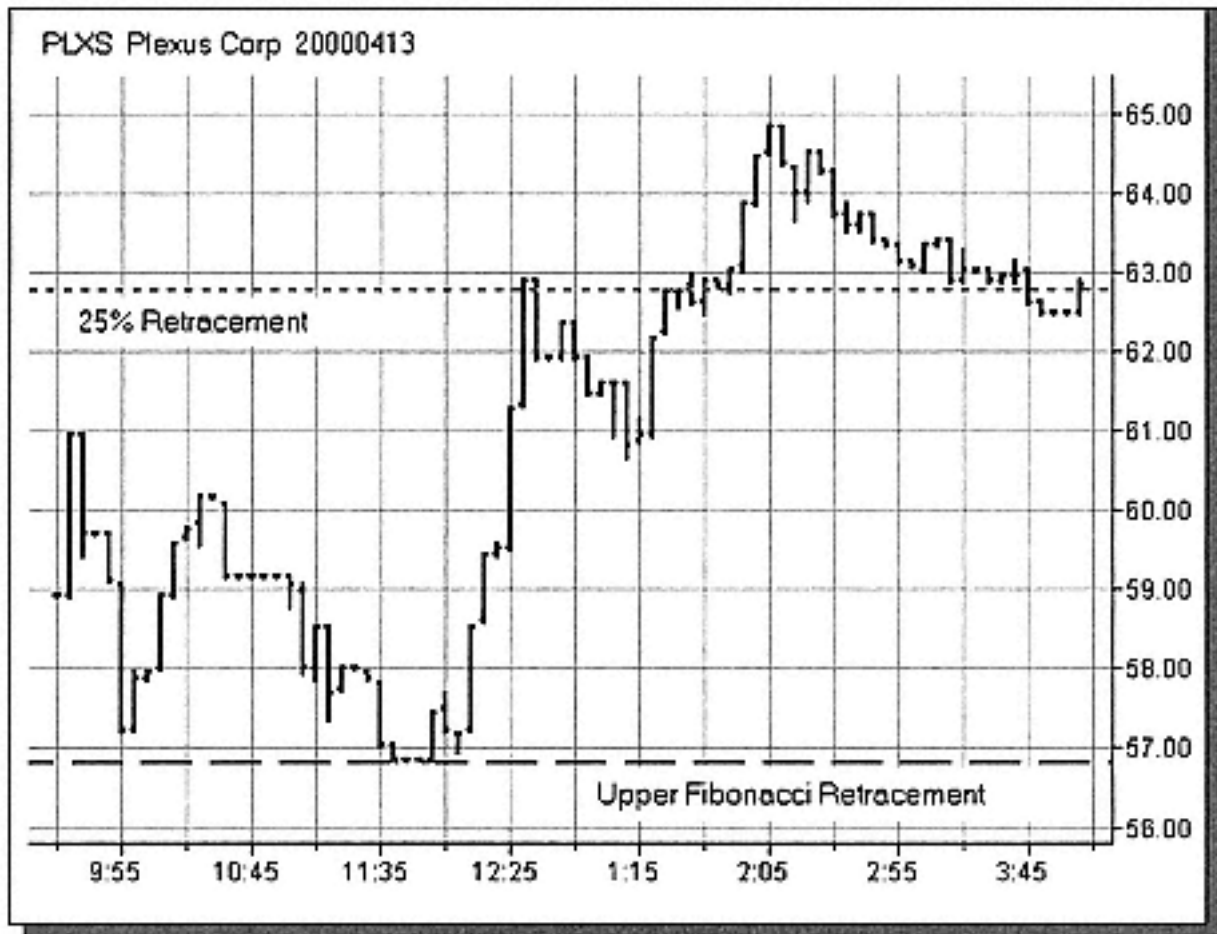
Figure 7-11.
Intraday chart for Plexus Corporation (PLXS) on April 13, 2000.

to work the options market for an entry. This stock offered two opportunities to buy options during the day. One opportunity appeared just before 10:00 a.m. and the other at 11:45 a.m. As can be seen in Figure 7-11, the stock rose swiftly, bouncing off the upper Fibonacci retracement level in each instance. It would have been difficult not to have profited from either of these entries. The second entry especially would have yielded a nice profit of about $375 (excluding commissions and slippage) per contract for the trader, even if he or she did not get out at the best time. The stock closed around $62.50.

One must realize that good setups do not always lead to successful trades. Sometimes it is not possible to get any trade at all out of a setup. Consider Microchip Technology (MCHP). The end-

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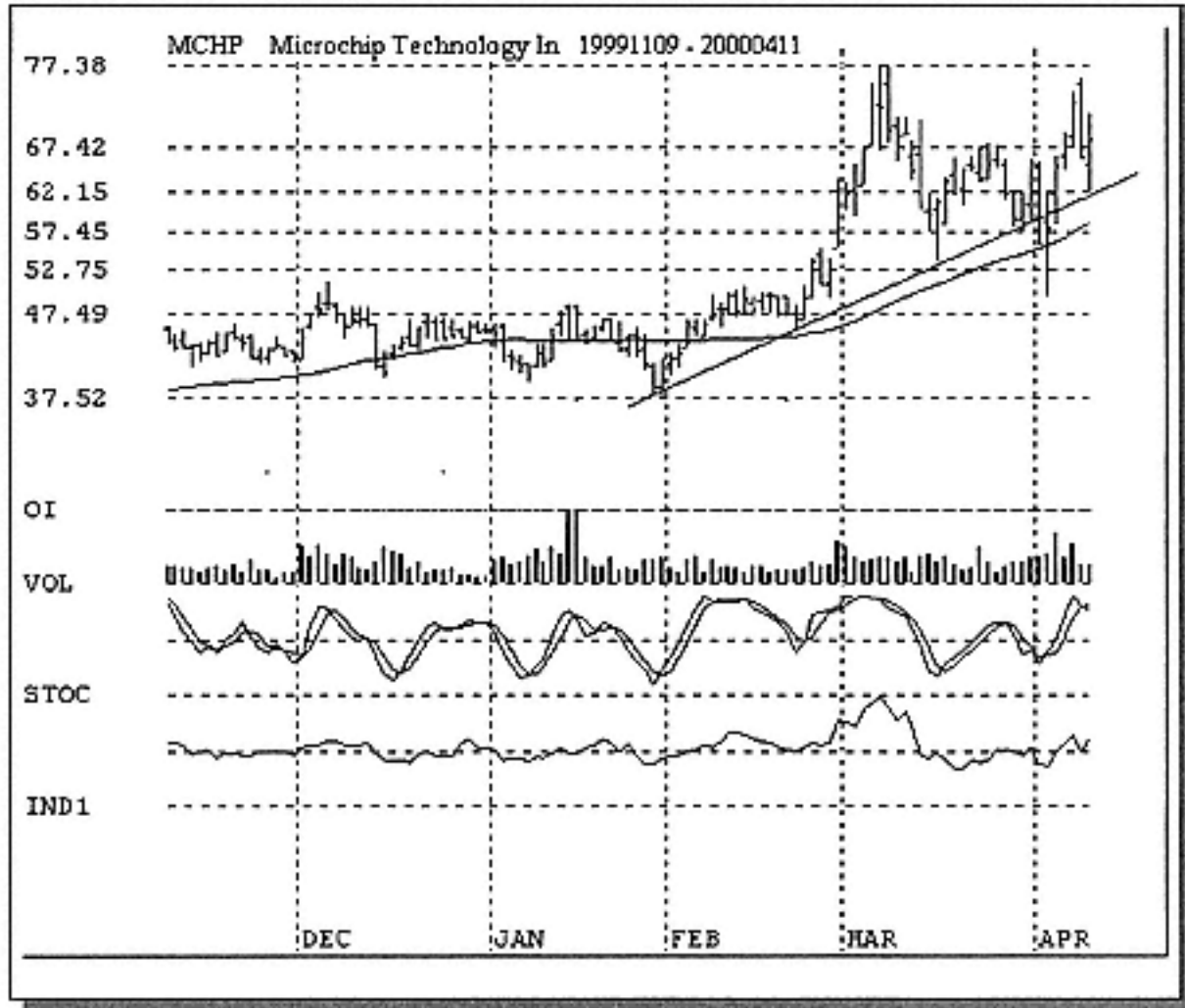
Figure 7-12.
Setup for Microchip Technology (MCHP) on April 11, 2000.

of-day chart for this stock appears in Figure 7-12 with a virtually perfect setup. The overall trend is up, as shown by the slope of the moving average and the fact that prices are currently above it. In addition, there is a trendline that is close to the Fibonacci support for both today and tomorrow. On April 11, the market touched the trendline and Fibonacci retracement levels, and bounced back up to close above them. Frequently, a stock will retest support the next day.

During the trading day (April 12, 2000), the intention is to enter MCHP at a little above $62.15, the upper Fibonacci retracement level. For the April 65 call, this would work out to $3 on the basis

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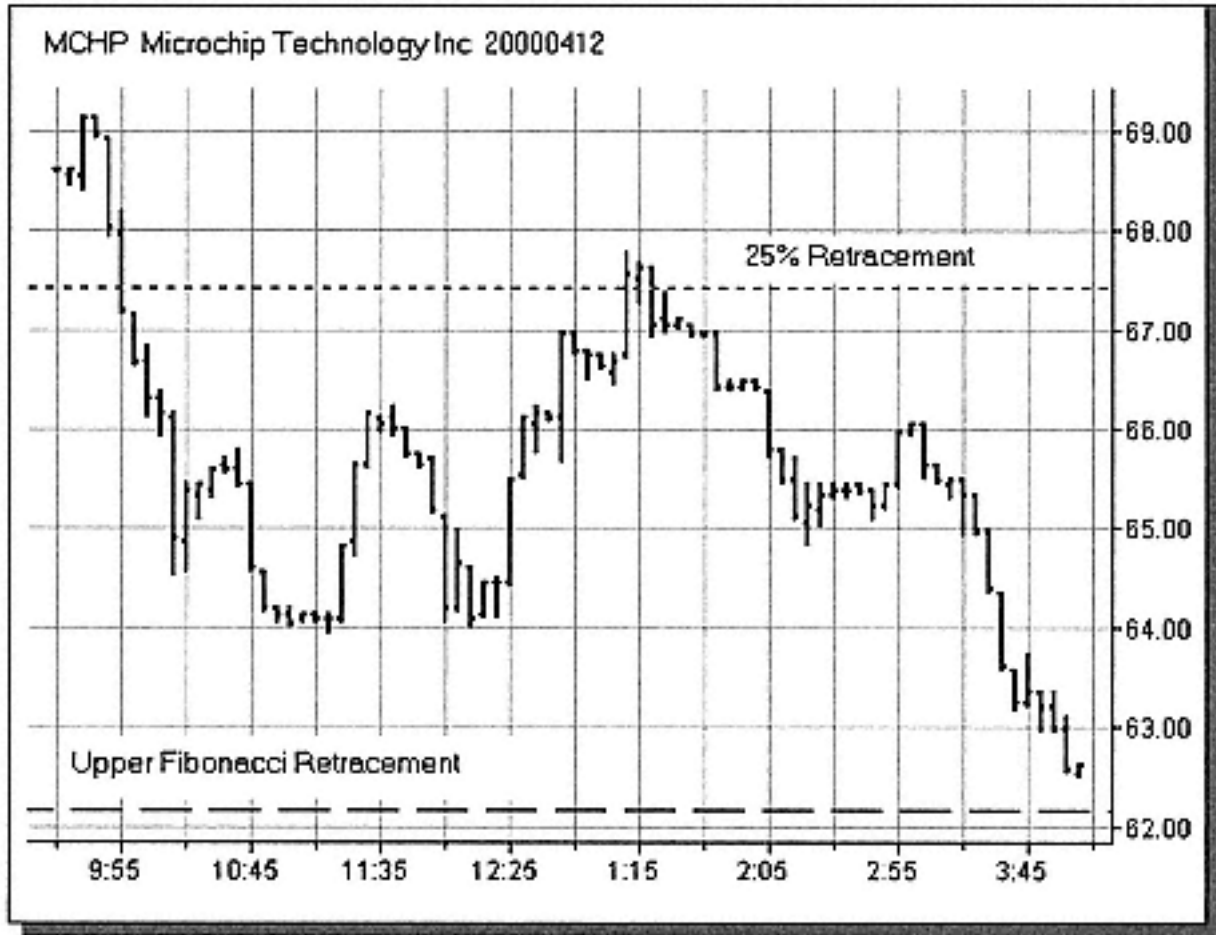
Figur 7-13.
Intraday prices for Microchip Technology (MCHP) on April 12, 2000.

of a Black-Scholes evaluation. Watching the stock throughout the day (see Figure 7-13), however, provides no opportunity to enter until just before the market closes. Of course, the swing trader does not take this late-in-the-day entry, since the position would have to be held overnight to wait for a bounce (should one occur), and thus would entail too much risk. This brings up an important point: When trying to trade bounces off critical support or resistance levels, you want to have an opportunity to enter the trade fairly early in the day to allow time for a profit to develop and be taken, or for the trade to be closed out with a small loss. You would not want to enter this kind of bounce situation anytime later than 2 or 3 hours before trading ceases for the day. It is interesting that MCHP could have been traded on the short side by purchasing a put (or
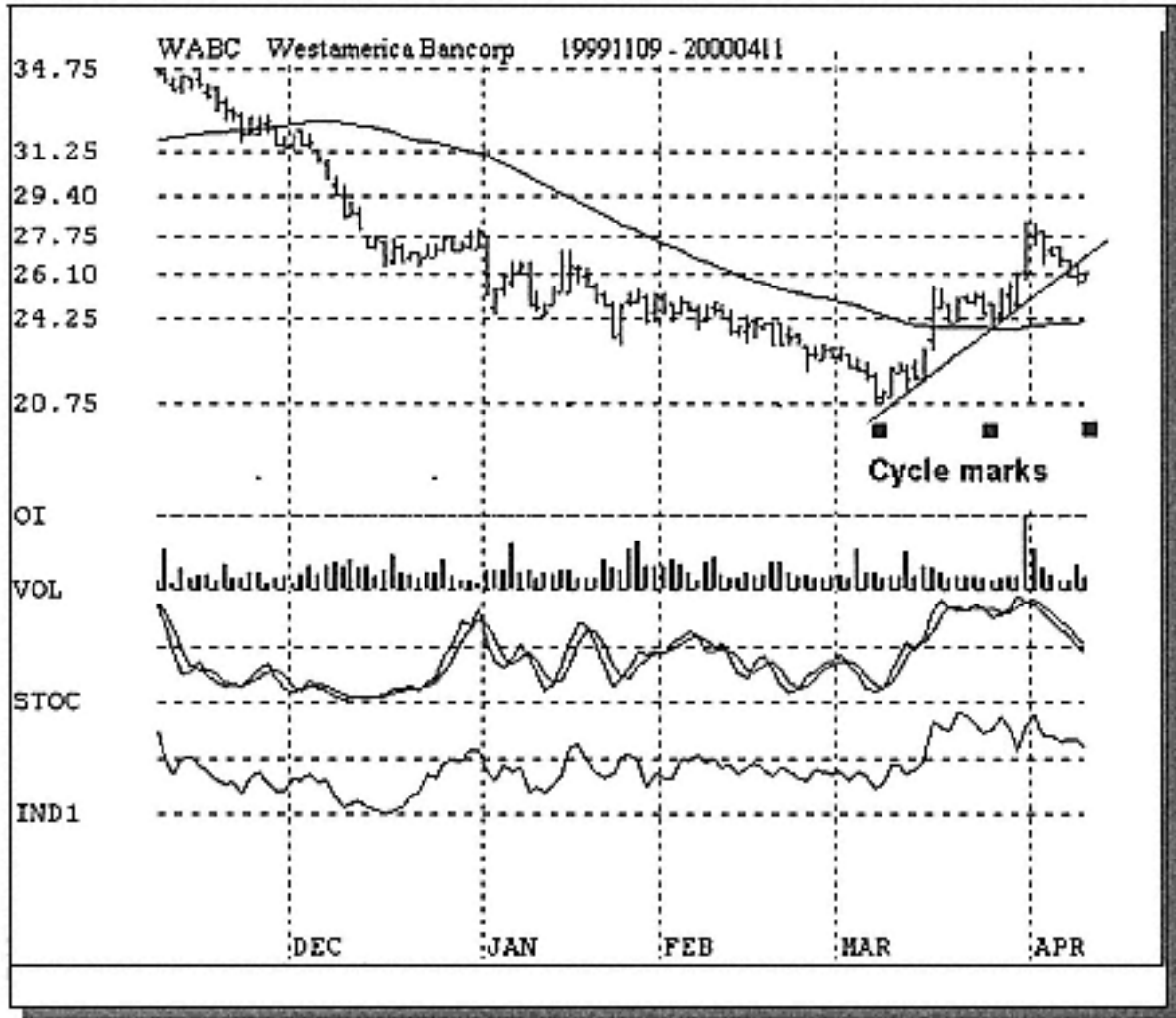
Figure 7-14.
Swwing setup for Westamerica Bancorp (WABC) on April 11, 2000.

selling a naked call) around 1:15 p.m., when the stock ran into resistance at the 25 percent retracement level.

Another example of a successful swing trade can be found in Westamerica Bancorp (WABC). Figure 7-14 shows a setup with the expectation of a bounce off the lower Fibonacci retracement level at $26. There was a trendline break. Often after such a break, prices will retrace to the broken trendline before continuing to decline. This stock behaves in just that way, as can be seen in Figure 7-15. If we had placed an order to buy an April 30 call at $0.15, the expected option price on the basis of Black-Scholes given the stock traded at $26.50, we might (given enough liquidity) have obtained

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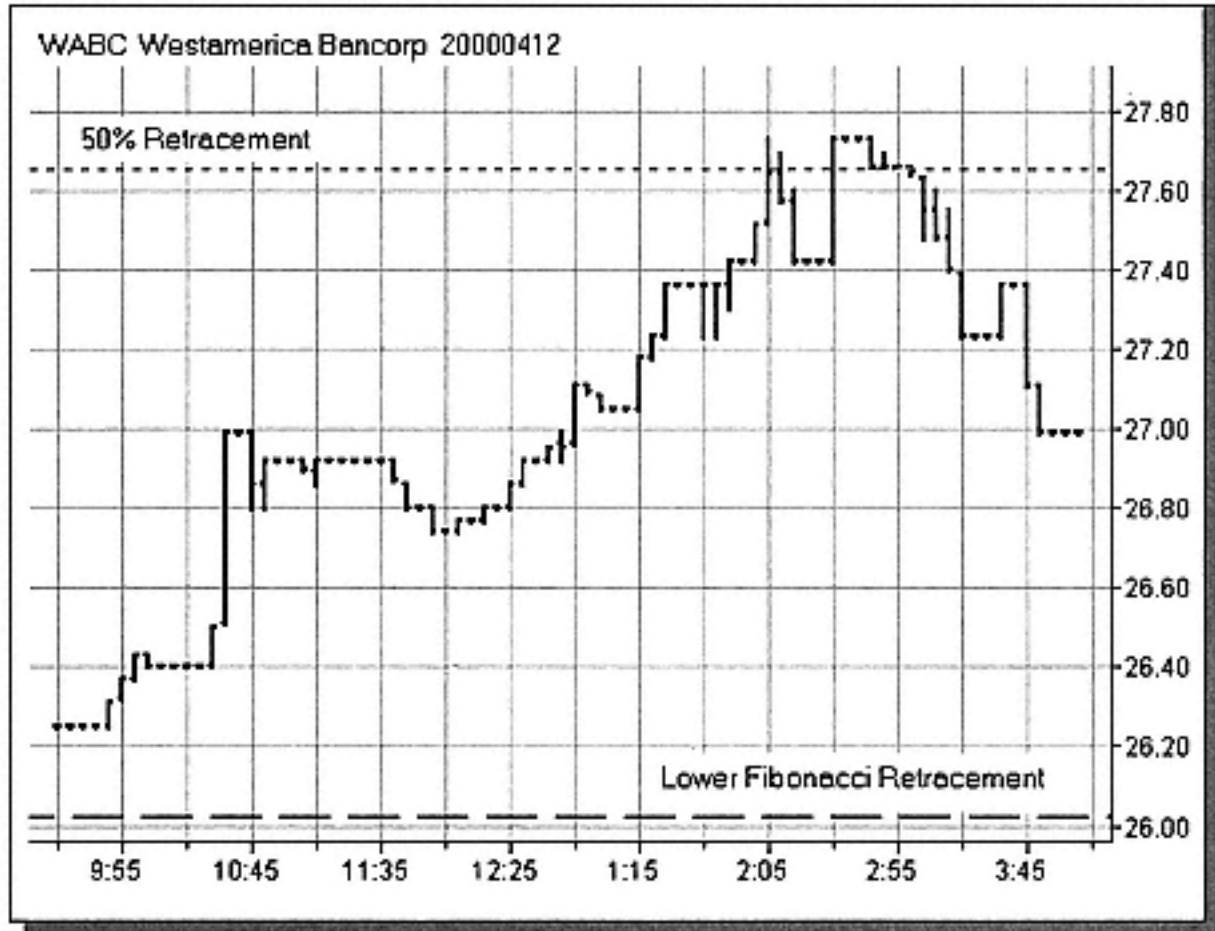
Figure 7-15.
Itraday chart for Westamerica Bancorp (WABC) on April 12, 2000.

a position soon after the open, with the stock trading just over $26. Throughout the day, the stock rose, peaking between 2:00 and 3:00 p.m. at over $27.50. At this time, the options might have traded around $0.35 and a small profit could have been made. Even if a trader had sold into momentum between 12:30 a.m. and 2:00 p.m., a profit could have been taken. In this instance, the position could have been exited by placing a limit order to sell the option when the stock approached the trendline or 50 percent retracement level. Remember that prices will often retrace to the trendline before resuming the decline. In fact, a second swing trade could be initiated at that point by buying a put in the expectation of a further decline after a test of the trendline from below.

Not all swing trades work out this well. Many times one can

exclude candidates in the setup phase. For example, a stock may have too narrow a daily range to be profitably traded on an intraday time frame. A stock that passed the setup phase might not be traded because, like Microchip Technology, it may not reach a critical level until late in the afternoon on the trading day, if at all. A worse scenario is when the stock barrels through the critical price level without turning around. The first two circumstances simply mean no trade is taken, no money is lost. The trader can search for another opportunity unscathed. The last situation, however, is unpleasant in that, immediately after the trade is entered, a loss occurs. With swing trading, it is important to decisively curtail such losses. By penetrating the barrier and continuing its movement against you, the stock or future has disproved your theory about its expected behavior relative to the support or resistance level. With the logic of the trade demolished, there is absolutely no justification for expecting a reversal or remaining in the trade. There is only justification for closing out the position as fast as possible. This is one reason that, with swing trades, it is important to be more concerned than usual with having highly liquid, actively traded options. In our first example with Dell, the options were extremely liquid, with very narrow ask-bid spreads. If the stock had not behaved appropriately, this would have made it easy to exit quickly before much damage could be done. With illiquid options, trading only a few contracts a day, the trader might be forced to suffer a large spread when trying to exit a losing position.

To maximize success with swing trading, the presence of several convergent elements that indicate a zone of support or resistance and a zone of time is needed for entry. For example, a trendline or moving average at the same level as a Fibonacci retracement would be encouraging, as would a cycle bottom (or top, for shorts) on the day of the trade. The stronger the support or resistance, and the more elements there are that contribute to it, the greater the likelihood of success. Another factor that can help in swing trading efforts is to trade in the direction of the longer-term trend. By definition, when swing trading, you are trading against the trend, at

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least on the shorter time frame. However, you should always attempt to trade with the trend, as seen from a longer-term perspective. Our successful examples (e.g., Dell and Plexus) illustrate this. In both cases, prices were above an upward sloping trendline and the moving average of the prices was trending up on the end-of-day charts. For Westamerica Bancorp, within the past month, prices broke above the moving average, which itself turned up. This indicated a reversal of trend. At least some of the end-of-day measures of the trend were concordant with the direction of the trade. This is one of the reasons we use and strongly recommend having an end-of-day view of the underlying stocks (when trading stock options) or of the futures (when trading these), even though your trading may be on a very short, intraday time frame.

Trading the News

When trading the news on a very short time frame, it seems that a contrarian stance is often the one to take. The idea behind this is that the public overreacts, causing prices to go out of line enough to make a profit. When a headline such as "XZY Corporation Reports Record Earnings" appears before the market opens, we look for a good short sale, or for a stock on which we can purchase puts at some point early in the day. If, on the other hand, the headline read "XZY Corporation Sued by Shareholders," we would look to buy calls on the stock early in the day, perhaps even at the opening bell. It should be repeated that this contrarian stance is usually only valid during the day or on a short time frame. A damaging lawsuit or continued good earnings may, over the long haul, have the logically expected effect of either decreasing or increasing the price of the stock and its associated options. But, in our experience, on the time frame of the day trader, strong news often produces an effect that is opposite of the one that would logically be expected. Some of the reasons for this were discussed in the previous chapter.

You might wonder why we have left the after-hours markets out of the discussion. Stocks can be traded over the various ECNs after

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the market closes or before it opens. In terms of the kinds of phenomena we are discussing, this kind of trading seems to have little neutralizing effect. Good news can still push a stock excessively high at the regular opening hours and bad news can likewise cause it to become significantly underpriced. An examination of after- hours trading can, however, reveal whether the news is having the expected impact.

The basic steps involved in news trading are as follows. Before the market opens, or at some point early in the day, log on to news vendors (such as *businesswire.com* or *prnewswire.com*; see Appendix E for more). Look for stories that hit the wire at some point after the market closed yesterday and preferably before it opens today. The idea is to search for extreme, unambiguously negative or positive headlines. For example: "Somexample Inc. Profits Greatly Exceed Estimates" or "SEC Charges RTZ Corporation with Fraudulent Reporting."

After you have found the news stories, call up 2- or 3-day charts for the stocks in question to see how they behaved prior to the news. If the news is good, the stock may have anticipated the breaking of the story, and should be near a high at the open of the trading day, or at approximately the time the news became public. For bad news, the stock should be bottoming at such times. This is the point to enter the market. If good news appeared overnight and the stock or futures contract opens high, buy a put or sell short the contract. If bad news came out overnight and the stock or futures contract opens low, buy a call or go long the contract. If good news arrives at 10:00 a.m. and the market appears to be up but leveling off, buy a put. If the news was bad and the stock dips sufficiently, buy a call. Of course, when buying the call or put, you follow the same procedure discussed elsewhere. You want a call or put that has as little time left to expiration as possible, and that is at the money or close to it. During the day, if the stock moves against expectation more than a preplanned amount, exit. For a $50 stock, you might tolerate about 1.5 points (2 to 3 percent) of adverse movement. Usually, once the news is widely disseminated, the stock will start

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moving in your favor. This should happen quickly and with little or no adverse excursion. Assuming you do not have to exit at a loss, watch for either a blow-off top or bottom (large spiky move on high volume), or other signs that the trend may be coming to an end or reversing, as a way to decide when to exit with a profit. Or, perhaps, set a profit target to get out on a limit. Often a stock will retrace about 50 percent of the runup that occurred in anticipation of the story. We have found that contrarian news trading frequently produces substantial profits; for example, a $50 stock might move 5 or more points during the day.

Examples of News Trading

What does a successful news trade look like? Consider IONA Technologies P.L.C. (IONA). At 6:59 a.m. on April 12, 2000, the headline "IONA Technologies Announces Record First Quarter Revenues" appeared on Business Wire. Several other encouraging news stories hit at 6:57, 6:55, and 6:54 a.m. These concerned business alliances and contracts of a positive nature. In other words, this company was awash in good news before the market opened. On the end-of-day setup chart (see Figure 7-16) we see that the close was $65, not far below a Fibonacci retracement level at $72.39, and just above a 50 percent retracement $63.25. In addition, there were bounding trendlines near the same critical price levels.

As expected, given the stories, the stock opened high, trading between $69 and $70 (see Figure 7-17). So not only do we have a news story that we expect to cause a profitable bounce, but we also have a Fibonacci resistance level not far over the opening price to limit our risk. The stock exhibits the typical pattern of one that has good newsthat is, it gapped up overnight, meaning today's open was significantly higher than yesterday's close. The news produced a flood of buyers, driving up the opening prices. The market makers, no doubt, have taken advantage of this flood of buyers and raised their prices. At this point we have a complete setup.

