TECHNICAL ANALYSIS OF THE FINANCIAL MARKETS

A COMPREHENSIVE GUIDE TO TRADING METHODS AND APPLICATIONS

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JOHN J. MURPHY

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To my parents,
Timothy and Margaret
and
To Patty, Clare, and Brian

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About the Author

John J. Murphy has been applying technical analysis for three decades. He was formerly Director of Futures Technical Research and the senior managed account trading advisor with Merrill Lynch. Mr. Murphy was the technical analyst for CNBC-TV for seven years. He is the author of three books, including *Technical Analysis of the Futures Markets,* the predecessor to this book. His second book, *Intermarket Technical Analysis,* opened up a new branch of analysis. His third book, *The Visual Investor,* applies technical work to mutual funds.

In 1996, Mr. Murphy founded MURPHYMORRIS, Inc., along with software developer Greg Morris, to produce interactive educational products and online analysis for investors. Their Web site address is:

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Introduction

I had no idea when *Technical Analysis of the Futures Markets* was published in 1986 that it would create such an impact on the industry. It has been referred to by many in the field as the "Bible" of technical analysis. The Market Technicians Association uses it as a primary source in their testing process for the Chartered Market Technician program. The Federal Reserve has cited it in research studies that examine the value of the technical approach. In addition, it has been translated into eight foreign languages. I was also unprepared for the long shelf life of the book. It continues to sell as many copies ten years after it was published as it did in the first couple of years.

It became clear, however, that a lot of new material had been added to the field of technical analysis in the past decade. I added some of it myself. My second book, *Intermarket Technical Analysis* (Wiley, 1991), helped create that new branch of technical analysis, which is widely used today. Old techniques like Japanese candlestick charting and newer ones like Market Profile have become part of the technical landscape. Clearly, this new work

needed to be included in any book that attempted to present a comprehensive picture of technical analysis. The focus of my work changed as well.

While my main interest ten years ago was in the futures markets, my recent work has dealt more with the stock market. That also brought me full circle, since I began my career as a stock analyst thirty years ago. That was also one of the side effects of my being the technical analyst for CNBC-TV for seven years. That focus on what the general public was doing also led to my third book, *The Visual Investor* (Wiley, 1996). That book focused on the use of technical tools for market sectors, primarily through mutual funds, which have become extremely popular in the 1990s.

Many of the technical indicators that I wrote about ten years ago, which had been used primarily in the futures markets, have been incorporated into stock market work. It was time to show how that was being done. Finally, like any field or discipline, writers also evolve. Some things that seemed very important to me ten years ago aren't as important today. As my work has evolved into a broader application of technical principles to all financial markets, it seemed only right that any revision of that earlier work should reflect that evolution.

I've tried to retain the structure of the original book. Therefore, many of the original chapters remain. However, they have been revised with new material and updated with new graphics. Since the principles of technical analysis are universal, it wasn't that difficult to broaden the focus to include all financial markets. Since the original focus was on futures, however, a lot of stock market material has been added.

Three new chapters have been added. The two previous chapters on point and figure charting (Chapters 11 and 12) have been merged into one. A new Chapter 12 on candlestick charting has been inserted. Two additional chapters have also been added at the end of the book. Chapter 17 is an introduction to my work on intermarket analysis. Chapter 18 deals with stock market indicators. We've replaced the previous appendices with new ones. Market Profile is introduced in Appendix B. The other appendices show some of the more advanced technical indicators and explain how to build a technical trading system. There's also a glossary.

I approached this revision with some trepidation. I wasn't sure redoing a book considered a "classic" was such a good idea. I hope I've succeeded in making it even better. I approached this work from the perspective of a more seasoned and mature writer and analyst. And, throughout the book, I tried to show the respect I have always had for the discipline of technical analysis and for the many talented analysts who practice it. The success of their work, as well as their dedication to this field, has always been a source of comfort and inspiration to me. I only hope I did justice to it and to them.

John Murphy

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The person who deserves the most credit for the second edition of this book is Ellen Schneid Coleman, Executive Editor at Simon & Schuster. She convinced me that it was time to revise *Technical Analysis of the Futures Markets* and broaden its scope. I'm glad she was so persistent. Special thanks go to the folks at Omega Research who provided me with the charting software I needed and, in particular, Gaston Sanchez who spent a lot of time on the phone with me. The contributing authors—Tom Aspray, Dennis Hynes, and Fred Schutzman—added their particular expertise where it was needed. In addition, several analysts contributed charts including Michael Burke, Stan Ehrlich, Jerry Toepke, Ken Tower, and Nick Van Nice. The revision of Chapter 2 on Dow Theory was a collaborative effort with Elyce Picciotti, an independent technical writer and market consultant in New Orleans, Louisiana. Greg Morris deserves special mention. He wrote the chapter on candlestick charting, contributed the article in Appendix D, and did most of the graphic work. Fred Dahl of Inkwell Publishing Services (Fishkill, NY), who handled production of the first edition of this book, did this one as well. It was great working with him again.

TECHNICAL ANALYSIS OF THE FINANCIAL MARKETS

A COMPREHENSIVE GUIDE TO TRADING METHODS AND APPLICATIONS

Philosophy of Technical Analysis

INTRODUCTION

Before beginning a study of the actual techniques and tools used in technical analysis, it is necessary first to define what technical analysis is, to discuss the philosophical premises on which it is based, to draw some clear distinctions between technical and fundamental analysis and, finally, to address a couple of criticisms frequently raised against the technical approach.

The author's strong belief is that a full appreciation of the technical approach must begin with a clear understanding of what technical analysis claims to be able to do and, maybe even more importantly, the philosophy or rationale on which it bases those claims.

First, let's define the subject. *Technical analysis is the study of market action, primarily through the use of charts, for the purpose of forecasting future price trends.* The term "market action" includes the three principal sources of information available to the techni-

cian—price, volume, and open interest. (Open interest is used only in futures and options.) The term "price action," which is often used, seems too narrow because most technicians include volume and open interest as an integral part of their market analysis. With this distinction made, the terms "price action" and "market action" are used interchangeably throughout the remainder of this discussion.

PHILOSOPHY OR RATIONALE

There are three premises on which the technical approach is based:

1. Market action discounts everything.
2. Prices move in trends.
3. History repeats itself.

Market Action Discounts Everything

The statement "market action discounts everything" forms what is probably the cornerstone of technical analysis. Unless the full significance of this first premise is fully understood and accepted, nothing else that follows makes much sense. The technician believes that anything that can possibly affect the price—fundamentally, politically, psychologically, or otherwise—is actually reflected in the price of that market. It follows, therefore, that a study of price action is all that is required. While this claim may seem presumptuous, it is hard to disagree with if one takes the time to consider its true meaning.

All the technician is really claiming is that price action should reflect shifts in supply and demand. If demand exceeds supply, prices should rise. If supply exceeds demand, prices should fall. This action is the basis of all economic and fundamental forecasting. The technician then turns this statement around to arrive at the conclusion that if prices are rising, for whatever the specific reasons, demand must exceed supply and the fundamentals must be bullish. If prices fall, the fundamen-

tals must be bearish. If this last comment about fundamentals seems surprising in the context of a discussion of technical analysis, it shouldn't. After all, the technician is indirectly studying fundamentals. Most technicians would probably agree that it is the underlying forces of supply and demand, the economic fundamentals of a market, that cause bull and bear markets. The charts do not in themselves cause markets to move up or down. They simply reflect the bullish or bearish psychology of the marketplace.

As a rule, chartists do not concern themselves with the reasons why prices rise or fall. Very often, in the early stages of a price trend or at critical turning points, no one seems to know exactly why a market is performing a certain way. While the technical approach may sometimes seem overly simplistic in its claims, the logic behind this first premise—that markets discount everything—becomes more compelling the more market experience one gains. It follows then that if everything that affects market price is ultimately reflected in market price, then the study of that market price is all that is necessary. By studying price charts and a host of supporting technical indicators, the chartist in effect lets the market tell him or her which way it is most likely to go. The chartist does not necessarily try to outsmart or outguess the market. All of the technical tools discussed later on are simply techniques used to aid the chartist in the process of studying market action. The chartist knows there are reasons why markets go up or down. He or she just doesn't believe that knowing what those reasons are is necessary in the forecasting process.

Prices Move in Trends

The concept of trend is absolutely essential to the technical approach. Here again, unless one accepts the premise that markets do in fact trend, there's no point in reading any further. The whole purpose of charting the price action of a market is to identify trends in early stages of their development for the purpose of trading in the direction of those trends. In fact, most of the techniques used in this approach are trend-following in nature, meaning that their intent is to identify and follow existing trends. (See Figure 1.1.)

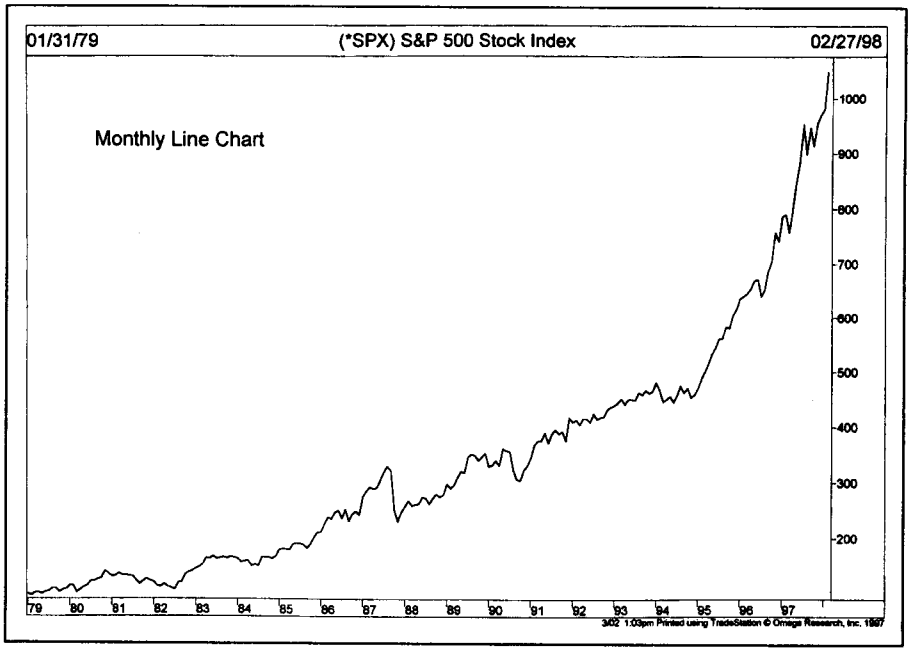

Figure 1.1 *Example of an uptrend. Technical analysis is based on the premise that markets trend and that those trends tend to persist.*

There is a corollary to the premise that prices move in trends—*a trend in motion is more likely to continue than to reverse.* This corollary is, of course, an adaptation of Newton's first law of motion. Another way to state this corollary is that a trend in motion will continue in the same direction until it reverses. This is another one of those technical claims that seems almost circular. But the entire trend-following approach is predicated on riding an existing trend until it shows signs of reversing.

History Repeats Itself

Much of the body of technical analysis and the study of market action has to do with the study of human psychology. Chart patterns, for example, which have been identified and categorized over the past one hundred years, reflect certain pictures that appear on price charts. These pictures reveal the bullish or bearish

psychology of the market. Since these patterns have worked well in the past, it is assumed that they will continue to work well in the future. They are based on the study of human psychology, which tends not to change. Another way of saying this last premise—that history repeats itself—is that the key to understanding the future lies in a study of the past, or that the future is just a repetition of the past.

TECHNICAL VERSUS FUNDAMENTAL FORECASTING

While technical analysis concentrates on the study of market action, fundamental analysis focuses on the economic forces of supply and demand that cause prices to move higher, lower, or stay the same. The fundamental approach examines all of the relevant factors affecting the price of a market in order to determine the intrinsic value of that market. The intrinsic value is what the fundamentals indicate something is actually worth based on the law of supply and demand. If this intrinsic value is under the current market price, then the market is overpriced and should be sold. If market price is below the intrinsic value, then the market is undervalued and should be bought.

Both of these approaches to market forecasting attempt to solve the same problem, that is, to determine the direction prices are likely to move. They just approach the problem from different directions. *The fundamentalist studies the cause of market movement, while the technician studies the effect.* The technician, of course, believes that the effect is all that he or she wants or needs to know and that the reasons, or the causes, are unnecessary. The fundamentalist always has to know why.

Most traders classify themselves as either technicians or fundamentalists. In reality, there is a lot of overlap. Many fundamentalists have a working knowledge of the basic tenets of chart analysis. At the same time, many technicians have at least a passing awareness of the fundamentals. The problem is that the charts and fundamentals are often in conflict with each other. Usually at the beginning of important market moves, the fundamentals do

not explain or support what the market seems to be doing. It is at these critical times in the trend that these two approaches seem to differ the most. Usually they come back into sync at some point, but often too late for the trader to act.

One explanation for these seeming discrepancies is that *market price tends to lead the known fundamentals*. Stated another way, *market price acts as a leading indicator of the fundamentals* or the conventional wisdom of the moment. While the known fundamentals have already been discounted and are already "in the market," prices are now reacting to the unknown fundamentals. Some of the most dramatic bull and bear markets in history have begun with little or no perceived change in the fundamentals. By the time those changes became known, the new trend was well underway.

After a while, the technician develops increased confidence in his or her ability to read the charts. The technician learns to be comfortable in a situation where market movement disagrees with the so-called conventional wisdom. A technician begins to enjoy being in the minority. He or she knows that eventually the reasons for market action will become common knowledge. It is just that the technician isn't willing to wait for that added confirmation.

In accepting the premises of technical analysis, one can see why technicians believe their approach is superior to the fundamentalists. If a trader had to choose only one of the two approaches to use, the choice would logically have to be the technical. Because, by definition, the technical approach includes the fundamental. If the fundamentals are reflected in market price, then the study of those fundamentals becomes unnecessary. Chart reading becomes a shortcut form of fundamental analysis. The reverse, however, is not true. Fundamental analysis does not include a study of price action. It is possible to trade financial markets using just the technical approach. It is doubtful that anyone could trade off the fundamentals alone with no consideration of the technical side of the market.

ANALYSIS VERSUS TIMING

This last point is made clearer if the decision making process is broken down into two separate stages—analysis and timing.

Because of the high leverage factor in the futures markets, timing is especially crucial in that arena. It is quite possible to be correct on the general trend of the market and still lose money. Because margin requirements are so low in futures trading (usually less than 10%), a relatively small price move in the wrong direction can force the trader out of the market with the resulting loss of all or most of that margin. In stock market trading, by contrast, a trader who finds him or herself on the wrong side of the market can simply decide to hold onto the stock, hoping that it will stage a comeback at some point.

Futures traders don't have that luxury. A "buy and hold" strategy doesn't apply to the futures arena. Both the technical and the fundamental approach can be used in the first phase—the forecasting process. However, the question of timing, of determining specific entry and exit points, is almost purely technical. Therefore, considering the steps the trader must go through before making a market commitment, it can be seen that the correct application of technical principles becomes indispensable at some point in the process, even if fundamental analysis was applied in the earlier stages of the decision. Timing is also important in individual stock selection and in the buying and selling of stock market sector and industry groups.

FLEXIBILITY AND ADAPTABILITY OF TECHNICAL ANALYSIS

One of the great strengths of technical analysis is its adaptability to virtually any trading medium and time dimension. There is no area of trading in either stocks or futures where these principles do not apply.

The chartist can easily follow as many markets as desired, which is generally not true of his or her fundamental counterpart. Because of the tremendous amount of data the latter must deal with, most fundamentalists tend to specialize. The advantages here should not be overlooked.

For one thing, markets go through active and dormant periods, trending and nontrending stages. The technician can

concentrate his or her attention and resources in those markets that display strong trending tendencies and choose to ignore the rest. As a result, the chartist can rotate his or her attention and capital to take advantage of the rotational nature of the markets. At different times, certain markets become "hot" and experience important trends. Usually, those trending periods are followed by quiet and relatively trendless market conditions, while another market or group takes over. The technical trader is free to pick and choose. The fundamentalist, however, who tends to specialize in only one group, doesn't have that kind of flexibility. Even if he or she were free to switch groups, the fundamentalist would have a much more difficult time doing so than would the chartist.

Another advantage the technician has is the "big picture." By following all of the markets, he or she gets an excellent feel for what markets are doing in general, and avoids the "tunnel vision" that can result from following only one group of markets. Also, because so many of the markets have built-in economic relationships and react to similar economic factors, price action in one market or group may give valuable clues to the future direction of another market or group of markets.

TECHNICAL ANALYSIS APPLIED TO DIFFERENT TRADING MEDIUMS

The principles of chart analysis apply to both *stocks* and *futures*. Actually, technical analysis was first applied to the stock market and later adapted to futures. With the introduction of *stock index futures,* the dividing line between these two areas is rapidly disappearing. *International stock markets* are also charted and analyzed according to technical principles. (See Figure 1.2.)

Financial futures, including *interest rate markets* and *foreign currencies,* have become enormously popular over the past decade and have proven to be excellent subjects for chart analysis.

Technical principles play a role in *options trading.* Technical forecasting can also be used to great advantage in the *hedging process.*

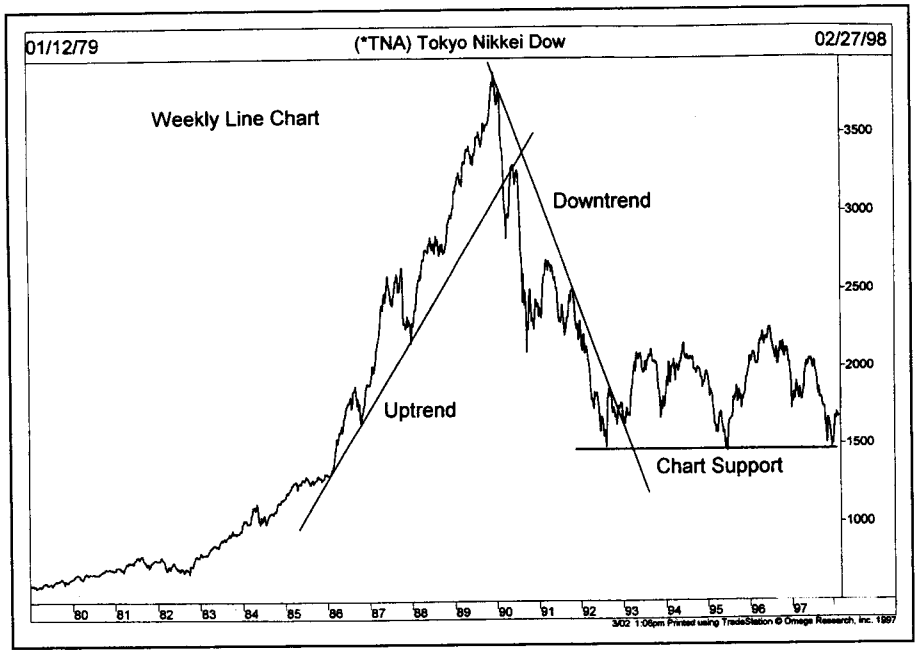

Figure 1.2 *The Japanese stock market charts very well as do most stock markets around the world.*

TECHNICAL ANALYSIS APPLIED TO DIFFERENT TIME DIMENSIONS

Another strength of the charting approach is its ability to handle different time dimensions. Whether the user is trading the intraday tic-by-tic changes for *day trading purposes* or *trend trading* the intermediate trend, the same principles apply. A time dimension often overlooked is *longer range technical forecasting*. The opinion expressed in some quarters that charting is useful only in the short term is simply not true. It has been suggested by some that fundamental analysis should be used for long term forecasting with technical factors limited to short term timing. The fact is that longer range forecasting, using weekly and monthly charts going back several years, has proven to be an extremely useful application of these techniques.

Once the technical principles discussed in this book are thoroughly understood, they will provide the user with tremendous flexibility as to how they can be applied, both from the standpoint of the medium to be analyzed and the time dimension to be studied.

ECONOMIC FORECASTING

Technical analysis can play a role in economic forecasting. For example, the direction of commodity prices tells us something about the direction of inflation. They also give us clues about the strength or weakness of the economy. Rising commodity prices generally hint at a stronger economy and rising inflationary pressure. Falling commodity prices usually warn that the economy is slowing along with inflation. The direction of interest rates is affected by the trend of commodities. As a result, charts of commodity markets like gold and oil, along with Treasury Bonds, can tell us a lot about the strength or weakness of the economy and inflationary expectations. The direction of the U.S. dollar and foreign currency futures also provide early guidance about the strength or weakness of the respective global economies. Even more impressive is the fact that trends in these futures markets usually show up long before they are reflected in traditional economic indicators that are released on a monthly or quarterly basis, and usually tell us what has already happened. As their name implies, futures markets usually give us insights into the future. The S&P 500 stock market index has long been counted as an official leading economic indicator. A book by one of the country's top experts on the business cycle, *Leading Indicators for the 1990s* (Moore), makes a compelling case for the importance of commodity, bond, and stock trends as economic indicators. All three markets can be studied employing technical analysis. We'll have more to say on this subject in Chapter 17, "The Link Between Stocks and Futures."

TECHNICIAN OR CHARTIST?

There are several different titles applied to practitioners of the technical approach: technical analyst, chartist, market analyst,

and visual analyst. Up until recently, they all meant pretty much the same thing. However, with increased specialization in the field, it has become necessary to make some further distinctions and define the terms a bit more carefully. Because virtually all technical analysis was based on the use of charts up until the last decade, the terms "technician" and "chartist" meant the same thing. This is no longer necessarily true.

The broader area of technical analysis is being increasingly divided into two types of practitioners, the traditional chartist and, for want of a better term, statistical technicians. Admittedly, there is a lot of overlap here and most technicians combine both areas to some extent. As in the case of the technician versus the fundamentalist, most seem to fall into one category or the other.

Whether or not the traditional chartist uses quantitative work to supplement his or her analysis, charts remain the primary working tool. Everything else is secondary. Charting, of necessity, remains somewhat subjective. The success of the approach depends, for the most part, on the skill of the individual chartist. The term "art charting" has been applied to this approach because chart reading is largely an art.

By contrast, the statistical, or quantitative, analyst takes these subjective principles, quantifies, tests, and optimizes them for the purpose of developing mechanical trading systems. These systems, or trading models, are then programmed into a computer that generates mechanical "buy" and "sell" signals. These systems range from the simple to the very complex. However, the intent is to reduce or completely eliminate the subjective human element in trading, to make it more scientific. These statisticians may or may not use price charts in their work, but they are considered technicians as long as their work is limited to the study of market action.

Even computer technicians can be subdivided further into those who favor mechanical systems, or the "black box" approach, and those who use computer technology to develop better technical indicators. The latter group maintains control over the interpretation of those indicators and also the decision making process.

One way of distinguishing between the chartist and the statistician is to say that all chartists are technicians, but not all technicians are chartists. Although these terms are used interchangeably throughout this book, it should be remembered that charting represents only one area in the broader subject of technical analysis.

A BRIEF COMPARISON OF TECHNICAL ANALYSIS IN STOCKS AND FUTURES

A question often asked is whether technical analysis as applied to futures is the same as the stock market. The answer is both yes and no. The basic principles are the same, but there are some significant differences. The principles of technical analysis were first applied to stock market forecasting and only later adapted to futures. Most of the basic tools—bar charts, point and figure charts, price patterns, volume, trendlines, moving averages, and oscillators, for example—are used in both areas. Anyone who has learned these concepts in either stocks or futures wouldn't have too much trouble making the adjustment to the other side. However, there are some general areas of difference having more to do with the different nature of stocks and futures than with the actual tools themselves.

Pricing Structure

The pricing structure in futures is much more complicated than in stocks. Each commodity is quoted in different units and increments. Grain markets, for example, are quoted in cents per bushel, livestock markets in cents per pound, gold and silver in dollars per ounce, and interest rates in basis points. The trader must learn the contract details of each market: which exchange it is traded on, how each contract is quoted, what the minimum and maximum price increments are, and what these price increments are worth.

Limited Life Span

Unlike stocks, futures contracts have expiration dates. A March 1999 Treasury Bond contract, for example, expires in March of

1999. The typical futures contract trades for about a year and a half before expiration. Therefore, at any one time, at least a half dozen different contract months are trading in the same commodity at the same time. The trader must know which contracts to trade and which ones to avoid. (This is explained later in this book.) This limited life feature causes some problems for longer range price forecasting. It necessitates the continuing need for obtaining new charts once old contracts stop trading. The chart of an expired contract isn't of much use. New charts must be obtained for the newer contracts along with their own technical indicators. This constant rotation makes the maintenance of an ongoing chart library a good deal more difficult. For computer users, it also entails greater time and expense by making it necessary to be constantly obtaining new historical data as old contracts expire.

Lower Margin Requirements

This is probably the most important difference between stocks and futures. All futures are traded on margin, which is usually less than 10% of the value of the contract. The result of these low margin requirements is tremendous leverage. Relatively small price moves in either direction tend to become magnified in their impact on overall trading results. For this reason, it is possible to make or lose large sums of money very quickly in futures. Because a trader puts up only 10% of the value of the contract as margin, then a 10% move in either direction will either double the trader's money or wipe it out. By magnifying the impact of even minor market moves, the high leverage factor sometimes makes the futures markets seem more volatile than they actually are. When someone says, for example, that he or she was "wiped out" in the futures market, remember that he or she only committed 10% in the first place.

From the standpoint of technical analysis, the high leverage factor makes timing in the futures markets much more critical than it is in stocks. The correct timing of entry and exit points is crucial in futures trading and much more difficult and frustrating than market analysis. Largely for this reason, technical trading skills become indispensable to a successful futures trading program.

Time Frame Is Much Shorter

Because of the high leverage factor and the need for close monitoring of market positions, the time horizon of the commodity trader is much shorter of necessity. Stock market technicians tend to look more at the longer range picture and talk in time frames that are beyond the concern of the average commodity trader. Stock technicians may talk about where the market will be in three or six months. Futures traders want to know where prices will be next week, tomorrow, or maybe even later this afternoon. This has necessitated the refinement of very short term timing tools. One example is the moving average. The most commonly watched averages in stocks are 50 and 200 days. In commodities, most moving averages are under 40 days. A popular moving average combination in futures, for example, is 4, 9, and 18 days.

Greater Reliance on Timing

Timing is everything in futures trading. Determining the correct direction of the market only solves a portion of the trading problem. If the timing of the entry point is off by a day, or sometimes even minutes, it can mean the difference between a winner or a loser. It's bad enough to be on the wrong side of the market and lose money. Being on the right side of the market and still losing money is one of the most frustrating and unnerving aspects of futures trading. It goes without saying that timing is almost purely technical in nature, because the fundamentals rarely change on a day-to-day basis.

LESS RELIANCE ON MARKET AVERAGES AND INDICATORS

Stock market analysis is based heavily on the movement of broad market averages—such as the Dow Jones Industrial Average or the S&P 500. In addition, technical indicators that measure the strength or weakness of the broader market—like the NYSE advance-decline line or the new highs-new lows list—are heavily employed. While commodity markets can be tracked using mea-

sures like the Commodity Research Bureau Futures Price Index, less emphasis is placed on the broader market approach. Commodity market analysis concentrates more on individual market action. That being the case, technical indicators that measure broader commodity trends aren't used much. With only about 20 or so active commodity markets, there isn't much need.

Specific Technical Tools

While most of the technical tools originally developed in the stock market have some application in commodity markets, they are not used in the exact same way. For example, chart patterns in futures often tend not to form as fully as they do in stocks.

Futures traders rely more heavily on shorter term indicators that emphasize more precise trading signals. These points of difference and many others are discussed later in this book.

Finally, there is another area of major difference between stocks and futures. Technical analysis in stocks relies much more heavily on the use of *sentiment indicators* and *flow of funds* analysis. *Sentiment indicators* monitor the performance of different groups such as odd lotters, mutual funds, and floor specialists. Enormous importance is placed on sentiment indicators that measure the overall market bullishness and bearishness on the theory that the majority opinion is usually wrong. *Flow of funds* analysis refers to the cash position of different groups, such as mutual funds or large institutional accounts. The thinking here is that the larger the cash position, the more funds that are available for stock purchases.

Technical analysis in the futures markets is a much purer form of price analysis. While contrary opinion theory is also used to some extent, much more emphasis is placed on basic trend analysis and the application of traditional technical indicators.

SOME CRITICISMS OF THE TECHNICAL APPROACH

A few questions generally crop up in any discussion of the technical approach. One of these concerns is the *self-fulfilling prophe-*

cy. Another is the question of whether or not past price data can really be used to forecast future price direction. The critic usually says something like: "Charts tell us where the market has been, but can't tell us where it is going." For the moment, we'll put aside the obvious answer that a chart won't tell you anything if you don't know how to read it. The Random Walk Theory questions whether prices trend at all and doubts that any forecasting technique can beat a simple *buy and hold* strategy. These questions deserve a response.

The Self-Fulfilling Prophecy

The question of whether there is a self-fulfilling prophecy at work seems to bother most people because it is raised so often. It is certainly a valid concern, but of much less importance than most people realize. Perhaps the best way to address this question is to quote from a text that discusses some of the disadvantages of using chart patterns:

> a. The use of most chart patterns has been widely publicized in the last several years. Many traders are quite familiar with these patterns and often act on them in concert. This creates a "self-fulfilling prophecy," as waves of buying or selling are created in response to "bullish" or "bearish" patterns. . .
>
> b. Chart patterns are almost completely subjective. No study has yet succeeded in mathematically quantifying any of them. They are literally in the mind of the beholder.... (Teweles et al.)

These two criticisms contradict one another and the second point actually cancels out the first. If chart patterns are "completely subjective" and "in the mind of the beholder," then it is hard to imagine how everyone could see the same thing at the same time, which is the basis of the self-fulfilling prophecy. Critics of charting can't have it both ways. They can't, on the one hand, criticize charting for being so objective and obvious that everyone will act in the same way at the same time (thereby causing the price pattern to be fulfilled), and then also criticize charting for being too subjective.

The truth of the matter is that charting is very subjective. Chart reading is an art. (Possibly the word "skill" would be more to the point.) Chart patterns are seldom so clear that even experienced chartists always agree on their interpretation. There is always an element of doubt and disagreement. As this book demonstrates, there are many different approaches to technical analysis that often disagree with one another.

Even if most technicians did agree on a market forecast, they would not all necessarily enter the market at the same time and in the same way. Some would try to anticipate the chart signal and enter the market early. Others would buy the "breakout" from a given pattern or indicator. Still others would wait for the pullback after the breakout before taking action. Some traders are aggressive; others are conservative. Some use stops to enter the market, while others like to use market orders or resting limit orders. Some are trading for the long pull, while others are day trading. Therefore, the possibility of all technicians acting at the same time and in the same way is actually quite remote.

Even if the self-fulfilling prophecy were of major concern, it would probably be "self-correcting" in nature. In other words, traders would rely heavily on charts until their concerted actions started to affect or distort the markets. Once traders realized this was happening, they would either stop using the charts or adjust their trading tactics. For example, they would either try to act before the crowd or wait longer for greater confirmation. So, even if the self-fulfilling prophecy did become a problem over the near term, it would tend to correct itself.

It must be kept in mind that bull and bear markets only occur and are maintained when they are justified by the law of supply and demand. Technicians could not possibly cause a major market move just by the sheer power of their buying and selling. If this were the case, technicians would all become wealthy very quickly.

Of much more concern than the chartists is the tremendous growth in the use of computerized technical trading systems in the futures market. These systems are mainly trend-following in nature, which means that they are all programmed to identify and trade major trends. With the growth in professionally man-

aged money in the futures industry, and the proliferation of multimillion-dollar public and private funds, most of which are using these technical systems, tremendous concentrations of money are chasing only a handful of existing trends. Because the universe of futures markets is still quite small, the potential for these systems distorting short term price action is growing. However, even in cases where distortions do occur, they are generally short term in nature and do not cause major moves.

Here again, even the problem of concentrated sums of money using technical systems is probably self-correcting. If all of the systems started doing the same thing at the same time, traders would make adjustments by making their systems either more or less sensitive.

The self-fulfilling prophecy is generally listed as a criticism of charting. It might be more appropriate to label it as a compliment. After all, for any forecasting technique to become so popular that it begins to influence events, it would have to be pretty good. We can only speculate as to why this concern is seldom raised regarding the use of fundamental analysis.

Can the Past Be Used to Predict the Future?

Another question often raised concerns the validity of using past price data to predict the future. It is surprising how often critics of the technical approach bring up this point because every known method of forecasting, from weather predicting to fundamental analysis, is based completely on the study of past data. What other kind of data is there to work with?

The field of statistics makes a distinction between *descriptive statistics* and *inductive statistics*. *Descriptive statistics* refers to the graphical presentation of data, such as the price data on a standard bar chart. *Inductive statistics* refers to generalizations, predictions, or extrapolations that are inferred from that data. Therefore, the price chart itself comes under the heading of the descriptive, while the analysis technicians perform on that price data falls into the realm of the inductive.

As one statistical text puts it, "The first step in forecasting the business or economic future consists, thus, of gathering obser-

vations from the past." (Freund and Williams) Chart analysis is just another form of *time series analysis,* based on a study of the past, which is exactly what is done in all forms of time series analysis. The only type of data anyone has to go on is past data. We can only estimate the future by projecting past experiences into that future.

So it seems that the use of past price data to predict the future in technical analysis is grounded in sound statistical concepts. If anyone were to seriously question this aspect of technical forecasting, he or she would have to also question the validity of every other form of forecasting based on historical data, which includes all economic and fundamental analysis.

RANDOM WALK THEORY

The *Random Walk Theory,* developed and nurtured in the academic community, claims that price changes are "serially independent" and that price history is not a reliable indicator of future price direction. In a nutshell, price movement is random and unpredictable. The theory is based on the *efficient market hypothesis,* which holds that prices fluctuate randomly about their intrinsic value. It also holds that the best market strategy to follow would be a simple "buy and hold" strategy as opposed to any attempt to "beat the market."

While there seems little doubt that a certain amount of randomness or "noise" does exist in all markets, it's just unrealistic to believe that *all* price movement is random. This may be one of those areas where empirical observation and practical experience prove more useful than sophisticated statistical techniques, which seem capable of proving anything the user has in mind or incapable of disproving anything. It might be useful to keep in mind that randomness can only be defined in the negative sense of an inability to uncover systematic patterns in price action. The fact that many academics have not been able to discover the presence of these patterns does not prove that they do not exist.

The academic debate as to whether markets trend is of little interest to the average market analyst or trader who is forced

to deal in the real world where market trends are clearly visible. If the reader has any doubts on this point, a casual glance through any chart book (randomly selected) will demonstrate the presence of trends in a very graphic way. How do the "random walkers" explain the persistence of these trends if prices are serially independent, meaning that what happened yesterday, or last week, has no bearing on what may happen today or tomorrow? How do they explain the profitable "real life" track records of many trend-following systems?

How, for example, would a buy and hold strategy fare in the commodity futures markets where timing is so crucial? Would those long positions be held during bear markets? How would traders even know the difference between bull and bear markets if prices are unpredictable and don't trend? In fact, how could a bear market even exist in the first place because that would imply a trend? (See Figure 1.3.)

Figure 1.3 *A "random walker" would have a tough time convincing a holder of gold bullion that there's no real trend on this chart.*

It seems doubtful that statistical evidence will ever totally prove or disprove the Random Walk Theory. However, the idea that markets are random is totally rejected by the technical community. If the markets were truly random, no forecasting technique would work. Far from disproving the validity of the technical approach, the *efficient market hypothesis* is very close to the technical premise that *markets discount everything.* The academics, however, feel that because markets quickly discount all information, there's no way to take advantage of that information. The basis of technical forecasting, already touched upon, is that important market information is discounted in the market price long before it becomes known. Without meaning to, the academics have very eloquently stated the need for closely monitoring price action and the futility of trying to profit from fundamental information, at least over the short term.

Finally, it seems only fair to observe that any process appears random and unpredictable to those who do not understand the rules under which that process operates. An electrocardiogram printout, for example, might appear like a lot of random noise to a layperson. But to a trained medical person, all those little blips make a lot of sense and are certainly not random. The working of the markets may appear random to those who have not taken the time to study the rules of market behavior. *The illusion of randomness gradually disappears as the skill in chart reading improves.* Hopefully, that is exactly what will happen as the reader progresses through the various sections of this book.

There may even be hope for the academic world. A number of leading American universities have begun to explore Behavioral Finance which maintains that human psychology and securities pricing are intertwined. That, of course, is the primary basis of technical analysis.

UNIVERSAL PRINCIPLES

When an earlier version of this book was published twelve years ago, many of the technical timing tools that were explained were used mainly in the futures markets. Over the past decade, howev-

er, these tools have been widely employed in analyzing stock market trends. The technical principles that are discussed in this book can be applied universally to all markets—even mutual funds. One additional feature of stock market trading that has gained wide popularity in the past decade has been sector investing, primarily through index options and mutual funds. Later in the book we'll show how to determine which sectors are hot and which are not by applying technical timing tools.

2 Dow Theory

INTRODUCTION

Charles Dow and his partner Edward Jones founded Dow Jones & Company in 1882. Most technicians and students of the markets concur that much of what we call *technical analysis* today has its origins in theories first proposed by Dow around the turn of the century. Dow published his ideas in a series of editorials he wrote for the *Wall Street Journal*. Most technicians today recognize and assimilate Dow's basic ideas, whether or not they recognize the source. *Dow Theory* still forms the cornerstone of the study of technical analysis, even in the face of today's sophisticated computer technology, and the proliferation of newer and supposedly better technical indicators.

On July 3, 1884, Dow published the first stock market average composed of the closing prices of eleven stocks: nine railroad companies and two manufacturing firms. Dow felt that these eleven stocks provided a good indication of the economic health of the country. In 1897, Dow determined that two separate indices would better represent that health, and created a 12 stock industrial index and a 20 stock rail index. By 1928 the industrial

index had grown to include 30 stocks, the number at which it stands today. The editors of *The Wall Street Journal* have updated the list numerous times in the ensuing years, adding a utility index in 1929. In 1984, the year that marked the one hundredth anniversary of Dow's first publication, the Market Technicians Association presented a Gorham-silver bowl to Dow Jones & Co. According to the MTA, the award recognized "the lasting contribution that Charles Dow made to the field of investment analysis. His index, the forerunner of what today is regarded as the leading barometer of stock market activity, remains a vital tool for market technicians 80 years after his death."

Unfortunately for us, Dow never wrote a book on his theory. Instead, he set down his ideas of stock market behavior in a series of editorials that *The Wall Street Journal* published around the turn of the century. In 1903, the year after Dow's death, S.A. Nelson compiled these essays into a book entitled *The ABC of Stock Speculation.* In that work, Nelson first coined the term "Dow's Theory." Richard Russell, who wrote the introduction to a 1978 reprint, compared Dow's contribution to stock market theory with Freud's contribution to psychiatry. In 1922, William Peter Hamilton (Dow's associate and successor at the Journal) categorized and published Dow's tenets in a book entitled *The Stock Market Barometer.* Robert Rhea developed the theory even further in the *Dow Theory* (New York: Barron's), published in 1932.

Dow applied his theoretical work to the stock market averages that he created; namely the Industrials and the Rails. However, most of his analytical ideas apply equally well to all market averages. This chapter will describe the six basic tenets of Dow Theory and will discuss how these ideas fit into a modern study of technical analysis. We will discuss the ramifications of these ideas in the chapters that follow.

BASIC TENETS

1. The Averages Discount Everything.

> The sum and tendency of the transactions of the Stock Exchange represent the sum of all Wall Street's knowl-

> edge of the past, immediate and remote, applied to the discounting of the future. There is no need to add to the averages, as some statisticians do, elaborate compilations of commodity price index numbers, bank clearings, fluctuations in exchange, volume of domestic and foreign trades or anything else. Wall Street considers all these things (Hamilton, pp. 40–41).

Sound familiar? The idea that the markets reflect every possible knowable factor that affects overall supply and demand is one of the basic premises of technical theory, as was mentioned in Chapter 1. The theory applies to market averages, as well as it does to individual markets, and even makes allowances for "acts of God." While the markets cannot anticipate events such as earthquakes and various other natural calamities, they quickly discount such occurrences, and almost instantaneously assimilate their affects into the price action.

2. The Market Has Three Trends.

Before discussing how trends behave, we must clarify what Dow considered a trend. Dow defined an uptrend as a situation in which each successive rally closes higher than the previous rally high, and each successive rally low also closes higher than the previous rally low. In other words, an uptrend has a pattern of rising peaks and troughs. The opposite situation, with successively lower peaks and troughs, defines a downtrend. Dow's definition has withstood the test of time and still forms the cornerstone of trend analysis.

