Technical Analysis of Financial Markets [Murphy]

Davide Azzalini, Fabio Azzalini

October 25, 2016

1 Philosophy of Technical Analysis

1.1 Philosophy or rationale

Technical analysis is the study of market action, primarily through the use of charts, for the purpose of forecasting future price trends.

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

1. Market action discounts everything. 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.

2. Prices move in trends, and trend in motion is more likely to continue than to reverse. This is of course, an adaptation of Newton's first law of motion. Another way to state this is that a trend in motion will continue in the same direction until it reverses.

3. 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.

1.2 Technical versus fundaamental forcasting

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.

The fundamentalist studies the cause of market movement, while the technician studies the effect.

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.

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.

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.

2 Dow Theory

2.1 Basic tenets

"The sum and tendency of the transactions of the Stock Exchange represent the sum of all Wall Street's knowledge of the past, immediate and remote, applied to the discounting of the future."

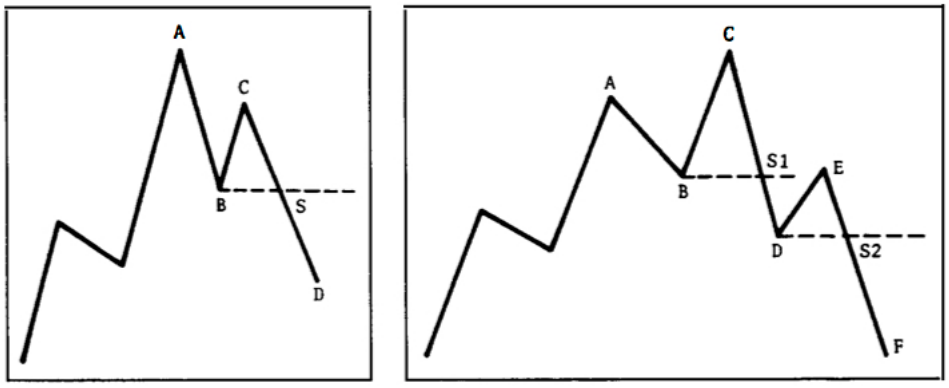
The idea that the markets reflect every possible knowable factor that affects overall supply and demand is one of the basic premises of technical theory. While the markets cannot anticipate events such as earthquakes and various other natural calamities, they quickly discount such occurrences, and almost instantaneously assimilate their affects into the price action.

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.

Dow considered a trend to have three parts, primary, secondary, and minor. Dow conceived of primary trend 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. The minor (or near term) trend usually lasts less than three weeks.

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 ad-

Figure 2.3a-b



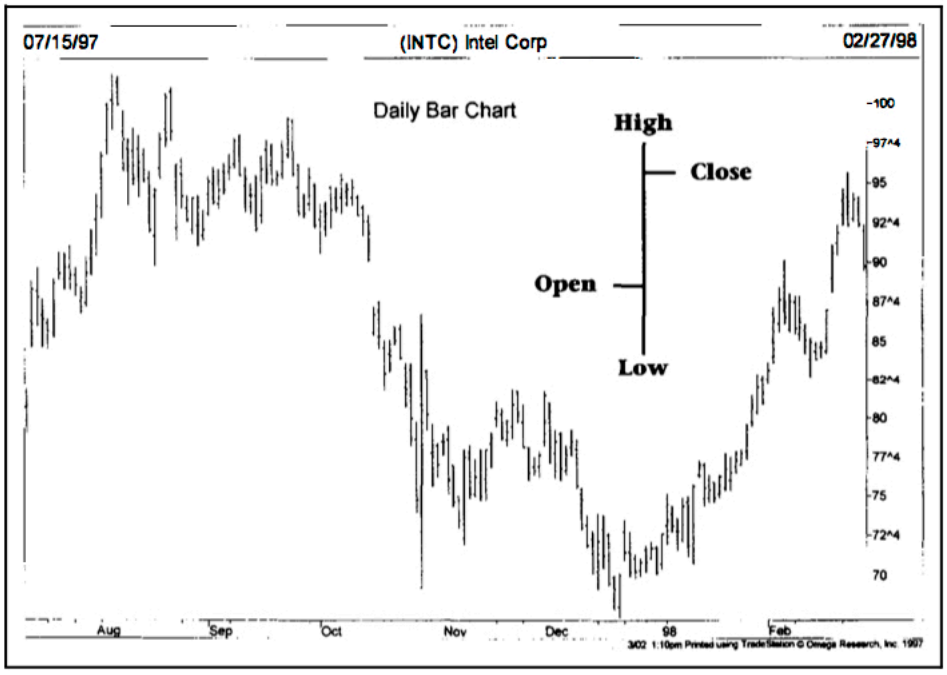
vance rapidly and business news improves. The distribution phase takes place when newspapers begin to print increasingly bullish stories; when economic news is better than ever; and when speculative volume and public participation increase. During this last phase the same informed investors who began to "accumulate" near the bear market bottom (when no one else wanted to buy) begin to "distribute" before anyone else starts selling.

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.

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. 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.”

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 Sl, 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 “non-failure swing.”

Figure 3.1



3 Chart Construction

3.1 Types of charts available

Figure 3.1 shows a standard daily bar chart. 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.

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 0 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.

3.2 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 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

Figure 3.2

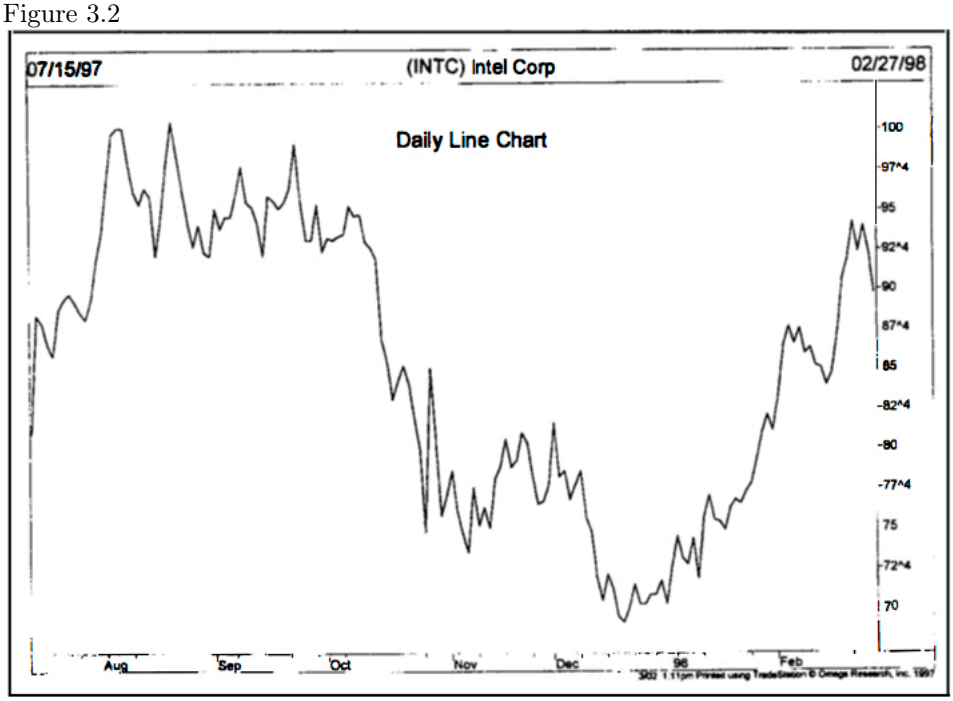


Figure 3.3

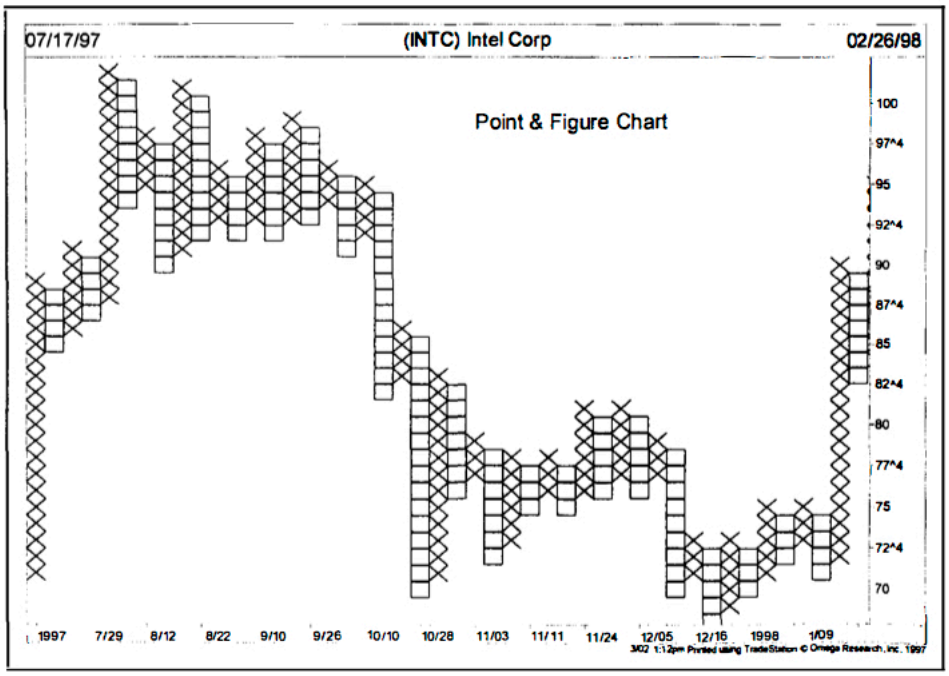
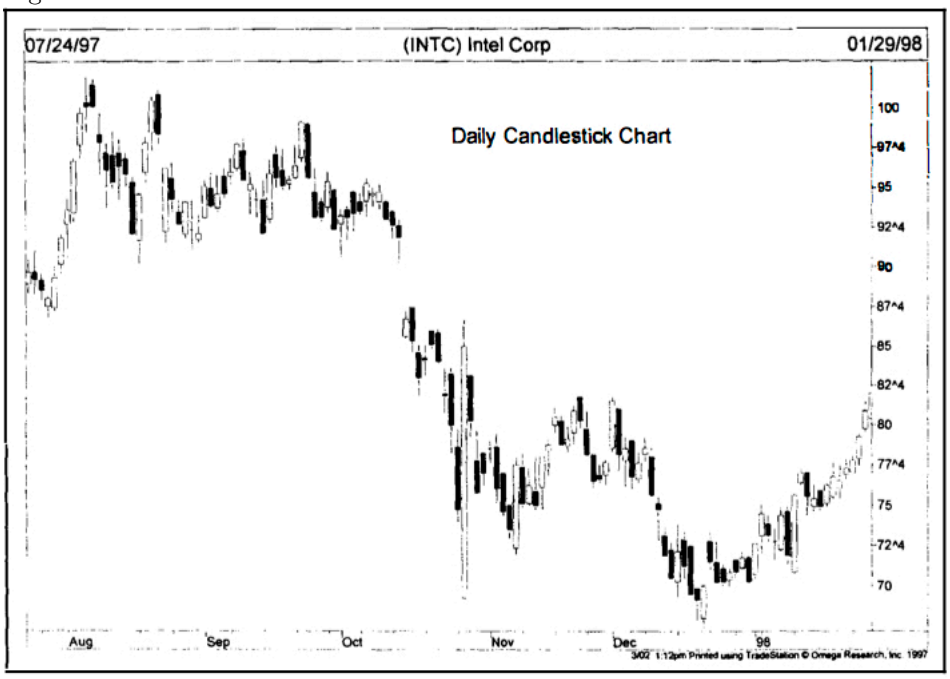


Figure 3.4



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.

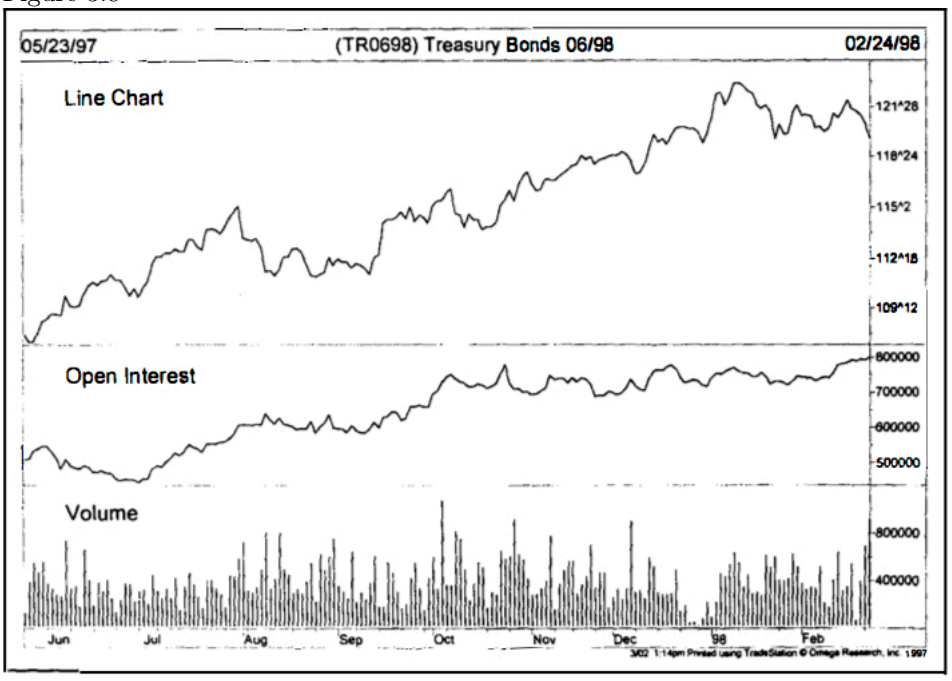
3.3 Volume and futures open interest

Another piece of important information that should be included on the bar chart is the 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. 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.)

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

Figure 3.8



the figures.

4 Basic Concepts of Trend

4.1 Definition of trend

The concept of trend is absolutely essential to the technical approach to market analysis. In a general sense, the trend is simply the direction of the market, which way it's moving. It is the direction of the peaks and troughs that constitutes market trend. An up end would be defined as a series of successively higher peaks and troughs; a down end 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-c.)

4.2 Trend has three directions

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

Figure 4.1a-c

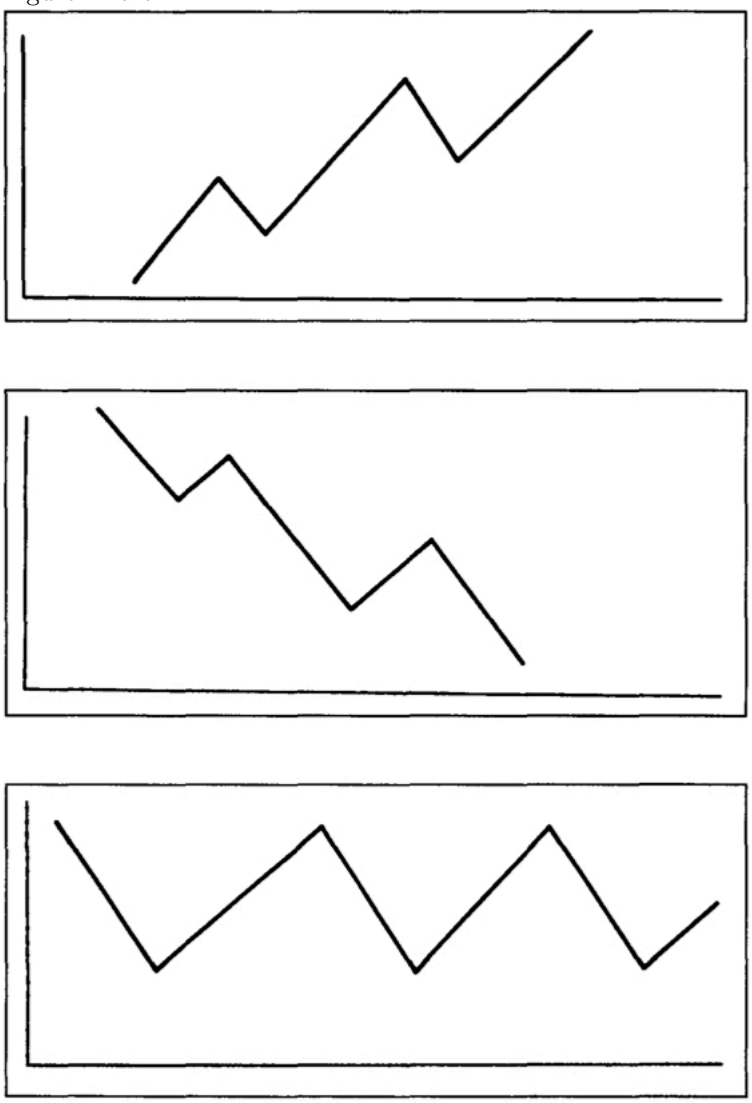
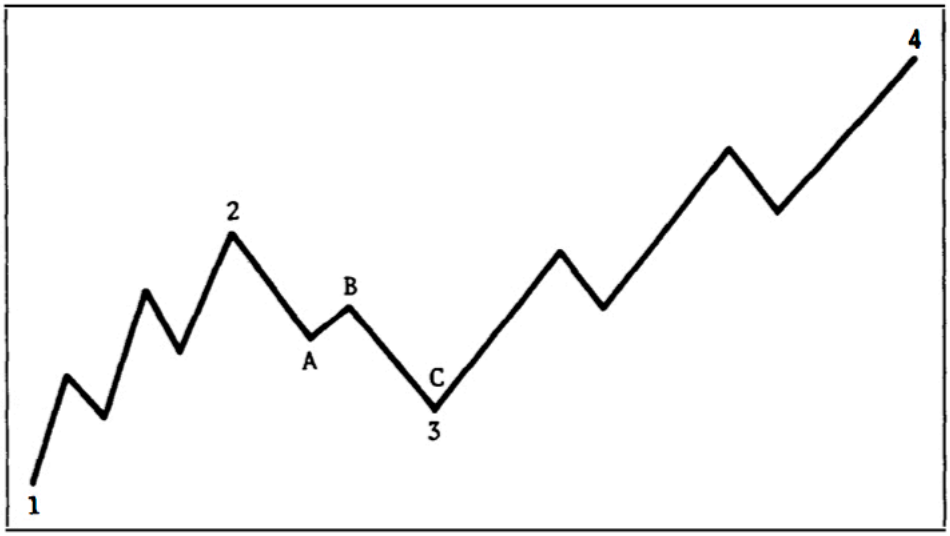


Figure 4.2a



the forces of supply and demand are in a state of relative balance. 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.

4.3 Trend has three classifications

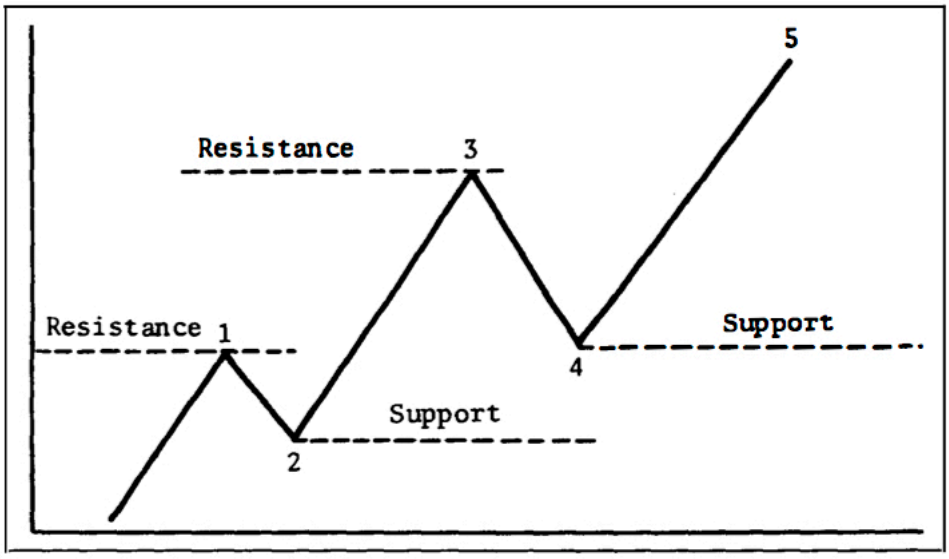
Trend is usually broken down into the three categories: the major, intermediate, and near term trends. A major trend last longer than a year. The intermediate, or secondary, trend from three weeks to many months. The near term trend is usually defined as anything less than two or three weeks.

Each trend becomes a portion of its next larger trend. For example, the intermediate trend would be a correction in the major trend.

In 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 which trend the person is inquiring about.

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

Figure 4.3a



primarily for timing purposes. In an intermediate uptrend, short term setbacks would be used to initiate long positions.

4.4 Support and resistance

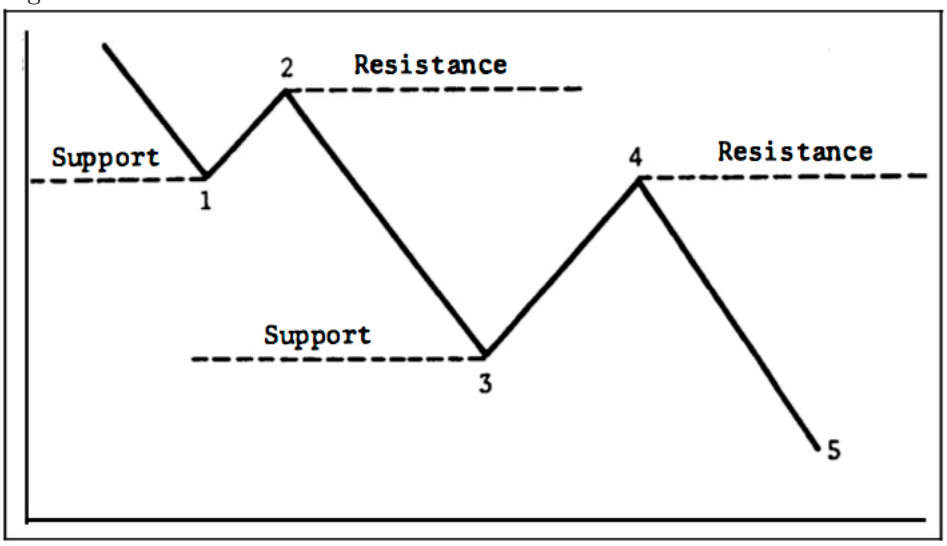
Prices move in a series of peaks and troughs, and the direction of those peaks and troughs determines the trend of the market. Let's now give those peaks and troughs their appropriate names and, at the same time, introduce the concepts of support and resistance.

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. 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 resistance 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.

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

Figure 4.3b



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. Figures 4.4a-b 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.

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%.

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, SO, 75,

Figure 4.4a

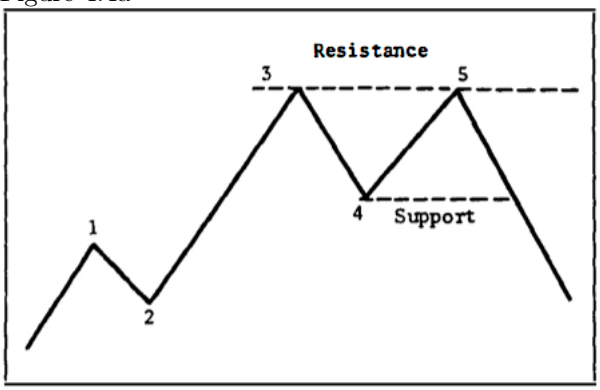
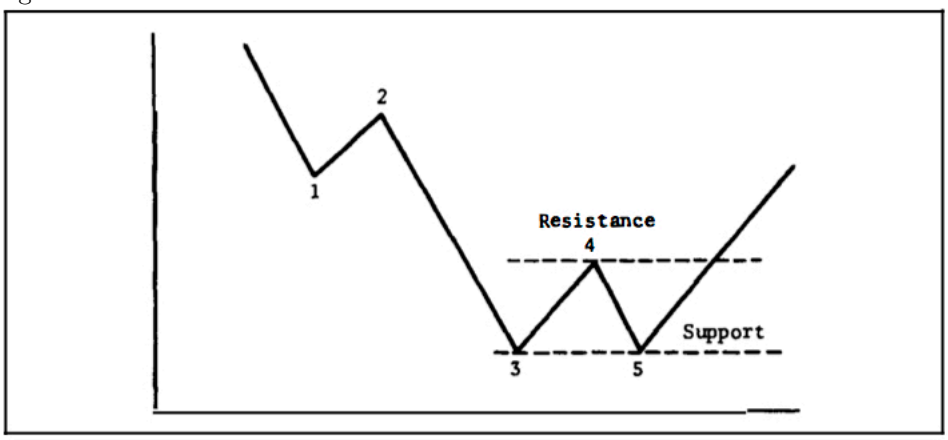


Figure 4.4b



100 (and multiples of 1000), as price objectives and act accordingly. These round numbers, therefore, will often act as "psychological" support or resistance levels.

4.5 Trend lines

Now that we understand support and resistance, let's add another building block to our arsenal of technical tools: the endline. (See Figures 4.6a-c.) An up endline 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 endline is drawn downward to the right along successive rally peaks as shown in Figure 4.6b.

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. 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.