The next step was to find appropriate options to use to trade

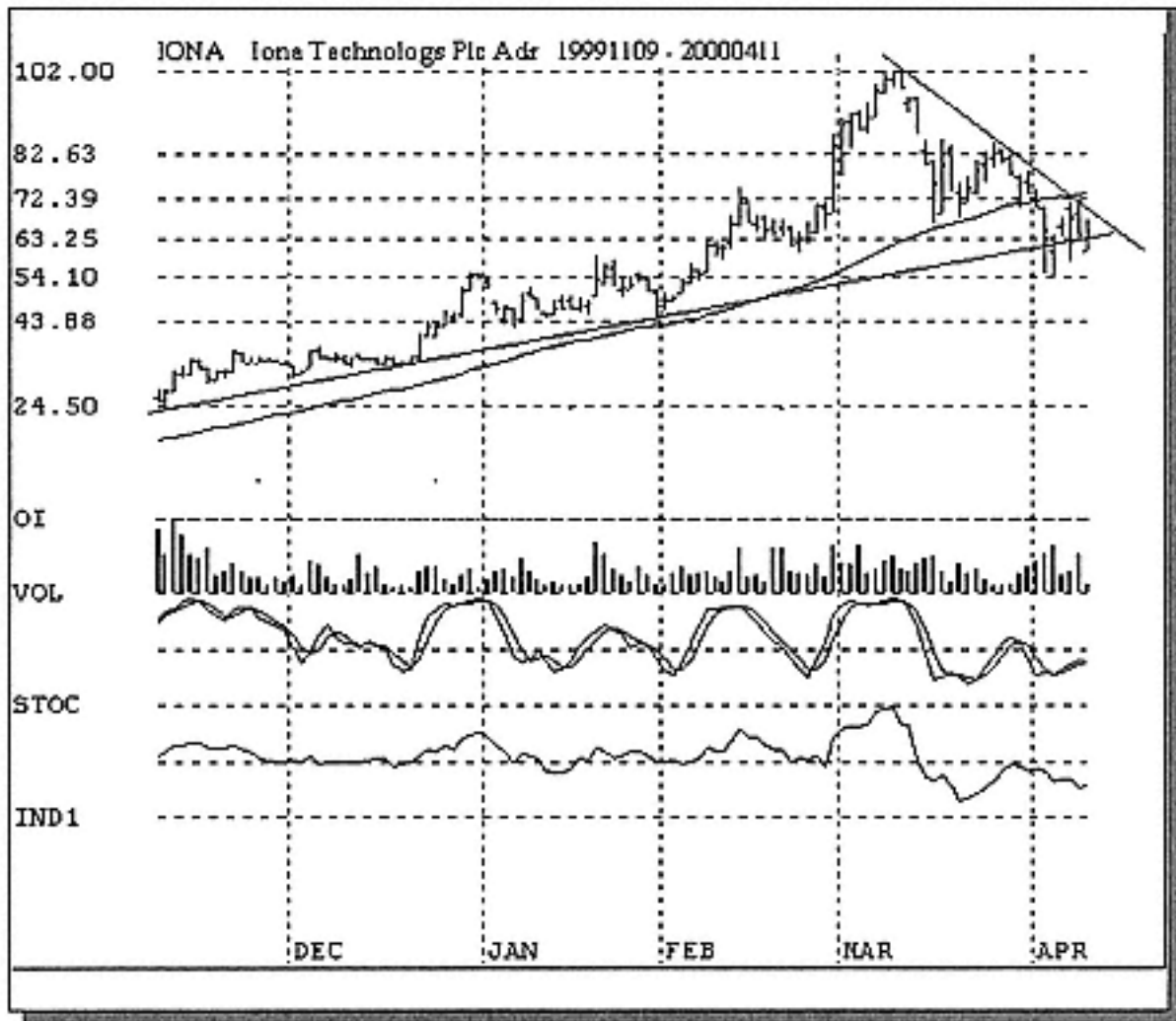< previous page   page_168   next page >

Figure 7-16.
News setup for IONA Technologies (IONA) on April 11, 2000.

the stock. The best choice seemed to be the April 70 put, which had 9 days left to expiration. A little after the open, this put was trading between $4 and $5, somewhat overpriced according to Black-Scholes. Five puts on this stock would cost about $2250. As profit takers came in and sold stock to the hungry buyers, prices declined. In this case, the stock declined in a gradual, even manner. At around 11:30 a.m., the decline slowed and by noon nothing much was happening. Nerves had begun to set in. The stock dropped to about $64 and the options were trading around $7.50. This was a good time to exit and take a profit on the trade. With a maximum at risk of $2250 and a profit of $1500, the return was

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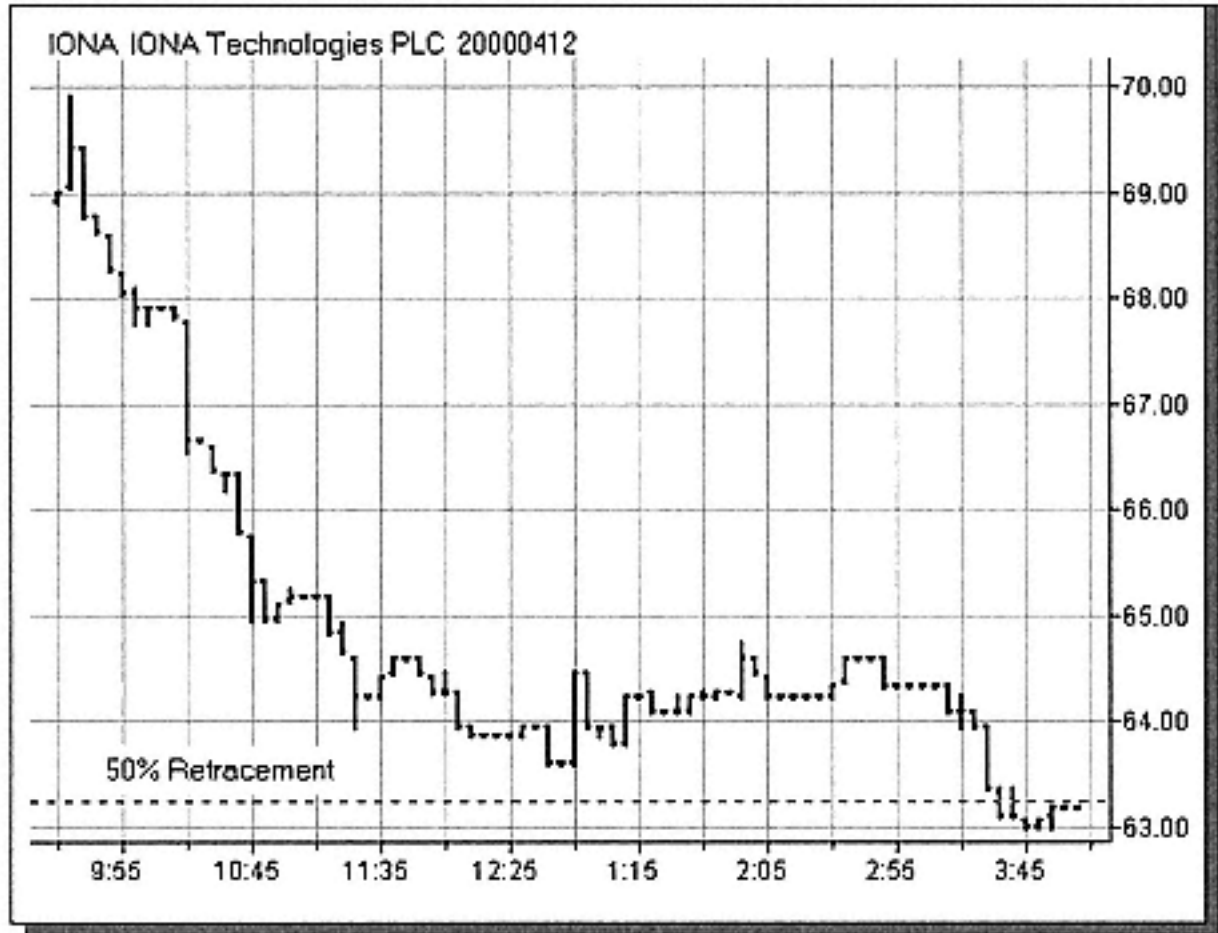
Figure 7-17.
News trade for IONA Technologies (IONA) on April 12, 2000.

over 66 percent. Not bad for a trade lasting just a few hours. Throughout the remainder of the day, until just before the close when it dropped another point, the stock remained fairly flat. During the next few days, the stock could go either way, depending on the amount of "insider" trading and other factors. Some stocks will begin to move in accord with the growth and earnings reports (i.e., to rise) after the initial selloff, while others will continue to decline, despite the good news. In other words, on a longer time frame, the news does not always act in a consistently contrarian manner, although it may do so.

Another example of good news preceding a down day can be found with Time Warner (see Figure 7-18). At 8:00 a.m., Business

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Figure 7-18.
Intraday chart for Time Warner Inc. (TWX) on April 12, 2000.

Wire indicated that the company had record first quarter earnings. Reuters also provided an earnings report at about this time. At 8:04 a.m., another positive report appeared on Reuters regarding Time Warner Cable Networks. Lots of positive news. What did the stock do? It opened marginally higher than the previous day's close, between $96 and $96.50. It then dropped steadily until just after 11:00 a.m., when it was trading slightly under $92. The option for this stock would have been the April 95 put. At the open, this put was slightly in the money and trading around $3. By 11:00 a.m., that same put was trading over $5, representing approximately $200 per contract in profit. If the trader had the nerve to hold on to the option until the end of the day, or even until the next day, the profit

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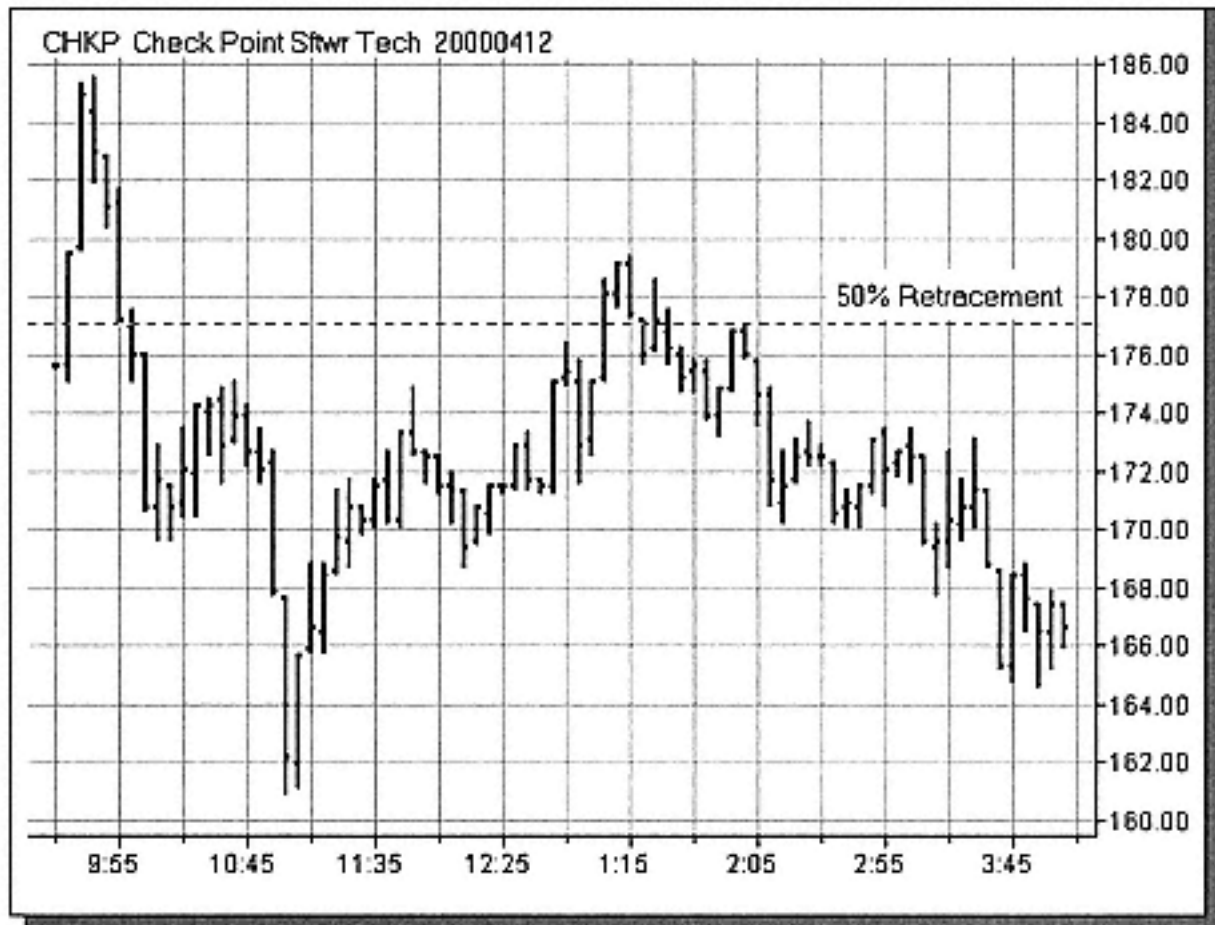
Figure 7-19.
Chart for Checkpoint Software (CHKP) on April 12, 2000.

would have been very much greater. The stock continued to decline throughout the day, especially toward the end of the day, and the crash on April 14, 2000, carried it further.

Another stock that had record earnings was Checkpoint Software (see Figure 7-19). This was according to Business Wire at 7:40 a.m. Other good news appeared on Reuters at 8:24 a.m. The stock opened about $5 higher than the previous day's close, around $175. It rose to $185 within the first 20 minutes of trading, and then proceeded to collapse, dropping to a little over $160 by 11:00 a.m. Again, a serious selloff followed the excessive optimism and buying before and just after the open. Throughout the remainder of the day, and in possible anticipation of another news story on positive earnings that appeared at 2:38 p.m. on Reuters, the stock recovered

to $180. It then continued its decline, closing at about $167. The recovery seen later in the day may have had nothing to do with the second news story. It might simply have been due to a tendency of many stocks to recover some of their losses after the selloff. In a sense, the selloff that occurs after a news story hits and traders pile up at the open is a response to an overshoot. The pileup, along with optimism, carries prices excessively high at or near the open. Profit takers come in, triggering a wave of selling. This, in turn, brings prices too low. After the wave of selling exhausts itself, prices return to more rational levels, as correct information regarding the impact of the reports is absorbed into the markets.

When news hits before the market opens, one strategy some traders might be using is to respond to the news in the so-called after-hours markets. For example, if a good news story comes out at 6:00 a.m., experienced day traders will get in before the market opens, when much of the public jumps on the bandwagon. They enter and buy, slowly driving prices up. When the market finally opens, and the public swarms in, the pros sell into the mounting demand, taking a quick profit from the news. Since we are talking about options trading, we are playing the reaction move, that is, we are "fading" the move produced by these short-term traders.

Some may argue that the declines in the aforementioned stocks were due to the general bear market that was in progress at the time and not due to the news. To disprove that conjecture, we decided to look for news occurring after the close of the market on April 13, 2000, and before the opening on April 14, 2000a day when the Dow dropped over 617 points. In this case, we looked for really bad news. There were only a few companies for which seriously damaging stories appeared. There was a report about MicroAge Inc. (MICA) filing for bankruptcy. On April 13, 2000, at 7:13 p.m. (after the close), a news report on Business Wire regarding Horace Mann (HMN) had the headline "First Quarter Earnings Estimate Impacted by North Carolina Settlement" at 7:13 p.m. The next morning, at 7:53 a.m., Reuters ran the headline "Horace Mann Sees First Quarter Earnings Below Forecast."

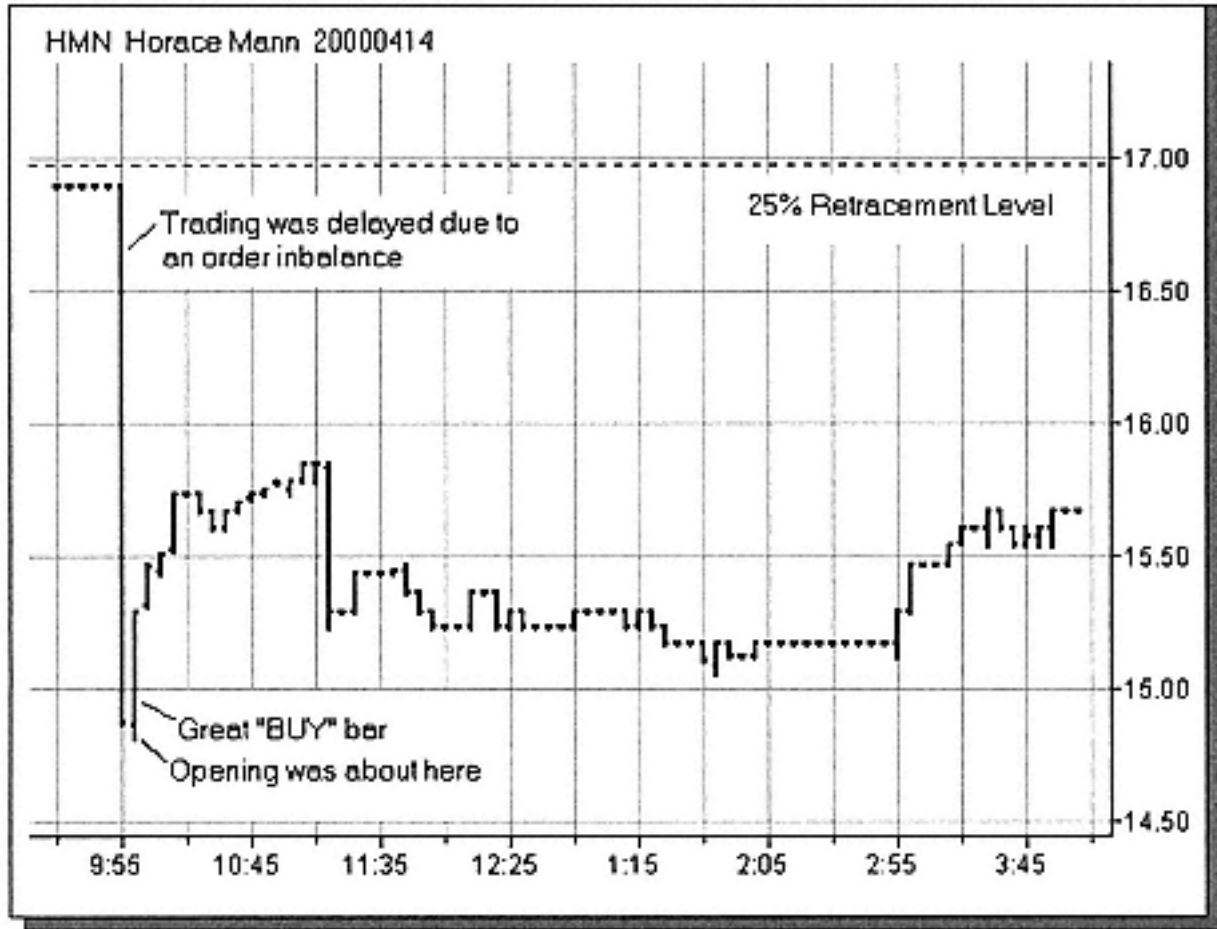< previous page   page_173   next page >

Figure 7-20.
Chart for Horece Mann (HMN) on April 12, 2000.

We first examined MicroAge, which did not trade on April 14. We then proceeded to Horace Mann and found exactly what we were looking for (see Figure 7-20). After a delay in trading due to an order imbalance (possibly from a pileup of sell orders overnight), the stock opened down ($14.81) on the bad news. This was a drop of $2.12, down from $16.93 on the previous close. After the open, the stock immediately began to climb. Within less than 20 minutes, the stock was trading around $15.75. A little after 11:00 a.m., the prices again dropped, but not to the low of the opening. Throughout most of the remainder of the day, the stock traded between $15 and $15.50. Shortly after 3:00 p.m., the stock climbed above $15.50 and managed to close at $15.69. The stock actually gained $0.875 from open to close. A day trader would have made slightly more because he or she would have exited during the first thrust, at around

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11:00 a.m. This was on a day when the Dow dropped over 617 points. On "Black Friday," this stock, having to pay a lawsuit settlement and having lower than expected earnings, posted a gain! Contrarian news trading works. Of course, things don't always come out this well. For best results when going long, find news stories that would terrify most investors, or entice them if you are planning to go short. The more extreme the news, the bigger the potential bounce.

What Have We Learned?

Momentum trading is a form of trend following, in which the trader enters the market in the direction of strong, accelerating movement.

The first step in momentum trading is to sort through a large number of charts looking for promising stocks or futures for a *setup*, when it is clear that momentum has started to accelerate.

When picking stocks or futures for intraday trading, examine their longer-term behavior.

To capture sufficient movement, look for trading instruments with large daily ranges. Also look for movement that is expected to continue into the next trading day.

When momentum trading options, make sure they have enough trading volume to be liquid, and strike prices that provide sufficient leverage and cushioning against adverse movement.

Attempt to buy or sell at least several hours before the market closes, as well as to do so during a pause in movement to get a better fill and reduce slippage.

When momentum trading, after entering on a pause, hold the position until just after the next spurt of movement, but exit before the movement stalls.

It is easy to find stocks for momentum trading options. The currencies and energy markets are often the best futures.

When momentum trading options, consider *Delta* estimates of

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how much the price of the option is expected to change in response to a change in the price of the underlying.

Options suitable for momentum trading should have reasonable trading volume (for liquidity and tight ask-bid spreads), and prices that are acceptable (neither too low nor too high) relative to theoretical fair value.

Seek confirmation from several sources when momentum trading. For example, when the moving average, the stochastic, and the 14-day rate of change are up, and when prices break above a resistance trendline and volume is rising, all combine to produce an ideal setup for a momentum trade.

When momentum trading, it is best not to place buy or sell orders at the open, since the market might initially respond to overnight trading. Instead, wait a bit until the market's behavior stabilizes and its overall direction can be determined.

Sometimes it is best to take a quick profit and *roll over* a position, that is, to reenter then exit, rather than ride a movement for a prolonged time. This ensures some profit and helps cushion against the possibility of sudden adverse movement.

Stock prices often decline immediately after good news is disseminated, possibly because traders that anticipated the news have already bought and, when the new appears, they take a profit by selling into the demand created by the story. The reverse is true for bad news.

In *swing trading*, traders buy or sell into *reversals*, when movement in one direction stops, only to begin in the opposite direction.

The difficulty in swing trading is determining the price and time at which the reversal will occur.

Support and resistance points help signal price levels that can be critical in swing trading.

Under the *50 percent retracement rule*, a stock or a future is

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expected to retrace 50 percent of its previous movement before reversing.

Opening gaps and market response to news stories can be opportunities for swing trading.

The basic idea in swing trading is to buy when others are selling, and to sell when they are buying.

When scanning charts for swing trading, look for stocks or futures that are retracing to one of the critical price levels, off of which movement might bounce the next day. Check that the instruments have behaved according to expectation in the past.

To determine when to exit, examine the market's past behavior to see how far it penetrated before bouncing. If it doesn't behave as expected, exit immediately.

A *Fibonacci retracement level* is a price level based on the high and low of the previous swing.

Good setups do not always lead to successful trades.

When trading the news, a contrarian stance seems best, since the public usually overreacts and a profit can be captured when the market adjusts to more normal price levels.

Those trading the news should, before the market opens, look for extremely positive or extremely negative stories that occur after yesterday's close but before today's open.

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Chapter 8
Trading Index Options and Futures

An alternative to trading equity options or commodity futures is trading index options or index futures. In previous chapters, we mentioned that we trade the S&P 500 and E-Mini index futures. There are also the popular OEX options, which trade on the S&P 100 index. These instruments are useful for speculating on the direction of the broad market rather than on movements in individual stocks. If you believe the market is on the way up, go long an E-Mini future or purchase an OEX index call option. If the market rises, carrying the S&P 100 and S&P 500 indexes higher, the E-Mini future or OEX call will increase in value. If you anticipate a market decline, short an E-Mini future or buy an OEX put option. This is known as *index trading*.

There are many indexes on which options and futures trade. Most traders have at least heard of the ones just mentioned, namely,

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the S&P 500 and 100 indexes, which underlie the E-Mini futures and OEX options, respectively. Other popular general market indexes include the CAC-40, DAX-30, FTSE 100, NASDAQ 100, NIKKEI-225, NYSE Composite, Russell 2000, and Value Line. Most of these indexes have active futures, as well as options, trading on them.

In addition to broad market indexes are what might be called *sector* or *group indexes*. Among these are the XAU (Philadelphia Gold and Silver Index), XOI (American Stock Exchange Oil Index), BTK (American Stock Exchange Biotechnology Index), and SOX (Philadelphia Semiconductor Index). Many other indexes of this kind can be found on the websites of various exchanges.

Why trade derivatives (futures or options) on indexes rather than on individual stocks? You might have an opinion about the future direction of the market. Perhaps interest rates have decreased and you expect the market to turn bullish. Maybe a planetary alignment is imminent and you believe it will trigger a crash. In such cases, it makes more sense to speculate directly on the direction of the entire market, rather than on a specific stock. Another reason for trading indexes is because of an opinion regarding a specific sector. For instance, you might feel that internet stocks are the wave of the future, but have no idea which specific stocks will participate in the sector's gain. Under such circumstances, trade an internet index since, by doing so, you avoid the need to know on which internet stock to speculate. Trading an index is similar to trading a diversified portfolio of stocks with a given theme. By trading an index, you avoid the risk that is unique to an individual stockfor example, the risk of a decline caused by a lawsuitbut participate in the performance of the sector. These are some reasons that it often makes sense to speculate on indexes using options or futures.

The indexes can be day traded in the same manner as stocks and futures were traded in the previous chapter: You can search for an end-of-day setup, wait for confirming intraday activity, and conduct an intraday trade. In the examples below, we will again examine the three major approaches to this style of trading: momentum trading, swing trading, and news trading. We will be looking

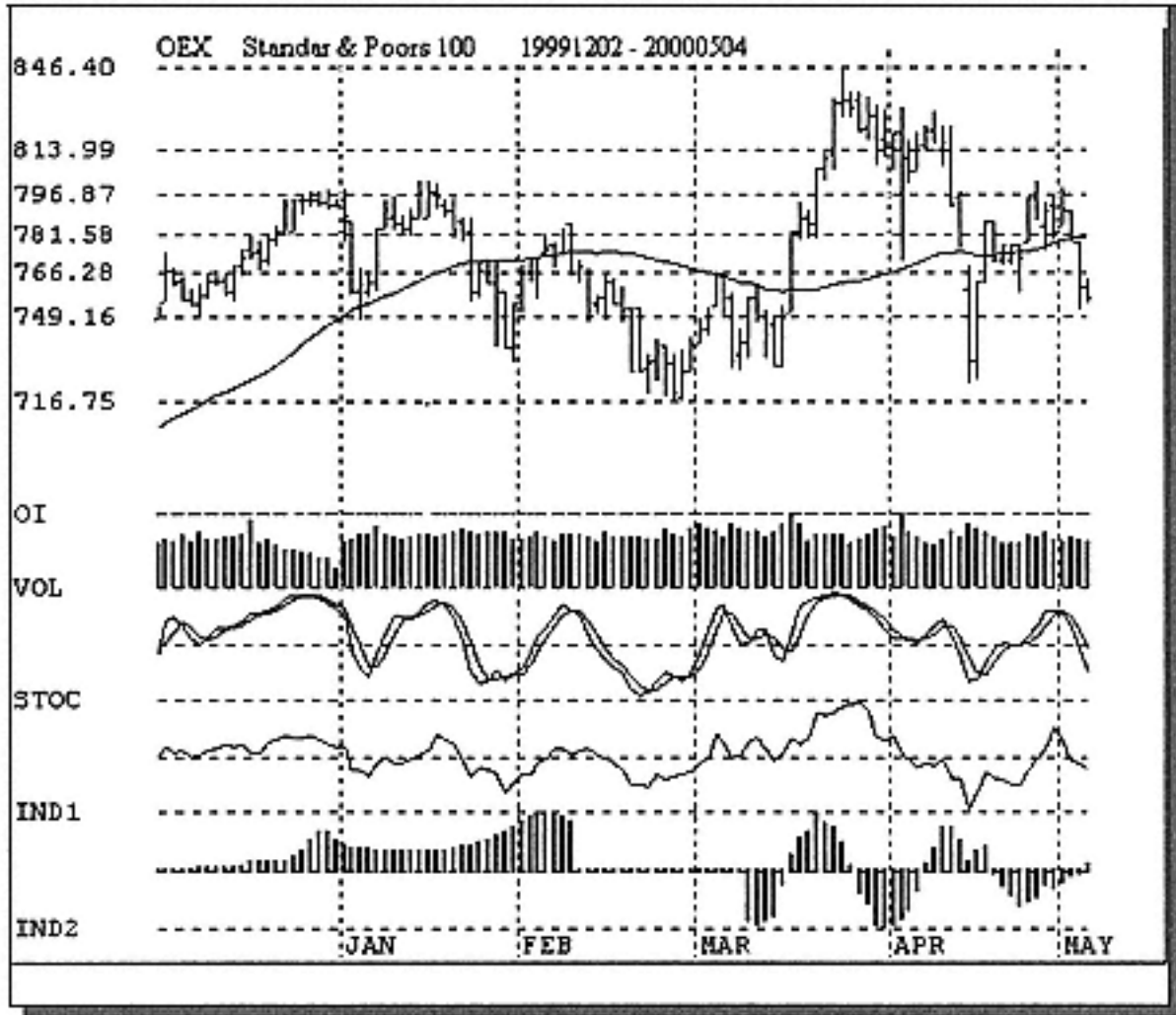< previous page | page_180 | next page >

Figure 8-1.
End-of -day chart for the S&P 100 Index (OEX) as of May 4, 2000.

for setups across six different indexes: the OEX, which tracks the overall market; the XAU, which tracks gold and silver stocks; the SOX, which tracks semiconductor companies; the DRG, which tracks pharmaceutical (drug) firms; the IIX, which covers internet companies; and the XOI, the index representing oil and gas stocks. End-of-day charts for these indexes are presented in Figures 8-1 through 8-6, respectively. These charts extend from December 2, 1999, to May 4, 2000.

Momentum Trading the Indexes

The approach we took to momentum trading in the previous chapter involved looking for a setup in which a stock or future was making

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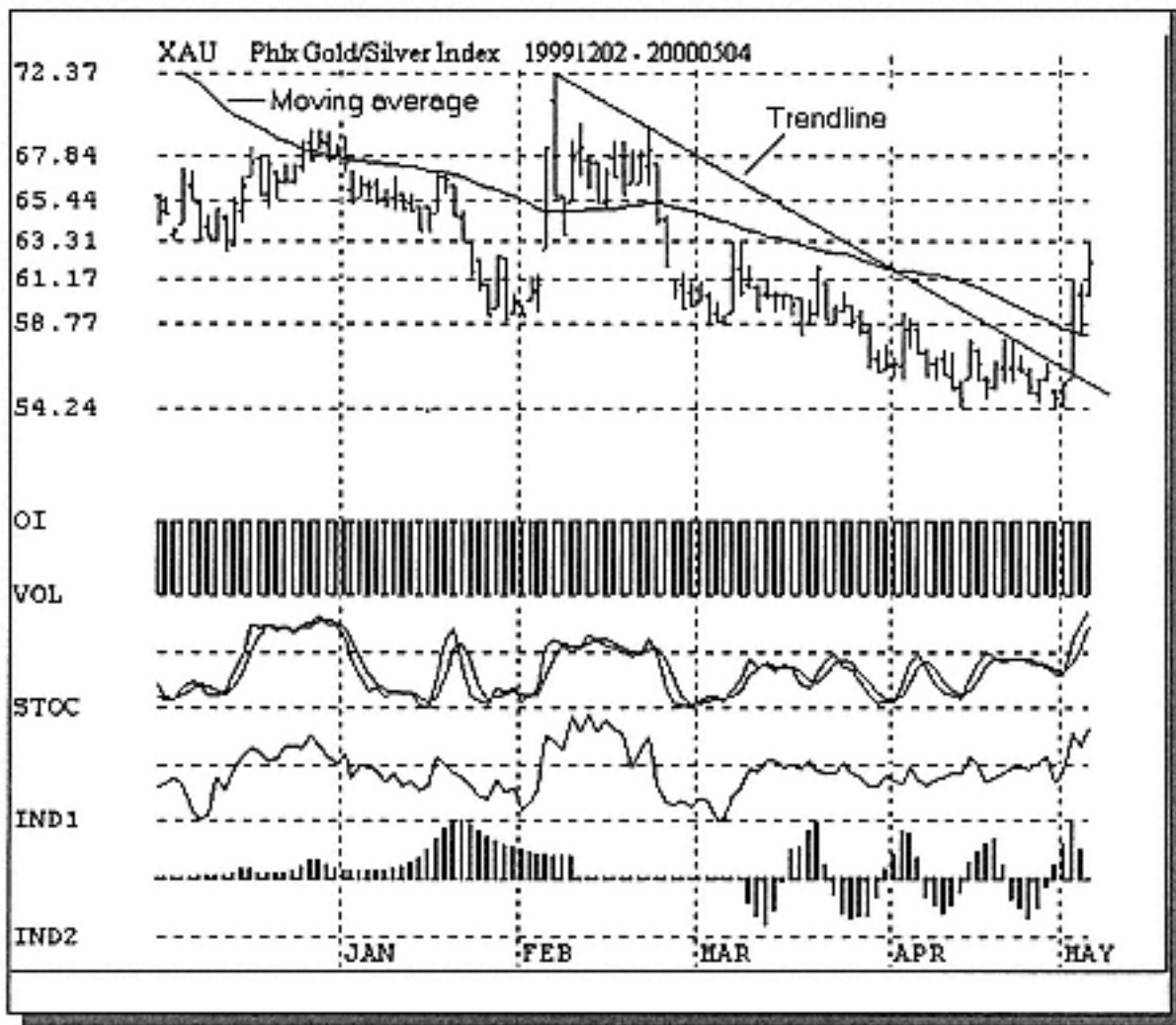
Figure 8-2.
End-of-day chart for the Gold and Silver Index (XAU) on May 4,2000.

new highs or new lows, and evidencing accelerating movement consistent enough to suggest follow-through the next day. When examining Figures 8-1 through 8-6, we were unable to find a really good momentum setup. The closest was the XAU (Figure 8-2), which broke a trendline and a moving average, and appeared to be headed up. However, a 50 percent retracement level loomed above current prices. Such a level could act as a resistance point, stopping further upward movement and perhaps causing a reversal. In fact, the next day, the XAU declined. The 50 percent retracement level was moot, as prices never approached it.

