

Guide To Technical Indicators

Volume 1

How To Use Technical Indicators To Predict
Future Market Action





Most experienced traders use technical analysis to help them predict market moves, and then make trading decisions based on those predictions. Typically, these traders are knowledgeable about many different technical indicators, have used a number of them, and subsequently have settled on a few that they use over and over again.

To most newer traders, however, technical analysis remains somewhat of a mystery. To some, the term "technical analysis" itself takes on an almost mystical meaning.

In reality, technical analysis is no more than the study of market action using any of a variety of mathematics-based tools called technical indicators, with the objective being to accurately predict future activity. In a sense, traders use technical analysis as a diagnostic tool to study the markets, much like a doctor uses radiology as a diagnostic tool to study the human body.

The understanding of these diagnostic tools is essential to your growth as a trader. Without them, you will be severely handicapped in your trading.

This booklet can help you understand and apply these technical tools. The contents first appeared as a series of articles in *Futures*, the world's leading monthly magazine devoted to trading the futures and options markets for profit. It is designed to take the mystery out of technical analysis by explaining the popular indicators in non-technical language, with graphic examples to demonstrate their use.

We hope you enjoy reading about these proven tools and applying them to your own trading program.

The Editors of *Futures* Magazine

Futures
News, analysis and strategies for
futures, options and derivatives traders

Price Charts

There are many ways to plot market prices in chart form. Here are a few of the most popular charting methods...

By the Editors of Futures

Like any field, in technical analysis one has to begin somewhere. Most technical analysts agree that the starting point in their field is charts.

That's why we're starting this booklet with an introduction to the most popular types of charts used in futures trading today with a full description of when to use what chart and why.

BAR CHARTS

Bar charts are probably the most commonly used type of charting in the stock and futures markets. The "bar" itself marks the high and low for a particular period, onto which the close is marked by a tick off its right side. The opening price, popular in recent years, is marked on the left side.

Filling gaps

The price bar can represent any time period — a minute, an hour, a day, a week, even a quarter of a year — during which where trading took place. The bars do not always overlap. Even liquid markets show an occasional gap where prices were skipped. The less liquid the market, generally the more gaps, as well as the greater the variation in bar length.

Also, shortening the time period of the bar tends to reveal more gaps. This only makes sense: Two daily bars may overlap nicely while the

open and previous close seem miles apart on a 10-minute bar chart.

Getting the whole "day"

Gaps on daily charts appear because futures markets trade only for a small set number of hours per day. Currency futures at the Chicago Mercantile Exchange (CME), for example, trade from 7:15 a.m. until 2:00 p.m. Chicago time. This leaves 17 hours in which the world is trading currencies, but the CME is not (although the CME generally covers the most liquid hours).

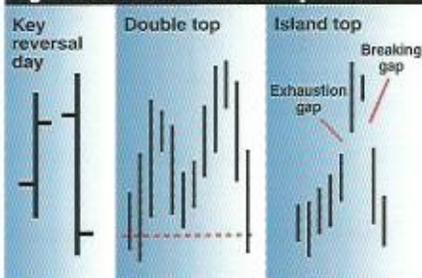
Any market-moving events or news during this "off" time forces the next bar's open to be far off the current price. For futures on internationally-traded markets, this effect becomes important. Cash markets for financials, as well as many commodities like crude oil and precious metals, are always traded somewhere in the world.

Is a futures trader better off charting these markets? Gary Klopfenstein, president of GK Capital, a Bloomington, Ill.-based commodity trading advisor, directs most of his currency trades to the interbank market.

"Our 'daily bar' consists of the open in Sydney in the Far East, to the New York close," says Klopfenstein, who relies on Bloomberg and Telerate charting services.

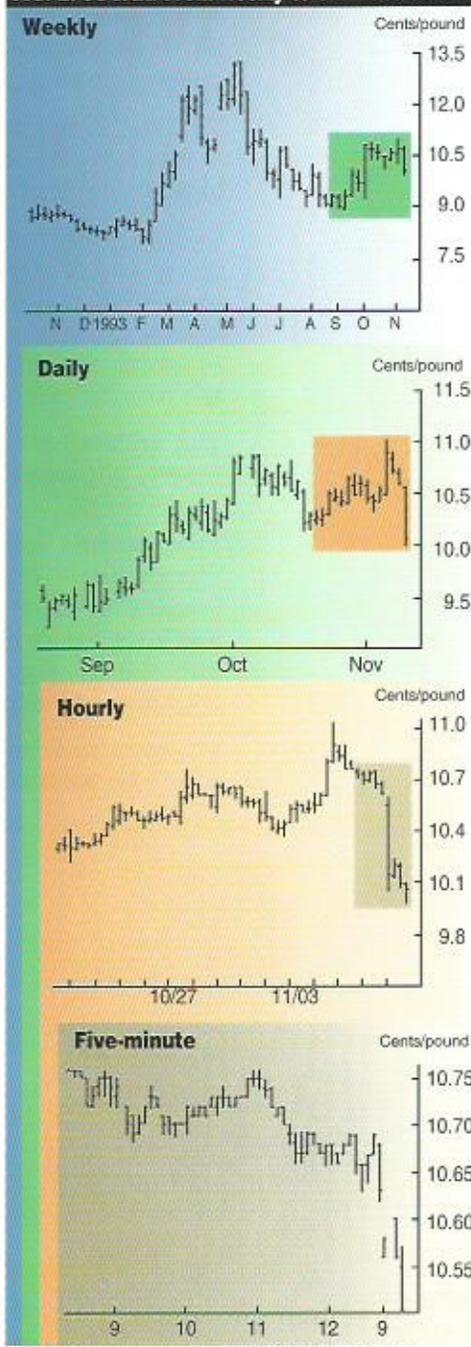
Peripheral charting has become an issue even within the futures markets themselves. Traders now have

Fig. 1: Some basic bar chart patterns



In the key reversals, besides the second bar engulfing the first, its close is lower than the first period's low. Island tops — one of the fastest and strongest reversal patterns — require a gap on both sides.