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. The successful test of the trendline occurs at point S. To summarize, two points are needed to draw the trendline, and a third point to make it a valid 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

Figure 4.6a

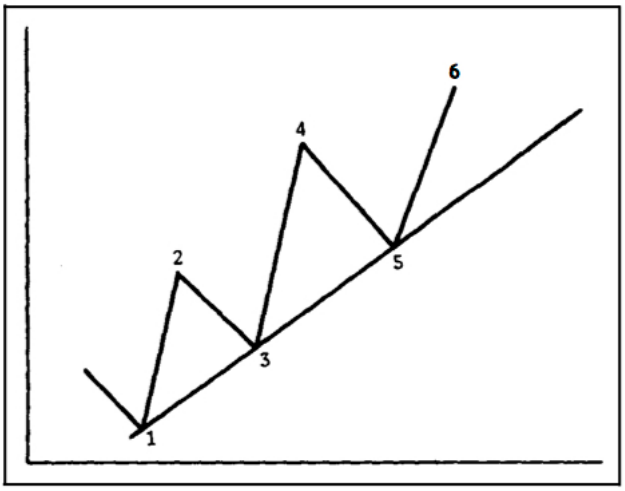


Figure 4.6b

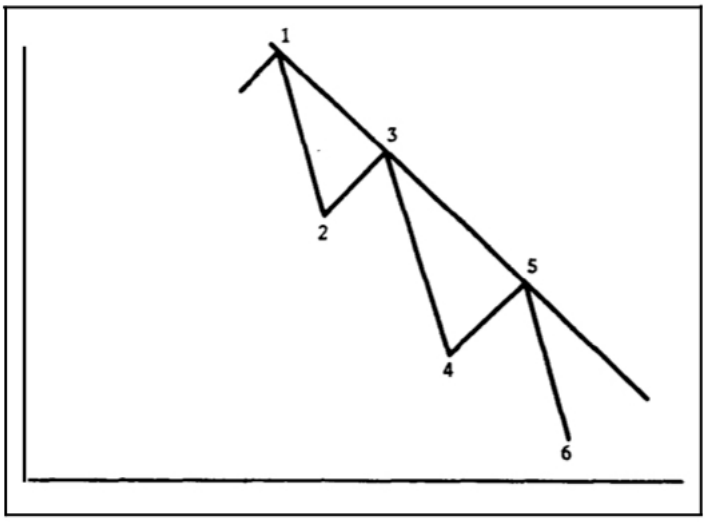
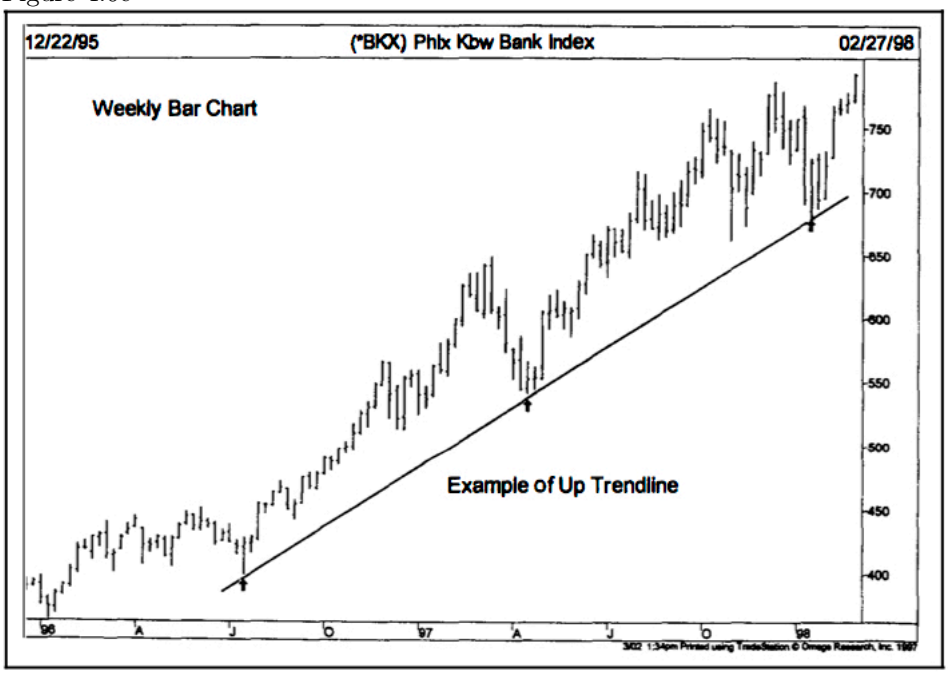


Figure 4.6c



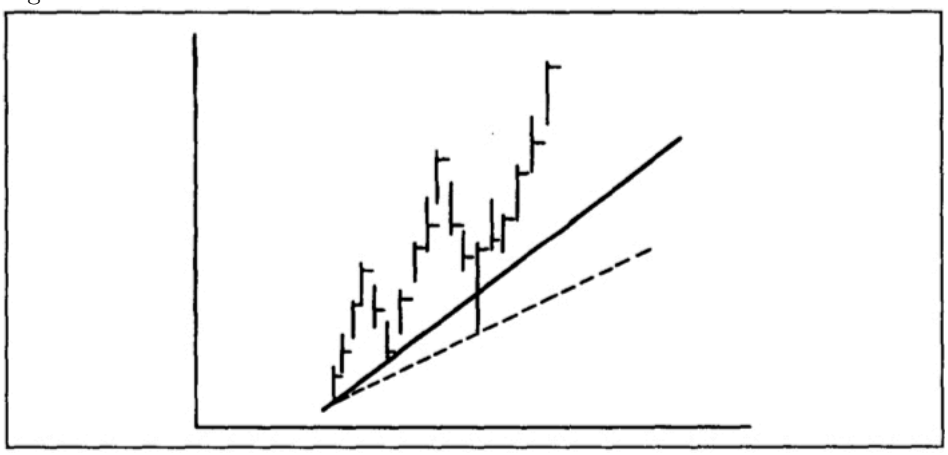
then helps not only to determine the extremities of the corrective phases, but maybe even more importantly, tells us when that trend is changing.

The significance of a trendline is determined by: how long it has been intact and how many 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.

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.) 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.

As a general rule, a close beyond the trendline is more significant than just an intraday penetration. 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%.

Figure 4.9



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.

Trendlines can be used to help determine price objectives. 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 om the "head" to the "neckline" is projected beyond that line once it's broken.

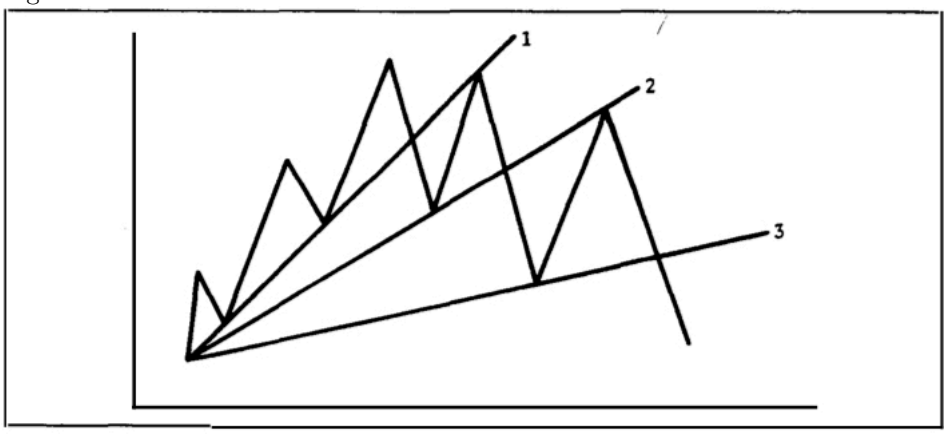
4.6 The fan principle

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 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.

4.7 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

Figure 4.11a



chartists simply draw a 45 degree line on the chart from a prominent high or low and use this as a major trendline. 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 4S 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.

Sometimes trendlines have to be adjusted to fit a slowing or an accelerating trend. 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).

4.8 The channel line

The channel line, or the re 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 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, but of course in the opposite direction.

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.

Figure 4.12

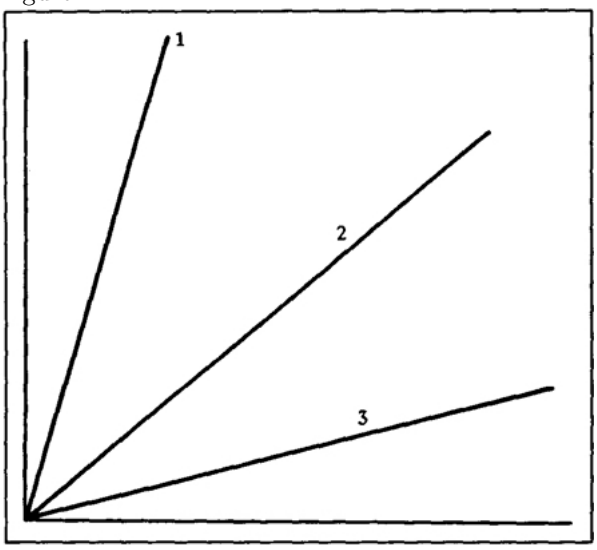


Figure 4.13

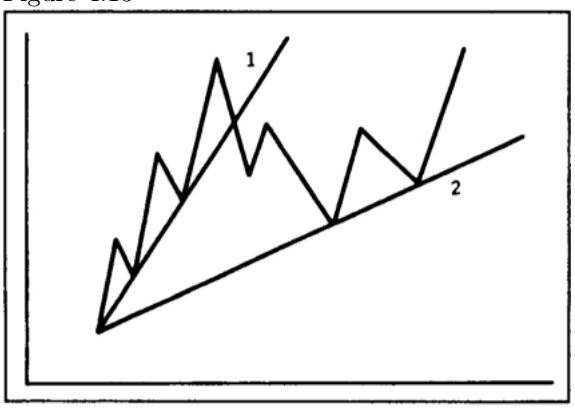
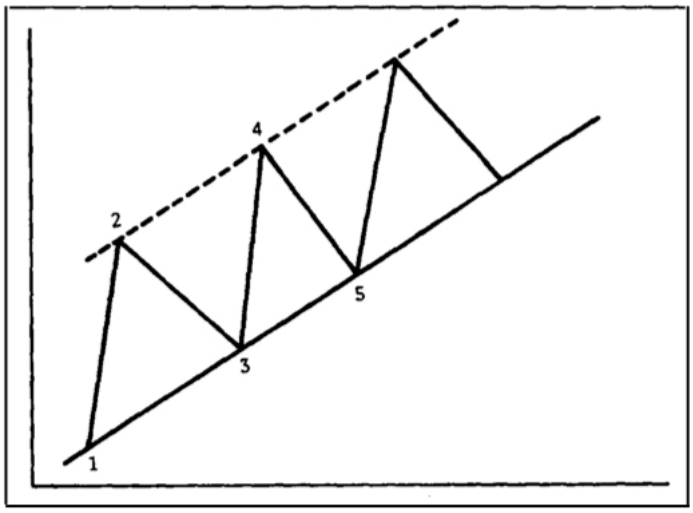


Figure 4.16a



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.

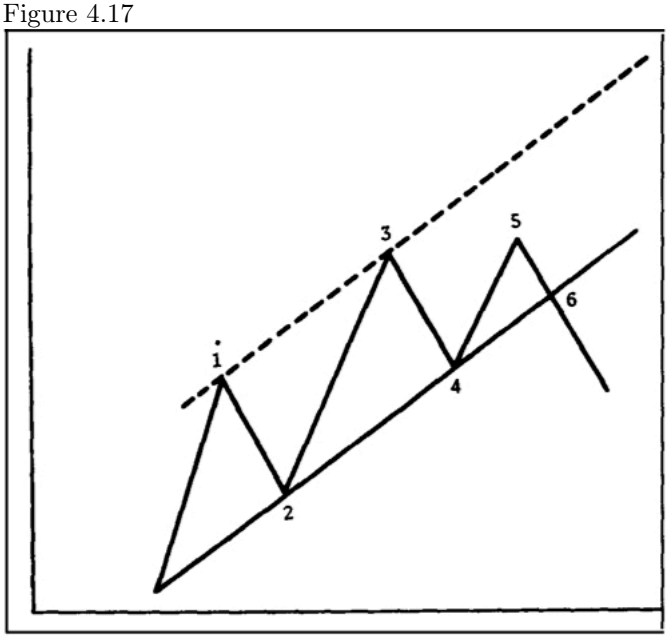
Channel lines have measuring implications. Once a breakout occurs om an existing price channel, prices usually travel a distance equal to the width of the channel. Therefore, the user has to simply measure the width of the channel and then project that amount from the point at which either trendline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

4.9 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 retracement. 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

Figure 4.17



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.)

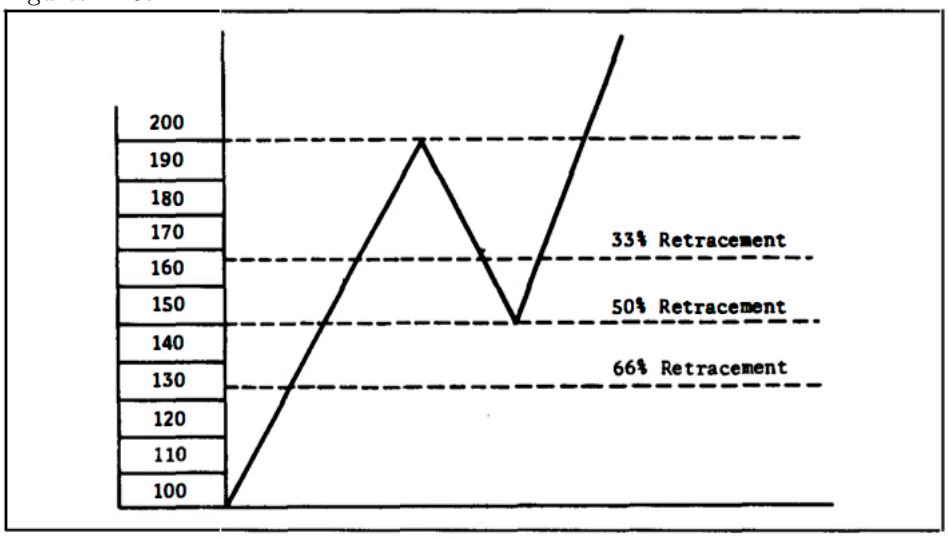
The maximum retracement parameter is 66%, which becomes an especially critical area. If the prior trend is to be maintained, the correction must stop at the two-thirds point. This then becomes a relatively low risk buying area in an uptrend or selling area in a downtrend. If prices move beyond the two-thirds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

4.10 Reversal days

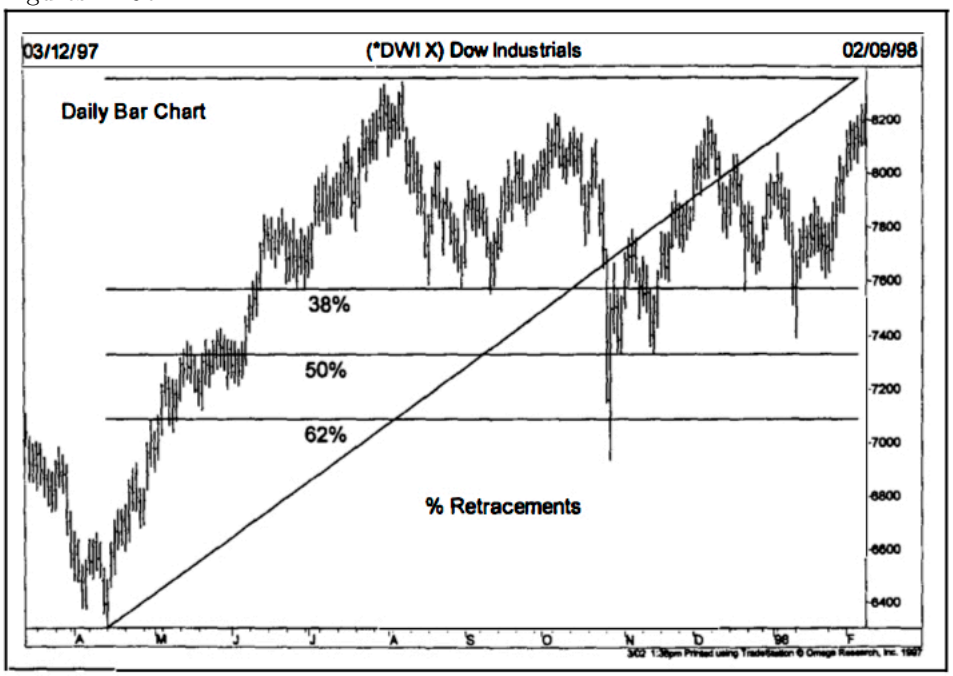
A reversal day takes place either at a top or a bottom. The generally accepted definition of a top reversal day is the setting of a new high in an uptrend, followed by a lower close on the same day. In other words, prices set a new high for a given upmove at some point during the day (usually at or near 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. Figures 4.22a-b show what both would look like on a bar chart. Note the heavier volume on the reversal day.

The bottom reversal day is sometimes referred to as a selling climax, while the top reversal day as buying climax.

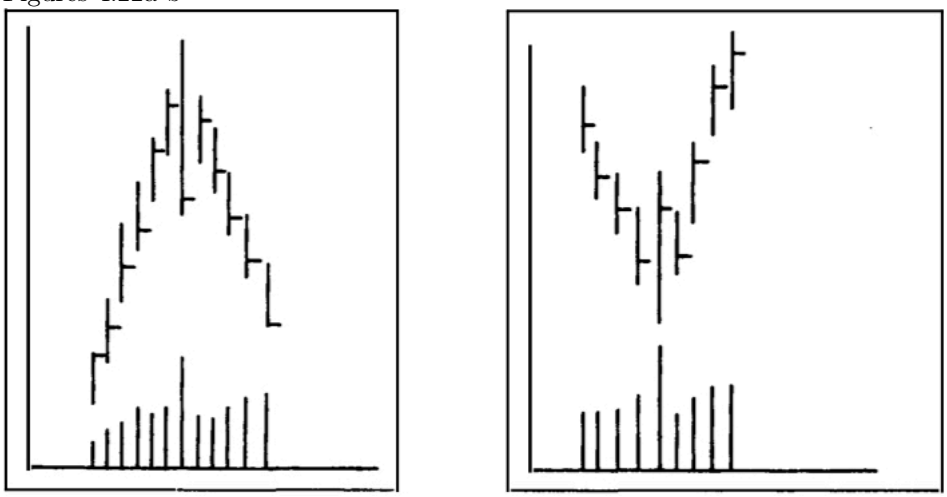
Figures 4.20a



Figures 4.20b



Figures 4.22a-b



4.11 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. 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.

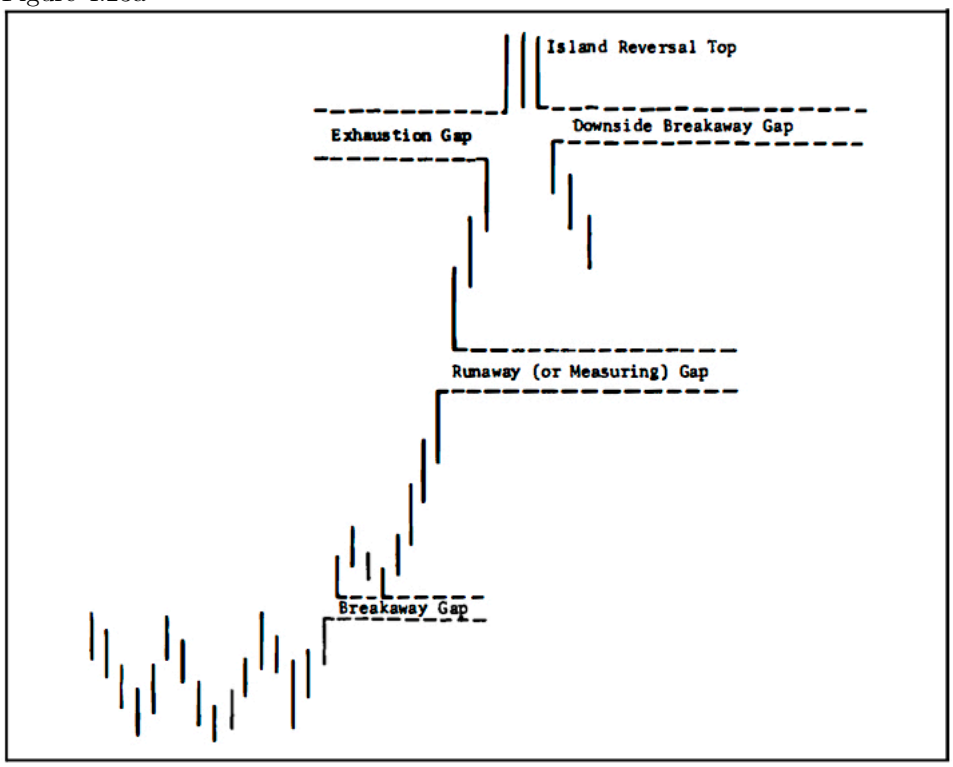
There are three general types of gaps:

1. 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 o en occurs on a breakaway gap. Breakaway gaps usually occur on heavy volume. In all cases a close below an upward gap is a sign of weakness. (See Figures 4.23a and b.)

2. The Runaway or Measuring Gap. After the move has been underway for a while, 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.

3. 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. However, that upward leap

Figure 4.23a



quickly fades and prices turn lower within a couple of days or within a week.

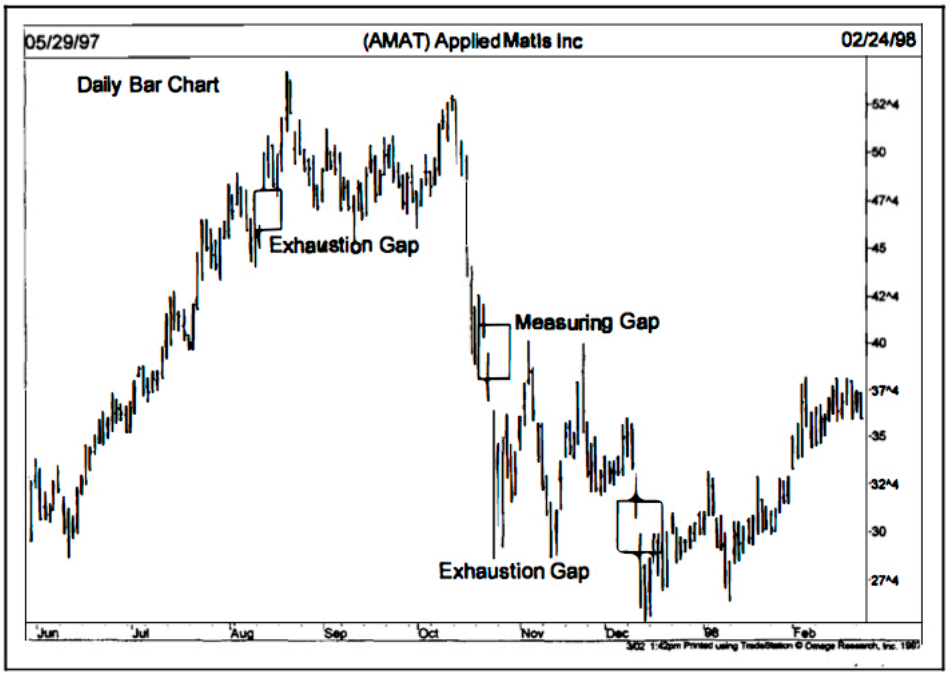
5 Major Reversal Patterns

5.1 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 pat terns 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.

Figure 4.23b



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.

Preliminary points to be considered that are common to all of these reversal patterns:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

5.2 The head and shoulders reversal pattern

It is probably the best known and most reliable of all major reversal patterns.

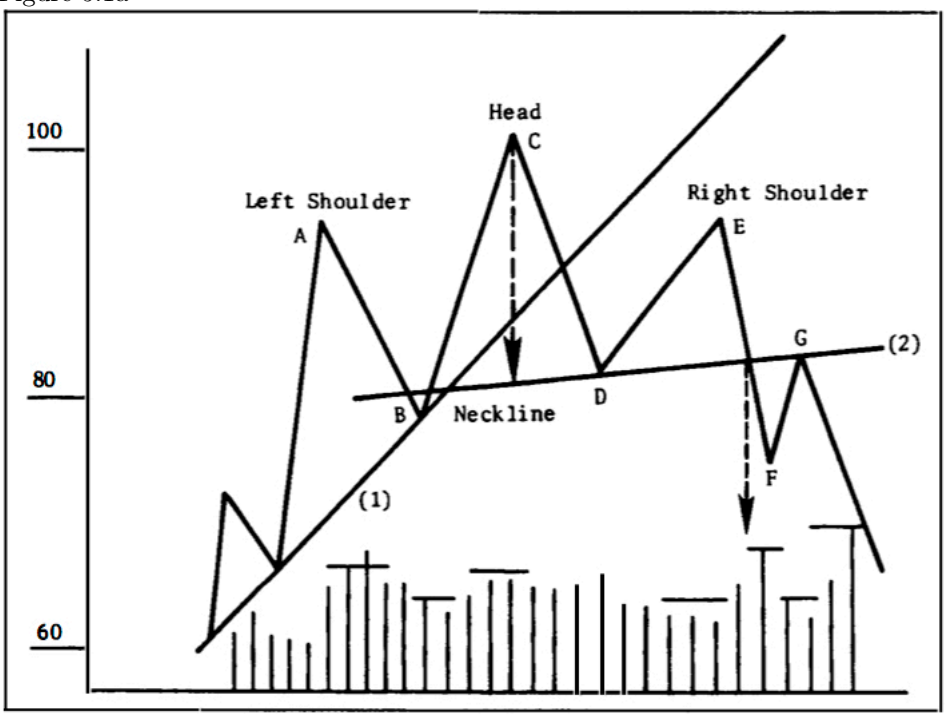
In a major uptrend, where a series of ascending peaks and troughs gradually begin to lose momentum. The uptrend then levels off for awhile. During this time the forces of supply and demand are in relative balance. Once this distribution phase has been completed, support levels along the bottom of the 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 S.la 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 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. 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. 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

Figure 5.1a



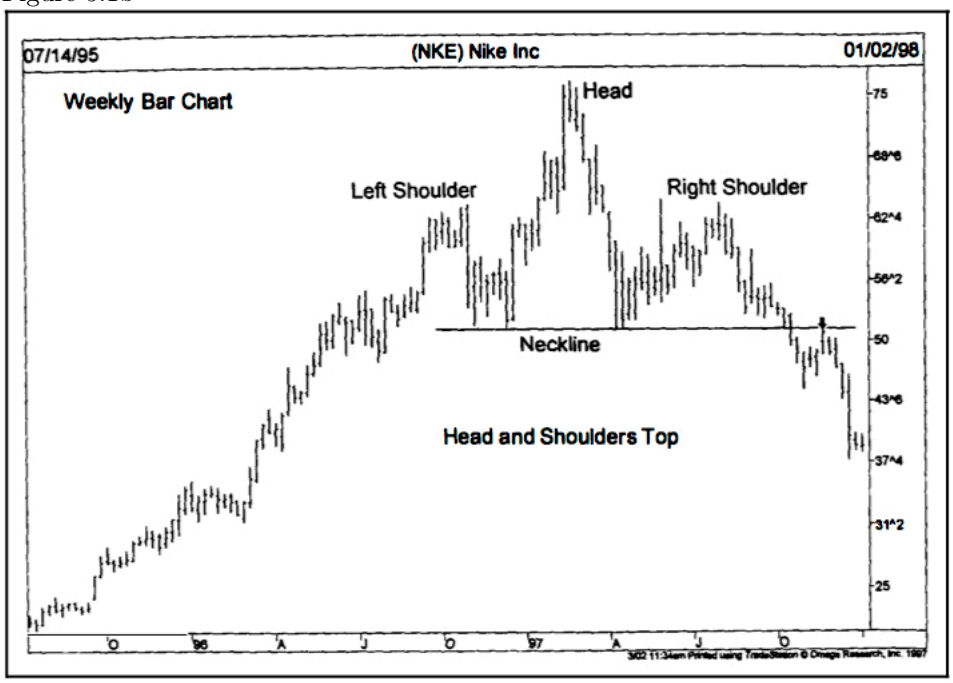
to sideways. This might be sufficient cause to liquidate long positions, but not necessarily enough to justify new short sales.