Dow believed that the laws of action and reaction apply to the markets just as they do to the physical universe. He wrote, "Records of trading show that in many cases when a stock reaches top it will have a moderate decline and then go back again to near the highest figures. If after such a move, the price again recedes, it is liable to decline some distance" (Nelson, page 43).

Dow considered a trend to have three parts, *primary, secondary,* and *minor,* which he compared to the tide, waves, and ripples of the sea. The primary trend represents the tide, the secondary or intermediate trend represents the waves that make up the tide, and the minor trends behave like ripples on the waves.

An observer can determine the direction of the tide by noting the highest point on the beach reached by successive waves. If each successive wave reaches further inland than the preceding one, the tide is flowing in. When the high point of each successive wave recedes, the tide has turned out and is ebbing. Unlike actual ocean tides, which last a matter of hours, Dow conceived of market tides as lasting for more than a year, and possibly for several years.

The secondary, or intermediate, trend represents corrections in the primary trend and usually lasts three weeks to three months. These intermediate corrections generally retrace between one-third and two-thirds of the previous trend movement and most frequently about half, or 50%, of the previous move.

According to Dow, the minor (or near term) trend usually lasts less than three weeks. This near term trend represents fluctuations in the intermediate trend. We will discuss trend concepts in greater detail in Chapter 4, "Basic Concepts of Trends," where you will see that we continue to use the same basic concepts and terminology today.

3. Major Trends Have Three Phases.

Dow focused his attention on primary or major trends, which he felt usually take place in three distinct phases: an accumulation phase, a public participation phase, and a distribution phase. The accumulation phase represents informed buying by the most astute investors. If the previous trend was down, then at this point these astute investors recognize that the market has assimilated all the so-called "bad" news. The public participation phase, where most technical trend-followers begin to participate, occurs when prices begin to advance rapidly and business news improves. The distribution phase takes place when newspapers begin to print increasingly bullish stories; when economic news is better than ever; and when speculative volume and public participation increase. During this last phase the same informed investors who began to "accumulate" near the bear market bottom (when no one else wanted to buy) begin to "distribute" before anyone else starts selling.

Students of Elliott Wave Theory will recognize this division of a major bull market into three distinct phases. R. N. Elliott elaborated upon Rhea's work in *Dow Theory,* to recognize that a bull market has three major, upward movements. In Chapter 13, "Elliott Wave Theory," we'll show the close similarity between Dow's three phases of a bull market and the five wave Elliott sequence.

4. The Averages Must Confirm Each Other.

Dow, in referring to the Industrial and Rail Averages, meant that no important bull or bear market signal could take place unless both averages gave the same signal, thus confirming each other. He felt that both averages must exceed a previous secondary peak to confirm the inception or continuation of a bull market. He did not believe that the signals had to occur simultaneously, but recognized that a shorter length of time between the two signals provided stronger confirmation. When the two averages diverged from one another, Dow assumed that the prior trend was still maintained. (Elliott Wave Theory only requires that signals be generated in a single average.) Chapter 6, "Continuation Patterns," will cover the key concepts of confirmation and divergence. (See Figures 2.1 and 2.2.)

5. Volume Must Confirm the Trend.

Dow recognized volume as a secondary but important factor in confirming price signals. Simply stated, *volume should expand or increase in the direction of the major trend.* In a major uptrend, volume would then increase as prices move higher, and diminish as prices fall. In a downtrend, volume should increase as prices drop and diminish as they rally. Dow considered volume a secondary indicator. He based his actual buy and sell signals entirely on closing prices. In Chapter 7, "Volume and Open Interest," we'll cover the subject of volume and build on Dow's ideas. Today's sophisticated volume indicators help determine whether volume is increasing or falling off. Savvy traders then compare this information to price action to see if the two are confirming each other.

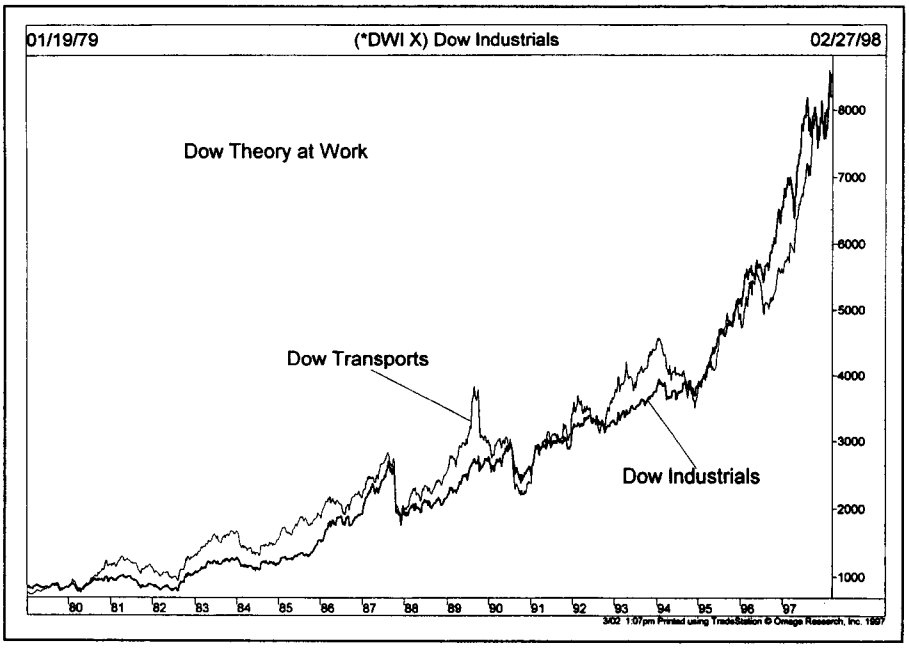

Figure 2.1 *A long term view of the Dow Theory at work. For a major bull trend to continue, both the Dow Industrials and the Dow Transports must advance together.*

6. A Trend Is Assumed to Be in Effect Until It Gives Definite Signals That It Has Reversed.

This tenet, which we touched upon in Chapter 1, forms much of the foundation of modern trend-following approaches. It relates a physical law to market movement, which states that an object in motion (in this case a trend) tends to continue in motion until some external force causes it to change direction. A number of technical tools are available to traders to assist in the difficult task of spotting reversal signals, including the study of support and resistance levels, price patterns, trendlines, and moving averages. Some indicators can provide even earlier warning signals of loss of momentum. All of that not withstanding, the odds usually favor that the existing trend will continue.

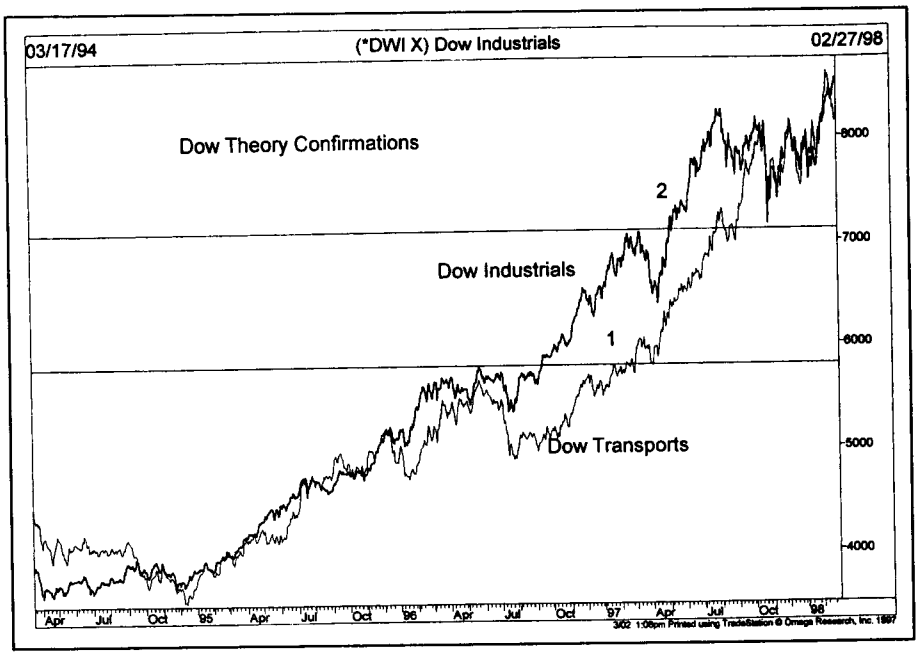

Figure 2.2 *Examples of two Dow Theory confirmations. At the start of 1997 (point 1), the Dow Transports confirmed the earlier breakout in the Industrials. The following May (point 2), the Dow Industrials confirmed the earlier new high in the Transports.*

The most difficult task for a Dow theorist, or any trend-follower for that matter, is being able to distinguish between a normal secondary correction in an existing trend and the first leg of a new trend in the opposite direction. Dow theorists often disagree as to when the market gives an actual reversal signal. Figures 2.3a and 2.3b show how this disagreement manifests itself.

Figures 2.3a and 2.3b illustrate two different market scenarios. In Figure 2.3a, notice that the rally at point C is lower than the previous peak at A. Price then declines below point B. The presence of these two lower peaks and two lower troughs gives a clear-cut sell signal at the point where the low at B is broken (point S). This reversal pattern is sometimes referred to as a "failure swing."

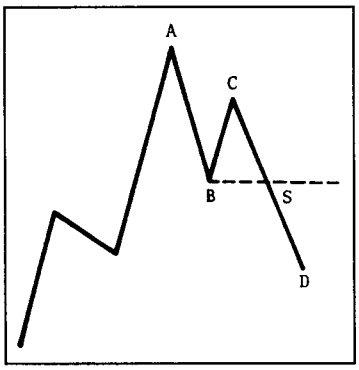

Figure 2.3a *Failure Swing. The failure of the peak at C to overcome A, followed by the violation of the low at B, constitutes a "sell" signal at S.*

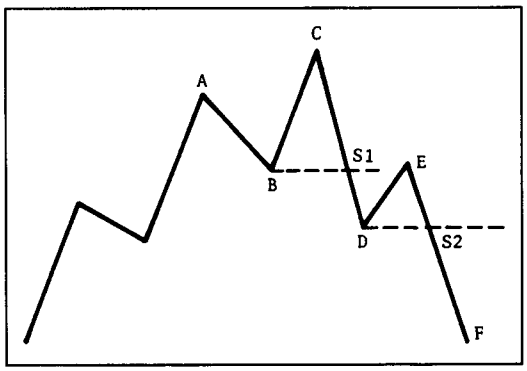

Figure 2.3b *Nonfailure Swing. Notice that C exceeds A before falling below B. Some Dow theorists would see a "sell" signal at S1, while others would need to see a lower high at E before turning bearish at S2.*

In Figure 2.3b, the rally top at C is higher than the previous peak at A. Then price declines below point B. Some Dow theorists would not consider the clear violation of support, at S1, to be a bona fide sell signal. They would point out that only lower lows exist in this case, but not lower highs. They would prefer to see a rally to point E which is lower than point C. Then they would look for another new low under point D. To them, S2 would represent the actual sell signal with two lower highs and two lower lows.

The reversal pattern shown in Figure 2.3b is referred to as a "nonfailure swing." A failure swing (shown in Figure 2.3a) is a much weaker pattern than the nonfailure swing in Figure 2.3b. Figures 2.4a and 2.4b show the same scenarios at a market bottom.

THE USE OF CLOSING PRICES AND THE PRESENCE OF LINES

Dow relied exclusively on *closing prices*. He believed that averages had to *close* higher than a previous peak or lower than a previous trough to have significance. Dow did not consider intraday penetrations valid.

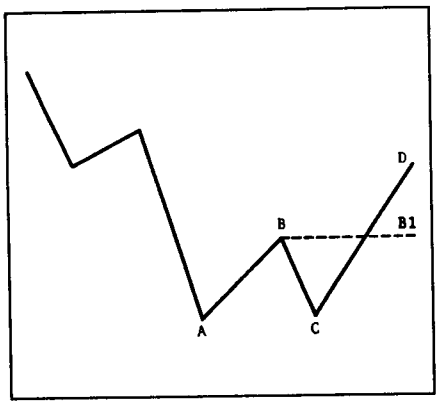

Figure 2.4a *Failure Swing Bottom. The "buy" signal takes place when point B is exceeded (at B1).*

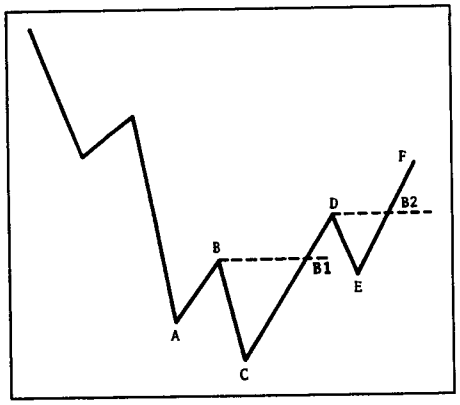

Figure 2.4b *Nonfailure Swing Bottom. "Buy" signals occur at points B1 or B2.*

When traders speak of *lines* in the averages, they are referring to horizontal patterns that sometimes occur on the charts. These sideways trading ranges usually play the role of corrective phases and are usually referred to as consolidations. In more modern terms, we might refer to such lateral patterns as "rectangles."

SOME CRITICISMS OF DOW THEORY

Dow Theory has done well over the years in identifying major bull and bear markets, but has not escaped criticism. On average, Dow Theory misses 20 to 25% of a move before generating a signal. Many traders consider this to be too late. A Dow Theory buy signal usually occurs in the second phase of an uptrend as price penetrates a previous intermediate peak. This is also, incidentally, about where most trend-following technical systems begin to identify and participate in existing trends.

In response to this criticism, traders must remember that Dow never intended to anticipate trends; rather he sought to recognize the emergence of major bull and bear markets and to capture the large middle portion of important market moves.

Available records suggest that Dow's Theory has performed that function reasonably well. From 1920 to 1975, Dow Theory signals captured 68% of the moves in the Industrial and Transportation Averages and 67% of those in the S&P 500 Composite Index (Source: Barron's). Those who criticize Dow Theory for failing to catch actual market tops and bottoms lack a basic understanding of the trend-following philosophy.

STOCKS AS ECONOMIC INDICATORS

Dow apparently never intended to use his theory to forecast the direction of the stock market. He felt its real value was to use stock market direction as a barometric reading of general business conditions. We can only marvel at Dow's vision and genius. In addition to formulating a great deal of today's price forecasting methodology, he was among the first to recognize the usefulness of stock market averages as a leading economic indicator.

DOW THEORY APPLIED TO FUTURES TRADING

Dow's work considered the behavior of stock averages. While most of that original work has significant application to commodity futures, there are some important distinctions between stock and futures trading. For one thing, Dow assumed that most investors follow only the major trends and would use intermediate corrections for timing purposes only. Dow considered the minor or near term trends to be unimportant. Obviously, this is not the case in futures trading in which most traders who follow trends trade the intermediate instead of the major trend. These traders must pay a great deal of attention to minor swings for timing purposes. If a futures trader expected an intermediate uptrend to last for a couple of months, he or she would look for short term dips to signal purchases. In an intermediate downtrend, the trader would use minor bounces to signal short sales. The minor trend, therefore, becomes extremely important in futures trading.

NEW WAYS TO TRADE THE DOW AVERAGES

For the first 100 years of its existence, the Dow Jones Industrial Average could only be used as a market indicator. That all changed on October 6, 1997 when futures and options began trading on Dow's venerable average for the first time. The Chicago Board of Trade launched a futures contract on the Dow Jones Industrial Average, while options on the Dow (symbol: DJX) started trading at the Chicago Board Options Exchange. In addition, options were also launched on the Dow Jones Transportation Average (symbol: DJTA) and the Dow Jones Utility Index (symbol: DJUA). In January 1998, the American Stock Exchange started trading the Diamonds Trust, a unit investment trust that mimics the 30 Dow industrials. In addition, two mutual funds were offered based on the 30 Dow benchmark. Mr. Dow would probably be happy to know that, a century after their creation, it would now be possible to trade his Dow averages, and actually put his Dow Theory into practice.

CONCLUSION

This chapter presented a relatively quick review of the more important aspects of the Dow Theory. It will become clear, as you continue through this book, that an understanding and appreciation of Dow Theory provides a solid foundation for any study of technical analysis. Much of what is discussed in the following chapters represents some adaptation of Dow's original theory. The standard definition of a trend, the classification of a trend into three categories and phases, the principles of confirmation and divergence, the interpretation of volume, and the use of percentage retracements (to name a few), all derive, in one way or another, from Dow Theory.

In addition to the sources already cited in this chapter, an excellent review of the principles of Dow Theory can be found in *Technical Analysis of Stock Trends* (Edwards & Magee).

3 Chart Construction

INTRODUCTION

This chapter is primarily intended for those readers who are unfamiliar with bar chart construction. We'll begin by discussing the different types of charts available and then turn our focus to the most commonly used chart—*the daily bar chart.* We'll look at how the price data is read and plotted on the chart. *Volume and open interest* are also included in addition to price. We'll then look at other variations of the bar chart, including *longer range weekly and monthly charts.* Once that has been completed, we'll be ready to start looking at some of the analytical tools applied to that chart in the following chapter. Those readers already familiar with the charts themselves might find this chapter too basic. Feel free to move on to the next chapter.

TYPES OF CHARTS AVAILABLE

The daily bar chart has already been acknowledged as the most widely used type of chart in technical analysis. There are, however, other types of charts also used by technicians, such as line charts, point and figure charts, and more recently, candlesticks. Figure 3.1 shows a standard daily bar chart. It's called a bar chart because each day's range is represented by a vertical bar. The bar chart shows the open, high, low, and closing prices. The tic to the right of the vertical bar is the closing price. The opening price is the tic to the left of the bar.

Figure 3.2 shows what the same market looks like on a line chart. In the line chart, only the closing price is plotted for each successive day. Many chartists believe that because the closing price is the most critical price of the trading day, a line (or close-only) chart is a more valid measure of price activity.

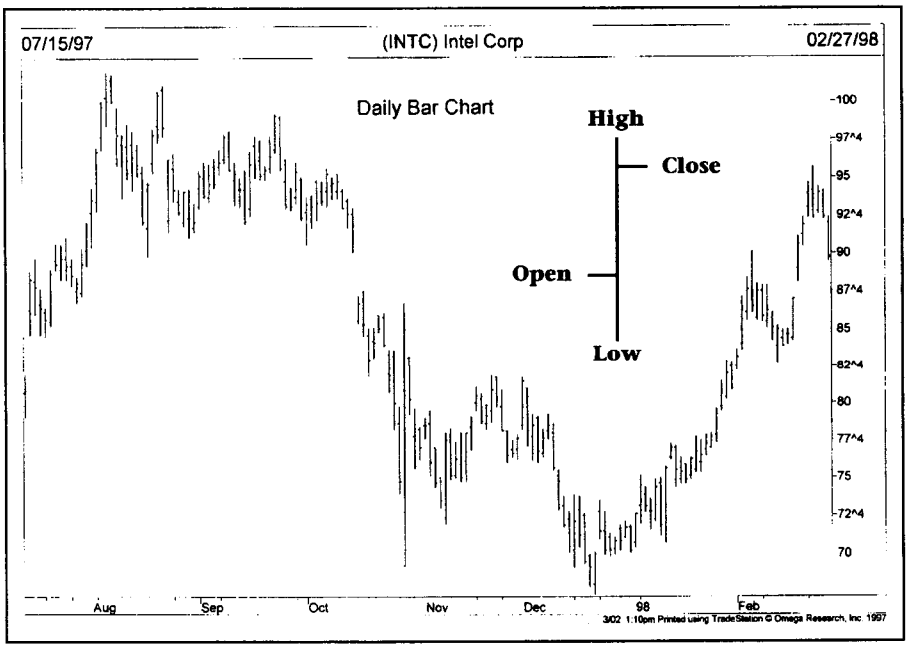

Figure 3.1 *A daily bar chart of Intel. Each vertical bar represents one day's action.*

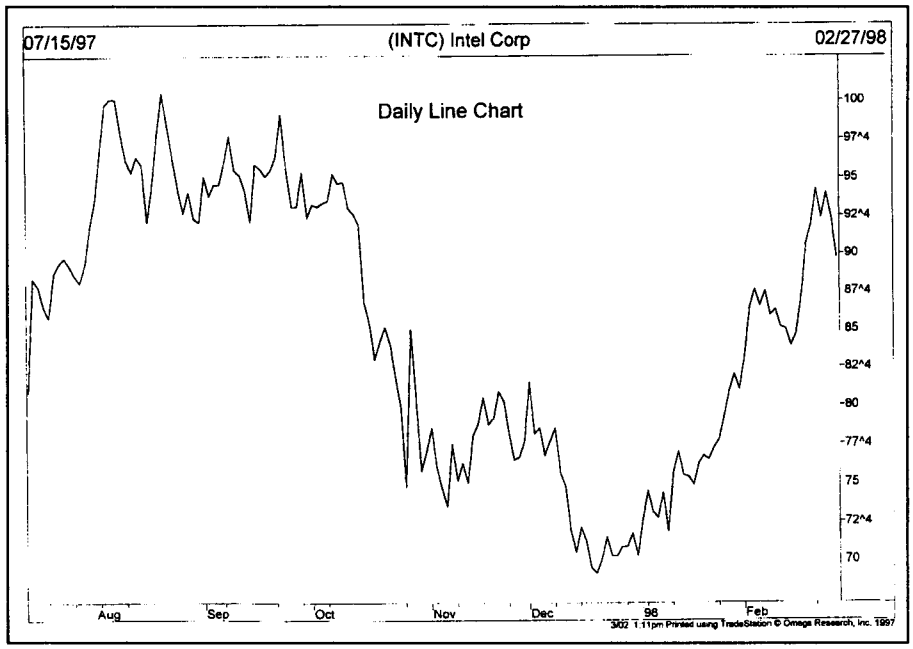

Figure 3.2 *A line chart of Intel. This type of chart produces a solid line by connecting the successive closing prices.*

A third type of chart, the point and figure chart, is shown in Figure 3.3. Notice here that the point and figure chart shows the same price action but in a more compressed format. Notice the alternating column of x's and o's. The x columns show rising prices and the o columns, declining prices. Buy and sell signals are more precise and easier to spot on the point and figure chart than on the bar chart. This type of chart also has a lot more flexibility. Chapter 11 covers point and figure charts.

CANDLESTICKS

Candlestick charts are the Japanese version of bar charting and have become very popular in recent years among western chartists. The Japanese candlestick records the same four prices as the traditional bar chart—the open, the close, the high, and the

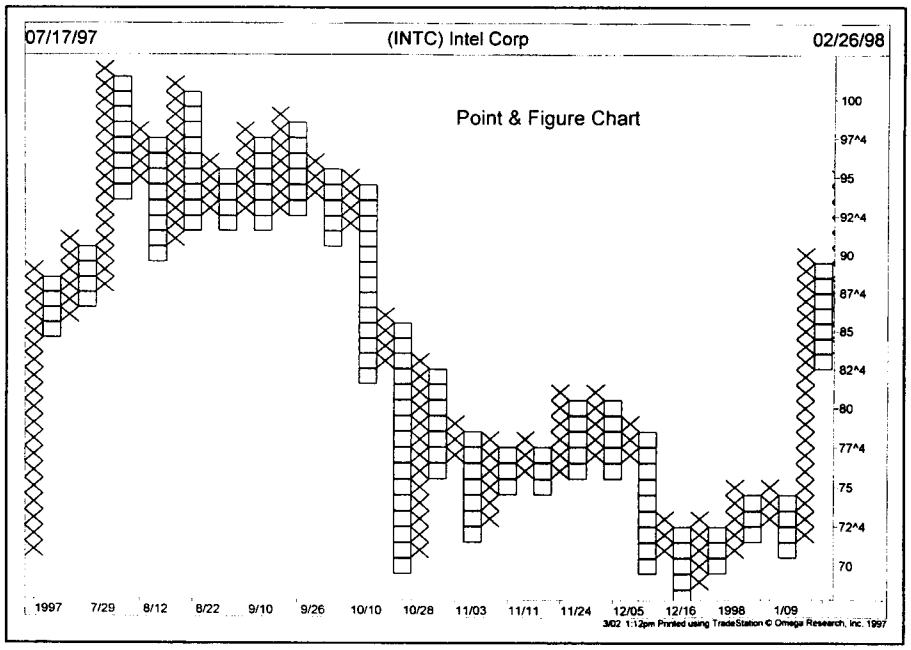

Figure 3.3 *A point and figure chart of Intel. Notice the alternating columns of x's and o's. The x column shows rising prices. The o column shows falling prices. Buy and sell signals are more precise on this type of chart.*

low. The visual presentation differs however. On the candlestick chart, a thin line (called the *shadow*) shows the day's price range from the high to the low. A wider portion of the bar (called the *real body*) measures the distance between the open and the close. If the close is higher than the open, the real body is white (positive). If the close is lower than the open, the real body is black (negative). (See Figure 3.4.)

The key to candlestick charts is the relationship between the open and the close. Possibly because of the growing popularity of candlesticks, western chartists now pay a lot more attention to the opening tic on their bar charts. You can do everything with a candlestick chart that you can do with a bar chart. In other words, all the technical tools and indicators we'll be showing you for the bar chart can also be used on candlesticks. We'll show you a bit later in the chapter how to construct bar charts for weekly

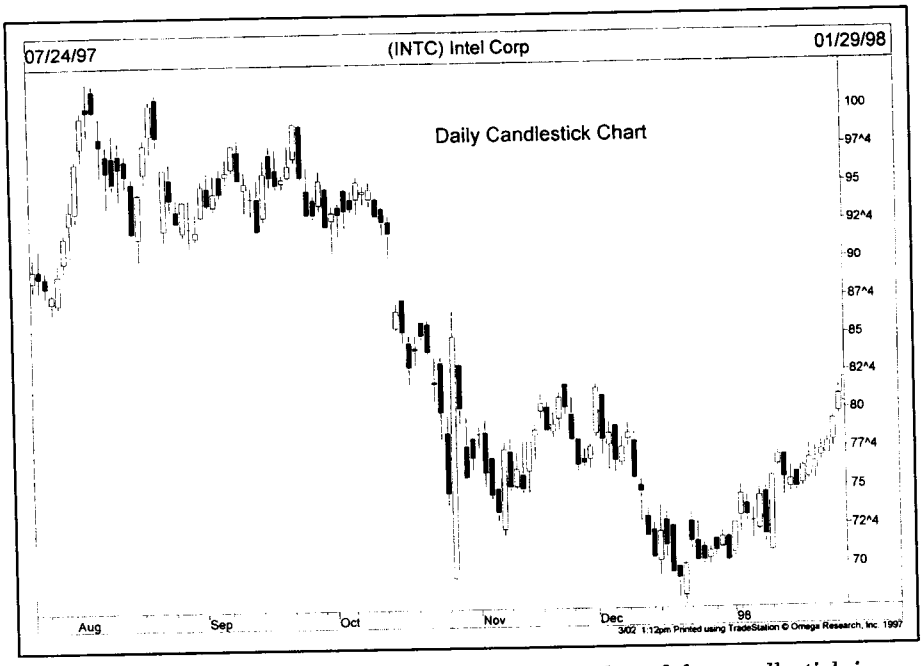

Figure 3.4 *A candlestick chart of Intel. The color of the candlestick is determined by the relationship between the open and the close. White candlesticks are positive, while black candlesticks are negative.*

and monthly periods. You can do the same with candlesticks. Chapter 12, "Japanese Candlesticks," provides a more thorough explanation of candlestick charting.

ARITHMETIC VERSUS LOGARITHMIC SCALE

Charts can be plotted using arithmetic or logarithmic price scales. For some types of analysis, particularly for very long range trend analysis, there may be some advantage to using logarithmic charts. (See Figures 3.5 and 3.6.) Figure 3.5 shows what the different scales would look like. On the arithmetic scale, the vertical price scale shows an equal distance for each price unit of change. Notice in this example that each point on the arithmetic scale is equidistant. On the log scale, however, note that the percentage

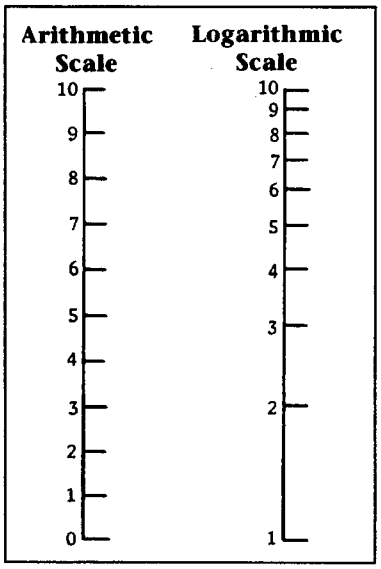

Figure 3.5 *A comparison of an arithmetic and logarithmic scale. Notice the equal spacing on the scale to the left. The log scale shows percentage changes (right scale).*

increases get smaller as the price scale increases. The distance from points 1 to 2 is the same as the distance from points 5 to 10 because they both represent the same doubling in price. For example, a move from 5 to 10 on an arithmetic scale would be the same distance as a move from 50 to 55, even though the former represents a doubling in price, while the latter is a price increase of only 10%. Prices plotted on ratio or log scales show equal distances for similar percentage moves. For example, a move from 10 to 20 (a 100% increase) would be the same distance on a log chart as a move from 20 to 40 or 40 to 80. Many stock market chart services use log charts, whereas futures chart services use arithmetic. Charting software packages allow both types of scaling, as shown in Figure 3.6.

CONSTRUCTION OF THE DAILY BAR CHART

The construction of the daily bar chart is extremely simple. The bar chart is both a price and a time chart. The vertical axis (the y axis) shows a scale representing the price of the contract. The horizontal axis (the x axis) records the passage of time. Dates are marked along the bottom of the the chart. All the user has to do is plot a vertical bar in the appropriate day from the day's high to the day's low (called the range). Place a horizontal tic to the right of the vertical bar identifying the daily closing price. (See Figure 3.7.)

The reason for placing the tic to the right of the bar is to distinguish it from the opening price, which chartists record to

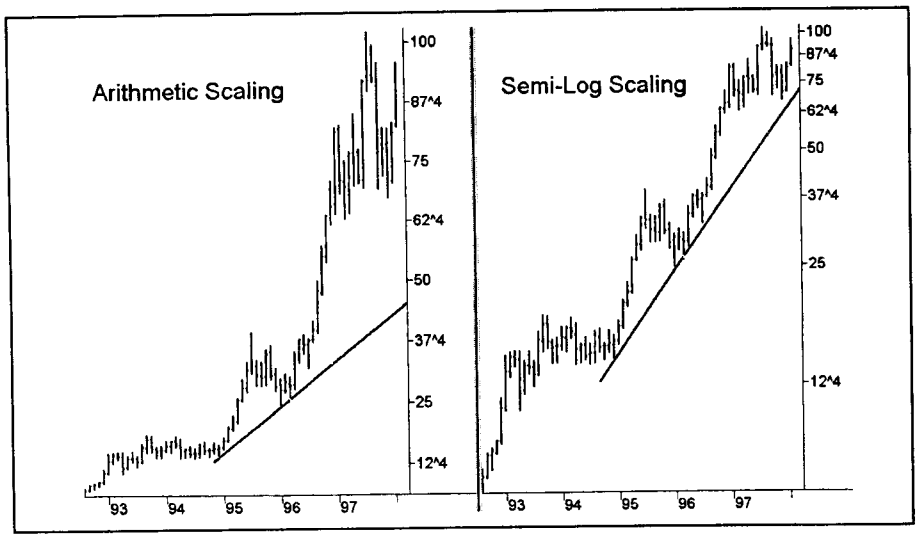

Figure 3.6 *Longer view of Intel using two different price scales. The chart to the left shows the traditional arithmetic scale. The chart on the right shows a logarithmic scale. Notice that the three year up trendline worked better on the log chart.*

the left of the bar. Once that day's activity has been plotted, the user moves one day to the right to plot the next day's action. Most chart services use five day weeks. Weekends are not shown on the chart. Whenever an exchange is closed during the trading week, that day's space is left blank. The bars along the bottom of the chart measure volume. (See Figure 3.7.)

VOLUME

Another piece of important information should be included on the bar chart—volume. *Volume* represents the total amount of trading activity in that market for that day. It is the total number of futures contracts traded during the day or the number of common stock shares that change hands on a given day in the stock market. The volume is recorded by a vertical bar at the bottom of the chart under that day's price bar. A higher volume bar means

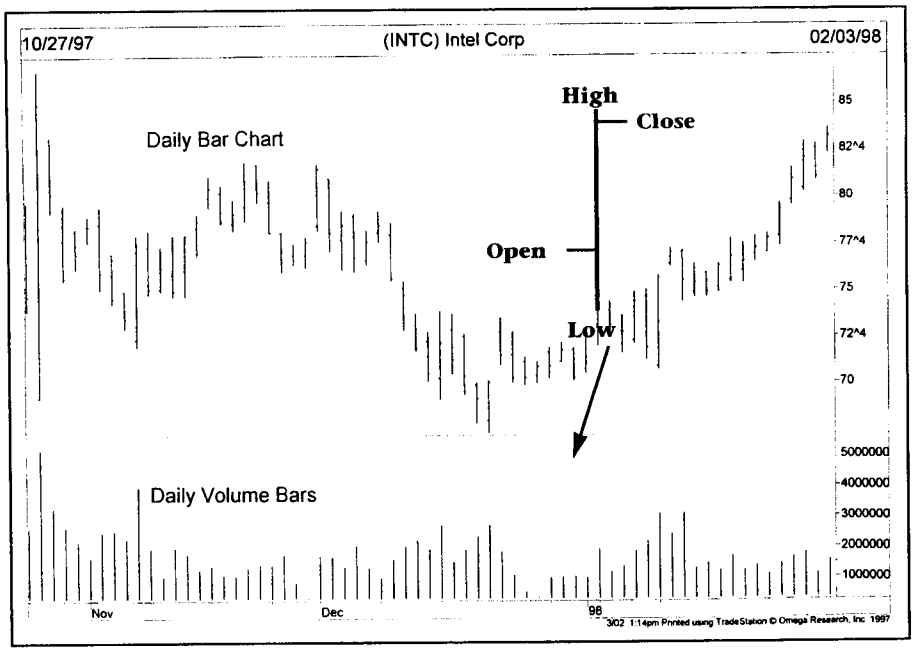

Figure 3.7 *A closer look at the Intel daily bar chart. Each bar measures the day's price range. The opening price is marked by the small tic to the left of each bar. The closing tic is to the right. The bars along the bottom measure each day's volume.*

the volume was heavier for that day. A smaller bar represents lighter volume. A vertical scale along the bottom of the chart is provided to help plot the data, as shown in Figure 3.7.

FUTURES OPEN INTEREST

Open interest is the total number of outstanding futures contracts that are held by market participants at the end of the day. Open interest is the number of outstanding contracts held by the longs or the shorts, not the total of both. Remember, because we're dealing with futures contracts, for every long there must also be a short. Therefore, we only have to know the totals on one side. Open interest is marked on the chart with a solid line along the bottom, usually just above the volume but below the price. (See Figure 3.8.)

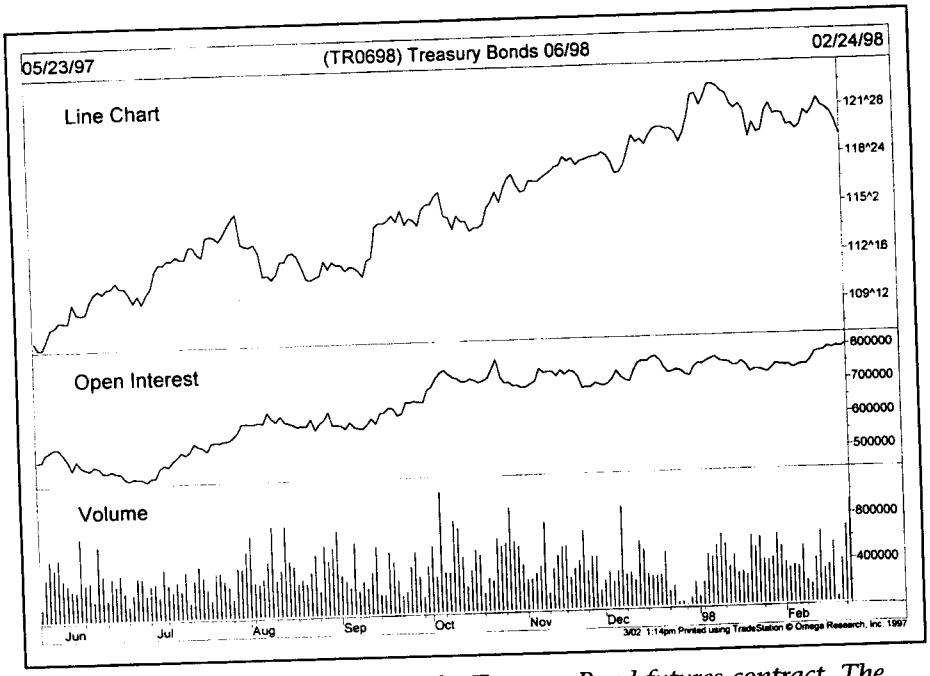

Figure 3.8 *A daily line chart of a Treasury Bond futures contract. The vertical bars along the bottom measure the total daily volume. The solid line along the middle represents the total outstanding open interest for the Treasury Bond futures market.*

Total Versus Individual Volume and Open Interest Numbers in Futures

Futures chart services, along with most futures technicians, use only the *total* volume and open interest figures. Although figures are available for each individual delivery month, the total figures for each commodity market are the ones that are used for forecasting purposes. There is a good reason for this.

In the early stages of a futures contract's life, volume and open interest are usually quite small. The figures build up as the contract reaches maturity. In the last couple of months before expiration, however, the numbers begin to drop again. Obviously, traders have to liquidate open positions as the con-

tract approaches expiration. Therefore, the increase in the numbers in the first few months of life and the decline near the end of trading have nothing to do with market direction and are just a function of the limited life feature of a commodity futures contract. To provide the necessary continuity in volume and open interest numbers, and to give them forecasting value, the total numbers are generally used. (Stock charts plot total volume figures, but do not include open interest.)

Volume and Open Interest Reported a Day Late in Futures

Futures volume and open interest numbers are reported a day late. Therefore, the chartist must be content with a day's lag in obtaining and interpreting the figures. The numbers are usually reported during the following day's trading hours, but too late for publication in the day's financial newspapers. Estimated volume figures are available, however, after the markets close and are included in the following morning's paper. Estimated volume numbers are just that, but they do at least give the futures technician some idea of whether trading activity was heavier or lighter the previous day. In the morning paper, therefore, what the reader gets is the last day's futures prices along with an estimated volume figure. Official volume and open interest numbers, however, are given for the day before. Stock chartists don't have that problem. Volume totals for stocks are immediately available.

The Value of Individual Volume and Open Interest Numbers in Futures

The individual open interest numbers in futures do provide valuable information. They tell us which contracts are the most liquid for trading purposes. *As a general rule, trading activity should be limited to those delivery months with the highest open interest. Months with low open interest numbers should be avoided.* As the term implies, higher open interest means that there is more interest in certain delivery months.

WEEKLY AND MONTHLY BAR CHARTS

We've focused so far on the daily bar chart. However, be aware that a bar chart can be constructed for any time period. The intraday bar chart measures the high, low, and last prices for periods as short as five minutes. The average daily bar chart covers from six to nine months of price action. For longer range trend analysis, however, weekly and monthly bar charts must be used. The value of using these longer range charts is covered in Chapter 8. But the method of constructing and updating the charts is essentially the same. (See Figures 3.9 and 3.10.)