FIG. 2: SUGAR: From weekly to 5-minute bars



the choice of also charting the bond futures volume traded nightly at the Chicago Board of Trade, the night currency trading at the Philadelphia Stock Exchange, and the emerging GLOBEX after-hours markets.

Most charting services simply incorporate these after-hours sessions into the regular daily bar. This is largely because at present, there's not much happening at night. In fact, most intra-day traders elect to purge the spotty night sessions from their data series. Should night trading pick up, however, things could change. Not only would traders begin using the data on an intra-day basis, but the night session might be pared into a separate bar of its own.

Regardless of the number of hours, a single "daily" bar represents an entire session's price activity. That bar can be broken down into several intra-day bars. Looking at the four sugar charts (Fig. 2), aside from the big jumps during the first hour, notice how the hourly bar chart resembles a daily bar chart. On the five-minute chart, however, highs and lows are much more static.

Intra-day bars let you see things daily bars don't, namely intra-day support and resistance levels. Even the most staunch followers of daily- and weekly-based charts can find hidden intra-day support and resistance that aid them in getting in a trade. On the hourly bar chart, for instance, if you drew a downward-sloping trendline connecting hourly highs of Nov. 1-2, it would be broken Nov. 4. The brief rally was not confirmed by the daily chart until a day or so later.

Patterns

The key to price charts is looking for "patterns" to determine how the market will move. In another chapter we will discuss in more detail the more popular patterns and what they mean. For now, two basic parts of any chart are key "reversal" patterns and gap retracements.

Reversal patterns consist of double tops (bottoms) and head and shoulders formations (see Fig. 1, "Some basic bar chart patterns") and signal key reversal

moves in a market.

When a gap occurs between two bars, the basic rule is futures price activity, sooner or later, always fills the bar. If so, this may offer a true signal of coming retracement in price. The key is, you don't know when.

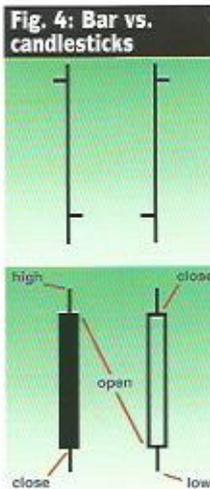
Alternatives

Conventional bar charts have been as much a fixture in the financial world as wing tips, but not everyone wears wing tips. Proponents of other types of charting — such as candlesticks — reject the drab illustrative nature of bar charts, including their inability to highlight up-versus down-market bars.

Bar enthusiasts have tried to address this by simply color-coding the charts (great on a screen, bad on a printout) for up days and down days, even different shades for strong up or down days. Another criticism, the advantages to scaling price on a percentage or "logarithmic" basis — mainly for longer-term charts — will be addressed later.

JAPANESE CANDLESTICKS

Japanese candlesticks, which have been enjoying the spotlight in recent years, are difficult to explain in one broad brush. Candlesticks draw on the same open-high-low-close data as do bars. Here the length of the bar, or "candle," is



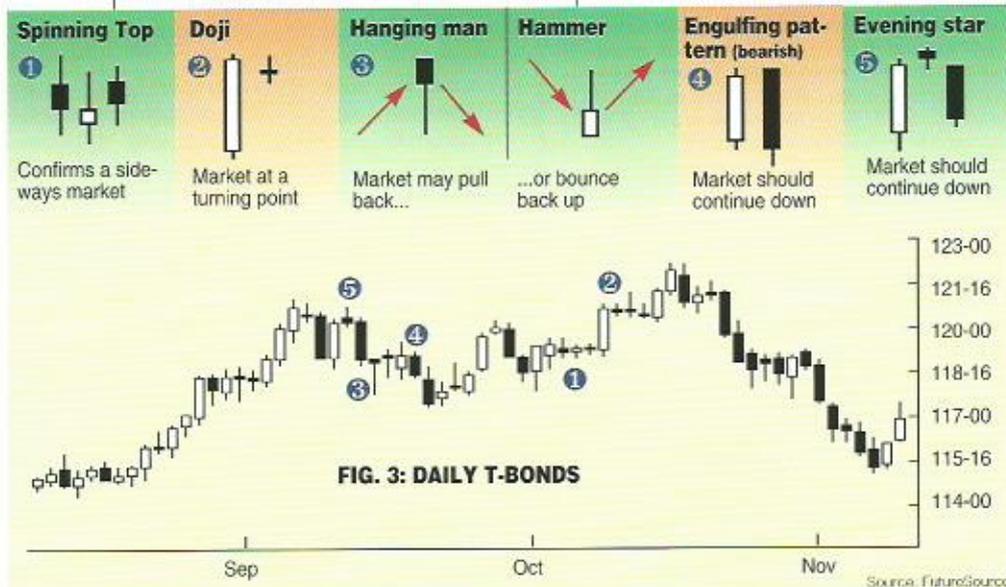
determined by the high and low, but the area between the open and close is considered the most important.

This area, the "body" of the candle, is unfilled (or white) for closes higher than the open, and filled (or dark) for down days. The wicks above and below constitute the "shadow" of the candle, or high or low.

Look at the "Bar vs. candlesticks" diagram at left (Fig. 4). These symbols can offer more to the naked eye than bar charts. According to one of the first North American users of this method, Steve Nison, candlesticks show not only the direction of the move but the "force underpinning it."