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 Volume should increase on the breaking of the neckline.

5.3 The iportance 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

Figure 5.1b



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.

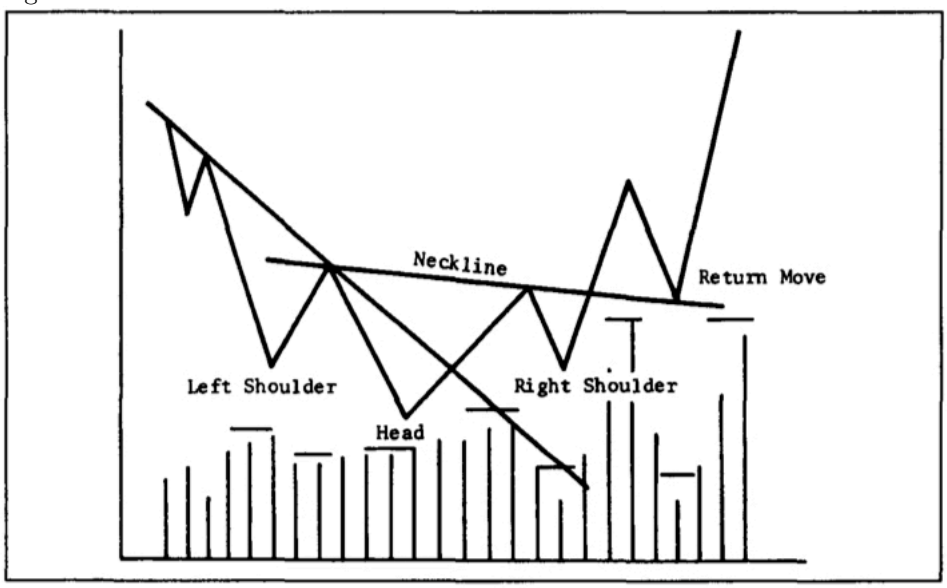
5.4 Finding a price objective

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.

5.5 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 S.2a shows, there are three distinct bottoms 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. 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. The markets require a significant increase in buying pressure, reflected in greater volume, to launch a new bull market.

Figure 5.2a



5.6 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.

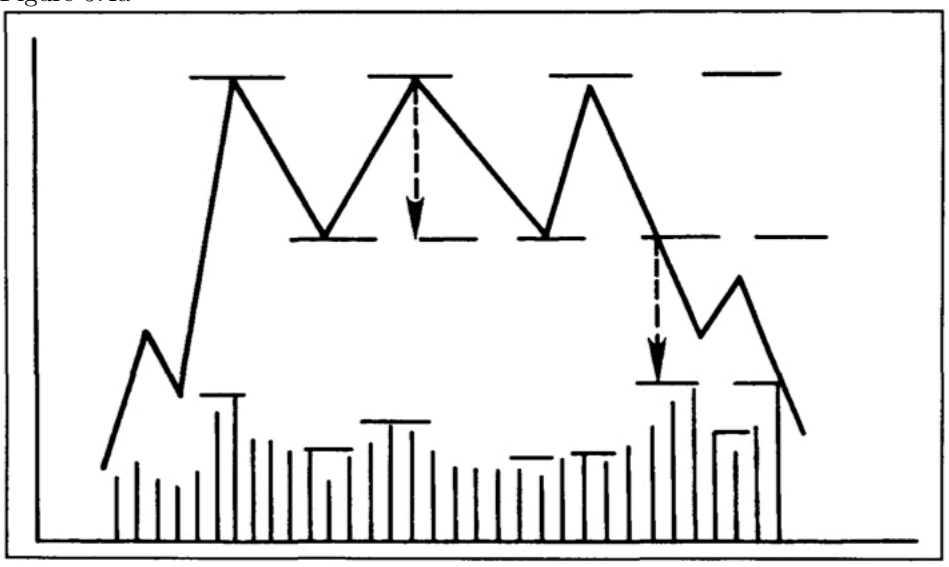
5.7 Triple tops and bottoms

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.) 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.

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.

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.

Figure 5.4a



5.8 Double tops and bottoms

A 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. Figures 5.5a and 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 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.

The measuring technique for the double top is the height of the pattern projected from the breakdown point (the point where the middle trough at point B is broken).

Figure 5.5a

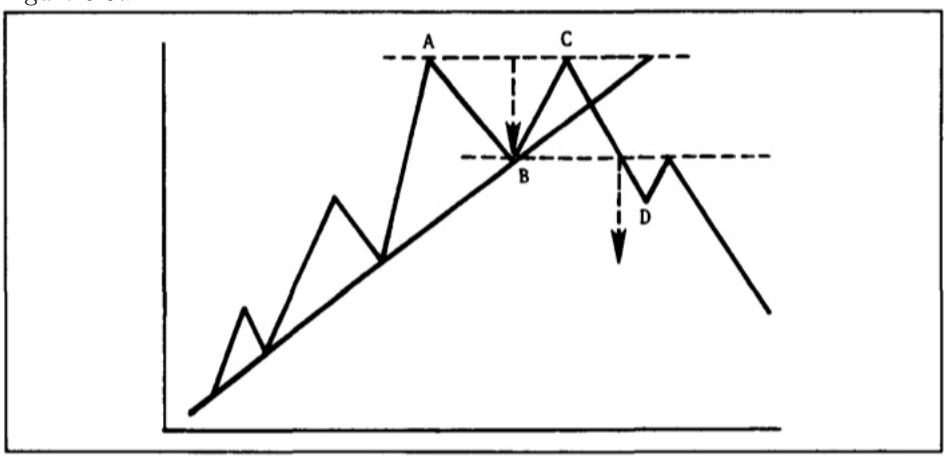


Figure 5.5b

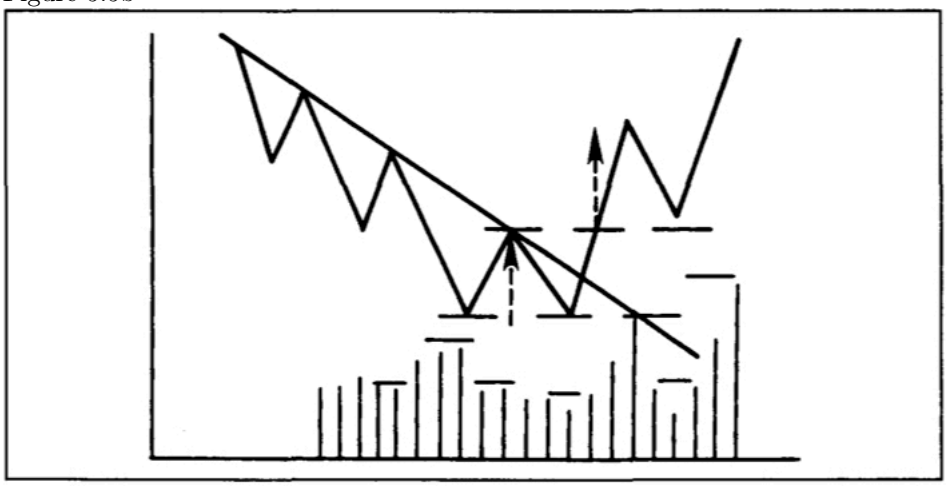
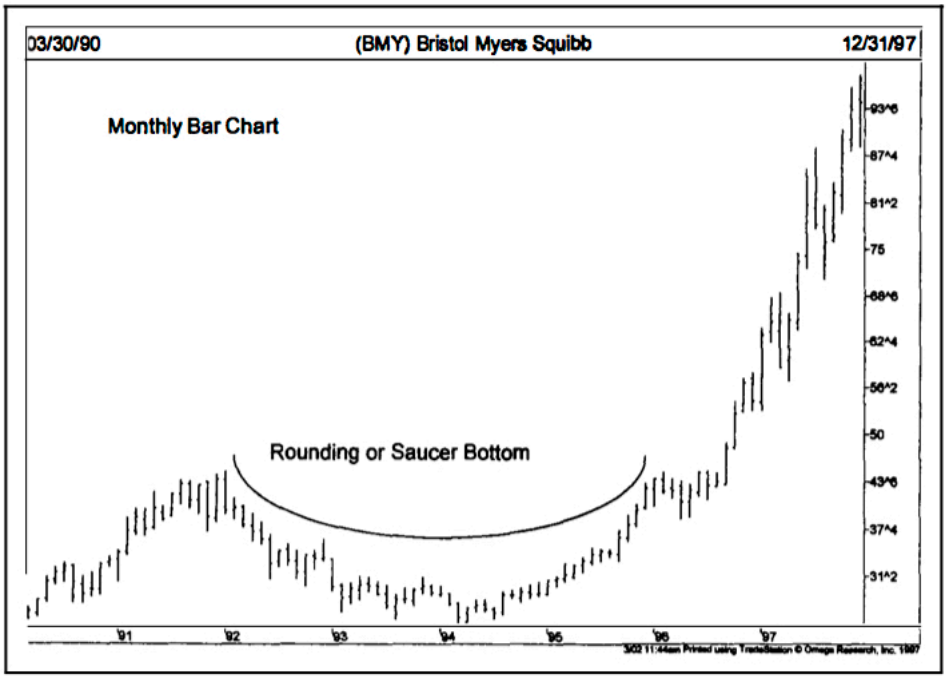


Figure 5.8



5.9 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.

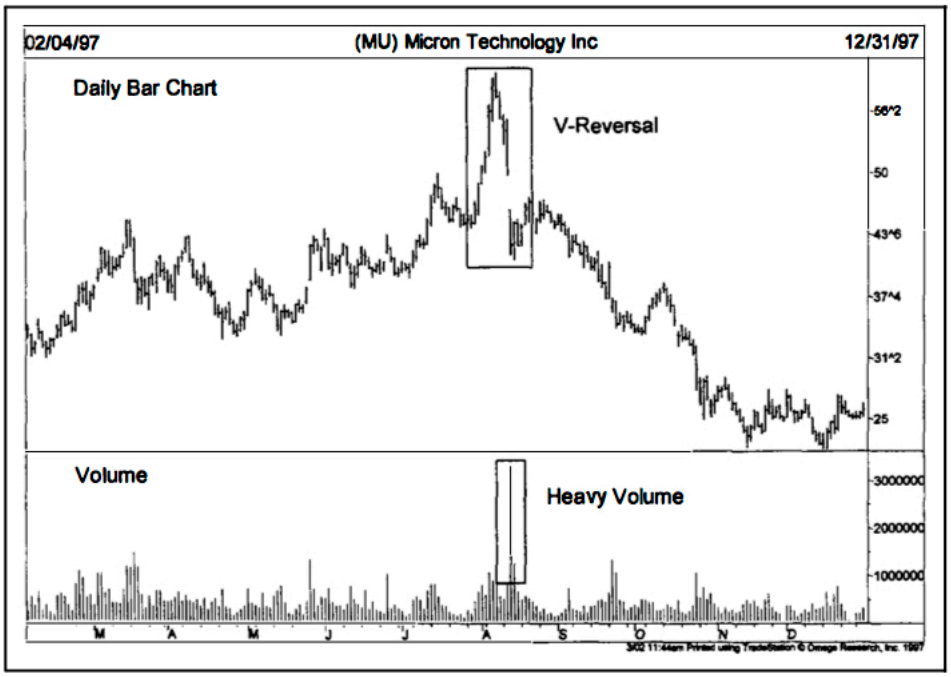
Spikes are the hardest market turns to deal with because the spike (or V pattern) happens very quickly with little or no transition period. They usually take place in a market that has gotten so overextended in one direction, that a sudden piece of adverse news causes the market to reverse direction very abruptly. A daily or weekly reversal, on very heavy volume, is sometimes the only warning they give us.

6 Continuation Patterns

6.1 Introduction

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

Figure 5.9



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.

6.2 Triangles

There are three types of triangles: symmetrical, ascending, and descending. Each type of triangle has a slightly different shape and has different forecasting implications.

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.

The ascending triangle has a rising lower line with a flat or horizontal upper line (see Figure 6.1b).

The descending tri angle (Figure 6.1c), by contrast, has the upper line declining with a flat or horizontal bottom line.

Figure 6.1a

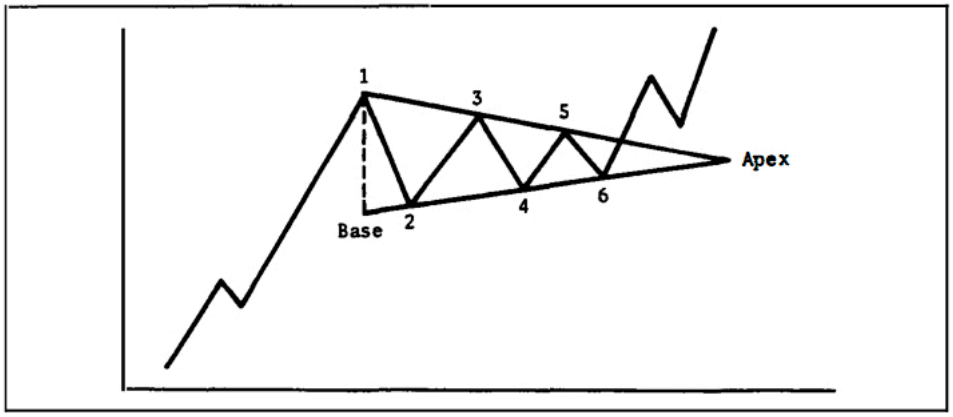


Figure 6.1b

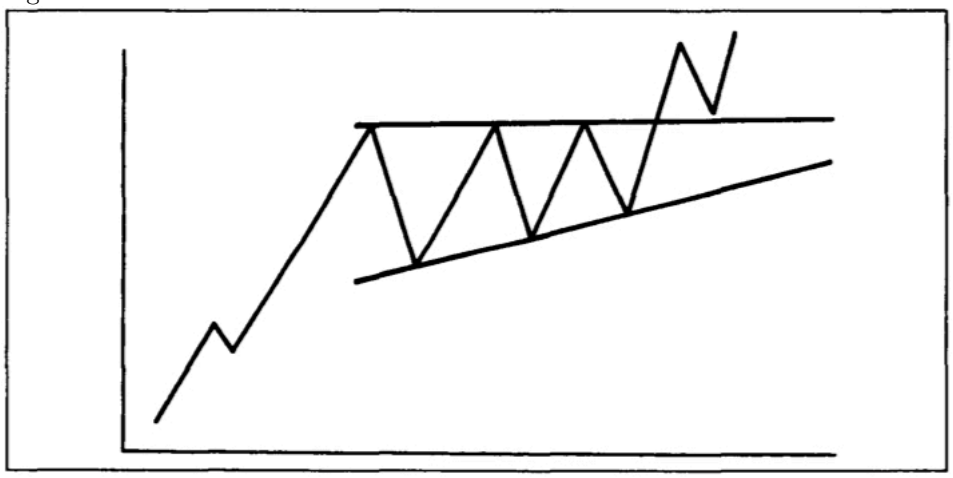
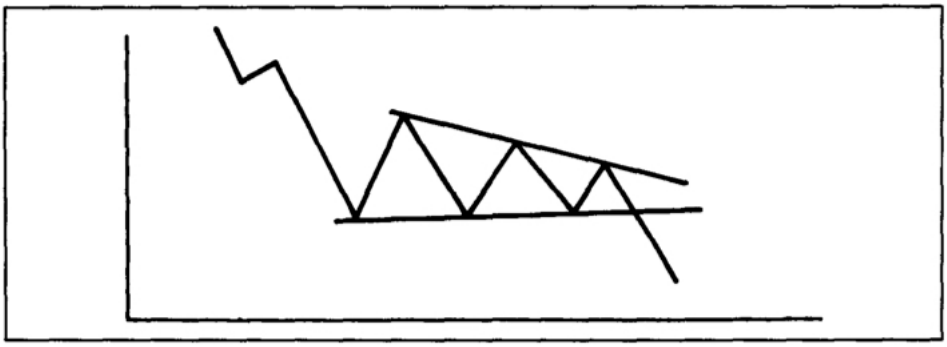


Figure 6.1c



6.3 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.

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.

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

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.

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.

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.

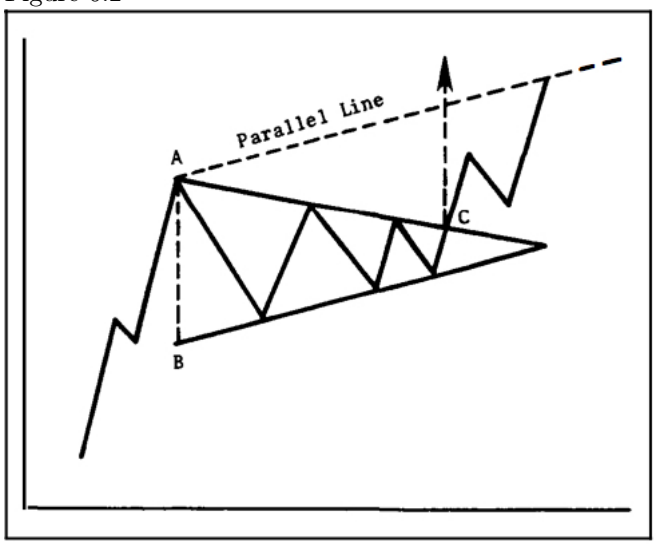
6.4 The ascending triangle

The ascending and descending triangles are variations of the symmetrical, but have different forecasting implications. Figures 6.1b 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.

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.

Figure 6.2



6.5 The descending triangle

The descending triangle is just a mirror image of the ascending, and is generally considered a bearish pattern. 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.

The measuring technique is exactly the same as the ascending triangle

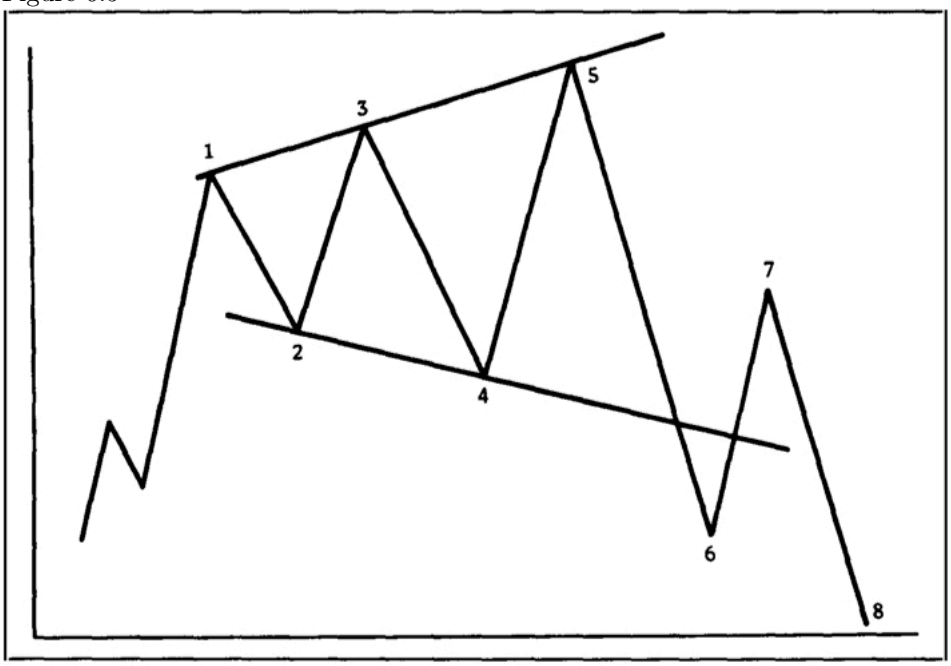
One final factor to be considered on the subject of triangles is that of the time dimension. The triangle is considered an intermediate pattern, meaning that it usually takes longer than a month to form, but generally less than three months.

6.6 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 and unusually emotional. Because this pattern also represents an

Figure 6.5



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.

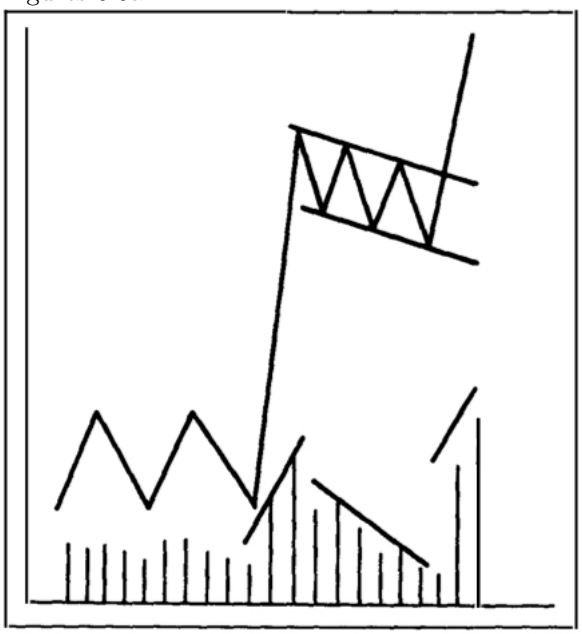
6.7 Flags and pennants

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.

Figures 6.6a



Figures 6.6b

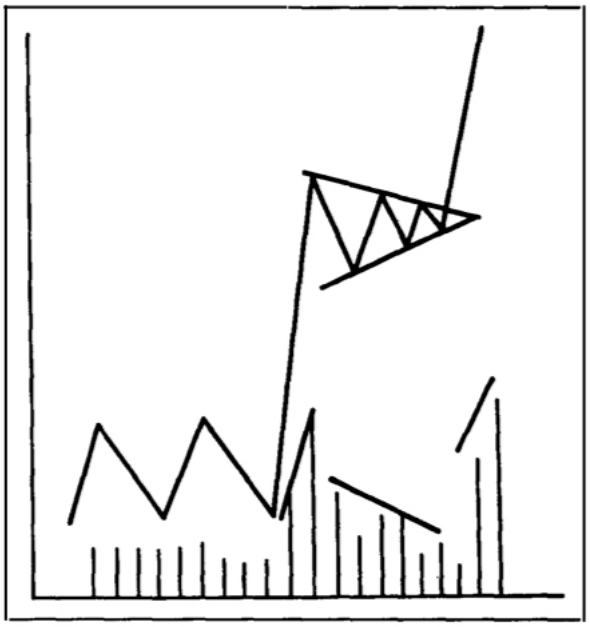
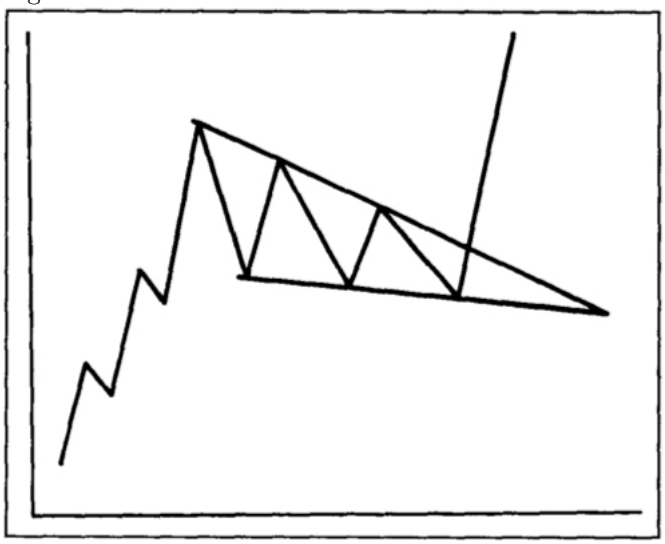


Figure 6.8a



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.

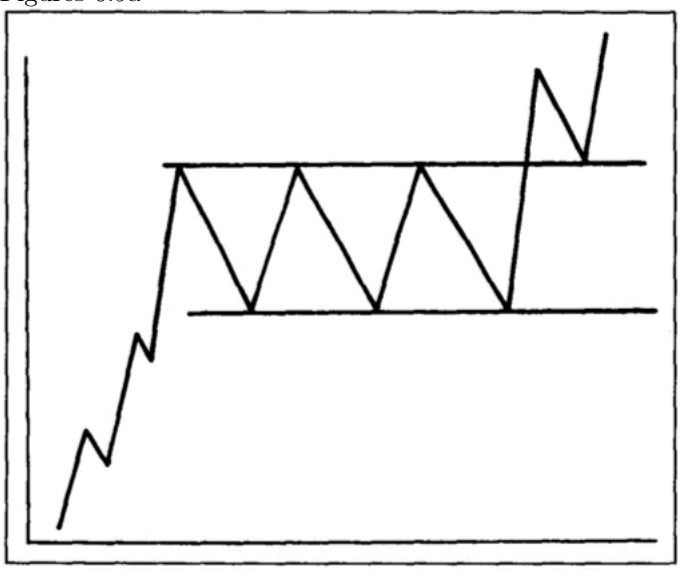
The measuring implications are similar for both patterns. Flags and pennants are said to "fly at half-mast" from a flagpole. The flagpole is the prior sharp advance or decline. The term "half mast" suggests that these minor continuation patterns tend to appear at about the halfway point of the move. In general, the move after the trend has resumed will duplicate the flagpole or the move just prior to the formation of the pattern.

6.8 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.

Figures 6.9a



6.9 The rectangle formation

It represents a pause in the trend during which prices move sideways between two parallel horizontal lines. The rectangle is sometimes referred to as a trading range or a congestion area. Tt usually represents just a consolidation period in the existing trend, and is usually resolved in the direction of the market trend that preceded its occurrence.