On the weekly chart, one bar represents the price activity for the entire week. On the monthly chart, each bar shows the

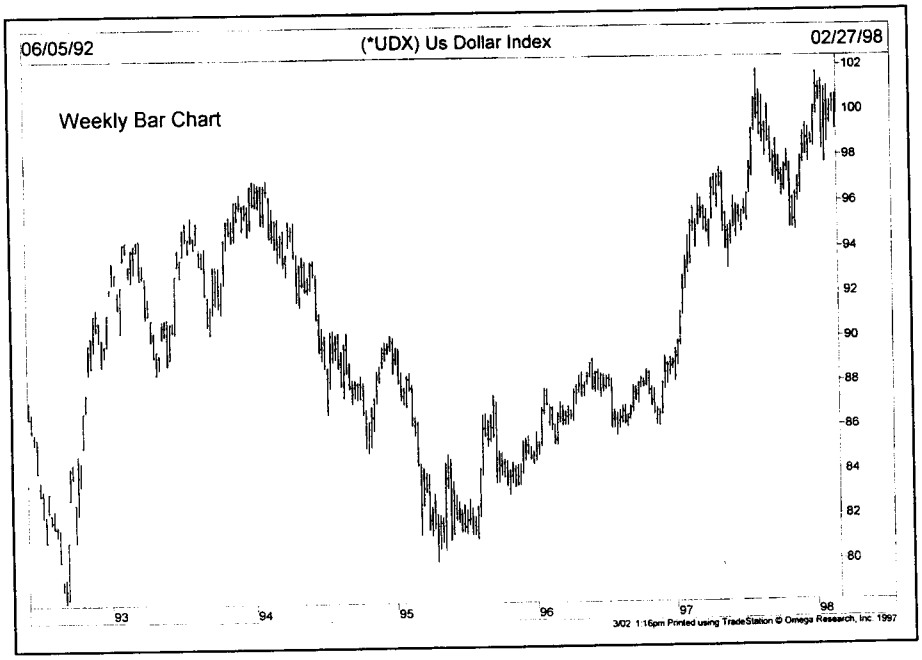

Figure 3.9 *A weekly bar chart of the U.S. Dollar Index. Each bar represents one week's price data. By compressing the price data, the weekly chart allows for chart analysis of longer range price trends, usually in the vicinity of five years.*

Figure 3.10 *A monthly bar chart of the U.S. Dollar Index. Each bar represents one month's price data. By compressing the data even further, the monthly chart allows chart analysis for periods as long as twenty years.*

entire month's price action. Obviously, weekly and monthly charts compress the price action to allow for much longer range trend analysis. A weekly chart can go back as much as five years and a monthly chart up to 20 years. It's a simple technique that helps the chartist study the markets from a longer range perspective—a valuable perspective that is often lost by relying solely on daily charts.

CONCLUSION

Now that we know how to plot a bar chart, and having introduced the three basic sources of information—price, volume, and open interest—we're ready to look at how that data is interpreted. Remember that the chart only records the data. In itself, it has lit-

tle value. It's much like a paint brush and canvas. By themselves, they have no value. In the hands of a talented artist, however, they can help create beautiful images. Perhaps an even better comparison is a scalpel. In the hands of a gifted surgeon, it can help save lives. In the hands of most of us, however, a scalpel is not only useless, but might even be dangerous. A chart can become an extremely useful tool in the art or skill of market forecasting once the rules are understood. Let's begin the process. In the next chapter, we'll look at some of the basic concepts of trend and what I consider to be the building blocks of chart analysis.

4 Basic Concepts of Trend

DEFINITION OF TREND

The concept of *trend* is absolutely essential to the technical approach to market analysis. All of the tools used by the chartist—support and resistance levels, price patterns, moving averages, trendlines, etc.—have the sole purpose of helping to measure the trend of the market for the purpose of participating in that trend. We often hear such familiar expressions as "always trade in the direction of the trend," "never buck the trend," or "the trend is your friend." So let's spend a little time to define what a trend is and classify it into a few categories.

In a general sense, the trend is simply the direction of the market, which way it's moving. But we need a more precise definition with which to work. First of all, markets don't generally move in a straight line in any direction. Market moves are characterized by a series of *zigzags*. These zigzags resemble a series of successive waves with fairly obvious peaks and troughs. *It is the direction of those peaks and troughs that constitutes market trend.* Whether those peaks and troughs are moving up, down, or side-

ways tells us the trend of the market. An *uptrend* would be defined as a series of successively higher peaks and troughs; a *downtrend* is just the opposite, a series of declining peaks and troughs; horizontal peaks and troughs would identify a sideways price trend. (See Figures 4.1a-d.)

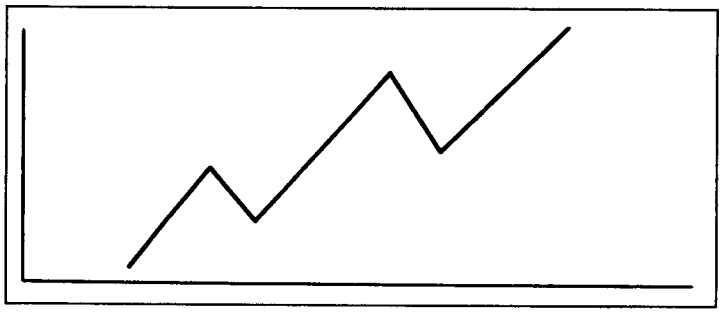

Figure 4.1a
Example of an uptrend with ascending peaks and troughs.

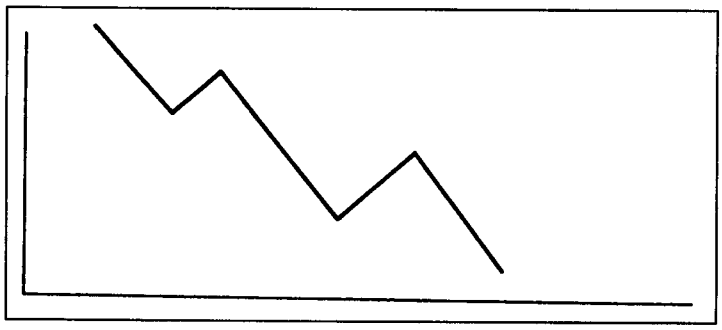

Figure 4.1b
Example of a downtrend with descending peaks and troughs.

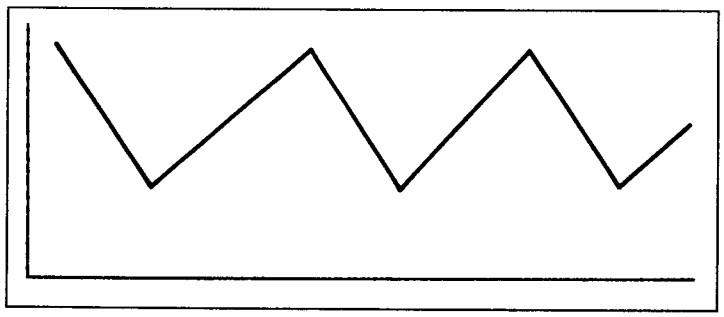

Figure 4.1c
Example of a sideways trend with horizontal peaks and troughs. This type of market is often referred to as "trendless."

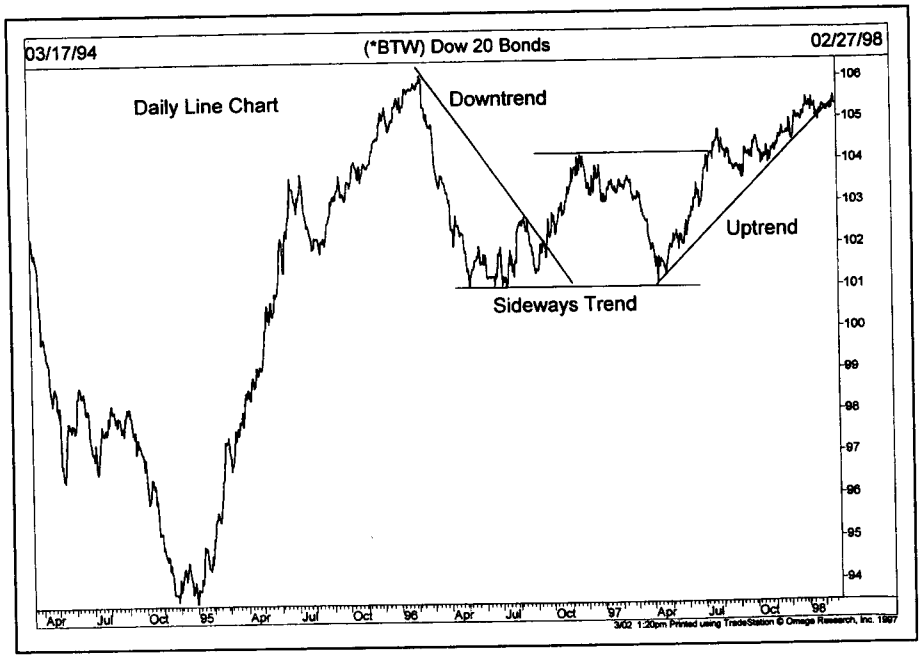

Figure 4.1d *Example of a downtrend turning into an uptrend. The first portion to the left shows a downtrend. From April 1996 to April 1997, the market traded sideways. During the summer 1997, the trend turned up.*

TREND HAS THREE DIRECTIONS

We've mentioned an uptrend, downtrend, and sideways trend for a very good reason. Most people tend to think of markets as being always in either an uptrend or a downtrend. The fact of the matter is that markets actually move in three directions—up, down, and sideways. It is important to be aware of this distinction because for at least a third of the time, by a conservative estimate, prices move in a flat, horizontal pattern that is referred to as a *trading range*. This type of sideways action reflects a period of equilibrium in the price level where the forces of supply and demand are in a state of relative balance. (If you'll recall, Dow Theory refers to this type of pattern as a *line*.) Although we've defined a flat market as having a sideways trend, it is more commonly referred to as being *trendless*.

Most technical tools and systems are trend-following in nature, which means that they are primarily designed for markets that are moving up or down. They usually work very poorly, or not at all, when markets enter these lateral or "trendless" phases. It is during these periods of sideways market movement that technical traders experience their greatest frustration, and systems traders their greatest equity losses. A trend-following system, by its very definition, needs a trend in order to do its stuff. The failure here lies not with the system. Rather, the failure lies with the trader who is attempting to apply a system designed for trending markets into a nontrending market environment.

There are three decisions confronting the trader—whether to buy a market (go long), sell a market (go short), or do nothing (stand aside). When a market is rising, the buying strategy is preferable. When it is falling, the second approach would be correct. *However, when the market is moving sideways, the third choice—to stay out of the market—is usually the wisest.*

TREND HAS THREE CLASSIFICATIONS

In addition to having three directions, trend is usually broken down into the three categories mentioned in the previous chapter. Those three categories are the *major, intermediate,* and *near term trends*. In reality, there are almost an infinite number of trends interacting with one another, from the very short term trends covering minutes and hours to superlong trends lasting 50 or 100 years. Most technicians, however, limit trend classifications to three. There is a certain amount of ambiguity, however, as to how different analysts define each trend.

Dow Theory, for example, classifies the *major trend* as being in effect for longer than a year. Because futures traders operate in a shorter time dimension than do stock investors, I would be inclined to shorten the major trend to anything over six months in the commodity markets. Dow defined the intermediate, or secondary, trend as three weeks to as many months, which also appears about right for the futures markets. The near term trend is usually defined as anything less than two or three weeks.

Each trend becomes a portion of its next larger trend. For example, the intermediate trend would be a *correction* in the major trend. In a long term uptrend, the market pauses to correct itself for a couple of months before resuming its upward path. That secondary correction would itself consist of shorter waves that would be identified as near term dips and rallies. This theme recurs many times—that each trend is part of the next larger trend and is itself comprised of smaller trends. (See Figures 4.2a and b.)

In Figure 4.2a, the major trend is up as reflected by the rising peaks and troughs (points 1, 2, 3, 4). The corrective phase (2-3) represents an intermediate correction within the major uptrend. But notice that the wave 2-3 also breaks down into three smaller waves (A, B, C). At point C, the analyst would say that the major trend was still up, but the intermediate and near term trends were down. At point 4, all three trends would be up. It is important to understand the distinction between the various degrees of trend. When someone asks what the trend is in a given market, it is difficult, if not impossible, to respond until you know

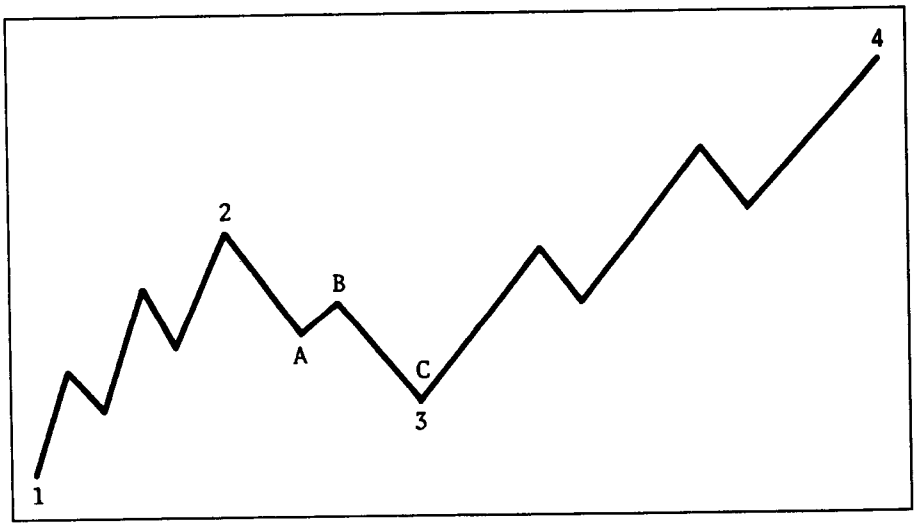

Figure 4.2a *Example of the three degrees of trend: major, secondary, and near term. Points 1, 2, 3, and 4 show the major uptrend. Wave 2-3 represents a secondary correction within the major uptrend. Each secondary wave in turn divides into near term trends. For example, secondary wave 2-3 divides into minor waves A-B-C.*

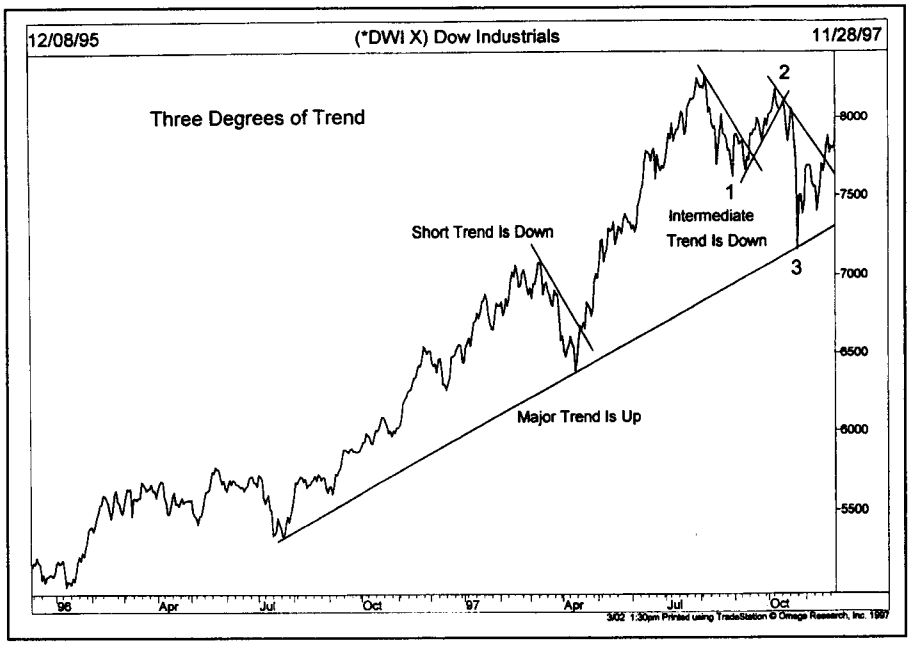

Figure 4.2b *The major trend (over a year) is up during 1997. A short term correction occurred during March. An intermediate correction lasted from August to November (three months). The intermediate correction broke down into three short term trends.*

which trend the person is inquiring about. You may have to respond in the manner previously discussed by defining the three different trend classifications.

Quite a bit of misunderstanding arises because of different traders' perceptions as to what is meant by a trend. To long term position traders, a few days' to a few weeks' price action might be insignificant. To a day trader, a two or three day advance might constitute a major uptrend. It's especially important, then, to understand the different degrees of trend and to make sure that all involved in a transaction are talking about the same ones.

As a general statement, most trend-following approaches focus on the intermediate trend, which may last for several months. The near term trend is used primarily for timing purposes. In an intermediate uptrend, short term setbacks would be used to initiate long positions.

SUPPORT AND RESISTANCE

In the previous discussion of trend, it was stated that prices move in a series of peaks and troughs, and that the direction of those peaks and troughs determined the trend of the market. Let's now give those peaks and troughs their appropriate names and, at the same time, introduce the concepts of *support* and *resistance.*

The troughs, or reaction lows, are called *support.* The term is self-explanatory and indicates that support is a level or area on the chart *under the market* where buying interest is sufficiently strong to overcome selling pressure. As a result, a decline is halted and prices turn back up again. Usually a support level is identified beforehand by a previous reaction low. In Figure 4.3a, points 2 and 4 represent support levels in an uptrend. (See Figures 4.3a and b.)

Resistance is the opposite of support and represents a price level or area *over the market* where selling pressure overcomes buying pressure and a price advance is turned back. Usually a resis-

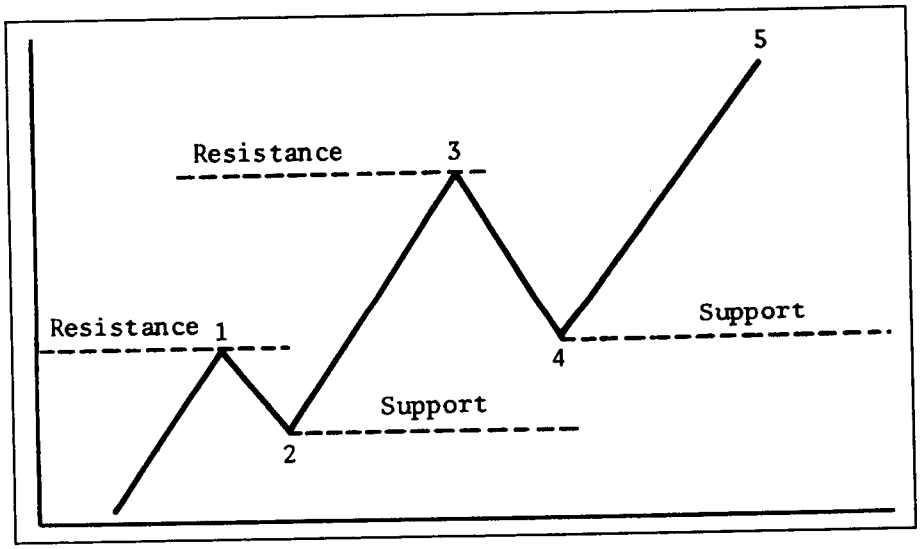

Figure 4.3a *Shows rising support and resistance levels in uptrend. Points 2 and 4 are support levels which are usually previous reaction lows. Points 1 and 3 are resistance levels, usually marked by previous peaks.*

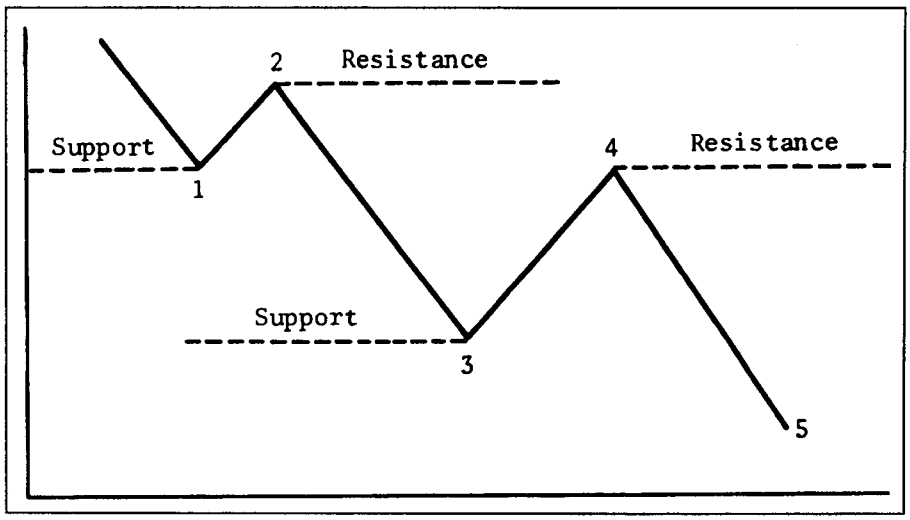

Figure 4.3b *Shows support and resistance in a downtrend.*

tance level is identified by a previous peak. In Figure 4.3a, points 1 and 3 are resistance levels. Figure 4.3a shows an uptrend. In an uptrend, the support and resistance levels show an ascending pattern. Figure 4.3b shows a downtrend with descending peaks and troughs. In the downtrend, points 1 and 3 are support levels under the market and points 2 and 4 are resistance levels over the market.

In an uptrend, the resistance levels represent pauses in that uptrend and are usually exceeded at some point. In a downtrend, support levels are not sufficient to stop the decline permanently, but are able to check it at least temporarily.

A solid grasp of the concepts of support and resistance is necessary for a full understanding of the concept of trend. For an uptrend to continue, each successive low (support level) must be higher than the one preceding it. Each rally high (resistance level) must be higher than the one before it. If the corrective dip in an uptrend comes all the way down to the previous low, it may be an early warning that the uptrend is ending or at least moving from an uptrend to a sideways trend. If the support level is violated, then a trend *reversal* from up to down is likely.

Each time a previous resistance peak is being tested, the uptrend is in an especially critical phase. Failure to exceed a previous peak in an uptrend, or the ability of prices to bounce off the previous support low in a downtrend, is usually the first warning that the existing trend is changing. Chapters 5 and 6 on *price patterns* show how the testing of these support and resistance levels form pictures on the charts that suggest either a trend reversal in progress or merely a pause in the existing trend. But the basic building blocks on which those price patterns are based are support and resistance levels.

Figures 4.4a-c are examples of a classic trend reversal. Notice, in Figure 4.4a, that at point 5 prices failed to exceed the previous peak (point 3) before turning down to violate the previous low at point 4. This trend reversal could have been identified simply by watching the support and resistance levels. In our coverage of price patterns, this type of reversal pattern will be identified as a *double top*.

How Support and Resistance Levels Reverse Their Roles

So far we've defined "support" as a previous low and "resistance" as a previous high. However, this is not always the case. This leads us to one of the more interesting and lesser known aspects of support and resistance—their reversal of roles. *Whenever a support or*

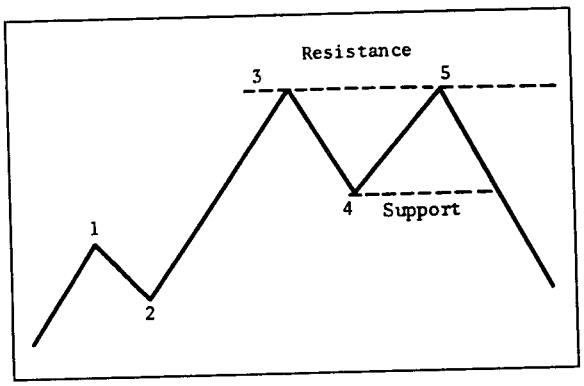

Figure 4.4a *Example of a trend reversal. The failure of prices at point 5 to exceed the previous peak at point 3 followed by a downside violation of the previous low at point 4 constitutes a downside trend reversal. This type of pattern is called a double top.*

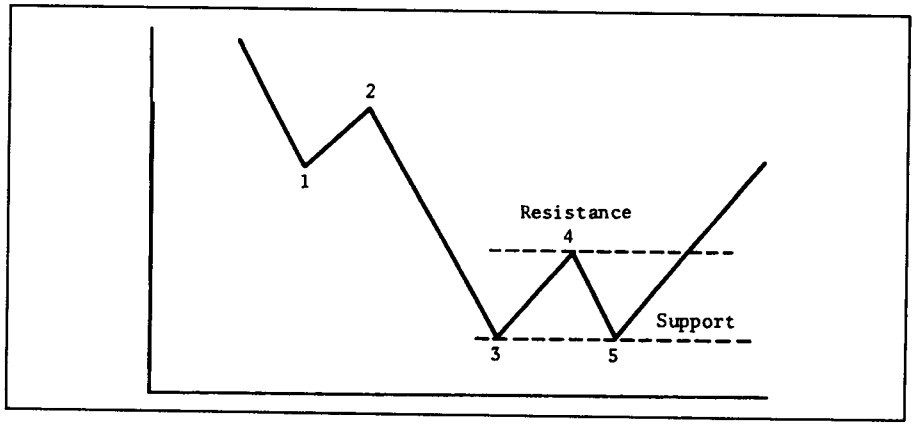

Figure 4.4b *Example of a bottom reversal pattern. Usually the first sign of a bottom is the ability of prices at point 5 to hold above the previous low at point 3. The bottom is confirmed when the peak at 4 is overcome.*

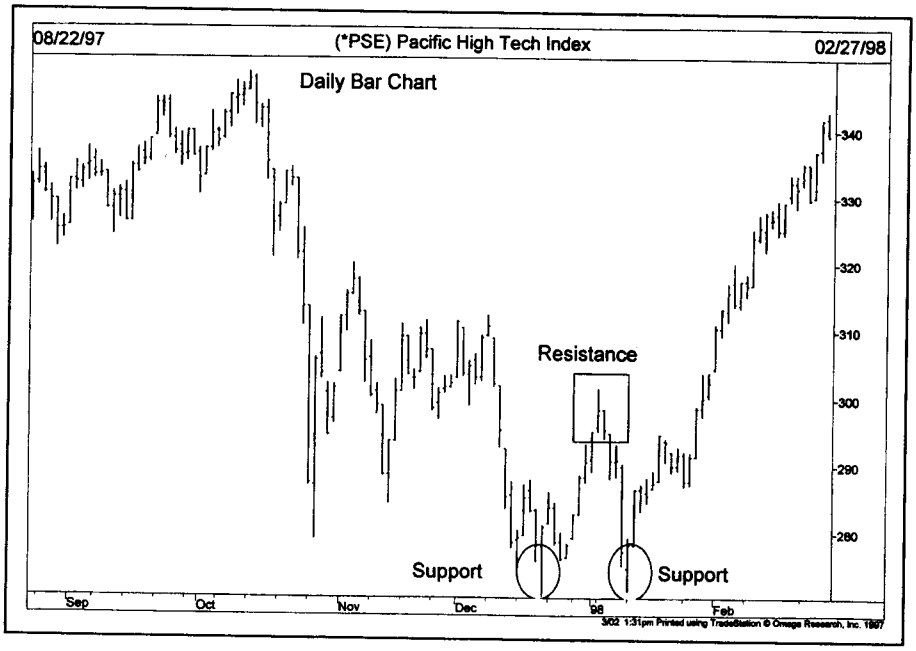

Figure 4.4c *Example of a bottom reversal. During January 1998 prices retested the December support low and bounced off it, forming a second support level. The upside penetration of the middle resistance peak signaled a new uptrend.*

resistance level is penetrated by a significant amount, they reverse their roles and become the opposite. In other words, a resistance level becomes a support level and support becomes resistance. To understand why this occurs, perhaps it would be helpful to discuss some of the psychology behind the creation of support and resistance levels.

The Psychology of Support and Resistance

To illustrate, let's divide the market participants into three categories—the longs, the shorts, and the uncommitted. The longs are those traders who have already purchased contracts; the shorts are those who have already committed themselves to the sell side; the uncommitted are those who have either gotten out of the market or remain undecided as to which side to enter.

Let's assume that a market starts to move higher from a support area where prices have been fluctuating for some time. The longs (those who bought near the support area) are delighted, but regret not having bought more. If the market would dip back near that support area again, they could add to their long positions. The shorts now realize (or strongly suspect) that they are on the wrong side of the market. (How far the market has moved away from that support area will greatly influence these decisions, but we'll come back to that point a bit later.) The shorts are hoping (and praying) for a dip back to that area where they went short so they can get out of the market where they got in (their break even point).

Those sitting on the sidelines can be divided into two groups—those who never had a position and those who, for one reason or another, liquidated previously held long positions in the support area. The latter group are, of course, mad at themselves for liquidating their longs prematurely and are hoping for another chance to reinstate those longs near where they sold them.

The final group, the undecided, now realize that prices are going higher and resolve to enter the market on the long side on the next good buying opportunity. All four groups are resolved to "buy the next dip." They all have a "vested interest" in that sup-

port area under the market. Naturally, if prices do decline near that support, renewed buying by all four groups will materialize to push prices up.

The more trading that takes place in that support area, the more significant it becomes because more participants have a vested interest in that area. The amount of trading in a given support or resistance area can be determined in three ways: the amount of time spent there, volume, and how recently the trading took place.

The longer the period of time that prices trade in a support or resistance area, the more significant that area becomes. For example, if prices trade sideways for three weeks in a congestion area before moving higher, that support area would be more important than if only three days of trading had occurred.

Volume is another way to measure the significance of support and resistance. If a support level is formed on heavy volume, this would indicate that a large number of units changed hands, and would mark that support level as more important than if very little trading had taken place. Point and figure charts that measure the intraday trading activity are especially useful in identifying these price levels where most of the trading took place and, consequently, where support and resistance will be most likely to function.

A third way to determine the significance of a support or resistance area is how recently the trading took place. Because we are dealing with the reaction of traders to market movement and to positions that they have already taken or failed to take, it stands to reason that the more recent the activity, the more potent it becomes.

Now let's turn the tables and imagine that, instead of moving higher, prices move lower. In the previous example, because prices advanced, the combined reaction of the market participants caused each downside reaction to be met with additional buying (thereby creating new support). However, if prices start to drop and move below the previous support area, the reaction becomes just the opposite. All those who bought in the support area now realize that they made a mistake. For futures traders, their brokers are now calling frantically for more margin money.

Because of the highly leveraged nature of futures trading, traders cannot sit with losses very long. They must put up additional margin money or liquidate their losing positions.

What created the previous support in the first place was the predominance of buy orders under the market. Now, however, all of the previous buy orders under the market have become sell orders over the market. *Support has become resistance.* And the more significant that previous support area was—that is, the more recent and the more trading that took place there—the more potent it now becomes as a resistance area. All of the factors that created support by the three categories of participants—the longs, the shorts, and the uncommitted—will now function to put a ceiling over prices on subsequent rallies or bounces.

It is useful once in a while to pause and reflect on why the price patterns used by chartists, and concepts like support and resistance, actually do work. It's not because of some magic produced by the charts or some lines drawn on those charts. These patterns work because they provide pictures of what the market participants are actually doing and enable us to determine their reactions to market events. Chart analysis is actually a study of human psychology and the reactions of traders to changing market conditions. Unfortunately, because we live in the fast-paced world of financial markets, we tend to rely heavily on chart terminology and shortcut expressions that overlook the underlying forces that created the pictures on the charts in the first place. There are sound psychological reasons why support and resistance levels can be identified on price charts and why they can be used to help predict market movements.

Support Becoming Resistance and Vice Versa: Degree of Penetration

A support level, penetrated by a significant margin, becomes a resistance level and vice versa. Figures 4.5a-c are similar to Figures 4.3a and b but with one added refinement. Notice that as prices are rising in Figure 4.5a the reaction at point 4 stops at or above the top of the peak at point 1. That previous peak at point 1 had been a resistance level. But once it was decisively penetrated by

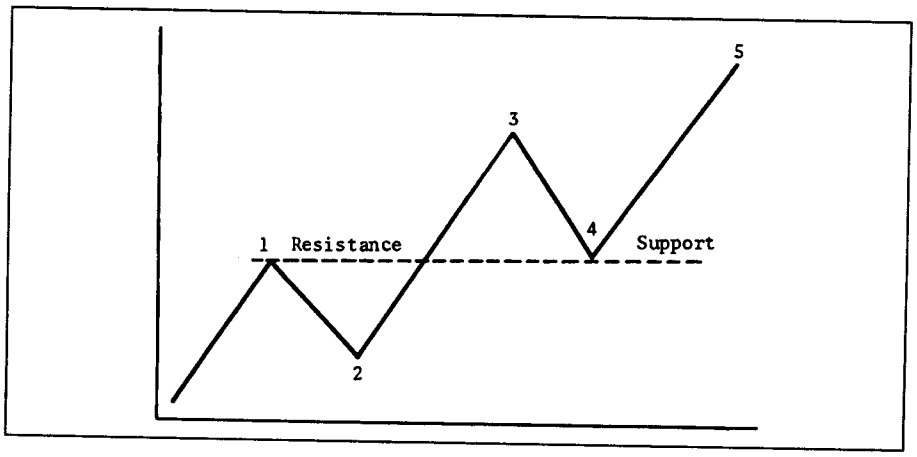

Figure 4.5a *In an uptrend, resistance levels that have been broken by a significant margin become support levels. Notice that once resistance at point 1 is exceeded, it provides support at point 4. Previous peaks function as support on subsequent corrections.*

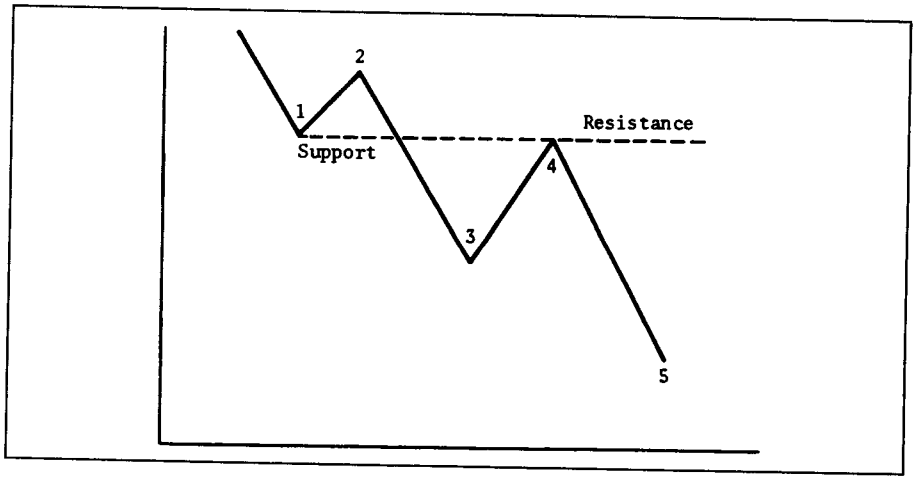

Figure 4.5b *In a downtrend, violated support levels become resistance levels on subsequent bounces. Notice how previous support at point 1 became resistance at point 4.*

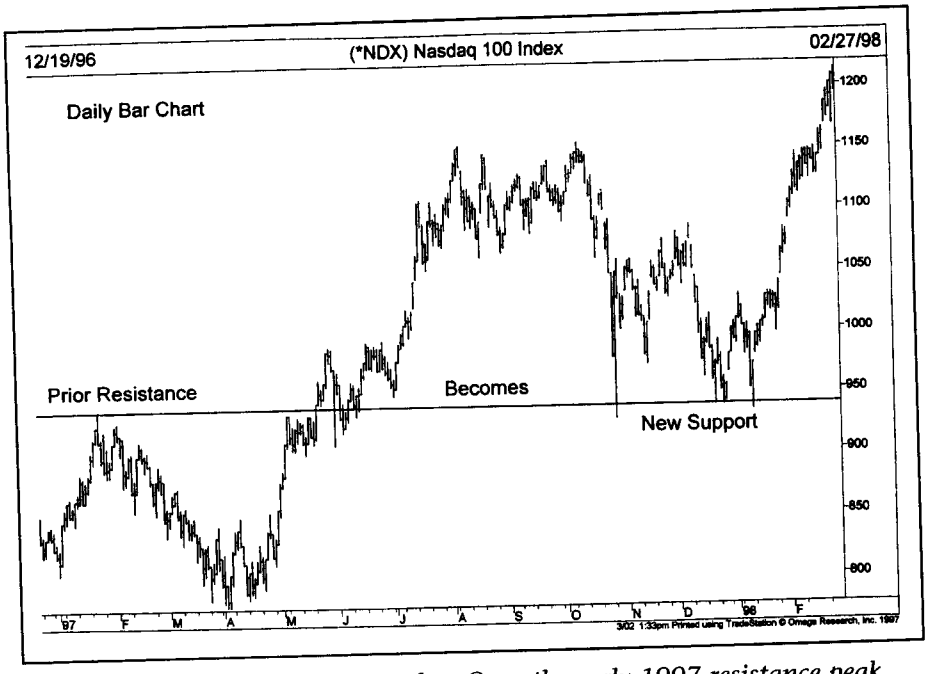

Figure 4.5c *Role reversal at play. Once the early 1997 resistance peak was broken, it reversed roles to become a support level. A year later, the intermediate price decline found support right at that prior resistance peak which had become new support.*

wave 3, that previous resistance peak became a support level. All of the previous selling near the top of wave 1 (creating the resistance level) has now become buying under the market. In Figure 4.5b, showing declining prices, point 1 (which had been a previous support level under the market) has now become a resistance level over the market acting as a ceiling at point 4.

It was mentioned earlier that the distance prices traveled away from support or resistance increased the significance of that support or resistance. This is particularly true when support and resistance levels are penetrated and reverse roles. For example, it was stated that support and resistance levels reverse roles only after a significant penetration. But what constitutes significant? There is quite a bit of subjectivity involved here in determining whether a penetration is significant or not. As a benchmark, some

chartists use a 3% penetration as a criteria, particularly for major support and resistance levels. Shorter term support and resistance areas would probably require a much smaller number, like 1%. In reality, each analyst must decide for himself or herself what constitutes a significant penetration. It's important to remember, however, that support and resistance areas only reverse roles when the market moves far enough away to convince the market participants that they have made a mistake. The farther away the market moves, the more convinced they become.

The Importance of Round Numbers as Support and Resistance

There is a tendency for round numbers to stop advances or declines. Traders tend to think in terms of important round numbers, such as 10, 20, 25, 50, 75, 100 (and multiples of 1000), as price objectives and act accordingly. These round numbers, therefore, will often act as "psychological" support or resistance levels. A trader can use this information to begin taking profits as an important round number is approached.

The gold market is an excellent example of this phenomenon. The 1982 bear market low was right at $300. The market then rallied to just above $500 in the first quarter of 1983 before falling to $400. A gold rally in 1987 stopped at $500 again. From 1990 to 1997, gold failed each attempt to break through $400. The Dow Jones Industrial Average has shown a tendency to stall at multiples of 1000.

One trading application of this principle is to *avoid placing trading orders right at these obvious round numbers*. For example, if the trader is trying to buy into a short term market dip in an uptrend, it would make sense to place limit orders just above an important round number. Because others are trying to buy the market at the round number, the market may never get there. Traders looking to sell on a bounce should place resting sell orders just below round numbers. The opposite would be true when placing protective stops on existing positions. As a general rule, *avoid placing protective stops at obvious round numbers.*

In other words, protective stops on long positions should be placed below round numbers and on short positions, above such numbers. The tendency for markets to respect round numbers, and especially the more important round numbers previously referred to, is one of those peculiar market characteristics that can prove most helpful in trading and should be kept in mind by the technically oriented trader.

TRENDLINES

Now that we understand support and resistance, let's add another building block to our arsenal of technical tools—*the trendline*. (See Figures 4.6a-c.) The basic trendline is one of the simplest of the technical tools employed by the chartist, but is also one of the most valuable. An *up trendline* is a straight line drawn upward to the right along successive reaction lows as shown by the solid line in Figure 4.6a. A *down trendline* is drawn downward to the right along successive rally peaks as shown in Figure 4.6b.

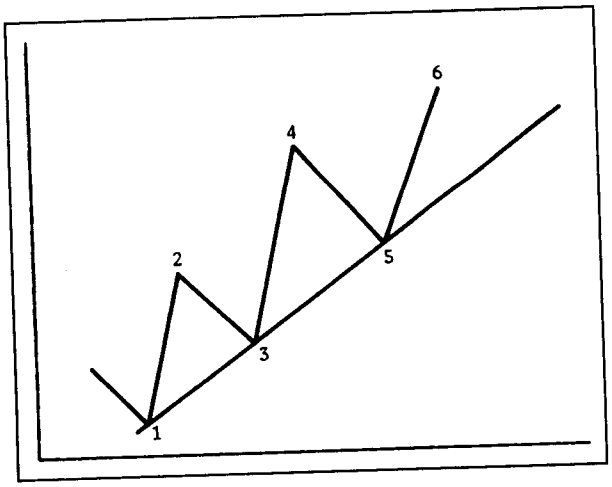

Figure 4.6a
Example of an up trendline. The up trendline is drawn under the rising reaction lows. A tentative trendline is first drawn under two successively higher lows (points 1 and 3), but needs a third test to confirm the validity of the trendline (point 5).