But perhaps the most important aspect of candlestick charting is not its appeal to the naked eye but the trove of patterns that come along with it. Regular bar chart patterns pale in comparison to the variety of candlestick patterns. A candlestick "pattern" can consist of anywhere from one to four candles, providing generally shorter-term forecasts in contrast to some of the bar patterns illustrated earlier.

The daily T-bond futures chart (Fig. 3) is ringed by examples of some of the most basic formations. Not all of these qualify as ancient secrets from the East. Notice the "engulfing pattern" looks much like the bar chart key reversal. Yet candlestick fans present the engulfing stick as an example of a big advan-



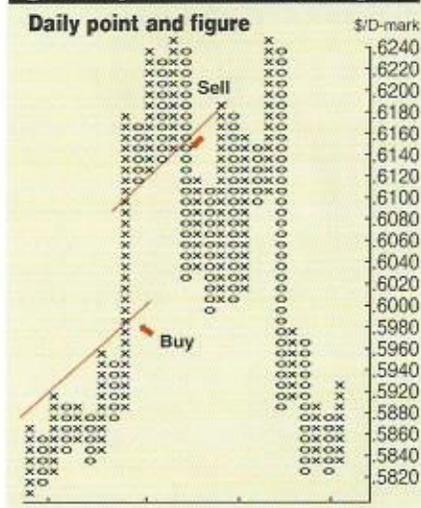
tage to this method — it requires the previous day's body to be covered, not the whole candle (including the high). While bar chartists focus on highs and lows, candlestickers dwell on bodies.

Like all charting methods, however, even this import from the East has its limits. No pattern is 100% correct. Some have turned to incorporating these patterns in a mechanical system, something that makes candlestick purists grumble.

POINT-AND-FIGURE CHARTING

Many debate whether point-and-figure charting is really charting or an indicator. It's actually both. One feature dominates point-and-figure charting: Time, as we know it, has

Fig. 5: Daily D-MARK: Point-and-figure



Point and Figure charts sometimes can offer earlier, and more definite, entry points based on breaks of trendlines. The second arrow (sell) on the P&F chart arrives around .6135-.6140, while a similar signal arrived in the bar chart at .6115-.6120 (based on breaking of the "middle trough" low of double top).



Source: FutureSource

little meaning.

As existential as that sounds, reconsider how bar and candle charts are plotted: Both cram price action of a given time period into one vertical symbol, the symbol for the next period appearing one space to the right. Price movement, not time, moves point-and-figure charts to the right. One topsyturvy week of prices might take an entire sheet while three weeks of a more orderly market could occupy just a few columns.

Point-and-figurists believe whether it lasts a day or several days, if price runs straight up with only minor corrections, you plot the move in the same vertical column. The end of a time period has no impact; the plot moves to the next column — and down a box — only when the market "reverses" by a certain amount (see "Plotting the point-and-figure," Fig. 6).

Before plotting price this way you need to decide two things: first, the box size — how much movement one "X" or "O" will represent; and second, the reversal criteria — or how far the market must reverse before going to the next column.

Your choices depend on how reactive to price you want the chart to be.

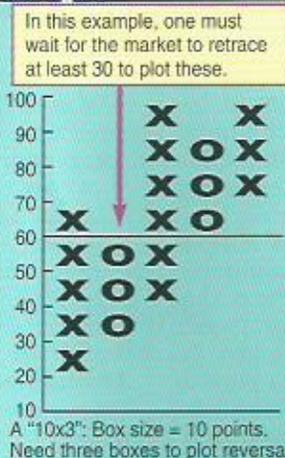
Contrast the Deutsche mark point-and-figure chart to the daily bar chart beneath it (Fig.5). The box size for the D-mark chart shown is U.S.\$0.20. (This means an average day could take up 2-3 boxes.)

Likewise, the stiffer the reversal criteria, the more serious the retracement must be to move to the next column. Most chartists require moves of more than one box, eliminating all the short-term retracements.

The D-mark chart requires a minimum of three boxes to move to the next column. Shorthand for this scheme is "20 x 3" — 20 points per box with three box reversal.

Point-and-figure charting is far from new. In his text, *Technical Analysis of the Futures Markets*, John Murphy estimates its inception sometime during the 1880-90s, when it was called

Fig. 6: Plotting the point-and-figure



"book" method. The first bar chart didn't appear until 10-15 years later.

Most charting software can calculate point-and-figure charts based on either daily or intra day data. While purists prefer intra day for more accuracy, the chart at left was built with daily data. But the rule here is not to let one day yield both Xs and Os.

Say the market soars as much as it drops from the previous close; if you were working on Xs yesterday, add more Xs and disregard the low.

Point and figurists trade breakouts. One of the advantages cited by these enthusiasts is the ability to see trendlines that do not appear on regular bar charts. Notice the crisp upward 45-degree trendlines shown on the D-mark chart, and how definite the breakouts appear. It is the chartist's discretion how many boxes the break must clear the trendline.

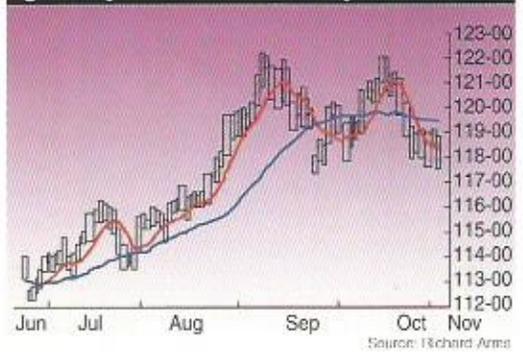
VOLUME-ADJUSTED CHARTS

Many chartists hold that you should not even pick up a chart without consulting volume figures. The truth is, most people don't even look at volume, let alone know how to use it.