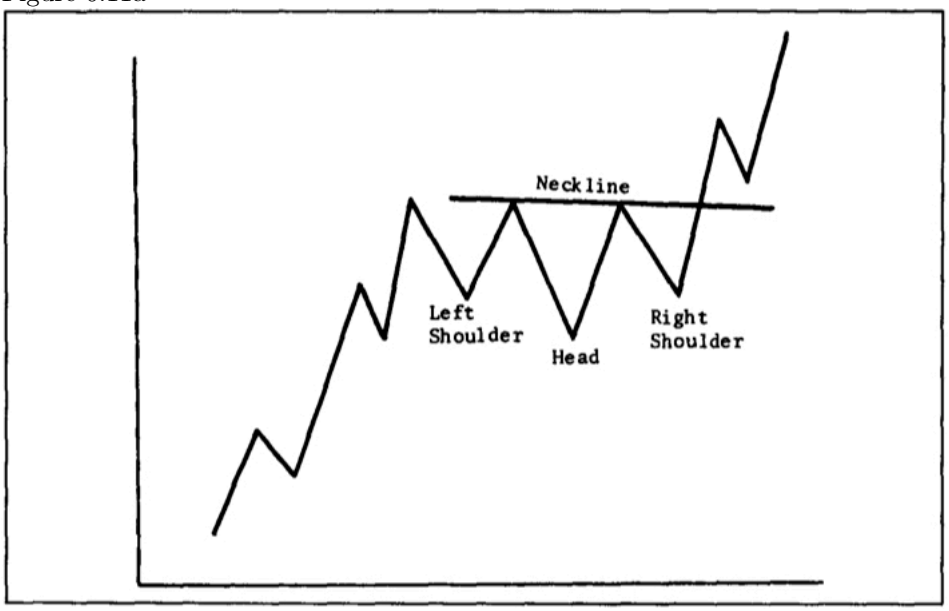
One important clue to watch for is the volume pattern. Because the price swings in both directions are fairly broad, the analyst should keep a close eye on which moves have the heavier volume. If the rallies are on heavier and the setbacks on lighter volume, then the formation is probably a continuation 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.

In terms of duration, the rectangle usually falls into the one to three month category, similar to triangles and wedges. 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.

6.10 The continuation head and shoulders pattern

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.

Figure 6.11a



7 Volume and Open Interest

7.1 Introduction

Most technicians in the financial markets use a multidimensional approach to market analysis by tracking the movement of three sets of figures: price, volume, and open interest. Volume analysis applies to all markets. Open interest applies primarily to futures markets.

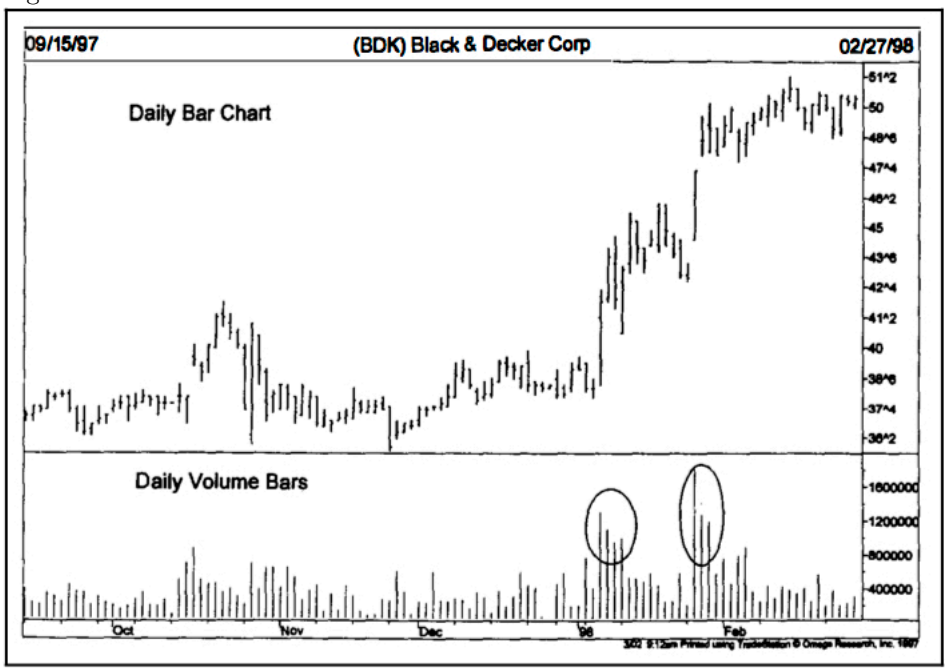
7.2 Volume and open interest as secondary indicators

Let's begin by placing volume and open interest in their proper perspective. Price is by far the most important. Volume and open interest are secondary in importance and are used primarily as confirming indicators. Of those two, volume is the more important.

Volume is the number of entities traded during the time period under study. Because we'll be dealing primarily with daily bar charts, our main concern is with daily volume. That daily volume is plotted by a vertical bar at the bottom of the chart under the day's price action. (See Figure 7.1.)

The total number of outstanding or unliquidated contracts at the end of the day is open interest.

Figure 7.1



7.3 Interpretation of volume for all markets

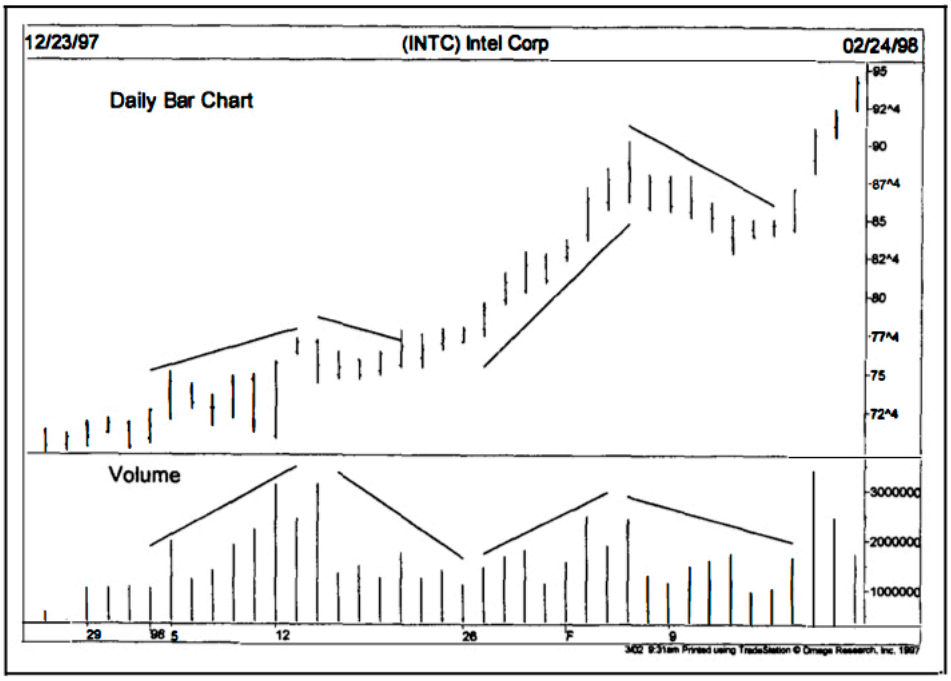
The level of volume measures the intensity or urgency behind the price move. Heavier volume reflects a higher degree of intensity or pressure. By monitoring the level of volume along with price action, the technician is better able to gauge the buying or selling pressure behind market moves. This information can then be used to confirm price movement or warn that a price move is not to be trusted. (See Figure 7.4.) To state the rule more concisely, volume should increase or expand in the direction of the existing price trend.

By monitoring the price and volume together, we're actually using two different tools to measure the same thing: pressure. By the mere fact that prices are trending higher, we can see that there is more buying than selling pressure. It stands to reason then that the greater volume should take place in the same direction as the prevailing trend. Technicians believe that volume precedes price, meaning that the loss of upside pressure in an uptrend or downside pressure in a downtrend actually shows up in the volume figures before it is manifested in a reversal of the price trend.

7.4 On balance volume

Technicians have experimented with many volume indicators to help quantify buying or selling pressure. The simplest and best known of these volume indicators is on balance volume or OBV. This line can be used either to confirm the

Figure 7.4



quality of the current price trend or warn of an impending reversal by diverging from the price action. Figure 7.6 shows the price chart with the OBV line along the bottom of the chart instead of the volume bars.

The construction of the OBV line is simplicity itself. The total volume for each day is assigned a plus or minus value depending on whether prices close higher or lower for that day. A higher close causes the volume for that day to be given a plus value, while a lower close counts for negative volume. A running cumulative total is then maintained by adding or subtracting each day's volume based on the direction of the market close. It is the direction of the OBV line (its trend) that is important and not the actual numbers themselves. The actual OBV values will differ depending on how far back you are charting.

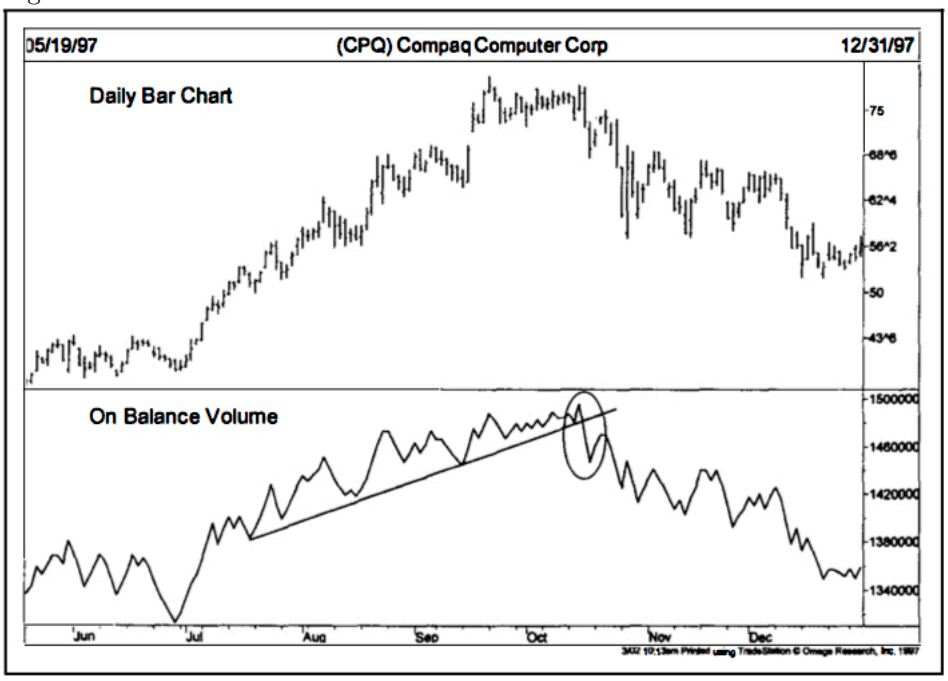
8 Long Term Charts

8.1 Introduction

The daily bar chart usually covers a period of only six to nine months. Weekly and monthly charts can be used for longer range trend analysis and forecasting.

A thorough trend analysis of a market, however, should include some consideration of how the daily market price is moving in relation to its long range trend structure. To accomplish that task, longer range char must be employed.

Figure 7.6



The purpose of weekly and monthly char is to compress price action in such a way that the time horizon can be greatly expanded and much longer time periods can be studied.

8.2 Patterns on charts: weekly and monthly reversals

Price patterns appear on the long range charts, which are interpreted in the same way as on the daily charts. Double tops and bottoms are very prominent on these charts, as are head and shoulder reversals. Triangles, which are usually continuation patterns, are frequently seen.

Another pattern that occurs quite frequently on these charts is the weekly and monthly reversal. For example, on the monthly chart, a new monthly high followed by a close below the previous month's close often represents a Significant turning point, especially if it occurs near a major support or resistance area. Weekly reversals are quite frequent on the weekly charts. These patterns are the equivalent of the key reversal day on the daily charts, except that on the long range charts these reversals carry a great deal more significance.

8.3 Long term to short term charts

It's especially important to appreciate the order in which price charts should be studied in performing a thorough trend analysis. e proper order to follow in

Figure 8.8

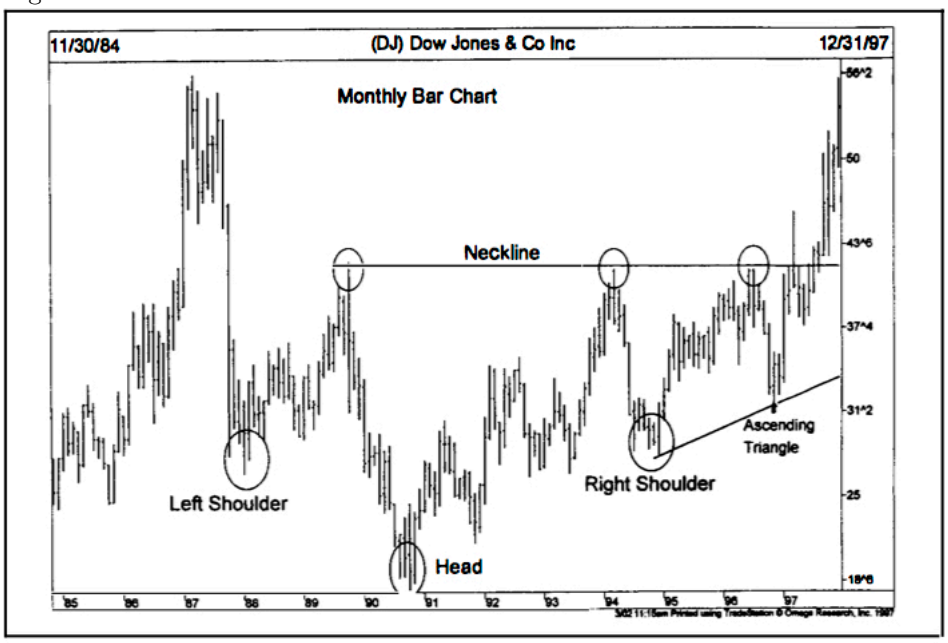


chart analysis is to begin with the long range and gradually work to the near term. e reason for this should become apparent as one works with the different time dimensions. If the analyst begins with only the near term picture, he or she is forced to constantly revise conclusions as more price data is considered. A thorough analysis of a daily chart may have to be completely redone after looking at the long range charts. By starting with the big picture, going back as far as 20 years, all data to be considered are already included in the chart and a proper perspective is achieved.

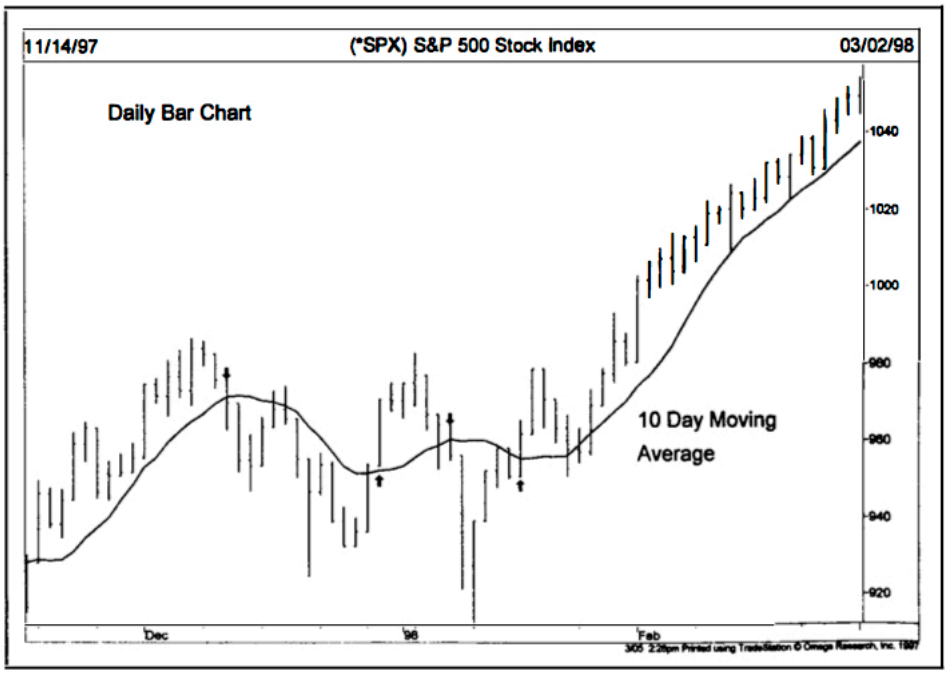
9 Moving Averages

9.1 Introduction

The moving average is one of the most versatile and widely used of all technical indicators. Because of the way it is constructed and the fact that it can be so easily quantified and tested, it is the basis for many mechanical trend-following systems in use today.

It is an average of a certain body of data. For example, if a 10 day average of closing prices is desired, the prices for the last 10 days are added up and the total is divided by 10. The term moving is used because only the latest 10 days' prices are used in the calculation. Therefore, the body of data to be averaged (the last 10 closing prices) moves forward with each new trading day.

Figure 9.1a



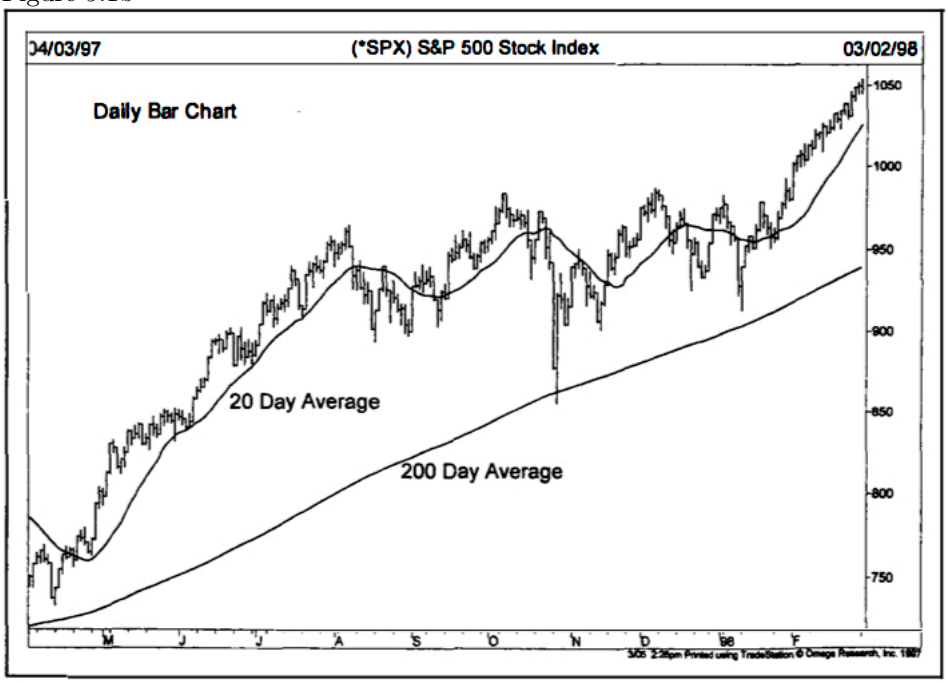
9.2 The moving average: a smoothing device with a time lag

The moving average is essentially a trend following device. Its purpose is to identify or signal that a new trend has begun or that an old trend has ended or reversed. Its purpose is to track the progress of the trend. It might be viewed as a curving trendline. It does not, however, predict market action in the same sense that standard chart analysis attempts to do. The moving average is a follower, not a leader. It never anticipates; it only reacts.

The moving average follows a market and tells us that a trend has begun, but only after the fact. The moving average is a smoothing device. By averaging the price data, a smoother line is produced, making it much easier to view the underlying trend. By its very nature, however, the moving average line also lags the market action. A shorter moving average, such as a 20 day average, would hug the price action more closely than a 200 day average. The time lag is reduced with the shorter averages, but can never be completely eliminated. Shorter term averages are more sensitive to the price action, whereas longer range averages are less sensitive. In certain types of markets, it is more advantageous to use a shorter average and, at other times, a longer and less sensitive average proves more useful. (See Figure 9.1b.)

The simple moving average, or the arithmetic mean, is the type used by most technical analysts. But there are some who question its usefulness on two

Figure 9.1b

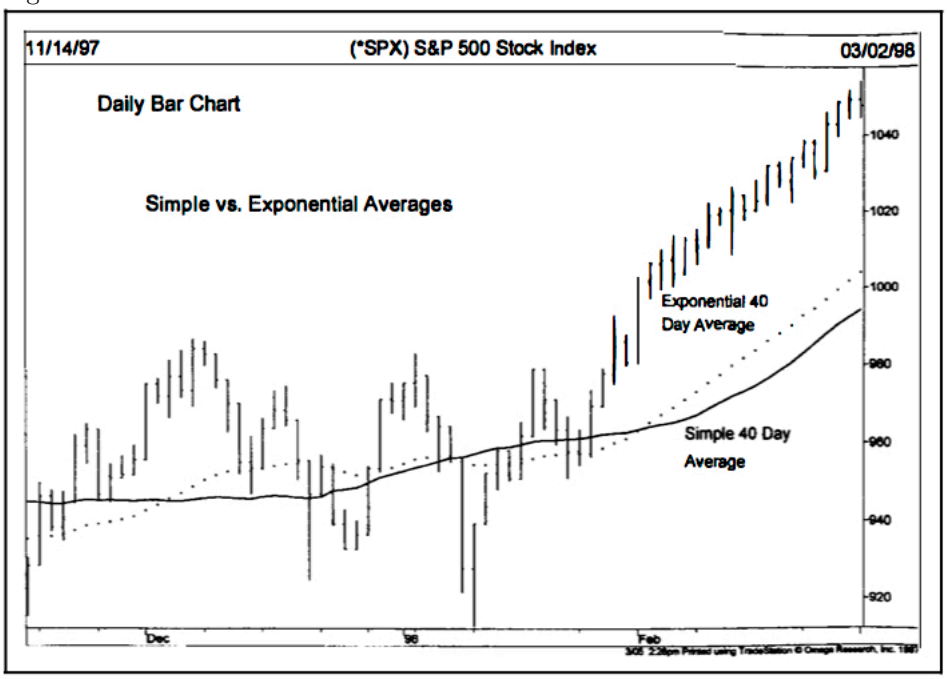


points. The first criticism is that only the period covered by the average (the last 10 days, for example) is taken into account. The second criticism is that the simple moving average gives equal weight to each day's price. In a 10 day average, the last day receives the same weight as the first day in the calculation. Some analysts believe that a heavier weighting should be given to the more recent price action.

In an attempt to correct the weighting problem, some analysts employ a linearly weighted moving average. In this calculation, the closing price of the 10th would be multiplied by 10, the ninth day by nine, the eighth day by eight, and so on. The greater weight is therefore given to the more recent closings. However, the linearly weighted average still does not address the problem of including only the price action covered by the length of the average itself.

Exponentially Smoothed Moving Average addresses both of the problems associated with the simple moving average. First, the exponentially smoothed average assigns a greater weight to the more recent data. Therefore, it is a weighted moving average. But while it assigns lesser importance to past price data, it does include in its calculation all of the data in the life of the instrument. In addition, the user is able to adjust the weighting to give greater or lesser weight to the most recent day's price. This is done by assigning a percentage value to the last day's price, which is added to a percentage of the previous day's value. The sum of both percentage values adds up to 100. For example, the last day's price could be assigned a value of 10% (.10), which is added to

Figure 9.2



the previous day's value of 90% (.90).

When the closing price moves above the moving average, a buy signal is generated. A sell signal is given when prices move below the moving average.

If a very short term average is employed (a 5 or 10 day), the average tracks prices very closely and several crossings occur. This action can be either good or bad. The use of a very sensitive average produces more trades (with higher commission costs) and results in many false signals (whipsaws). If the average is too sensitive, some of the short term random price movement (or "noise") activates bad trend Signals. While the shorter average generates more false Signals, it has the advantage of giving trend signals earlier in the move. It stands to reason that the more sensitive the average, the earlier the signals will be. So there is a tradeoff at work here. The trick is to find the average that is sensitive enough to generate early signals, but insensitive enough to avoid most of the random "noise." (See Figure 9.4.)

Two Averages can be used to Generate Signals. This technique is called the double crossover method. This means that a buy signal is produced when the shorter average crosses above the longer. For example, two popular combinations are the 5 and 20 day averages and the 10 and 50 day averages. In the former, a buy signal occurs when the 5 day average crosses above the 20, and a sell signal when the 5 day moves below the 20. In the latter example, the 10 day crossing above the 50 signals an uptrend, and a downtrend takes place with the 10 slipping under the 50.