As can be seen, on any given day it may be impossible to find
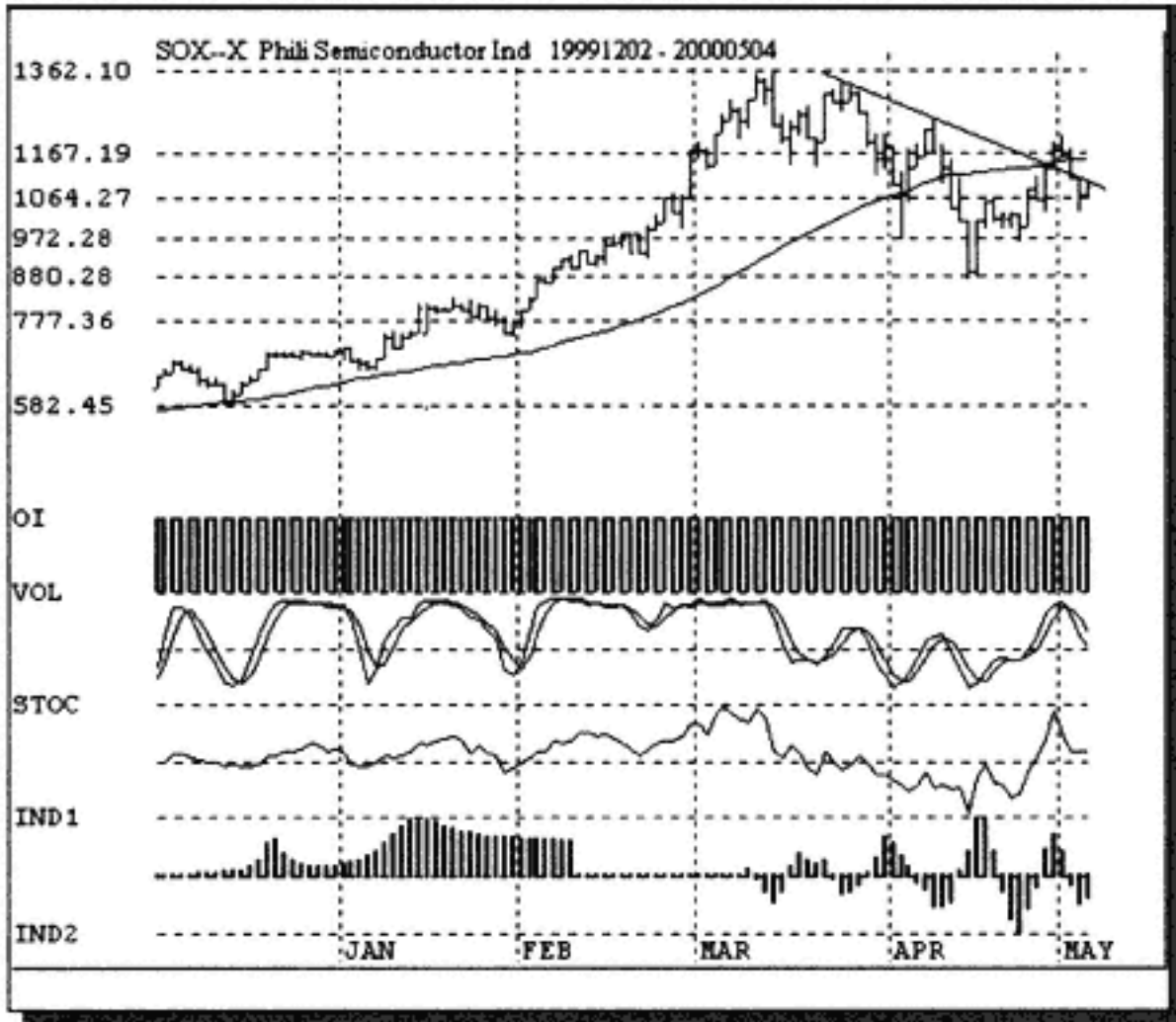
Figure 8-3.
End-of-day chart for the Semiconductor Index (SOX) on May 4, 2000.

a good momentum setup for an index trade. This is not surprising given that we had to search through thousands of stocks to find a few good setups when trading equity options. While a pool of thousands of stocks are available, there are, at best, only a few dozen tradable indexes to search for setupsso, on most days, the odds of finding a momentum setup are low. Furthermore, most of the indexes exhibit a lot of up-and-down activity, rather than clear trends. They less frequently exhibit the clear thrusts seen with individual stocks, the easily spotted trends that persist on the trading day.

To put it bluntly, you will have a hard time finding good mo-

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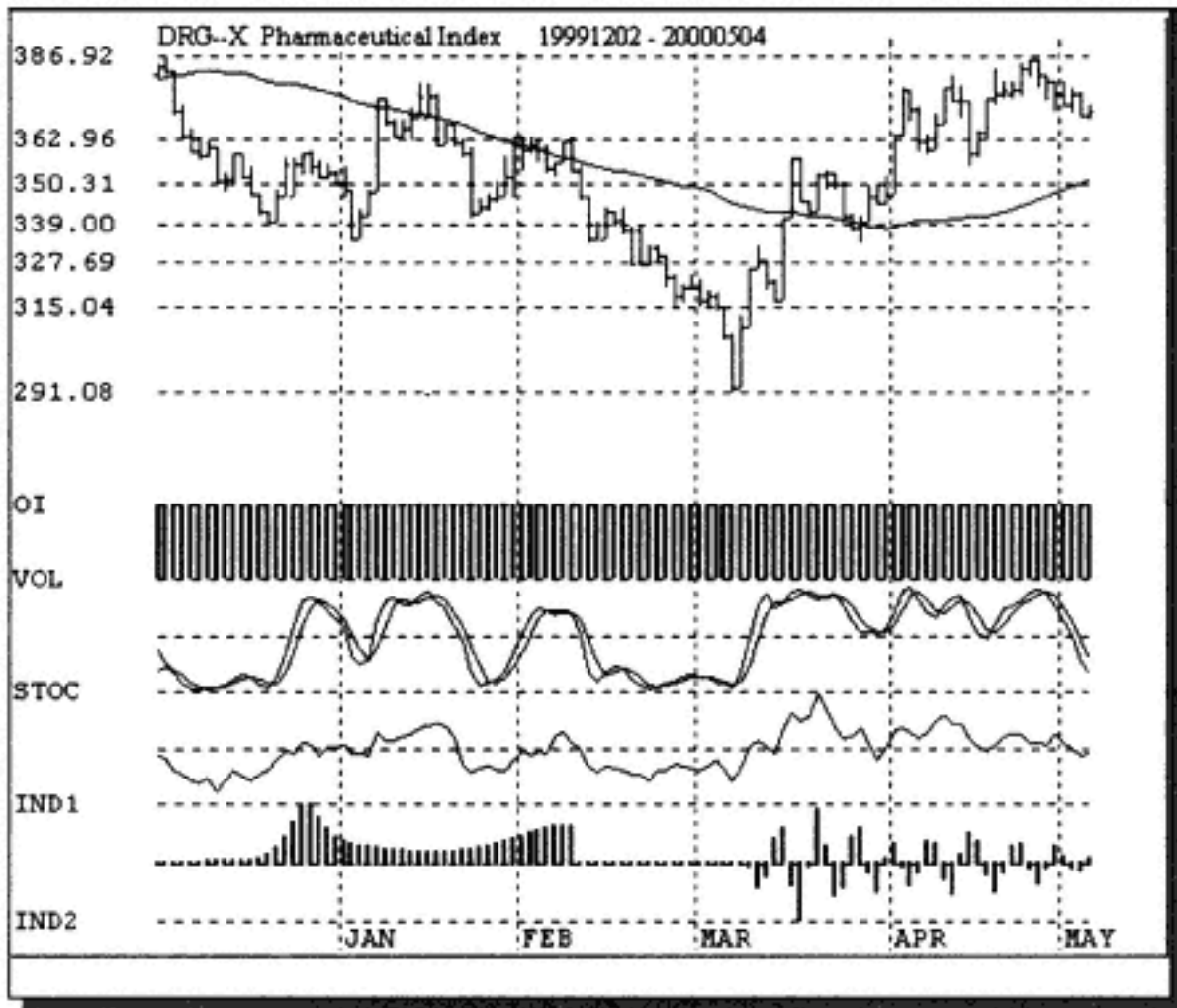
Figure 8-4.
End-of-day chart for the Pharmaceutical Index (DRG) on May 4, 2000.

mentum setups on a regular basis. You can see this for yourself by examining Figures 8-1 through 8-6. Day by day (bar by bar), starting from the extreme right and proceeding leftward, slide a piece of paper across each chart. The idea is to simulate looking at the chart as it would appear at earlier points in time. Try to find momentum setups. There is not much by way of convincing ones, except perhaps for the runup in the Semiconductor Index (SOX) during February 2000 (see Figure 8-3). Even during that fairly smooth trend, there were many short-term reversals from one day to the next, making the index difficult for the day trader using a kind of momentum strategy discussed in this text.

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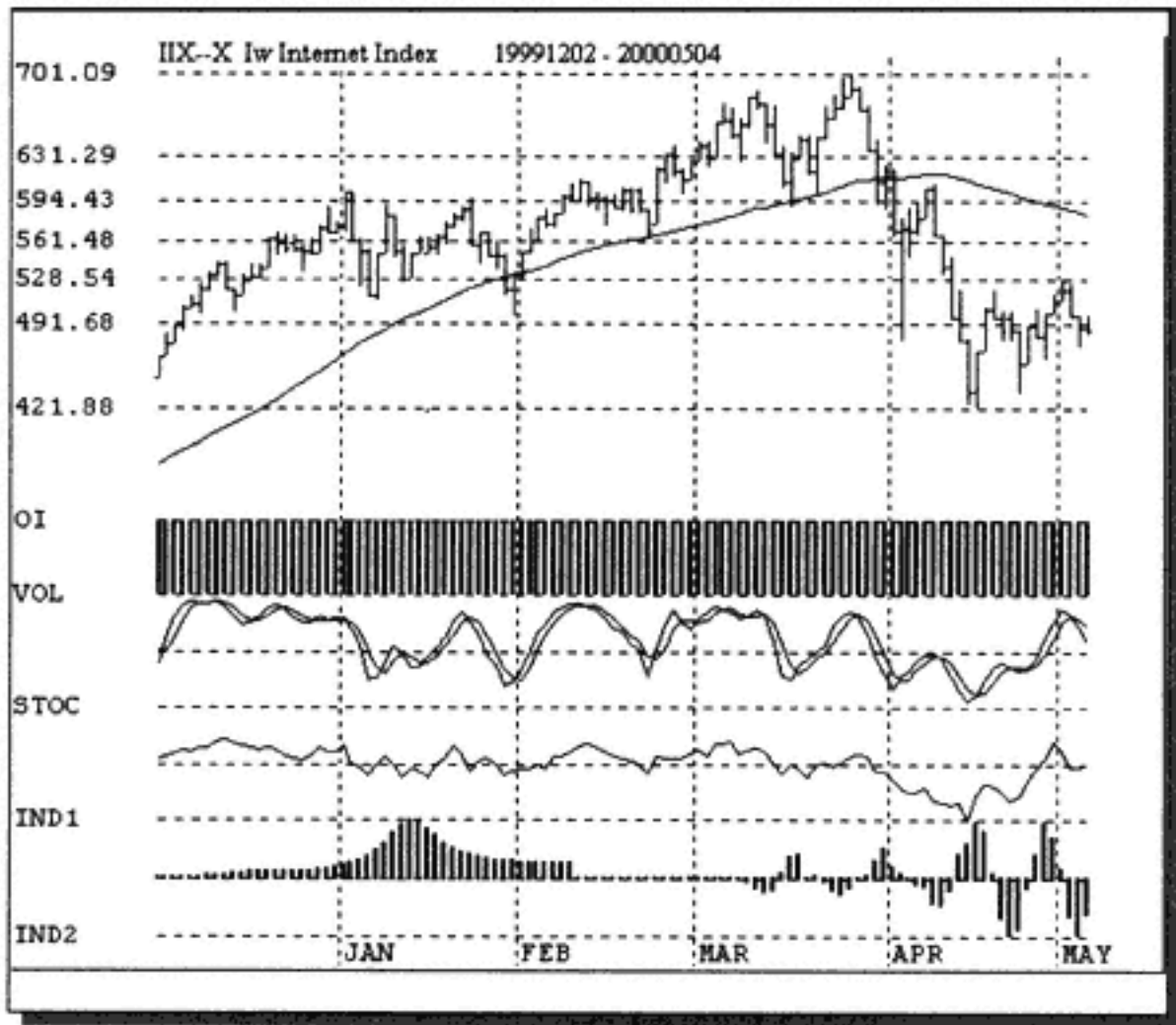
Figure 8-5.
End-of-day chart for the Internet Index (IIX) on May 4, 2000.

In summary, the approach of finding an end-of-day momentum setup, and following it by an intraday momentum trade, is not very workable when day trading indexes. Once in a while, you might find a good setup with tradable follow-through. However, such setups will not occur often enough for a day trader exclusively trading the indexes to see a steady stream of profits from frequent small trades.

Swing Trading the Indexes

The type of swing trading being discussed involves a tetracement to support or resistance. Support or resistance can often be found

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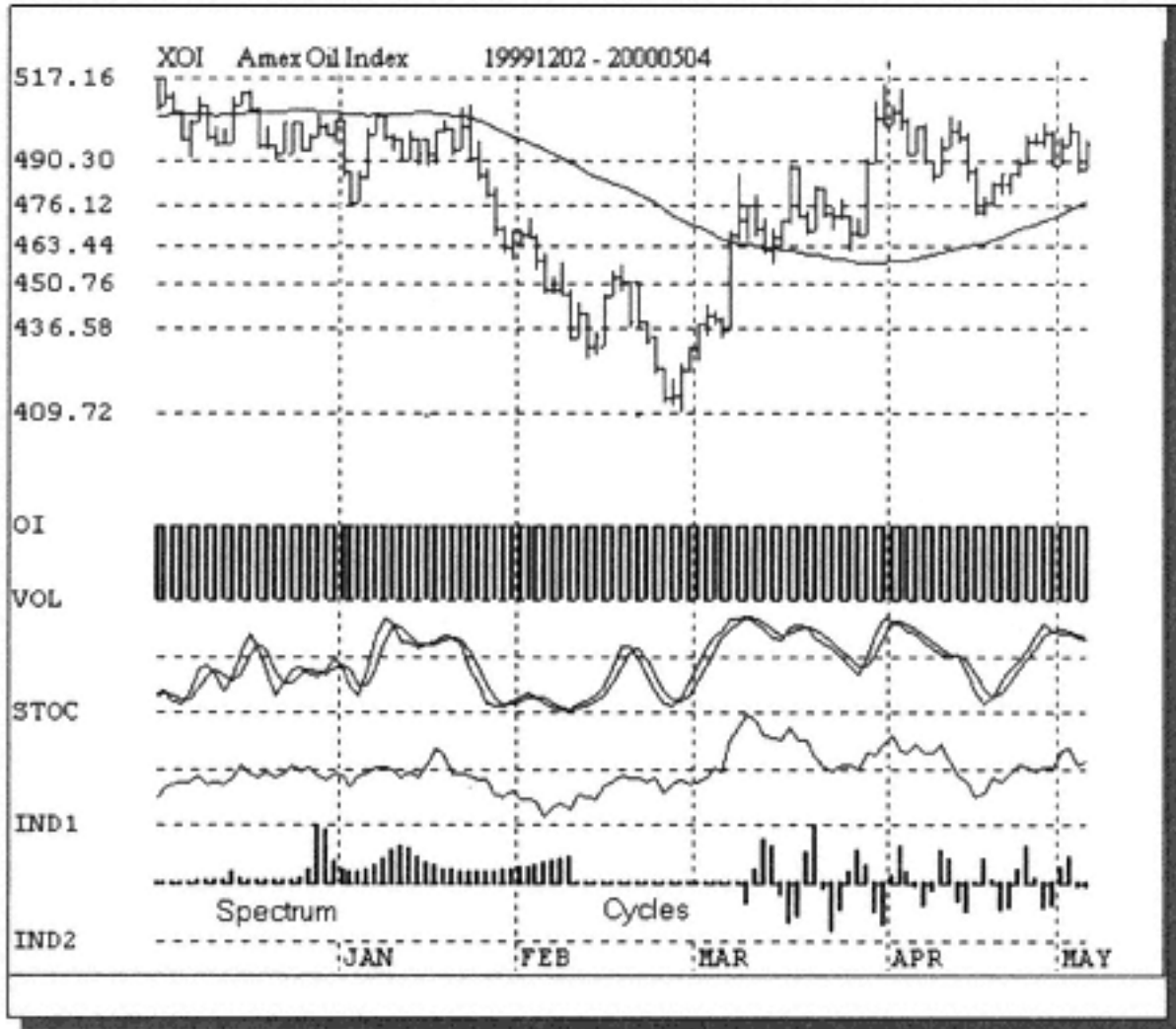
Figure 8-6.
End-of-day chart for the Oil Index (XOI) on May 4, 2000.

at a Fibonacci level, sometimes at a 75 percent, 50 percent, or 25 percent retracement level, or at a moving average. The intention is to capture a profit when prices bounce off the support or resistance level on the following day.

When we examined the index charts shown in Figures 8-1 through 86 for swing trade setups, we experienced a little more success than we did when searching for momentum setups. The Gold and Silver Index (XAU, Figure 8-2) approached, but did not penetrate, a 50 percent retracement level. This is a setup for a possible short trade the next day. The plan would be to buy a put option on the index, if and when the index moved close to $63.31, the resistance level, and to have an exit ready to post should any sig-
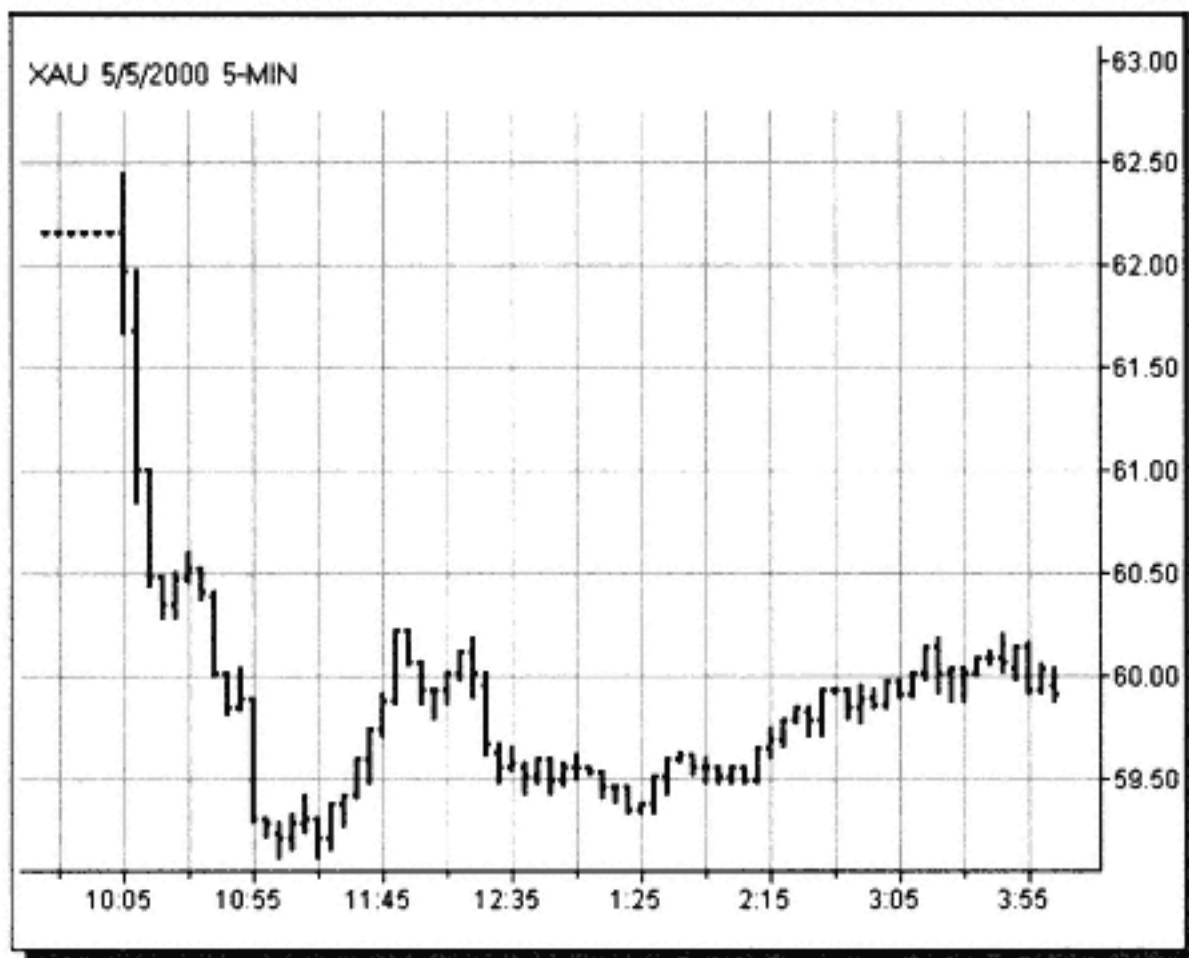
Figure 8-7.
Intraday chart for the Gold and Silver Index on May 5, 2000.

nificant penetration of that level to the upside occur. Confirming the setup is the cycle pattern (see the bottom of Figure 8-2) which suggests that the XAU is near a top and that a potential downward bounce may occur the next day, on May 5, 2000 (cycles are more fully discussed below).

Figure 8-7 shows a 5-minute bar chart for the Gold and Silver Index on May 5, 2000. The index never reached $63.72, the 50 percent retracement level. It only reached a high of $62.50 at the open. If the trader had decided that this was close enough to resistance and had bought a put option in the expectation of a downward bounce, a quick profit (given sufficiently liquid options) could have been made. The XAU dropped from $62.50 at the open to $59.20 around 11:00 a.m., a move of over 3 points.

Another potential swing trade might have been on the Semi-

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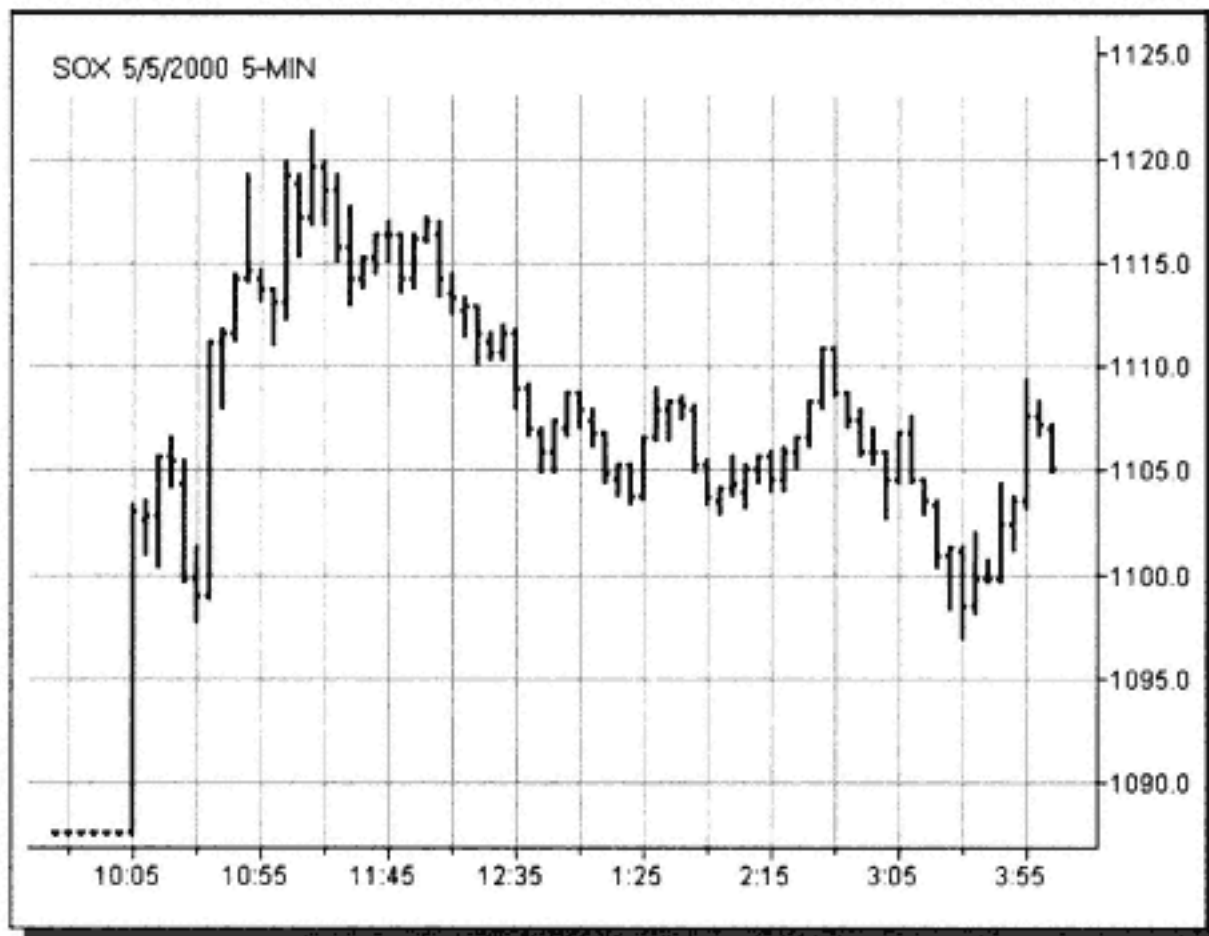
Figure 8-8.
Intraday chart for the Semiconductor Index on May 5, 2000.

conductor Index (SOX, Figure 8-3), which, on May 4, 2000, was trading in a range, the bottom of which just penetrated the upper Fibonacci retracement. There also appeared to be an inverted headand-shoulders pattern in the process of being formed, suggesting a potential move to the upside. The plan would be to buy a call option on the SOX if, the next day, the index again entered the region of the retracement level at $1064.27. There would be a planned losscontrol exit to take the trader out should the index penetrate the retracement level sufficiently to disprove the hypothesis underlying the trade, namely, that the index would bounce off support.

Figure 8-8 is a chart of 5-minute bars for the SOX on May 5, 2000. Although the anticipated direction of movement was correct, the index never reached $1067.27, the upper Fibonacci support

Figure 8-9.
Intraday chart for the Gold and Silver Index on May 9, 2000.

level. In fact, it never went below $1095. Therefore, a trade would not have been entered.

On May 9, 2000, the XAU Index responded to a support level. This can be seen in Figure 8-9. Here the index reached a low near the lower 25 percent level. After bouncing off the 25 percent support, the market rose until it approached the lower Fibonacci level (acting as resistance) at $61.17. This occurred at approximately 11:35 a.m. At that time, the index turned around and declined, retracing roughly half of its move to close around $60.

Another example of an index that bounced off a resistance level can be seen in Figure 8-10, which shows the IIX on May 8, 2000. The index broke down through support just after 10:00 a.m., retraced to that 25 percent level at around 11:00 a.m., and then de-
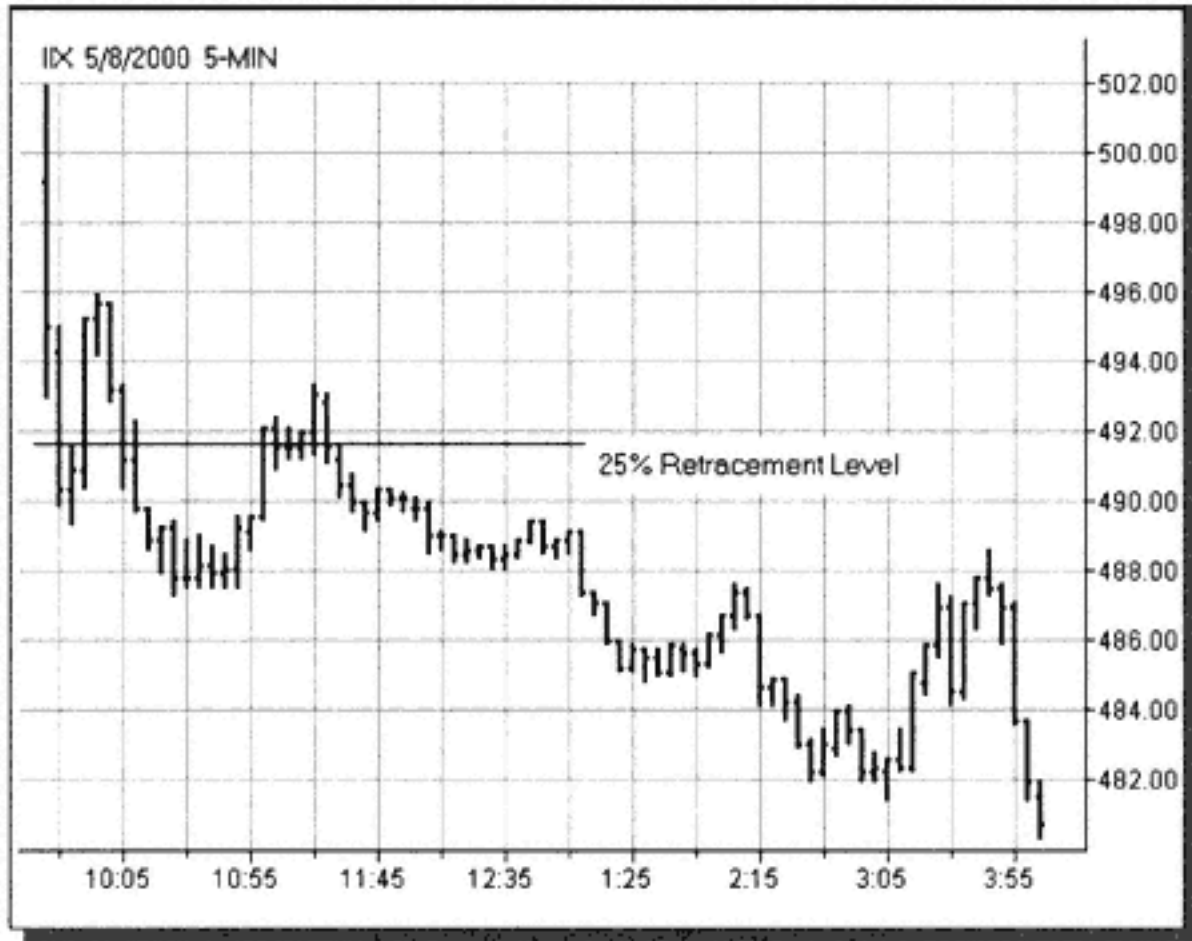
Figure 8-10.
Inteaday chart for the Internet Index on May 8, 2000.

clined the rest of the day. The 25 percent level apparently acted as a support level prior to the break, and as a resistance level after it.

The examples above demonstrate that many swing trading setups will simply not result in trades. Others will, but, as with momentum setups, the frequency of swing trade setups, and especially of successful trades, will be low on any given day. Since a day trader needs frequent, small trades to be successful, these methods fall short when applied to index trading.