Classic charting employs volume to confirm price movement. The oversimplified rule says price moves accompanied by increases in trading volume are more apt to be trends, while those in which volume stays or falls off are not.

Fans of volume-based charting such as the Equivolume method believe there is more to it. Volume-based charting methods are some of the more interesting and innov-

Fig. 7: Daily U.S. T-BOND futures: Equivolume method



Source: Richard Arms

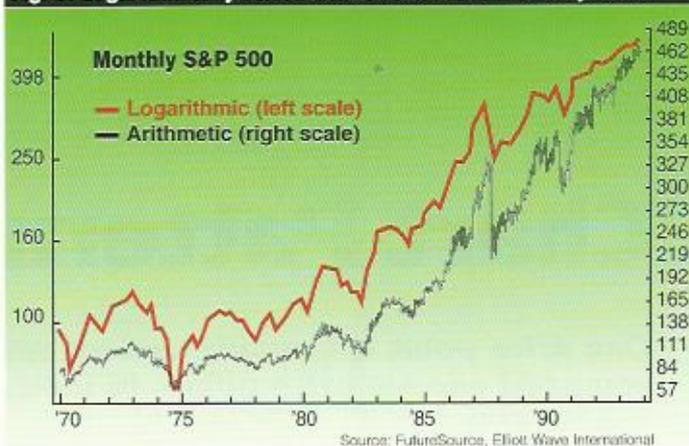
ative, yet also some of the least popular.

One approach, the Equivolume method, turns the traditional bar into a histogram — a bar fattened according to the amount of volume that day. This helps illustrate and discover new patterns in the relationship between price and volume. The classic rule about volume stated above, for instance, can be shown by the fatter rectangles during upside breakouts: thin rectangles are only temporary profit-taking cor-

rections (see Fig. 7: "Daily U.S. T-bond futures: Equivolume method).

Stock market timing guru Richard Arms is to thank for this method (see "Richard Arms: Keeping Markets Within Arms' Reach," *Futures*, October 1992, p. 98).

Fig. 8: Logarithmically scaled S&P 500 vs. Arithmetically scaled



Source: FutureSource, Elliott Wave International

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Market Profile

Missing from these pages is a description of the Market Profile method, pioneered by J. Peter Steidlmyer and the Chicago Board of Trade. Like point-and-figure charting, the Market Profile approach is both chart and indicator.

Because of space constraints — Market Profile charts require a lot of elbow room — the method will not be explored in this booklet.

THE CHARTIST DEBATES

Yet all is not settled in the charting realm. Many analysts and commentators complain bar and candlestick charts have a drawback when you go beyond the weekly and monthly analyses — arithmetic scaling.

Most futures and stock price charts are arithmetically scaled. In other words, a move from 150.00 to 151.50 looks the same as one from 450.00 to 451.50. But in percentage terms the earlier 1.50 point rally amounts to 1.0%, while the later one constitutes a mere 0.33% move. Logarithmic and semi-logarithmic charts adjust for the difference between small and big numbers. Notice the difference in the two monthly S&P 500 index charts shown since 1970 (above).

A note should be made concerning spread charts. Unless they trade as a separate market themselves, spread and ratio charts usually are not charted by themselves in any of the above formats. Instead they are represented by a simple line chart.

Whether traditional charting methods and technical analysis apply to these charts with equal attention depends on the spread. The basic rule is, if people are watching it, the traditional patterns may hold. If you cooked up some odd ratio on your own, it's most likely new territory. **FM**

Chart Patterns

One price point is virtually useless when analyzing a market; you need enough price points to indicate a pattern. Here are some examples...

By the Editors of Futures

Plotted on a grid, a dot representing the current price provides the trader with two valuable pieces of information — a time and a value. Yet, without any other data, it's like being at the "You are here" sign at a large shopping mall with no diagram to tell you where "here" is.

An isolated price isn't useful in your trading unless you have other prices to put the market into perspective. As the initial chapter in this booklet indicated, most traders use charts to portray this price action. A chart is simply a history of prices — a map of where prices have been and which some analysts use to envision where they might be going.

The challenge for a trader is figuring out what will happen when you come to what Alexander Elder calls "the hard right edge" of the chart.

"Each price is a momentary consensus of value of all market participants, expressed in action," Elder says in *Trading for a Living*. "Price is a psychological event — a momentary balance of opinion between bulls and bears. Prices are created by masses of traders — buyers, sellers and undecided people. The patterns of price and volume reflect the mass psychology of the markets."

Bar or line charts are the most popular way to track prices and to look at the psychology of the market. No matter what a market has done in the past, it will do one of two things in the future: Continue what it has been doing or change direction. As mass psychology shifts, price patterns form. Looking at similar patterns in the past, you may be able to surmise what a market will do next.

However, several points need to be

emphasized before going any further: First, what you "see" on a chart may not be what others see. Constructing a bar chart is relatively mechanical and straightforward; reading what it says is an art. Sometimes interpreting charts may require as much creativity as the finest art.

Second, a price chart alone may not be enough to make a trading decision. Anyone can point to a bottom and a top on a chart and say, "If you had bought here and sold here..." Visual analysis is only one trading tool. In the computer world, technical analysis can incorporate many other signals quickly and easily.

Textbooks have been written on chart analysis, and many books on trading cover technical analysis. This booklet covers most of the basics of

bar chart analysis. This chapter focuses on continuation patterns; the next one on reversal formations. Sometimes a pattern can be either, and it is only in hindsight that you can identify the clues. As with any art, only practice will help you.