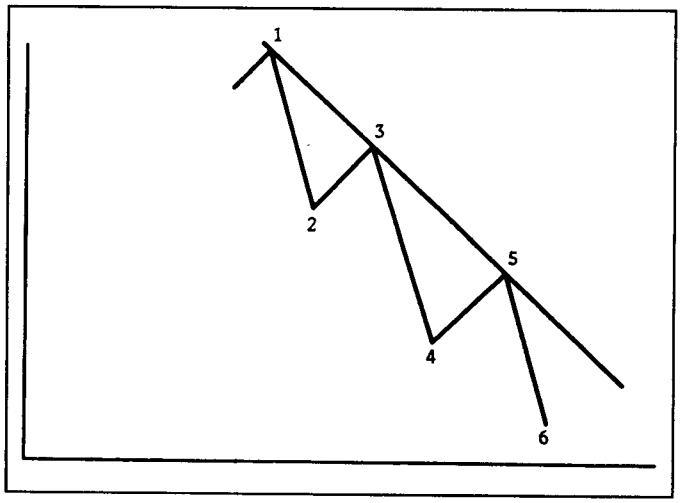

Figure 4.6b *A down trendline is drawn over the successively lower rally highs. The tentative down trendline needs two points (1 and 3) to be drawn and a third test (5) to confirm its validity.*

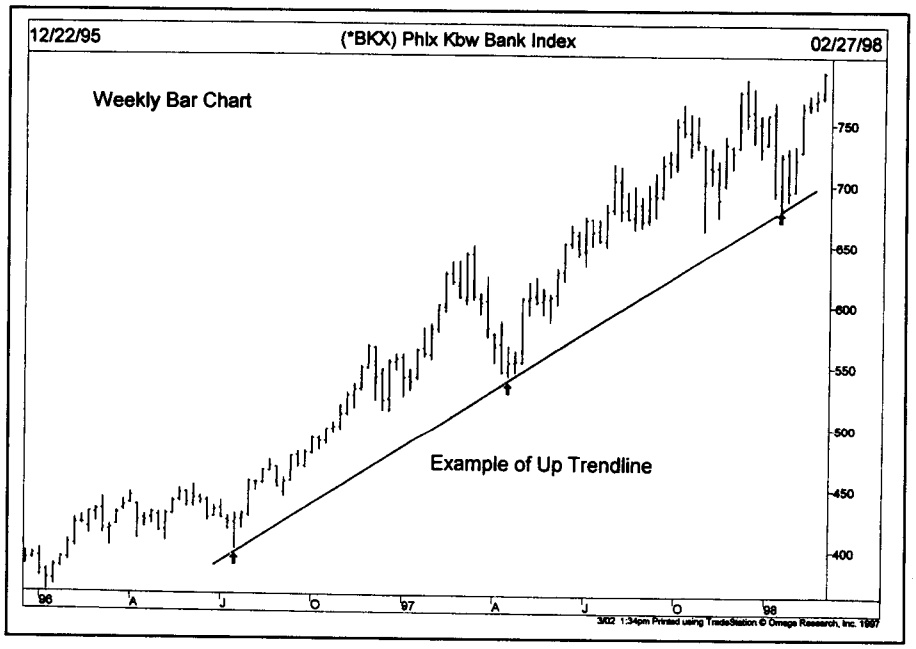

Figure 4.6c *Long term up trendline at work. The up trendline was drawn upward and to the right along the first two reaction lows (see arrows). The third low at the start of 1998 bounced right off the rising trendline, thereby keeping the uptrend intact.*

Drawing a Trendline

The correct drawing of trendlines is a lot like every other aspect of charting and some experimenting with different lines is usually necessary to find the correct one. Sometimes a trendline that looks correct may have to be redrawn. But there are some useful guidelines in the search for that correct line.

First of all, there must be evidence of a trend. This means that, for an up trendline to be drawn, there must be at least two reaction lows with the second low higher than the first. Of course, it always takes two points to draw any straight line. In Figure 4.6a, for example, only after prices have begun to move higher from point 3 is the chartist reasonably confident that a reaction low has been formed, and only then can a tentative up trendline be drawn under points 1 and 3.

Some chartists require that the peak at point 2 be penetrated to confirm the uptrend before drawing the trendline. Others only require a 50% retracement of wave 2-3, or that prices approach the top of wave 2. While the criteria may differ, the main point to remember is that the chartist wants to be reasonably sure that a reaction low has been formed before identifying a valid reaction low. Once two ascending lows have been identified, a straight line is drawn connecting the lows and projected up and to the right.

Tentative Versus the Valid Trendline

So far, all we have is a *tentative trendline.* In order to confirm the validity of a trendline, however, that line should be touched a third time with prices bouncing off of it. Therefore, in Figure 4.6a, the successful test of the up trendline at point 5 confirmed the validity of that line. Figure 4.6b shows a downtrend, but the rules are the same. The successful test of the trendline occurs at point 5. To summarize, two points are needed to draw the trendline, and a third point to make it a *valid trendline.*

How to Use the Trendline

Once the third point has been confirmed and the trend proceeds in its original direction, that trendline becomes very useful in a

variety of ways. One of the basic concepts of trend is that a trend in motion will tend to remain in motion. As a corollary to that, once a trend assumes a certain slope or rate of speed, as identified by the trendline, it will usually maintain the same slope. The trendline then helps not only to determine the extremities of the corrective phases, but maybe even more importantly, tells us when that trend is changing.

In an uptrend, for example, the inevitable corrective dip will often touch or come very close to the up trendline. Because the intent of the trader is to buy dips in an uptrend, that trendline provides a support boundary under the market that can be used as a buying area. A down trendline can be used as a resistance area for selling purposes. (See Figures 4.7a and b.)

As long as the trendline is not violated, it can be used to determine buying and selling areas. However, at point 9 in Figures 4.7a-b, the violation of the trendline signals a trend change, calling for liquidation of all positions in the direction of the previous trend. Very often, *the breaking of the trendline is one of the best early warnings of a change in trend.*

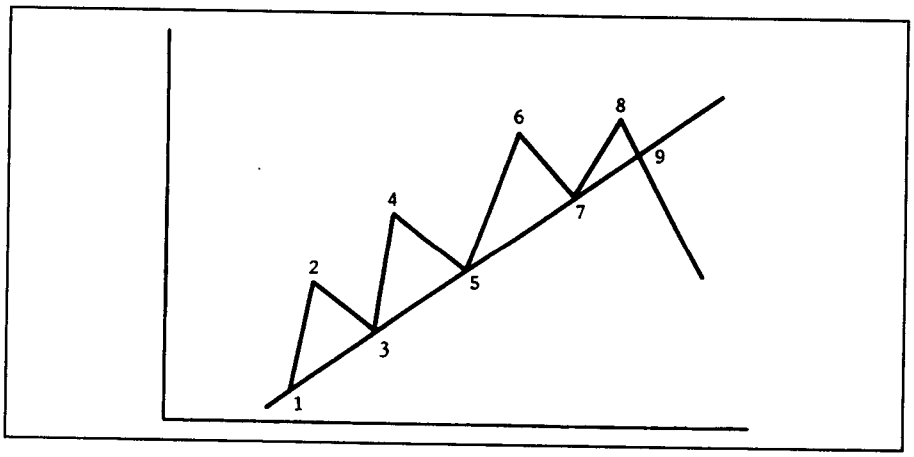

Figure 4.7a *Once the up trendline has been established, subsequent dips near the line can be used as buying areas. Points 5 and 7 in this example could have been used for new or additional longs. The breaking of the trendline at point 9 called for liquidation of all longs by signaling a downside trend reversal.*

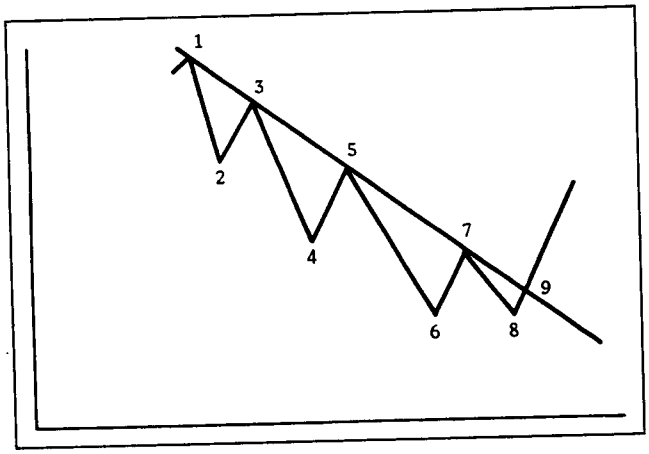

Figure 4.7b
Points 5 and 7 could have been used as selling areas. The breaking of the trendline at point 9 signaled an upside trend reversal.

How to Determine the Significance of a Trendline

Let's discuss some of the refinements of the trendline. First, what determines the significance of a trendline? The answer to that question is twofold—*the longer it has been intact and the number of times it has been tested.* A trendline that has been successfully tested eight times, for example, that has continually demonstrated its validity, is obviously a more significant trendline than one that has only been touched three times. Also, a trendline that has been in effect for nine months is of more importance than one that has been in effect for nine weeks or nine days. The more significant the trendline, the more confidence it inspires and the more important is its penetration.

Trendlines Should Include All Price Action

Trendlines on bar charts should be drawn over or under the entire day's price range. Some chartists prefer to draw the trendline by connecting only the closing prices, but that is not the more standard procedure. The closing price may very well be the most important price of the day, but it still represents only a small sample of that day's activity. The technique of including the day's price range takes into account all of the activity and is the more common usage. (See Figure 4.8.)

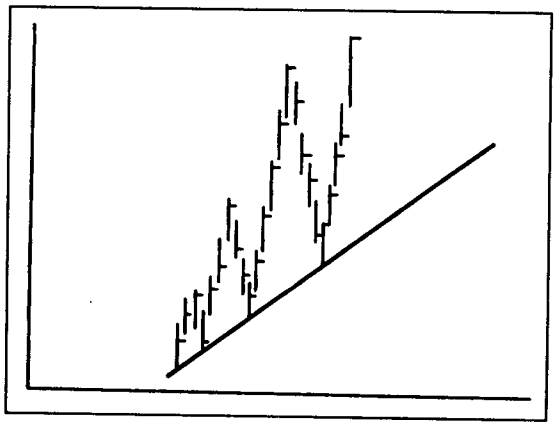

Figure 4.8 *The correct drawing of a trendline should include the entire day's trading range.*

How to Handle Small Trendline Penetrations

Sometimes prices will violate a trendline on an intraday basis, but then close in the direction of the original trend, leaving the analyst in some doubt as to whether or not the trendline has actually been broken. (See Figure 4.9.) Figure 4.9 shows how such a situation might look. Prices did dip under the trendline during the day, but closed back above the up trendline. Should the trendline be redrawn?

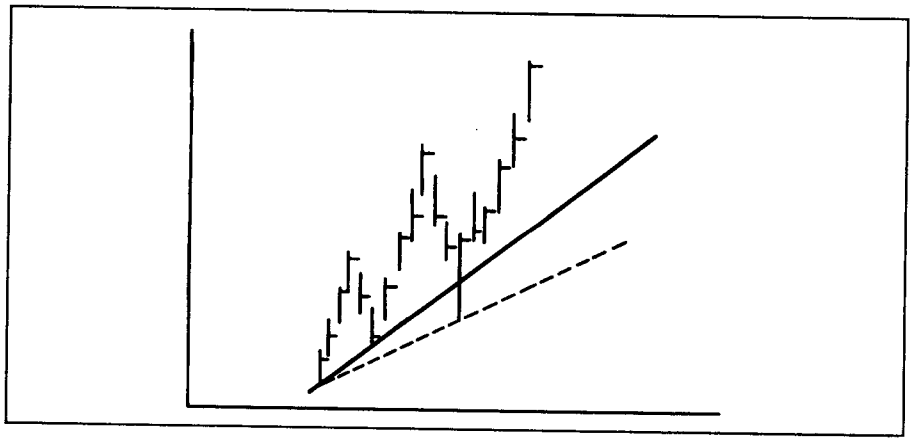

Figure 4.9 *Sometimes an intraday violation of a trendline will leave the chartist in doubt as to whether the original trendline is still valid or if a new line should be drawn. A compromise is to keep the original trendline, but draw a new dotted line until it can be better determined which is the truer line.*

Unfortunately, there's no hard and fast rule to follow in such a situation. Sometimes it is best to ignore the minor breach, especially if subsequent market action proves that the original line is still valid.

What Constitutes a Valid Breaking of a Trendline?

As a general rule, *a close beyond the trendline is more significant than just an intraday penetration.* To go a step further, sometimes even a closing penetration is not enough. Most technicians employ a variety of time and price filters in an attempt to isolate valid trendline penetrations and eliminate bad signals or "whipsaws." One example of a price filter is the 3% *penetration criteria.* This price filter is used mainly for the breaking of longer term trendlines, but requires that the trendline be broken, on a closing basis, by at least 3%. (The 3% rule doesn't apply to some financial futures, such as the interest rate markets.)

If, for example, gold prices broke a major up trendline at $400, prices would have to close below that line by 3% of the price level where the line was broken (in this case, prices would have to close $12 below the trendline, or at $388). Obviously, a $12 penetration criteria would not be appropriate for shorter term trading. Perhaps a 1% criterion would serve better in such cases. The % rule represents just one type of price filter. Stock chartists, for example, might require a full point penetration and ignore fractional moves. There is tradeoff involved in the use of any type of filter. If the filter is too small, it won't be very useful in reducing the impact of whipsaws. If it's too big, then much of the initial move will be missed before a valid signal is given. Here again, the trader must determine what type of filter is best suited to the degree of trend being followed, always making allowances for the differences in the individuals markets.

An alternative to a price filter (requiring that a trendline be broken by some predetermined price increment or percentage amount) is a *time filter.* A common time filter is the *two day rule.* In other words, to have a valid breaking of a trendline, prices must close beyond the trendline for two successive days. To break

an up trendline, therefore, prices must close under the trendline two days in a row. A one day violation would not count. The 1-3% rule and the two day rule are also applied to the breaking of important support and resistance levels, not just to major trendlines. Another filter would require a Friday close beyond a major breakout point to ensure a weekly signal.

How Trendlines Reverse Roles

It was mentioned earlier that support and resistance levels became the opposite once violated. The same principle holds true of trendlines. (See Figures 4.10a-c.) In other words, an up trendline (a support line) will usually become a resistance line once it's decisively broken. A down trendline (a resistance line) will often become a support line once it's decisively broken. This is why it's usually a good idea to project all trendlines as far out to the right on the chart as possible even after they've been broken. It's surprising how often old trendlines act as support and resistance lines again in the future, but in the opposite role.

Measuring Implications of Trendlines

Trendlines can be used to help determine price objectives. We'll have a lot more to say about price objectives in the next two chap-

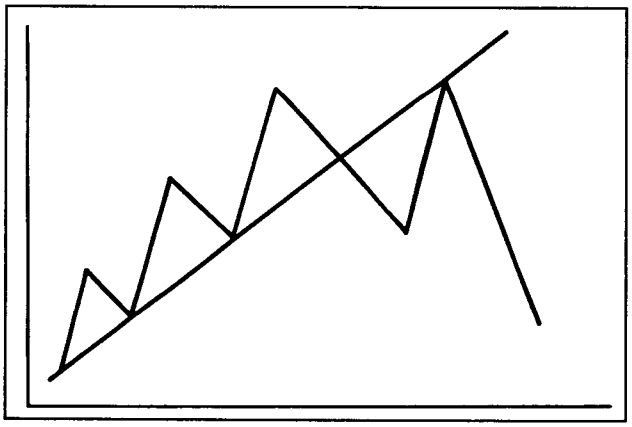

Figure 4.10a
Example of a rising support line becoming resistance. Usually a support line will function as a resistance barrier on subsequent rallies, after it has been broken on the downside.

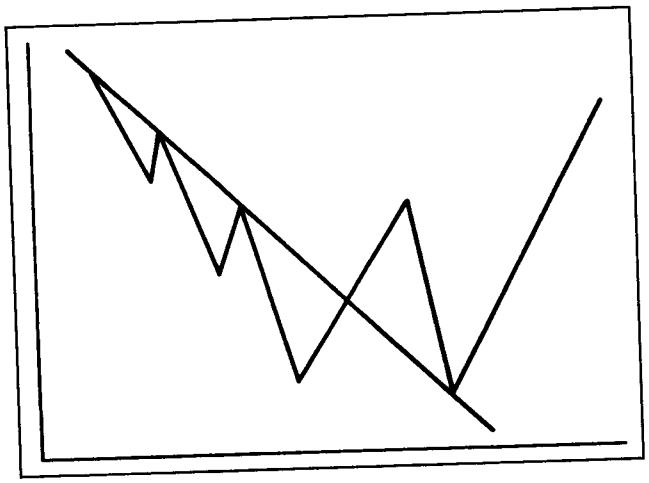

Figure 4.10b *Very often a down trendline will become a support line once it's been broken on the upside.*

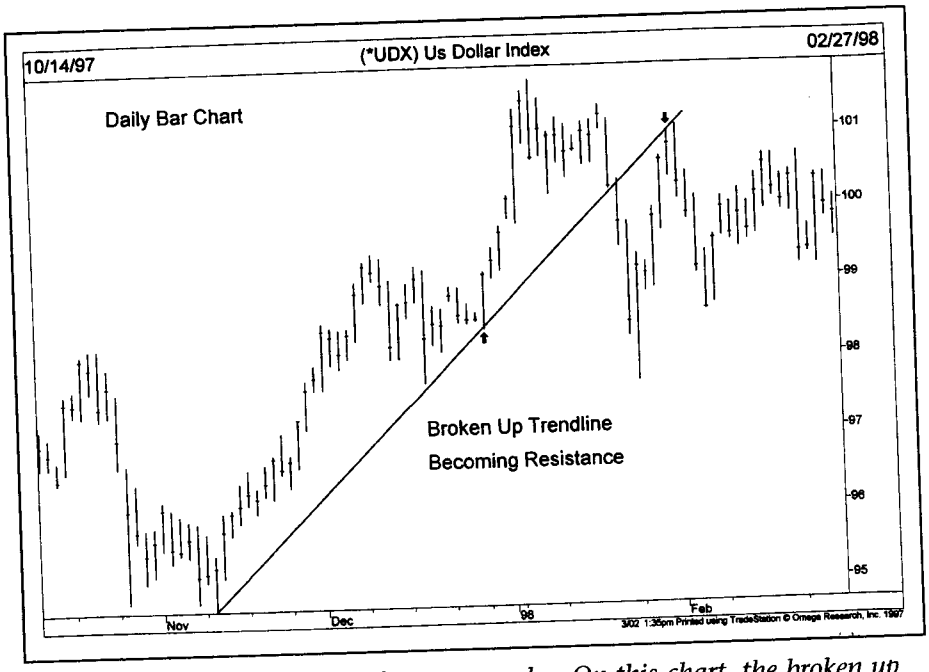

Figure 4.10c *Trendlines also reverse roles. On this chart, the broken up trendline became a resistance barrier on the following rally attempt.*

ters on price patterns. In fact, some of the price objectives addressed that are derived from various price patterns are similar to the one we'll cover here with trendlines. Stated briefly, once a trendline is broken, prices will usually move a distance beyond the trendline equal to the vertical distance that prices achieved on the other side of the line, prior to the trend reversal.

In other words, if in the prior uptrend, prices moved $50 above the up trendline (measured vertically), then prices would be expected to drop that same $50 below the trendline after it's broken. In the next chapter, for example, we'll see that this measuring rule using the trendline is similar to that used for the well-known *head and shoulders* reversal pattern, where the distance from the "head" to the "neckline" is projected beyond that line once it's broken.

THE FAN PRINCIPLE

This brings us to another interesting use of the trendline—the *fan principle.* (See Figures 4.11a-c.) Sometimes after the violation of an up trendline, prices will decline a bit before rallying back to the bottom of the old up trendline (now a resistance line). In Figure 4.11a, notice how prices rallied to but failed to penetrate line 1. A

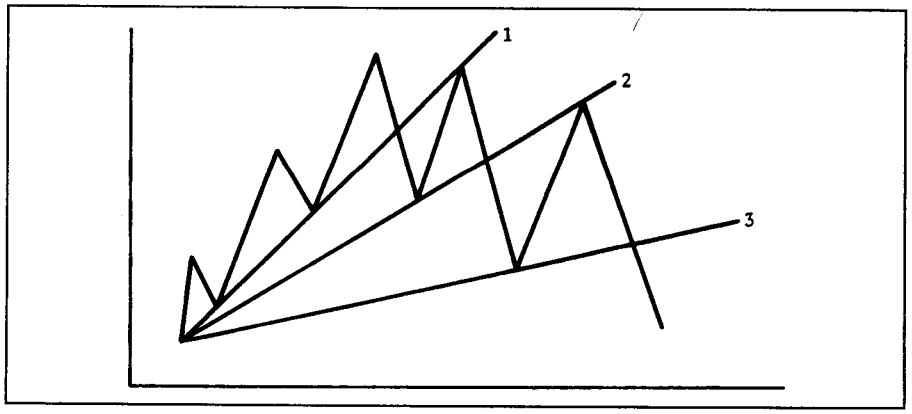

Figure 4.11a *Example of the fan principle. The breaking of the third trendline signals the reversal of a trend. Notice also that the broken trendlines 1 and 2 often become resistance lines.*

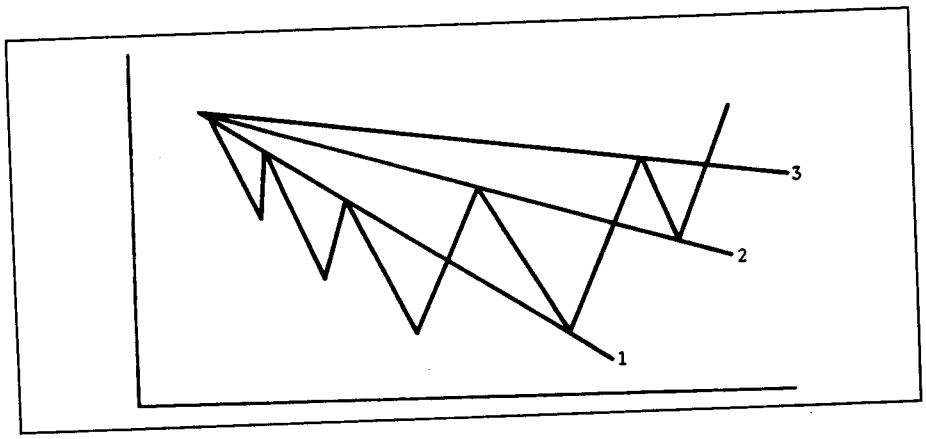

Figure 4.11b *The fan principle at a bottom. The breaking of the third trendline signals the upside trend reversal. The previously broken trendlines (1 and 2) often become support levels.*

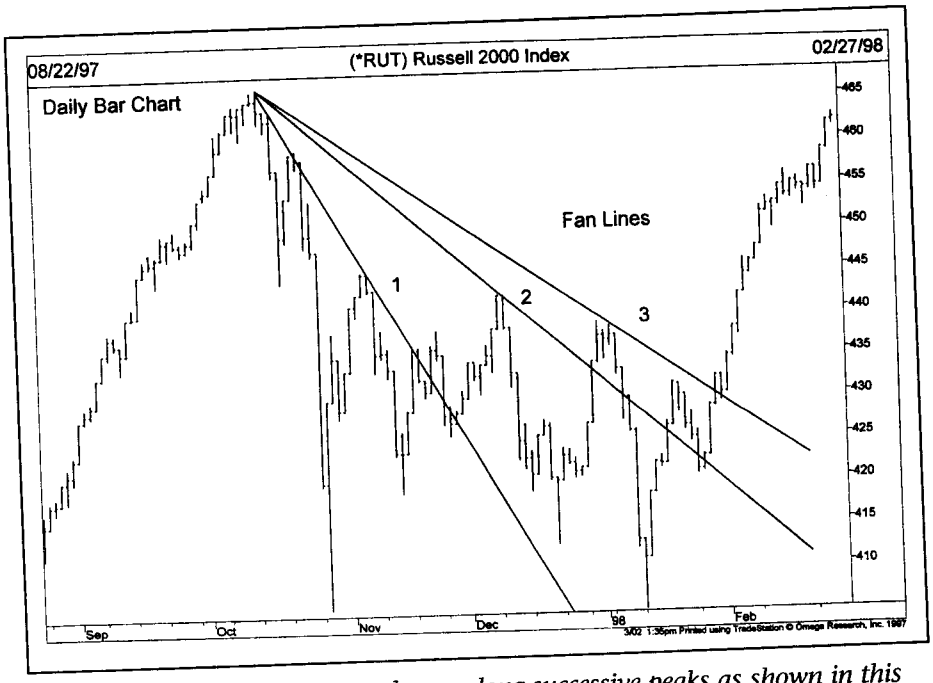

Figure 4.11c *Fan lines are drawn along successive peaks as shown in this chart. The breaking of the third fan line usually signals the start of the uptrend.*

second trendline (line 2) can now be drawn, which is also broken. After another failed rally attempt, a third line is drawn (line 3). *The breaking of that third trendline is usually an indication that prices are headed lower.* In Figure 4.11b, the breaking of the third down trendline (line 3) constitutes a new uptrend signal. Notice in these examples how previously broken support lines became resistance and resistance lines became support. The term "fan principle" derives from the appearance of the lines that gradually flatten out, resembling a fan. *The important point to remember here is that the breaking of the third line is the valid trend reversal signal.*

THE IMPORTANCE OF THE NUMBER THREE

In examining the three lines in the fan principle, it's interesting to note how often the number three shows up in the study of technical analysis and the important role it plays in so many technical approaches. For example, the fan principle uses three lines; major bull and bear markets usually have three major phases (Dow Theory and Elliott Wave Theory); there are three kinds of *gaps* (to be covered shortly); some of the more commonly known reversal patterns, such as the *triple top* and the *head and shoulders,* have three prominent peaks; there are three different classifications of trend (major, secondary, and minor) and three trend directions (up, down, and sideways); among the generally accepted continuation patterns, there are three types of *triangles*—the symmetrical, ascending, and descending; there are three principle sources of information—price, volume, and open interest. For whatever the reason, the number three plays a very prominent role throughout the entire field of technical analysis.

THE RELATIVE STEEPNESS OF THE TRENDLINE

The relative steepness of the trendline is also important. In general, most important up trendlines tend to approximate an average slope of 45 degrees. Some chartists simply draw a 45 degree

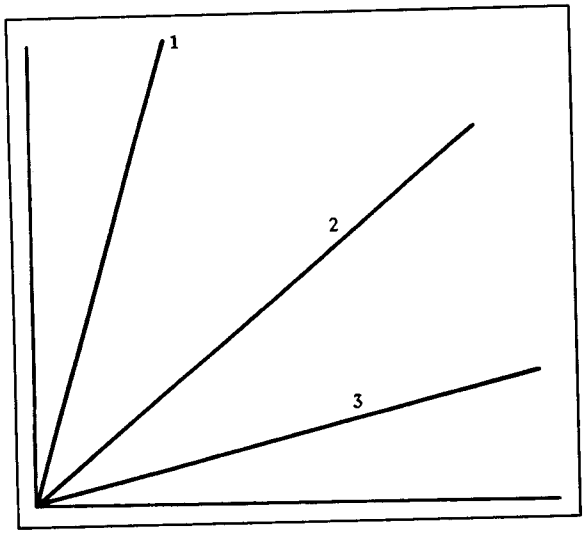

Figure 4.12 *Most valid trendlines rise at an angle approximating 45 degrees (see line 2). If the trendline is too steep (line 1), it usually indicates that the rate of ascent is not sustainable. A trendline that is too flat (line 3) suggests that the uptrend is too weak and probably suspect. Many technicians use 45 degree lines from previous tops or bottoms as major trendlines.*

line on the chart from a prominent high or low and use this as a major trendline. The 45 degree line was one of the techniques favored by W. D. Gann. Such a line reflects a situation where prices are advancing or declining at such a rate that price and time are in perfect balance.

If a trendline is too steep (see line 1 in Figure 4.12), it usually indicates that prices are advancing too rapidly and that the current steep ascent will not be sustained. The breaking of that steep trendline may be just a reaction back to a more sustainable slope closer to the 45 degree line (line 2). If a trendline is too flat (see line 3), it may indicate that the uptrend is too weak and not to be trusted.

How to Adjust Trendlines

Sometimes trendlines have to be adjusted to fit a slowing or an accelerating trend. (See Figure 4.13 and Figures 4.14a and b.) For example, as shown in the previous case, if a steep trendline is broken, a slower trendline might have to be drawn. If the original trendline is too flat, it may have to be redrawn at a steeper angle. Figure 4.13 shows a situation where the breaking of the steeper trendline (line 1) necessitated the drawing of a slower line (line 2).

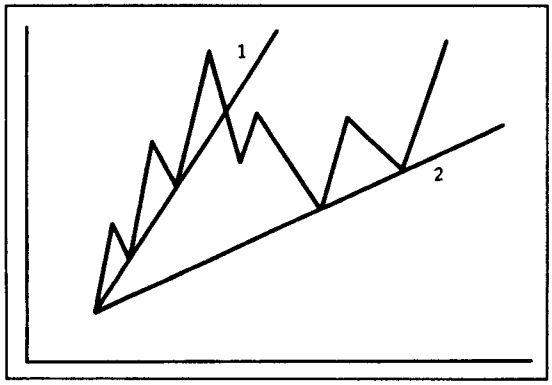

Figure 4.13 *Example of a trendline that is too steep (line 1). The original up trendline proved too steep. Often the breaking of a steep trendline is only an adjustment to a slower and more sustainable up trendline (line 2).*

In Figure 4.14a, the original trendline (line 1) is too flat and has to be redrawn at a steeper angle (line 2). The uptrend accelerated, requiring a steeper line. A trendline that is too far away from the price action is obviously of little use in tracking the trend.

In the case of an accelerating trend, sometimes several trendlines may have to be drawn at increasingly steeper angles. In my experience, however, where steeper trendlines become necessary, it is best to resort to another tool—the moving average—which is the same as a curvilinear trendline. One of the advantages

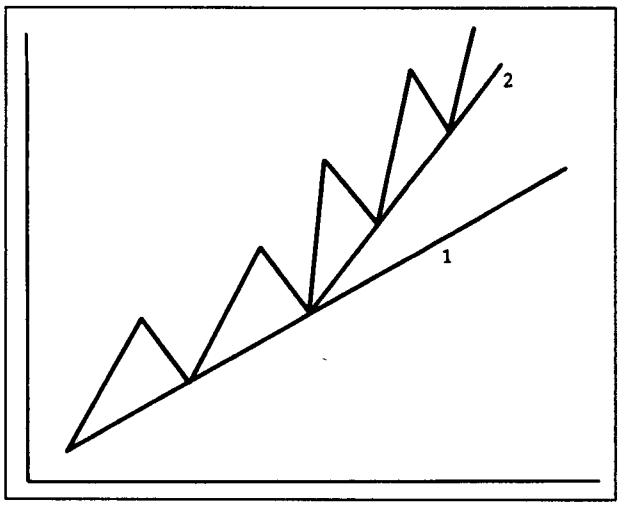

Figure 4.14a *Example of an up trendline that is too flat (line 1). Line 1 proved too slow as the uptrend accelerated. In this case, a second and steeper trendline (line 2) should be drawn to more closely track the rising trend.*

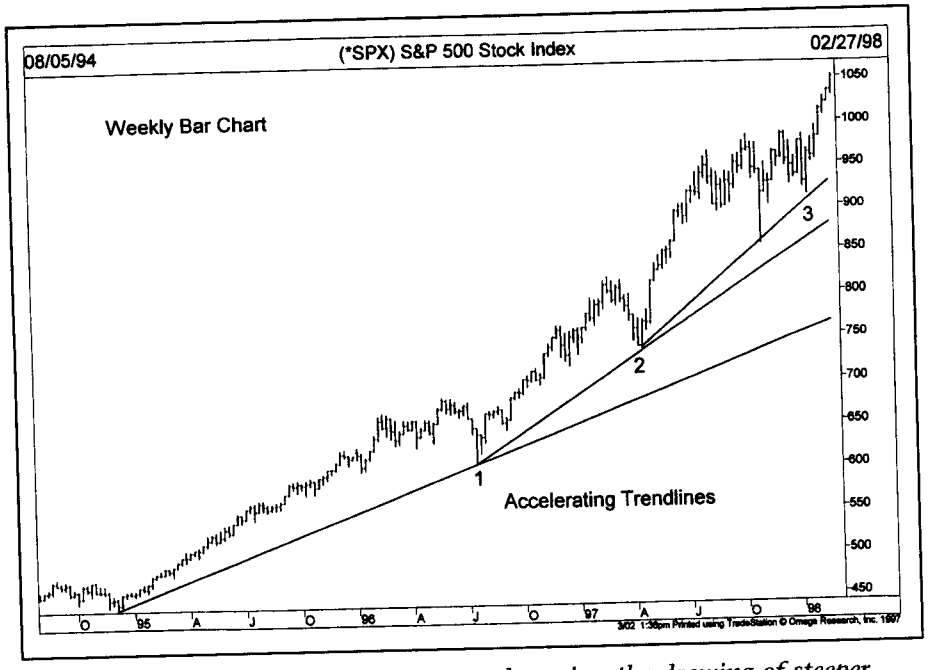

Figure 4.14b *An accelerating uptrend requires the drawing of steeper trendlines as shown in this chart. The steepest trendline becomes the most important one.*

of having access to several different types of technical indicators is being able to choose the one most appropriate for a given situation. All of the techniques covered in this book work well in certain situations, but not so well in others. By having an arsenal of tools to fall back on, the technician can quickly switch from one tool to another that might work better in a given situation. An accelerated trend is one of those cases where a moving average would be more useful than a series of steeper and steeper trendlines.

Just as there are several different degrees of trend in effect at any one time, so is there a need for different trendlines to measure those various trends. A major up trendline, for example, would connect the low points of the major uptrend, while a shorter and more sensitive line might be used for secondary swings. An even shorter line can measure the short term movements. (See Figure 4.15.)

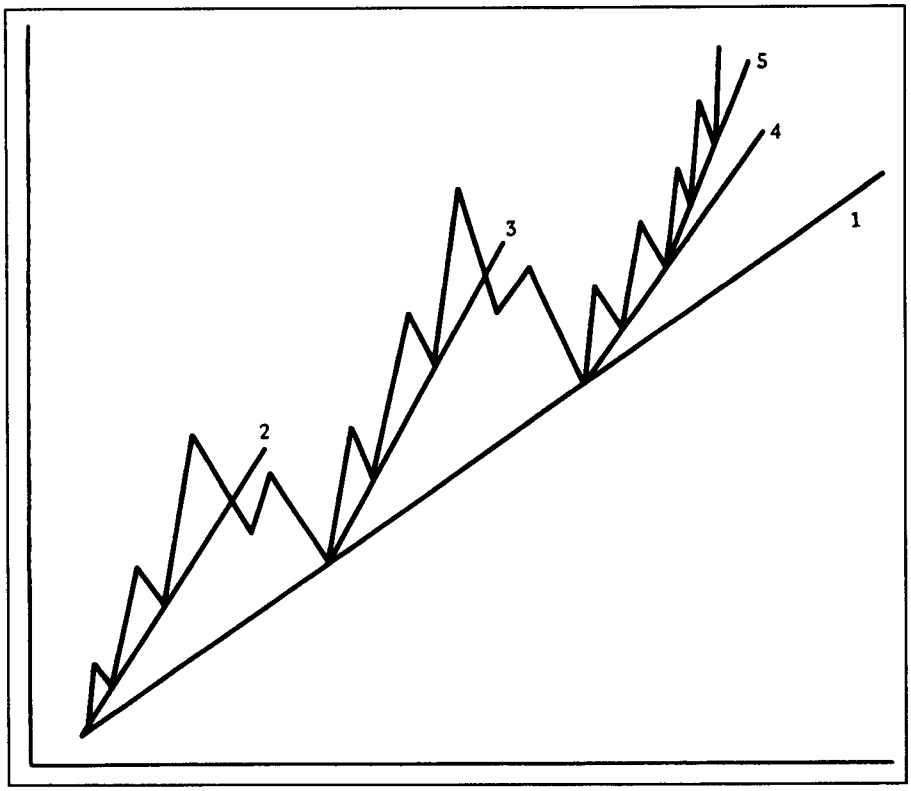

Figure 4.15 *Different trendlines are used to define the different degrees of trend. Line 1 in the above example is the major up trendline, defining the major uptrend. Lines 2, 3, and 4 define the intermediate uptrends. Finally, line 5 defines a shorter term advance within the last intermediate uptrend. Technicians use many different trendlines on the same chart.*

THE CHANNEL LINE

The *channel line,* or the *return line* as it is sometimes called, is another useful variation of the trendline technique. Sometimes prices trend between two parallel lines—the basic trendline and the channel line. Obviously, when this is the case and when the analyst recognizes that a channel exists, this knowledge can be used to profitable advantage.

The drawing of the channel line is relatively simple. In an uptrend (see Figure 4.16a), first draw the basic up trendline along

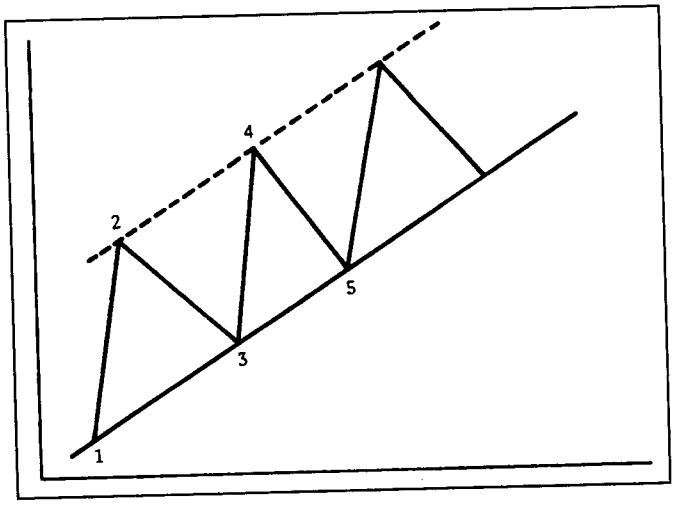

Figure 4.16a
Example of a trend channel. Once the basic up trendline is drawn (below points 1 and 3) a channel, or return, line (dotted line) can be projected over the first peak at 2, which is parallel to the basic up trendline.

the lows. Then draw a dotted line from the first prominent peak (point 2), which is parallel to the basic up trendline. Both lines move up to the right, forming a channel. If the next rally reaches and backs off from the channel line (at point 4), then a channel may exist. If prices then drop back to the original trendline (at point 5), then a channel probably does exist. The same holds true for a downtrend (Figure 4.16b), but of course in the opposite direction.

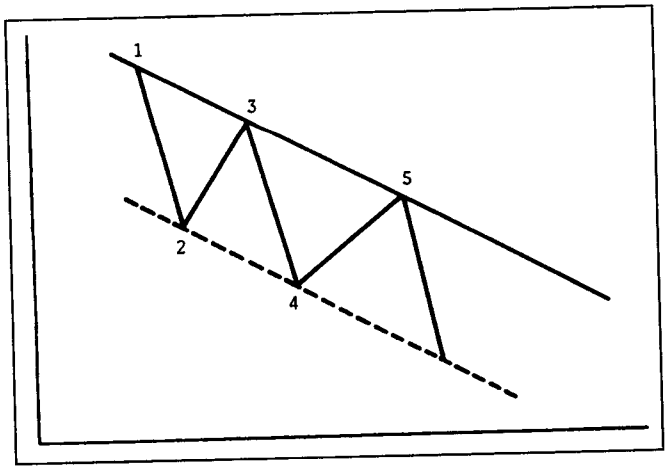

Figure 4.16b
A trend channel in a downtrend. The channel is projected downward from the first low at point 2, parallel to the down trendline along the 1 and 3 peaks. Prices will often remain within such a trend channel.