News Trading the Indexes

In the previous chapter, when dealing with individual stocks and futures, we described a contrarian news trading strategy. We ex-

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pected the stock or future to open high and then decline following extremely good news, or to open low and rise following extremely bad news. When we look for news relevant to trading indexes, our focus is not on news about a specific company (unless it is a major industry leader, like Microsoft), but on news that will affect an entire market sector or the economy as a whole. For example, crises in the Middle East are likely to affect oil supplies and, therefore, oil stocks. Political crises anywhere in the world affect gold. Interest rate hikes affect the stock market in its entirety, as well as many other aspects of the economy.

On the morning of May 5, 2000, we examined *Investor's Business Daily* for news that might affect the indexes used in the examples. The news in the top 10 headlines was fairly insignificant. The only item that appeared at all relevant (although, in our view, not sufficiently strong for the effects we were looking for) was the headline "Productivity Gain of 2.4 percent Falls Below Expectations." This kind of news might be expected to ease fears of an interest rate hike and, therefore, to send the market upward. Playing a contrarian strategy, we would expect the general market, as reflected in the OEX Index, to decline, rather than rise, as interest rate fears abated. However, since this not extremely terrible or good news, the impact may not be strong enough to cause the market to overshoot in a way that would be useful for contrarian trading. In actual fact, the OEX rose over 16 points within the first 2 hours of trading (see Figure 8-11). In other words, the index reacted in accord with the sentiment of the news, rather than against it, as would be required for a contrarian trading strategy. Of course, the rise in the OEX might not have been due to the news at all. It may have been nothing more than a rebound from the severe decline of the previous 3 days.

On a slightly longer time frame, the upward bounce in prices can be seen in the usual contrarian light. On May 3, 2000, there were two headlines in *Investor's Business Daily* threatening interest rate increases: "Surge in New Home Sales May Put Pressure on Fed" and "Stocks Sell Off Near End As Interest Rates Climb."

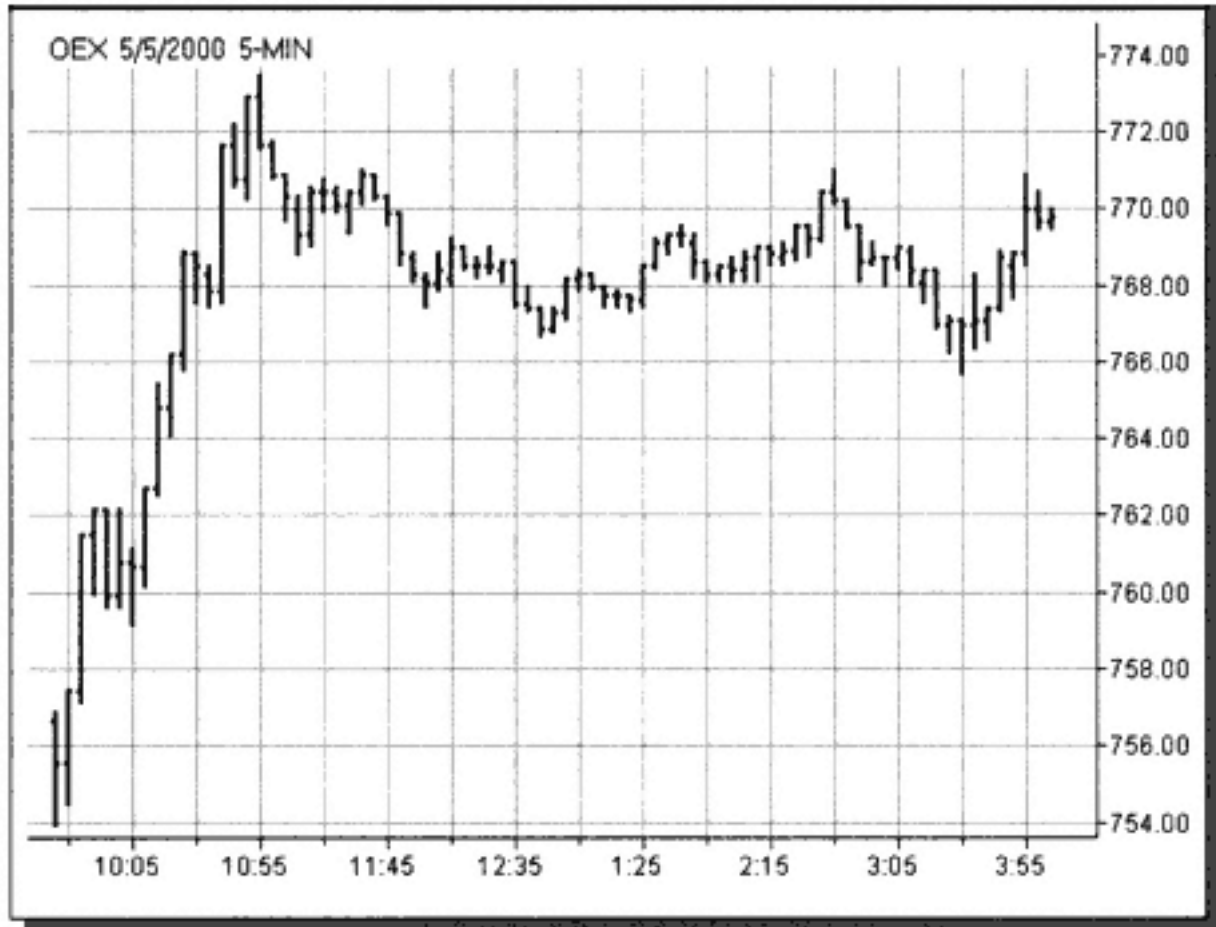< previous page   page_191   next page >

Figure 8-11.
Intraday chart for the S&P 100 Index on May 5, 2000.

There was also a rise in the so-called leading indicators, which can stimulate fears that the economy is heating up and that the Federal Reserve will respond with another rate hike to cool it off. There were also two headlines on May 4 which revealed fears of rising interest rates: "Stocks Suffer Steep Losses As Rate Worries Heighten" and "Fed Beige Book Concludes Wage Pressures Rising." Considering the news over these 2 days, and taking the contrarian stance, we would indeed expect the market to be near a low, ready to bounce, having overshot in response to interest rate anxiety.

These examples illustrate how the impact of news on the indexes may be slower and less well-defined than in the case of individual stocks or futures. Surges in interest rate fears triggered market de-

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clines that persisted for a day or two, with a contrarian bounce taking place only later. And often the force of the fundamentals rules the day.

The Difficulties Day Trading Indexes

For the most part, the highly precise use of the aforementioned strategies to pinpoint day trading opportunities is not a viable strategy for day trading the indexes. Momentum and swing setups are hard to find, and news may have a more delayed and uncertain effect. It is also hard to pinpoint the exact timing of a specific kind of news, since stories with similar themes frequently repeat for several consecutive days. In short, these strategies are not particularly appropriate for actively day trading indexes.

Imagine, however, that these strategies were effective or that there were others that could accurately isolate day trading opportunities. How would you take advantage of such trading opportunities using index options and what problems would be involved in doing so?

On the basis of inside industry information or on some general understanding of the economy, suppose you knew that drug companies were collectively poised for a rise on May 5, 2000. You knew that the drug index (DRG) would have a tradable move like the one in Figure 8-12.

Further suppose that you entered the market at 10:00 a.m., after some confirmation that your hypothesis was correct. At that time, the DRG was around $372. You decided to purchase one of the more liquid calls, the May 390. This call is somewhat further out of the money than preferred; however, the price is lower and some trading volume exists to provide liquidity. Assume you held the position until 11:00 a.m., just after the index had begun to hesitate and when the DRG was around $377, and sold the call at the market price.

In this trade, the DRG moved 5 points in your favor. Did you make a profit? No. In fact, you lost money! The option Delta was
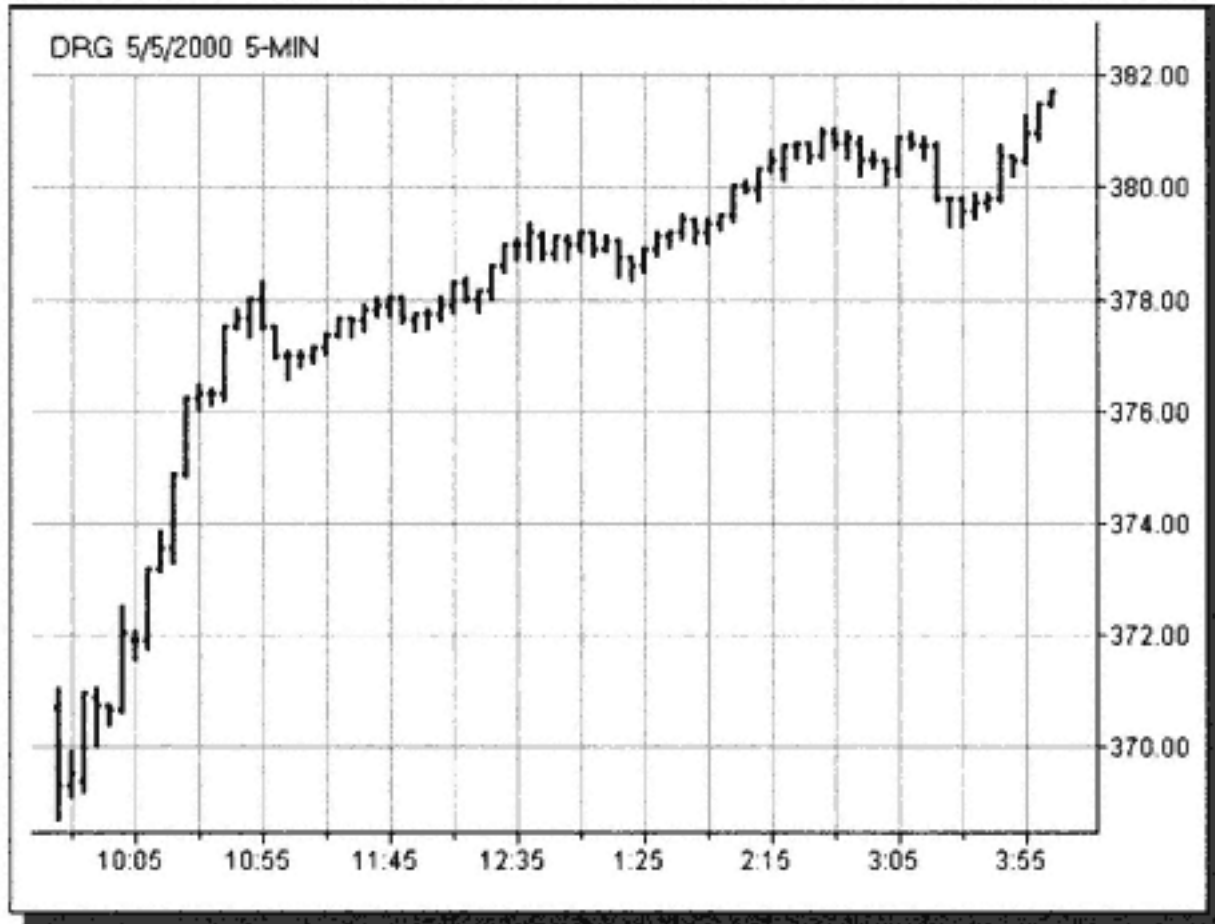
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Figure 8-12
Intraday chart of the Pharmaceutical Index on May 5, 2000.

around .3, so the 5-point move in the index translated into a move of $1.50 in the option. Because the option had an ask-bid spread of $2, quite large, your profit would have been more than eaten away. And this is with an index that moved exactly as anticipated! The trade lost due primarily to unfair pricing and lack of liquidity.

Many index options have problems with liquidity. They tend to trade thinly and the ask-bid spreads are often large, especially when compared to the spreads seen on actively traded stock options. In the previous chapter, ask-bid spreads less than 1/4, sometimes less than 1/8, were found, and there was a good deal of trading volume. In the case just discussed, the ask-bid spreads were as wide as $2. At the close on May 5, 2000, DRG's May 390 had a bid of 4 5/8 and an ask of 6 5/8. The May 400 option had a bid of 1 5/8 and

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an ask of 3 1/8a spread more than 50 percent of the total option asking price! Although some index options are more liquid (e.g., the OEX is actively traded and reasonably liquid), the ask-bid spreads still tend to remain high. Many traders experience losses with these index options, even when they are right about the direction of the market. Not only are the ask-bid spreads large, but many index options are so thinly traded that trading just two or three options can dramatically change prices and make it difficult to profit. The problem of poor liquidity in many index option markets is a serious one.

As discussed in an earlier chapter, inefficiencies may imply the existence of opportunities. In this case, there might be arbitrage plays or other ways to exploit the wide ask-bid spreads. A trader could, for example, attempt to sell highly overpriced options at a price just below the current ask, and then attempt to buy them back above the current bid. With spreads as large as those frequently seen in the indexes, this seems to be a viable strategy. However, the margin requirements for selling naked index options are so great as to render this strategy insufficiently profitable. High margins are one of the factors contributing to the low levels of liquidity. Another approach is to try to buy slightly above the bid and sell slightly below the ask. In practice, however, fills will be infrequent.

Even though it may not be practical to exclusively play the askbid spread, the incorporation of techniques that are designed to work the spread within another strategy (such as momentum or swing trading) might improve the odds enough to yield a profit. When trading the indexes to speculate on sector or market direction using index options, it is absolutely essential to work the market using limit orders. The main reason to work the market using a limit order is to obtain a significantly better price than the ask when buying or the bid when selling. Otherwise, with spreads as large as many of those we have seen, it is virtually impossible for the day trader to profit, even when the index moves in the trader's favor. Although the OEX is more liquid and has smaller ask-bid spreads

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than some of the other indexes, you must still work the ask-bid spread to obtain a reasonable chance of success. As a day trader, you simply cannot afford to give up large spreads.

The Opening Range Breakout Strategy

Since the momentum, swing, and news trading strategies, as defined in the previous chapter, are not viable for the day trader focusing on the indexes, what strategies are? Let us revisit momentum trading.

There are other ways to trade momentum than by first finding an end-of-day setup and then placing an intraday trade. One such way is known as the *opening range breakout*. The trader watches the index after the open, waiting for prices to move sufficiently up or down. When prices move significantly, a trade is triggered in the direction of the movement. Usually, the "opening range breakout" is a mechanized system in which measurements of volatility are used to calculate the distance from the open that the tradable must move to trigger an entry. But it does not have to be. The trader can simply use horse sense. For example, after the open on May 5, 2000, the OEX moved up (see Figure 8-11). There followed a small consolidation between 9:45 and 10:05 a.m. During this period, it would have been possible to enter long using a limit order, under the assumption that momentum would carry the index higher. Such a trade would have caught a definitely profitable move of between 8 and 12 points, depending on the timing of the exit. The opening range breakout strategy might also have worked for the XAU (see Figure 8-7). The agile trader, seeing the market drop rapidly at the open, might have tried entering short (buying puts) just before 10:00 a.m., with the index at $61. The problem, however, is that the movement was rapid and liquidity poor, so entry might not have been possible. The opening range breakout strategy might also have worked on May 5, 2000 for the DRG (see Figure 8-12) and, to a

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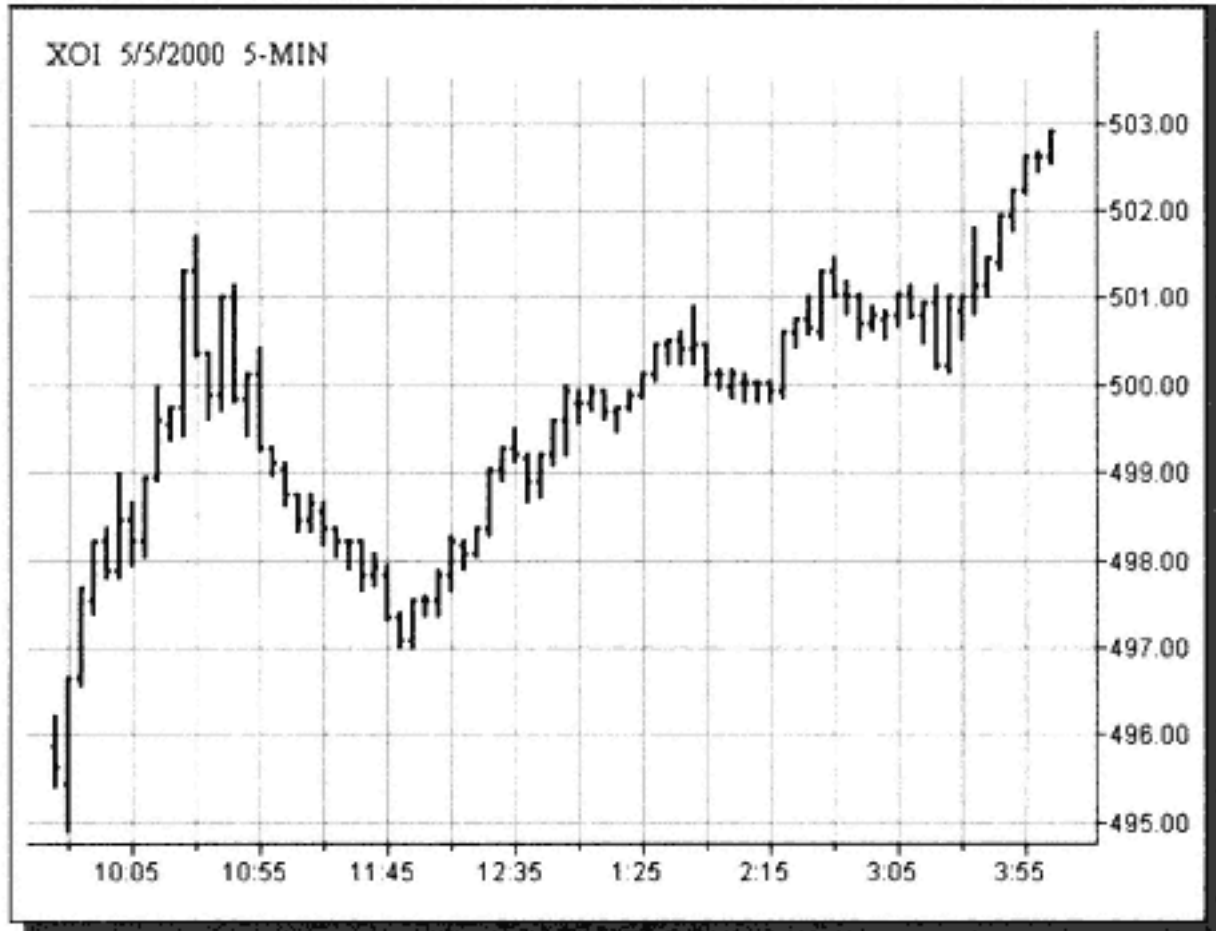
Figure 8.13
Intraday chart of the Oil Index on May 5,2000.

lesser extent, on the Oil and Internet indexes (see Figures 8-13 and 814, respectively).

The opening range breakout strategy works best when the index or market exhibits at least some consistent directional movement throughout the day. The approach fails when prices exhibit cyclic or other forms of trading range (nontrending) activity.

A variation on the opening range breakout strategy may be called the *early direction strategy*. In this approach, the trader looks at the direction of the index a *fixed period* after the open, say, at 11:00 a.m. Has the index dropped from the open or has it risen? Frequently, the early trend continues throughout the day. For example, on May 9, 2000, before 10:00 a.m., the OEX was trading as high as $768 but, by 11:00 a.m., it was trading in a range be-

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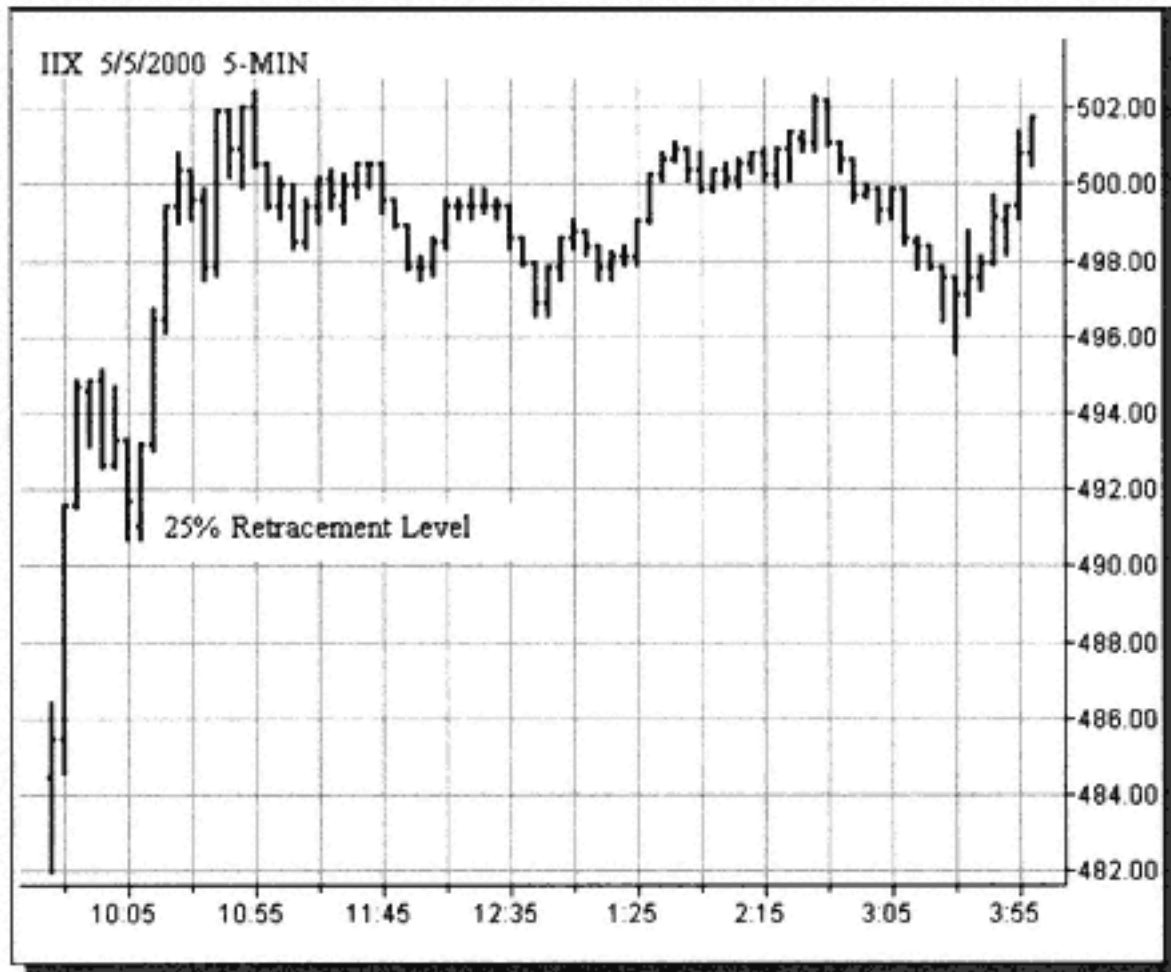
Figure 8-14
Intraday chart of the Internet Index on May 5, 2000.

tween $760 and $762. A trader having shorted the index at that time could easily have picked up a 5-point profit, getting out at, say, $754, since the OEX continued to decline throughout most of the day (see Figure 8-15).

The early direction strategy also worked for the Pharmaceutical Index (DRG). On May 8, 2000, the DRG opened at $382 and had moved up to $385 by 11:00 a.m. A trader entering long at that time could have benefited from a steady rise in price throughout the day (see Figure 8-16). By 3:00 p.m., the index was trading at around $389 and, by the close, it was around $392, again a 5-point move.

Neither the opening range breakout nor the early direction strategy always works as well as in the examples. Sometimes a move can be almost over by 11:00 a.m., with little or no further follow-

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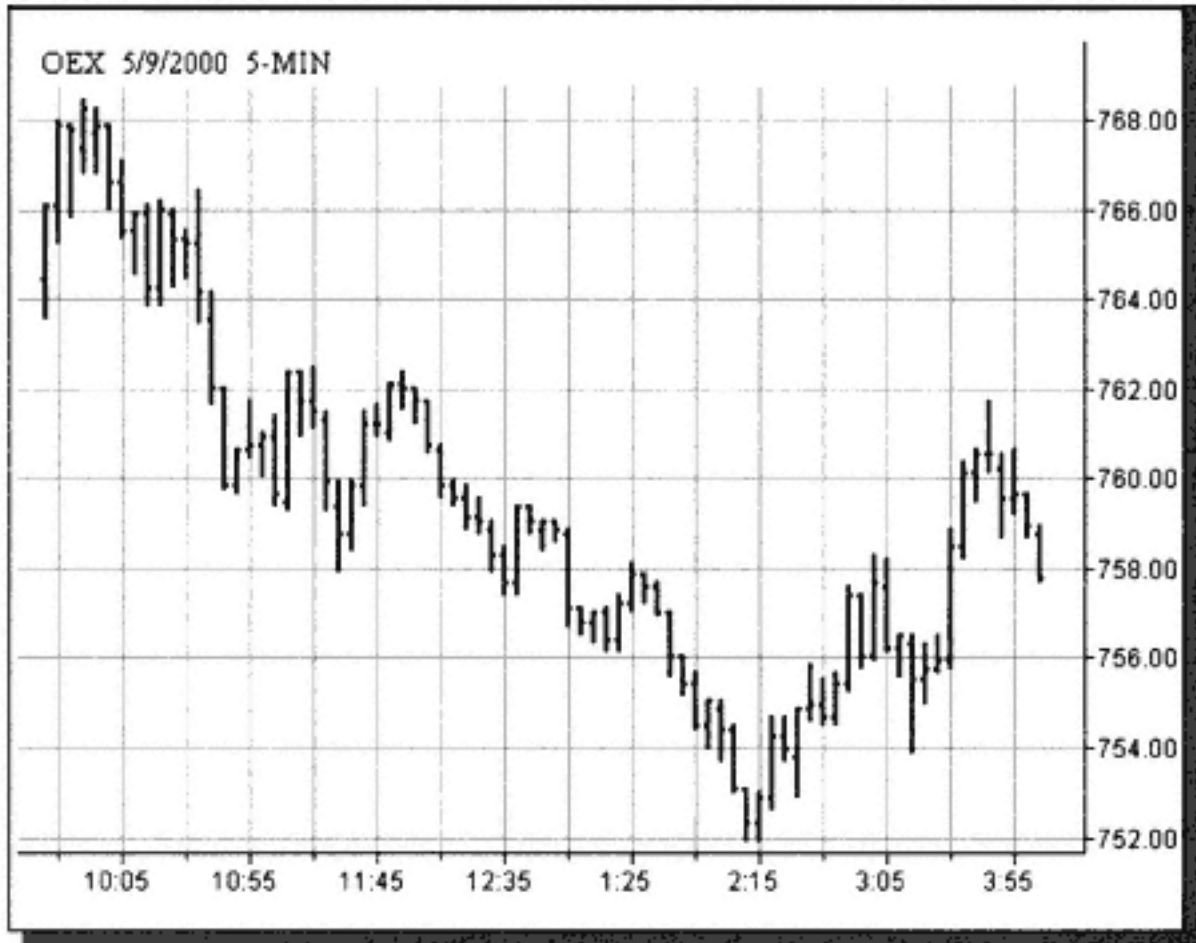
Figure 8-15
Intraday chart of the S&P 100 Index on May 9, 2000.

through. In other instances, the market can reverse just after a trade is entered. You must be ready to exit immediately if this happens. As you can see in Figure 8-8, the chart for the Semiconductor Index on May 5, 2000, the trend was up until just after 11:00 a.m., when the index reversed and entered a rolling decline that continued throughout the remainder of the day.

Another kind of momentum pattern occurs when prices break through a previous high or previous low. This can be called a *simple breakout strategy*. Consider the Pharmaceutical Index in Figure 8-16. The previous high for this index was $386.92. At 1:00 p.m., the index touched and bounced off this old high, which served as a resistance level. At about 1:40 p.m., the index broke through, making a new high. By about 2:00 p.m., the DRG was trading at around $388. The index continued to move steadily and smoothly

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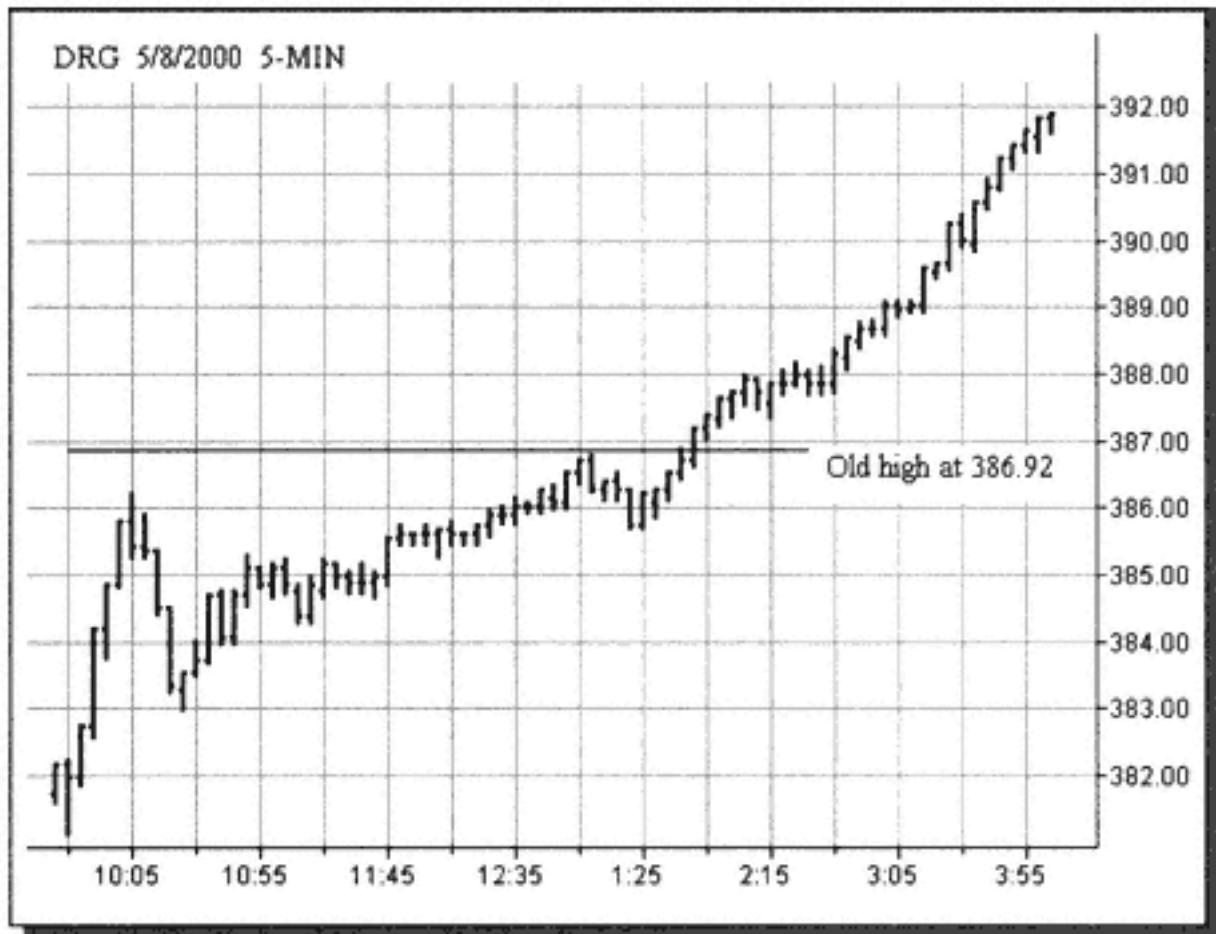
Figure 8-16
Intraday chart of the Pharmaceutical Index on May 8, 2000.

up, closing at $392. This represents a 4-point move in the space of a little under 2 hours.