Figure 9.3

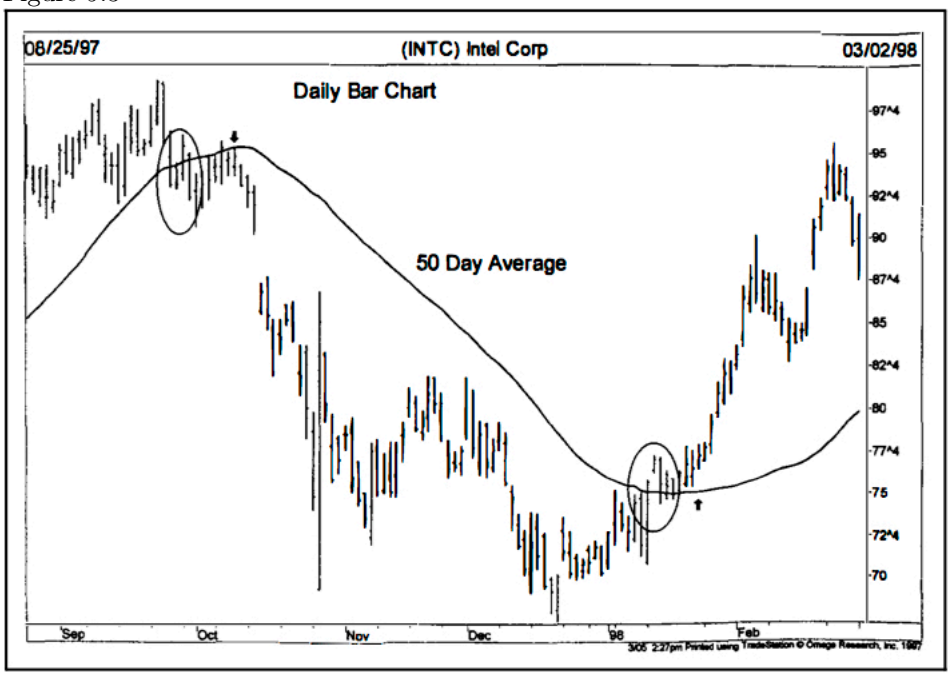


Figure 9.4

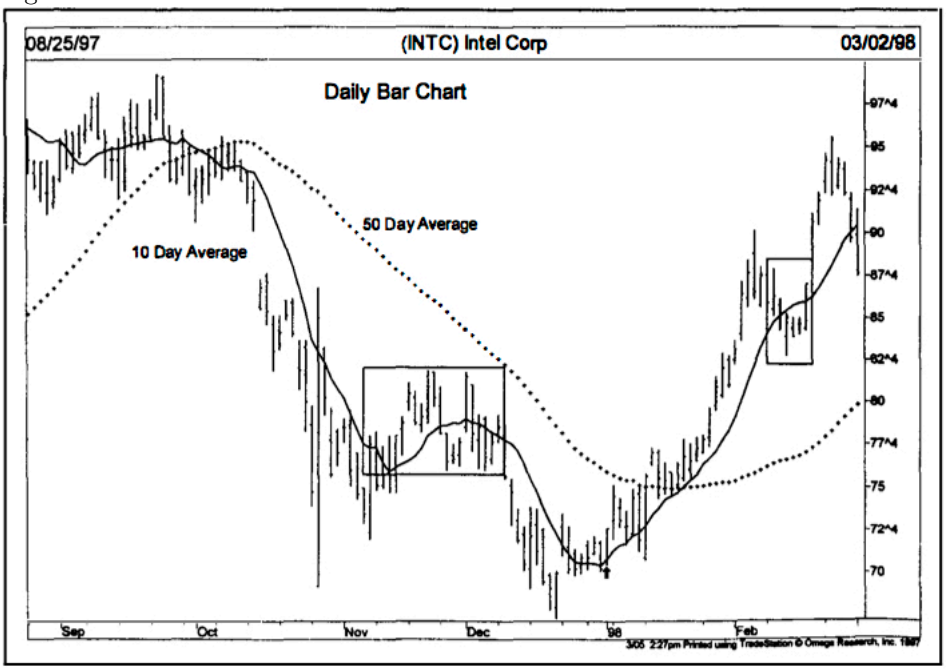
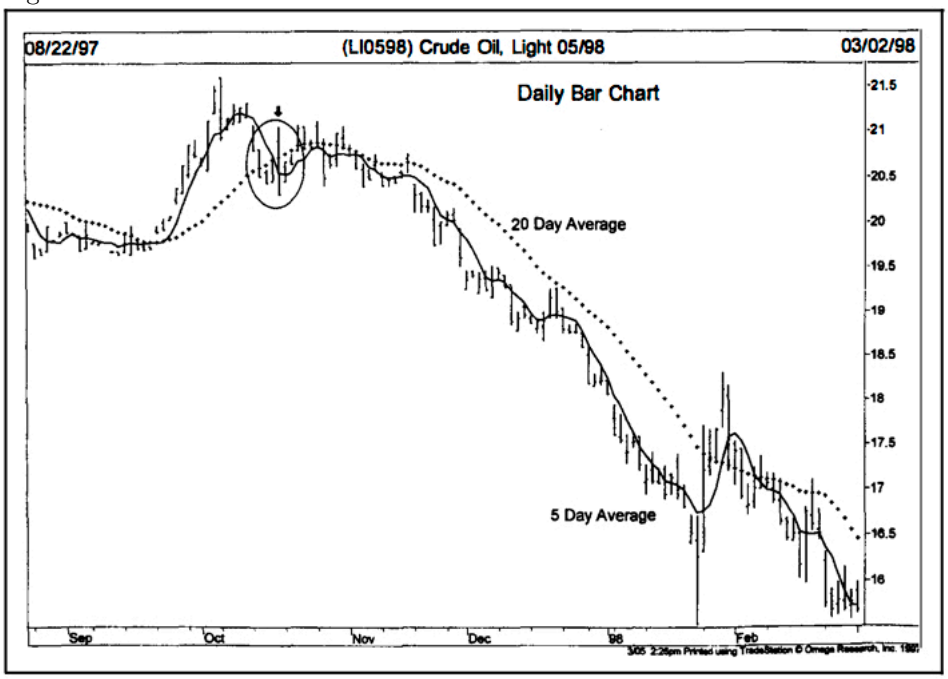


Figure 9.5



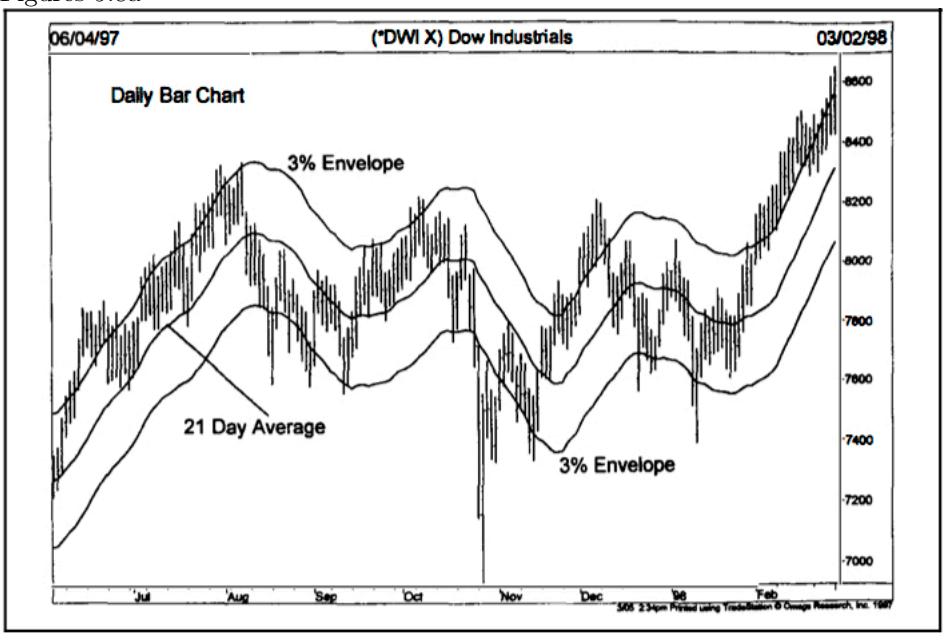
9.3 Moving average envelopes

The usefulness of a single moving average can be enhanced by surrounding it with envelopes. Percentage envelopes can be used to help determine when a market has gotten overextended in either direction. In other words, they tell us when prices have strayed too far from their moving average line. In order to do this, the envelopes are placed at fixed percentages above and below the average. Shorter term traders, for example, often use 3% envelopes around a simple 21 day moving average. When prices reach one of the envelopes (3% from the average), the short term trend is considered to be overextended. For long range analysis, some possible combinations include 5% envelopes around a 10 week average or a 10% envelope around a 40 week average. (See Figures 9.8a.)

9.4 Bollinger bands

This technique was developed by John Bollinger. Two trading bands are placed around a moving average similar to the envelope technique. Except that Bollinger Bands are placed two standard deviations above and below the moving average, which is usually 20 days. Using two standard deviations ensures that 95% of the price data will fall between the two trading bands. As a rule, prices are considered to be overextended on the upside (overbought) when they touch the upper band. They are considered overextended on the downside (oversold) when they

Figures 9.8a



touch the lower band. (See Figures 9.9a.)

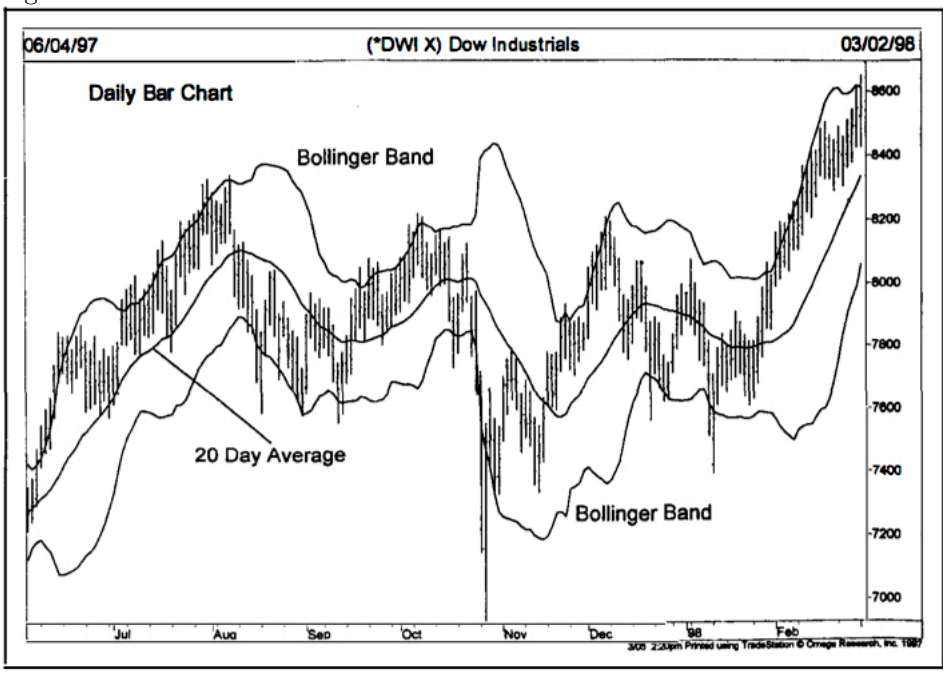
9.5 Using bollinger bands as targets

The simplest way to use Bollinger Bands is to use the upper and lower bands as price targets. In other words, if prices bounce off the lower band and cross above the 20 day average, the upper band becomes the upper price target. A crossing below the 20 day average would identify the lower band as the downside target.

9.6 Band width measures volatility

Bollinger Bands differ from envelopes in one major way. Whereas the envelopes stay a constant percentage width apart, Bollinger Bands expand and contract based on the last 20 days' volatility. During a period of rising price volatility, the distance between the two bands will widen. Conversely, during a period of low market volatility, the distance between the two bands will contract. There is a tendency for the bands to alternate between expansion and contraction. When the bands are unusually far apart, that is often a sign that the current trend may be ending. When the distance between the two bands has narrowed too far, that is often a sign that a market may be about to initiate a new trend.

Figures 9.9a


06/04/97
(*DWI X) Dow Industrials
03/02/98
Daily Bar Chart
Bollinger Band
20 Day Average
Bollinger Band
8600
8400
8200
8000
7800
7600
7400
7200
7000
Jul
Aug
Sep
Oct
Nov
Dec
'98
Feb

10 Oscillators and Contrary Opinion

10.1 Introduction

The oscillator is extremely useful in nontrending markets where prices fluctuate in a horizontal price band, or trading range, creating a market situation where most trend-following systems simply don't work that well. The oscillator provides the technical trader with a tool that can enable him or her to profit from these periodic Sideways and trendless market environments. The value of the oscillator is not limited to horizontal trad ing ranges, however. Used in conjunction with price charts during trending phases, the oscillator becomes an extremely valuable ally by alerting the trader to short term market extremes, commonly referred to as overbought or oversold conditions. The oscillator can also warn that a trend is losing momentum before that situation becomes evident in the price action itself. Oscillators can signal that a trend may be nearing completion by displaying certain divergences.

The oscillator is only a secondary indicator in the sense that it must be subordinated to basic trend analysis. There are times when oscillators are more useful than at others. For example, near the beginning of important moves, oscillator analysis isn't that helpful and can even be misleading. Toward the end of market moves, however, oscillators become extremely valuable.

There are three situations when the oscillator is most useful:

1. The oscillator is most useful when its value reaches an extreme reading near the upper or lower end of its bound aries. The market is said to be overbought when it is near the upper extreme and oversold when it is near the lower extreme. This warns that the price trend is overextended and vulnerable.

2. A divergence between the oscillator and the price action when the oscillator is in an extreme position is usually an important warning.

3. The crossing of the zero (or midpoint) line can give impor tant trading signals in the direction of the price trend.

10.2 Measuring Momentum

The concept of momentum is the most basic application of oscillator analysis. Momentum measures the velocity of price changes as opposed to the actual price levels themselves. Market momentum is measured by continually taking price differences for a fixed time interval. To construct a 10 day momentum line, simply sub tract the closing price 10 days ago from the last closing price. This positive or negative value is then plotted around a zero line. The formula for momentum is:

$$M = V - V^x$$

where V is the latest closing price and V^x is the closing price x days ago.

If the latest closing price is greater than that of 10 days ago (in other words, prices have moved higher), then a positive value would be plotted above the zero line. If the latest close is below the close 10 days earlier (prices have declined), then a negative value is plotted below the zero line. A shorter time period (such as 5 days) produces a more sensitive line with more pronounced oscillations. A longer number of days (such as 40 days) results in a much smoother line in which the oscillator swings are less volatile.

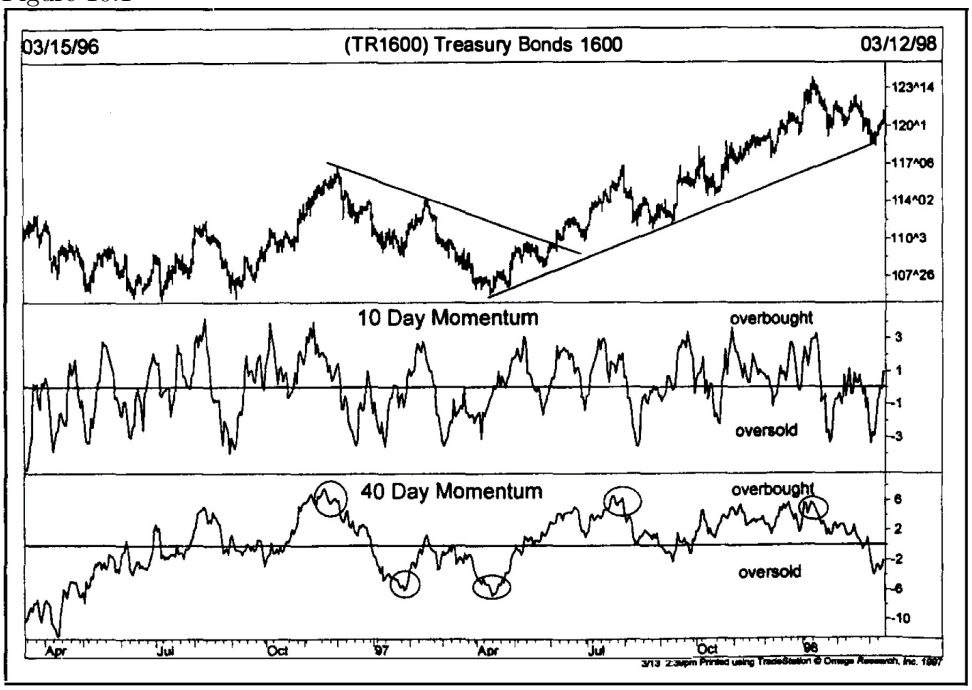
By plotting price differences for a set period of time, the chartist is studying rates of ascent or descent. If prices are rising and the momentum line is above the zero line and rising, this means the uptrend is accelerating. If the upslanting momentum line begins to flatten out, this means that the new gains being achieved by the latest closes are the same as the gains 10 days earlier. While prices may still be advancing, the rate of ascent (or the velocity) has leveled off. When the momentum line begins to drop toward the zero line, the uptrend in prices is still in force, but at a decelerating rate. The uptrend is losing momentum. When the momentum line moves below the zero line, the latest 10 day close is now under the close of 10 days ago and a near term downtrend is in effect. (And, incidentally, the 10 day moving average also has begun to decline.) As momentum continues to drop farther below the zero line, the downtrend gains momentum. Only when the line begins to advance again does the analyst know that the downtrend is decelerating. It's important to remember that momentum measures the differences between prices at two time intervals. In order for the line to advance, the price gains for the last day's close must be greater than the gains of 10 days ago. If prices advance by only the same amount as 10 days ago, the momentum line will be at. If the last price gain is less than that of 10 days ago, the momentum line begins to decline even though prices are still rising. This is how the momentum line measures the acceleration or deceleration in the current advance or decline in the price trend.

Because of the way it is constructed, the momentum line is always a step ahead of the price movement. It leads the advance or decline in prices, then levels off while the current price trend is still in effect. It then begins to move in the opposite direction as prices begin to level off.

The momentum chart has a zero line. Many technicians use the crossing of the zero line to generate buy and sell signals. A crossing above the zero line would be a buy Signal, and a crossing below the zero line, a sell signal. It should be stressed here again, however, that basic trend analysis is still the overriding consideration. Oscillator analysis should not be used as an excuse to trade against the prevailing market trend.

One problem with the momentum line, as it is described here, is the absence of a fixed upper and lower boundary. It was stated earlier that one of the major values of oscillator analysis is being able to determine when markets are in extreme areas. But, how high is too high and how low is too low on the momentum line? The simplest way to solve this problem is by visual inspection. Check the back history of the momentum line on the chart and draw horizontal lines along its upper and lower boundaries. These lines will have to be adjusted periodically, especially after important trend changes have occurred. But it

Figure 10.1



is the simplest and probably the most effective way of identifying the outer extremities. (See Figure 10.1)

10.3 Measuring Rate of Change (ROC)

To measure the rate of change, a ratio is constructed of the most recent closing price to a price a certain number of days in the past. To construct a 10 day rate of change oscillator, the latest closing price is divided by the close 10 days ago. The formula is as follows:

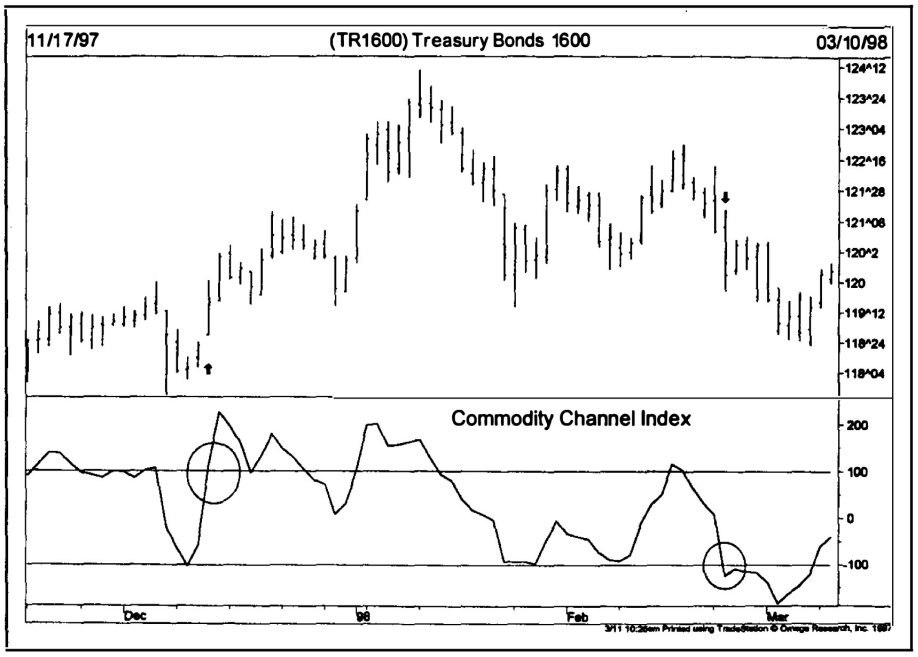
$$ROC = 100(V/V^x)$$

where V is the latest close and V^x is the closing price x days ago. In this case, the 100 line becomes the midpoint line. If the latest price is higher than the price 10 days ago (prices are rising), the resulting rate of change value will be above 100. If the last close is below 10 days ago, the ratio would be below 100.

10.4 Commodity Channel Index

It is possible to normalize an oscillator by dividing the values by a constant divisor. In the construction of his Commodity Channel Index (CCI), Donald R. Lambert compares the current price with a moving average over a selected

Figure 10.8



time span-usually 20 days. He then normalizes the oscillator values by using a divisor based on mean deviation. As a result, the CCl fluctuates in a constant range from +100 on the upside to -100 on the downside. Readings over +100 are considered overbought and under -100 are oversold. 20 days is the common default value for CCI. (See Figure 10.8)

10.5 The Relative Strength Index (RSI)

One of the two major problems in constructing a momentum line (using price differences) is the erratic movement often caused by sharp changes in the values being dropped off. A sharp advance or a decline 10 days ago (in the case of a 10 day momentum line) can cause sudden shifts in the momentum line even if the current prices show little change. Some smoothing is therefore necessary to minimize these distortions. The second problem is that there is the need for a constant range for comparison purposes. The RSI formula not only pro vides the necessary smoothing, but also solves the latter problem by creating a constant vertical range of 0 to 100. The actual formula is calculated as follows:

$$RSI = 100 - [\frac{100}{1 + RS}]$$

$$RS = \frac{Averagofxdays'upcloses}{Averageofxdays'downcloses}$$

Fourteen days are used in the calculation; 14 weeks are used for weekly charts. To find the average up value, add the total points gained on up days during the 14 days and divide that total by 14. To find the average down value, add the total number of points lost during the down days and divide that total by 14. Relative strength (RS) is then determined by dividing the up average by the down average. That RS value is then inserted into the formula for RSI. The number of days can be varied by simply changing the value of x.

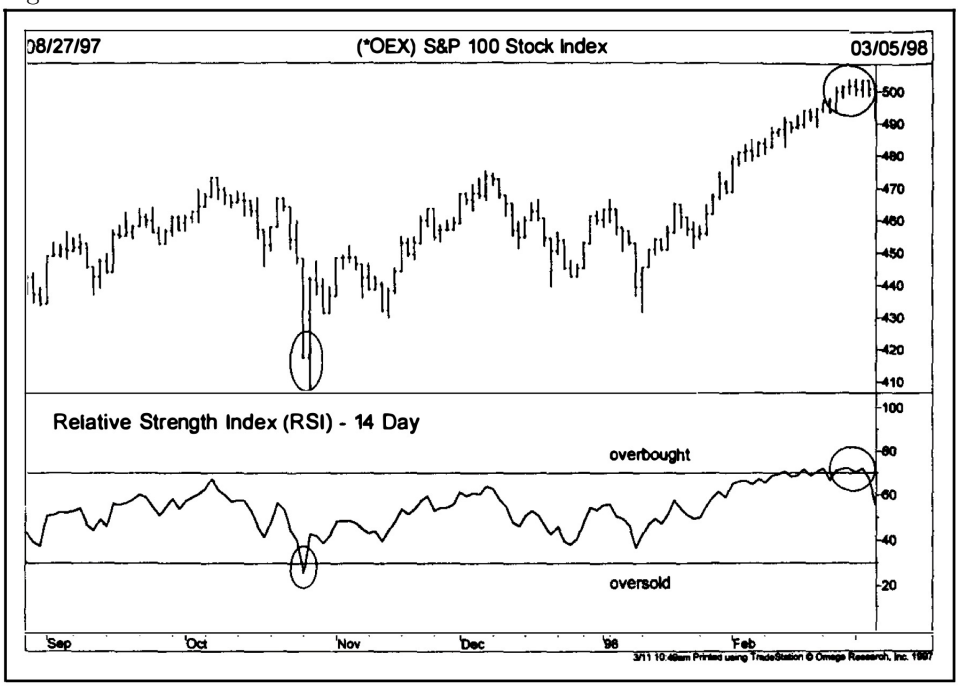
e shorter the time period, the more sensitive the oscillator becomes and the wider its amplitude. RSI works best when its fluctuations reach the upper and lower extremes. Therefore, if the user is trading on a very short term basis and wants the oscillator swings to be more pronounced, the time period can be shortened. The time period is lengthened to make the oscillator smoother and narrower in amplitude.

RSI is plotted on a vertical scale of 0 to 100. Movements above 70 are considered overbought, while an oversold condition would be a move under 30. Because of shifting that takes place in bull and bear markets, the 80 level usually becomes the overbought level in bull markets and the 20 level the oversold level in bear markets. "Failure swings" occur when the I is above 70 or under 30. A top failure swing occurs when a peak in the RSI (over 70) fails to exceed a previous peak in an uptrend, followed by a downside break of a previous trough. A bottom failure swing occurs when the RSI is in a downtrend (under 30), fails to set a new low, and then proceeds to exceed a previous peak. Divergence between the RSI and the price line, when the RSI is above 70 or below 30, is a serious warning that should be heeded. Any strong trend, either up or down, usually produces an extreme oscillator reading before too long. In such cases, claims that a market is overbought or oversold are usually premature and can lead to an early exit from a profitable trend. In strong uptrends, overbought markets can stay overbought for some time. Just because the oscillator has moved into the upper region is not reason enough to liquidate a long position (or, even worse, short into the strong uptrend). The first move into the overbought or oversold region is usually just a warning. The signal to pay close attention to is the second move by the oscillator into the danger zone. If the second move fails to confirm the price move into new highs or new lows (forming a double top or bottom on the oscillator), a possible divergence exists. At that point, some defensive action can be taken to protect existing positions. If the oscillator moves in the opposite direction, breaking a previous high or low, then a divergence or failure swing is confirmed. The 50 level is the RSI midpoint value, and will often act as support during pullbacks and resistance during bounces. Some traders treat RSI crossings above and below the 50 level as buying and selling signals respectively. (See Figure 10.10)

10.6 Using the 70 and 30 lines to generate signals

Horizontal lines appear on the oscillator chart at the 70 and 30 values. Traders often use those lines to generate buy and sell signals. We already know that a move under 30 warns of an oversold condition. Suppose the trader thinks a

Figure 10.10



market is about to bottom and is looking for a buying opportunity. He or she watches the oscillator dip under 30. Some type of divergence or double bottom may develop in the oscillator in that oversold region. A crossing back above the 30 line at that point is taken by many traders as a confirmation that the trend in the oscillator has turned up. Accordingly, in an overbought market, a crossing back under the 70 line can often be used as a sell signal.

10.7 Stochastics (K%D)

The Stochastic oscillator is based on the observation that as prices increase, closing prices tend to be closer to the upper end of the price range. Conversely, in downtrends, the closing price tends to be near the lower end of the range. Two lines are used in the Stochastic Process-the %K line and the %D line. The %D line is the more important and is the one that pro vides the major signals. e intent is to determine where the most recent closing price is in relation to the price range for a chosen me period. Fourteen is the most common period used for this oscillator. To determine the K line, which is the more sensitive of the two, the formula is:

$$\%K = 100[(C - L14)/(H14 - L14)]$$

where C is the latest close, $L14$ is the lowest low for the last 14 periods, and

$H14$ is the highest high for the same 14 periods (14 periods can refer to days, weeks, or months).

The formula simply measures, on a percentage basis of 0 to 100, where the closing price is in relation to the total price range for a selected time period. A very high reading (over 80) would put the closing price near the top of the range, while a low reading (under 20) near the bottom of the range. The second line (%D) is a 3 period moving average of the %K line. This formula produces a version called fast stochastics. By taking another 3 period average of %D, a smoother version called slow stochastics is computed. Most traders use the slow stochastics because of its more reliable signals. These formulas produce two lines that oscillate between a vertical scale from 0 to 100. The K line is a faster line, while the D line is a slower line. The major signal to watch for is a divergence between the D line and the price of the underlying market when the D line is in an overbought or oversold area. The upper and lower extremes are the 80 and 20 values. A bearish divergence occurs when the D line is over 80 and forms two declining peaks while prices continue to move higher. A bullish divergence is present when the D line is under 20 and forms two rising bottoms while prices continue to move lower. Assuming all of these factors are in place, the actual buy or sell signal is triggered when the faster K line crosses the slower D line. The Stochastic oscillator can be used on weekly and monthly charts for longer range perspective. It can also be used effectively on intraday charts for shorter term trading. One way to combine daily and weekly stochastics is to use weekly signals to determine market direction and daily signals for timing. It's also a good idea to combine stochastics with RSI. (See Figure 10.15)

10.8 Larry Williams %R

Larry Williams %R is based on a similar concept of measuring the latest close in relation to its price range over a given number of days. Today's close is subtracted from the price high of the range for a given number of days and that difference is divided by the total range for the same period. The concepts already discussed for oscillator interpretation are applied to %R as well, with the main factors being the presence of divergences in overbought or oversold areas. (See Figure 10.18)

10.9 The Importance of Trend

The importance of trading in the direction of the major trend cannot be overstated. The danger in placing too much importance on oscillators by themselves is the temptation to use divergence as an excuse to initiate trades contrary to the general trend. This action generally proves a costly and painful exercise. The oscillator, as use l as it is, is just one tool among many others and must always be used as an aid, not a substitute, for basic trend analysis.