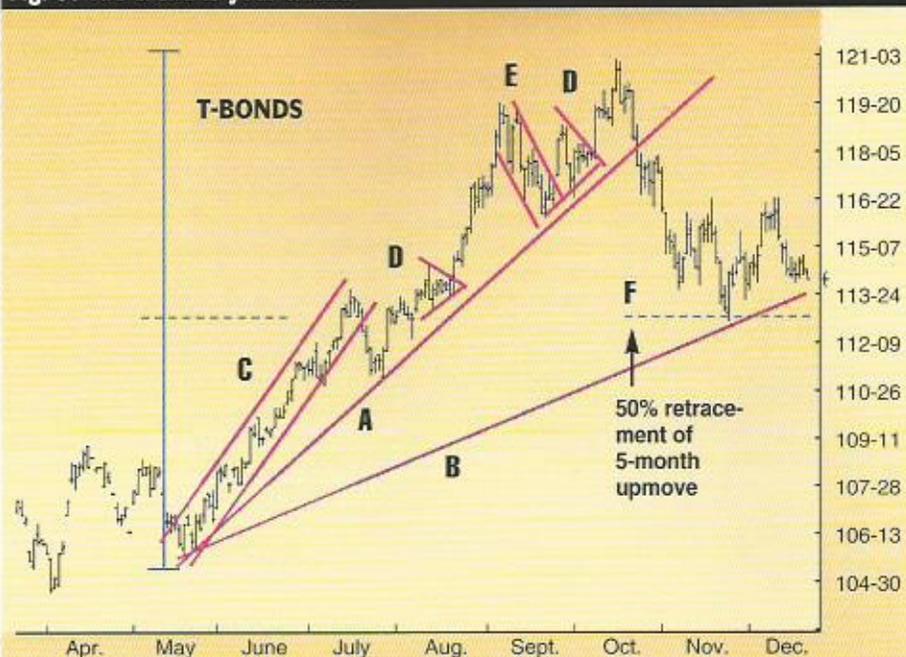
Trendlines

Drop a chart in front of almost any novice, and he or she can probably tell you the trend. An uptrend is a continuous series of higher highs and higher lows; a downtrend is a series of lower highs and lower lows.

"Trade with the trend" is a basic tenet of successful trading, so identifying the trend is where chart analysis begins. The strategy is simple: As long as a trend is intact, stay with it.

Nearly every bar chart displays

Fig. 9: The trend is your friend



One important thing a chart can tell you at a glance is the price trend. When one trendline is penetrated, a new trendline can be drawn at the reaction low, which may be the bottom of a flag (E). Quite often, the new move will stop or at least pause at 50% of the previous move.

trends of some type. The March T-bond chart, (Fig. 9), has several, the most notable the uptrend from 106 in May to about 119 in October (A). The approximately 45-degree line connecting the bottoms identifies a major trendline. The longer the trendline and the more times prices touch it, the more reliable it is and the more support it offers the market when prices test it.

Trendline A has three points of contact, as drawn. If you use only closes for trendlines, you'd have more contact points on this chart and a slightly different level of support. That's part of the art of chart analysis.

The first trendline in this overall move (C) is the steepest — typical as a market breaks into a new trend. But the steeper the trendline, the harder it is to maintain. After a break through trendline A and a low at 113 in November, another trendline (B) could be drawn, using the new low.

Trendline C also has a well-defined "channel," a relatively narrow band of price action within two parallel trendlines. Once a channel is established, close market followers might use "breakouts" of the channel to establish positions, or they might use the channel trendlines to buy at the bottom and sell at the top of the channel.

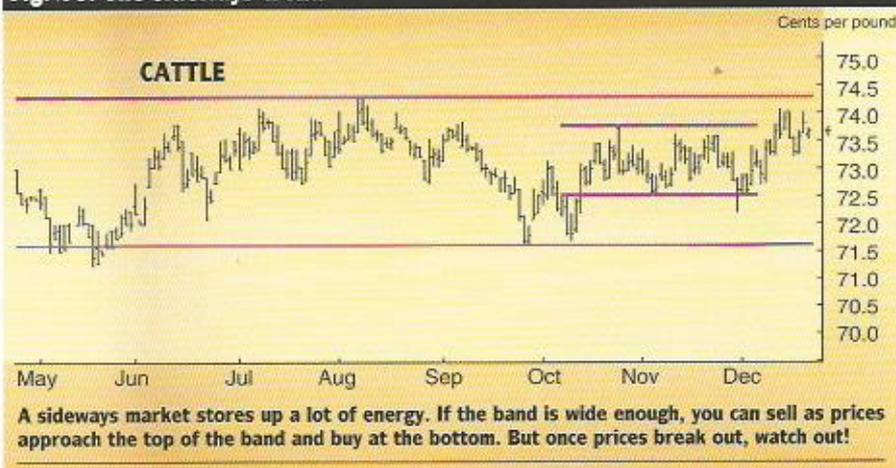
Trading range or sideways markets

Another type of "trend" or "channel" continuous formation is a sideways move. In the cattle chart (Fig. 10), prices drift sideways for months in about a 2 1/2-cent band, then move into an even narrower 1-cent range in October.

A similar situation exists on the D-mark chart (Fig. 11), where four tops seem to make the .6200 mark (A, B, C and D) a formidable obstacle for any future upmove. But the D-mark band is wide enough to allow short-term trading opportunities whereas the narrower band in cattle covers only a \$400 range, a small window for setting up profitable trades except for perhaps an option seller.