There are many patterns that are similar to the ones we described and that are often incorporated into mechanical trading systems. Variations include other kinds of activity during the trading day. Is price behavior during lunchtime prognostic of how the market responds later in the day? Can anything regarding current market behavior be determined by examining whether the index opened high or low relative to the previous close? Many other, similar types of rules can be tested and form the basis of a mechanical system.

In our experience, index markets are best traded using at least a partially mechanical trading system, perhaps based on maximum entropy spectral analysis or neural network pattern recognition. This

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is certainly true for the S&P 500, which exhibits all sorts of rolling patterns with specific rhythms, patterns of movement in the futures premium relative to the price, and other oddities that make good fodder for pattern recognition technologies.

Cycle Analysis

If you examine the chart in Figure 8-2, the Gold and Silver Index (XAU), you will find a strong cycle. This cycle is highlighted in IND2 at the bottom of the chart. IND2 depicts the extent of cyclic activity with different periodicities and the actual cyclic oscillations in recent prices. The left side of the subchart shows the power spectrum. A large, clearly defined peak of activity with a periodicity of around 11 days is visible. The right side presents the cycle itself in a way that is easy to visually extrapolate. It appears in the form of a histogram chart. The bars above the baseline indicate that intraday movement (because of the cycle) is up. Conversely, the bars below the baseline indicate downward intraday cyclic movement. In both cases, the length of the bars represents the amount of movement anticipated. Based on the cycle shown in IND2, the next trading day's prices should decline, which indeed they do. As can be seen in Figure 8-7, the Gold and Silver Index declined from a high of between $62 and $62.5 at the open, to a low of between $59 and $59.5 between 11:00 and 11:30 a.m.

Another market with a clear cycle as of May 4, 2000, is the Internet Index (IIX), as illustrated in Figure 8-5. On the basis of the cyclic activity, we would expect the market to reverse the next day, May 5, as the cyclic movement goes from negative to positive. In accord with the cycle, movement during the early part of the day was strongly up for this index, as can be seen in Figure 8-14.

Finally, consider the AMEX Oil Index (XOI). As can be seen in Figure 8-6, as of May 4, 2000, this index evidenced a strong cycle of approximately 4 to 5 days' duration, as well as a weaker cycle of a longer period. On the right side of IND2, we see that two of the down parts of the cycle just occurred; in this subchart,
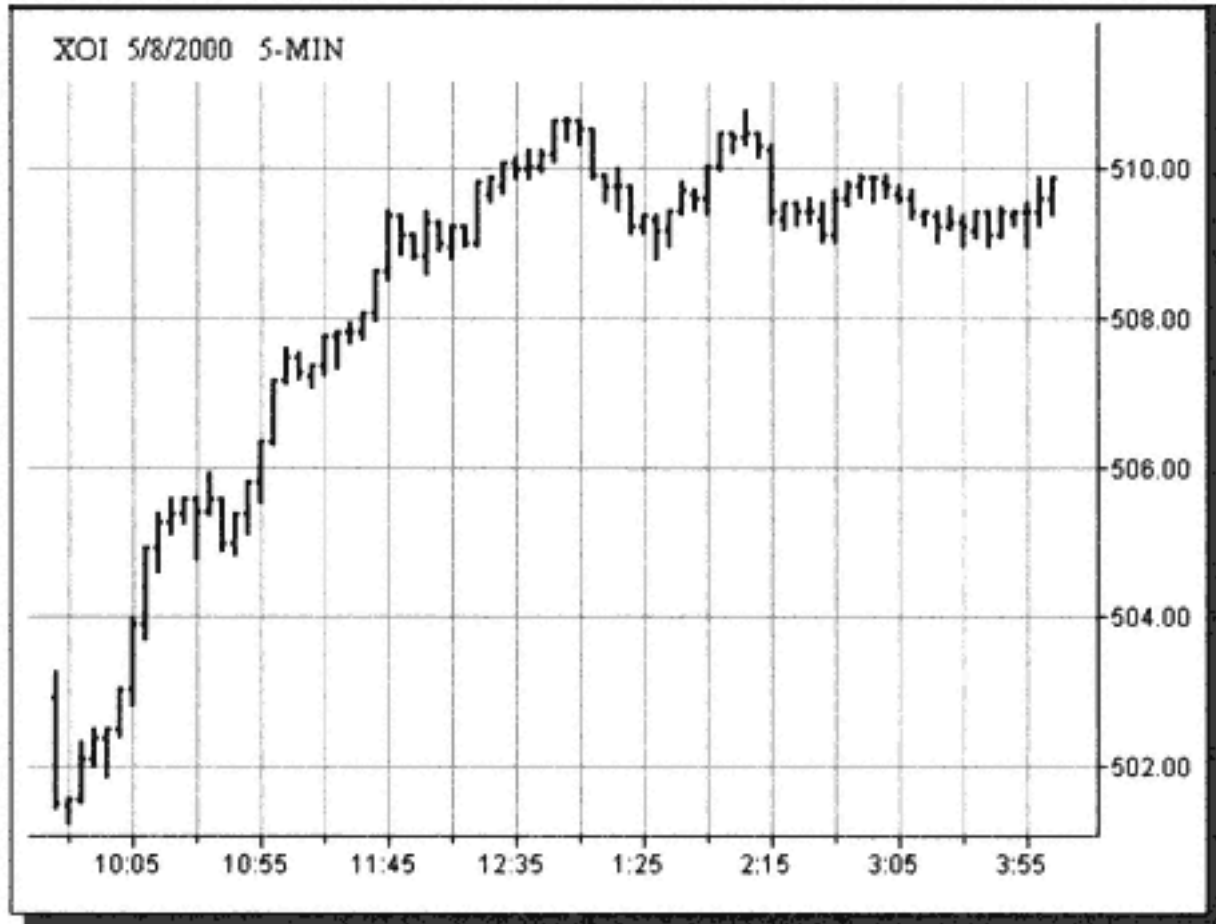
Figure 8-17.
Intraday chart of the Oil Index May 8, 2000.

this is usually followed by 2 up days. Based on this, we would extrapolate that the market should be up over the next 2 days. How did the market actually fare? Examine Figure 8-13, which is XOI on May 5, 2000. The market did indeed rise on this date. Going ahead to the next trading day, which was Monday, May 8 (see Figure 8-17), we see a continuation of the rising trend, in accord with the expectation of 2 up days, as suggested by the cyclic activity.

To extrapolate further, a reversal to the downside would be expected on May 9, the third trading day following the end-of-day chart on which the cycle analysis appears. Indeed, the XOI did decline (see Figure 8-18).

It is clear from the examples that the analysis of cyclic activity (in this case using maximum entropy spectral analysis, or MESA)

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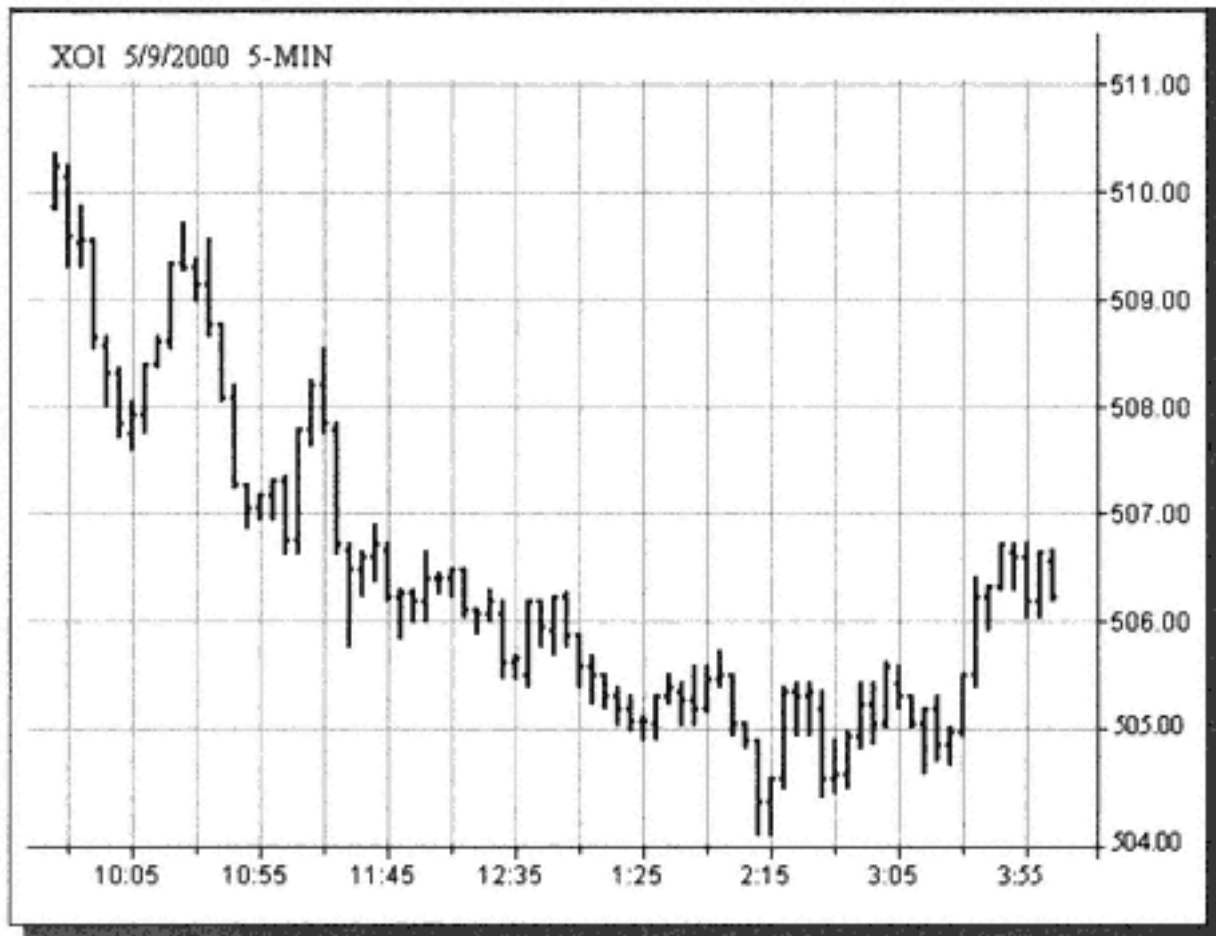
Figure 8-18
Intraday chart of the Oil Index on May 9, 2000.

can be helpful in correctly anticipating the directional movement of the indexes during the trading day. In contrast to many stocks and futures, indexes appear to cycle more as they move up and down repeatedly around some theoretical fair value. Although such cycles are sometimes present in stocks and futures, a pattern in which there are thrusts, plateaus, and strong trends is more often seen with these entities. This is especially true for "new economy" and small cap stocks, such as those found on the NASDAQ. However, this is not to say that cycle analysis cannot also be effective with individual stocks.

Using Proxies for Index Trading

In the previous chapter, we actually conducted some trades and discussed the option prices at the times the trades took place. Here

we have not spoken extensively about option prices. The reason is that the lack of liquidity and large ask-bid spreads of many index options make the kinds of movements just described difficult to trade. If there is a 4- or 5-point move in the XAU, and the Delta is .3 on an illiquid option that has an ask-bid spread of 2, a loss is likely to occur, even with the index moving as anticipated. Although such options might be tradable on a longer time frame, many of these options are not sufficiently liquid to be good instruments for intraday traders.

If you want to trade a sector or index (e.g., semiconductors or oil), we would not generally advise the use of index options because of the aforementioned liquidity and spread issues. This is especially true for the day trader, who would probably suffer losses, even when correct about the direction of movement in the sector. If you are determined to trade something like an index using options, how can you get around the problem of poor liquidity and large ask-bid spreads? A strategy we like involves using specially chosen stocks to act as "proxies" for the indexes.

In the sense we are using the term, a *proxy* is a stock that is highly representative of a given index or sector and that has actively traded, liquid options. While a proxy might not possess the breadth of the entire index, it may provide better liquidity, narrower askbid spreads, and the ability to actually make money during the day. If you are worried about the breadth of your simulated index, there is no reason not to diversify by trading low-cost options on several different but, nevertheless, sector-representative stocks. The benefits of better liquidity and pricing with actively traded stock options may outweigh the drawback of lack of breadth. For example, instead of trading the AMEX Oil Index (XOI), trade options on XOM, the company that resulted from the merger of Exxon and Mobil. XOM options are very liquid and the stock tracks the XOI acceptably well.

When using this approach, it is necessary to pick appropriate stocks to serve as proxies for the sectors on which you wish to speculate. Such stocks must have options that are actively traded.

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This ensures the liquidity needed to day trade the options. The stocks must also have a fair amount of intraday movement and high Betas. Then, too, the stocks must be as representative as possible of the sector as a whole. Lastly, when playing the long side, the stocks should be leaders, that is, have dominant and growing markets (e.g., Intel as a proxy for the microprocessor sector).

Using Factor Analysis to Discover Proxies

To select stocks to serve as representatives of various sectors or market dimensions, an advanced technique called *factor analysis* may be used. This is a mathematical method employed to determine groups of stocks that tend to move together under the influence of some common force or "factor."

Factor analysis is a technique that can reveal a great deal about the structure of the market. The fundamental idea behind factor analysis is the decomposition of a set of observable variables, such as stock prices, into a smaller number of underlying or hidden variables. The small number of hidden variables is chosen to account for as much variation in the more numerous observed variables as possible. Originating in the field of psychometrics, factor analysis was developed in the quest for the fundamental traits of intellect and personality insofar as these could be determined from correlations between scores on mental tests. In the current application, factor analysis can reveal the common, underlying themes that explain the correlations in intraday movement between different stocks. In a sense, factor analysis allows the discovery of sets of variables (in this case, stocks) that move together as if determined by some common underlying influence or force. Factor analysis can help the trader isolate groups of stocks that have price behavior that correlates over time.

Factor analysis allows you to find several groups or clusters of stocks having the following properties: (1) Within each group, the stocks correlate highly with one another, exhibiting a coherence in their intraday movement, and (2) between groups, stocks have lower

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correlations and exhibit distinct patterns of movement. The stocks in distinct groups behave as if their prices are being influenced by different underlying forces. This will all become clearer when we discuss some examples.

Although the subject has not heretofore been covered in the popular trading literature, factor analysis can be extremely useful to traders for a variety of purposes. For example, factor analysis can provide the precise data necessary to optimally diversify. When attempting to create a diversified portfolio, even on a small scale (e.g., trading options on two or three stocks), it is necessary to find stocks that do not move in unison. If you trade options on several conglomerate stocks, chances are they will all rise or fall together. Therefore, despite trading options on several stocks, you will not have achieved any risk reduction through diversification. In some sense, you will not really be diversified. If one stock goes down (or up), the others will follow. They are all influenced in a similar way by the same economic and market forces. Effective diversification requires finding stocks or other tradables that do not move together, that are not correlated, and that are not determined by a common factor. That way, if certain market conditions or "factors" cause one stock to decline (or rise), the others will not follow suit. Instead, one or another of the stocks may go up, compensating for the loss on the one that declined. The information provided by factor analysis is exactly what is needed to select tradables that are distinct from one another, and that are influenced by different underlying economic and psychological forces.

The market has thousands of stocks and each displays a great deal of movement. The idea behind factor analysis, and related cluster and decomposition techniques, is that the activity of all these stocks can be explained in terms of a much smaller number of mathematically constructed, time-varying indexes or factor variables. In fact, as will be shown, you can find a fairly small number of factors that can explain a large proportion of the activity and movement in the greater universe of stocks. More specifically, over

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50 percent of the total variance (movement, volatility) in stock prices over time on the NASDAQ, AMEX, and NYSE can be analyzed into just 60 factors!

As a stock trader, you may have heard the term *Beta*. Beta is a measure of the degree to which a stock moves in response to the general market. Stocks with high Beta are considered more speculative. They tend to rise more in bull markets and decline faster in bear markets than low Beta stocks. Factor analysis refines the idea of Beta. It replaces a single Beta, representing the influence of the entire market on a stock's price, with a whole row of Betas, each of which represents the influence of a single factor or dimension of market movement on the stock. Again, this will become more understandable in the examples, when we discuss the interpretation of a factor matrix or table.

Finally, factor analysis provides one of the most elegant ways to find proxy stocks for trading broad market groupings. The groups found by factor analysis are more precise and have greater empirical grounding than those constructed by analysts.

A Two-Factor Model

To illustrate how factor analysis works, consider Table 8-1, which presents a factor matrix for a two-factor model of the market. The factor matrix in Table 8-1 was computed by analyzing the correlations of open-to-close price change between all pairs of stocks on the AMEX, NYSE, and NASDAQ. The columns represent the inferred common elements or factors; the rows represent stocks, indexes, and Worden groups (sectors defined by Worden Brothers).

The first two columns in Table 8-1 identify the stock or index by symbol and name. The next two columns constitute the actual factor matrix, which is an array of numbers arranged in rows and columns, as in a spreadsheet. The first of these columns represents the first factor (FACT01) and the second represents the second factor in the model (FACT02). The final column represents the "com-

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TABLE 8-1 TWO-FACTOR MODEL OF INTRADAY STOCK MOVEMENT

		FACT01	FACT02	H**2
"Old Economy"				
DJ-65	Dow Jones 65-Stk Comp	0.87	0.05	0.78
CYCX	Morgan Stanley Cyclical Index	0.84	0.05	0.68
BANK-X	NASDAQ Banking Index	0.77	0.07	0.63
DRGX	Pharmaceutical Index	0.65	0.07	0.41
OEX	Standar & Poors 100	0.65	0.37	0.67
WG350	Diversified-financial	0.79	0.04	0.62
WG160	Banks-Large Regional	0.79	0.09	0.60
WG250	Chemicals	0.77	0.21	0.56
WG450	Insurance-Life/Multi	0.76	0.09	0.56
WG210	Building-Materials	0.72	0.01	0.52
WG730	Retail-Specialty	0.70	0.09	0.53
WB	Wachovia Corp	0.75	0.11	0.54
AIG	American Internat Group	0.71	0.16	0.49
SUB	Summit Bancorp	0.71	0.10	0.48
CB	Chubb Corp	0.68	0.11	0.45
PPG	Ppg Industries Inc	0.68	0.27	0.45
GDW	Golden West Financial	0.68	0.12	0.44
BAX	Baxter International Inc	0.60	0.10	0.34
UFS	U.S. Foodservice	0.59	0.07	0.34
WFC	Wells Fargo & Co New	0.59	0.15	0.33
"New Economy"				
INDS-X	NASDAQ Industrial Index	0.06	0.93	0.89
PSE	Pse Technology Index	0.14	0.83	0.76
SOXX	Phili Semiconductor Index	0.03	0.78	0.62
IIXX	Iw Internet Index	0.03	0.79	0.63
BTKX	Amex Biotech Index	0.09	0.64	0.45
WG400	Electronic-Semiconduct	0.02	0.80	0.64
WG290	Computer-Software	0.15	0.78	0.68
WG270	Communication-Equip	0.10	0.75	0.61
LSCC	Lattice Semiconductor Cp	0.10	0.78	0.58
VRTS	Veritas Software Corp	0.12	0.73	0.51
NSOL	Network Solutions Inc A	0.17	0.72	0.50
VRSN	Verisign Inc	0.13	0.68	0.45
ADI	Analog Devices Inc	0.02	0.68	0.46
CSCO	Cisco Systems Inc	0.12	0.66	0.48
NSM	National Semiconductor	0.12	0.62	0.37
NT	Nortel Net	0.01	0.61	0.37
CELG	Celgene Corp	0.12	0.61	0.35
IMCL	Imclone Systems Inc	0.05	0.57	0.31

| INTC | Intel Corp | | | 0.16 | 0.54 | 0.36 |

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munality" (H**2), which is the percentage of variance that is explained in a variable (in this case, a given stock or index) by the factors.

The full matrix contains many thousands of rows, so pruning was necessary for presentation in Table 8-1. The indexes in the table were chosen because they may be traded using options and also because they serve as "marker variables," that is, they help in identifying the essence of the factors. The Worden groups (symbols beginning with WG) appear after the indexes and, while not tradable, also help clarify the nature of each factor. The stocks chosen were both highly loaded on each factor and representative of the diversity of industries within it.

To interpret Table 8-1, keep in mind that the numbers in the factor matrix represent weights, Beta coefficients if you will. The factors themselves can be thought of as hypothetical indices that were inferred by the factor analytic procedure. In this case, the two indices are those that extract from the data as much information about intraday market movement as can be condensed into two factors. The numbers or weights, known as "factor loadings," represent the extent to which each of the underlying factors contributes to price movements in a given stock or index. For example, the Dow Jones 65 Composite Stock Index (DJ-65) shows a loading of .87 on Factor 1 and .05 on Factor 2. This means that intraday movements in the DJ-65, as determined by the factors, may be estimated by multiplying the factor loading in column 1 by the value of the hypothetical index that corresponds to Factor 1, and adding it to the factor loading in column 2 multiplied by the hypothetical index that corresponds to Factor 2. The numerical values of the hypothetical indices are known as "factor scores." Because, in the calculations, all stocks and hypothetical factor indices have been scaled to have unit variance, the coefficients or factor loadings in the factor matrix will always be less than 1. In Table 8-1, the DJ-65 has a high loading on Factor 1 and a negligible loading on Factor 2. The loading on Factor 1 suggests that movement in the DJ-65 can be almost completely explained by that factor. In other words, if it

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were tradable, the DJ-65 could be used as a proxy for the dimension of market movement identified by the factor.

Scanning down the column FACT01 reveals that indexes for banking, drugs, and cyclical stocks all have high loadings. The Worden groups that load this factor point to diversified financial institutions, large banks, insurance, building material, and chemical companies, and retail stores. Highly loaded stocks include Summit Bancorp, Chubb Corporation, Baxter International, and U.S. Food Service. The most highly loaded stocks on Factor 1 are Wachovia Corporation (a bank), American International Group (insurance), and PPG Industries (conglomerate), all of which would serve as good proxies for Factor 1. The stocks and tradable indexes that load this factor represent what has recently been called the "old economy." The common theme of items loading Factor 2 is, by way of contrast, the "new economy." The NASDAQ indexesas well as the biotech, internet, and semiconductor indexeshave high loadings on this factor. The Worden groups cover electronics, semiconductors, computers, and communications. Among stocks loading Factor 2 are Lattice Semiconductor Corporation, Network Solutions, Analog Devices, Cisco Systems, and Intel Corporation. In terms of proxies, a combination of Lattice Semiconductor, Veritas Software Corporation, Verisign Incorporated, and Analog Devices would be effective for representing the dimension of market movement captured by Factor 2.

It is interesting to note that, although primarily loading Factor 1 (the old economy factor), the OEX also has a significant loading on Factor 2. Although not shown in this table, other broad indexes, including the S&P 500, also have this pattern of loadings. This shows that these indexes are composed of stocks from both the old and new economies, with a little more emphasis on the former.

The two-factor model shows that there is empirical validity to the idea of breaking the market into two major groups: the old and new economies. It reveals that old economy stocks have a coherence in their intraday movement, and that this movement is distinguished from the equally coherent patterns of movement demonstrated by

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new economy stocks. In fact, it is because these two groups move in different, but internally consistent, ways that we have seen the recent divergences in daily activity between the Dow and the NASDAQ indexes. On some days, the divergence has been dramatic, with one market tumbling while the other soars. To diversify using the two-factor model, attempt to obtain equal amounts of variance from stocks loading each of the factors. Variance is analogous to dollar volatility, that is, variation per unit time.

To speculate on the new economy, select two or three of the stocks on Factor 1 to serve as proxies, then trade them using call or put options, depending on whether bullish or bearish behavior is expected. To speculate on the old economy, trade options on a few of the highly loaded stocks from Factor 2. To speculate on the strength of the new economy relative to the old economy, purchase puts on several of the highly loaded stocks on Factor 1 and purchase calls on several of the highly loaded stocks on Factor 2. If the purchases are appropriately adjusted in terms of numbers of contracts, gains will occur to the extent that the new economy advances over the old economy, and losses to the extent that the old economy advances over the new one. If a move to the old economy is expected, buy puts on the stocks that load Factor 2 and buy calls on stocks that load Factor 1.

Table 8-1 also demonstrates that several of the NASDAQ indexes have exceptionally high loadings on Factor 1. The NASDAQ indexes are heavy with new economy stocks. Likewise, the Dow Jones Industrial Average and the New York Stock Exchange Composite Index reflect the old economy. In this exercise, we found proxy stocks for both economies, as well as for the NASDAQ, the Dow, and the NYSE Composite Index. Simultaneously, we have gained a more precise and empirical understanding of the dimensions of variation in the markets and the stocks that these dimensions affect.

Returning to the idea of Beta, it should now be evident that factor loadings are essentially Beta coefficients. The standard stock Beta is merely the regression coefficient (a Beta weight, like a factor

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weight) of an individual stock when it is estimated on the basis of the whole market, or whichever index the calculator of the weight decided to use as representative of the market. The factor loadings are also regression coefficients. In the case of factors, however, we have a *multiple regression* in which there is a unique Beta weight for each of the factors (hypothetical indices). In other words, factor analysis provides a more refined notion of a stock's Beta. Instead of a single Beta that represents a stock's sensitivity to the broad market, there are several Beta coefficients that reflect a stock's sensitivity to unique hypothetical sectors or underlying common forces.

Factors can sometimes be interpreted as reflecting a common force or influence, be it economic, psychological, or an artifact of arbitrage. For instance, certain stocks are extremely sensitive to changes in interest rates, while others are barely affected at all. Interest rates vary over time. Because of the variation, stocks sensitive to interest rates will tend to correlate with one another more highly than those that are not sensitive to interest rates. Factor analysis will reveal the correlation induced by the common influence of interest rates. Were a set of such stocks analyzed, an interest rate factor would appear. Factors reflect common underlying influences that affect certain stocks but not others.

The presence of futures and options trading on indexes (e.g., the S&P 500) can itself induce a common factor because of arbitrage. When the futures become overpriced relative to the index, arbitrageurs sell the futures and buy the stocks comprising the index. This is so-called program trading. The effect is to cause all stocks in the index to rise or fall in unison, depending on whether they are being bought or sold. Among the stocks in the index being arbitraged, this induces a correlation beyond that which is present from other market forces. Of course, this common influence (the buying and selling due to arbitrage) is likely to be revealed by a factor that is aligned with the arbitraged index and that loads those stocks most influenced by the arbitrage process. With special techniques, factor analysis can be used to isolate and measure some of these influences in a way that can greatly aid the sophisticated day

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trader of futures and options. Such techniques are, however, far beyond the scope of this book and will not be discussed further.

A 20-Factor Model

Table 8-1 depicts a solution that shows two very broad factors that influence the market. The resolution is a little sharper than that of a single, general market index (e.g., the S&P 500), but we are still operating on the level of the broad market where each factor affects a large number of stocks. For the purpose of selecting stocks to serve as proxies for narrow, homogenous sectors (such as those of biotechnology, internet, semiconductor, and oil stocks), a larger number of factors is required.

Determining the correct number of factors to use is a complex issue that involves mathematical esoterica that will not be elaborated here. Suffice it to say that usually there are several alternative numbers of factors that might provide reasonable solutions. In this particular case, we found that solutions of 8 factors, 20 factors, and 33 factors were indicated as possibilities. A solution for a 20-factor model of intraday market activity is discussed below.

Table 8-2 contains some of the more clearly defined and interpretable factors obtained from the analysis. In contrast to Table 8-1, where all the loadings on the two factors studied were shown, Table 8-2 presents loadings only for the relevant factor in each homogenous group of stocks and indexes. For example, the first group is for the factor pertaining to semiconductors (chips) and computers: There are 18 itemslisted from most to least loadedbeginning with NVLS (Novellus Systems Inc.) with a loading of .80, and ending with AAPL (Apple Computer) with a loading of .50. The second group is for the factor pertaining to banks and large investment firms. Throughout Table 8-2, each group of items for each factor is separated from the previous and subsequent one by a space.