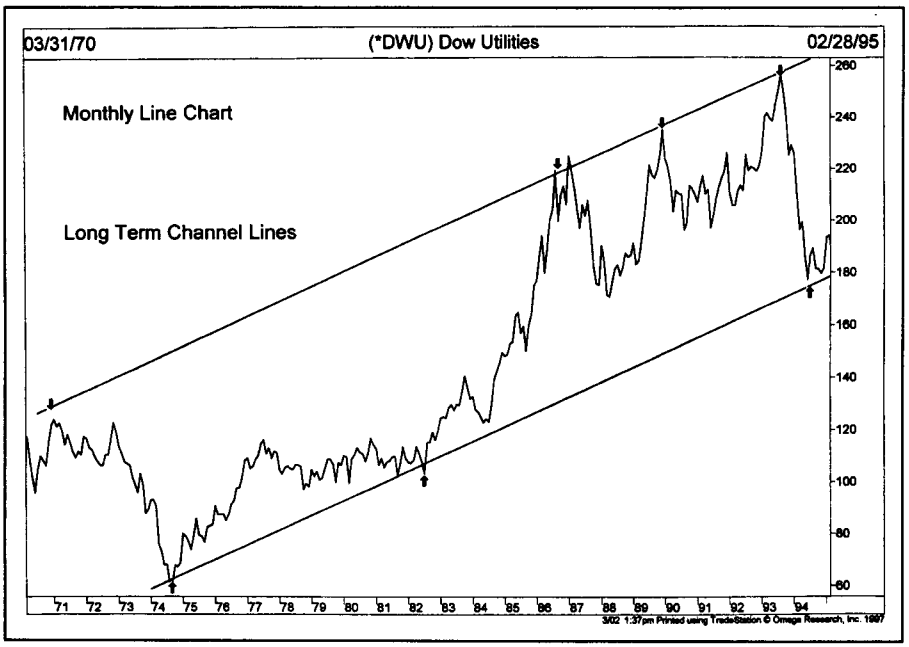

Figure 4.16c *Notice how prices fluctuated between the upper and lower parallel channels over a period of 25 years. The 1987, 1989, and 1993 tops occurred right at the upper channel line. The 1994 bottom bounced off the lower trendline.*

The reader should immediately see the value of such a situation. The basic up trendline can be used for the initiation of new long positions. The channel line can be used for short term profit taking. More aggressive traders might even use the channel line to initiate a countertrend short position, although trading in the opposite direction of the prevailing trend can be a dangerous and usually costly tactic. As in the case of the basic trendline, the longer the channel remains intact and the more often it is successfully tested, the more important and reliable it becomes.

The breaking of the major trendline indicates an important change in trend. But the breaking of a rising channel line has exactly the opposite meaning, and signals an acceleration of the existing trend. Some traders view the clearing of the upper line in an uptrend as a reason to add to long positions.

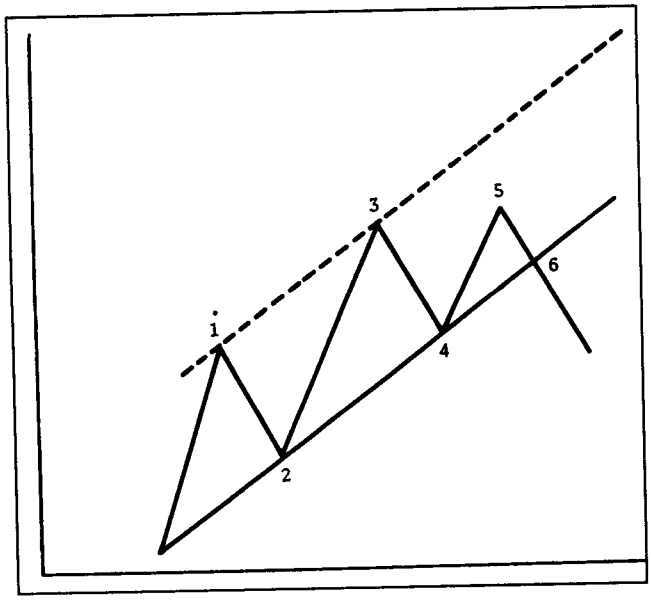

Figure 4.17
The failure to reach the upper end of the channel is often an early warning that the lower line will be broken. Notice the failure to reach the upper line at point 5 is followed by the breaking of the basic up trendline at point 6.

Another way to use the channel technique is to spot failures to reach the channel line, usually a sign of a weakening trend. In Figure 4.17, the failure of prices to reach the top of the channel (at point 5) may be an early warning that the trend is turning, and increases the odds that the other line (the basic up trendline) will be broken. As a general rule of thumb, the failure of any move within an established price channel to reach one side of the channel usually indicates that the trend is shifting, and increases the likelihood that the other side of the channel will be broken.

The channel can also be used to adjust the basic trendline. (See Figures 4.18 and 4.19.) If prices move above a projected rising channel line by a significant amount, it usually indicates a strengthening trend. Some chartists then draw a steeper basic up trendline from the last reaction low parallel to the new channel line (as demonstrated in Figure 4.18). Often, the new steeper support line functions better than the old flatter line. Similarly, the failure of an uptrend to reach the upper end of a channel justifies the drawing of a new support line under the last reaction low parallel to the new resistance line over the past two peaks (as shown in Figure 4.19).

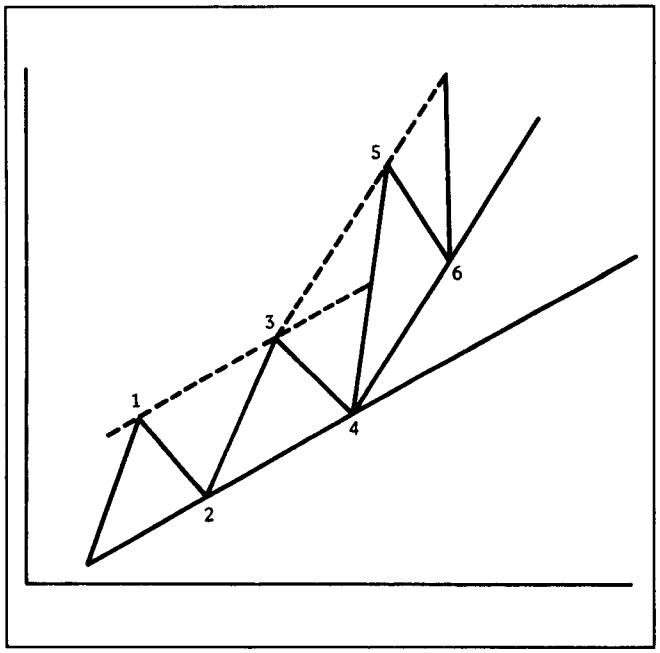

Figure 4.18
When the upper channel line is broken (as in wave 5), many chartists will redraw the basic up trendline parallel to the new upper channel line. In other words, line 4-6 is drawn parallel to line 3-5. Because the uptrend is accelerating, it stands to reason that the basic up trendline will do likewise.

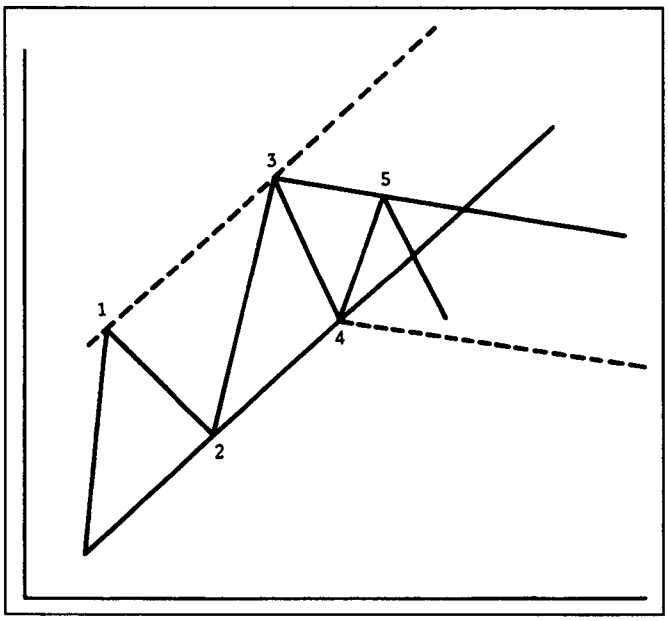

Figure 4.19
When prices fail to reach the upper channel line, and a down trendline is drawn over the two declining peaks (line 3-5), a tentative channel line can be drawn from the low at point 4 parallel to line 3-5. The lower channel line sometimes indicates where initial support will be evident.

Channel lines have measuring implications. *Once a breakout occurs from an existing price channel, prices usually travel a distance equal to the width of the channel.* Therefore, the user has to simply measure the width of the channel and then project that amount from the point at which either trendline is broken.

It should always be kept in mind, however, that of the two lines, the basic trendline is by far the more important and the more reliable. The channel line is a secondary use of the trendline technique. But the use of the channel line works often enough to justify its inclusion in the chartist's toolkit.

PERCENTAGE RETRACEMENTS

In all of the previous examples of uptrends and downtrends, the reader has no doubt noticed that after a particular market move, prices retrace a portion of the previous trend before resuming the move in the original direction. These countertrend moves tend to fall into certain predictable percentage parameters. The best known application of the phenomenon is the 50% *retracement.* Let's say, for example, that a market is trending higher and travels from the 100 level to the 200 level. Very often, the subsequent reaction retraces about half of the prior move, to about the 150 level, before upward momentum is regained. This is a very well-known market tendency and happens quite frequently. Also, these percentage retracements apply to any degree of trend—major, secondary, and near term.

Besides the 50% retracement, there are minimum and maximum percentage parameters that are also widely recognized—*the one-third and the two-thirds retracements.* In other words, the price trend can be divided into thirds. Usually, a minimum retracement is about 33% and a maximum about 66%. What this means is that, in a correction of a strong trend, the market usually retraces at least a third of the previous move. This is very useful information for a number of reasons. If a trader is looking for a buying area under the market, he or she can just compute a 33-50% zone on the chart and use that price zone as a general frame of reference for buying opportunities. (See Figures 4.20a and b.)

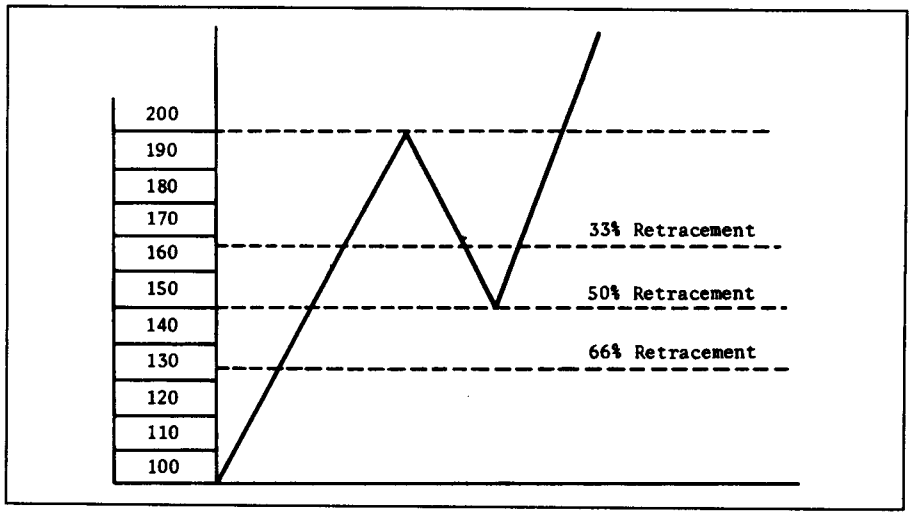

Figure 4.20a *Prices often retrace about half of the prior trend before resuming in the original direction. This example shows a 50% retracement. The minimum retracement is one-third and the maximum, two-thirds of the prior trend.*

The maximum retracement parameter is 66%, which becomes an especially critical area. If the prior trend is to be maintained, the correction must stop at the two-thirds point. This then becomes a relatively low risk buying area in an uptrend or selling area in a downtrend. If prices move beyond the two-thirds point, the odds then favor a trend reversal rather than just a retracement. The move usually then retraces the entire 100% of the prior trend.

You may have noticed that the three percentage retracement parameters we've mentioned so far—50%, 33%, and 66%—are taken right from the original Dow Theory. When we get to the Elliott Wave Theory and Fibonacci ratios, we will see that followers of that approach use percentage retracements of 38% and 62%. I prefer to combine both approaches for a minimum retracement zone of 33-38% and a maximum zone of 62-66%. Some technicians round off these numbers even further to arrive at a 40-60% retracement zone.

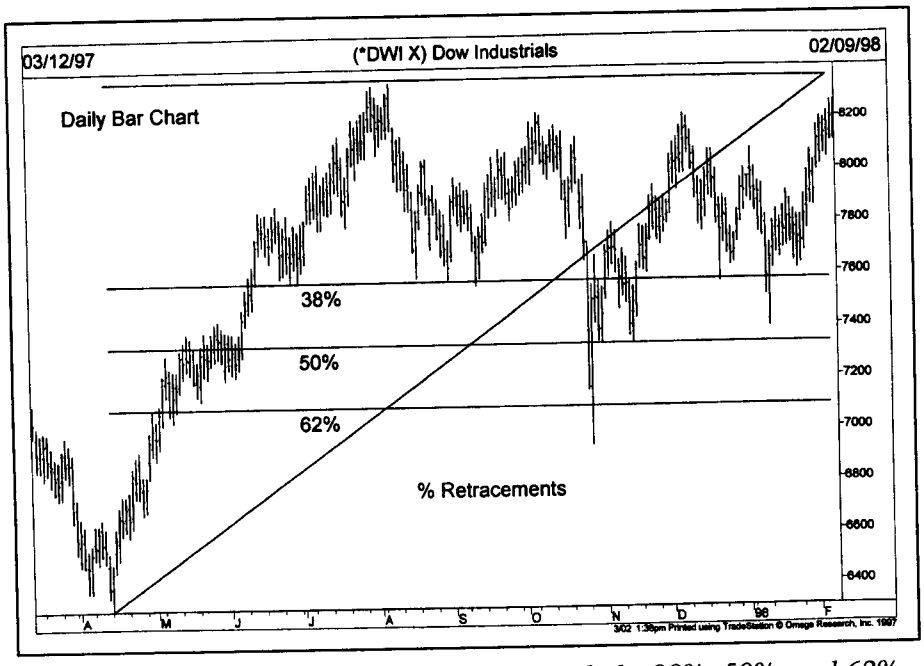

Figure 4.20b *The three horizontal lines mark the 38%, 50%, and 62% retracement levels measured from the April 1997 low to the August high. The first decline fell to the 38% line, the second decline to the 62% line, and the third near the 50% line. Most corrections will find support in the 38% to 50% retracement zones. The 38% and 62% lines are Fibonacci retracements and are popular with chartists.*

Students of W. D. Gann are aware that he broke down the trend structure into eighths—$^1/_8$, $^2/_8$, $^3/_8$, $^4/_8$, $^5/_8$, $^6/_8$, $^7/_8$, $^8/_8$. However, even Gann attached special importance to the $^3/_8$ (38%), $^4/_8$ (50%), and $^5/_8$ (62%) retracement numbers and also felt it was important to divide the trend into thirds—$^1/_3$ (33%) and $^2/_3$ (66%).

SPEED RESISTANCE LINES

Speaking of thirds, let's touch on another technique that combines the trendline with percentage retracements—*speedlines*. This technique, developed by Edson Gould, is actually an adaptation

of the idea of dividing the trend into thirds. The main difference from the percentage retracement concept is that the speed resistance lines (or speedlines) measure the rate of ascent or descent of a trend (in other words, its speed).

To construct a bullish *speedline,* find the highest point in the current uptrend. (See Figure 4.21a.) From that high point on the chart, a vertical line is drawn toward the bottom of the chart to where the trend began. That vertical line is then divided into thirds. A trendline is then drawn from the beginning of the trend through the two points marked off on the vertical line, representing the one-third and two-thirds points. In a downtrend, just reverse the process. Measure the vertical distance from the low point in the downtrend to the beginning of the trend, and draw two lines from the beginning of the trend through the one-third and two-thirds points on the vertical line. (See Figures 4.21a and b.)

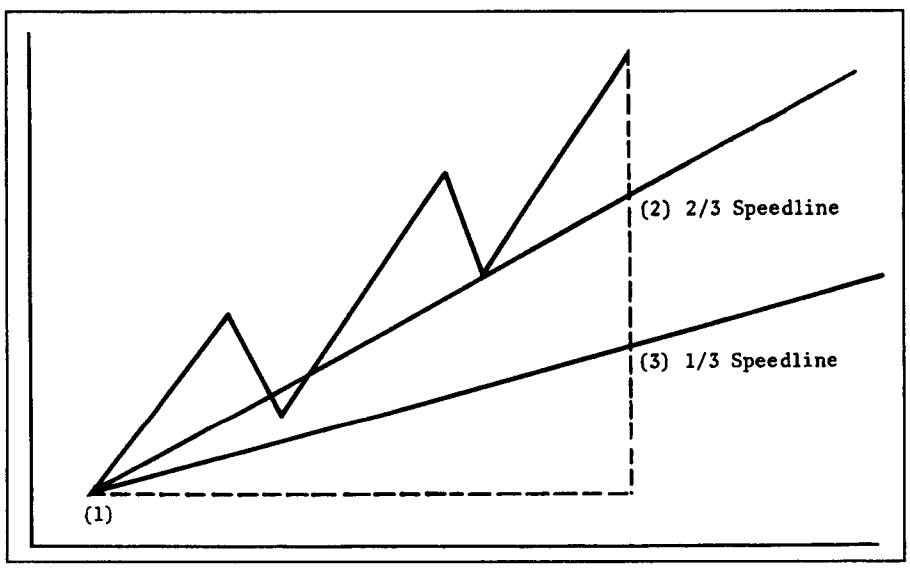

Figure 4.21a *Examples of speed resistance lines in an uptrend. The vertical distance from the peak to the beginning of the trend is divided into thirds. Two trendlines are then drawn from point 1 through points 2 and 3. The upper line is the $^2/_3$ speedline and the lower, the $^1/_3$. The lines should act as support during market corrections. When they're broken, they revert to resistance lines on bounces. Sometimes these speedlines intersect price action.*

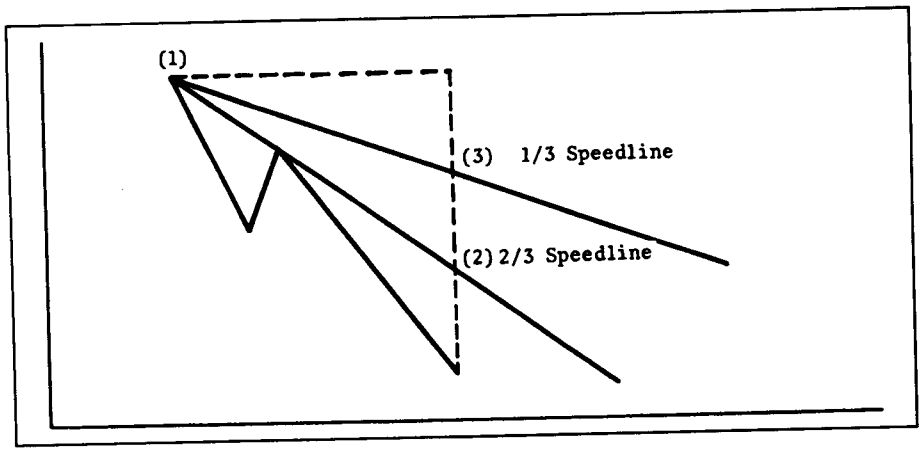

Figure 4.21b *Speedlines in a downtrend.*

Each time a new high is set in an uptrend or a new low in a downtrend, a new set of lines must be drawn (because there is now a new high or low point). Because the *speedlines* are drawn from the beginning of the trend to the one-third and two-thirds points, those trendlines may sometimes move through some of the price action. This is one case where trendlines are not drawn under lows or over highs, but actually through the price action.

If an uptrend is in the process of correcting itself, the downside correction will usually stop at the higher speedline (the $^2/_3$ speedline). If not, prices will drop to the lower speedline (the $^1/_3$ speedline). If the lower line is also broken, prices will probably continue all the way to the beginning of the prior trend. In a downtrend, the breaking of the lower line indicates a probable rally to the higher line. If that is broken, a rally to the top of the prior trend would be indicated.

As with all trendlines, speedlines reverse roles once they are broken. Therefore, during the correction of an uptrend, if the upper line ($^2/_3$ line) is broken and prices fall to the $^1/_3$ line and rally from there, that upper line becomes a resistance barrier. Only when that upper line is broken would a signal be given that the old highs will probably be challenged. The same principle holds true in downtrends.

GANN AND FIBONACCI FAN LINES

Charting software also allows the drawing of *Gann* and *Fibonacci* fan lines. *Fibonacci* fan lines are drawn in the same fashion as the speedline. Except that Fibonacci lines are drawn at 38% and 62% angles. (We'll explain where those 38% and 62% numbers come from in Chapter 13, "Elliott Wave Theory.") *Gann* lines (named after the legendary commodity trader, W.D. Gann) are trendlines drawn from prominent tops or bottoms at specific geometric angles. The most important Gann line is drawn at a 45 degree angle from a peak or trough. Steeper Gann lines can be drawn during an uptrend at $63^3/_4$ degree and 75 degree angles. Flatter Gann lines can be drawn at $26^1/_4$ and 15 degree lines. It's possible to draw as many as nine different Gann lines.

Gann and Fibonacci lines are used in the same way as speedlines. They are supposed to provide support during downward corrections. When one line is broken, prices will usually fall to the next lower line. Gann lines are somewhat controversial. Even if one of them works, you can't be sure in advance which one it will be. Some chartists question the validity of drawing geometric trendlines at all.

INTERNAL TRENDLINES

These are variations of the trendline that don't rely on extreme highs or lows. Instead, *internal* trendlines are drawn through the price action and connect as many internal peaks or troughs as possible. Some chartists develop a good eye for this type of trendline and find them useful. The problem with internal trendlines is that their drawing is very subjective; whereas the rules for drawing of more traditional trendlines along the extreme highs and lows are more exact. (See Figure 4.21c.)

REVERSAL DAYS

Another important building block is the *reversal day.* This particular chart formation goes by many names—the top reversal day,

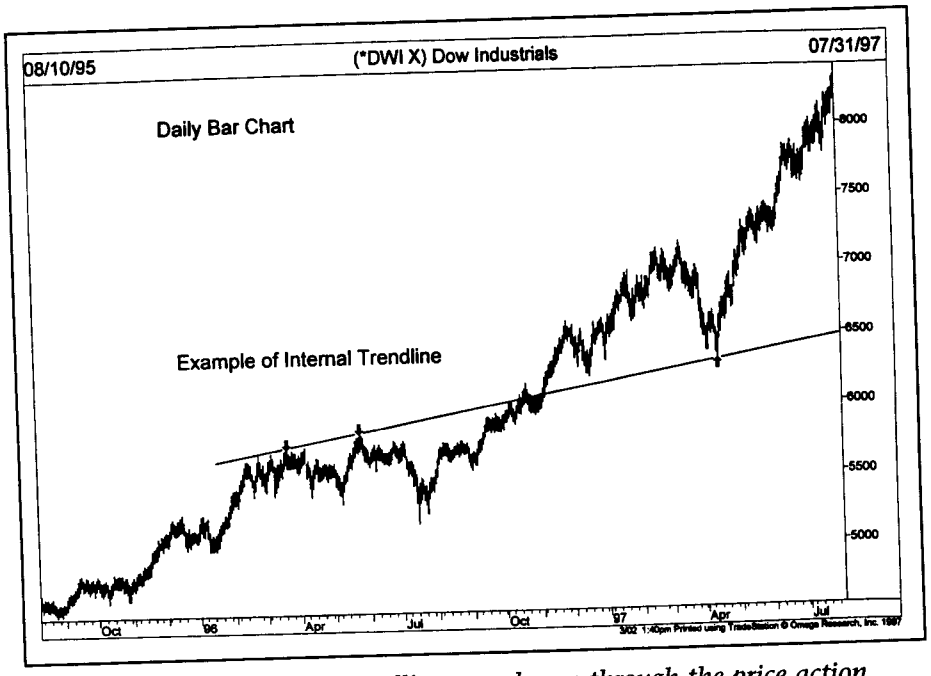

Figure 4.21c *Internal trendlines are drawn through the price action connecting as many highs and lows as possible. This internal trendline drawn along the early 1996 highs provided support a year later during the spring of 1997.*

the bottom reversal day, the *buying* or *selling climax,* and the key reversal day. By itself, this formation is not of major importance. But, taken in the context of other technical information, it can sometimes be significant. Let's first define what a reversal day is.

A *reversal day* takes place either at a top or a bottom. The generally accepted definition of a *top reversal day* is the setting of a new high in an uptrend, followed by a lower close on the same day. In other words, prices set a new high for a given upmove at some point during the day (usually at or near the opening) then weaken and actually close lower than the previous day's closing. A *bottom reversal day* would be a new low during the day followed by a higher close.

The wider the range for the day and the heavier the volume, the more significant is the signal for a possible near term

trend reversal. Figures 4.22a-b show what both would look like on a bar chart. Note the heavier volume on the reversal day. Also notice that both the high and low on the reversal day exceed the range of the previous day, forming an *outside day.* While an outside day is not a requirement for a reversal day, it does carry more significance. (See Figure 4.22c.)

The bottom reversal day is sometimes referred to as a *selling climax.* This is usually a dramatic turnaround at the bottom of a down move where all the discouraged longs have finally been forced out of the market on heavy volume. The subsequent absence of selling pressure creates a vacuum over the market, which prices quickly rally to fill. The selling climax is one of the more dramatic examples of the reversal day and, while it may not mark the final bottom of a falling market, it usually signals that a significant low has been seen.

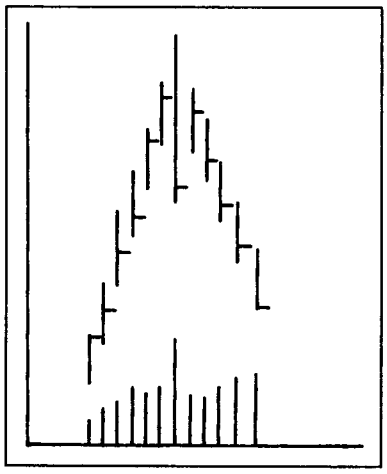

Figure 4.22a *Example of a top reversal day. The heavier the volume on the reversal day and the wider the range, the more important it becomes.*

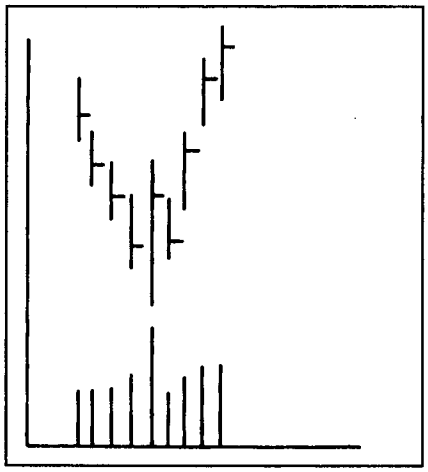

Figure 4.22b *Example of a bottom reversal day. If volume is especially heavy, bottom reversals are often referred to as "selling climaxes."*

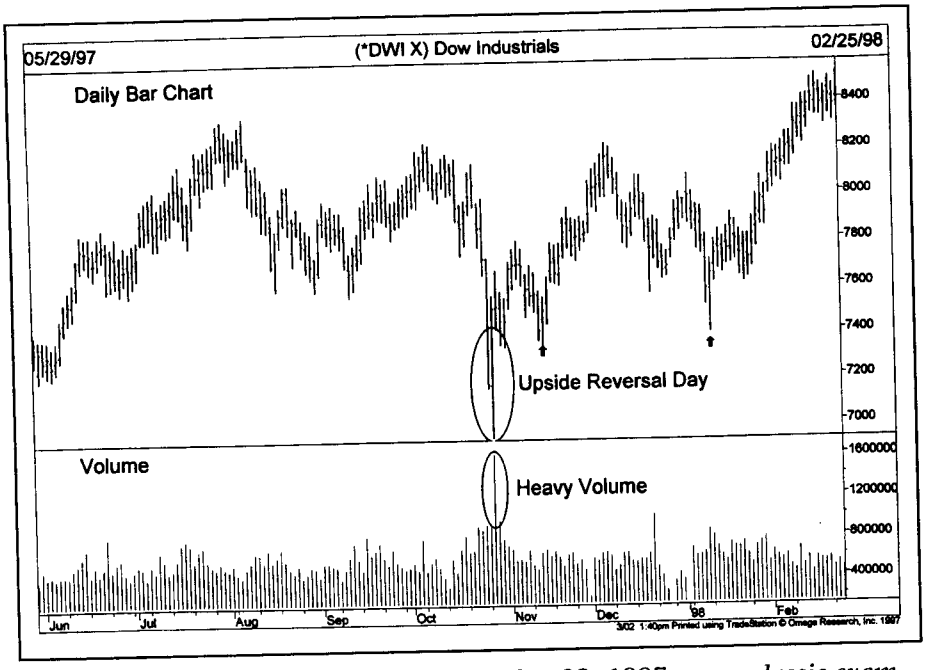

Figure 4.22c *The chart action of October 28, 1997 was a classic example of an upside reversal day or a "selling climax." Prices opened sharply lower and closed sharply higher. The unusually heavy volume bar for that day added to its importance. Two less dramatic upside reversal days (see arrows) also marked price bottoms.*

Weekly and Monthly Reversals

This type of reversal pattern shows up on weekly and monthly bar charts, and with much greater significance. On a weekly chart, each bar represents the entire week's range with the close registered on Friday. An *upside weekly reversal,* therefore, would occur when the market trades lower during the week, makes a new low for the move, but on Friday closes above the previous Friday's close.

Weekly reversals are much more significant than daily reversals for obvious reasons and are watched closely by chartists as signaling important turning points. By the same token, monthly reversals are even more important.

PRICE GAPS

Price *gaps* are simply areas on the bar chart where no trading has taken place. In an uptrend, for example, prices open above the highest price of the previous day, leaving a gap or open space on the chart that is not filled during the day. In a downtrend, the day's highest price is below the previous day's low. Upside gaps are signs of market strength, while downside gaps are usually signs of weakness. Gaps can appear on long term weekly and monthly charts and, when they do, are usually very significant. But they are more commonly seen on daily bar charts.

Several myths exist concerning the interpretation of gaps. One of the maxims often heard is that "gaps are always filled." This is simply not true. Some should be filled and others shouldn't. We'll also see that gaps have different forecasting implications depending on which types they are and where they occur.

Three Types of Gaps

There are three general types of gaps—the *breakaway, runaway (or measuring),* and *exhaustion gaps.*

The Breakaway Gap. The *breakaway gap* usually occurs at the completion of an important price pattern, and usually signals the beginning of a significant market move. After a market has completed a major basing pattern, the breaking of resistance often occurs on a breakaway gap. Major breakouts from topping or basing areas are breeding grounds for this type of gap. The breaking of a major trendline, signaling a reversal of trend, might also see a breakaway gap.

Breakaway gaps usually occur on heavy volume. More often than not, breakaway gaps are not filled. Prices may return to the upper end of the gap (in the case of a bullish breakout), and may even close a portion of the gap, but some portion of the gap is often left unfilled. As a rule, the heavier the volume after such a gap appears, the less likely it is to be filled. Upside gaps usually act as support areas on subsequent market corrections. It's important that prices not fall below gaps during an uptrend. In all cases a close below an upward gap is a sign of weakness. (See Figures 4.23a and b.)

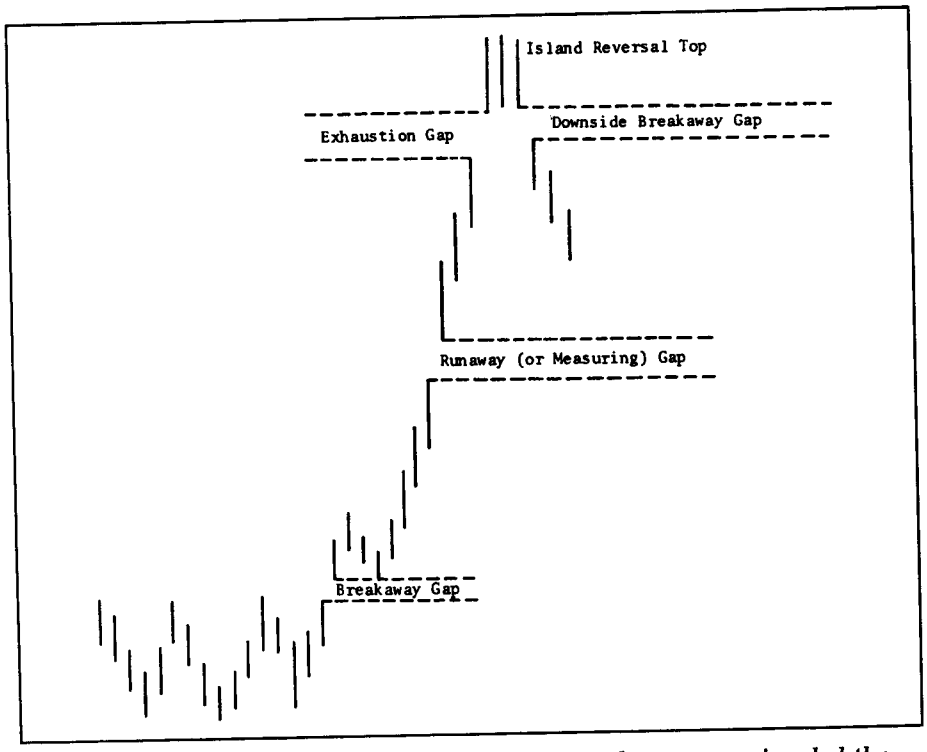

Figure 4.23a *The three types of gaps. The breakaway gap signaled the completion of the basing pattern. The runaway gap occurred at about the midway point (which is why it is also called the measuring gap). An exhaustion gap to the upside, followed within a week by a breakaway gap to the downside, left an island reversal top. Notice that the breakaway and runaway gaps were not filled on the way up, which is often the case.*

The Runaway or Measuring Gap. After the move has been underway for awhile, somewhere around the middle of the move, prices will leap forward to form a second type of gap (or a series of gaps) called the *runaway gap*. This type of gap reveals a situation where the market is moving effortlessly on moderate volume. In an uptrend, it's a sign of market strength; in a downtrend, a sign of weakness. Here again, runaway gaps act as support under the market on subsequent corrections and are often not filled. As in the case of the breakaway, a close below the runaway gap is a negative sign in an uptrend.

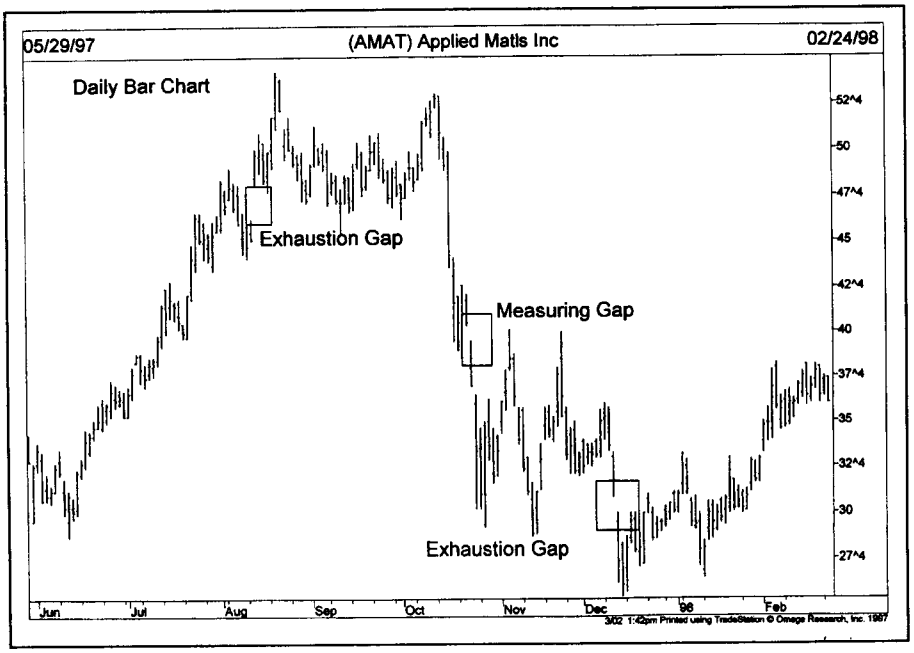

Figure 4.23b *The first box shows an "exhaustion" gap near the end of the rally. Prices falling below that gap signaled a top. The second box is a "measuring" gap about halfway through the downtrend. The third box is another "exhaustion" gap at the bottom. The move back above that gap signaled higher prices.*

This variety of gap is also called a *measuring gap* because it usually occurs at about the halfway point in a trend. By measuring the distance the trend has already traveled, from the original trend signal or breakout, an estimate of the probable extent of the remaining move can be determined by doubling the amount already achieved.

The Exhaustion Gap. The final type of gap appears near the end of a market move. After all objectives have been achieved and the other two types of gaps (breakaway and runaway) have been identified, the analyst should begin to expect the *exhaustion gap*. Near the end of an uptrend, prices leap forward in a last gasp, so to speak. However, that upward leap quickly fades and prices turn lower within a couple of days or within a week. When prices close

under that last gap, it is usually a dead giveaway that the exhaustion gap has made its appearance. This is a classic example where falling below a gap in an uptrend has very bearish implications.

The Island Reversal

This takes us to *the island reversal pattern.* Sometimes after the upward exhaustion gap has formed, prices will trade in a narrow range for a couple of days or a couple of weeks before gapping to the downside. Such a situation leaves the few days of price action looking like an "island" surrounded by space or water. The exhaustion gap to the upside followed by a breakaway gap to the downside completes the island reversal pattern and usually indicates a trend reversal of some magnitude. Of course, the major significance of the reversal depends on where prices are in the general trend structure. (See Figure 4.23c.)

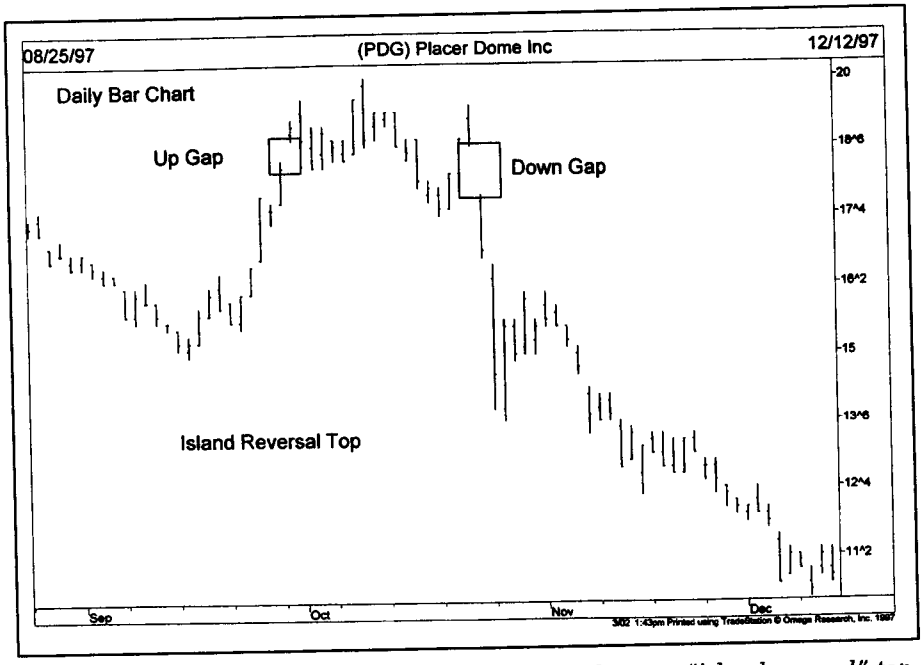

Figure 4.23c *The two gaps on this daily chart form an "island reversal" top. The first box shows an up gap after a rally. The second box shows a down gap three weeks later. That combination of gaps usually signals an important top.*

CONCLUSION

This chapter introduced introductory technical tools that I consider to be the building blocks of chart analysis—support and resistance, trendlines and channels, percentage retracements, speed resistance lines, reversal days, and gaps. Every technical approach covered in later chapters uses these concepts and tools in one form or another. Armed with a better understanding of these concepts, we're now ready to begin a study of price patterns.

Major Reversal Patterns

INTRODUCTION

So far we've touched on Dow Theory, which is the basis of most trend following work being used today. We've examined the basic concepts of trend, such as support, resistance, and trendlines. And we've introduced volume and open interest. We're now ready to take the next step, which is a study of chart patterns. You'll quickly see that these patterns build on the previous concepts.

In Chapter 4, the definition of a trend was given as a series of ascending or descending peaks and troughs. As long as they were ascending, the trend was up; if they were descending, the trend was down. It was stressed, however, that markets also move sideways for a certain portion of the time. It is these periods of sideways market movement that will concern us most in these next two chapters.

It would be a mistake to assume that most changes in trend are very abrupt affairs. The fact is that important changes in trend usually require a period of transition. The problem is that

these periods of transition do not always signal a trend reversal. Sometimes these sideways periods just indicate a pause or consolidation in the existing trend after which the original trend is resumed.