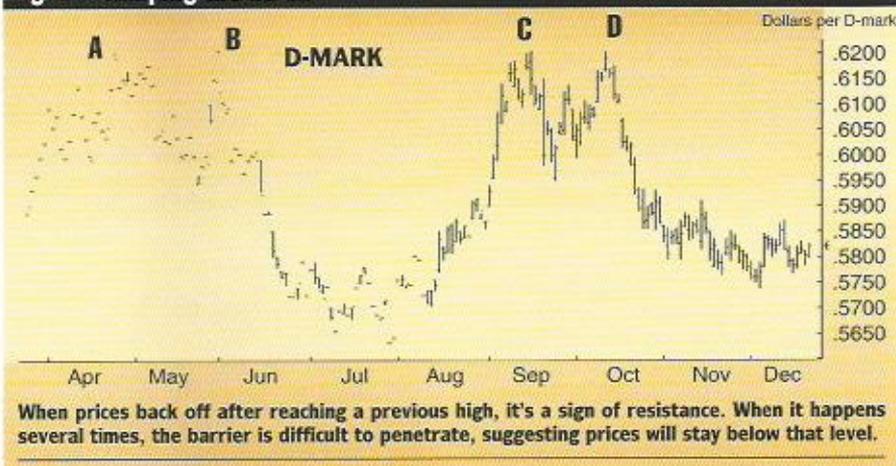
You can use the tops of channels to sell and bottoms to buy, assuming the market will reverse its course at those resistance points to stay in the range when a trendline is tested. But you must be cautious with this continuous formation: When the market breaks out from a double, triple or multiple top or bottom of a trading

Fig. 10: The sideways trend



Source: FutureSource

Fig. 11: Keeping the lid on



Source: FutureSource

range, the pent-up energy can produce a significant move in the direction of the breakout (see the chapter on "Trendlines").

Triangles, flags, pennants

Markets seldom go straight up or down. In most cases, congestion areas, pauses or resting periods develop as prices react against the main trend, perhaps for days or weeks. As bears and bulls sort out the dominant psychological force in the marketplace, chart patterns may develop that suggest a turn in direction or a continuation of the larger trend already in place.

Patterns that suggest continuation include symmetrical triangles ("D" on the T-bond chart (Fig. 9) or "B" on the crude oil chart (Fig. 12), using the dashed line), ascending and descending triangles ("A," "E" and "F" on the gold chart, Fig. 13) and flags ("E" on T-bonds, "C" on gold, "B" on crude oil, using the solid line). These aren't the only examples of formations on these charts nor even the best — this is a subjective art.

The names describe how the formations look. With triangles, prices

tend to trade in a narrower and narrower area or coil before springing out with another strong move. CAUTION: It may not be in the direction of the trend; triangles also can be reversal formations.

The breakout of an ascending or descending triangle that develops during a trend usually is through the flat side of the triangle (see gold chart, Fig. 13). But nothing is "always" in chart analysis. What looks like a triangle could be a rising wedge with different dynamics, depending on where you put the lines (see "A" on crude oil, Fig. 12).

A flag formation is a short-term trend against the prevailing trend — a bear flag in a larger bullish trend ("E" on T-bonds (Fig. 9), "C" on gold (Fig. 13)) or a bull flag in a bearish move ("B" on crude oil (Fig. 12), using solid lines). The best examples come after a sharp "flagpole" move.

Measuring a trend

If a chart pattern suggests a trend is to continue, how long is it likely to do so? Again, nothing is certain, but chart analysts have ways to project late how much of the old trend the

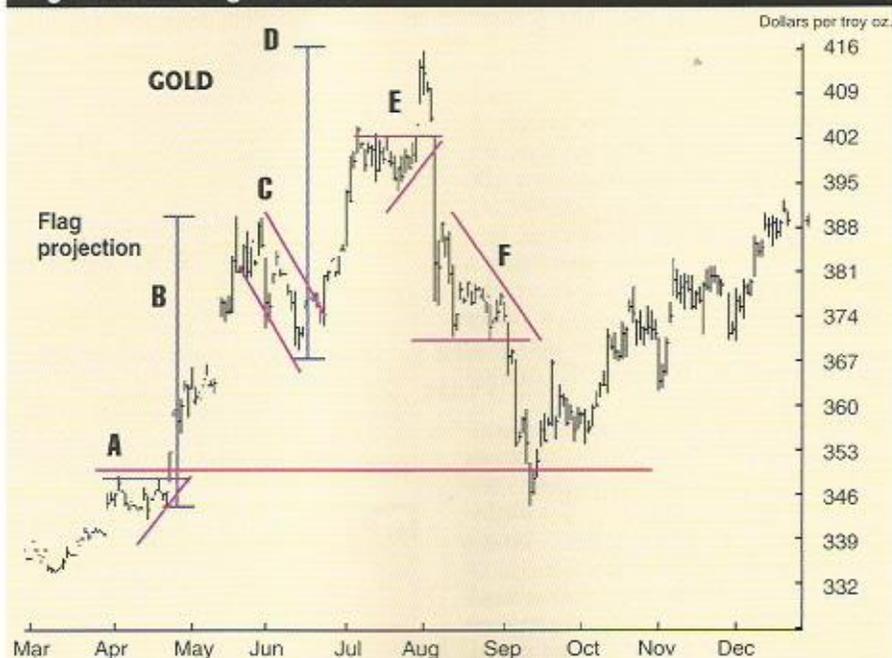
new trend will "retrace." They use these projected "retracement" levels as objectives for the new move.

On the T-bond chart (Fig. 9), the uptrend started just below 106 and the high was about 121. To project how far the downtrend reaction might continue, some analysts use Fibonacci numbers or Gann techniques to find targets at several levels. That's too deep for this basic article. One of the most popular concepts, 50% retracements, was the basic premise of a whole book on trading a few years ago.

On the T-bond chart (Fig. 9), 50% of the long-term uptrend put the target just above 113, where the market, in fact, did turn back up in mid-November. Note that level coincides with the congestion area that ended the uptrend channel (C), a logical place to expect support.