(See Figure 10.15)

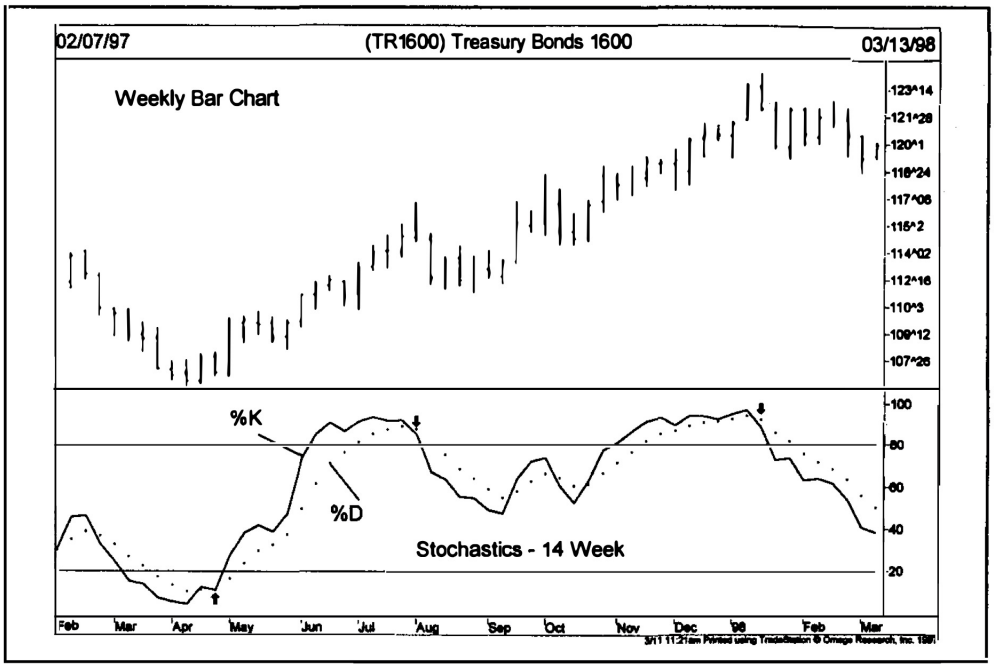
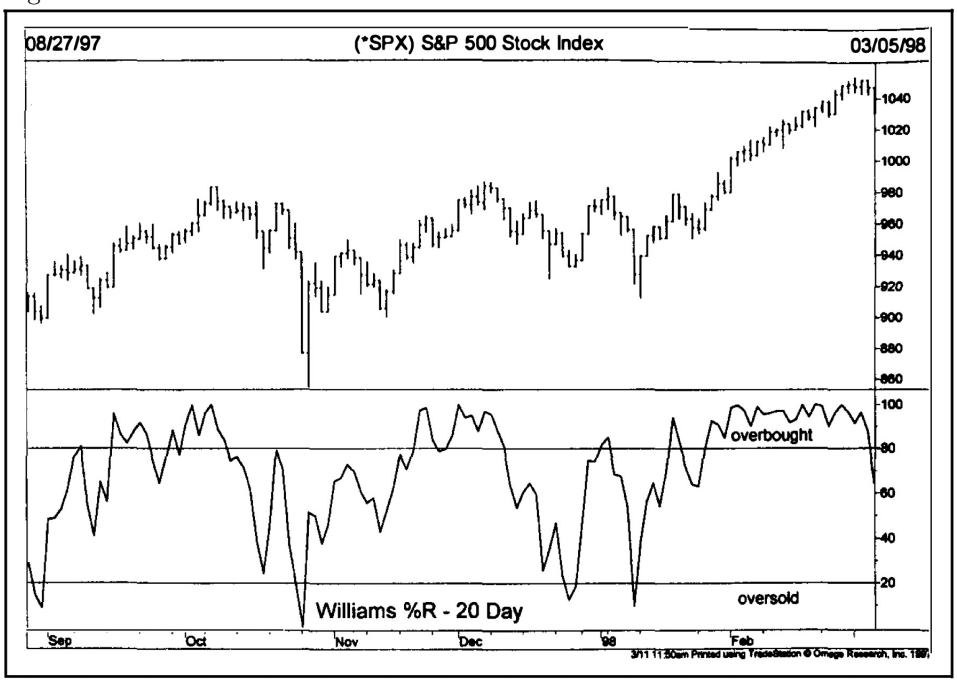


Figure 10.18



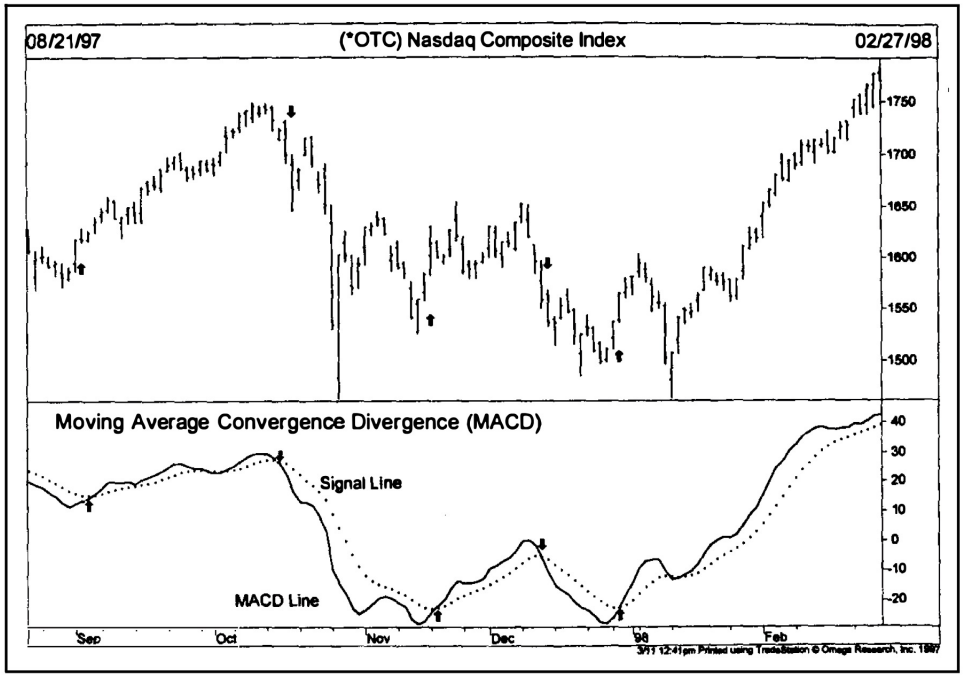
10.10 When oscillators are most useful

There are times when oscillators are more useful than at others. During choppy market periods, as prices move sideways for several weeks or months, oscillators track the price movement very closely. The peaks and troughs on the price chart coincide almost exactly with the peaks and troughs on the oscillator. Because both price and oscillator are moving sideways, they look very much alike. At some point, however, a price breakout occurs and a new uptrend or downtrend begins. By its very nature, the oscillator is already in an extreme position just as the breakout is taking place. If the break out is to the upside, the oscillator is already overbought. An oversold reading usually accompanies a downside breakout. The trader is faced with a dilemma. Should he or she buy the bullish breakout in the face of an overbought oscillator reading? Should the down side breakout be sold into an oversold market? In such cases, the oscillator is best ignored for the time being and the position taken. The reason for this is that in the early stages of a new trend, following an important breakout, oscillators often reach extremes very quickly and stay there for a while. Basic trend analysis should be the main consideration at such times, with oscillators given a lesser role. Later on, as the trend begins to mature, the oscillator should be given greater weight. To summarize, give less attention to the oscillator in the early stages of an important move, but pay close attention to its signals as the move reaches maturity.

10.11 Moving Average Convergence/Divergence (MACD)

We mentioned in the previous chapter an oscillator technique that uses 2 exponential moving averages and here it is. The Moving Average Convergence/ Divergence indicator, or simply MACD, was developed by Gerald Appel. What makes this indicator so useful is that it combines some of the oscillator principles we've already explained with a dual moving average crossover approach. You'll see only two lines on your computer screen although three lines are actually used in its calculation. The faster line (called the MACD line) is the difference between two exponentially smoothed moving averages of closing prices (usually the last 12 and 26 days or weeks). The slower line (called the signal line) is usually a 9 period exponentially smoothed average of the MACD line. The actual buy and sell signals are given when the two lines cross. A crossing by the faster MACD line above the slower signal line is a buy signal. A crossing by the faster line below the slower is a sell signal. An overbought condition is present when the lines are too far above the zero line. An oversold condition is present when the lines are too far below the zero line. The best buy signals are given when prices are well below the zero line (oversold). Crossings above and below the zero line are another way to generate buy and sell signals respectively, similar to the momentum technique we discussed previously. Divergences appear between the trend of the MACD lines and the price line. A negative, or bearish, divergence exists when the MACD lines are well above the zero line (overbought) and start to weaken while prices continue to trend higher. That is often a warning

Figure 10.19



of a market top. A positive, or bullish, divergence exists when the MACD lines are well below the zero line (oversold) and start to move up ahead of the price line.

The two MACD lines can be turned into an MACD histogram. The histogram consists of vertical bars that show the difference between the two MACD lines. The histogram has a zero line of its own. When the MACD lines are in positive alignment (faster line over the slower), the histogram is above its zero line. Crossings by the histogram above and below its zero line coincide with actual MACD crossover buy and sell signals. The real value of the histogram is spotting when the spread between the two lines is widening or narrowing. When the histogram is over its zero line (positive) but starts to fall toward the zero line, the uptrend is weakening. Conversely, when the histogram is below its zero line (negative) and starts to move upward toward the zero line, the downtrend is losing its momentum. Turns in the histogram back toward the zero line always precede the actual crossover signals. Histogram turns are best used for spotting early exit signals from existing positions. As with all technical indicators, signals on weekly charts are always more important than those on daily charts. The best way to combine them is to use weekly signals to determine market direction and the daily signals to fine-tune entry and exit points. A daily signal is followed only when it agrees with the weekly signal. (See Figure 10.19)

11 Japanese Candlesticks

11.1 Candlestick charting

Charting market data in candlestick form uses the same data available for standard bar charts; open, high, low, and close prices. While using the exact same data, candlestick charts offer a much more visually appealing chart. Information seems to jump off the page (computer screen). The information displayed is more easily interpreted and analyzed. The rectangle represents the difference between the open and close price for the day, and is called the body. Notice that the body can be either black or white. A white body means that the close price was greater (higher) than the open price. The black body means that the close price was lower than the open price. The open and close prices are given much significance in Japanese candlesticks. The small lines above and below the body are referred to as wicks or hairs or shadows. Many different names for these lines appear in Japanese reference literature, which is odd since they represent the high and low prices for the day and are normally not considered vital in the analysis by the Japanese.

11.2 Basic Candlesticks

Different body/shadow combinations have different meanings. Days in which the difference between the open and close prices is great are called Long Days. Likewise, days in which the difference between the open and close price is small, are called Sho Days. Remember, we are only talking about the size of the body and no reference is made to the high and/or low prices. Spinning Tops are days in which the candlesticks have small bodies with upper and lower shadows that are of greater length than that of the body. The body color is relatively unimportant in spinning top candlesticks. These candlesticks are considered as days of indecision. (See Figure 12.3)

When the open price and the close price are equal, they are called Doji lines. Doji candles sticks can have shadows of varying length. When referring to Doji candlesticks, there is some consideration as to whether the open and close price must be exactly equal. This is a time when the prices must be almost equal, especially when dealing with large price movements. There are different Doji candlesticks that are important. The Long-legged Doji has long upper and lower shadows and reflects consider able indecision on the part of market participants. The Gravestone Doji has only a long upper shadow and no lower shadow. The longer the upper shadow, the more bearish the interpretation. The Dragonfly Doji is the opposite of the Gravestone Doji, the lower shadow is long and there is no upper shadow. It is usually considered quite bullish. The single candlestick lines are essential to Japanese candlestick analysis. (See Figure 12.5)

Figure 12.3

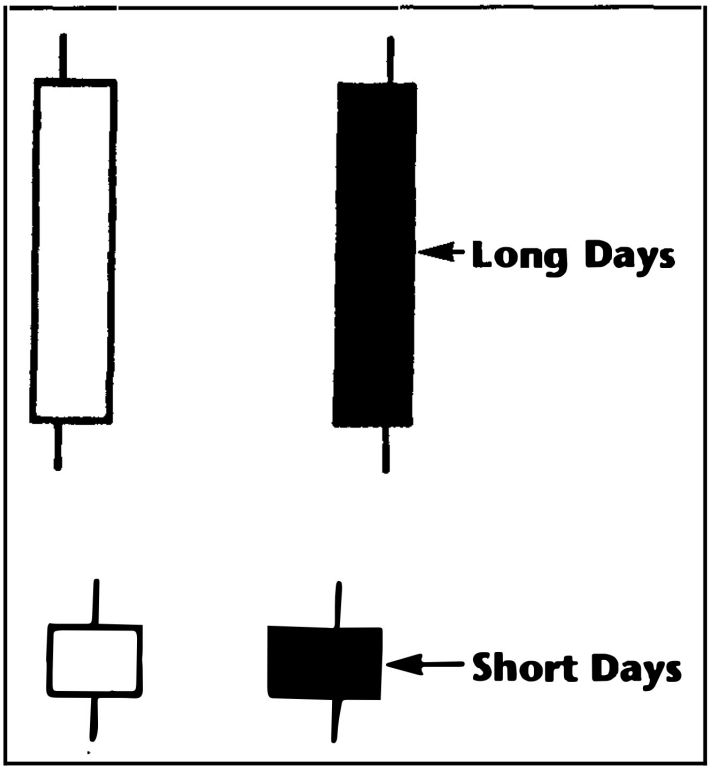
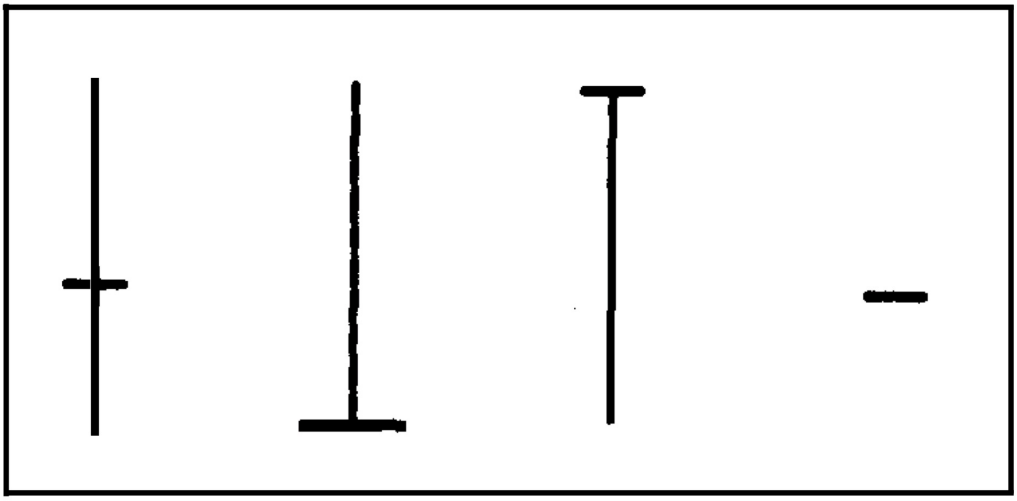


Figure 12.5



11.3 Candel pattern analysis

A Japanese candle pattern is a psychological depiction of traders' mentality at the time. It vividly shows the actions of the traders as time unfolds in the market. e mere fact that humans react consistently during similar situations makes candle pattern analysis work. A Japanese candle pattern can consist of a single candlestick line or be a combination of multiple lines, normally never more than five. While most candle patterns are used to determine rever sal points in the market, there are a few that are used to determine trend continuation. They are referred to as reversal and continua tion patterns.

11.4 Reversal Patterns

A reversal candle pa e is a combination of Japanese candlesticks that normally indicate a reversal of the trend. One serious consideration that must be used to help identify patterns as being either bullish or bearish is the trend of the market preceding the pattern. You cannot have a bullish reversal pattern in an uptrend. You can have a series of candlesticks that resemble the bullish pat tern, but if the trend is up, it is not a bullish Japanese candle pat tern. Likewise, you cannot have a bearish reversal candle pattern in a downtrend. This presents one of the age-old problems when analyzing markets: What is the trend? You must determine the trend, before you can utilize Japanese candle patterns effectively. While volumes have been written on the subject of trend determination, the use of a moving average will work quite well with Japanese candle patterns. Once the short term (ten periods or so) trend has been determined, Japanese candle patterns will significantly assist in identifying the reversal of that trend. Japanese literature consistently refers to approximately forty reversal candle patterns. These vary from single candlestick lines to more complex patterns of up to five candlestick lines.

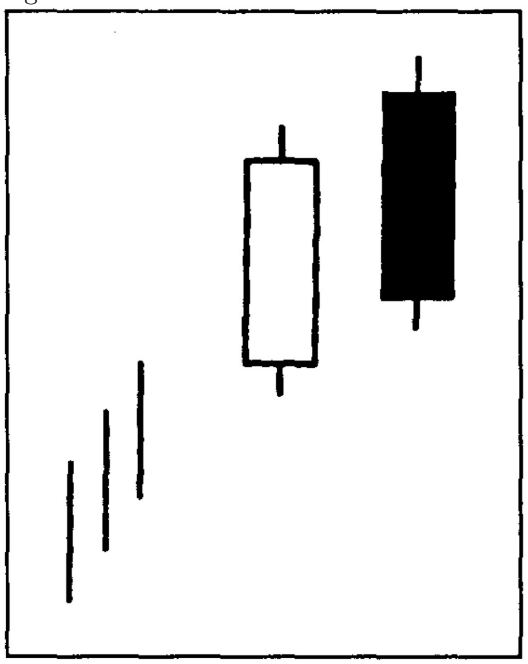
11.4.1 Dark Cloud Cover

This is a two day reversal pattern that only has bearish implications. This is also one of the times when the pat tern's counterpart exists but has a different name (Piercing Line). The first day of this pattern is a long white candlestick. This reflects the current trend of the market and helps confirm the uptrend to traders. The next day opens above the high price of the previous day, again adding to the bullishness. However, trading for the rest of the day is lower with a close price at least below the mid-point of the body of the first day. This is a significant blow to the bullish mentality and will force many to exit the market. Since the close price is below the open price on the second day, the body is black. (See Figure 12.6)

11.4.2 Piercing Line

The opposite of the Dark Cloud Cover, the Piercing Line, has bullish implications. The scenario is quite similar, but opposite. A downtrend is in place,

Figure 12.6



the first candlestick is a long black day which solidifies traders' condence in the downtrend. The next day, prices open at a new low and then trade higher all day and close above the midpoint of the first candle stick's body. This offers a significant change to the downtrend mentality and many will reverse or exit their positions. (See Figure 12.7)

11.4.3 Evening Star and Morning Star

The Evening Star and its cousin, the Morning Star, are two powerful reversal candle patterns. These are both three day patterns that work exceptionally well. The scenario for understanding the change in trader psychology for the Evening Star will be thoroughly discussed here since the opposite can be said for the Morning Star. The Evening Star is a bearish reversal candle pattern, as its name suggests. The first day of this pattern is a long white candle stick which enforces the current uptrend. On the open of the second day, prices gap up above the body of the first day. Trading on this second day is somewhat restricted and the close price is near the open price while remaining above the body of the first day. The body for the second day is small This type of day following a long day is referred to as a Star pattern. A Star is a small body day that gaps away from a long body day. The third and last day of this pattern opens with a gap below the body of the star and closes lower with the close price below the midpoint of the first day. (See Figure 12.8-9)

Figure 12.7

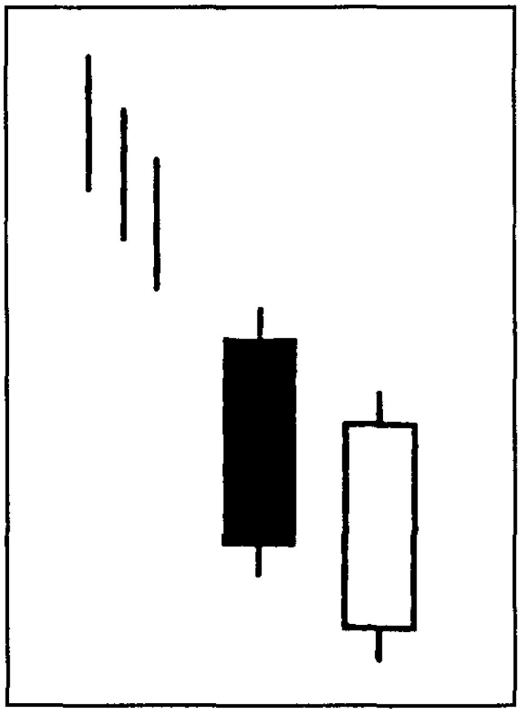


Figure 12.8-9

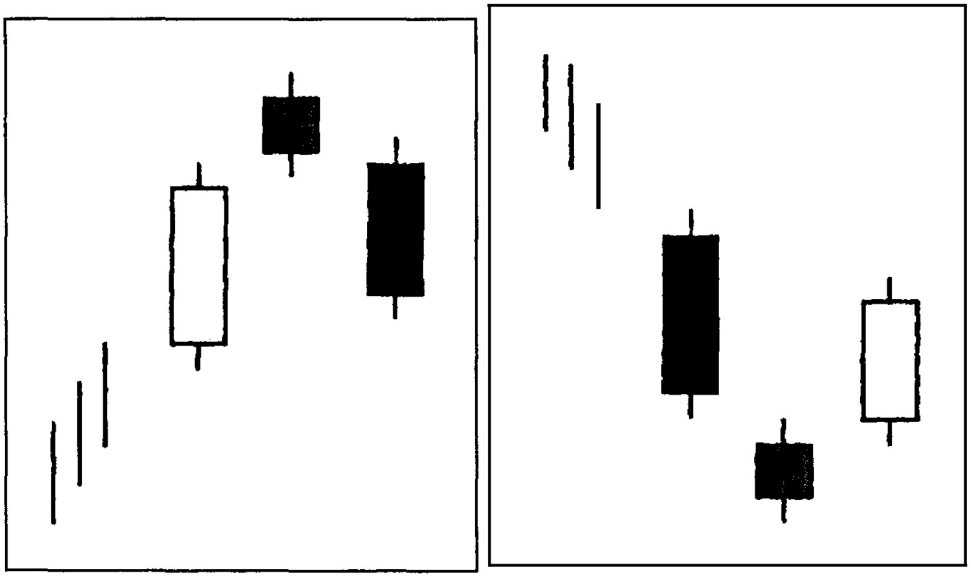
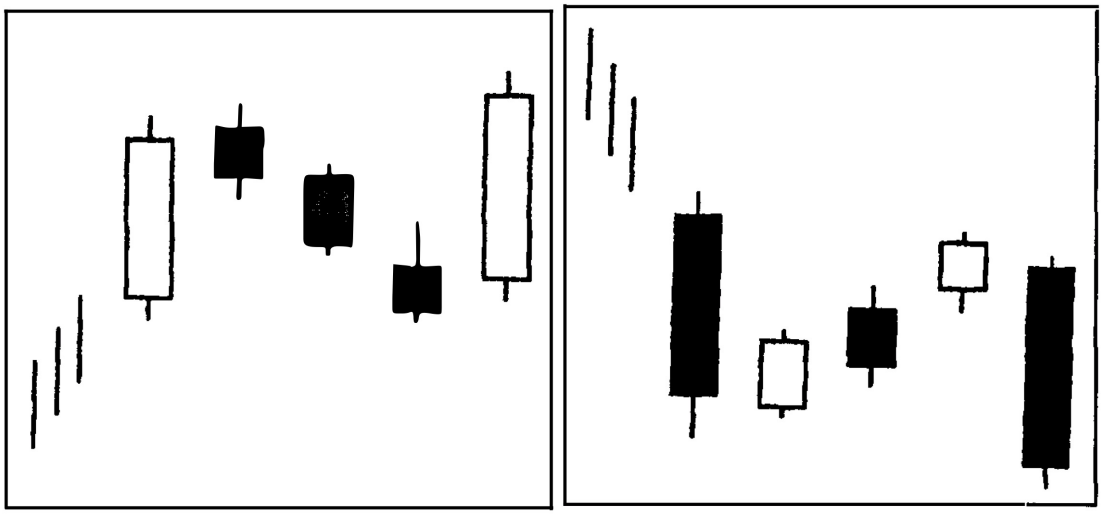


Figure 12.10-11



11.5 Continuation Patterns

Each trading day, a decision needs to be made, whether it is to exit a trade, enter a trade, or remain in a trade. A candle pattern that helps identify the fact that the current trend is going to continue is more valuable than may first appear.

11.5.1 Rising and Falling Three Methods

The Rising Three Methods continuation candle pattern is the bullish counterpart to this duo and will be the subject of this scenario building. A bullish continuation pattern can only occur in an uptrend and a bearish continuation pattern can only occur in a downtrend. The first day of the Rising Three Methods pattern is a long white day which fully supports the uptrending market. However, over the course of the next three trading periods, small body days occur which, as a group, trend downward. They all remain within the range of the first day's long white body and at least two of these three small-bodied days have black bodies. This period of time when the market appears to have gone nowhere is considered by the Japanese as a "period of rest." On the firsth day of this pattern, another long white day develops which closes at a new high. Prices have finally broken out of the short trading range and the uptrend will continue. A five day pattern such as the Rising Three Methods requires a lot of detail in its definition. The concept of the "period of rest" could be expanded to include more than three reaction days. Don't ignore the Rising and Falling Three Methods pat tern; it can give you a feeling of comfort when worrying about protecting profits in a trade. (See Figure 12.10-11)

CANDLE PATTERNS

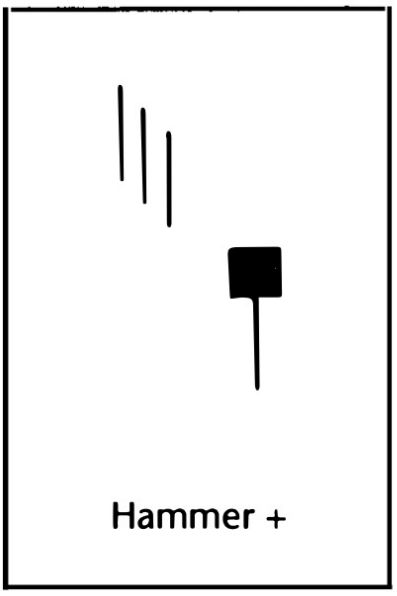
The candle patterns listed below comprise the library that is used to identify candlestick signals. The number in parentheses at the end of each name represents the number of candles that are used to define that particular pattern. The bullish and bearish patterns are divided into two groups signifying either reversal or continuation patterns.