PRICE PATTERNS

The study of these transition periods and their forecasting implications leads us to the question of price patterns. First of all, what are price patterns? Price patterns are pictures or formations, which appear on price charts of stocks or commodities, that can be classified into different categories, and that have predictive value.

TWO TYPES OF PATTERNS: REVERSAL AND CONTINUATION

There are two major categories of price patterns—reversal and continuation. As these names imply, reversal patterns indicate that an important reversal in trend is taking place. The continuation patterns, on the other hand, suggest that the market is only pausing for awhile, possibly to correct a near term overbought or oversold condition, after which the existing trend will be resumed. The trick is to distinguish between the two types of patterns as early as possible during the formation of the pattern.

In this chapter, we'll be examining the five most commonly used major reversal patterns: the head and shoulders, triple tops and bottoms, double tops and bottoms, spike (or V) tops and bottoms, and the rounding (or saucer) pattern. We will examine the price formation itself, how it is formed on the chart, and how it can be identified. We will then look at the other important considerations—the accompanying *volume pattern* and *measuring implications*.

Volume plays an important confirming role in all of these price patterns. In times of doubt (and there are lots of those), a study of the volume pattern accompanying the price data can be the deciding factor as to whether or not the pattern can be trusted.

Most price patterns also have certain *measuring techniques* that help the analyst to determine minimum price objectives. While these objectives are only an approximation of the size of the subsequent move, they are helpful in assisting the trader to determine his or her reward to risk ratio.

In Chapter 5, we'll look at a second category of patterns—the continuation variety. There we will examine triangles, flags, pennants, wedges, and rectangles. These patterns usually reflect pauses in the existing trend rather than trend reversals, and are usually classified as intermediate and minor as opposed to major.

Preliminary Points Common to All Reversal Patterns

Before beginning our discussion of the individual major reversal patterns, there are a few preliminary points to be considered that are common to all of these reversal patterns.

1. A prerequisite for any reversal pattern is the existence of a prior trend.
2. The first signal of an impending trend reversal is often the breaking of an important trendline.
3. The larger the pattern, the greater the subsequent move.
4. Topping patterns are usually shorter in duration and more volatile than bottoms.
5. Bottoms usually have smaller price ranges and take longer to build.
6. Volume is usually more important on the upside.

The Need for a Prior Trend. The existence of a prior major trend is an important prerequisite for any reversal pattern. A market must obviously have something to reverse. A formation occasionally appears on the charts, resembling one of the reversal patterns. If that pattern, however, has not been preceded by a trend, there is nothing to reverse and the pattern is suspect. Knowing where certain patterns are most apt to occur in the trend structure is one of the key elements in pattern recognition.

A corollary to this point of having a prior trend to reverse is the matter of measuring implications. It was stated earlier that most of the measuring techniques give only *minimum* price objectives. The *maximum* objective would be the total extent of the prior move. If a major bull market has occurred and a major topping pattern is being formed, the maximum implication for the potential move to the downside would be a 100% retracement of the bull market, or the point at which it all began.

The Breaking of Important Trendlines. The first sign of an impending trend reversal is often the breaking of an important trendline. Remember, however, that the violation of a major trendline does not necessarily signal a trend reversal. What is being signaled is a change in trend. The breaking of a major up trendline might signal the beginning of a sideways price pattern, which later would be identified as either the reversal or consolidation type. Sometimes the breaking of the major trendline coincides with the completion of the price pattern.

The Larger the Pattern, the Greater the Potential. When we use the term "larger," we are referring to the height and the width of the price pattern. The height measures the volatility of the pattern. The width is the amount of time required to build and complete the pattern. The greater the size of the pattern—that is, the wider the price swings within the pattern (the volatility) and the longer it takes to build—the more important the pattern becomes and the greater the potential for the ensuing price move.

Virtually all of the measuring techniques in these two chapters are based on the *height* of the pattern. This is the method applied primarily to bar charts, which use a *vertical* measuring criteria. The practice of measuring the *horizontal* width of a price pattern usually is reserved for point and figure charting. That method of charting uses a device known as the *count,* which assumes a close relationship between the width of a top or bottom and the subsequent price target.

Differences Between Tops and Bottoms. Topping patterns are usually shorter in duration and are more volatile than bottoms. Price swings within the tops are wider and more violent. Tops usually take less time to form. Bottoms usually have smaller price ranges,

but take longer to build. For this reason it is usually easier and less costly to identify and trade bottoms than to catch market tops. One consoling factor, which makes the more treacherous topping patterns worthwhile, is that *prices tend to decline faster than they go up*. Therefore, the trader can usually make more money a lot faster by catching the short side of a bear market than by trading the long side of a bull market. Everything in life is a tradeoff between reward and risk. The greater risks are compensated for by greater rewards and vice versa. Topping patterns are harder to catch, but are worth the effort.

Volume is More Important on the Upside. Volume should generally increase in the direction of the market trend and is an important confirming factor in the completion of all price patterns. The completion of each pattern should be accompanied by a noticeable increase in volume. However, in the early stages of a trend reversal, *volume is not as important at market tops.* Markets have a way of "falling of their own weight" once a bear move gets underway. Chartists like to see an increase in trading activity as prices drop, but it is not critical. At bottoms, however, the volume pickup is absolutely essential. If the volume pattern does not show a significant increase during the upside price *breakout,* the entire price pattern should be questioned. We will be taking a more in-depth look at volume in Chapter 7.

THE HEAD AND SHOULDERS REVERSAL PATTERN

Let's take a close look now at what is probably the best known and most reliable of all major reversal patterns—*the head and shoulders reversal.* We'll spend more time on this pattern because it is important and also to explain all the nuances involved. Most of the other reversal patterns are just variations of the head and shoulders and will not require as extensive a treatment.

This major reversal pattern, like all of the others, is just a further refinement of the concepts of trend covered in Chapter 4. Picture a situation in a major uptrend, where a series of ascending peaks and troughs gradually begin to lose momentum. The

uptrend then levels off for awhile. During this time the forces of supply and demand are in relative balance. Once this distribution phase has been completed, support levels along the bottom of the horizontal trading range are broken and a new downtrend has been established. That new downtrend now has descending peaks and troughs.

Let's see how this scenario would look on a *head and shoulders* top. (See Figures 5.1a and b.) At point A, the uptrend is proceeding as expected with no signs of a top. Volume expands on the price move into new highs, which is normal. The corrective

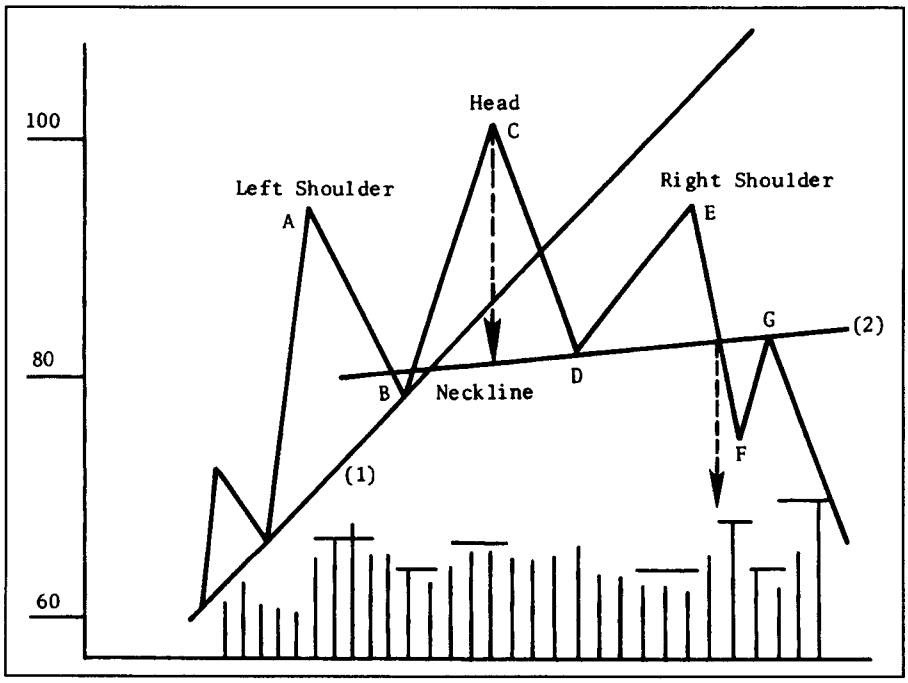

Figure 5.1a *Example of a head and shoulders top. The left and right shoulders (A and E) are at about the same height. The head (C) is higher than either shoulder. Notice the lighter volume on each peak. The pattern is completed on a close under the neckline (line 2). The minimum objective is the vertical distance from the head to the neckline projected downward from the breaking of the neckline. A return move will often occur back to the neckline, which should not recross the neckline once it has been broken.*

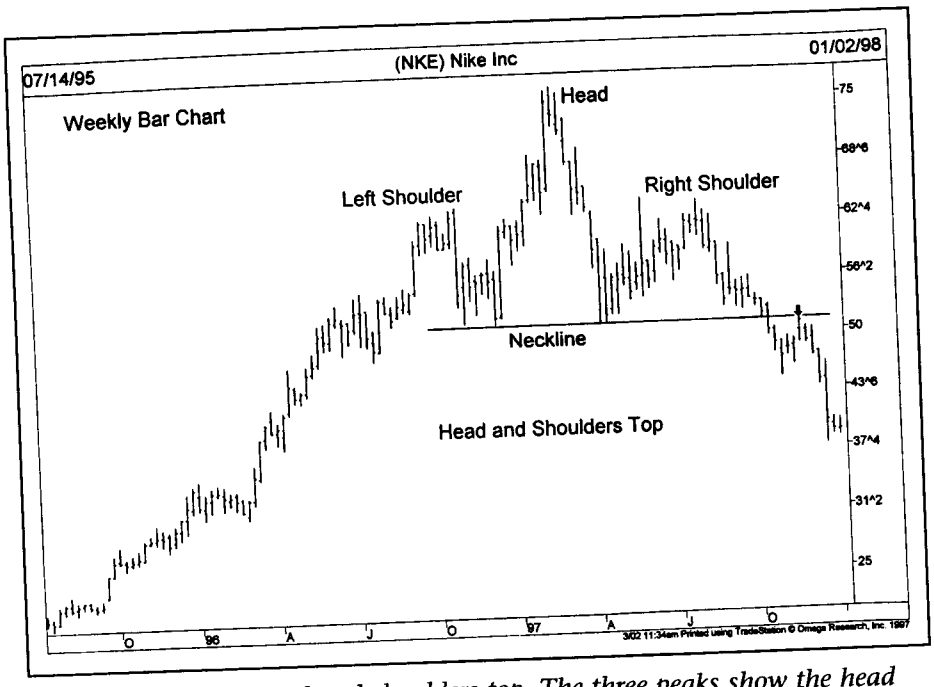

Figure 5.1b *A head and shoulders top. The three peaks show the head higher than either shoulder. The return move (see arrow) back to the neckline occurred on schedule.*

dip to point B is on lighter volume, which is also to be expected. At point C, however, the alert chartist might notice that the volume on the upside breakout through point A is a bit lighter than on the previous rally. This change is not in itself of major importance, but a little yellow caution light goes on in the back of the analyst's head.

Prices then begin to decline to point D and something even more disturbing happens. The decline carries below the top of the previous peak at point A. Remember that, in an uptrend, a penetrated peak should function as support on subsequent corrections. The decline well under point A, almost to the previous reaction low at point B, is another warning that something may be going wrong with the uptrend.

The market rallies again to point E, this time on even lighter volume, and isn't able to reach the top of the previous

peak at point C. (That last rally at point E will often retrace one-half to two-thirds of the decline from points C to D.) To continue an uptrend, each high point must exceed the high point of the rally preceding it. The failure of the rally at point E to reach the previous peak at point C fulfills half of the requirement for a new downtrend—namely, descending peaks.

By this time, the major up trendline (line 1) has already been broken, usually at point D, constituting another danger signal. But, despite all of these warnings, all that we know at this point is that the trend has shifted from up to sideways. This might be sufficient cause to liquidate long positions, but not necessarily enough to justify new short sales.

The Breaking of the Neckline Completes the Pattern

By this time, a flatter trendline can be drawn under the last two reaction lows (points B and D), which is called a *neckline* (see line 2). This line generally has a slight upward slope at tops (although it's sometimes horizontal and, less often, tilts downward). *The deciding factor in the resolution of the head and shoulders top is a decisive closing violation of that neckline.* The market has now violated the trendline along the bottom of points B and D, has broken under support at point D, and has completed the requirement for a new downtrend—descending peaks and troughs. The new downtrend is now identified by the declining highs and lows at points C, D, E, and F. Volume should increase on the breaking of the neckline. A sharp increase in downside volume, however, is not critically important in the initial stages of a market top.

The Return Move

Usually a *return move* develops which is a bounce back to the bottom of the neckline or to the previous reaction low at point D (see point G), both of which have now become overhead resistance. The return move does not always occur or is sometimes only a very minor bounce. Volume may help determine the size of the bounce. If the initial breaking of the neckline is on very heavy trading, the odds for a return move are diminished because the

increased activity reflects greater downside pressure. Lighter volume on the initial break of the neckline increases the likelihood of a return move. That bounce, however, should be on light volume and the subsequent resumption of the new downtrend should be accompanied by noticeably heavier trading activity.

Summary

Let's review the basic ingredients for a head and shoulders top.

1. A prior uptrend.
2. A left shoulder on heavier volume (point A) followed by a corrective dip to point B.
3. A rally into new highs but on lighter volume (point C).
4. A decline that moves below the previous peak (at A) and approaches the previous reaction low (point D).
5. A third rally (point E) on noticeably light volume that fails to reach the top of the head (at point C).
6. A close below the neckline.
7. A return move back to the neckline (point G) followed by new lows.

What has become evident is three well defined peaks. The middle peak (the head) is slightly higher than either of the two shoulders (points A and E). The pattern, however, is not complete until the neckline is decisively broken on a closing basis. Here again, the 1-3% penetration criterion (or some variation thereof) or the requirement of two successive closes below the neckline (the two day rule) can be used for added confirmation. Until that downside violation takes place, however, there is always the possibility that the pattern is not really a head and shoulders top and that the uptrend may resume at some point.

THE IMPORTANCE OF VOLUME

The accompanying volume pattern plays an important role in the development of the head and shoulders top as it does in all price

patterns. As a general rule, the second peak (the head) should take place on lighter volume than the left shoulder. This is not a requirement, but a strong tendency and an early warning of diminishing buying pressure. The most important volume signal takes place during the third peak (the right shoulder). Volume should be noticeably lighter than on the previous two peaks. Volume should then expand on the breaking of the neckline, decline during the return move, and then expand again once the return move is over.

As mentioned earlier, volume is less critical during the completion of market tops. But, at some point, volume should begin to increase if the new downtrend is to be continued. Volume plays a much more decisive role at market bottoms, a subject to be discussed shortly. Before doing so, however, let's discuss the measuring implications of the head and shoulders pattern.

FINDING A PRICE OBJECTIVE

The method of arriving at a price objective is based on the *height* of the pattern. Take the vertical distance from the head (point C) to the neckline. Then project that distance from the point where the neckline is broken. Assume, for example, that the top of the head is at 100 and the neckline is at 80. The vertical distance, therefore, would be the difference, which is 20. That 20 points would be measured downward from the level at which the neckline is broken. If the neckline in Figure 5.1a is at 82 when broken, a downside objective would be projected to the 62 level (82 – 20 = 62).

Another technique that accomplishes about the same task, but is a bit easier, is to simply measure the length of the first wave of the decline (points C to D) and then double it. In either case, the greater the height or volatility of the pattern, the greater the objective. Chapter 4 stated that the measurement taken from a trendline penetration was similar to that used in the head and shoulders pattern. You should be able to see that now. Prices travel roughly the same distance below the broken neckline as they do above it. You'll see throughout our entire study of price patterns that *most price targets on bar charts are based on the height or*

volatility of the various patterns. The theme of measuring the height of the pattern and then projecting that distance from a breakout point will be constantly repeated.

It's important to remember that the objective arrived at is only a minimum target. Prices will often move well beyond the objective. Having a minimum target to work with, however, is very helpful in determining beforehand whether there is enough potential in a market move to warrant taking a position. If the market exceeds the price objective, that's just icing on the cake. The *maximum* objective is the size of the prior move. If the previous bull market went from 30 to 100, then the maximum downside objective from a topping pattern would be a complete retracement of the entire upmove all the way down to 30. Reversal patterns can only be expected to reverse or retrace what has gone before them.

Adjusting Price Objectives

A number of other factors should be considered while trying to arrive at a price objective. The measuring techniques from price patterns, such as the one just mentioned for the head and shoulders top, are only the first step. There are other technical factors to take into consideration. For example, where are the prominent support levels left by the reaction lows during the previous bull move? Bear markets often pause at these levels. What about percentage retracements? The *maximum objective* would be a 100% retracement of the previous bull market. But where are the 50% and 66% retracement levels? Those levels often provide significant support under the market. What about any prominent gaps underneath? They often function as support areas. Are there any long term trendlines visible below the market?

The technician must consider other technical data in trying to pinpoint price targets taken from price patterns. If a downside price measurement, for example, projects a target to 30, and there is a prominent support level at 32, then the chartist would be wise to adjust the downside measurement to 32 instead of 30. As a general rule, when a slight discrepancy exists between a projected price target and a clearcut support or resistance level, it's

usually safe to adjust the price target to that support or resistance level. It is often necessary to adjust the measured targets from price patterns to take into account additional technical information. The analyst has many different tools at his or her disposal. The most skillful technical analysts are those who learn to blend all of those tools together properly.

THE INVERSE HEAD AND SHOULDERS

The head and shoulders bottom, or the *inverse head and shoulders* as it is sometimes called, is pretty much a mirror image of the topping pattern. As Figure 5.2a shows, there are three distinct bot-

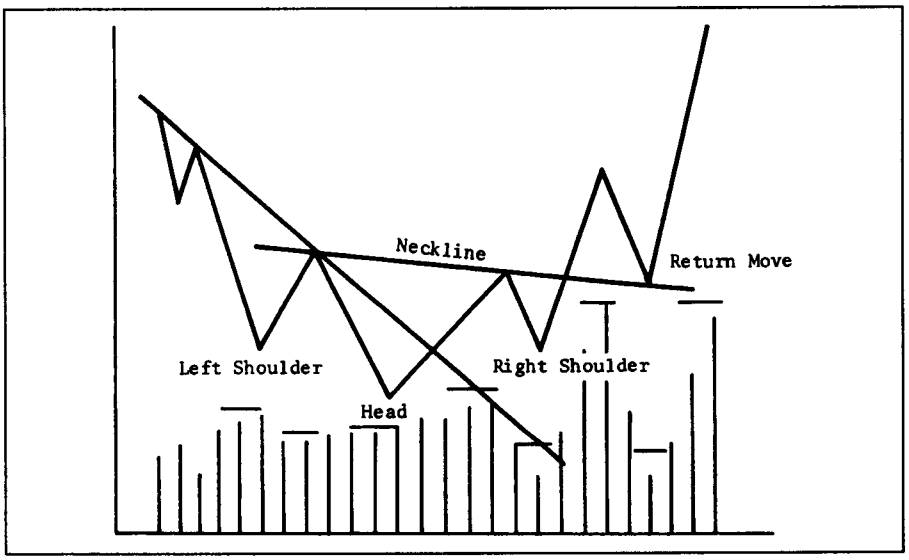

Figure 5.2a *Example of an inverse head and shoulders. The bottom version of this pattern is a mirror image of the top. The only significant difference is the volume pattern in the second half of the pattern. The rally from the head should see heavier volume, and the breaking of the neckline should see a burst of trading activity. The return move back to the neckline is more common at bottoms.*

toms with the head (middle trough) a bit lower than either of the two shoulders. A decisive close through the neckline is also necessary to complete the pattern, and the measuring technique is the same. One slight difference at the bottom is the greater tendency for the return move back to the neckline to occur after the bullish breakout. (See Figure 5.2b.)

The most important difference between the top and bottom patterns is the volume sequence. Volume plays a much more critical role in the identification and completion of a head and shoulders bottom. This point is generally true of all bottom patterns. It was stated earlier that markets have a tendency to "fall of their own weight." At bottoms, however, markets require a significant increase in buying pressure, reflected in greater volume, to launch a new bull market.

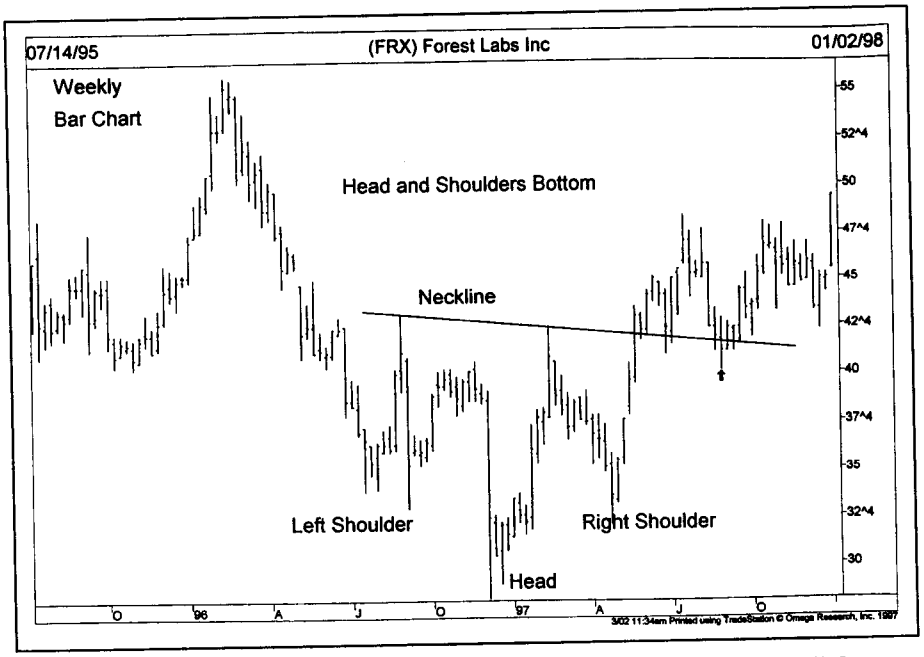

Figure 5.2b *A head and shoulders bottom. The neckline has a slight downward slant, which is normally the case. The pullback after the breakout (see arrow) nicked the neckline a bit, but then resumed the uptrend.*

A more technical way of looking at this difference is that a market can fall just from inertia. Lack of demand or buying interest on the part of traders is often enough to push a market lower; but a market does not go up on inertia. Prices only rise when demand exceeds supply and buyers are more aggressive than sellers.

The volume pattern at the bottom is very similar to that at the top for the first half of the pattern. That is, the volume at the head is a bit lighter than that at the left shoulder. The rally from the head, however, should begin to show not only an increase in trading activity, but the level of volume often exceeds that registered on the rally from the left shoulder. The dip to the right shoulder should be on very light volume. The critical point occurs at the rally through the neckline. This signal must be accompanied by a sharp burst of trading volume if the breakout is for real.

This point is where the bottom differs the most from the top. At the bottom, heavy volume is an absolutely essential ingredient in the completion of the basing pattern. The return move is more common at bottoms than at tops and should occur on light volume. Following that, the new uptrend should resume on heavier volume. The measuring technique is the same as at the top.

The Slope of the Neckline

The neckline at the top usually slopes slightly upward. Sometimes, however, it is horizontal. In either case, it doesn't make too much of a difference. Once in a while, however, a top neckline slopes downward. This slope is a sign of market weakness and is usually accompanied by a weak right shoulder. However, this is a mixed blessing. The analyst waiting for the breaking of the neckline to initiate a short position has to wait a bit longer, because the signal from the down sloping neckline occurs much later and only after much of the move has already taken place. For basing patterns, most necklines have a slight downward tilt. A rising neckline is a sign of greater market strength, but with the same drawback of giving a later signal.

COMPLEX HEAD AND SHOULDERS PATTERNS

A variation of the head and shoulders pattern sometimes occurs which is called the *complex head and shoulders pattern.* These are patterns where two heads may appear or a double left and right shoulder. These patterns are not that common, but have the same forecasting implications. A helpful hint in this regard is the strong tendency toward symmetry in the head and shoulders pattern. This means that a single left shoulder usually indicates a single right shoulder. A double left shoulder increases the odds of a double right shoulder.

Tactics

Market tactics play an important role in all trading. Not all technical traders like to wait for the breaking of the neckline before initiating a new position. As Figure 5.3 shows, more aggressive traders, believing that they have correctly identified a head and shoulders bottom, will begin to probe the long side during the formation of the right shoulder. Or they will buy the first technical signal that the decline into the right shoulder has ended.

Some will measure the distance of the rally from the bottom of the head (points C to D) and then buy a 50% or 66% retracement of that rally. Still others would draw a tight down trendline along the decline from points D to E and buy the first upside break of that trendline. Because these patterns are reasonably symmetrical, some will buy into the right shoulder as it approaches the same level as the bottom of the left shoulder. A lot of anticipatory buying takes place during the formation of the right shoulder. If the initial long probe proves to be profitable, additional positions can be added on the actual penetration of the neckline or on the return move back to the neckline after the breakout.

The Failed Head And Shoulders Pattern

Once prices have moved through the neckline and completed a head and shoulders pattern, *prices should not recross the neckline*

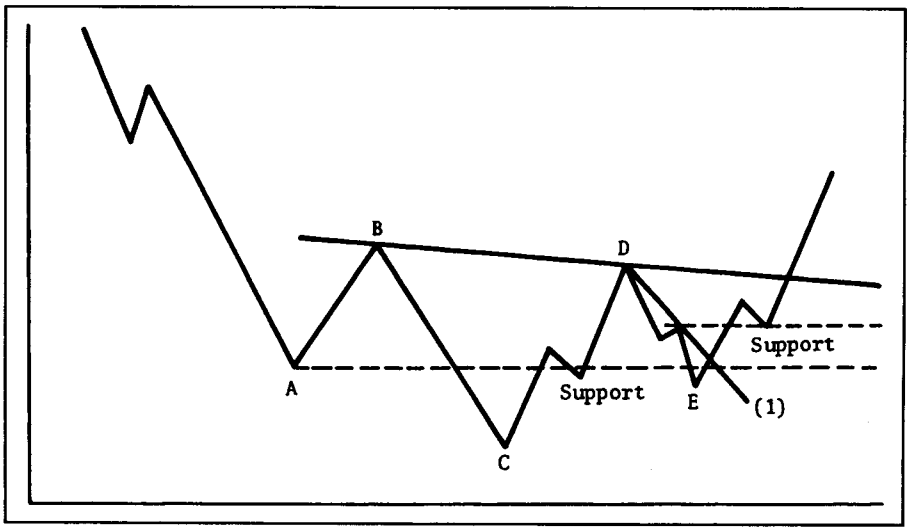

Figure 5.3 *Tactics for a head and shoulders bottom. Many technical traders will begin to initiate long positions while the right shoulder (E) is still being formed. One-half to two-thirds pullback of the rally from points C to D, a decline to the same level as the left shoulder at point A, or the breaking of a short term down trendline (line 1) all provide early opportunities for market entry. More positions can be added on the breaking of the neckline or the return move back to the neckline.*

again. At a top, once the neckline has been broken on the downside, any decisive close back above the neckline is a serious warning that the initial breakdown was probably a bad signal, and creates what is often called, for obvious reasons, *a failed head and shoulders.* This type of pattern starts out looking like a classic head and shoulders reversal, but at some point in its development (either prior to the breaking of the neckline or just after it), prices resume their original trend.

There are two important lessons here. The first is that none of these chart patterns are infallible. They work most of the time, but not always. The second lesson is that technical traders must always be on the alert for chart signs that their analysis is incorrect. One of the keys to survival in the financial markets is to keep trading losses small and to exit a losing trade as quickly as possible. One of the greatest advantages of chart analysis is its ability

to quickly alert the trader to the fact that he or she is on the wrong side of the market. The ability and willingness to quickly recognize trading errors and to take defensive action immediately are qualities not to be taken lightly in the financial markets.

The Head And Shoulders as a Consolidation Pattern

Before moving on to the next price pattern, there's one final point to be made on the head and shoulders. We started this discussion by listing it as the best known and most reliable of the major reversal patterns. You should be warned, however, that this formation can, on occasion, act as a consolidation rather than a reversal pattern. When this does happen, it's the exception rather than the rule. We'll talk more about this in Chapter 6, "Continuation Patterns."

TRIPLE TOPS AND BOTTOMS

Most of the points covered in the treatment of the head and shoulders pattern are also applicable to other types of reversal patterns. (See Figures 5.4a-c.) The *triple top* or *bottom,* which is much rarer in occurrence, is just a slight variation of that pattern. The main difference is that the three peaks or troughs in the *triple top* or *bottom* are at about the same level. (See Figure 5.4a.) Chartists often disagree as to whether a reversal pattern is a head and shoulders or a triple top. The argument is academic, because both patterns imply the exact same thing.

The volume tends to decline with each successive peak at the top and should increase at the breakdown point. The triple top is not complete until support levels along both of the intervening lows have been broken. Conversely, prices must close through the two intervening peaks at the bottom to complete a triple bottom. (As an alternate strategy, the breaking of the nearest peak or trough can also be used as a reversal signal.) Heavy upside volume on the completion of the bottom is also essential.

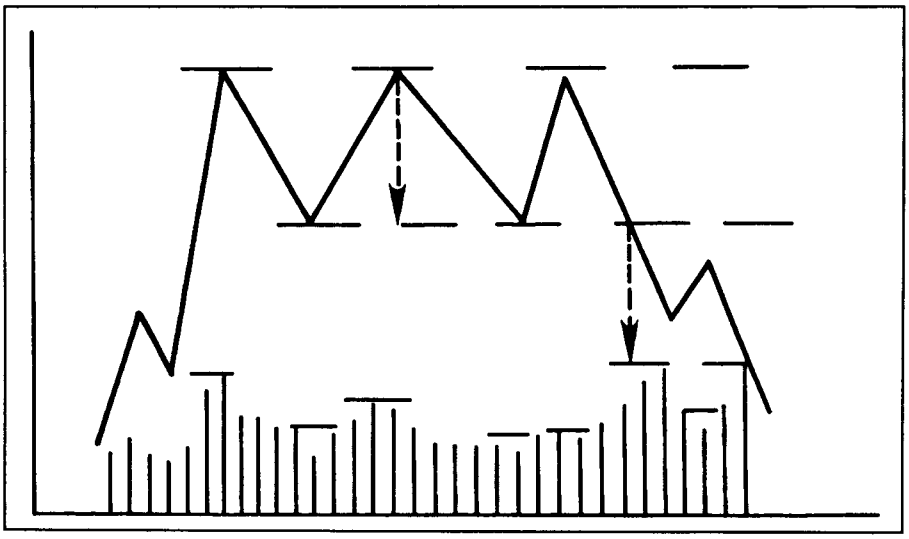

Figure 5.4a *A triple top. Similar to the head and shoulders except that all peaks are at the same level. Each rally peak should be on lighter volume. The pattern is complete when both troughs have been broken on heavier volume. The measuring technique is the height of the pattern projected downward from the breakdown point. Return moves back to the lower line are not unusual.*

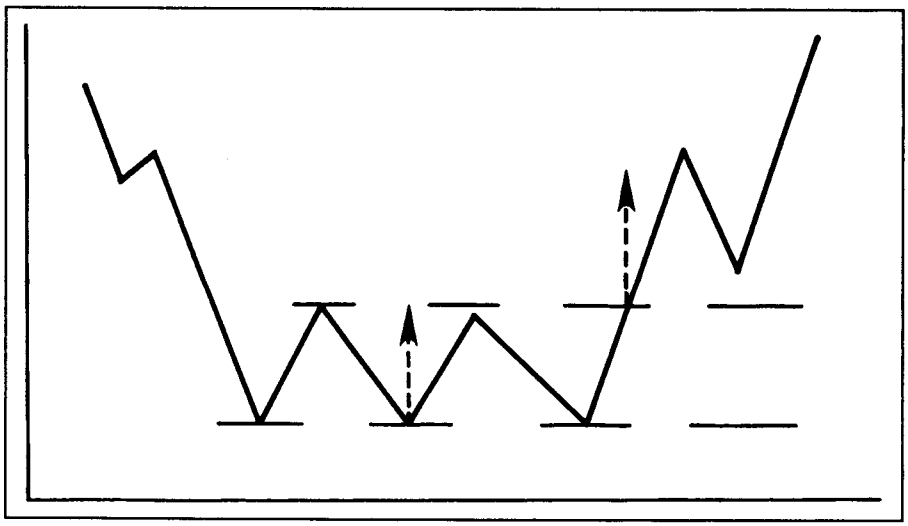

Figure 5.4b *A triple bottom. Similar to a head and shoulders bottom except that each low is at the same level. A mirror image of the triple top except that volume is more important on the upside breakout.*

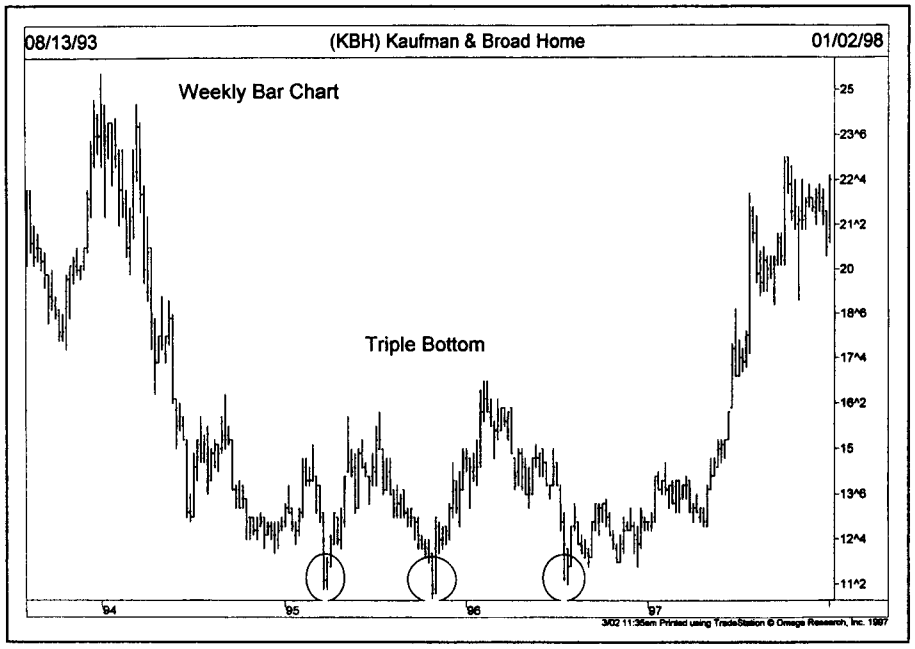

Figure 5.4c *A triple bottom reversal pattern. Prices found support just below 12 three times on this chart before launching a major advance. The bottom formation on this weekly chart lasted two full years, thereby giving it major significance.*

The measuring implication is also similar to the head and shoulders, and is based on the height of the pattern. Prices will usually move a minimum distance from the breakout point at least equal to the height of the pattern. Once the breakout occurs, a return move to the breakout point is not unusual. Because the triple top or bottom represents only a minor variation of the head and shoulders pattern, we won't say much more about it here.

DOUBLE TOPS AND BOTTOMS

A much more common reversal pattern is the *double top or bottom.* Next to the *head and shoulders,* it is the most frequently seen and the most easily recognized. (See Figures 5.5a-e.) Figures 5.5a and

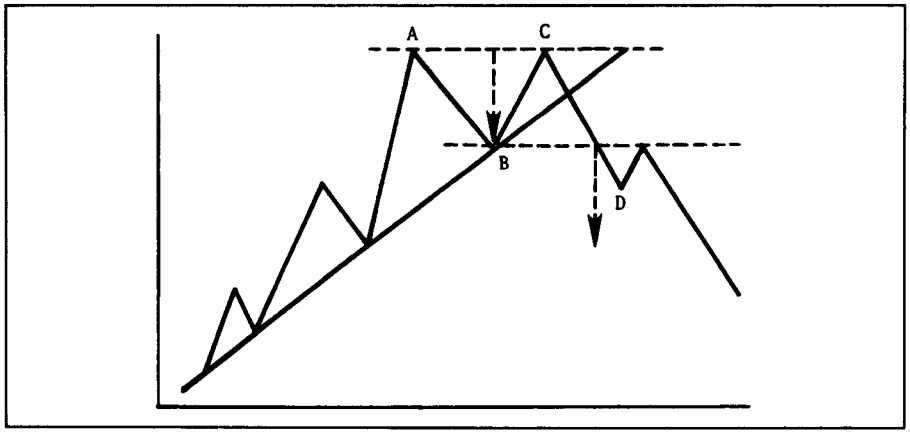

Figure 5.5a *Example of a double top. This pattern has two peaks (A and C) at about the same level. The pattern is complete when the middle trough at point B is broken on a closing basis. Volume is usually lighter on the second peak (C) and picks up on the breakdown (D). A return move back to the lower line is not unusual. The minimum measuring target is the height of the top projected downward from the breakdown point.*

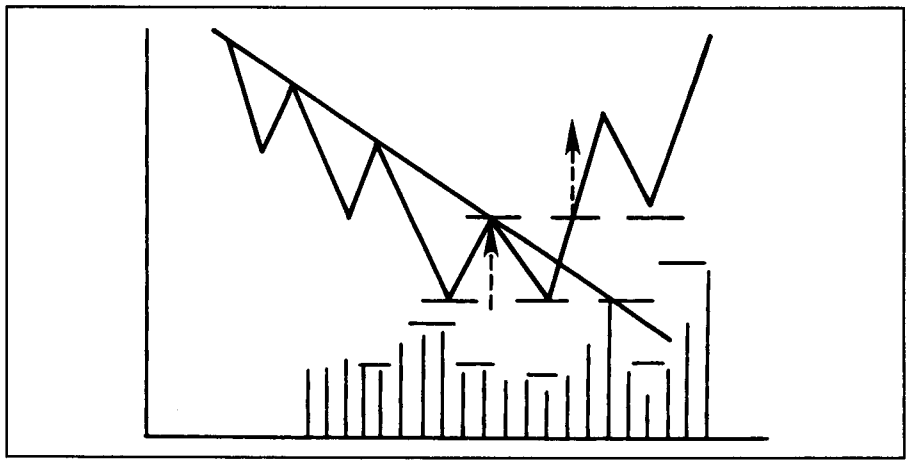

Figure 5.5b *Example of a double bottom. A mirror image of the double top. Volume is more important on the upside breakout. Return moves back to the breakout point are more common at bottoms.*

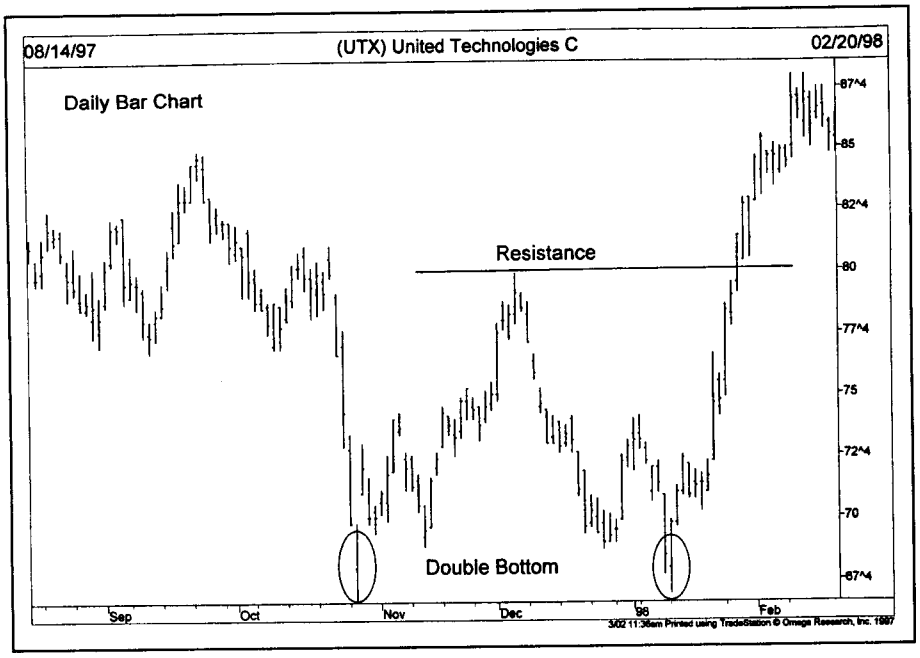

Figure 5.5c *Example of a double bottom. This stock bounced sharply off the 68 level twice over a span of three months. Note that the second bottom was also an upside reversal day. The breaking of resistance at 80 completed the bottom.*

5.5b show both the top and bottom variety. For obvious reasons, the top is often referred to as an "M" and the bottom as a "W." The general characteristics of a *double top* are similar to that of the head and shoulders and triple top except that only two peaks appear instead of three. The volume pattern is similar as is the measuring rule.