Formations themselves also can be used to project the extent of a move. After prices broke above resistance at "A" on the gold chart (Fig. 13), they formed a flagpole (B) and a flag formation (C). As prices broke above the top of the flag, the length of the flagpole (\$45 per oz.) could be used to calculate how high prices might go. Just add \$45 to the bottom of the flag and

Fig. 13: Measuring the move



The height of the "flagpole" (B), added to the bottom of the "flag" (C), projects a top (D). The distance from the top to the base of the descending triangle (F), subtracted from the base, projects a low of about \$325. This move didn't go that far, suggesting a strong market.

Source: FutureSource

you get something like \$413 per oz., only slightly below the actual high.

You can calculate similarly with the descending triangle on the same chart. Figure the difference between the high and the base of the triangle (again, about \$45) and subtract that

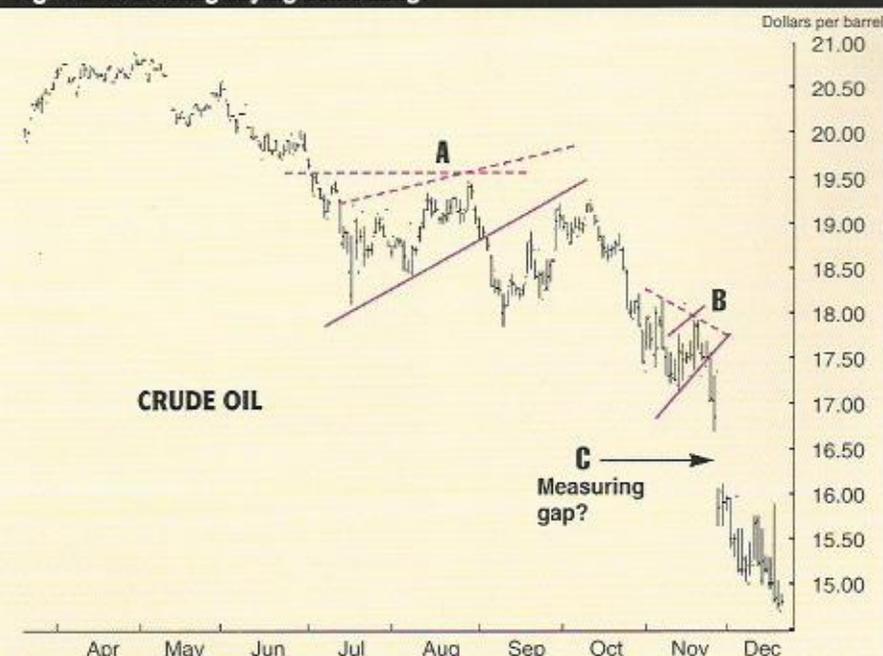
from the base to get the downtrend target (\$325). Here the downtrend found support near what had previously been resistance (at A), and the market didn't reach its triangle target.

Another continuation formation amounts to nothing — that is, there is no formation but a "gap" or a price level where no trading takes place in a running market. This can be a "measuring gap" that marks the halfway point between a bottom and top or vice versa. Not every gap has meaning, and some measuring gaps may turn out to be exhaustion gaps that indicate a reversal, not a continuation, of the trend. But a correctly diagnosed measuring gap can be helpful in projecting a price objective.

On the gold chart (Fig. 13), a gap in May was part of the flagpole (near B). The difference from the bottom of the move to the bottom of the gap is roughly \$25. Adding that to the price level at the top of the gap gave a projection closer to the first top (E), although the extended flag may have wiped out your hopes such an objective would ever be reached.

Look at the crude oil chart (Fig. 12). Could "C" be a measuring gap halfway between the high at \$19.20 and a low projected to be well below \$14 per barrel? It looked like it as this article was prepared, yet... Again, this is an art, not an exact science. That's the dilemma when you're operating at the hard right edge of the chart. **FM**

Fig. 12: Is nothing saying something?



Sometimes gaps on charts are "common" and indicate very little. In other cases, price action on one side of the gap will be mirrored by action on the other side, with the distance from the high to the gap matched by the distance from the gap to a projected bottom.

Source: FutureSource

Trendlines

Identifying a trend — and when it is about to begin or end — is the first step toward successful trading. Here's why...

By the Editors of Futures

For many traders who use traditional high-low-close bar charts to analyze price action, the most significant factor to identify is the trend as revealed by the trendline — the line drawn across the bottoms of price action as an uptrend records a series of higher lows and higher highs, or the line drawn across the tops as the market establishes lower highs and lower lows in a downtrend.

Nearly any bar chart can be used to illustrate trendlines, whether the time period of an individual bar is a month, week, day or intra-day. As long as the integrity of a trendline is maintained, the trend continues, and position traders may find it risky to go against the trend. The more a trendline is tested and the more points of contact on the trendline, the stronger it is.

But all trendlines are penetrated at some point. When it happens, it's

like an alarm bell:

- Will the trend in place resume and continue the previous move?
- Or will the trend change?

The previous chapter, "Chart Patterns," covered triangles, flags, measuring gaps and other chart signs indicating that a trend is likely to continue and how far it could go. Some other chart patterns suggest a trend may be ending and another is ready to begin.

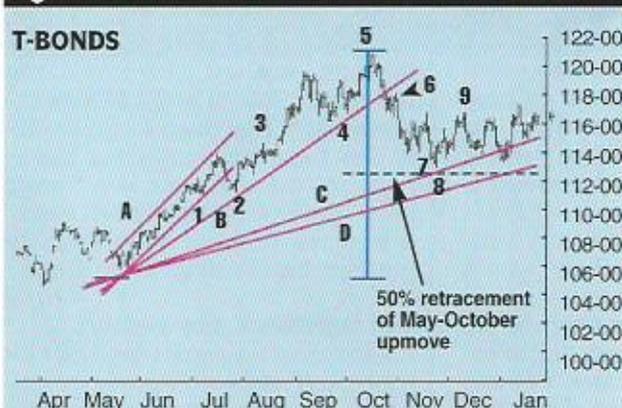
Often, the chart action may look quite similar. Remember, chart analysis is an art, not a science, and you may apply it to your trading differently than some other trader does. Depending on your trading style, a reversal pattern may suggest a move that is too short-term or, for some other reason, may not be

worth trading for you. Or, in this computer age, you may use indicators to analyze momentum or cycles or other factors before you make a trading decision.