Among the stocks highly saturated with the first factor are some familiar and recognizable companies, including Intel Corporation

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TABLE 8-2 MOST INTERPRETABLE FACTORS FROM THE 20-FACTOR MODEL

	Semiconductors (chips), electronics, computers			Banks and major financial institutions (continued)	
NVLS	Novellus Systems Inc	0.80	GDW	Golden West Financial	0.69
WG400	Electronic-Semiconduct	0.79	BANK-X	NASDAQ Banking Index	0.68
AMAT	Applied Materials Inc	0.77	WG470	Investment Brokers	0.68
ATML	Atmel Corp	0.76	WFC	Wells Fargo & Co New	0.66
AMCC	Applied Micro Circuits	0.75	LEH	Lehman Bros Hldg Inc	0.64
IDTI	Integrated Device Tech	0.73	MER	Merrill Lynch & Co	0.61
INTC	Intel Corp	0.72			
TER	Teradyne Inc	0.70		Oil, oil services, oil drilling	
WG270	Communication-Equip	0.69	OSXXAMEX	Oil Service Index	0.90
LRCX	Lam Research Corp	0.68	WG610	Oil-Services	0.87
QQQ	NASDAQ 100 Tr Series I	0.67	RIG	Transocean Sedco Forex	0.80
SEBL	Siebel Systems Inc	0.66	BJS	Bj Services Co	0.80
CSCO	Cisco Systems Inc	0.66	RDC	Rowan Companies Inc	0.79
ORCL	Oracle Corporation	0.61	HAL	Halliburton Co	0.79
LSI	Lsi Loqic Corp	0.61	GLM	Global Marine Inc	0.79
SOXX	Phili Semiconductor Index	0.60	DOX	Amdocs Ud	0.78
WG300	Computer-Systems	0.52	NBR	Nabors Industries Inc	0.78
AAPL	Apple Computer Inc	0.50	ESV	Ensco International Inc	0.77
			SDC	Santa Fe Intl Corp	0.75
	Banks and major financial institutions		SLB	Schlumberger Ltd	0.75
WG150	Banks-Money Centers	0.93	NE	Noble Drilling Corp	0.74
WG160	Banks-Large Regional	0.93	XLE	Spdr Energy Sector	0.74
STI	Suntrust Banks Inc	0.85	SII	Smith Internat Inc	0.74
CMB	Chase Manhattan Corp	0.82	XNGX	Natural Gas Index	0.73
NF	NYSE Financial Indx N/A	0.81	WG620	Oil-International	0.66
JPM	J.P. Morgan & Co Inc	0.79	WG630	Oil-Domestic	0.66
BK	Bank Of New York Co Inc	0.77	MRL	Marine Drilling Cos Inc	0.65
WG350	Diversified-Financial	0.77	PKD	Parker Drilling Co	0.64
WB	Wachovia Corp	0.76	XOI	AMEX Oil Index	0.64
MEL	Mellon Financial Corp	0.75	GLBL	Global Industries Ltd	0.62
SUB	Summit Bancorp	0.73	CHV	Chevron Corp	0.58
ASO	Amsouth Bancorporation	0.72	AHC	Amerada Hess Corp	0.56
BSC	Bear Stearns Companies	0.72	TBI	Tuboscope Inc	0.52
WG340	Savings & Loan	0.72	XOM	Exxon Mobil Corporation	0.51
FBF	Fleetboston Financial Cp	0.71	TX	Texaco Inc	0.51
PWJ	Paine Webber Group Inc	0.71	RDN	Radian Group	0.51
IXFX	NASDAQ Financial Index	0.70	KMG	Kerr-Mcgee Corp	0.49

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TABLE 8-2. Continued

Basic industrials (wood, paper, base metals, chemicals)			Biotechnology (continued)		
CEGE	Cell Genesys Inc	0.60			
WG640	Paper & Wood Products	0.92	LYNX	Lynx Therapeutics Inc	0.59
WG320	Container-Paper	0.90	CEPH	Cephalon Inc	0.58
XLB	Spdr Basic Inds Sectr	0.85	CYTO	Cytogen Corp	0.56
MEA	Mead Corp	0.84	IMNX	Immunex Corp	0.53
MEC	Midamerican Energy Hldgs	0.84	GERN	Geron Corporation	0.52
TIN	Temple Inland Inc	0.81	NBIX	Neurocrine Biosciences	0.51
WLL	Willamerle Industries	0.81	AMGN	Amgen Inc	0.46
IP	Internat Paper Co	0.81			
WY	Weyerhaeuser Co	0.80		Utilities (gas and electric)	
BOW	Bowater Inc	0.76	WG820	Utilities-Electric	0.86
BCC	Boise Cascade Corp	0.75	UTYX	Utility Index	0.83
WG100	Aerospace/Defense	0.74	AEE	Ameren Corp	0.77
WG250	Chemicals	0.73	DJ-15	Dow Jones Utility Avg	0.75
BMS	Bemis Co Inc	0.72	AEP	American Eledric Power	0.74
PD	Phelps Dodge Corp	0.71	PEG	Public Service Entprs Gr	0.71
PCH	Potlatch Corp	0.71	DTE	Dte Energy Co	0.69
GP	Georgia Pacific Cp Georg	0.68	CEG	Constellation Energy Grp	0.69
EMN	Eastman Chemical Co	0.65	WEC	Wisconsin Energy Corp	0.68
DOW	Dow Chemical Co	0.65	FPL	Fpl Group Inc	0.66
AA	Alcoa Inc	0.65	LNT	Alliant Energy Corp	0.65
UK	Union Carbide Corp	0.63	AYE	Allegheny Energy Inc	0.65
CYCX	Morgan Stanley Cyclical Index	0.62	PPL	Ppl Corporation	0.65
WG750	Steel Producers	0.59	REI	Reliant Energy Inc	0.65
WG570	Metals-Aluminum	0.58	ED	Consolidated Edison Inc	0.64
WG310	Container-Metal/Glass	0.55	PCG	Pg&E Corp Holdings Co	0.61
	Biotechnology			Gold and gold mining	
MLNM	Millennium Pharmaceuticl	0.74	WG580	Metals-Gold	0.62
IDPH	Idac Pharmaceuticals Cp	0.69	XAU	Phlx Gold/Silver Index	0.62
BTKX	AMEX Biotech Index	0.69	ABX	Barrick Gold Corp	0.60
HGSI	Human Genome Sciences	0.65	PDG	Placer Dome Inc	0.60
AXPH	Axys Pharmaceuticals Inc	0.63	NEM	Newmont Mining Corp	0.53
MEDI	Madimmune Inc	0.63	BMG	Battle Mountain Gold Co	0.53
GENE	Genome Therapeutics Corp	0.62	HMT	Host Marriot Reit	0.51
HYSQ	Hyseq Inc	0.62	ASA	Asa Ltd	0.49
ALKS	Alkermes Inc	0.61	AEM	Agnico-Eagle Mines Ltd	0.48
ARQL	Arqule Inc	0.60	CDE	Coeur D'alene Mines Corp	0.46
SMMT	Summit Design Inc	0.60	GLG	Glamis Gold Ltd	0.43

(table continued on next page)

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TABLE 8-2. Continued

	Gold and gold mining (continued)			Media (news,entertainment,radio) with mix other items (continued)	
KGC	Kinross Gold Corp	0.42			
FCX	Freeport Mcmoran C&G B	0.41	KRI	Kniqht-Ridder Inc	0.37
			SFX	Sfx Entertainment Inc A	0.37
	Media (news, entertainment, radio) with mix other items		CVC	Cablevision Systems Cl A	0.36
WG510	Media-Mist Publ (Old)	0.36			
CCU	Clear Channel Comm Inc	0.67			
AFM	Amfm Inc	0.65		Internet and information services (11X should have been here!)	
WG530	MediaRadio/Tv	0.60			
CXR	Cox Radio Inc	0.59	RRRR	Rare Medium Group Inc	0.77
GSTRF	Globalstar Telecomm Ltd	0.57	ADAP	Adaptive Broadband Corp	0.70
WG380	Electr-Military (Old)	0.55	TVGIA	Tv Guide Inc Cl A	0.70
HD	Home Depot Inc	0.55	VERT	Verticalnet Inc	0.67
TWX	Time Warner Inc	0.55	OMKT	Open Market Inc	0.66
LOR	Loral Space & Commun Ltd	0.54	OMPT	Omnipoint Corp	0.66
XLV	Spdr Consmr Svcs Sect Cm	0.50	GMST	Gemstar Intl Gr Ltd Ord	0.65
OMC	Omnicom Group Inc	0.50	PMTC	Parametric Technoloqy Cp	0.57
GSLI	Gsi Lumonics Inc	0.48	EBAY	Ebay Inc	0.56
WG410	Entertainment	0.46	ENTU	Entrust Technologies Inc	0.55
COX	Cox Communications Inc	0.46	PUMA	Puma Technology Inc	0.54
BXP	Boston Properties Inc	0.46	SPYG	Spyglass Inc	0.53
UVN	Univision Communications	0.46	NSOL	Network Solutions Inc A	0.48
WG520	Media-Newspap Publish	0.43	ITVU	Intervu Inc	0.46
TRB	Tribune Co	0.39	CHKP	Check Point Sftware Tech	0.45
LMGA	Liberty Media Grp A At&T	0.39	DCLK	Doubleclick Inc	0.44
NWS	News Corp Ltd	0.38	PWAV	Powerwave Technologies	0.44
WG430	Hotels/Motels/Casino	0.38	INSP	Infospace. Com Inc	0.43

(the manufacturer of the processor used in most desktop computers), Cisco Systems (a provider of networking software), and Oracle Corporation (the well-known database vendor). There are also a number of less recognizable companies involved with integrated circuit chips used in computers and related materials. Markers on this factor include the Worden group, "electronic and semiconductor," and the SOX, the Philadelphia Semiconductor Index. This is a well-defined factor that loads companies involved with computer chips, electronics, and, to a lesser extent, computer software.

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The second factor in Table 8-2 loads banks and major financial houses. The two Worden groups concerned with banks and the one labeled "diversified financial" have the highest loadings. The NASDAQ Financial Index and NASDAQ Banking Index also load highly on this factor. Familiar banks, such as Chase Manhattan, the Bank of New York, Fleet, and others appear, along with J.P. Morgan, Bear Steams, Paine Webber, Merrill Lynch, and other major investment firms. Again, this is a clear, easy-to-interpret factor.

The third factor loads companies involved in oil and related services. This is the factor where the XOI Index (mentioned earlier) appears. Worden groups having to do with oil, oil and gas indexes, oil companies (e.g., Exxon, Texaco, Chevron, and Hess), and companies concerned with drilling, marine, and oil exploration are present on this factor.

Factor 4 has a broader mix of content than the previous three. It loads companies involved in the "basic industries." These include paper and wood, base metals, chemicals, and defense contracting. The Worden groups make its content clear, as does the presence of the Morgan Stanley Cyclical Index. Stocks loading this factor include old economy "cyclical" companies. There are no optionable indexes trading on this factor.

The fifth factor loads biotechnology companies and is well marked by the AMEX Biotech Index. Highly loaded companies include those concerned with advanced pharmaceuticals and genetic technology. The content of this category is homogenous, with names such as Idec Pharmaceuticals, Human Genome Sciences, Cell Genesys, Neurocrine Biosciences, and others of like nature. Geron Corporation and Amgen Corporation load this factor.

Energy companies, both gas and electric, appear on Factor 6, along with the Utility Index, the Dow Jones Utility Average, and the Worden group "utilities-electric." In addition are a large number of companies like Con Edison and American Electric Power. This is a utilities factor.

Factor 7 concerns gold and gold mining. The Worden group "metals-gold" and the Philadelphia Gold and Silver Index are the two most loaded items, closely followed by Barrick Gold Corpo-

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ration, Battle Mountain Gold Corporation, Freeport McMoran C&G, and other companies operating in this industry.

The next factor loads companies concerned with news, entertainment, and radio and television. It is a "media" factor marked by such Worden groups as "media-radio/tv," "entertainment," and "media-newspaper publishing." There is a small loading on a Worden group called "hotels/motels/casinos." Among highly loaded stocks are Cox Radio, Clear Channel Communications, Time Warner, Tribune Company, and News Corporation. Greater loadings appear for news and radio stocks; stocks like Cablevision, and others in the television and entertainment divisions, are less prominent. There is no optionable index for this grouping.

The final factor in Table 8-2 loads a variety of internet and internet service companies like eBay and Network Solutions. It is surprising that the Internet Index does not appear here, but that TV Guide does (possibly because, in addition to distributing information via the print and cable media, it has a large presence on the net).

Less Homogenous and Interpretable Factors

In Table 8-2, we presented the more interpretable, homogenous factors found in the 20-factor model. In Table 8-3, we present additional factors from the same analysis, these being more ambiguous and harder to label.

The first factor loads large, well-established drug firms (e.g., Pfizer, Merck, Abbott Laboratories, and Smith-Klein Beecham) and the Pharmaceutical Index. The highest loading appears for the Worden group, "drug manufacturers." However, this factor also loads what might be termed "consumer staples," such as Coca-Cola, American Home Products, Johnson and Johnson, Clorox, and the Morgan Stanley Consumer Index. Other Worden groups include "medical products," "beverages-softdrinks," and "retail food stores." Oddly, Amazon.com and Starbucks appear here, although not with exceptionally strong loadings.

TABLE 8-3. LESS INTERRPRETABLE FACTORS FROM THE 20-FACTOR MODEL

Drugs (beverages and consumer items also appear here)			Mix of niche drugs, medical, and other (continued)		
WG360	Drug Manufactures	0.69	MAGN	Magainin Pharmaceuticals	0.42
XLP	Spdr Cnsmr Stpls Sector	0.67	GZTC	Genzyme Transgenies Corp	0.42
PFE	Pfizer Inc	0.61	NRGN	Neurogen Corp	0.39
WLA	Warner Lambert Co	0.57	MOGN	Mgi Pharma Inc	0.38
JNJ	Johnson & Johnson	0.57			
SGP	Schering-Plough Corp	0.55		This one's hard to identify	
MRK	Merck & Co	0.55	MOLXA	Molex Inc Cl A	0.56
DRGX	Pharmaceutical Index	0.54	DV	Devry Inc	0.51
ABT	Abbott Laboratories	0.54	LLL	L-3 Communications Hldgs	0.49
LLY	Lilly Eli & Co	0.53	TFX	Teleflex Inc	0.49
AHP	American Horne Produds	0.51	WH	Whitman Corp	0.48
GLX	Glaxo Wellcome Plc	0.50	SANM	Sanmina Corp	0.45
SBH	Smithkline Beecham Adr	0.50	CMH	Clayton Homes Inc	0.44
WG540	Medical-Products	0.45	BLC	A.H. Belo Corp	0.44
WG180	Beverages-Soft Drinks	0.43	ALV	Autoliv Inc	0.44
CMRX	Morgan Stanley Consumer Index	0.43	ACTL	Actel Corp	0.43
KO	Coco-Cola Co	0.41	SHU	Shurgard Storage Centers	0.42
BAX	Baxter International Inc	0.41	HBCCA	Hispanic Broadcasting Cp	0.41
SBUX	Starbucks Corporation	0.40	MRBK	Mercantile Bankshares Cp	0.41
WG690	Retail-Food Stores	0.39			
MTC	Monsanto Co	0.39		Transportation and building (mixed with other items)	
CLX	Clorox Co	0.37			
AMZN	Amazon. Com Inc	0.37	WG810	Transports-Trucks/Frght	0.56
BMY	Bristol-Myers Squibb Co	0.37	TRST	Trustco Bank Corp Ny	0.53
			GGG	Graco Inc	0.49
	Mix of niche drugs, medical, and other		DCI	Donaldson Co Inc	0.47
BELW	Bellwether Exploration	0.52	FLS	Flowserve Corp	0.46
MCDE	Microcide Pharmaceutical	0.52	CEM	Chemfirst Inc	0.45
BDX	Becton Dickinson & Co	0.50	TRAN-X	NASDAQ Transportaion	0.45
AIMM	Autoimmune Inc	0.49	RLC	Rollins Truck Leasing	0.44
OLGC	Orthologic Corp	0.49	UVV	Universal Corp	0.44
ARDM	Aradigm Corporation	0.47	FNF	Fidelity National finl	0.43
SCMM	Scm Microsystems Inc	0.47	RI	Ruby Tuesday Inc (Ga)	0.42
GZTR	Genzyme Tissue Repair	0.46	GTK	Gtech Holdings Corp	0.42
IFCI	Internat fibercom Inc	0.46	BBRC	Burr-Brown Corp	0.42
NSTA	Anesta Corp	0.46	ARV	Arvin Industries Inc	0.41
CUM	Cummins Engine Co Inc	0.44	LZB	La-Z-Boy Incorporated	0.41

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TABLE 8-3. Continued

Transportation and building (mixed with other items) (continued)			Another high tech factorbiotech, computer and semiconductor (continued)		
NGH	Nabisco Group Holdings	0.41	ITRI	firon Inc	0.52
BRR	Barrett Resources Corp	0.41	ASF	Administaff Inc	0.51
APPB	Applebee's International	0.40	CYCH	Cybercash Inc	0.50
EK	Eastman Kodak Co	0.40			
WG220	Building-Residential	0.39	Broad market (with Mexican element)		
WG240	Business-Print/Publish	0.38	XTCX	North American Telecomm Index	0.70
WG660	Restaurants	0.38	MXYX	Mexico Index	0.69
WG760	Textiles (Old)	0.37	XIIX	AMEX Institutional Indx	0.69
BBBY	Bed Bath & Beyond Inc	0.37	MEXX	Mexican Adr Index	0.64
WGl14	Furniture-Retailers	0.37	NNX	NYSE Utility Index	0.64
			OEX	Standar & Poors 100	0.63
Another high-tech factorbiotech, computer and semiconductor			XCI	Computer Technology Idx	0.62
RUI-X	Russell 1000	0.61			
AFFI	Affinity Technology Grp	0.88	ADRX	Int'l Market Index Ase	0.61
SIPX	Sipex Corporation	0.75	SP-500	Standard & Poors 500	0.60
RMBS	Rambus Inc	0.66	RUA-X	Russell 3000	0.60
NDB	National Discount Br&Grp	0.66	IIXX	lw Internet Index	0.58
REGN	Regeneron Pharm Inc	0.62	MSHX	Morgan Stan High-Tech	0.57
RELY	Reliance Bancorp Inc	0.62	XOCX	Nat'l Otc Index	0.56
SECX	Sed Internat Hldngs Inc	0.62	NDX	Nyse Industrial Index	0.56
IONA	Iona Technologs PIc Adr	0.60	CWXX	Cboe Computer Software Index	0.55
DY	Dycom Industries Inc	0.57	T2121	13wk New High/Low Ratio	0.55
HYC	Hypercom Corp	0.57	FMX	Fomento Economico Mex	0.51
CHRZ	Computer Horizons Corp	0.57	TSD	Tele Sudeste Celular Sa	0.50
MCRE	Metacreations Corp	0.57	UBB	Unibanco Uniao De Bancos	0.49
IMCL	Imclone Systems Inc	0.52	UMG	Mediaone Group	0.48
OLGC	Orthologic Corp	0.52	TMX	Telefonos De Mexico Sa L	0.48

The next factor seems to load a mix of companies that specialize in niche markets, be they drugs, medical services and supplies, or even oil exploration. This is one of the more difficult factors to identify. Some companies that might have been expected to load the biotechnology factor in Table 8-2 (e.g., Autoimmune, Inc. and Genzyme Tissue Repair) appear here instead. Also in attendance

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are Becton Dickinson (medical supply manufacturer), (Bellwether) Exploration, International Fibercom, and Cummins Engine Company. The nature of the common element in these industries, and why certain biotech companies are on this factor, is a mystery. There are no markers in the form of identifying indexes or Worden groups to help define this factor.

The third factor is even harder to interpret than the second one. This factor loads companies such as Molex (electronics), Clayton Homes, Devry Incorporated, and Sureguard Storage Centers. These companies are extremely heterogeneous, and it is hard to discern a common theme. There are no Worden groups or market indexes to help in the identification process.

Factor 4 appears to be a transportation factor, but it also loads a number of other industries. The highest loaded item is the Worden group, "transports-truck/freight." The NASDAQ Transportation Index appears with a reasonable loading, as do a few companies involved in the transportation industry, such as Rollins Truck Leasing. However, a bank, an analog chip manufacturer, (Applebee's) (a restaurant chain), Eastman-Kodak, La-Z-Boy, and Worden groups "building-residential, restaurants," and "textiles" also load this factor. Dow theory suggests that transports lead the general market and reflect the beginning of economic expansion. This is when consumers spend more freely. The increased demand leads to increased retail sales. There is also a greater tendency for consumers to travel during such periods. All of this increases the demand for the transport of goods and people. As time goes on, the demand impacts the companies that produce the goods and services. In other words, this factor may be a measure of the first wave of economic expansion.

The fifth factor includes a mix of high technology companies. The most recognizable is Rambus Incorporated, a developer and manufacturer of a new type of high speed computer memory. Several other high tech computer firms, as well as some biotech ones, appear on this factor. Many of the companies on this factor might have been expected to appear on one of the internet, semiconductor, or biotechnology factors discussed earlier. There are no markers

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from among the indexes or Worden groups. Again, this is a factor where the common theme or reason for coherence is not obvious.

The last factor combines the broad market with a Mexican element. It loads many of the popular indexes. General market indexes (e.g., the OEX and S&P 500), the Computer Technology Index, the North American Telecommunications Index, the Institutional Index, and the National OTC Index all appear here. It is interesting that IIX, the Internet Index, loads this factor, rather than the clearly identified internet factor discussed earlier. In addition to a wide range of indexes, this factor also loads the Mexico Index and several Mexican companies, including two phone companies and a bank. Few stocks are present. This almost seems to be a factor of indexes. One implication is that the indexes are not very distinct from one another. In fact, all the different indexes appear to respond to similar forces and reflect the state of the overall market. In addition, this factor may be picking up the effects on the economy induced by NAFTA and other international labor and trade agreements. The factor may also represent what remains of the general market after stripping out the variance resulting from clearly defined industrial groupings.

Selecting Proxies

Although it may seem that we have been put astray from our original purposeday trading the indexesour diversion into the arcane realm of factor analysis has led to some interesting discoveries about the way the market is structured. We have found homogenous groupings of stocks that move in a coherent fashion on an intraday basis. We have also learned that the popular optionable indexes do not always provide good coverage of these clearly defined, homogenous groupings or sectors. Some are well represented, while others are not. Instead of reflecting the behavior of a specific, homogenous sector, many popular indexes move with the general market.

Many of our findings can be helpful to the trader attempting to diversify or to trade unique subgroups of stocks. Unlike arbitrarily

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defined sectors or groupings that are widely covered by the media, those in Tables 8-2 and 8-3 have a deep empirical foundation. The stocks in these groups tend to move in unison with one another on an intraday time frame, which cannot always be said for the arbitrarily defined sectors. In other words, the groupings discovered above are statistically homogenous in a manner directly relevant to the day trader.

It should be noted that the factors, and the associated groupings of stocks, may change over time. The factor analysis was based on data from 1998 through May 2000. However, the structural patterns reflected in this kind of analysis respond more slowly to changes in the economy than prices do and so the information in Tables 8-1 through 8-3 will probably have relevance for several years.

By use of the information developed and discussed above, we can now select a few stocks to serve as proxies for some of the indexes. The proxies were chosen by selecting stocks that were highly loaded on factors also loading the indexes of interest. Some consideration was given to liquidity and the avoidance of redundancy.

For the first factor in Table 8-2, which loads the Semiconductor Index, Novellis Systems, Applied Materials, and Intel Corporation may be used as proxies. In fact, these proxy stocks provide better representation of the common factor in the semiconductor and computer industries than does the Philadelphia Semiconductor Index (SOX). Trading options on these stocks will result in trading a purer representation of this underlying homogeneity than if options were traded on the Philadelphia Semiconductor Index.

For the AMEX Oil Index (XOI), good proxies would be Transocean Sedco Forex, Noble Drilling Corporation, and Exxon Mobil Corporation.

Instead of the Gold and Silver Index (XAU), you could trade options on Barrick Gold Corporation, Placer Dome Incorporated, and Battle Mountain Gold Company.

For the Pharmaceutical Index (DRG), Pfizer, Schering-Plough, and Abbott Laboratories would serve as good proxies.

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To trade an index of internet stocks, options could be traded on Rare Medium Group Incorporated, eBay Incorporated, and Adaptive Broadband Corporation, perhaps adding Network Solutions and Entrust Technologies for somewhat better representation through diversification. In this case, you are not trading a proxy for the IIX (Internet Index), which loads a different factor and does not reflect the common element in these kinds of internet stocks.

We were unable to find any good proxy stocks for the OEX. However, the E-Mini or S&P 500 futures (which both trade on the S&P 500 Index) provide a more efficient way to participate in movement of the broad market than do OEX options, in our opinion. We might also suggest trading the North American Telecommunications Index or the Mexico Index to participate in movement along this dimension.

Every one of the indexes discussed in the earlier part of this chapter has been identified with a factor. With the exception of the OEX, proxy stocks, with options that allow efficient trading, have also been identified. In many cases, the proxies more clearly represent the underlying commonality (i.e., the dimension of variation or movement) present in the market than do the popular indexes. In addition, the selection of proxy stocks for factors not identified with optionable indexes is also readily achieved, allowing you to trade movement along the dimensions represented by these factors. As an example, you can trade movement in the radio and news industries by trading options on stocks that load Factor 8 in Table 8-2.

How well do proxies serve their purpose? How well does a highly loaded stock track the index that marks the factor throughout the day? Let us first examine Factor 7, gold and mining, from Table 8-2. This is the factor that represents the dimension of variance in the market that drives the Philadelphia Gold and Silver Index (XAU). In Figure 8-19, the XAU Index appears in the upper subgraph and the most highly loaded stock (Barrick Gold Corporation) is shown in the lower subgraph.

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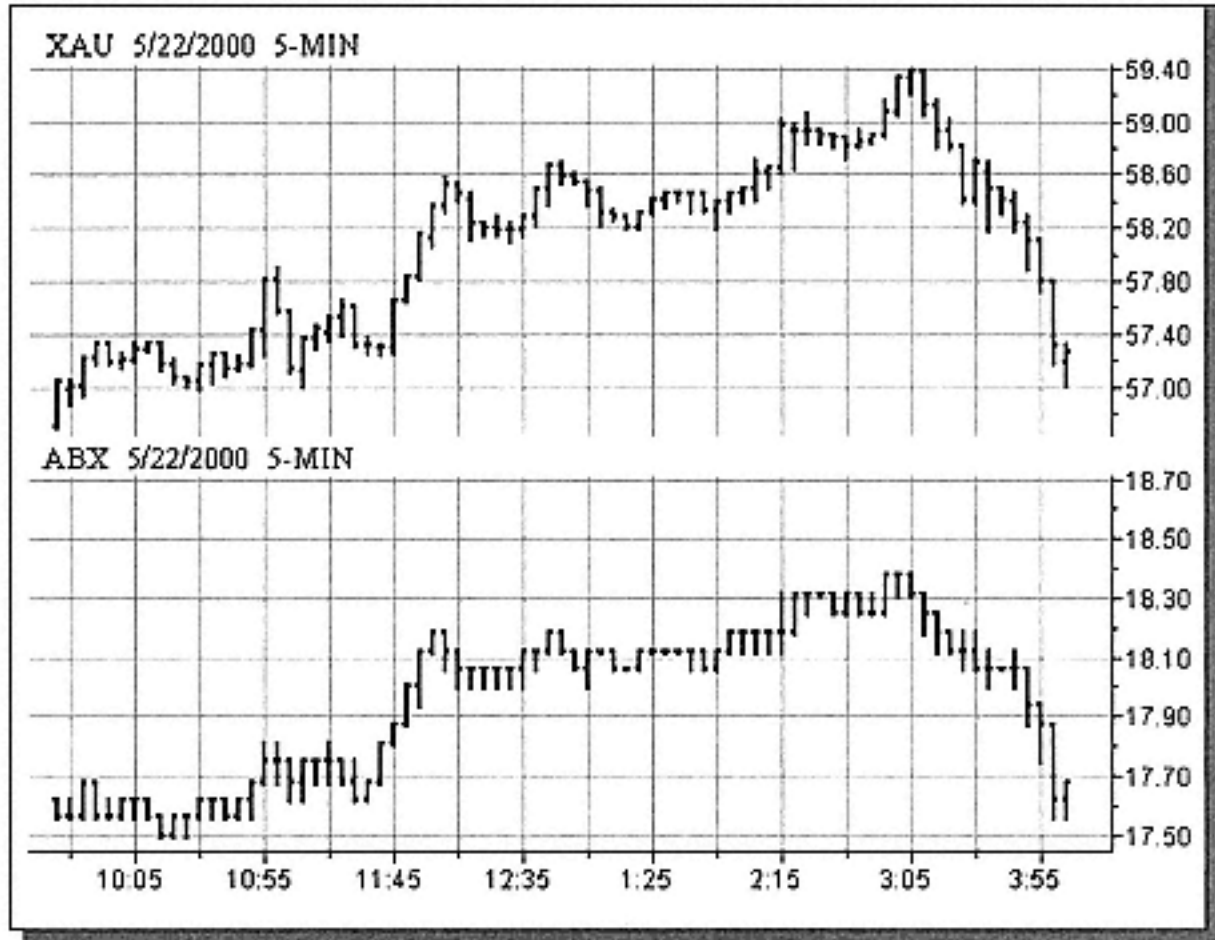
Figure 8-19.
Intraday charts for XAU and ABX on May 22, 2000.

As can be seen, the stock chosen as a proxy tracks the index well. There was a small upsurge just before noon, a peak at around 3:00 p.m., and a sharp decline thereafter that lasted until shortly before the close. Trading options on either the stock or the index would have produced similar results. Any choice as to which to trade would had to have been based on liquidity and other characteristics of the options. For example, a trader wanting lower cost options would have preferred in-the-money options on the stock, which trades at a lower price level, rather than in-the-money options on the Gold Index, which trades at a higher price level.

Another example illustrating correspondence between an index and a proxy stock can be found in Figure 8-20, where Intel (lower subgraph) serves as a proxy for the Semiconductor Index (SOX, upper subgraph). SOX was modestly loaded on Factor 1 from Table
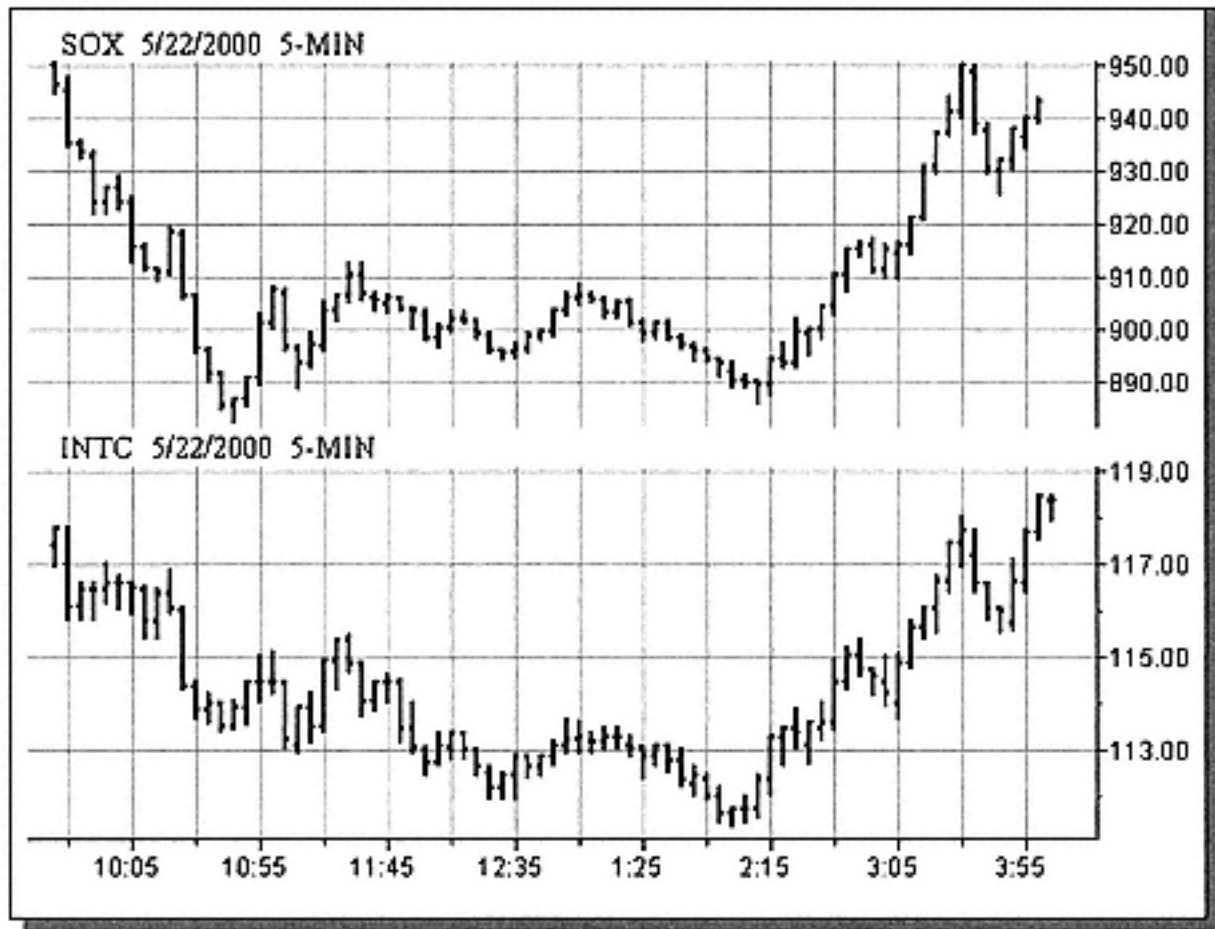
Figure 8-12.
Intraday chart of SOX and INTC on May 22, 2000.

8-2, which may be considered a semiconductor and computer factor. Intel has a more substantial loading on Factor 1 and so represents the dimension or market activity of the semiconductor and computer factor more highly.

It is evident that the SOX and Intel track one another fairly closely. They both opened high and declined rapidly until a little after 10:30 a.m. Intel then declined slightly until it bottomed at around 2:00 p.m. The SOX remained basically flat until it formed a second bottom at around 2:00 p.m. Both Intel and the SOX peaked around 3:30 p.m., retraced a bit for about 15 minutes, then rose and finally reached a plateau.