In an uptrend (as shown in Figure 5.5a), the market sets a new high at point A, usually on increased volume, and then declines to point B on declining volume. So far, everything is proceeding as expected in a normal uptrend. The next rally to point C, however, is unable to penetrate the previous peak at A on a closing basis and begins to fall back again. A potential *double top* has been set up. I use the word "potential" because, as is the case with all reversal patterns, the reversal is not complete until the

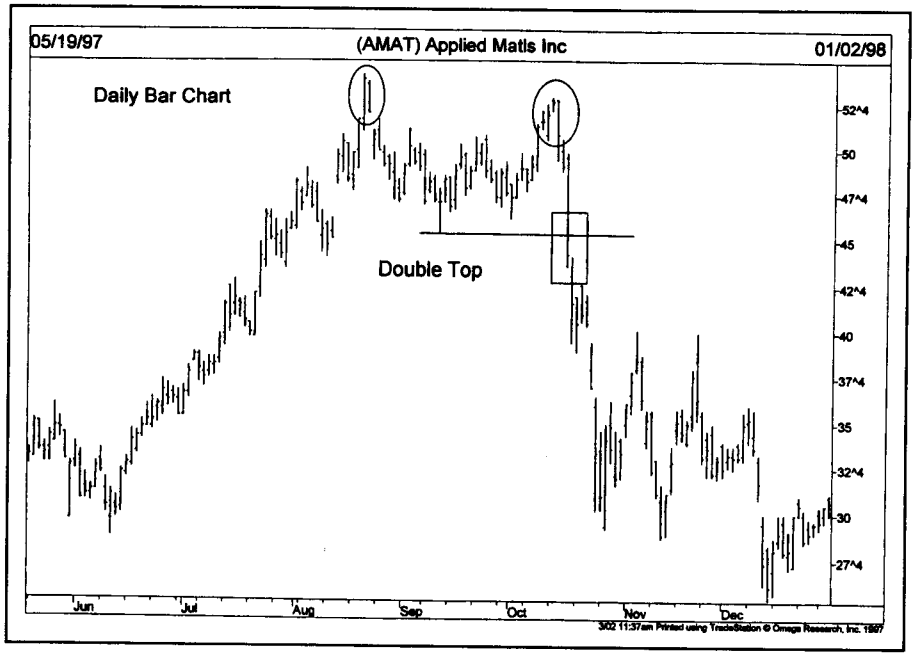

Figure 5.5d *Example of a double top. Sometimes the second peak doesn't quite reach the first peak as in this example. This two month double top signaled a major decline. The actual signal was the breaking of support near 46 (see box).*

previous support point at B is violated on a closing basis. Until that happens, prices could be in just a sideways consolidation phase, preparing for a resumption of the original uptrend.

The ideal top has two prominent peaks at about the same price level. Volume tends to be heavier during the first peak and lighter on the second. A decisive close under the middle trough at point B on heavier volume completes the pattern and signals a reversal of trend to the downside. A return move to the breakout point is not unusual prior to resumption of the downtrend.

Measuring Technique for the Double Top

The measuring technique for the double top is the height of the pattern projected from the breakdown point (the point where the

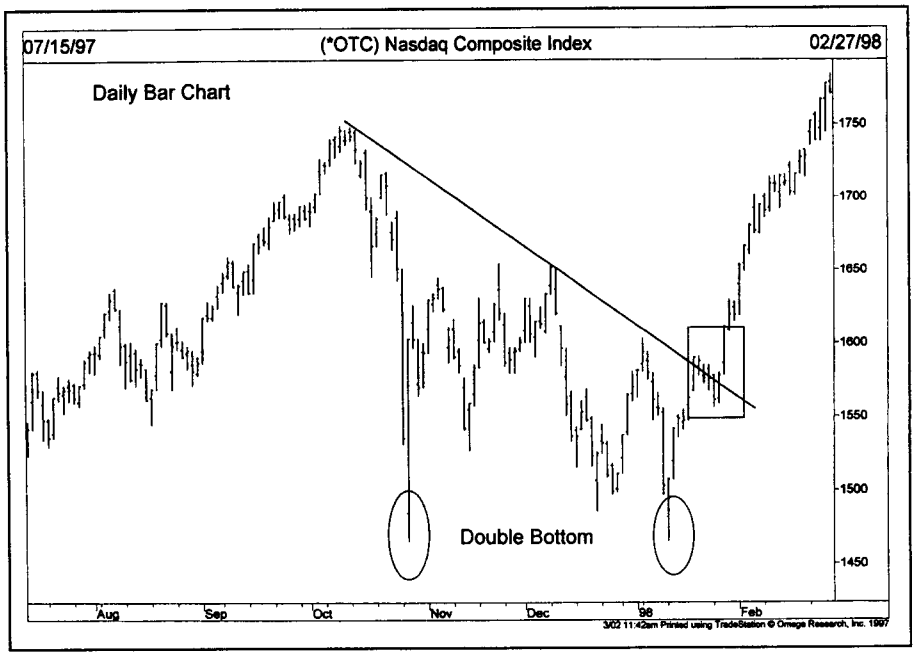

Figure 5.5e *Price patterns show up regularly on the charts of major stock averages. On this chart, the Nasdaq Composite Index formed a double bottom near the 1470 level before turning higher. The break of the down trendline (see box) confirmed the upturn.*

middle trough at point B is broken). As an alternative, measure the height of the first downleg (points A to B) and project that length downward from the middle trough at point B. Measurements at the bottom are the same, but in the other direction.

VARIATIONS FROM THE IDEAL PATTERN

As in most other areas of market analysis, real-life examples are usually some variation of the ideal. For one thing, sometimes the two peaks are not at exactly the same price level. On occasion, the second peak will not quite reach the level of the first peak, which is not too problematical. What does cause some problems is when

the second peak actually exceeds the first peak by a slight margin. What at first may appear to be a valid upside breakout and resumption of the uptrend may turn out to be part of the topping process. To help resolve this dilemma, some of the filtering criteria already mentioned may come in handy.

Filters

Most chartists require a close beyond a previous resistance peak instead of just an intraday penetration. Second, a price filter of some type might be used. One such example is a percentage penetration criterion (such as 1% or 3%). Third, the two day penetration rule could be used as an example of a time filter. In other words, prices would have to close beyond the top of the first peak for two consecutive days to signal a valid penetration. Another time filter could be a Friday close beyond the previous peak. The volume on the upside breakout might also provide a clue to its reliability.

These filters are certainly not infallible, but do serve to reduce the number of false signals (or whipsaws) that often occur. Sometimes these filters are helpful, and sometimes they're not. The analyst must face the realization that he or she is dealing with percentages and probabilities, and that there will be times when bad signals occur. That's simply a fact of trading life.

It's not that unusual for the final leg or wave of a bull market to set a new high before reversing direction. In such a case, the final upside breakout would become a "bull trap." (See Figures 5.6a and b.) We'll show you some indicators later on that may help you spot these false breakouts.

The Term "Double Top" Greatly Overused

The terms "double top and bottom" are greatly overused in the financial markets. Most potential double tops or bottoms wind up being something else. The reason for this is that prices have a strong tendency to back off from a previous peak or bounce off a previous low. These price changes are a natural reaction and do not in themselves constitute a reversal pattern. Remember that, at a top, prices must actually violate the previous reaction low before the double top exists.

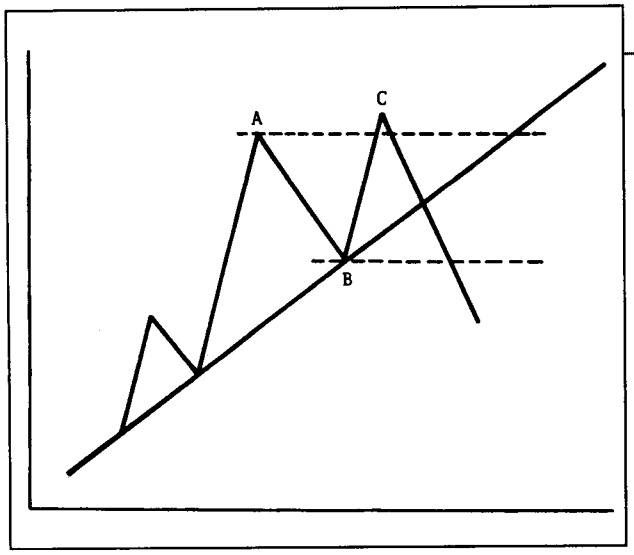

Figure 5.6a *Example of a false breakout, usually called a bull trap. Sometimes near the end of a major uptrend, prices will exceed a previous peak before failing. Chartists use various time and price filters to reduce such whipsaws. This topping pattern would probably qualify as a double top.*

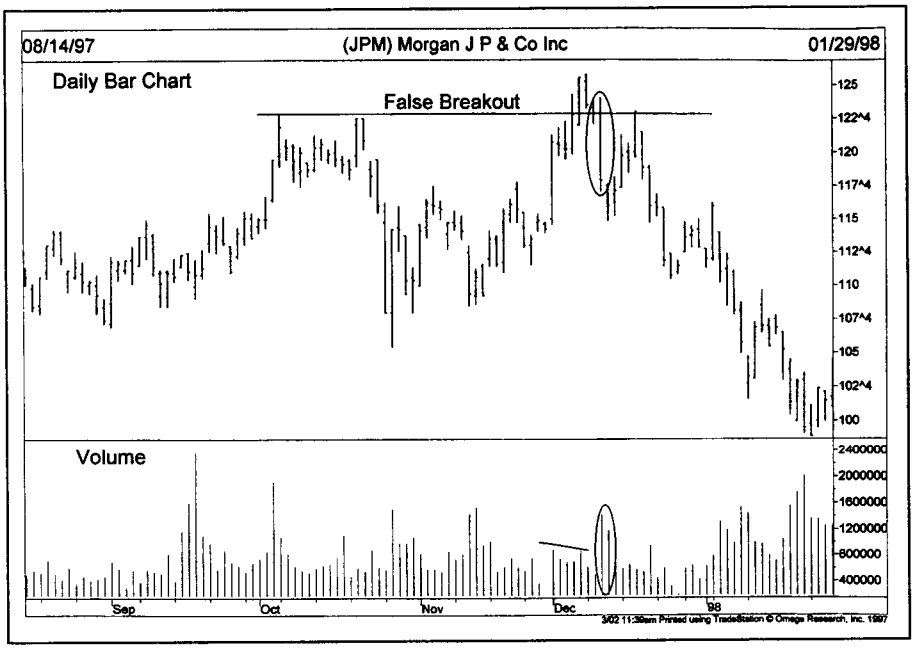

Figure 5.6b *Example of a false breakout. Notice that the upside breakout was on light volume and the subsequent decline on heavy volume—a negative chart combination. Watching the volume helps avoid some false breakouts, but not all.*

Notice in Figure 5.7a that the price at point C backs off from the previous peak at point A. This is perfectly normal action in an uptrend. Many traders, however, will immediately label this pattern as a double top as soon as prices fail to clear the first peak on the first attempt. Figure 5.7b shows the same situation in a downtrend. It is very difficult for the chartist to determine whether the pullback from the previous peak or the bounce from the previous low is just a temporary setback in the existing trend or the start of a double top or bottom reversal pattern. Because the technical odds usually favor continuation of the present trend, it is usually wise to await completion of the pattern before taking action.

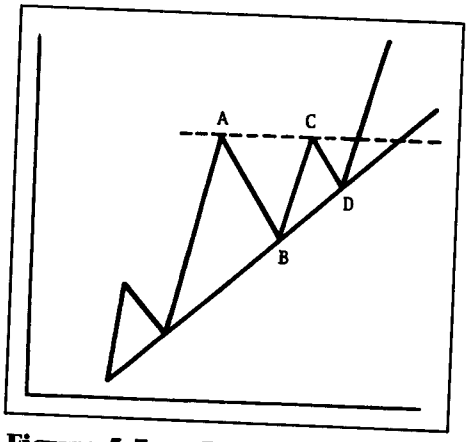

Figure 5.7a *Example of a normal pullback from a previous peak before resumption of the uptrend. This is normal market action and not to be confused with a double top. The double top only occurs when support at point B is broken.*

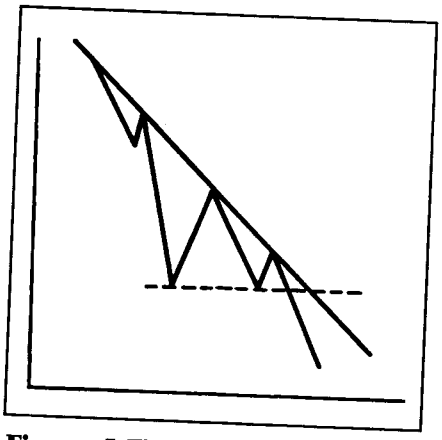

Figure 5.7b *Example of a normal bounce off a previous low. This is normal market action and not to be confused with a double bottom. Prices will normally bounce off a previous low at least once, causing premature calls for a double bottom.*

Time Between Peaks or Troughs Is Important

Finally, the size of the pattern is always important. The longer the time period between the two peaks and the greater the height of the pattern, the greater the potential impending reversal. This is true of all chart patterns. In general, most valid double tops or bottoms should have at least a month between the two peaks or troughs. Some will even be two or three months apart. (On longer range monthly and weekly charts, these patterns can span several years.) Most of the examples used in this discussion have described market tops. The reader should be aware by now that bottoming patterns are mirror images of tops except for some of the general differences already touched upon at the beginning of the chapter.

SAUCERS AND SPIKES

Although not seen as frequently, reversal patterns sometimes take the shape of saucers or rounding bottoms. The *saucer bottom* shows a very slow and very gradual turn from down to sideways to up. It is difficult to tell exactly when the saucer has been completed or to measure how far prices will travel in the opposite direction. Saucer bottoms are usually spotted on weekly or monthly charts that span several years. The longer they last, the more significant they become. (See Figure 5.8.)

Spikes are the hardest market turns to deal with because the spike (or V pattern) happens very quickly with little or no transition period. They usually take place in a market that has gotten so overextended in one direction, that a sudden piece of adverse news causes the market to reverse direction very abruptly. A daily or weekly reversal, on very heavy volume, is sometimes the only warning they give us. That being the case, there's not much more we can say about them except that we hope you don't run into too many of them. Some technical indicators we discuss in later chapters will help you determine when markets have gotten dangerously over-extended. (See Figure 5.9.)

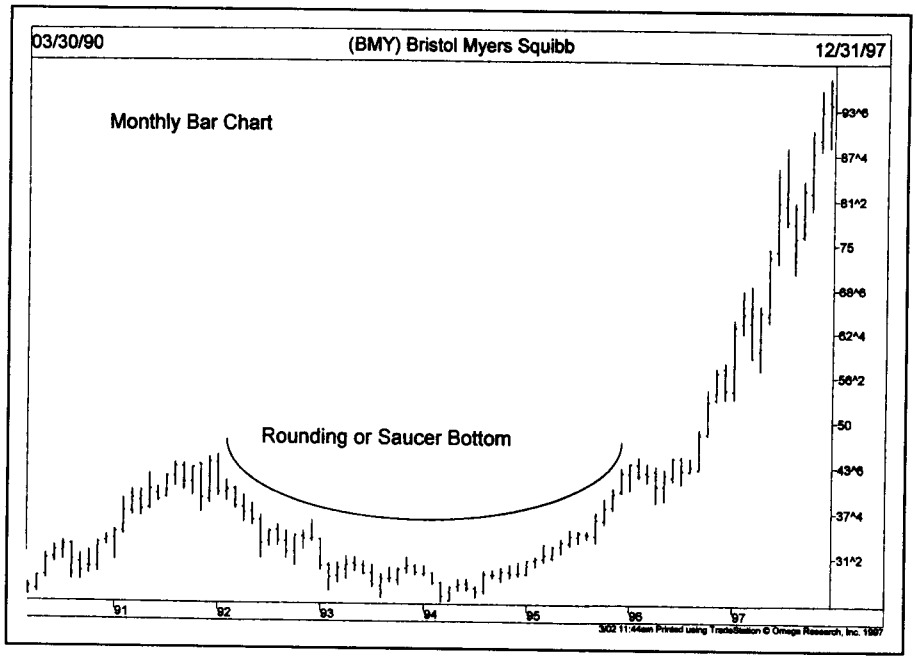

Figure 5.8 *This chart shows what a saucer (or rounding) bottom looks like. They're very slow and gradual, but usually mark major turns. This bottom lasted four years.*

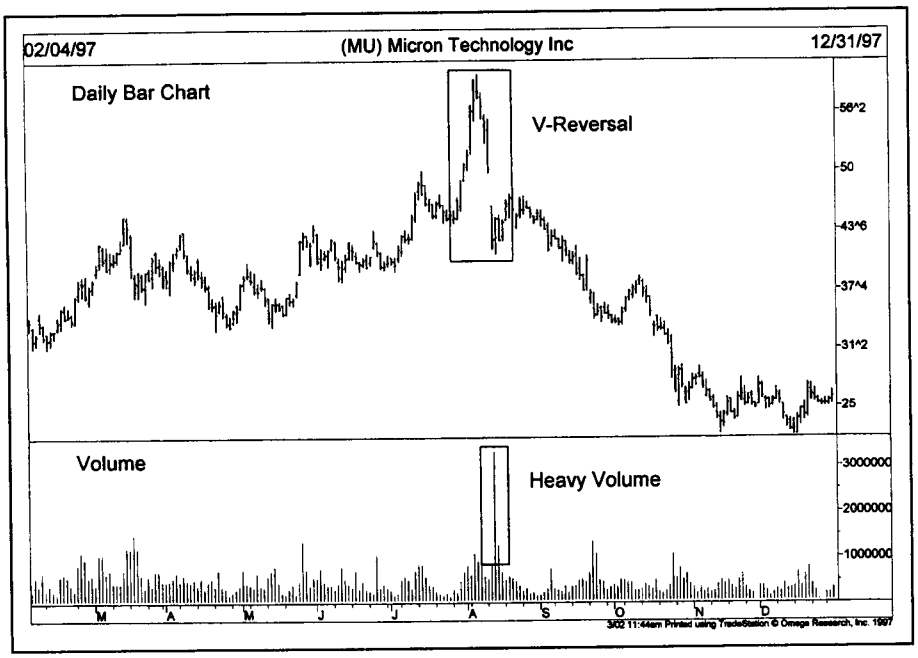

Figure 5.9 *Example of a v reversal pattern. These sudden reversals take place with little or no warning. A sudden price drop on heavy volume is usually the only telltale sign. Unfortunately, these sudden turns are hard to spot in advance.*

CONCLUSION

We've discussed the five most commonly used major reversal patterns—the head and shoulders, double and triple tops and bottoms, the saucer, and the V, or spike. Of those, the most common are the head and shoulders, and double tops and bottoms. These patterns usually signal important trend reversals in progress and are classified as major reversal patterns. There is another class of patterns, however, which are shorter term in nature and usually suggest trend consolidations rather than reversals. They are aptly called *continuation* patterns. Let's look at this other type of pattern in Chapter 6.

6 Continuation Patterns

INTRODUCTION

The chart patterns covered in this chapter are called *continuation* patterns. These patterns usually indicate that the sideways price action on the chart is nothing more than a pause in the prevailing trend, and that the next move will be in the same direction as the trend that preceded the formation. This distinguishes this group of patterns from those in the previous chapter, which usually indicate that a major trend reversal is in progress.

Another difference between reversal and continuation patterns is their time duration. Reversal patterns usually take much longer to build and represent major trend changes. Continuation patterns, on the other hand, are usually shorter term in duration and are more accurately classified as near term or intermediate patterns.

Notice the constant use of the term "usually." The treatment of all chart patterns deals of necessity with general tendencies as opposed to rigid rules. There are always exceptions. Even the grouping of price patterns into different categories sometimes

becomes tenuous. Triangles are usually continuation patterns, but sometimes act as reversal patterns. Although triangles are usually considered intermediate patterns, they may occasionally appear on long term charts and take on major trend significance. A variation of the triangle—the inverted variety—usually signals a major market top. Even the head and shoulders pattern, the best known of the major reversal patterns, will on occasion be seen as a consolidation pattern.

Even with allowances for a certain amount of ambiguity and the occasional exception, chart patterns do generally fall into the above two categories and, if properly interpreted, can help the chartist determine what the market will probably do most of the time

TRIANGLES

Let's begin our treatment of continuation patterns with the *triangle*. There are three types of triangles—*symmetrical, ascending,* and *descending*. (Some chartists include a fourth type of triangle known as an *expanding triangle,* or *broadening formation*. This is treated as a separate pattern later.) Each type of triangle has a slightly different shape and has different forecasting implications.

Figures 6.1a-c show examples of what each triangle looks like. The symmetrical triangle (see Figure 6.1a) shows two converging trendlines, the upper line descending and the lower line ascending. The vertical line at the left, measuring the height of the pattern, is called the *base*. The point of intersection at the right, where the two lines meet, is called the *apex*. For obvious reasons, the symmetrical triangle is also called a *coil*.

The ascending triangle has a rising lower line with a flat or horizontal upper line (see Figure 6.1b). The descending triangle (Figure 6.1c), by contrast, has the upper line declining with a flat or horizontal bottom line. Let's see how each one is interpreted.

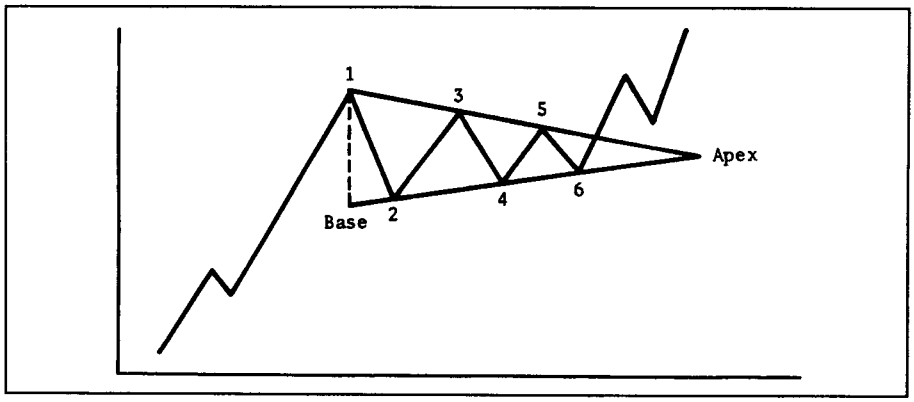

Figure 6.1a *Example of a bullish symmetrical triangle. Notice the two converging trendlines. A close outside either trendline completes the pattern. The vertical line at the left is the base. The point at the right where the two lines meet is the apex.*

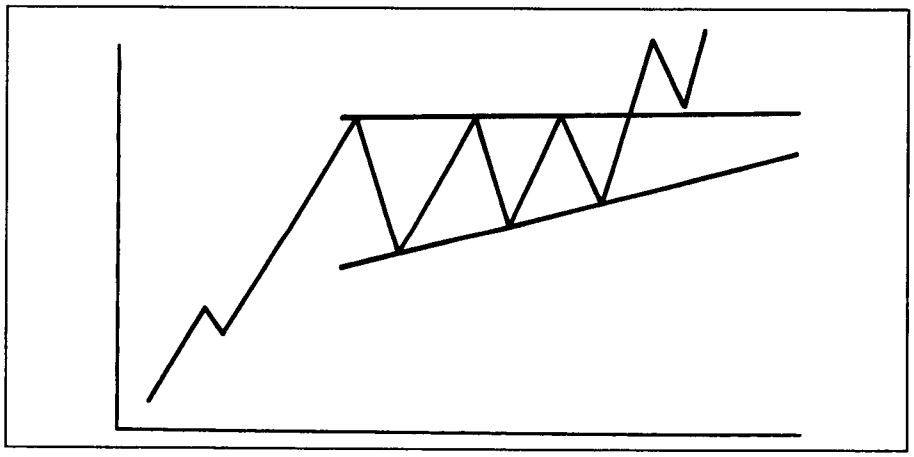

Figure 6.1b *Example of an ascending triangle. Notice the flat upper line and the rising lower line. This is generally a bullish pattern.*

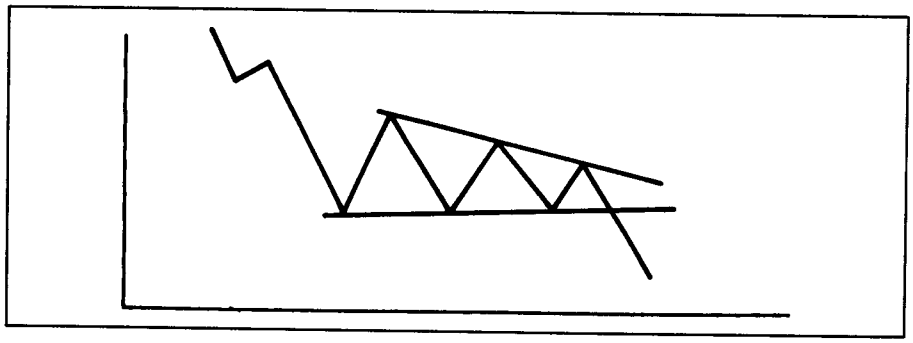

Figure 6.1c *Example of a descending triangle. Notice the flat bottom line and the declining upper line. This is usually a bearish pattern.*

THE SYMMETRICAL TRIANGLE

The *symmetrical triangle* (or the *coil*) is usually a continuation pattern. It represents a pause in the existing trend after which the original trend is resumed. In the example in Figure 6.la, the prior trend was up, so that the percentages favor resolution of the triangular consolidation on the upside. If the trend had been down, then the symmetrical triangle would have bearish implications.

The minimum requirement for a triangle is four reversal points. Remember that it always takes two points to draw a trendline. Therefore, in order to draw two converging trendlines, each line must be touched at least twice. In Figure 6.la, the triangle actually begins at point 1, which is where the consolidation in the uptrend begins. Prices pull back to point 2 and then rally to point 3. Point 3, however, is lower than point 1. The upper trendline can only be drawn once prices have declined from point 3.

Notice that point 4 is higher than point 2. Only when prices have rallied from point 4 can the lower upslanting line be drawn. It is at this point that the analyst begins to suspect the he or she is dealing with the symmetrical triangle. Now there are four reversal points (1, 2, 3, and 4) and two converging trendlines.

While the minimum requirement is four reversal points, many triangles have six reversal points as shown in Figure 6.1a.

This means that there are actually three peaks and three troughs that combine to form five waves within the triangle before the uptrend resumes. (When we get to the Elliott Wave Theory, we'll have more to say about the five wave tendency within triangles.)

Time Limit for Triangle Resolution

There is a time limit for the resolution of the pattern, and that is the point where the two lines meet—at the apex. As a general rule, prices should break out in the direction of the prior trend somewhere between two-thirds to three-quarters of the horizontal width of the triangle. That is, the distance from the vertical base on the left of the pattern to the apex at the far right. Because the two lines must meet at some point, that time distance can be measured once the two converging lines are drawn. An upside breakout is signaled by a penetration of the upper trendline. If prices remain within the triangle beyond the three-quarters point, the triangle begins to lose its potency, and usually means that prices will continue to drift out to the apex and beyond

The triangle, therefore, provides an interesting combination of price and time. The converging trendlines give the price boundaries of the pattern, and indicate at what point the pattern has been completed and the trend resumed by the penetration of the upper trendline (in the case of an uptrend). But these trendlines also provide a time target by measuring the width of the pattern. If the width, for example, were 20 weeks long, then the breakout should take place sometime between the 13th and the 15th week. (See Figure 6.1d.)

The actual trend signal is given by a closing penetration of one of the trendlines. Sometimes a return move will occur back to the penetrated trendline after the breakout. In an uptrend, that line has become a support line. In a downtrend, the lower line becomes a resistance line once it's broken. The apex also acts as an important support or resistance level after the breakout occurs. Various penetration criteria can be applied to the breakout, similar to those covered in the previous two chapters. A minimum penetration criterion would be a closing price outside the trendline and not just an intraday penetration.

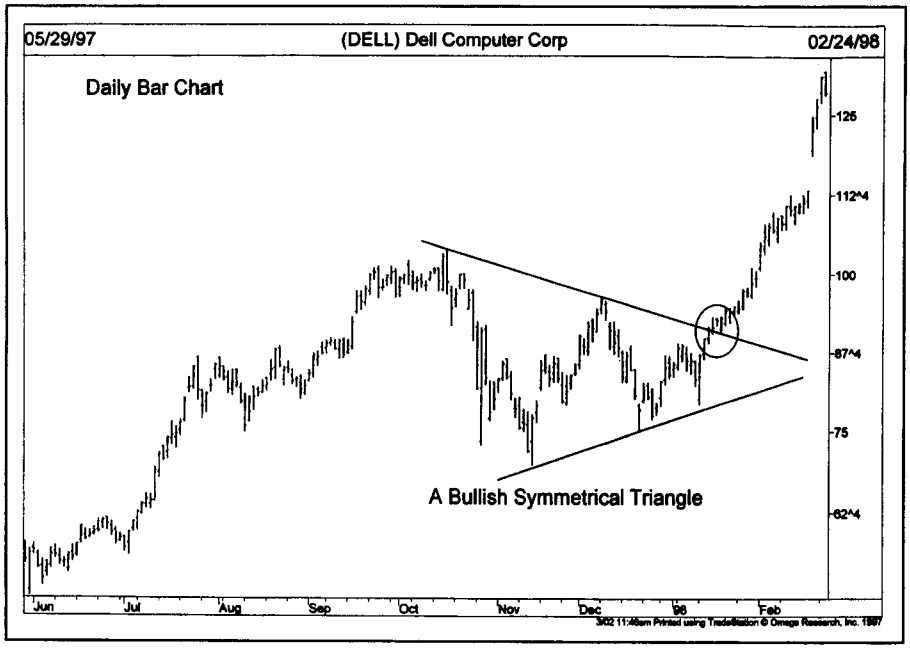

Figure 6.1d *Dell formed a bullish symmetrical triangle during the fourth quarter of 1997. Measured from left to right, the triangle width is 18 weeks. Prices broke out on the 13th week (see circle), just beyond the two-thirds point.*

Importance of Volume

Volume should diminish as the price swings narrow within the triangle. This tendency for volume to contract is true of all consolidation patterns. But the volume should pick up noticeably at the penetration of the trendline that completes the pattern. The return move should be on light volume with heavier activity again as the trend resumes.

Two other points should be mentioned about volume. As is the case with reversal patterns, volume is more important on the upside than on the downside. An increase in volume is essential to the resumption of an uptrend in all consolidation patterns.

The second point about volume is that, even though trading activity diminishes during formation of the pattern, a close inspection of the volume usually gives a clue as to whether

the heavier volume is occurring during the upmoves or downmoves. In an uptrend, for example, there should be a slight tendency for volume to be heavier during the bounces and lighter on the price dips.

Measuring Technique

Triangles have measuring techniques. In the case of the symmetrical triangle, there are a couple of techniques generally used. The simplest technique is to measure the height of the vertical line at the widest part of the triangle (the base) and measure that distance from the breakout point. Figure 6.2 shows the distance projected from the breakout point, which is the technique I prefer.

The second method is to draw a trendline from the top of the base (at point A) parallel to the lower trendline. This upper channel line then becomes the upside target in an uptrend. It is possible to arrive at a rough time target for prices to meet the upper channel line. Prices will sometimes hit the channel line at the same time the two converging lines meet at the apex.

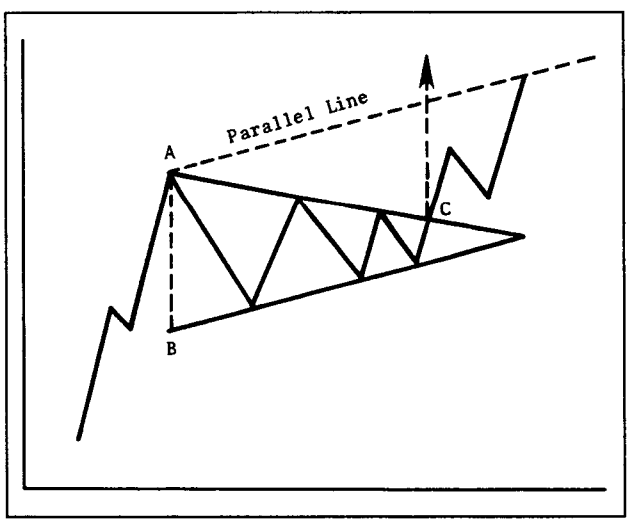

Figure 6.2 *There are two ways to take a measurement from a symmetrical triangle. One is to measure the height of the base (AB); project that vertical distance from the breakout point at C. Another method is to draw a parallel line upward from the top of the baseline (A) parallel to the lower line in the triangle.*

THE ASCENDING TRIANGLE

The ascending and descending triangles are variations of the symmetrical, but have different forecasting implications. Figures 6.3a and b show examples of an *ascending triangle.* Notice that the upper trendline is flat, while the lower line is rising. This pattern indicates that buyers are more aggressive than sellers. It is considered a bullish pattern and is usually resolved with a breakout to the upside.

Both the ascending and descending triangles differ from the symmetrical in a very important sense. No matter where in the trend structure the ascending or descending triangles appear, they have very definite forecasting implications. The ascending triangle is bullish and the descending triangle is bearish. The symmetrical triangle, by contrast, is inherently a neutral pattern. This does not mean, however, that the symmetrical triangle does not have forecasting value. On the contrary, because the symmetrical

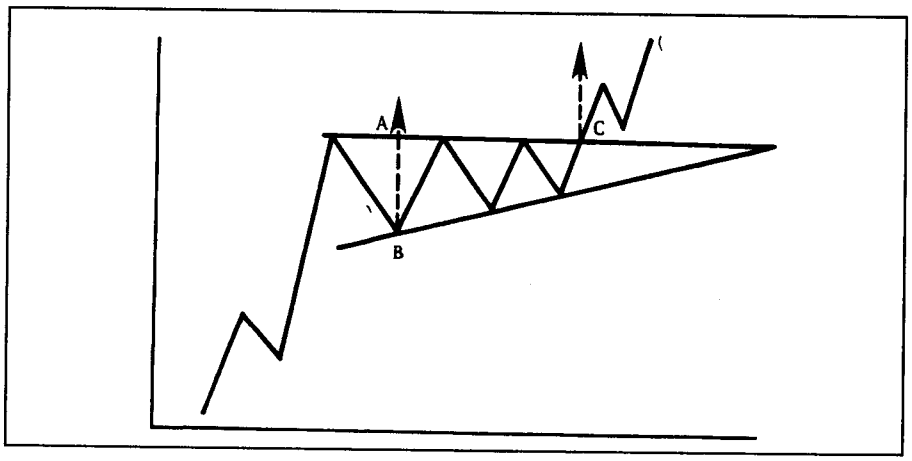

Figure 6.3a *An ascending triangle. The pattern is completed on a decisive close above the upper line. This breakout should see a sharp increase in volume. That upper resistance line should act as support on subsequent dips after the breakout. The minimum price objective is obtained by measuring the height of the triangle (AB) and projecting that distance upward from the breakout point at C.*

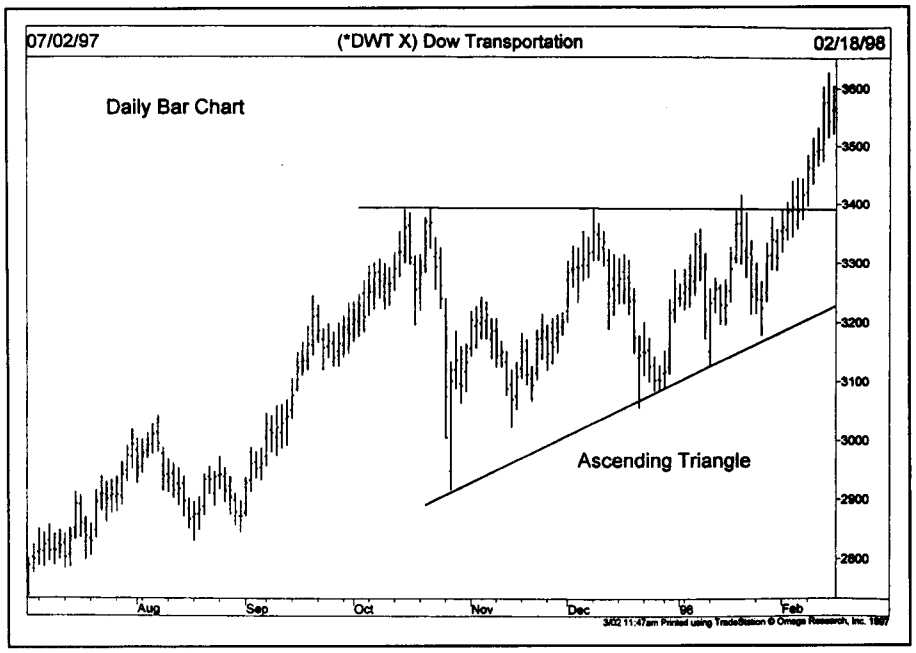

Figure 6.3b *The Dow Transports formed a bullish ascending triangle near the end of 1997. Notice the flat upper line at 3400 and the rising lower line. This is normally a bullish pattern no matter where it appears on the chart.*

triangle is a continuation pattern, the analyst must simply look to see the direction of the previous trend and then make the assumption that the previous trend will continue.

Let's get back to the ascending triangle. As already stated, more often than not, the ascending triangle is bullish. The bullish breakout is signaled by a decisive closing above the flat upper trendline. As in the case of all valid upside breakouts, volume should see a noticeable increase on the breakout. A return move back to the support line (the flat upper line) is not unusual and should take place on light volume.

Measuring Technique

The measuring technique for the ascending triangle is relatively simple. Simply measure the height of the pattern at its widest

point and project that vertical distance from the breakout point. This is just another example of using the volatility of a price pattern to determine a minimum price objective.

The Ascending Triangle as a Bottom

While the ascending triangle most often appears in an uptrend and is considered a continuation pattern, it sometimes appears as a bottoming pattern. It is not unusual toward the end of a downtrend to see an ascending triangle develop. However, even in this situation, the interpretation of the pattern is bullish. The breaking of the upper line signals completion of the base and is considered a bullish signal. Both the ascending and descending triangles are sometimes also referred to as *right angle* triangles.

THE DESCENDING TRIANGLE

The *descending triangle* is just a mirror image of the ascending, and is generally considered a bearish pattern. Notice in Figures 6.4a and b the descending upper line and the flat lower line. This pattern indicates that sellers are more aggressive than buyers, and is usually resolved on the downside. The downside signal is registered by a decisive close under the lower trendline, usually on increased volume. A return move sometimes occurs which should encounter resistance at the lower trendline.

The measuring technique is exactly the same as the ascending triangle in the sense that the analyst must measure the height of the pattern at the base to the left and then project that distance down from the breakdown point.

The Descending Triangle as a Top

While the descending triangle is a continuation pattern and usually is found within downtrends, it is not unusual on occasion for the descending triangle to be found at market tops. This type of pattern is not that difficult to recognize when it does appear in the top setting. In that case, a close below the flat lower line would signal a major trend reversal to the downside.