Bullish Reversals
Long White Body (1)
Hammer (1)
Inverted Hammer (1)
Belt Hold (1)
Engulfing Pattern (2)
Harami (2)
Harami Cross (2)
Piercing Line (2)
Doji Star (2)
Meeting Lines (2)
Three White Soldiers (3)
Morning Star (3)
Morning Doji Star (3)
Abandoned Baby (3)
Tri-Star (3)
Breakaway (5)
Three Inside Up (3)
Three Outside Up (3)
Kicking (2)
Unique Three Rivers Bottom (3)
Three Stars in the South (3)
Concealing Swallow (4)
Stick Sandwich (3)
Homing Pigeon (2)
Ladder Bottom (5)
Matching Low (2)

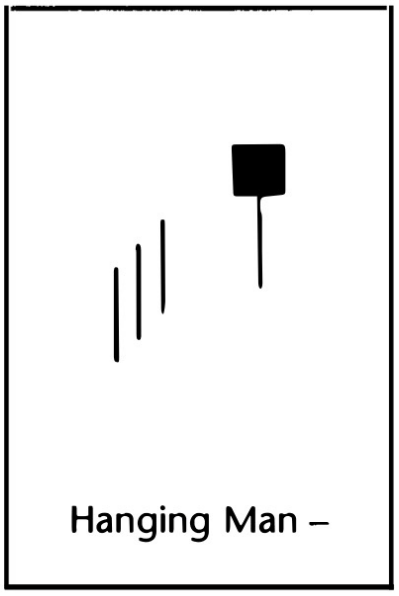
Bearish Reversals
Long Black Body (1)
Hanging Man (1)
Shooting Star (1)
Belt Hold (1)
Engulfing Pattern (2)
Harami (2)
Harami Cross (2)
Dark Cloud Cover (2)
Doji Star (2)
Meeting Lines (2)
Three Black Crows (3)
Evening Star (3)
Evening Doji Star (3)
Abandoned Baby (3)
Tri-Star (3)
Breakaway (5)
Three Inside Down (3)
Three Outside Down (3)
Kicking (2)
Latter Top (5)
Matching High (2)
Upside Gap Two Crows (3)
Identical Three Crows (3)
Deliberation (3)
Advance Block (3)
Two Crows (3)

Bullish Continuation
Separating Lines (2)
Rising Three Methods (5)
Upside Tasuki Gap (3)
Side by Side White Lines (3)
Three Line Strike (4)
Upside Gap Three Methods (3)
On Neck Line (2)
In Neck Line (2)

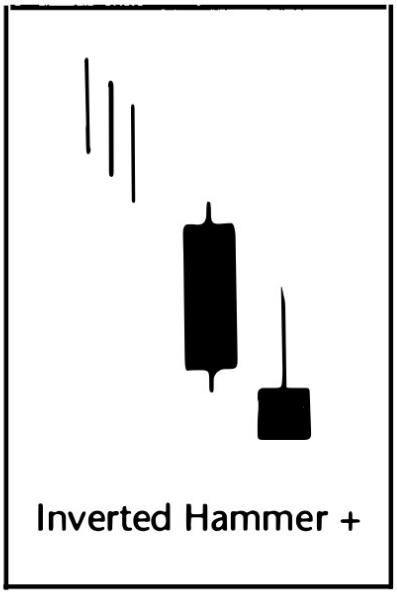
Bearish Continuation
Separating Lines (2)
Falling Three Methods (5)
Downside Tasuki Gap (3)
Side by Side White Lines (3)
Three Line Strike (4)
Downside Gap Three Methods (3)
On Neck Line (2)
In Neck Line (2)