Figure 8-21 illustrates Factor 1 from Table 8-3, which loads the Pharmaceutical Index (DRG, upper subgraph), which has a coeffi-

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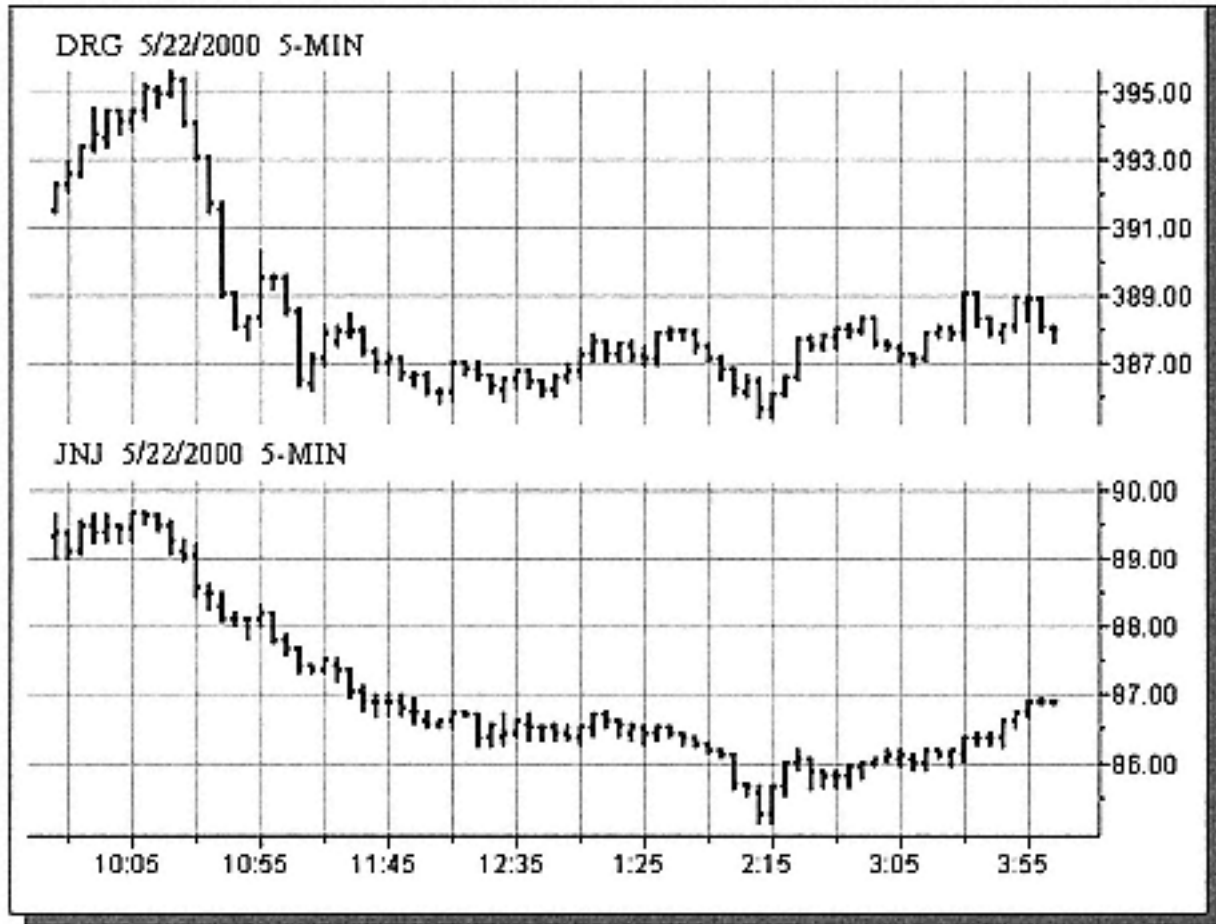
Figure 8-21.
Intraday chart of DRG and JNJ on May 22, 2000.

cient of .54, and the representative stock that loads this factor more strongly, Johnson and Johnson (JNJ, lower subgraph).

The three examples presented above demonstrate how a technique like factor analysis makes it possible to find a stock that tracks an index or dimension of market movement. In many cases, the options on the stock are better behaved (having smaller ask-bid spreads, more liquidity, and a larger Delta) than those on the index. This makes finding proxies and trading options on them a good strategy. Factor analysis can also help identify stocks that represent dimensions of market movement for which there are currently no popular optionable indexes, for example, media and news.

The use of factor analysis to find proxy stocks that are representative of the indexes is a viable technique. We recommend that

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anyone interested in trading options on indexes first run a factor analysis and see what tums up. Actually, the results in Tables 8-1 through 8-3 should remain accurate for some time, so you do not have to do the math yourself (check our website, *www.scientificconsultants.com*, for updates). Even if the options on the index seem liquid and tradable, the factor analytic approach might provide representative stocks that have more desirable options to trade.

What Have We Learned?

Index trading is useful when you want to speculate on the direction of a broad market or sector, rather than an individual stock or commodity. It is similar to trading a diversified portfolio of stocks that have something in common.

In addition to trading indexes such as the S&P 500 and OEX, it is possible to speculate on *sector* or *group indexes*, which are composed of categories of stocks and/or futures (e.g., biotechnology stocks, gold and silver futures).

Indexes can be traded in the same way as stocks and futures, namely, by looking for an end-of-day setup, waiting for confirming intraday activity, and then placing a trade.

Because there are only a few dozen tradable indexes, it may be more difficult to find appropriate setups on any given day.

Indexes often exhibit a lot of up and down price movement, rather than trends, and so they may be rather difficult to trade using the kind of momentum strategy used for stocks.

The indexes seem to offer more opportunity for swing trading setups than for momentum ones. However, prices often fail to reach the critical thresholds required to trigger trades.

When looking to trade indexes on the basis of news setups, find stories that are relevant to an entire market or to the economy as a whole, rather than about a specific company.

Use of a contrarian strategy when news trading may not work

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as effectively for the indexes, except perhaps on a longer-term (several-day) basis.

Many index options tend to be illiquid and have larger ask-bid spreads. Therefore, even though the market might move in your favor, you may lose when trading such index options.

While it may be possible to play the ask-bid spreads of index options, it may not be practical because of the difficulty in obtaining fills. But you should work the market using limit orders to help improve profitability.

In the *opening range breakout strategy*, a trader watches the index after the open, waits for prices to move significantly in either direction, and, when they do, enters a trade.

In the *early direction strategy*, a trader waits for a fixed time interval after the market opens, watches the index in an attempt to determine its overall direction for the day, and then trades on that basis.

In the *simple breakout strategy*, prices break above a previous high or below a previous low. Trades are placed just after the breakout occurs in expectation that the market will continue to move in the direction of the breakout.

Indexes may be best traded when mechanical systems (e.g., neural networks) are used.

Cycle analysis, which detects rhythmic oscillations in price patterns, may be a useful way to trade indexes.

Unlike many stocks, indexes appear to cycle more as they repeatedly move around some theoretical fair value.

Rather than trading indexes directly, it may be preferable to trade them using individual stocks or futures to act as *proxies* for them.

A *proxy* is a stock or commodity that is highly representative of a given index and that has actively traded, liquid options.

To further cover the breadth of the index, options on several proxies may be traded simultaneously.

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One way to select stocks or futures to serve as proxies is through the mathematical technique known as "factor analysis."

Factor analysis can reveal the underlying variables that significantly influence a stock or commodity. It can also help identify groups of stocks or futures that behave similarly and elucidate the reasons for that behavior.

When used to select trading instruments (e.g., stocks) that are different from one another, factor analysis can help the trader diversify, which is important to risk management.

Over 50 percent of the total variation in prices over time of stocks on the NASDAQ, AMEX, and NYSE is attributable to just 60 factors or variables.

A stock's *Beta* is the degree to which it moves in response to the general market. The higher its Beta, the more speculative the stock, that is, the more likely it will rise in a bull market and decline in a bear market.

Factor analysis refines the concept of Beta by providing Beta coefficients for each factor that influences a given stock.

Marker variables help reveal the essence or clarify the nature of a factor.

In the examples in this chapter, the factors were construed as *hypothetical indices*, each having its own unique, defining characteristics.

The *weights or factor loadings* in the matrices produced by the factor analyses represent the extent to which each of the underlying factors contributes to the price behavior of a given stock or index.

The first factor analysis we performed revealed two broad market sectors: the old and the new economies (respectively, banks, insurance companies, conglomerates, stocks on the Dow and the NYSE on the one hand, and biotech, internet, semiconductor, and NASDAQ stocks on the other).

There are clear differences in the price behaviors of old and new economy stocks.

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Instead of reflecting the behavior of a specific, homogenous sector, many popular indexes (e.g., the SOX, or Philadelphia Semiconductor Index) move with the general market or each other. The opposite is true for our hypothetical indexes, which more truly reflect the movement of a specific sector.

Chapter 9
Advanced Trading Techniques

In previous chapters, we discussed a variety of simple trading strategies. Most of these focused directly on price and its movement, as well as on price levels (such as support and resistance levels), on trendlines, and on such elementary indicators as moving averages that can be drawn on price charts. In this chapter, we introduce you to several other tools used by traders. Some of the tools are rather simple. These include popular indicators like stochastics and the moving average convergence divergence (MACD) oscillator. Others are more complex. Into this category fall maximum entry spectral analysis (MESA) and the tools derived from artificial intelligence (AI). *Artificial intelligence* is a general term for those technologies that allow intelligent processes to be performed by software running in a computer. Included under the AI rubric are

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such tools as expert systems, neural networks, and genetic algorithms.

Indicators

If you have worked with a charting package like MetaStock or CQG on an end-of-day time frame, you have almost certainly encountered indicators such as Lane's Stochastic or Appel's moving average convergence divergence oscillator. Indicators come in many forms and are popular with traders. There are two broad groupings of indicators: those which emphasize trends and overall market direction, and those which highlight rhythms or cyclic activity. You have already encountered one of the former in the previous chapterthe moving average. The *moving average* is a simple indicator that reveals the general direction of price movement, while smoothing out some of the noise or jiggle. It is an indicator that allows the trader to more easily perceive the overall trend. The latter group of indicators, which includes such things as the Stochastic, are referred to as "oscillators." *Oscillators* attempt to detect situations in which prices have reached some extreme, either up or down, or to amplify cyclic movements of a period close to that of the indicator. The *Stochastic*, for example, simply shows where current prices are relative to the range established in the recent past. Are prices near the high of that range or near its low? This is a so-called *over-bought/oversold* indicator, which is sensitive to price extremes. The Stochastic oscillator can be seen in some of the charts presented in the previous chapter. It is identified by the label STOC that appears to the left of the graph. Another indicator, the *14-day rate of change*, is a simple momentum indicator. It is calculated by subtracting from today's price the price 14 days ago. It is also visible on most of the charts and is labeled IND1.

A naive way to trade using the Stochastic oscillator is to buy when the indicator reaches a very low level and to sell when it reaches a high level. However, this strategy will almost always lose money. A very low (or high) level often represents a market that

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has begun to charge either up or down, a market with a lot of momentum that may continue in the direction it is moving. In other words, extreme prices often become more extreme unless there is some good reason for them to turn around. Some reasons that prices turn around were discussed in the previous chapter.

The MACD does not look for price extremes, but attempts to smooth and emphasize cyclical rhythms (oscillations) in the market. Depending on the parameters used, the indicator may detect rapid oscillations or it may emphasize slower, longer-term rhythms. If there are clear cycles in the market that have a timing coincident with the parameters used for the indicator, there will be a smooth oscillating line that can be used to generate entries and exits. The problem is that, most of the time, the market either is not cycling or does not have a rhythm that is coincident with that of the indicator.

Although these indicators are popular and some traders find them useful, we don't particularly like them. We have never found them very helpful, nor have they performed well in attempts to develop mechanical trading systems using backtesting and other sophisticated procedures (Katz and McCormick, 2000). We have generally found it better to stay as close as possible to the actual price movements of the instrument being traded, or other data such as futures premiums, the effects of news, support and resistance levels, and so on. This is why, in our earlier discussions, the only indicator frequently mentioned was the moving average.

Maximum Entropy Spectral Analysis (MESA)

Although we have found most popular indicators to be of little use, there are a number of more sophisticated indicators and other tools that can greatly aid the trader. In the previous chapter, we spoke about cycles. In the context of swing trading, for example, we said that you can improve your odds if, when looking for a setup, you could find a projected cycle bottom near the open of the trading day. We marked some of the charts with visually determined cycles.

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For example, on the chart for Dell Computer, we observed a somewhat hard to visually detect, but nevertheless present, cycle that had a rhythm of about 5 days (i.e., one trading week). A similar rhythm was seen for Plexus.

Maximum entropy spectral analysis, or MESA, is a tool on which an indicator can be built. It is useful because it specifically addresses the issue of finding, quantifying, and extrapolating cycles in a mathematically rigorous manner. MESA represents one of a number of sophisticated methods of detecting and analyzing cyclic behavior in a signal. With proper software (like our TradeCycles) that implements MESA, or an alternative technique (such as a wavelet filter bank), we can highlight a region of the chart and obtain accurate information on the presence, purity, and intensity of cyclic activity, as well as extrapolate any present cycles into the future. The results of MESA when applied to Dell can be seen in Figure 9-1. This is the same chart shown in the previous chapter, but now contains the extra data generated by a maximum entropy spectral analysis. On the left-hand side of the bottom subchart, there is a histogram-style graph that shows the relative power or strength of cyclic activity of each period in the market. There is a clear, sharp peak in cycle intensity at around 5 days, with a decline on either side. This reflects the 5-day cycle observed by eyea strong, pure cycle according to MESA. The fact that there is only one hump in the curve tells us that the 5-day cycle (actually 5.26 days) is the only one present in recent prices. An extrapolation of the cycle is shown in the right half of the bottom graph as a smooth, oscillating histogram that represents the expected cycle phase one bar (day) ahead. We can see that, in full accord with the visual analysis presented in the previous chapter, we are at or near a cycle bottom on the last day shown on the chart.

This kind of analysis is logical, has its roots in electronic engineering and mathematics, and is an objective way to detect and characterize cycles, an important aspect of market behavior. Even though the mathematics are advanced and the implementation in software tricky, the results are very easy to understand, and can be

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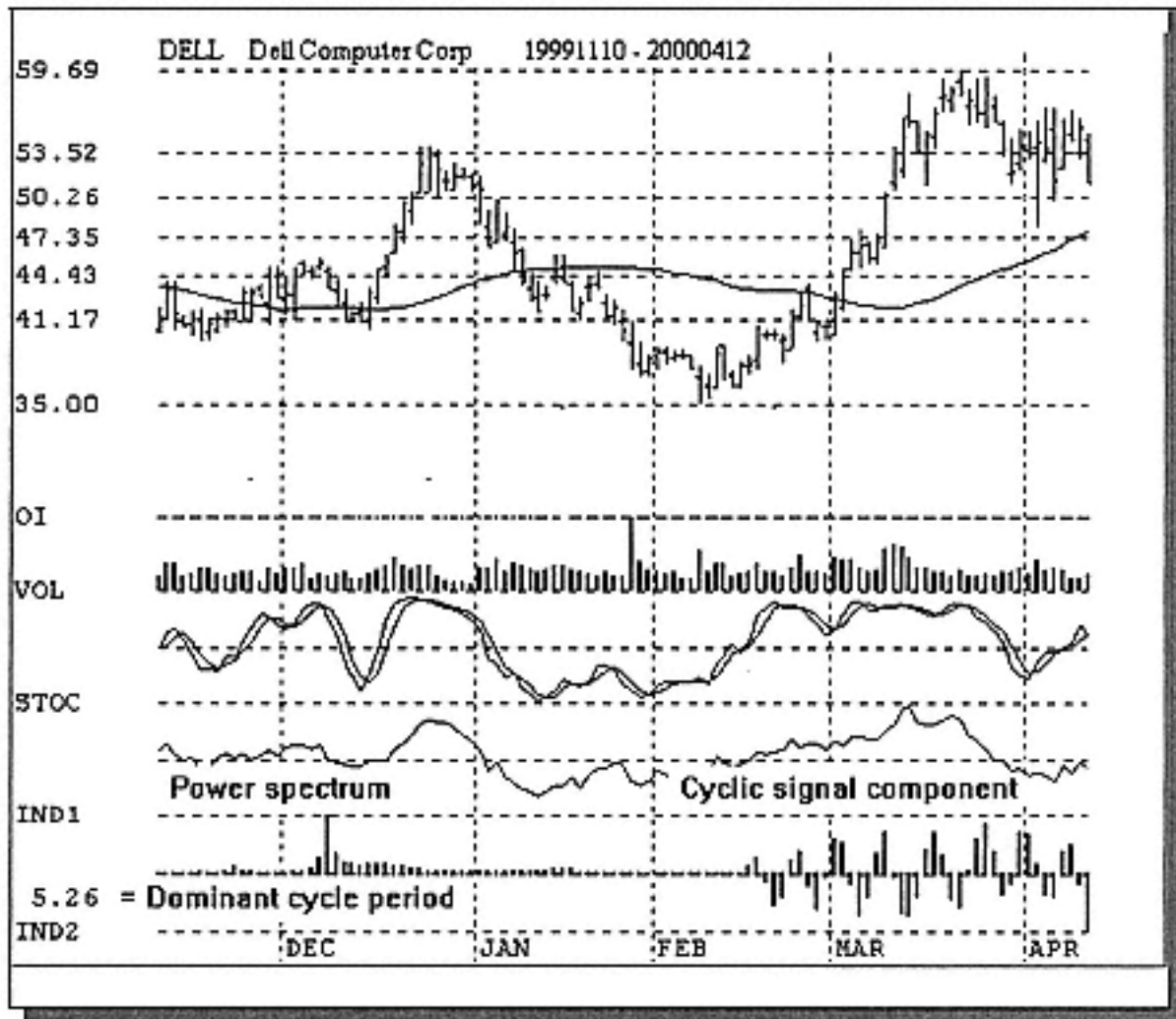
Figure 9-1.
Setup chart for Dell Computer showing a Mesa cycle analysis.

useful to any trader. If you have such a tool in your charting software, you will be reaching for it frequently, as we do.

Expert Systems

Expert systems represent a branch of AI. They are built of rules and old-fashioned, syllogistic reasoning. The use of expert system engines and related software allows the trader to represent his or her trading ideas as a formal set of rules. The system can then apply those rules to various charts or data series, coming to conclusions regarding whether to enter, exit, hold, or stay away. For example,

someone skilled in the use of expert system tools could prepare a set of rules to perform the search for a good setup of the kind discussed in the previous chapter. Rules could be written that would assess charts for desired trend, retracement levels, and other factors that comprise the setup. Other rules would search for keywords in news stories, somewhat like an internet search engine running on automatic and looking for the kinds of news that might be useful to the trader. Once such an expert system is written, it can be tested to determine how well it does its job. The rules can be modified and adjusted to improve results; then the system can be retested.

With a sufficiently skilled expert system designer, working with a knowledgeable trader, a fairly good system can be developed. The expert system designer will try to elicit from the trader the explicit logic used when examining charts, attempt to write rules within the expert system's language to capture that logic, compare the expert system's judgments against the trader's judgments, and then modify the rule base to improve results. Once an expert system has been developed, it can also be tested for actual trading performance, if it contains rules not merely for a setup but for actual trading. This leads into the idea of mechanical systems trading, one of our areas of expertise.

Expert systems represent clear-cut, hard-edged logic. They use rules like "If the trend is up, and there is a blow-off top, then expect a retracement tomorrow," and "If the moving average has been sloping up for each of the last 7 days, and prices today are higher than any price 7 to 40 days ago, then the trend is up." Another rule might be "If volume is greater than four times its average, and price has risen more than twice the daily range for the past 2 days, there is a blow-off top." An expert system is composed of large numbers of rules of this kind, and the expert system's "engine" will employ the rules in an effort to draw useful conclusions.

Expert systems work somewhat as follows. An attempt is made to "execute" each rule in the rule base. On the first pass, however, a large number of rules may not have their antecedents available and so no conclusions can be drawn. For example, if we were to

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make a pass, in sequence, through the three rules above, we would not be able to come to any conclusion using the first rule. The rule cannot be executed because antecedents such as "blow-off top" and "the trend is up" have not yet been defined or determined. However, some rules will be executed and lead to conclusions. These conclusions then become part of the pool of knowledge regarding the state of affairs the system is analyzing. On the next pass through the set of all rules, rules that could not be executed the first time may now be executed, since some of the antecedents may have been derived as conclusions from other rules. For example, after the first pass, the status of "blow-off top" and "the trend is up" will be known from the last two rules; therefore, on the second pass, the first rule can be executed and a conclusion drawn.

An expert system engine engages in a process of attempting to execute each of a large number of rules, generating conclusions for those it can, and then going back and executing the rules again, hoping that some of the conclusions will allow additional rules to be executed. It repeats the process until no more rules can be executed and no more conclusions can be drawn. Technically, this process is referred to as "forward chaining." In addition, expert systems have various schemes implemented to handle such things as probability, validity, and strength of expectation. Some rules may lead to conclusions of greater strength, or one may have a greater conviction in the truth of a given rule. Such factors can be expressed in the expert system's language as part of the rules.

As already stated, expert systems can be developed to search for good setups for the next day's trades or to examine news headlines. They can also be used to tell you when to enter and/or exit the market, as a mechanical trading system would do.

Expert systems, however, run into difficulty when dealing with "fuzzy" or "soft" patterns. Even though some of these patterns may be easy to spot by eye, or to recognize intuitively, they are hard to describe in terms of precise, quantifiable "If . . . , then . . . " statements. Imagine you wanted to design a program to alert you to the presence of head-and-shoulders tops or double bottoms, perhaps

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selecting stocks or futures that exhibit these patterns. If you try to precisely define a head-and-shoulders pattern in terms of, say, which bars should have prices higher or lower than which other bars, you will find yourself facing an almost impossible task. Subjectively, however, it is easy to recognize such a pattern or "gestalt." The problem is that the pattern comes in many different shapes and sizes. And, although they look different, and lay themselves out differently in the chart, they are clearly recognizable as head-and-shoulders patterns. It is for these tasks that you would want to develop or train a neural network.

Neural Networks

Neural networks emulate the kind of information processing and decision making that occurs in living organisms. They model the behavior of neural tissue in living systems by using computers to implement structures composed of simulated neurons and neural interconnections (synapses). Neural networks can be trained to perform tasks that involve pattern recognition, classification, and prediction.

Unlike expert systems, where the rules that form part of the system's knowledge base must be written by a trader or system developer, neural networks learn by example. Let's say we want a neural network that is capable of identifying inverted head-and-shoulders patterns, the kind that indicate a buy and are sometimes seen when prices are bottoming. Rather than attempting to write a set of rules to define or differentiate this pattern from all the other patterns of movement in the market, we would instead create a set of examples or "facts." These examples would contain a large number of inverted head-and-shoulders patterns, as well as a number of other patterns for contrast. Using a neural network software tool (like our own N-TRAIN), we would present these examples to the neural network and train it to differentiate between the patterns.

There are many issues beyond the scope of this book involved in developing a neural network pattern recognizer. For example,

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there are many subtleties in the process of selecting proper input variables and targets to use when training neural networks. However, if you successfully manage to train a network to differentiate the head-and-shoulders pattern from other patterns, you would have an element or building block that could be added to your charting program or trading system. It could be implemented so that your software would automatically notify you when head-and-shoulders patterns are present in the markets you are following.

In addition to simple pattern recognition tasks as the one just described, neural networks can sometimes make effective forecasters. For example, a neural network could be trained to predict price changes based on a trading instrument's price behavior over a previous period of time. Wouldn't it be useful to know what the likely price change is tomorrow, from open to close, on your favorite stock or future? You could run all the optionable NASDAQ stocks through the neural network every night and select, perhaps, five with the greatest predicted open-to-close price change as potential candidates for tomorrow's trading. If the neural network was accurate in its predictions, you might have five winning trades.

As with expert systems, neural networks can be used as support tools for discretionary trading or as parts of systems that generate unambiguous trading signals. An example of a mechanized system that uses several neural networks and rule-based components is the one we have for short-term trading on the S&P 500 futures. The signals from this system can be seen in the lower part of Figure 9-2. When the signal line is near the top, it means the system is indicating that it is time to be long the S&P 500. When the line is at the bottom, the system is indicating that it is time to be short. As you can see from the chart, the neural network-based trading system has done an excellent job in telling the trader whether to be long or short. Anyone following its suggestions could have made a hefty profit in the 30-minute period shown.

A problem with neural networks, especially those used for forecasting and in systems such as the one illustrated above, is that they may lose predictive worth if the market changes its characteristic

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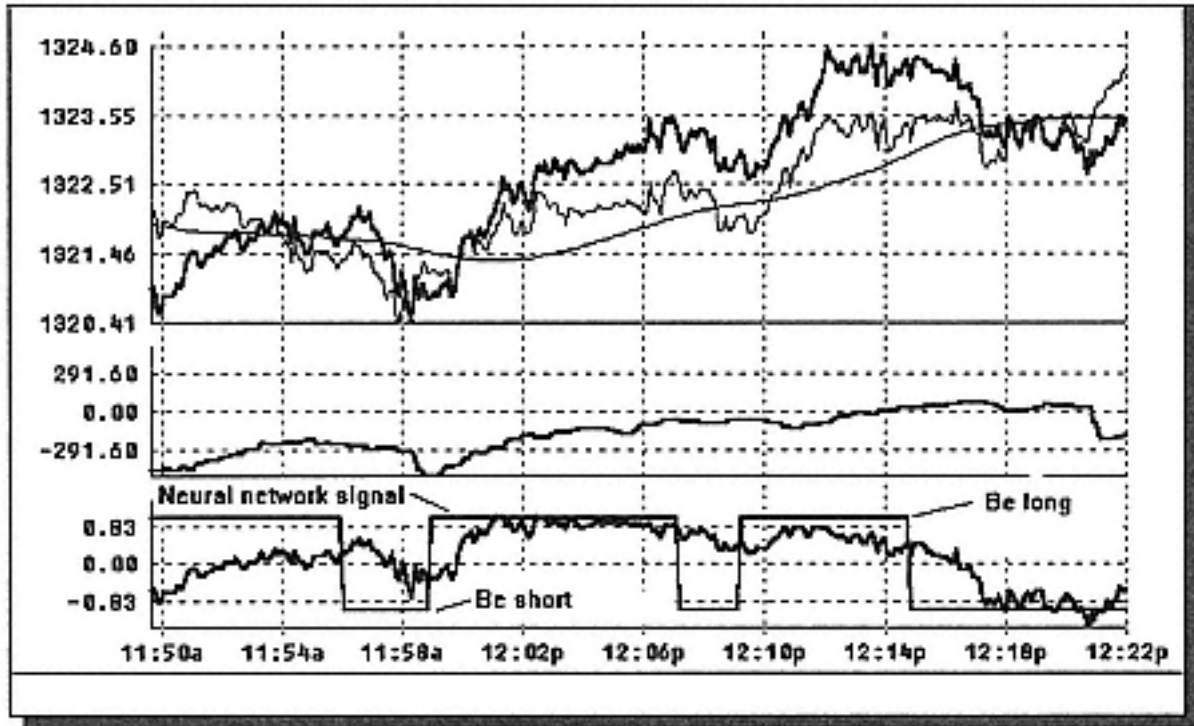
Figure 9-2.
Intraday chart of the S&P 500 Futures with Neural Trading Signals.

patterns of behavior. Neural networks are good at detecting subtle patterns that may have significance in a given era, but that disappear or change their meaning during another time period. For example, the system shown in Figure 9-2 worked fine as long as the market exhibited a kind of rolling pattern that was common a while ago, but that has become less common recently. Today, the same system, although still profitable, is no longer able to overcome transaction costs or provide decent risk-to-reward ratios consistently.

It should be noted that decline in the performance of a system or method is not a problem just when using neural networks. Any pattern recognition scheme has this tendency. Even a person playing a simulated trading game to learn how to trade can find his or her intuition going totally awry as time passes and the market changes its behavior. Because of their ability to detect very subtle patterns, neural networks tend to be subject to this problem. The patterns they detect may not persist; they might become artifacts of a particular market at a particular point in time. However, those skilled

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in the use of neural networks can sometimes circumvent this problem by retraining their networks. We are currently attempting to train some neural network forecasters to assist our trading of stock options.

To learn more about neural networks and their applications to trading, we suggest you read the chapter on this subject in our book, *The Encyclopedia of Trading Strategies* (Katz and McCormick, 2000a). We also describe the development of a rule-based trading system using neural networks in "Case Study: Building an Advanced Trading System" in *Computerized Trading* (Katz and McCormick, 1999).

Genetic Algorithms

Genetic algorithms are not, strictly speaking, a form of artificial intelligence, although they are often used in conjunction with such AI technologies as neural networks. Genetic algorithms are perhaps the most potent *optimizers* in existence. In other words, they are among the most powerful solution-finding methodologies around. Genetic algorithms operate through a process modeled after biological evolution. They work by the recombination and mutation of "gene" sequences. In this case, a *gene* is a block of programming code (the genotype). Genes that are strung together are referred to as *chromosomes*. In genetic optimization, the chromosomes are usually a series of numbers. When decoded, they reveal a functional organism (perhaps a trading system) that has specific characteristics (the phenotype).

The genetic algorithm engages in breeding during the simulated evolutionary process; that is, it mates and selects members of the *population* (chromosomes). *Mating* involves crossover and mutuation. In *crossover*, the elements that form the genes of different chromosomes (population members or *solutions*) are combined to form new chromosomes. *Mutation* involves the introduction of random alterations into these elements. This process provides additional variation in the sets of chromosomes that are generated. As

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in biological *selection* ("survival of the fittest," where more fit members of the population leave more progeny), the less fit solutions are weeded out so that the more fit solutions can proliferate, producing another generation that may contain some better solutions than the previous one. The evolutionary process of recombination, random mutation, and selection is extremely powerful at problem solving.

Genetic algorithms are useful in many domains, including those of interest to the trader. For example, they can be used to generate the rules for an expert trading system. If the performance of a mechanical trading system can be evaluated, a genetic algorithm can be used to *evolve* a set of rules through the process of selective breeding, rather than by having an expert system developer or trader write them. If it is provided with a collection of rule fragments, the genetic algorithm can combine, replicate, mutate, and recombine them until it has arrived at a set of trading rules that is profitable. Genetic algorithms can also be used to train neural networks.

There are software tools (such as our own OptEvolve) that allow trading system developers to use genetic algorithms. Despite what some may claim, this technology is a bit difficult to implement, especially for the novice system developer. More precisely, like neural networks, working successfully with genetic algorithms requires a degree of finesse. Those interested in venturing further into this subject should read our chapter on genetic algorithms in *The Encyclopedia of Trading Strategies* (Katz and McCormick, 2000b), where we explain the process and the application of such technology more completely.

What Have We Learned?

Artificial intelligence (or AI) refers to technologies that allow computer software to perform intelligent processes.

There are two kinds of indicators: those that emphasize trend and market direction, and those that highlight rhythms and cycles.

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The *moving average* is an indicator that reveals the direction of price movement.

Oscillators are indicators that detect price extremes or cyclic movement in the market.

Stochastics is an oscillator that shows whether current prices are high or low relative to a past price range.

Extreme prices often become more extreme unless there is some reason for them to reverse. Therefore, it is not necessarily wise to simply buy when prices are relatively low or to sell when they are relatively high.

The *MACD* (moving average convergence divergence) attempts to detect cyclic rhythms in the market.

MESA (maximum entropy spectral analysis) is a tool that allows traders to objectively find and quantify cycles, and to extrapolate them into the future.

Expert systems form a branch of AI. They allow a trader to represent trading ideas as a set of clearly defined rules. Market data are presented to such systems for assessment. The systems then determine appropriate trading actions.