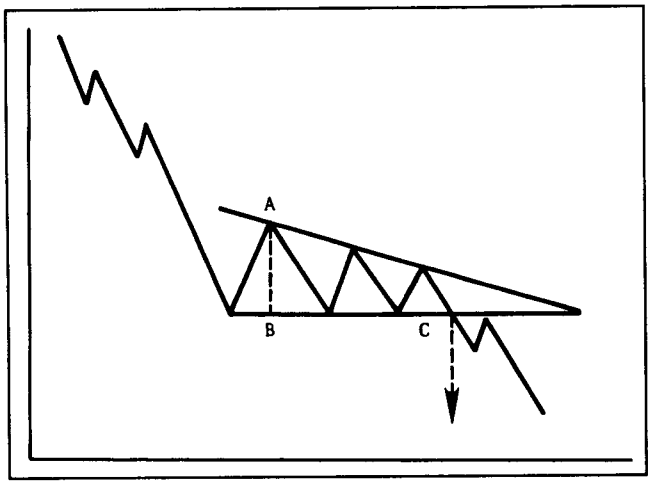

Figure 6.4a *A descending triangle. The bearish pattern is completed with a decisive close under the lower flat line. The measuring technique is the height of the triangle (AB) projected down from the breakout at point C.*

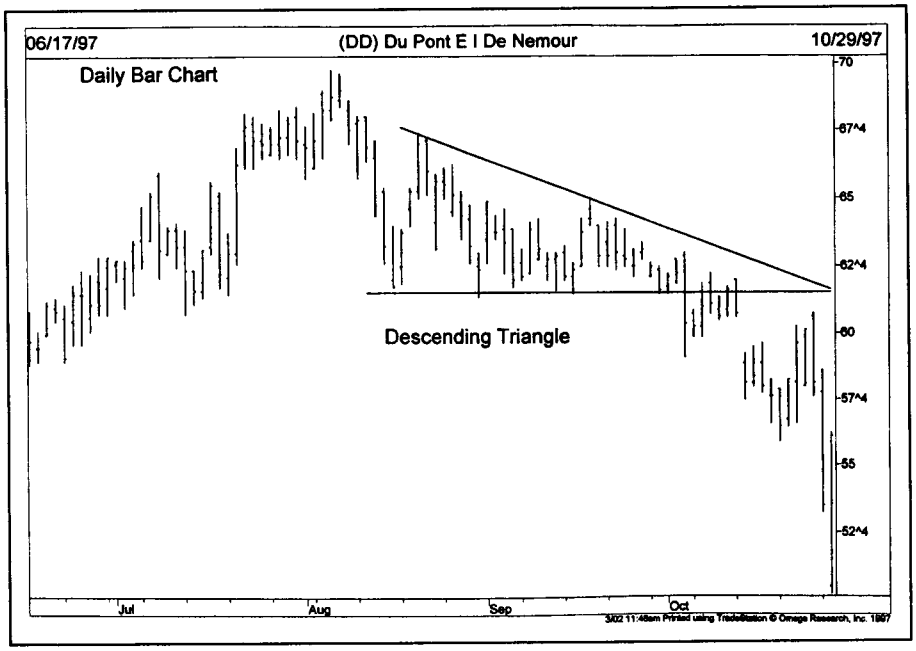

Figure 6.4b *A bearish descending triangle formed in Du Pont during the autumn of 1997. The upper line is descending while the lower line is flat. The break of the lower line in early October resolved the pattern to the downside.*

The Volume Pattern

The volume pattern in both the ascending and descending triangles is very similar in that the volume diminishes as the pattern works itself out and then increases on the breakout. As in the case of the symmetrical triangle, during the formation the chartist can detect subtle shifts in the volume pattern coinciding with the swings in the price action. This means that in the ascending pattern, the volume tends to be slightly heavier on bounces and lighter on dips. In the descending formation, volume should be heavier on the downside and lighter during the bounces.

The Time Factor in Triangles

One final factor to be considered on the subject of triangles is that of the time dimension. The triangle is considered an intermediate pattern, meaning that it usually takes longer than a month to form, but generally less than three months. A triangle that lasts less than a month is probably a different pattern, such as a pennant, which will be covered shortly. As mentioned earlier, triangles sometimes appear on long term price charts, but their basic meaning is always the same.

THE BROADENING FORMATION

This next price pattern is an unusual variation of the triangle and is relatively rare. It is actually an inverted triangle or a triangle turned backwards. All of the triangular patterns examined so far show converging trendlines. The *broadening formation,* as the name implies, is just the opposite. As the pattern in Figure 6.5 shows, the trendlines actually diverge in the broadening formation, creating a picture that looks like an expanding triangle. It is also called a megaphone top.

The volume pattern also differs in this formation. In the other triangular patterns, volume tends to diminish as the price swings grow narrower. Just the opposite happens in the broadening formation. *The volume tends to expand along with the wider price swings.* This situation represents a market that is out of control

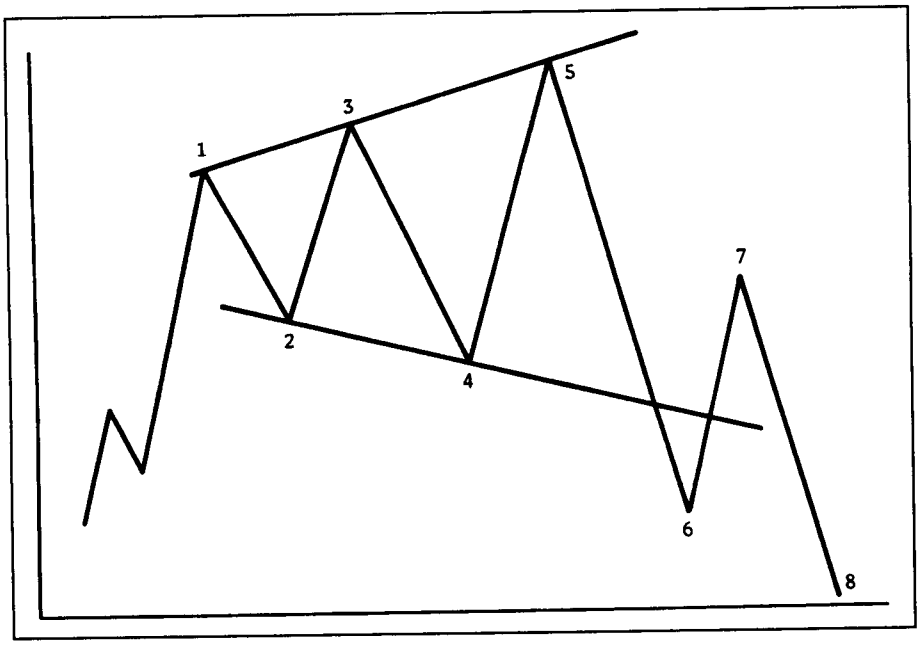

Figure 6.5 *A broadening top. This type of expanding triangle usually occurs at major tops. It shows three successively higher peaks and two declining troughs. The violation of the second trough completes the pattern. This is an unusually difficult pattern to trade and fortunately is relatively rare.*

and unusually emotional. Because this pattern also represents an unusual amount of public participation, it most often occurs at major market tops. *The expanding pattern, therefore, is usually a bearish formation.* It generally appears near the end of a major bull market.

FLAGS AND PENNANTS

The *flag* and *pennant* formations are quite common. They are usually treated together because they are very similar in appearance, tend to show up at about the same place in an existing trend, and have the same volume and measuring criteria.

The *flag* and *pennant* represent brief pauses in a dynamic market move. In fact, one of the requirements for both the flag

and the pennant is that they be preceded by a sharp and almost straight line move. They represent situations where a steep advance or decline has gotten ahead of itself, and where the market pauses briefly to "catch its breath" before running off again in the same direction.

Flags and pennants are among the most reliable of continuation patterns and only rarely produce a trend reversal. Figures 6.6a-b show what these two patterns look like. To begin with, notice the steep price advance preceding the formations on heavy volume. Notice also the dramatic drop off in activity as the consolidation patterns form and then the sudden burst of activity on the upside breakout.

Construction of Flags and Pennants

The construction of the two patterns differs slightly. The flag resembles a parallelogram or rectangle marked by two parallel trendlines that tend to slope against the prevailing trend. In a downtrend, the flag would have a slight upward slope.

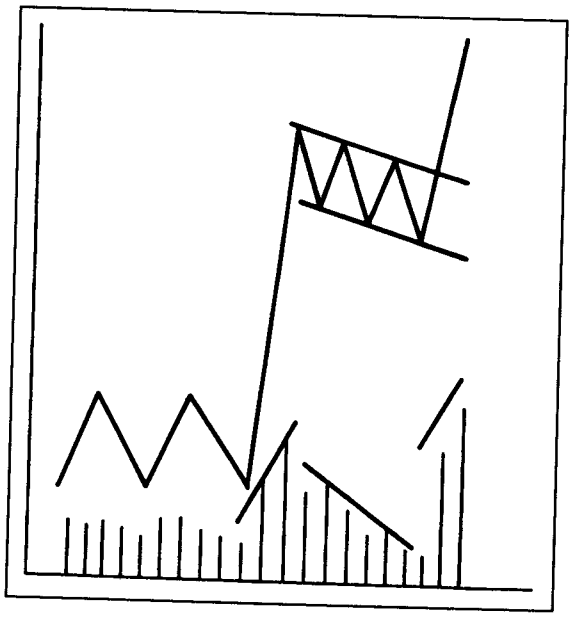

Figure 6.6a *Example of a bullish flag. The flag usually occurs after a sharp move and represents a brief pause in the trend. The flag should slope against the trend. Volume should dry up during the formation and build again on the breakout. The flag usually occurs near the midpoint of the move.*

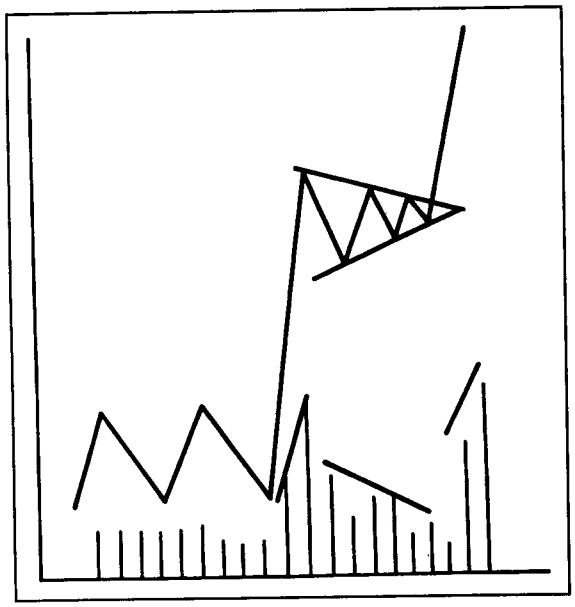

Figure 6.6b *A bullish pennant. Resembles a small symmetrical triangle, but usually lasts no longer than three weeks. Volume should be light during its formation. The move after the pennant is completed should duplicate the size of the move preceding it.*

The pennant is identified by two converging trendlines and is more horizontal. It very closely resembles a small symmetrical triangle. An important requirement is that volume should dry up noticeably while each of the patterns is forming.

Both patterns are relatively short term and should be completed within one to three weeks. Pennants and flags in downtrends tend to take even less time to develop, and often last no longer than one or two weeks. Both patterns are completed on the penetration of the upper trendline in an uptrend. The breaking of the lower trendline would signal resumption of downtrends. The breaking of those trendlines should take place on heavier volume. As usual, upside volume is more critically important than downside volume. (See Figures 6.7a-b.)

Measuring Implications

The measuring implications are similar for both patterns. Flags and pennants are said to "fly at half-mast" from a *flagpole*. The flagpole is the prior sharp advance or decline. The term "half-mast" suggests that these minor continuation patterns tend to

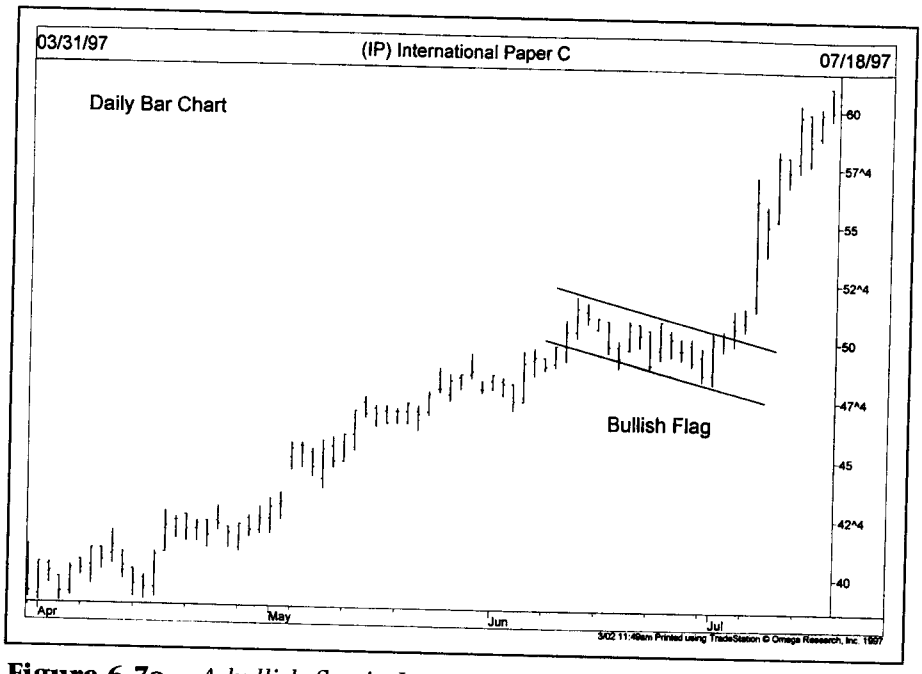

Figure 6.7a *A bullish flag in International Paper. The flag looks like a down-sloping parallelogram. Notice that the flag occurred right at the halfway point of the uptrend.*

appear at about the halfway point of the move. In general, the move after the trend has resumed will duplicate the flagpole or the move just prior to the formation of the pattern.

To be more precise, measure the distance of the preceding move from the original breakout point. That is to say, the point at which the original trend signal was given, either by the penetration of a support or resistance level or an important trendline. That vertical distance of the preceding move is then measured from the breakout point of the flag or pennant—that is, the point at which the upper line is broken in an uptrend or the lower line in a downtrend.

Summary

Let's summarize the more important points of both patterns.

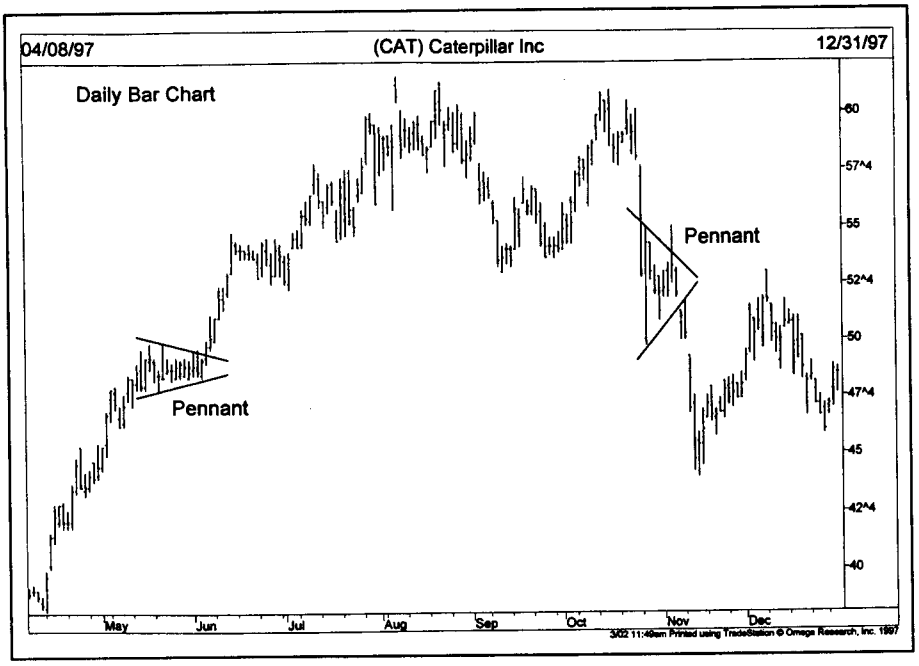

Figure 6.7b *A couple of pennants are flying on this Caterpillar chart. Pennants are short term continuation patterns that look like small symmetrical triangles. The pennant to the left continued the uptrend, while the one to the right continued the downtrend.*

1. They are both preceded by an almost straight line move (called a flagpole) on heavy volume.
2. Prices then pause for about one to three weeks on very light volume.
3. The trend resumes on a burst of trading activity.
4. Both patterns occur at about the midpoint of the market move.
5. The pennant resembles a small horizontal symmetrical triangle.
6. The flag resembles a small parallelogram that slopes against the prevailing trend.
7. Both patterns take less time to develop in downtrends.
8. Both patterns are very common in the financial markets.

THE WEDGE FORMATION

The *wedge* formation is similar to a symmetrical triangle both in terms of its shape and the amount of time it takes to form. Like the symmetrical triangle, it is identified by two converging trendlines that come together at an *apex*. In terms of the amount of time it takes to form, the wedge usually lasts more than one month but not more than three months, putting it into the intermediate category.

What distinguishes the *wedge* is its noticeable slant. The wedge pattern has a noticeable slant either to the upside or the downside. As a rule, like the flag pattern, the wedge slants against the prevailing trend. Therefore, a *falling wedge is considered bullish and a rising wedge is bearish.* Notice in Figure 6.8a that the bullish wedge slants downward between two converging trendlines. In the downtrend in Figure 6.8b, the converging trendlines have an unmistakable upward slant.

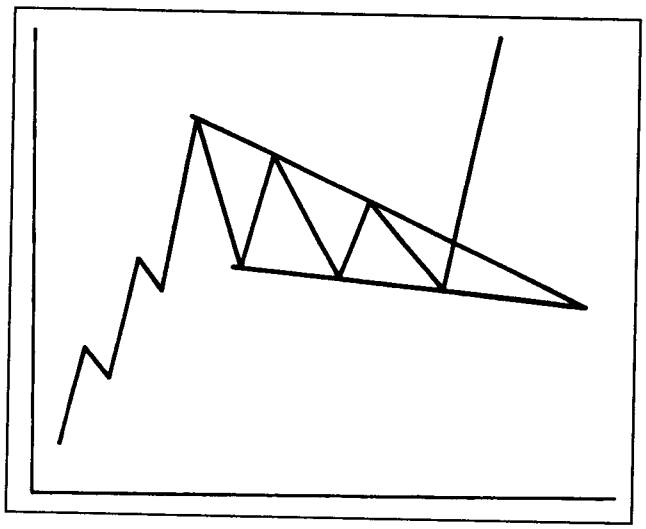

Figure 6.8a
Example of a bullish falling wedge. The wedge pattern has two converging trendlines, but slopes against the prevailing trend. A falling wedge is usually bullish.

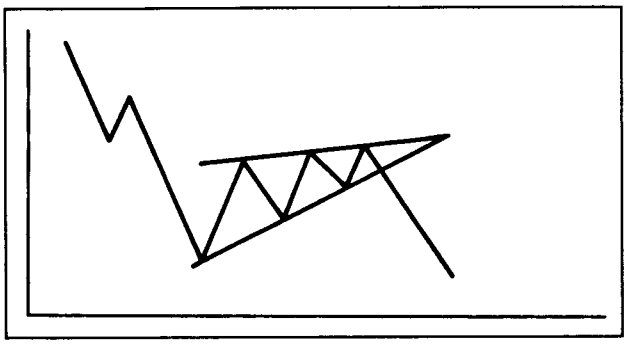

Figure 6.8b
Example of a bearish wedge. A bearish wedge should slope upward against the prevailing downtrend.

Wedges as Tops and Bottom Reversal Patterns

Wedges show up most often within the existing trend and usually constitute continuation patterns. The wedge can appear at tops or bottoms and signal a trend reversal. But that type of situation is much less common. Near the end of an uptrend, the chartist may observe a clearcut rising wedge. Because a continuation wedge in an uptrend should slope downward against the prevailing trend, the rising wedge is a clue to the chartist that this is a bearish and not a bullish pattern. At bottoms, a falling wedge would be a tip-off of a possible end of a bear trend.

Whether the wedge appears in the middle or the end of a market move, the market analyst should always be guided by the general maxim that *a rising wedge is bearish and a falling wedge is bullish.* (See Figure 6.8c.)

THE RECTANGLE FORMATION

The *rectangle formation* often goes by other names, but is usually easy to spot on a price chart. It represents a pause in the trend during which prices move sideways between two parallel horizontal lines. (See Figures 6.9a-c.)

The rectangle is sometimes referred to as a *trading range* or a *congestion area.* In Dow Theory parlance, it is referred to as a *line.* Whatever it is called, it usually represents just a consolidation period in the existing trend, and is usually resolved in the direc-

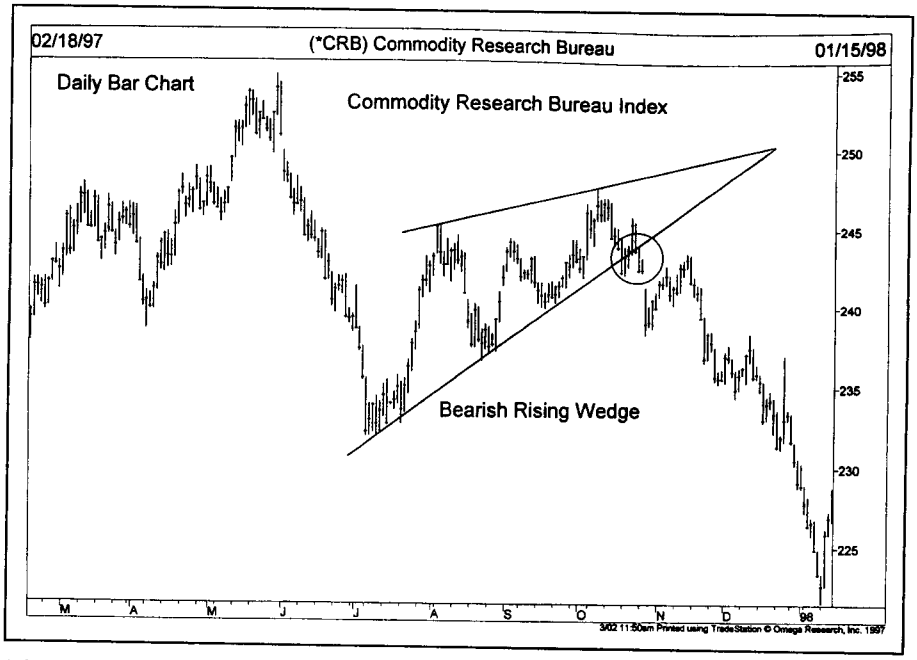

Figure 6.8c *Example of a bearish rising wedge. The two converging trendlines have a definite upward slant. The wedge slants against the prevailing trend. Therefore, a rising wedge is bearish, and a falling wedge is bullish.*

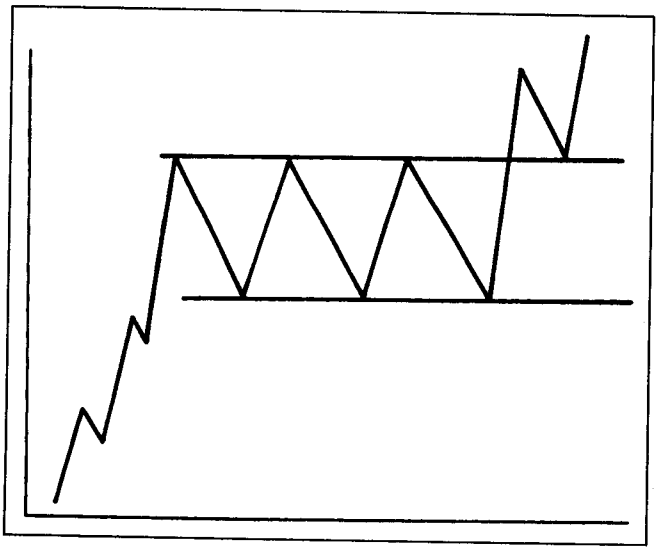

Figure 6.9a *Example of a bullish rectangle in an uptrend. This pattern is also called a trading range, and shows prices trading between two horizontal trendlines. It is also called a congestion area.*

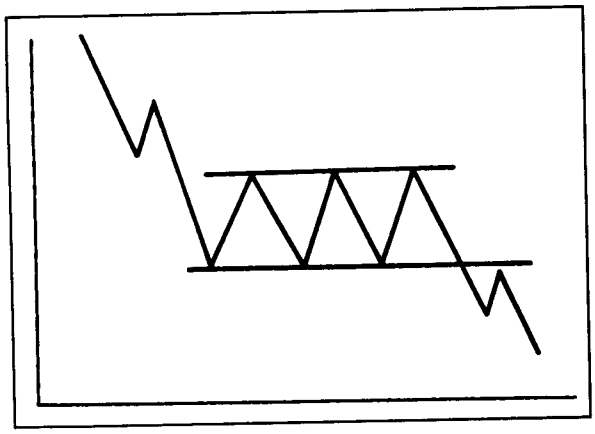

Figure 6.9b *Example of a bearish rectangle. While rectangles are usually considered continuation patterns, the trader must always be alert for signs that it may turn into a reversal pattern. such as a triple bottom.*

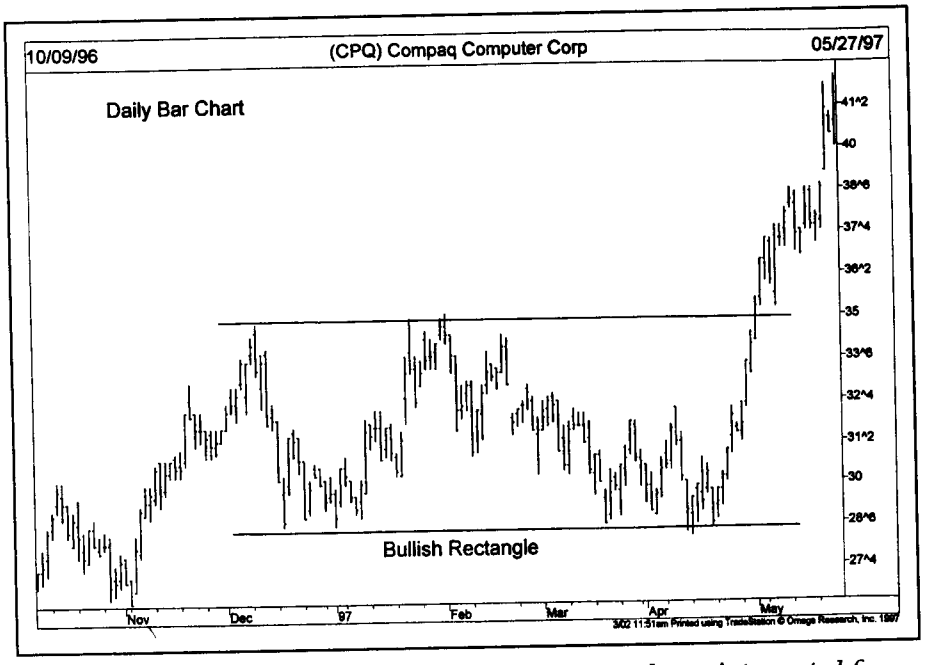

Figure 6.9c *A bullish rectangle. Compaq's uptrend was interrupted for four months while it traded sideways. The break above the upper line in early May completed the pattern and resumed the uptrend. Rectangles are usually continuation patterns.*

tion of the market trend that preceded its occurrence. In terms of forecasting value, it can be viewed as being similar to the symmetrical triangle but with flat instead of converging trendlines.

A decisive close outside either the upper or lower boundary signals completion of the rectangle and points the direction of the trend. The market analyst must always be on the alert, however, that the rectangular consolidation does not turn into a reversal pattern. In the uptrend shown in Figure 6.9a, for example, notice that the three peaks might initially be viewed as a possible triple top reversal pattern.

The Importance of the Volume Pattern

One important clue to watch for is the volume pattern. Because the price swings in both directions are fairly broad, the analyst should keep a close eye on which moves have the heavier volume. If the rallies are on heavier and the setbacks on lighter volume, then the formation is probably a continuation in the uptrend. If the heavier volume is on the downside, then it can be considered a warning of a possible trend reversal in the works.

Swings Within the Range Can Be Traded

Some chartists trade the swings within such a pattern by buying dips near the bottom and selling rallies near the top of the range. This technique enables the short term trader to take advantage of the well defined price boundaries, and profit from an otherwise trendless market. Because the positions are being taken at the extremes of the range, the risks are relatively small and well defined. If the trading range remains intact, this countertrend trading approach works quite well. When a breakout does occur, the trader not only exits the last losing trade immediately, but can reverse the previous position by initiating a new trade in the direction of the new trend. Oscillators are especially useful in sideways trading markets, but less useful once the breakout has occurred for reasons discussed in Chapter 10.

Other traders assume the rectangle is a continuation pattern and take long positions near the lower end of the price band

in an uptrend, or initiate short positions near the top of the range in downtrends. Others avoid such trendless markets altogether and await a clearcut breakout before committing their funds. Most trend-following systems perform very poorly during these periods of sideways and trendless market action.

Other Similarities and Differences

In terms of duration, the rectangle usually falls into the one to three month category, similar to triangles and wedges. The volume pattern differs from other continuation patterns in the sense that the broad price swings prevent the usual dropoff in activity seen in other such patterns.

The most common measuring technique applied to the rectangle is based on the height of the price range. Measure the height of the trading range, from top to bottom, and then project that vertical distance from the breakout point. This method is similar to the other vertical measuring techniques already mentioned, and is based on the volatility of the market. When we cover the count in point and figure charting, we'll say more on the question of horizontal price measurements.

Everything mentioned so far concerning volume on breakouts and the probability of return moves applies here as well. Because the upper and lower boundaries are horizontal and so well defined in the rectangle, support and resistance levels are more clearly evident. This means that, on upside breakouts, the top of the former price band should now provide solid support on any selloffs. After a downside breakout in downtrends, the bottom of the trading range (the previous support area) should now provide a solid ceiling over the market on any rally attempts.

THE MEASURED MOVE

The *measured move,* or the *swing* measurement as it is sometimes called, describes the phenomenon where a major market advance or decline is divided into two equal and parallel moves, as shown in Figure 6.10a. For this approach to work, the market moves

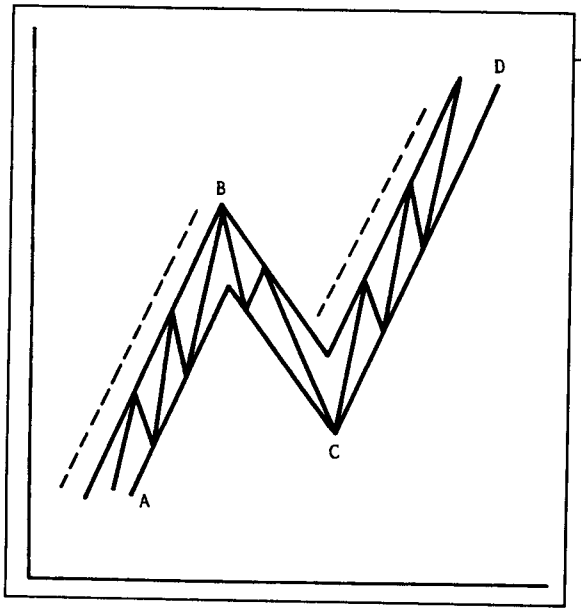

Figure 6.10a
Example of a measured move (or the swing measurement) in an uptrend. This theory holds that the second leg in the advance (CD) duplicates the size and slope of the first upleg (AB). The corrective wave (BC) often retraces a third to a half of AB before the uptrend is resumed.

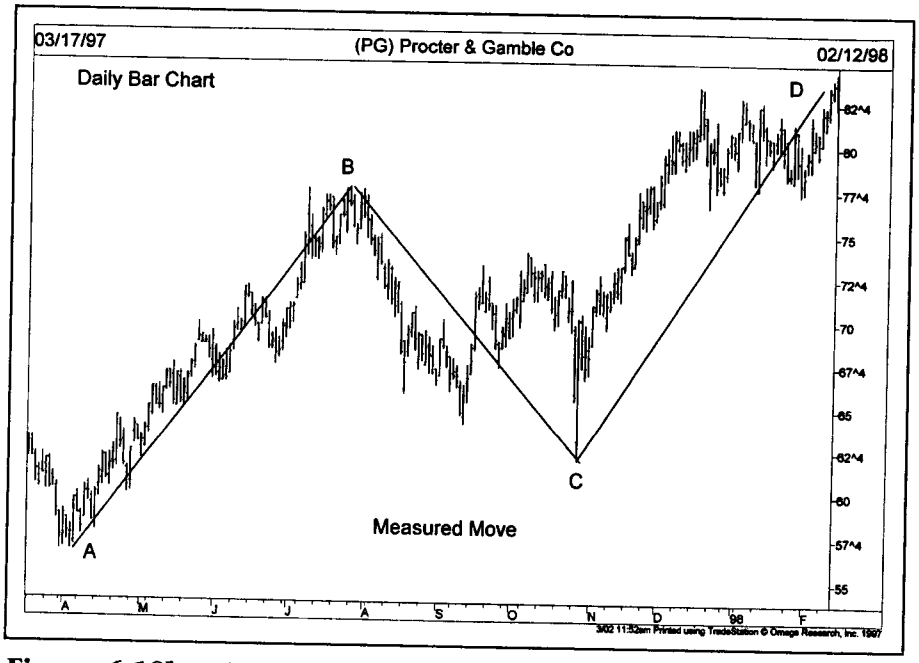

Figure 6.10b *A measured move takes the prior upleg (AB) and adds that value to the bottom of the correction at C. On this chart, the prior uptrend (AB) was 20 points. Adding that to the lowpoint at C (62) yielded a price target to 82 (D).*

should be fairly orderly and well defined. The measured move is really just a variation of some of the techniques we've already touched on. We've seen that some of the consolidation patterns, such as flags and pennants, usually occur at about the halfway point of a market move. We've also mentioned the tendency of markets to retrace about a third to a half of a prior trend before resuming that trend.

In the measured move, when the chartist sees a well-defined situation, such as in Figure 6.10a, with a rally from point A to point B followed by a countertrend swing from point B to point C (which retraces a third to a half of wave AB), it is assumed that the next leg in the uptrend (CD) will come close to duplicating the first leg (AB). The height of wave (AB), therefore, is simply measured upward from the bottom of the correction at point C.

THE CONTINUATION HEAD AND SHOULDERS PATTERN

In the previous chapter, we treated the head and shoulders pattern at some length and described it as the best known and most trustworthy of all reversal patterns. The head and shoulders pattern can sometimes appear as a continuation instead of a reversal pattern.

In the continuation head and shoulders variety, prices trace out a pattern that looks very similar to a sideways rectangular pattern except that the middle trough in an uptrend (see Figure 6.11a) tends to be lower than either of the two shoulders. In a downtrend (see Figure 6.11b), the middle peak in the consolidation exceeds the other two peaks. The result in both cases is a head and shoulders pattern turned upside down. Because it is turned upside down, there is no chance of confusing it with the reversal pattern.

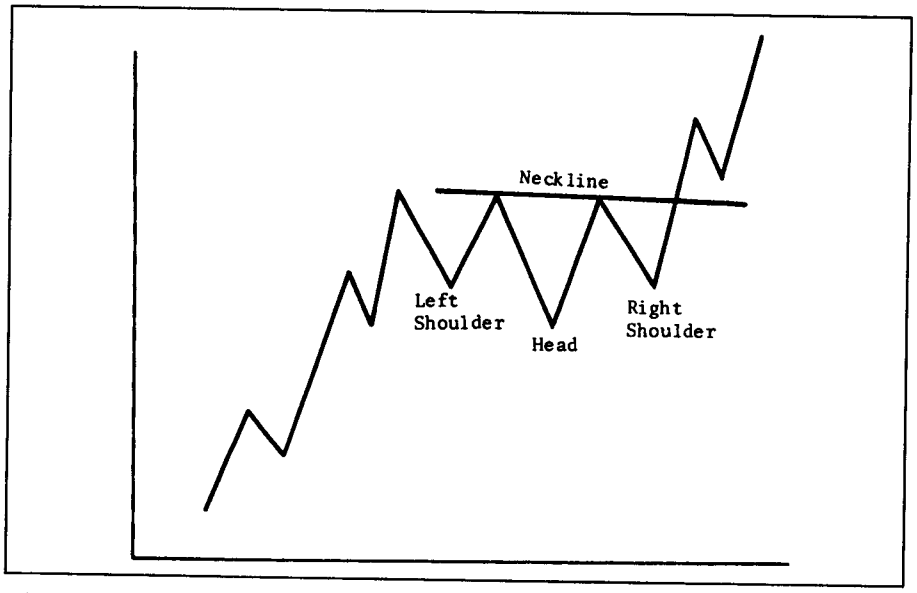

Figure 6.11a *Example of a bullish continuation head and shoulders pattern.*

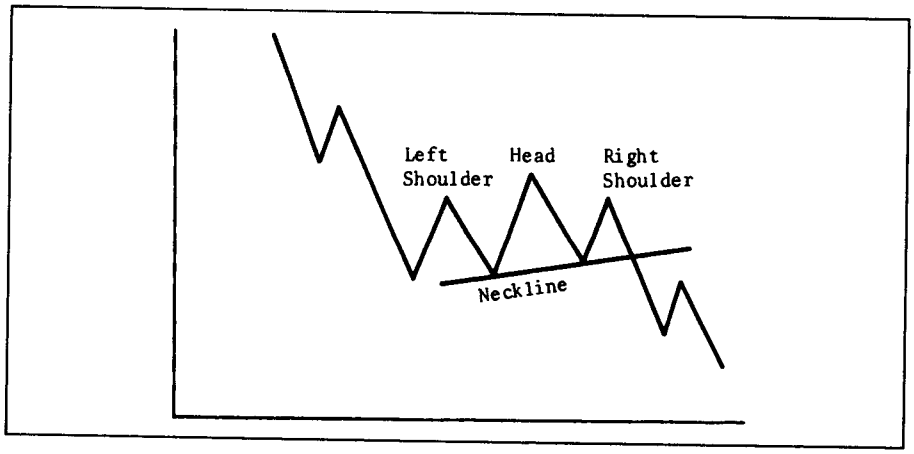

Figure 6.11b *Example of a bearish continuation head and shoulders pattern.*

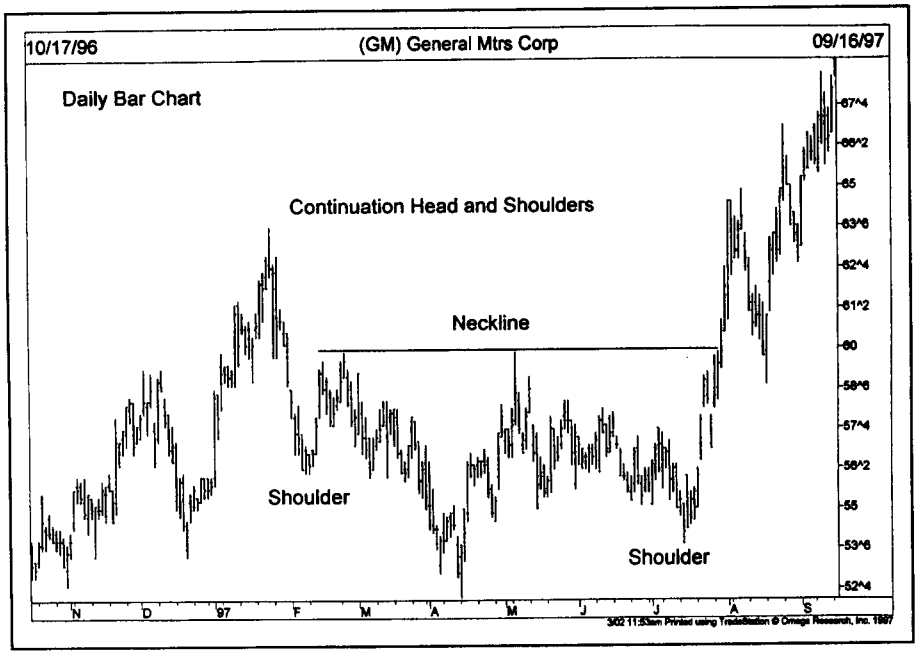

Figure 6.11c *General Motors formed a continuation head and shoulders pattern during the first half of 1997. The pattern is very clear but shows up in an unusual place. The pattern was completed and the uptrend resumed with the close above the neckline at 60.*

CONFIRMATION AND DIVERGENCE

The principle of *confirmation* is one of the common themes running throughout the entire subject of market analysis, and is used in conjunction with its counterpart—*divergence*. We'll introduce both concepts here and explain their meaning, but we'll return to them again and again throughout the book because their impact is so important. We're discussing confirmation here in the context of chart patterns, but it applies to virtually every aspect of technical analysis. *Confirmation* refers to the comparison of all technical signals and indicators to ensure that most of those indicators are pointing in the same direction and are confirming one another.

Divergence is the opposite of confirmation and refers to a situation where different technical indicators fail to confirm one another. While it is being used here in a negative sense, divergence is a valuable concept in market analysis, and one of the best early warning signals of impending trend reversals. We'll discuss the principle of divergence at greater length in Chapter 10, "Oscillators and Contrary Opinion."

CONCLUSION

This concludes our treatment of price patterns. We stated earlier that the three pieces of raw data used by the technical analyst were *price, volume,* and *open interest.* Most of what we've said so far has focused on price. Let's take a closer look now at volume and open interest and how they are incorporated into the analytical process.