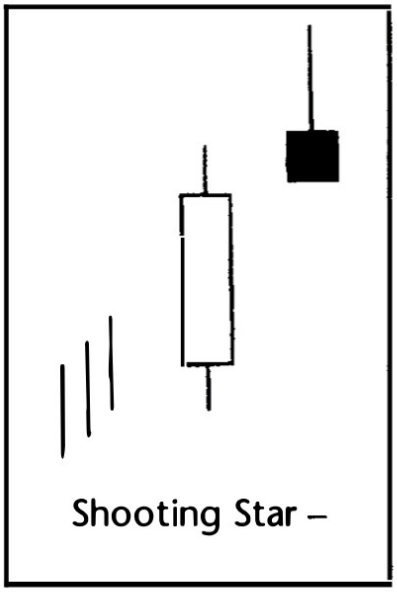
Hammer +



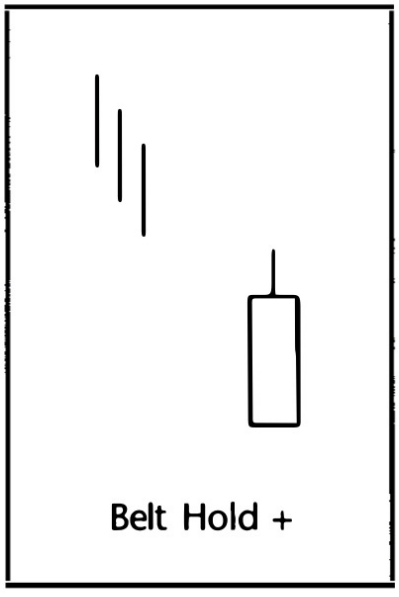
Hanging Man –



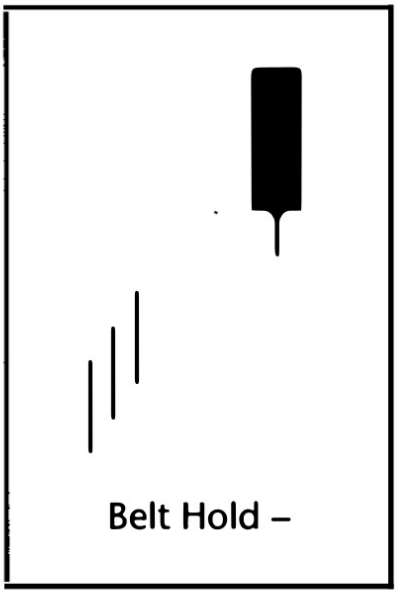
Inverted Hammer +



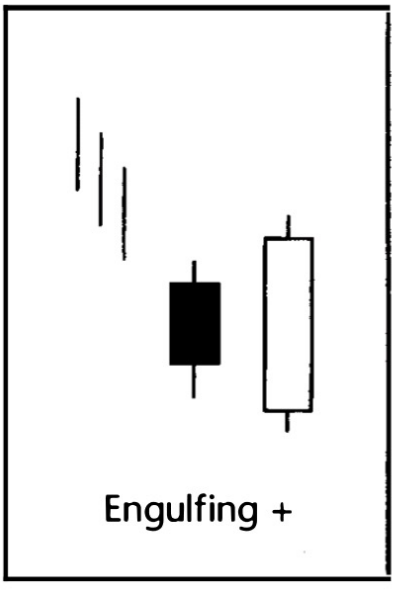
Shooting Star –



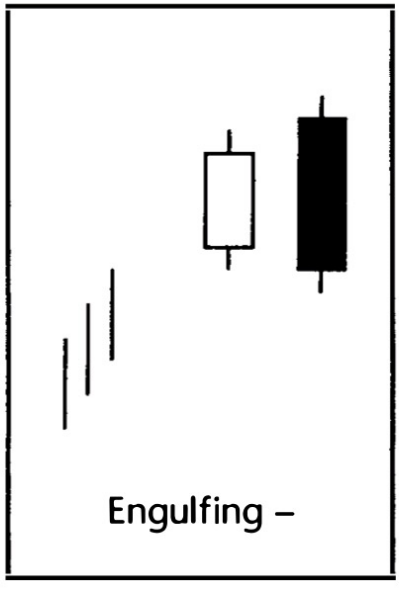
Belt Hold +



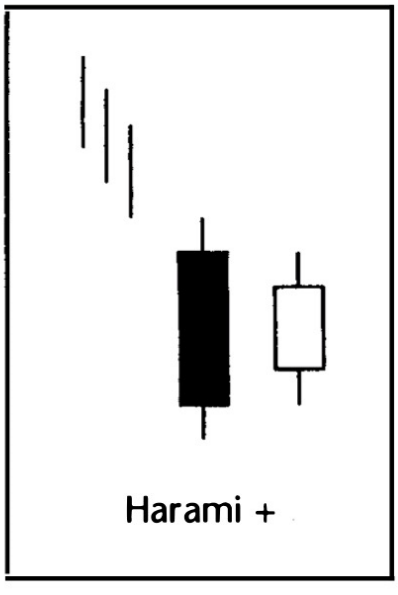
Belt Hold –



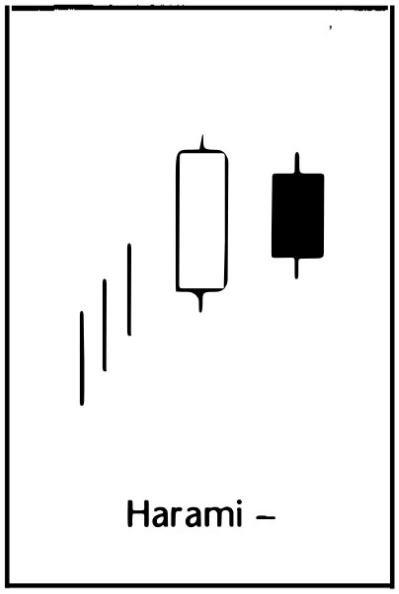
Engulfing +



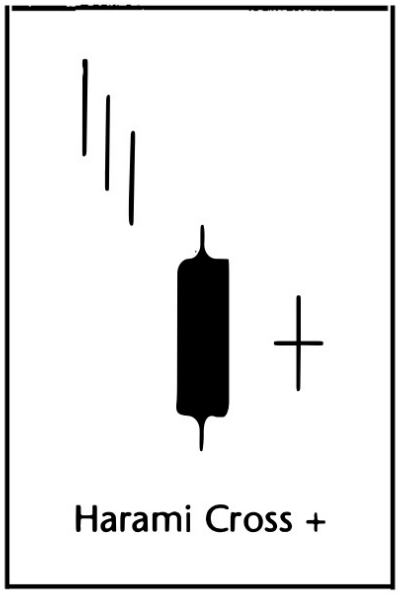
Engulfing –



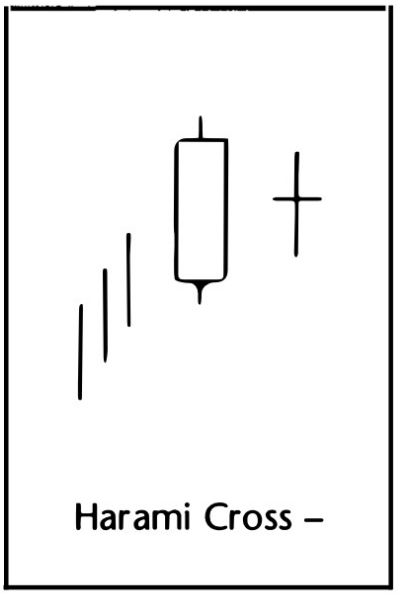
Harami +



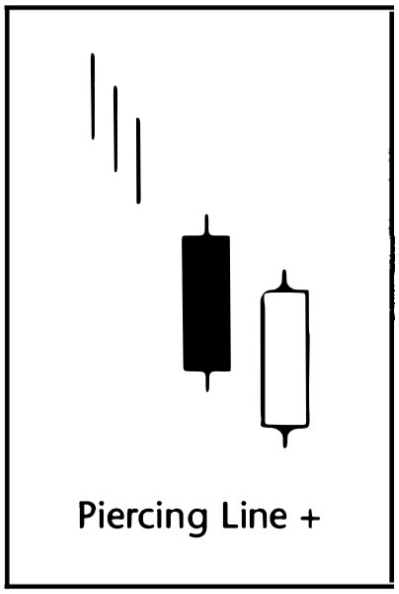
Harami –



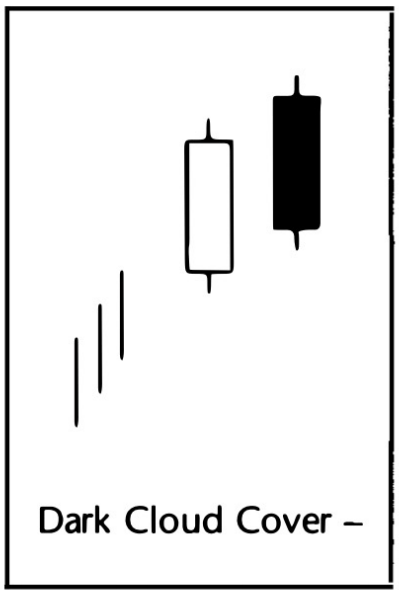
Harami Cross +



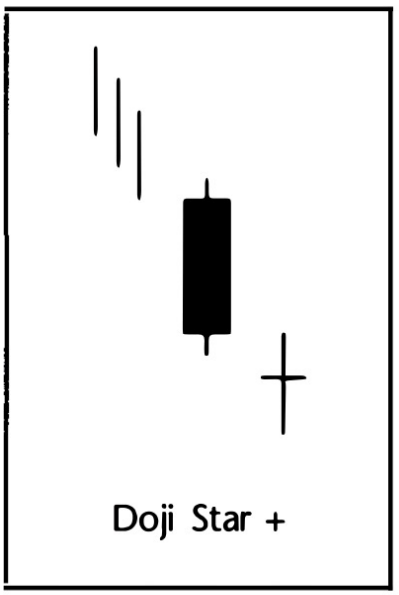
Harami Cross –



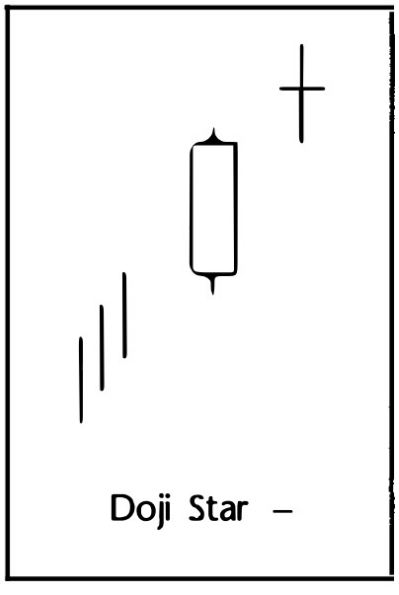
Piercing Line +



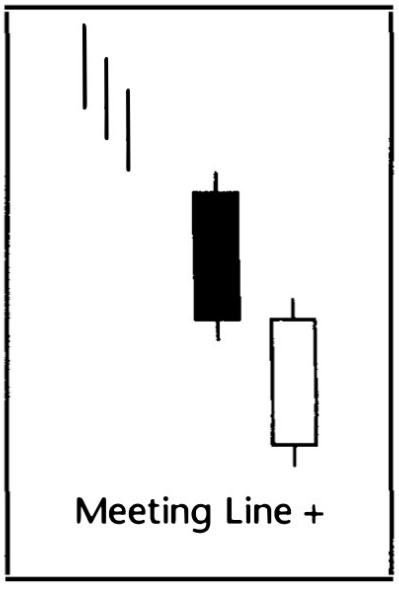
Dark Cloud Cover –



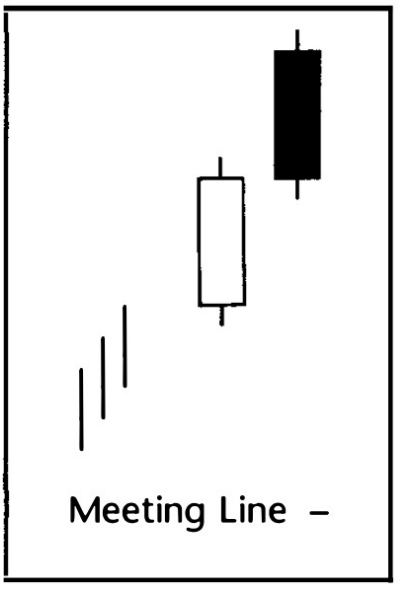
Doji Star +



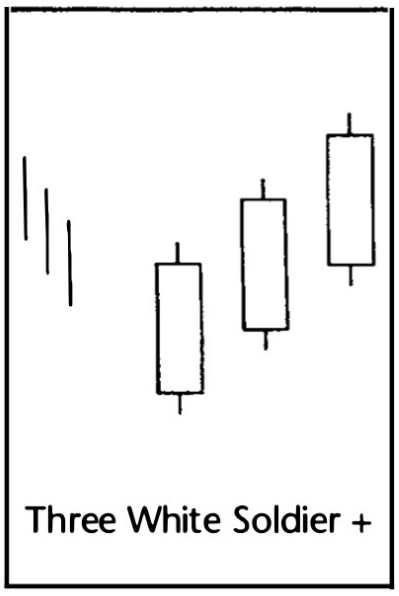
Doji Star –



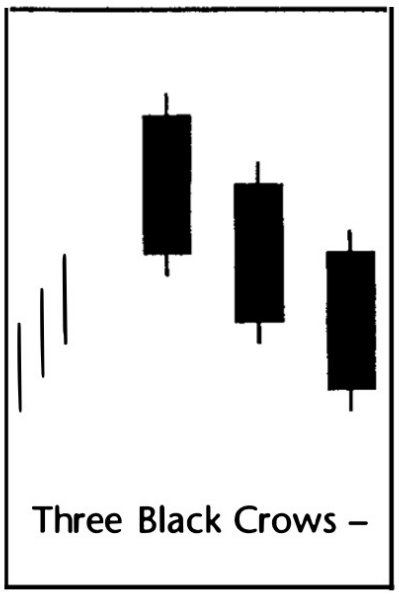
Meeting Line +



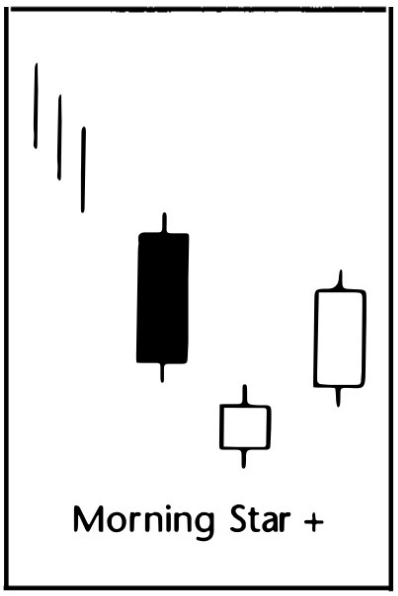
Meeting Line –



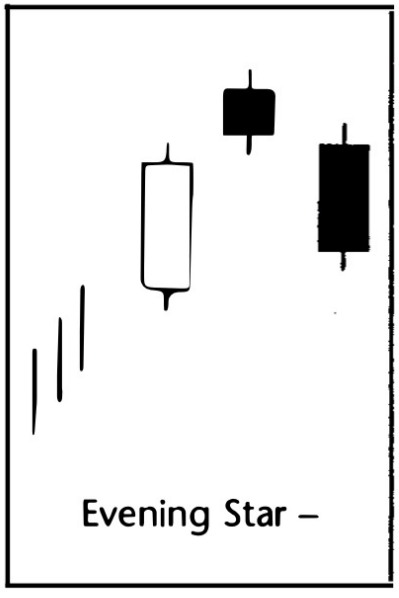
Three White Soldier +



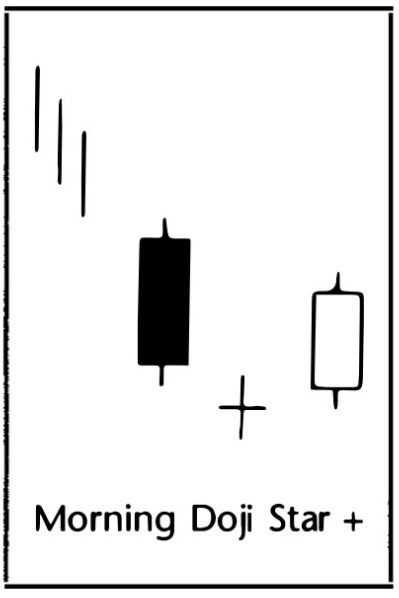
Three Black Crows –



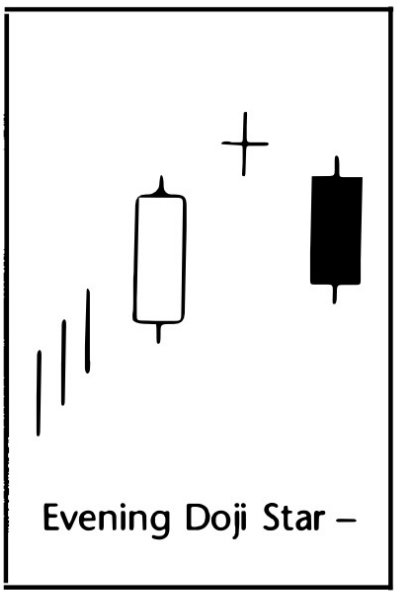
Morning Star +



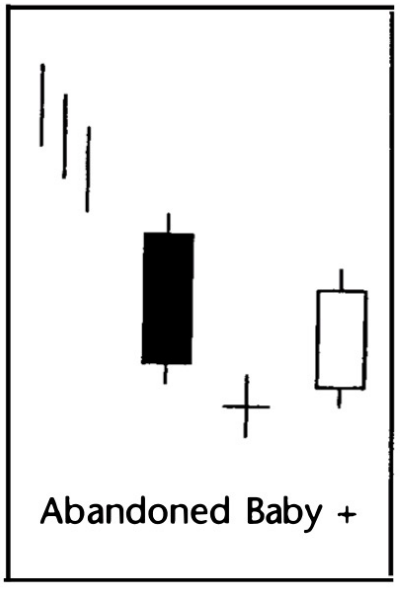
Evening Star –



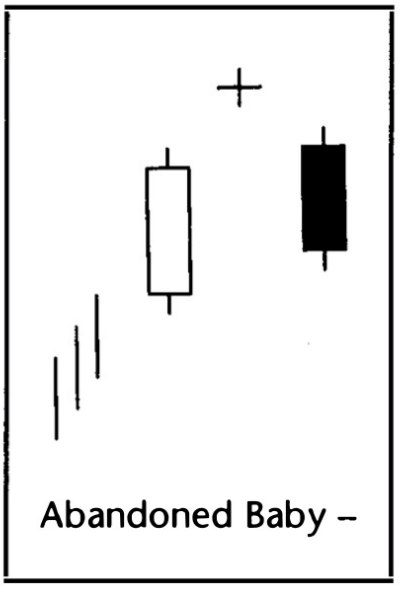
Morning Doji Star +



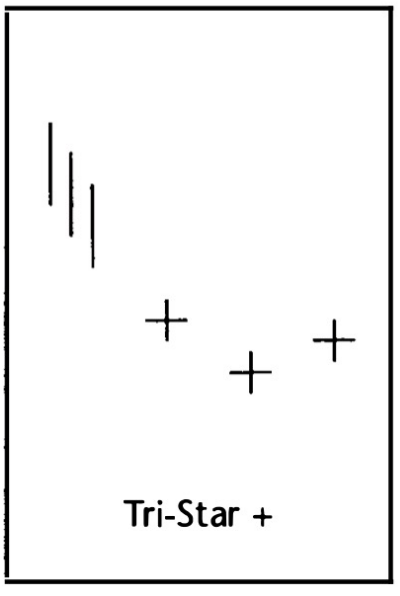
Evening Doji Star –



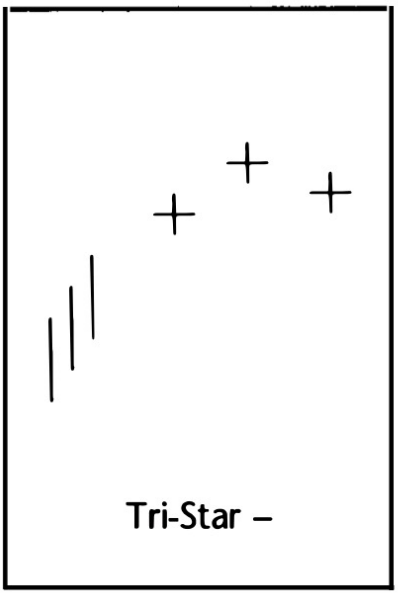
Abandoned Baby +



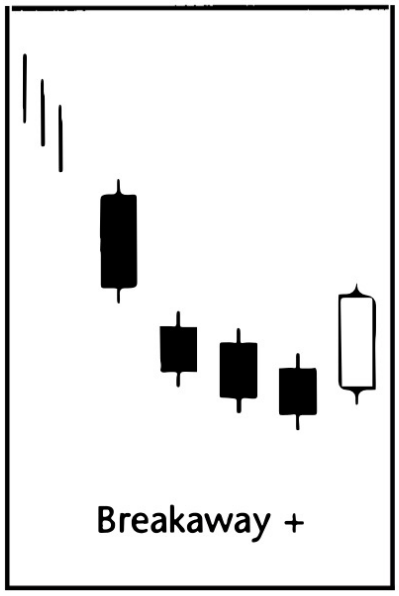
Abandoned Baby –



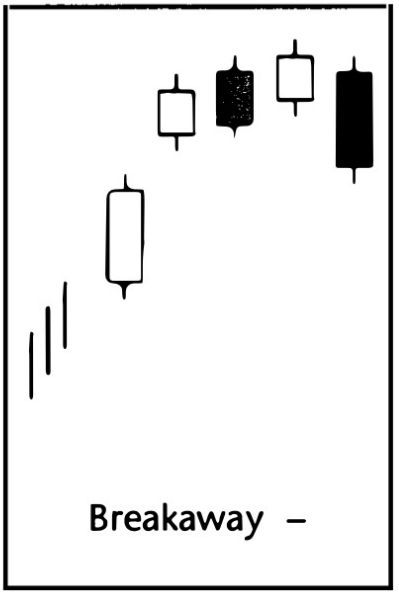
Tri-Star +



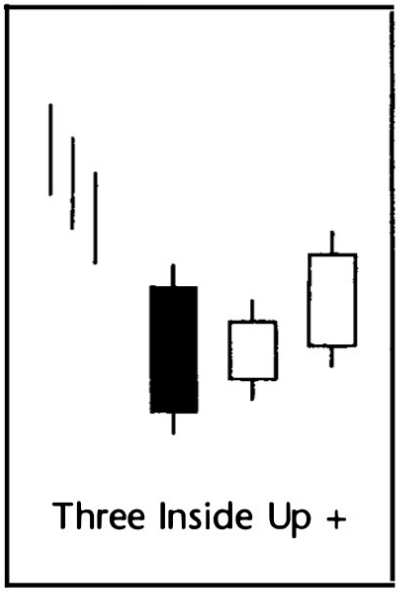
Tri-Star –



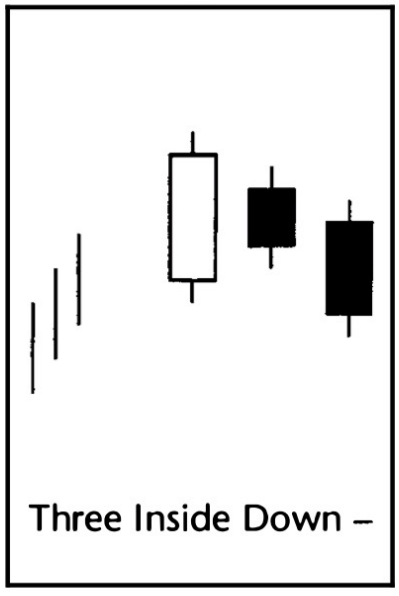
Breakaway +



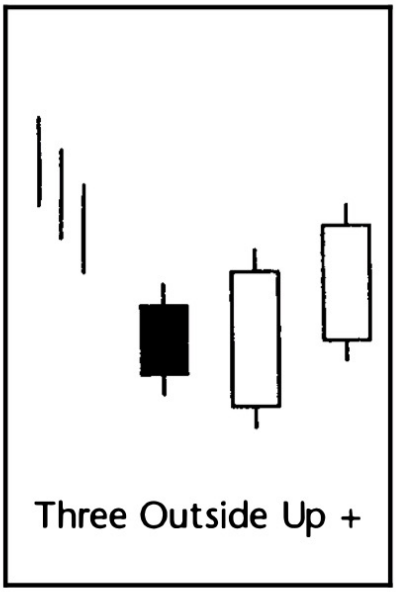
Breakaway –



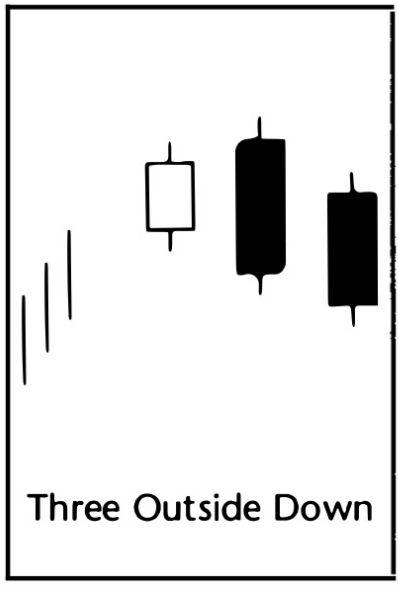
Three Inside Up +



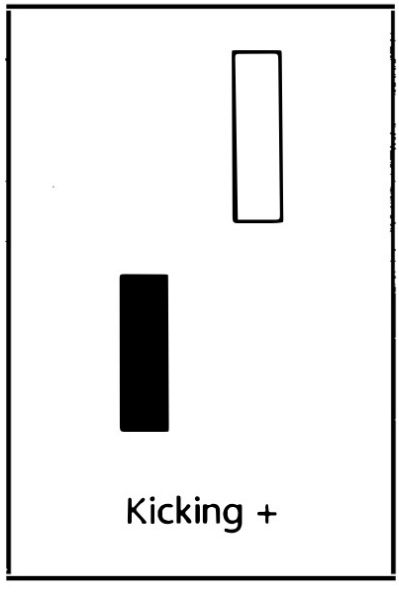
Three Inside Down –



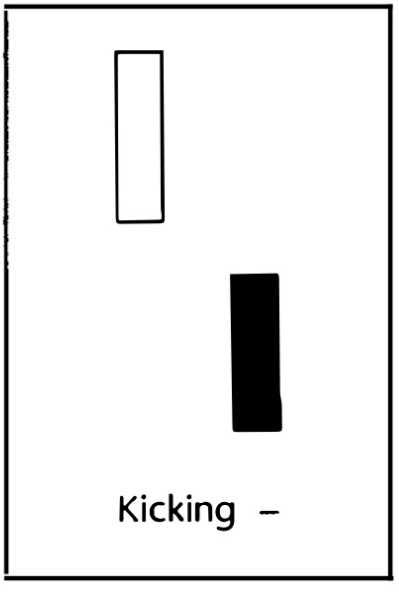
Three Outside Up +



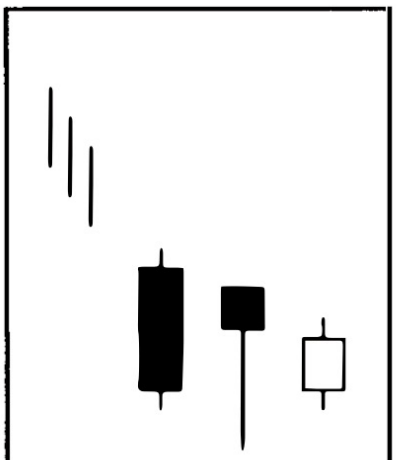
Three Outside Down



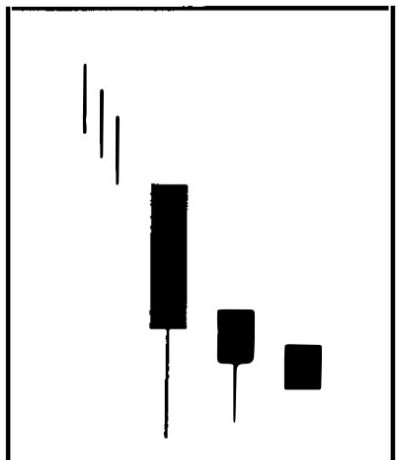
Kicking +



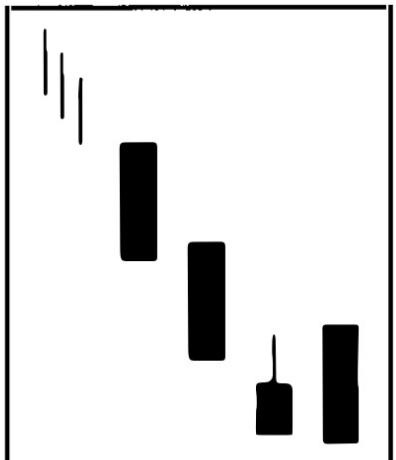
Kicking –



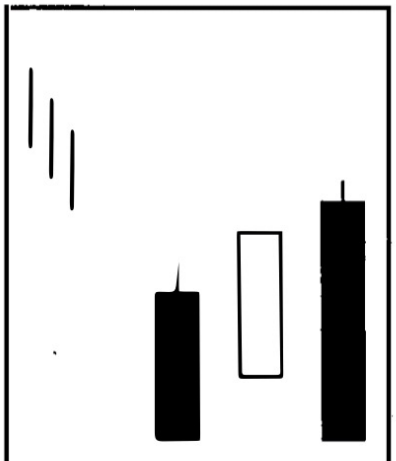
Unique Three River



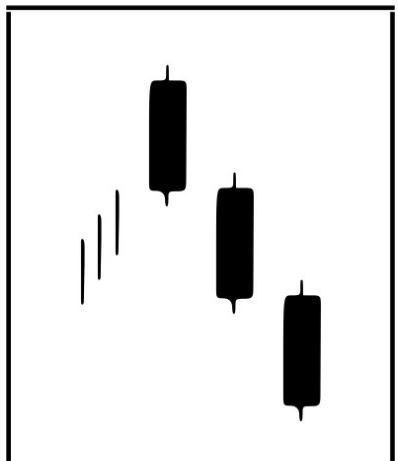
Three Stars in the South +



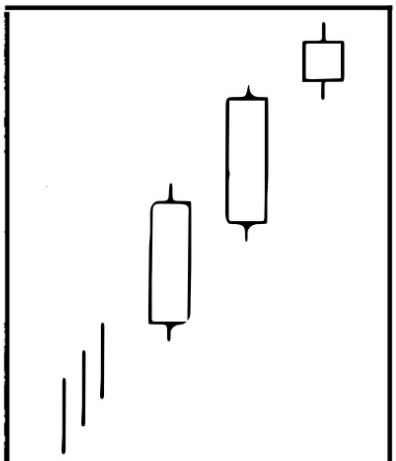
Concealing Baby Swallow +



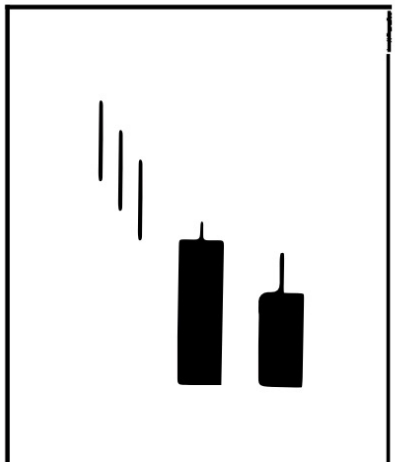
Stick Sandwich +



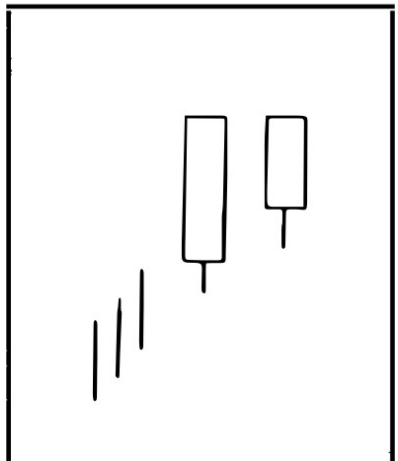
Identical Three Crows –



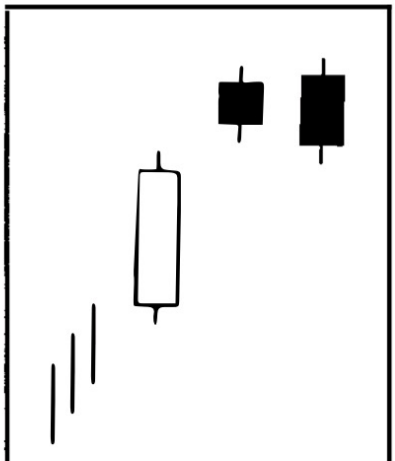
Deliberation –



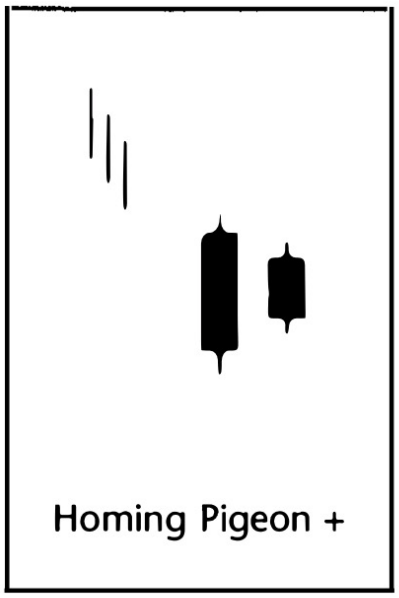
Matching Low +



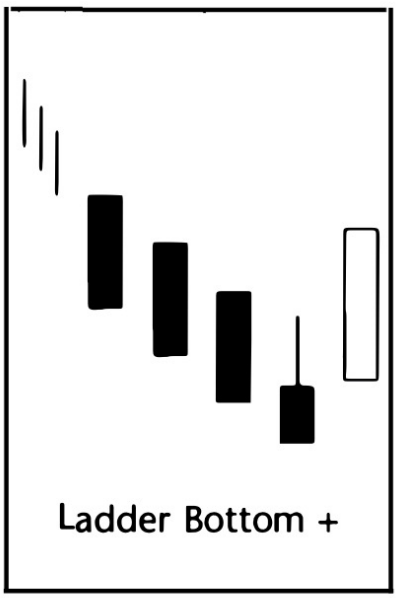
Matching High –



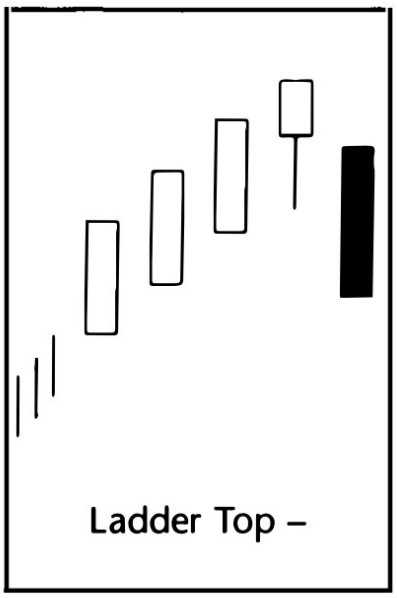
Upside Gap Two Crows–



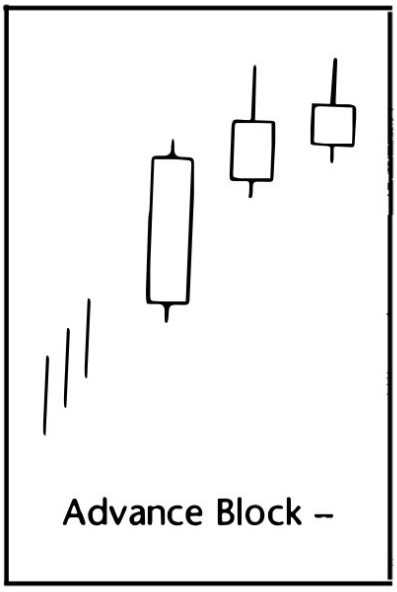
Homing Pigeon +



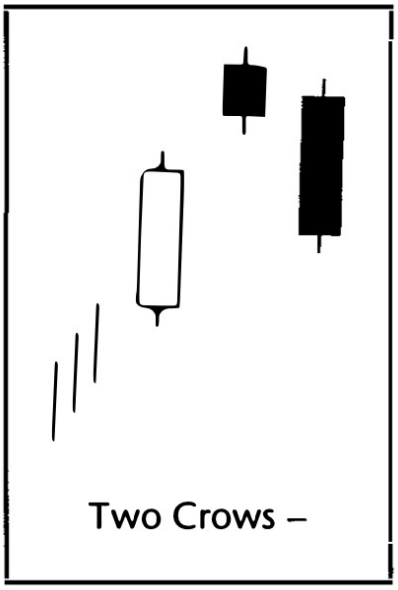
Ladder Bottom +



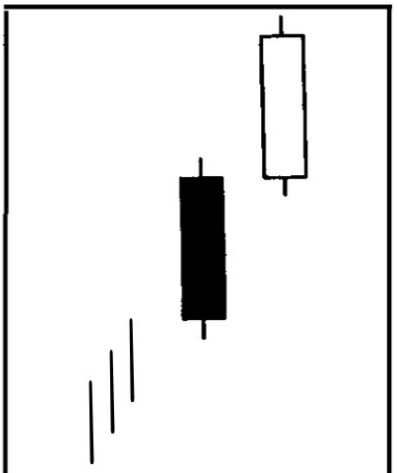
Ladder Top –



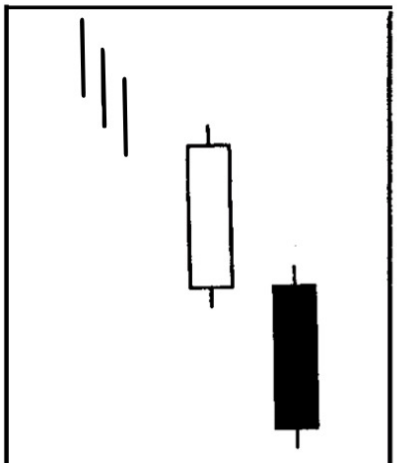
Advance Block –



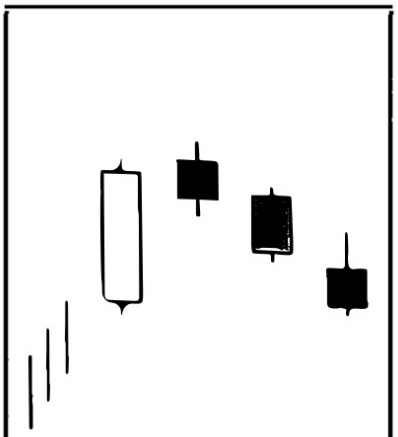
Two Crows –



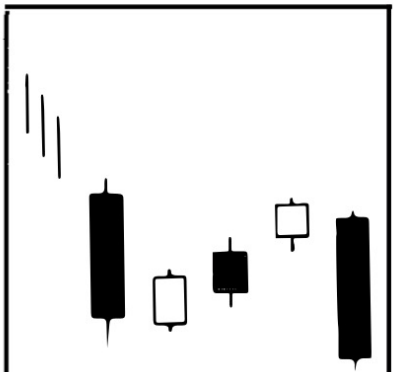
Separating Lines +



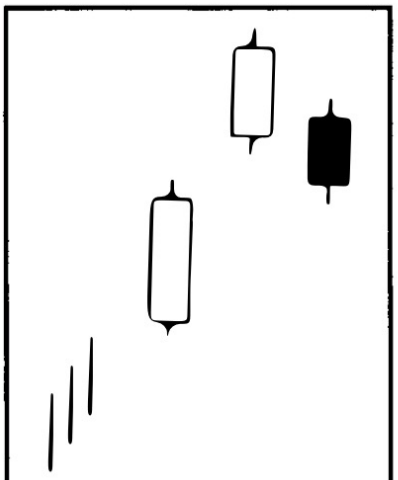
Separating Lines –



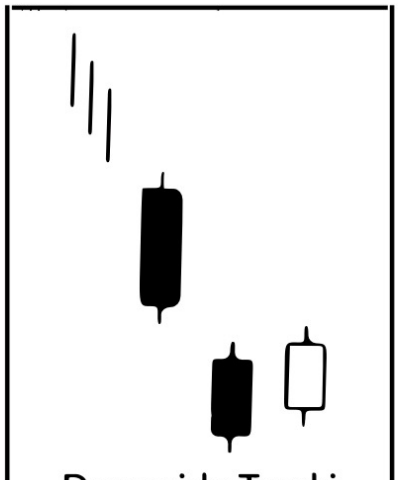
Rising Three Methods +



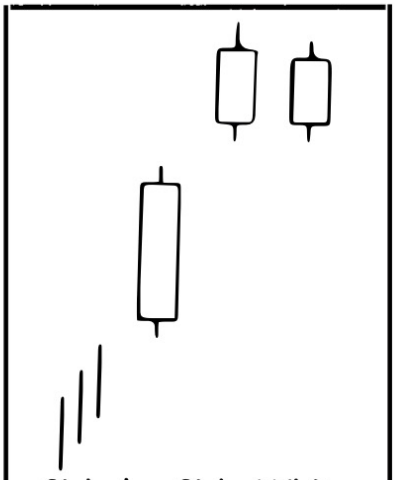
Falling Three Methods –



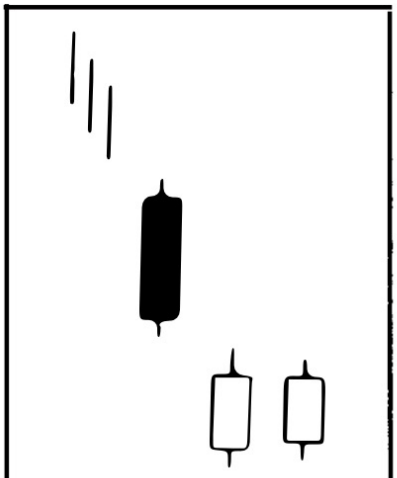
Upside Tasuki Gap +



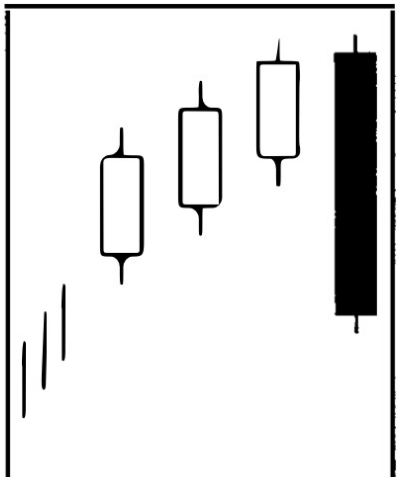
Downside Tasuki Gap –



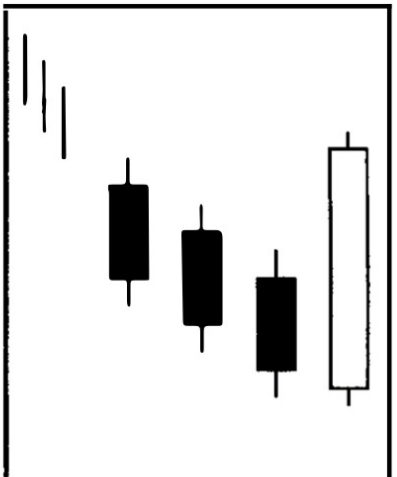
Side by Side White Lines +



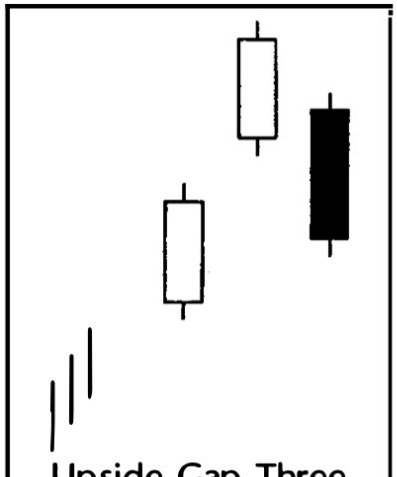
Side by Side White Lines –



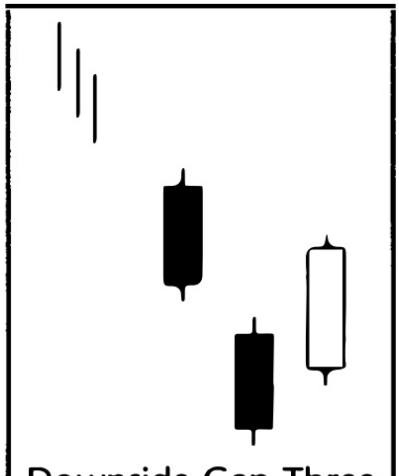
Three Line Strike +



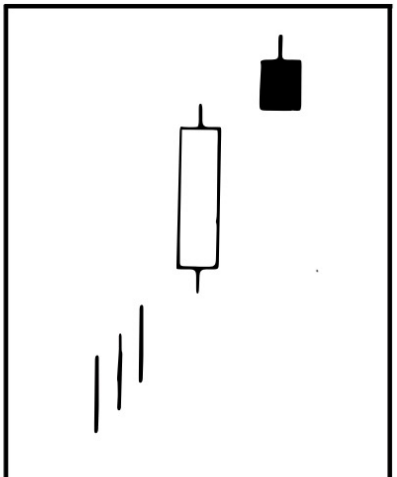
Three Line Strike –



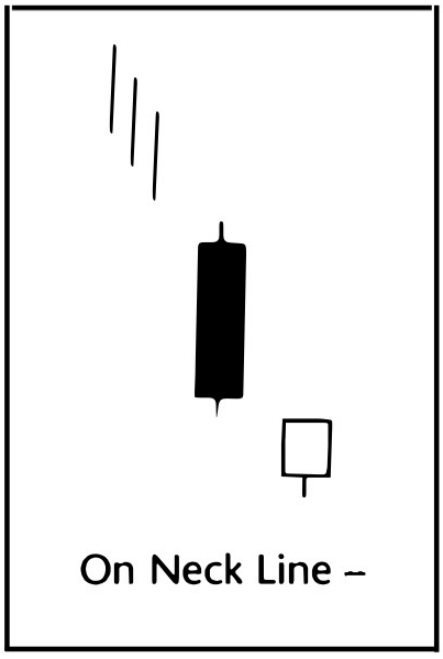
Upside Gap Three Methods +



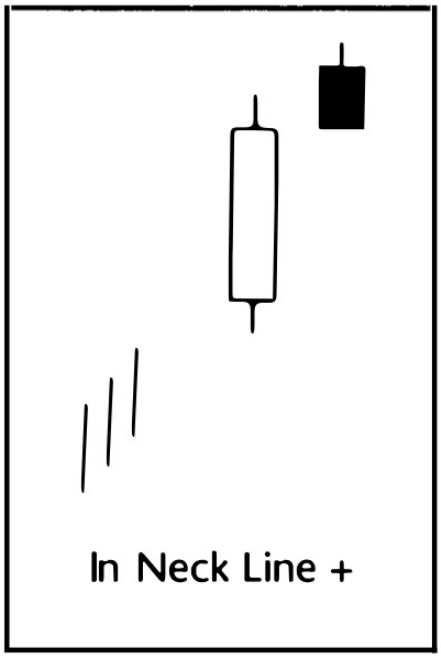
Downside Gap Three Methods +



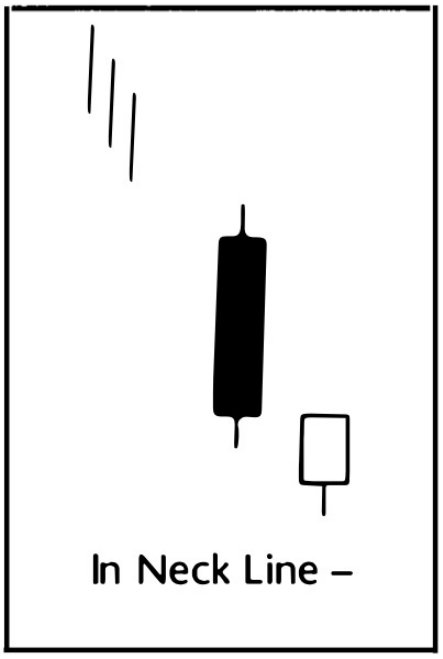
On Neck Line +



On Neck Line –



In Neck Line +



In Neck Line –