Neural networks are also under the auspices of AI. They emulate the kind of information processing that occurs in the brain and are useful for pattern recognition, classification, and prediction. Neural networks learn by example to, say, differentiate between chart patterns.

Genetic algorithms are optimizers; that is, they are powerful solution-finding methodologies. They work using a process similar to biological evolution, where "natural selection" (survival of the fittest) is applied to find the best solution to a given problem.

Among the applications of genetic algorithms is the ability to generate rules for an expert system or to evolve neural networks.

Appendix A
Specifications for Some Popular Commodities (as of March 2000)

It may seem surprising, but information of the kind presented in Table A-1 is sometimes difficult to find, especially in one place. This is one of the reasons we compiled the table. Our primary sources for the data were the exchanges themselves and Lind-Waldock. We attempted to corroborate the information, but found that discrepancies seem to exist among the various sources. For example, Lind-Waldock and Pinnacle Data Corporation use the symbol NR for rough rice, while the exchange (CBOT) uses the symbol RR. We have done our best to be accurate and relied most heavily on the information provided by the exchanges (for their website addresses, see Appendix E). However, before actually using

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TABLE A-1

Market	Australian Dollar	British Pound	Canadian Dollar
Pit Symbol	AD	CD	CD
Name	AUSTRALIAN $	B-POUND	C-DOLLAR
Time Mon-Fri	7:20a2:00p CT	7:20a2:00p CT	7:20a2:00p CT
Elec Symbol	A2	B2	C2
Name	AUSSIE $	B-POUND	C-DOLLAR
Time Sun	5:30p7:05a	CT 5:30p7:05a CT	5:30p7:05a CT
Time Mon-Fri	2:30p7:05a CT	2:30p7:05a CT	2:30p7:05a CT
Trades On	GLBX	GLBX	GLBX
Exchange	CME	CME	CME
Expiration	HMUZ	HMUZ	HMUZ
Rollover Date	8th DM	8th DM	8th DM
Tick Size	.01 c	.02 c	.01 c
Tick Value	$10.00	$12.50	$10.00
$ Volatility 05%		$262	$130
$ Volatility 50%		$475	$280
$ Volatility 95%		$1,050	$740

Market	Cattle, Feeder	Cattle, Live	Cocoa
Pit Symbol	FC	LC	CC
Name	FEEDER CATTLE	LIVE CATTLE	COCOA
Time MonFri	9:05a1:00p CT	9:05a1:00p CT	8:30a1:30p ET
Elec Symbol			
Name			
Time Sun			
Time MonFri			
Trades On			
Exchange	CME	CME	CSCE/NYBOT
Expiration	FHJKQUVX	GJMQVZ	HKNUZ
Rollover Date	27th MPDM	27th MPDM	9th MPDM
Tick Size	.025 (d 100lbs)	.025 (d 100lbs)	1.00 (d metric ton)
Tick Value	$12.50	$10.00	10.00
$ Volatility 05%	$200	$172	$120
$ Volatility 50%	$450	$332	$220
$ Volatility 95%	$800	$640	$390

Market	Coffee	Copper	Corn
Pit Symbol	KC	HG	Corn

Name	COFFEE	COPPER	CORN
Time MonFri	9:15a1:32p ET	8:10a2:00p ET	9:30a1:15p CT

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(table continued from previous page)

Market	Coffee	Copper	Corn
Elec Symbol		YH	ZC
Name		COPPER	CORN
Time Sun		7:00p8:00a ET	8:00p5:00a CT
Time MonFri		4:00p8:00a ET	8:00p5:00a CT
Trades On		ACSS	PRJA
Exchange	CSCE/NYBOT	NYME	CBOT
Expiration	HKNUZ	all months plus	HKNUZXF
Rollover Date	11th MPDM	22nd MPDM	22nd MPDM
Tick Size	.05 c	.05 c	.25 (c bushel)
Tick Value	$18.75	$12.50	$12.50
$ Volatility 05%	$637		$62
$ Volatility 50%	$1,312		$162.
$ Volatility 95%	$3,000		$325
Market	Cotton No. 2	CRB Futures	Crude Oil, Light
Pit Symbol	CT	CR	CL
Name	COTTON #2	CRB FUTURES	LITE CRUDE
Time MonFri	10:30a2:40p ET	9:40a2:45p ET	9:45a3:10p ET
Elec Symbol			YC
Name			CRUDE
Time Sun			7:00p8:00a ET
Time MonFri			4:00p8:00a ET
Trades On			ACSS
Exchange	NYCE/NYBOT	NYFE/NYBOT	NYMEX
Expiration	HKNVZ	FGJMQX	all months plus
Rollover Date	15th MPDM	1st DM	11th MPDM
Tick Size	.01 d	.05	.01 (d barrel)
Tick Value	$5.00	$25.00	$10.00
$ Volatility 05%	$225		$220
$ Volatility 50%	$475		$420
$ Volatility 95%	$1,125		$800
Market	Deutsche Mark	Dew Jones	E-Mini (S&P 500)
Pit Symbol		DJ	ES
Name		DOW	E-MINI
Time MonFri		7:20a3:15p CT	8:30a3:15p CT

Elec Symbol	DM	ZD	ES
Name	D-MARK	DOW	E-MINI
Time Sun	5:30p:2:00p CT	6:05p5:00a CT	5:30p3:15p CT
Time MonFri	2:30p2:00p CT	6:05p5:00a CT E104	3:45p3:15p CT
Trades On	GLBX	PRJA	GLBX

(table continued on next page)

(TABLE A-1. Continued)

Market	Deutsche Mark	Dow Jones	E-Mini(S&P 500)
Exchange	CME	CBOT	CME
Expiration	NMUZ	HMUZ	HMUZ
Rollover Date	8th DM	8th DM	9th DM
Tick Size	.01 c	1.0	.25
Tick Value	$12.50	$10.00	$12.50
$ Volatility 05%	$200		$325
$ Volatility 50%	$387		$800
$ Volatility 95%	$850		$1,845

Market	Eurodollars	Gold	Goldman Sachs CI
Pit Symbol	ED	GC	GI
Name	EURO$	CMX GOLD	GOLDMAN SACHS
Time MonFri	7:20a2:00p CT	8:20a2:30p ET	8:15a2:15p CT
Elec Symbol	GE	YG	
Name	EURO$	GOLD	
Time Sun	5:30p4:00p CT	7:00p8:00a ET	5:30p8:00a CT
Time MonFri	4:30p4:00p CT	4:00p8:00a ET	2:45p8:00a CT
Trades On	GLBX	ACSS	GLBX
Exchange	CME	NYMEX	CME
Expiration	HMUZ	GJMQZV	all months
Rollover Date	22nd MPDM	22nd MPDM	27th MPDM
Tick Size	.01	.10 (d troy ounce)	.05
Tick Value	$25.00	$10.00	$12.50
$ Volatility 05%	$25	$110	
$ Volatility 50%	$75	$230	
$ Volatility 95%	$250	$500	

Market	Heating Oil #2	Japanese Yen	Lean Hogs
Pit Symbol	HO	JY	LH
Name	HTG OIL	J-YEN	LEAN HOGS
Time MonFri	9:50a3:10p ET	7:20a2:00p CT	9:10a1:00p CT
Elec Symbol	YO	J2	
Name	HEAT OIL	J-YEN	
Time Sun	7:00p8:00a ET	5:30p7:05a CT	
Time MonFri	4:00p8:00a ET	2:30p7:05a CT	
Trades On	ACSS	GLBX	

Exchange	NYMEX	CME	CME
Expiration	all months plus	HMUZ	GJMNQVZ

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Market	Heating Oil #2	Japanese Yen	Lean Hogs
Rollover Date	11th MPDM	8th DM	27th MPDM
Tick Size	.01 c	.01 h	.025 (d 100 lb)
Tick Value	$4.20	$12.50	$10.00
$ Volatility 05%	$189	$325	$212
$ Volatility 50%	$399	$762	$432
$ Volatility 95%	$756	$1,900	$868
Market	Lumber, Random	Nasdaq	Natural Gas
Pit Symbol	LB	ND	NG
Name	LUMBER	NASDAQ	NATURAL GAS
Time MonFri	9:00A1:05p CT	8:30a3:15p CT	10:00a3:10p ET
Elec Symbol		Q2	YN
Name		NASDAQ	NATURAL
Time Sun		5:30p8:15a CT	no trading
Time MonFri		3:45p8:15a CT	4:00p7:00p ET
Trades On		GLBX	ACSS
Exchange	CME	CME	NYMEX
Expiration	FHKNUX	HMUZ	all months plus
Rollover Date	1st DM	9th DM	11th MPDM
Tick Size	.10 d	.05	$.001
Tick Value	$8.00	$5.00	$10.00
$ Volatility 05%	$416		
$ Volatility 50%	$880		
$ Volatility 95%	$1,616		
Market	Nikki Index	NYSE Comp Indx	Oats
Pit Symbol	NK	YX	0
Name	NIKKEI	NYSE COMP INDX	OATS
Time MonFri	8:00a3:15p CT	9:15a4:15p ET	9:30a1:15p CT
Elec Symbol			ZO
Name			OATS
Time Sun		7:00p10:00p ET	8:00p5:00a CT
Time MonFri			8:00p5:00a CT
Trades On			PRJA
Exchange	CME	NYFE/NYBOT	CBOT
Expiration	HMUZ	HMUZ	HKNUZXF

Rollover Date	3rd DM	9th DM	22nd MPDM
Tick Size	5.0	.05	$.00.25 c+G18525
Tick Value	$25.00	$25.00	$12.50

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(TABLE A-1. Continued)

Market	Nikkei Index	NYSE Comp Indx	Oats
$ Volatility 05%			
$ Volatility 50%			
$ Volatility 95%			
Market	Orange Juice	Palladium	Platinum
Pit Symbol	OJ	PA	PL
Name	ORANGE JUICE	PALLADIUM	PLATINUM
Time MonFri	10:15a2:15p ET	8:10a2:20p ET	8:20a2:30p ET
Elec Symbol		YA	YP
Name		PALLADIUM	PLATINUM
Time Sun		7:00p8:00a ET	7:00p8:00a ET
Time MonFri		4:00p8:00a ET	4:00p8:00a ET
Trades On		ACSS	ACSS
Exchange	NYCE/NYBOT	NYMEX	NYMEX
Expiration	FHKNUX	HMUZ plus	FJNV plus
Rollover Date	25th MPDM	22nd MPDM	22nd MPDM
Tick Size	.05	.05 (d troy ounce)	.10 (d troy ounce)
Tick Value	$7.50	$5.00	$5.00
$ Volatility 05%		$1,450	$125
$ Volatility 50%		$3,674	$250
$ Volatility 95%		$8,825	$465
Market	Pork Bellies (Froz)	Rough Rice	Silver
Pit Symbol	PB	NR (CBOT R+E212)	Silver
Name	PORK BELLIES	ROUGH RICE	CMX SILVER
Time MonFri	9:10a1:10p CT	9:15a1:30p CT	8:25a2:25p ET
Elec Symbol		ZR	YV
Name		RICE	SILVER
Time Sun		8:00p5:00a CT	7:00p8:00a ET
Time MonFri		8:00p5:00a CT	4:00p8:00a ET
Trades On		PRJA	ACSS
Exchange	CME	CBOT	NYMEX
Expiration	GHKNQ	FHKNUX	HKNUZF plus
Rollover Date	27th MPDM	22nd MPDM	22nd MPDM
Tick Size	.025 (d 100 lbs)	.5 h	.5 c
Tick Value	$10.00	$10.00	$25.00

$ Volatility 05%	$440		$225
$ Volatility 50%	$888		$575
$ Volatility 95%	$1,420		$1,250

(table continued on next page)

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Market	Soybeans	Soybean Meal	Soyhean Oil
Pit Symbol	S	SM	BO
Name	SOYBEANS	SOY MEAL	SOY OIL
Time MonFri	9:30a1:15p CT	9:30al:15p CT	9:30a1:15p CT
Elec Symbol	ZS	ZM	ZL
Name	SOYBEANS	SOY MEAL	SOY OIL
Time Sun	8:00p5:00a CT	8:00p5:00a CT	8:00p5:00a CT
Time MonFri	8:00p5:00a CT	8:00p5:00a CT	8:00p5:00a CT
Trades On	PRJA	PPJA>	PIUA
Exchange	CBOT	CBOT	CBOT
Expiration	FHKNUXQ	FHKNUVZQ	FHKNUVZQ
Rollover Date	22nd MPDM	22nd MPDM	22nd MPDM
Tick Size	.25 c	.10 d	.01 c
Tick Value	$12.50	$10.00	$6.00
$ Volatility 05%	$200	$120	$108
$ Volatility 50%	$362	$280	$216
$ Volatility 95%	$650	$590	$384
Market	S&P 500	S&P Midcap 400	Sugar #11
Pit Symbol	SP	MD	SB
Name	S&P 500	MIDCAP 400	SUGAR
Time MonFri	8:30a3:15p CT	8:30a3:15p CT	9:30al:20p ET
Elec Symbol	12	P2	
Name	S&P	MIDCAP	
Time Sun	5:30p8:15a CT	5:30p8:15a CT	
Time MonFri	3:45p8:15a CT	3:45p8:15a CT	
Trades On	GLBX	GLBX	
Exchage	CME	CME	CSCE/NYBOT
Expiration	HMUZ	HMUZ	HKNV
Rollover Date	9th DM	9th DM	22nd MPDM
Tick Size	.10	.05	.01 c
Tick Value	$25.00	$25.00	$11.20
$ Volatility 05%	$1,625		$100
$ Volatility 50%	$4,000		$212
$ Volatility 95%	$9,225		$448
Market	Swiss Franc	T-Bills, 90 days	T-Bonds

Pit Symbol	SF	TB	US
Name	S-FRANC	T-BILL	T-BONDS
Time MonFri	7:20a2:00p CT	7:20a2:00p CT	7:20a2:00p CT
Elec Symbol	S2	T2	ZB
Name	S-FRANC	T-BILL	T-BONDS

(table continued on next page)

Pit Symbol	SF	TB	US
Name	S-FRANC	T-BILL	T-BONDS
Time MonFri	7:20a2:00p CT	7:20a2:00p CT	7:20a2:00p CT

(TABLE A-1. Continued)

Market	Swiss Franc	T-Bills, 90 days	T-Bonds
Time Sun	5:30p7:05a CT	5:30p7:05a CT	6:00p5:00a CT
Time MonFri	2:30p7:05a CT	2:10p7:05a CT	6:00p5:00a CT
Trades On	GLBX	GLBX	PRJA
Exchange	CME	CME	CBOT
Expiration	HMUZ	HMUZ	HMUZ
Rollover Date	8th DM	22nd MPDM	22nd MPDM
Tick Size	.01 c	.005	.03125
Tick Value	$12.50	$12.50	$31.25
$ Volatility 05%	$287	$25	$406
$ Volatility 50%	$587	$100	$875
$ Volatility 95%	$1,399	$250	$1,999
Market	T-Notes, 5 years	10 Year Notes	Unleaded Gasoline
Pit Symbol	FV (Pinnacle=FB)	TY	HU
Name	5YR NOTE	10YR NOTE	NO-LEAD
Time MonFri	7:20a2:00p CT	7:20a2:00p CT	9:50a3:10p ET
Elec Symbol	ZF	ZN	YQ
Name	5YR NOTE	10YR NOTE	NO-LEAD
Time Sun	6:00p5:00a CT	6:00p5:00a CT	7:00p8:00a ET
Time MonFri	6:00p2:00p CT	6:00p2:00p CT	4:00p8:00a ET
Trades On	PRJA	PRJA	ACSS
Exchange	CBOT	CBOT	NYMEX
Expiration	HMUZ	HMUZ	all months
Rollover Date	22nd MPDM	22nd MPDM	11th MPDM
Tick Size	.015625	.015625	.01 c
Tick Value	$15.625	$15.625	$4.20
$ Volatility 05%		$218	$273
$ Volatility 50%		$300	$462
$ Volatility 95%		$1,312	$861
Market	Wheat, Chicago	Wheat, KS City	Wheat, Minnesota
Pit Symbol	W	KW	MW
Name	WHEAT	K-WHEAT	M-WHEAT
Time MonFri	9:30a1:15p CT	9:30a1:15p CT	9:30al:15p CT
Elec Symbol	ZW		
Name	WHEAT		

| Time Sun | 8:00p5:00a CT |
| Time MonFri | 8:00p5:00a CT |

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(table continued from previous page)

Market	Wheat, Chicago Wheat, KS City		Wheat, Minnesota	
Trades On	PRJA			
Exchange	CBOT		KCBT	MGE
Expiration	HKNUZ		HKNUZ	HKNUZ
Rollover Date	22nd MPDM		22nd MPDM	22nd MPDM
Tick Size	.25 c		.25 c	.25 c
Tick Value	$12.50		$12.50	$12.50
$ Volatility 05%	$125		$100	$125
$ Volatility 50%	$237		$200	$237
$ Volatility 95%	$450		$425	$450

this data to trade, we suggest that you check it with both your broker and data provider.

The first line of the table contains the common "Market" name of the commodity, like "Australian Dollar." The next three lines provide data relevant to pit trading, specifically, the "Pit Symbol" of the commodity, the "Name" it is called, and the "Time MonFri" when it is traded. Note that "CT" refers to central time and "ET" to eastern time.

The next five lines pertain to electronic and after-hours trading. As you will see, not all commodities trade this way, at least not as of this writing. Some still trade only in the pits. "Elec Symbol" is the electronic symbol for the commodity (usually different from the pit symbol) and, of course, there is its "Name." Commodities that trade electronically do not keep banker's hours. In addition to trading during the week ("Time MonFri"), they trade on Sundays ("Time Sun"). As you will see, some commodities seem to trade around the clock. Again, there can be variations so check before you trade. Finally, "Trades On" refers to where the commodity is electronically traded: "GLBX" is Globex, "ACSS" is Access, and "PRJA" is Project A.

"Exchange" refers to the name of the exchange on which the commodity trades. "CME" is the Chicago Mercantile Exchange. "CSCE" is the Cotton, Sugar, and Cocoa Exchange, which is under the auspices of "NYBOT," the New York Board of Trade. "NYME"

is the New York Mercantile Exchange. "CBOT" is the Chicago Board of Trade. "NYCE" is the New York Cotton Exchange, which is under the auspices of NYBOT, as is "NYFE," the New York Futures Exchange. "KCBT" is the Kansas City Board of Trade. "MGE" is the Minneapolis Grain Exchange.

"Expiration" is also known as the "delivery date," which is when the contract expires. These symbols and their respective months are as follows:

TABLE A-2. EXPIRATION MONTH CODES FOR FUTURES

Month	Letter	Month	Letter	Month	Letter
January	F	May	K	September	U
February	G	June	M	October	V
March	H	July	N	November	X
April	J	August	Q	December	Z

"Rollover Date" is the usual time by which a trader will want to close out a position in a contract. It is the last day that a given contract should be held for speculative purposes. These dates are chosen to avoid such things as first notice date and the decline in contract trading volume that often occurs in the days preceding expiration, as traders move to contracts further into the future. In this category, the number refers to the date, "DM" is the delivery month, and "MPDM" is the month previous to the delivery month. After having exited a position, if a trader wants to maintain a position in the market after the rollover date, he or she will purchase the contract with the next expiration date, that is, "roll over" to the next contract.

Different commodities have different "Tick Sizes," that is, minimum amounts that they move. The exchanges sometimes attach a monetary value to the tick size, represented here as "d" for dollars, "c" for cents, and "h" for hundredths of a cent. Commodities also differ in "Tick Value," the dollar value for the minimum size move. Such data is necessary when deciding how many contracts to trade

and whether day trading is even possible. It is also needed when running trading system development and simulation software such as TradeStation and C-Trader. As with everything else, there are discrepancies in these figures across sources. In TradeStation 4.0, for example, the internal database suggests that the S&P 500 has a tick size of 1/32; however, before the index futures split in 1997, the S&P 500 had a tick size of .05, and now has a tick size of. 1! It is also necessary to check on how these numbers are represented by your data vendor. Some data vendors represent a current price on the S&P 500 as 135140 without any decimal points; others represent it in the more familiar way, 1351.40. When dealing with trading software, you should adjust the tick size differently for each of these cases or instruct the software to perform conversions.

We should also point out that, in rare instances, the exchanges report the dollar value of a point. A point is not necessarily the same size as a tick. We have adjusted the dollar values in the table to represent the dollar value of a tick, that is, the dollar value of the minimum move, not of a point. For example, today's S&P 500 has a minimum move of .10, which represents $25 of movement; therefore, a 1-point move in the S&P 500 is $250. Prior to the split, the minimum move in the S&P 500 was .05, which represented $25; a 1-point move, at that time, represented $500.

To verify the tick sizes supplied by your data vendor, plot a histogram. Do this on as fine a grid as possible. The histogram should contain all the prices over the past year (or more) that have been provided for a given commodity. The *x*-axis should represent price and the *y*-axis should be the frequency of occurrence of each of the prices. The plot should look approximately like a comb, with some teeth being longer and some shorter. With few exceptions, the teeth should be spaced about evenly. The spacing between the teeth represents the minimum move or tick size. Some teeth may be missing because some prices may not have occurred in the particular data series examined.

Lastly, there are three measures of dollar volatility: "$ Volatility 05%," "$ Volatility 50%," and "$ Volatility 95%." The dollar vol-

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atility entries represent percentiles. "$ Volatility 05%" means that only 5 percent of the trading days over the past year had a value less than the one stated, that is, only 1 in 20 days had a dollar volatility that low. "$ Volatility 50%" means there were an equal number of trading days during the past year with a higher dollar volatility as with a lower dollar volatility than the one stated. "$ Volatility 95%" means that only 5 percent of the trading days over the past year had a dollar volatility as high as the number stated. Most days have a dollar volatility that ranges between the numbers reported in 05% and 95% categories, with the median value being reflected in "$ Volatility 50%." These numbers, which are highly related to margin requirements, can help you determine whether a given commodity is suitable for day trading at this time and, if so, the number of contracts to trade for a given amount of action and risk. It should be remembered that dollar volatility changes over time. The period referred to in this table is for 1999, January through December.

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Appendix B
Data Vendors

All addresses should be preceded by the following: *http://www*.

Bonneville Market Information (BMI)	bmiquotes.com
Bridge Information Systems	bridge.com
Commodity Systems, Inc. (CSI)	csidata.com
Comprehensive Quotes and Graphs (CQG)	cqg.com
CompuServe Interactive Services	compuserve.com
CyberCorp.com	cybercorp.com
Data Broadcasting Corporation (DBC)	dbc.com
Data Transmission Network (DTN)	dtn.com
eSignal	esignal.com
Futuresource, Inc.	futuresource.com
Genesis Financial Data Service	gfds.com
Iverson Financial Systems, Inc.	iverson.com
Knight Ridder	knightridder.com
Pinnacle Data Corporation	pinnacledata.com
Prophet Financial Systems, Inc.	prophetfinance.com
Reuters	reuters.com

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Standard & Poor's Comstock	spcomstock.com
Technical Tools	techtool.com
Tick Data, Inc.	tickdata.com
Track Data Corporation	tdc.com
Worden Brothers	tc2000.com

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Appendix C
Brokerages

As mentioned elsewhere, it is important to shop around when you are looking for a brokerage service. In addition to checks with other traders, independent reviews can be quite helpful. One of the best places we are aware of to find such reviews is on Don Johnson's Online Investment Services website (*http://www.sonicnet/donaldj/*). The list that follows contains some of his top choices for commodity brokers, as well as some services we have found particularly useful. Also remember, the websites of brokerages are often a good, free source of data, news, and other information pertinent to traders. Unless otherwise indicated, all the address below should be preceded by *http://www*.

A. B. Watley	abwatley.com
Alaron Trading	alaron.com
Ameritrade	ameritrade.com
Datek Online	datek.com
DLJ Direct	dljdirect.com
E*Trade	etrade.com
Fart Financial	farrfutures.com
Field Financial Group	fieldfinancial.com
Global Exchange Networks	gen-fx.com

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Infinity Brokerage Services	infinitybrokers.com
Instinet	instinet.com
Interactive Brokers (Timber Hill Group)	interactivebrokers.com
Ira Epstein & Company	iraepstein.com
Island ECN	island.com
J. Howard Trading	jhowardtrading.com
Lind-Waldock	lindwaldock.com
Link Futures	linkfutures.com
MB Trading	mbtrading.com
Money Garden Financial Group	forex-mg.com
Morgan Stanley Dean Witter Online	msdw.com
National Discount Brokers	ndb.com
NetFutures	netfutures.com
Professional Market Brokerage	pmbinc.com
Robbins Trading	robbins-trading.com
Smart Futures	smartfutures.net
Tradecast	tradecast.com
Wall Street Access	wsaccess.com
Web Street Securities	webstreetsecurities.com
ZAP Futures	zapfutures.com

Appendix D
Software Vendors

All addresses should be preceded by the following: *http://www*.

Borland/Inprise	borland.com
Comprehensive Quotes and Graphs (CQG)	cqg.com
CyBer Corporation	cybercorp.com
Ehlers MESA	mesasoftware.com
Equis International	equis.com
FM Labs	fmlabs.com
Inside Edge Systems	insideedgesystems.com
Jurik Research	jurikres.com
The MathWorks, Inc.	mathworks.com
Microsoft	microsoft.com
Netscape Communications Corporation	netscape.com
Omega Research	omegaresearch.com
Option Vue	optionvue.com
Ruggiero Associates	1-800-211-9785
Scientific Consultant Services, Inc.	scientific-consultants.com
Worden Brothers	tc2000.com

Appendix E
Websites of Interest

There is literally a world of information available on the internet these days. We are truly in the midst of an information explosion. The following websites are only a small sampling of what is out there. They are some of the sites we have found most useful and interesting. We encourage you to explore. Unless otherwise indicated, all the addresses should be preceded by *http://www*.

Useful Resources

The websites listed below contain useful information for traders. All of these sites have one or more of the following: free data, simulated trading games, independent reviews of brokerages, informative literature, and links to other interesting sites.

AllStocks.com	allstocks.com
Applied Research Company	appliedresearch.com
Auditrack Simulated Brokerage	auditrack.com
Big Charts	bigcharts.com

Commodity Futures Trading Commission	cfic.gov
Free Real Time	freerealtime.com
Futures and Options World	fow.com
Futures Magazine	futuresmag.com
Futures Truth	futurestruth.com
Internet Stock Report	internetstockreport.com
Investor's Business Daily	investors.corn
Journal of Computational Intelligence in Finance	http://ourworld.compuserve.com/homepages/ftpub/jcif.htm
Jurik Research	jurikres.com
Listen Only Squawk Box	los.net
Matrix Trading Group	matrixoptions.com
National Futures Association	nfa.futures.org
New York Institute of Finance	nyif.com
Online Investment Services	sonic.net/donaldj/
Online Trading Academy	onlinetradingacademy.com
Options Clearing House	optionsclearing.com
Pacific Rim Asset Mgmt.	pramusa.com
PCQuote.com	pcquote.com
Quicken.com	quicken.com/investments
Quote.com	quote.com
Real Time Futures	realtimefutures.com
Scientific Consultant Services, Inc.	scientific-consultants.com
Securities and Exchange Commission	sec.gov
Silicon Investor	siliconinvestor.com
Sim-u-Trade Brokerage Center	simutrade.com
StockMaster. com	stockmaster.com
Technical Analysis of Stocks & Commodities	traders.com

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The Motley Fool	fool.com
TheStreet.com	thestreet.com
The Web Investor	thewebinvestor.com
TradeComp International	tradecomp.com
Traders World	moneymentor.com
Trading Paper	tradingpaper.com
Value Line	valueline.com
Wall Street Directory	wallstreetdirectory.com
Yahoo! Finance	http://finance.yahoo.com

Sources for News

The following websites are great for obtaining up-to-date financial news. Many of them also have other resources of interest to traders.

Barrons	barrons.com
Bloomberg Business News	bloomberg.com
Business Wire	businesswire.com
CBS Market Watch	cbsmarketwatch.com
CNBC	cnbc.com
CNet	cnet.com
CNN	cnn.com
Corporate Financials Online	cfonews.com
Dow Jones	dowjones.com
Finance Net	financenet.gov
Financial Times	financialtimes.com
Morningstar	morningstar.com
PR Newswire	prnewswire.com
Radio Wall Street	radiowallstreet.com

Red Herring

redherring.com

Reuters

reuters.com

Trading Exchanges

The exchanges are often extremely useful in that they are a source for free data and a vast array of other information pertinent to understanding and trading the markets. The following is not a complete list of all the exchanges, but a good representation.

American Stock Exchange	amex.com
Arizona Stock Exchange	azx.com
Boston Stock Exchange	bostonstock.com
Chicago Board of Options Exchange	cboe.com
Chicago Board of Trade (Project A)	cbot.com
Chicago Mercantile Exchange (Globex)	cme.com
Coffee, Sugar & Cocoa Exchange (part of NYBOT)	csce.com
Commerce Exchange	comex.com
Kansas City Board of Trade	kcbot.com
Mid-America Commodity Exchange	midam.com
Minneapolis Grain Exchange	mgex.com
National Association of Securities Dealers Automated Quotations	nasdaq.com
New York Board of Trade (incl. NY Cotton Exchange or NYCE)	nybot.com
New York Mercantile Exchange (Access)	nymex.com
New York Stock Exchange	nyse.com
Pacifc Exchange	pacificex.com
Philadelphia Stock Exchange	phlx.com
Seattle Mercantile Exchange	seattlemerc.com

Below is a listing of some of the exchanges outside the United States. Most sites are multilingual (including English).

Amsterdam Exchanges	aex.nl/
Australian Stock Exchange	asx.com.au

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Bolsa de Derivados do Portugal	bdp.pt
Bolsa de Mercadorias & Futuros, Sño Paulo	bmf.com.br
Brussels Exchanges	bxs.be
Commodity & Monetary Exchange of Malaysia	commex.com.my
Copenhagen Stock Exchange	futop.dk
Eurex	eurexchange.com
European Association of Securities Dealers Automated Quotations	easdaq.be
Hong Kong Futures Exchange (years of historical Hang Seng data)	hkfe.com
International Petroleum Exchange of London	ipe.uk.com
Italian Stock Exchange (Italian Futures Market, MIF)	borsaitalia.it
Kansai Agricultural Commodities Exchange	kanex.or.jp
Korea Futures Exchange	kofex.com
Korea Stock Exchange	kse.or.kr
Kuala Lumpur Options & Financial Futures Exchange	kloffe.com.my
London International Financial Futures Exchange	liffe.com
London Metals Exchange	lme.co.uk
Marche à Terme International de France	matif.fr
Mercado Espanol de Futuros Financieros (Derivatives Exchange)	meffrv.es
Montreal Exchange	me.org
New Zealand Futures & Options Exchange	nzfoe.co.nz
Osaka Securities Exchange	ose.or.jp
Oslo Stock Exchange	ose.no
Shanghai Futures Exchange	shfe.com.cn
Singapore Commodity Exchange	sicom.com.sg

| South Africa Futures Exchange | safex.co.za |
| Sydney Futures Exchange | sfe.com.au |

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Tokyo Commodity Exchange	tocom.or.jp
Tokyo Grain Commodity Exchange	tge.or.jp
Tokyo International Financial Futures Exchange	tiffe.or.jp
Tokyo Stock Exchange	tse.or.jp
Winnipeg Commodity Exchange	wce.mb.ca

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About the Authors

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