This chapter looks only at some of the basic bar chart reversal patterns. Although the concepts apply to any time period, most of the examples are daily charts.

Trendline analysis
Breaking a trendline is the simplest,

Fig. 14: When the trendline breaks



A broken trendline is one sign a trend may change as the steeper trendline A gives way to B, then B to C at the 50% retracement level, and C to D. Key reversals (numbers) aren't always helpful.

Source: FutureSource

Fig. 15: Targeting a reversal zone



When a trendline (A) breaks, prices may hit a high (1), settle back to the trendline (2) and then break out (3) to the new bigger trend. This gap (C) suggests the next reversal target.

Source: FutureSource

most basic chart reversal pattern. It could be a false move or a trap, of course, but a break above or below a significant trendline usually signals some new market action you need to watch — a new trend in the opposite direction, a pause or short-term congestion in the direction of the longer trend, or perhaps just a shift to a sideways market.

Trendlines often supply important "support" and "resistance." Support is anything underlying a market that tends to lift price levels up; resistance is anything that tries to stop an advance or hold a market down. In the battle between market bulls and bears, a trendline often becomes a crucial support/resistance factor in determining whether a trend will continue or reverse. If a market reverses, support often becomes stout resistance and resistance can become a support area.

If the T-bonds chart (Fig. 14) looks familiar, it should: It is the

same chart used in the previous chapter to show continuation patterns during the strong May to October uptrend. The first significant penetration of the steep initial uptrending channel (A) produced a short-term reaction that became the base for a strong trendline (B). That was the most prominent feature on traders' charts for about three months. When that trendline was broken, the decline was significant until new lows became the basis for new trendlines (C and D).

Notice the significance of the trendline (A) on the corn chart (Fig. 15) and many of the other charts shown. The corn chart also shows several other features of trendline breaks:

- As prices move through a trendline, they sometimes do so with such vigor they leave a gap, sometimes called a "breakaway gap."
- And, quite often, prices also tend to return to the old trendline (at 2) to test the validity of the move — a case of old resistance becoming new support.

Trendlines are at the core of chart analysis and are part of many chart formations. Penetrating one of these lines doesn't guarantee anything about the next move, but trendline analysis does give you important clues about whatever information you are studying.

The next reversal

When a trendline is broken and a new trend begins, the first thing some chart analysts want to know is how far the new trend might go

and at what point this new trend might reverse. One possibility is a 50% retracement level or a "correction" that takes back 50% of the market's previous move, as the T-bond chart (Fig. 14) illustrates.

There is no magic about 50% — some traders use eighths of a previous move or Fibonacci ratios that are too complex for this basic article. But these are chart points where analysts expect to find new support or new resistance to turn the new, shorter trend around.

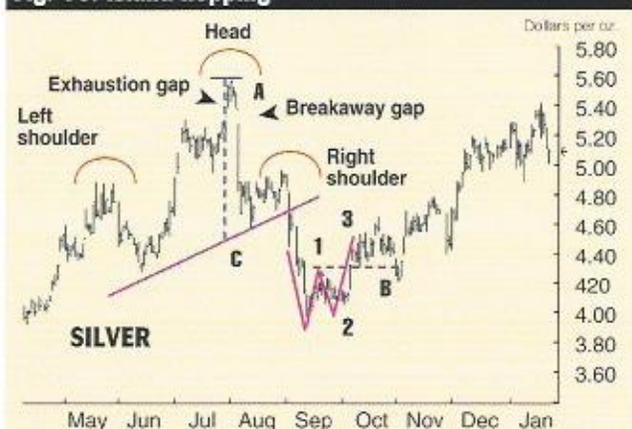
Another possibility for calculating the next reversal target is the "measuring gap," discussed previously as a continuation pattern. If the gap on the corn chart (Fig. 15), centered on the \$2.80 per bushel mark (C), is a measuring gap halfway through a move, the next place to watch for a major turn would be the \$3.10-\$3.15 area. One trader's continuation clue may be the basis for another's reversal prediction.

Key reversals

One chart feature often mentioned in market summaries is a "key reversal." In an uptrend, a market drives to new highs and then closes on or near the low and below the previous period's low; in a downtrend, the market hits new lows and then turns around to close on or near the high and above the previous period's high.

While they may be popular in technical trader talk, the problem is key reversals are not very reliable. Some would say they are no better than 50-50 in projecting actual turns. On the T-bond chart (Fig. 14), for example, nine points (you might see others) are labeled as key

Fig. 16: Island hopping



Reversal patterns here include a head-and-shoulders top, island reversals (A, B) with exhaustion and breakaway gaps (arrows) and a 1-2-3 W bottom. The neckline (C) break projected a lower low.

Source: FutureSource

Fig. 17: Applying the pressure



Which pressure point do you trade? The multiple tops are like a lid to force prices back down, but the momentum is pushing up from below. Watch out for a break.

Fig. 18



Like the Eurodollar, this S&P chart shows pressure from both sides. When prices break above top resistance, they often fall back to that level to test it as support.

Source: FutureSource

reversals, a few covering several days. As you can see, their record on predictability is mixed.

An "island reversal," which may take several days to develop, tends to be a more reliable bar chart reversal pattern. The price action in an island reversal formation is isolated from what happens before or after that period and is notable because it usually stands out on a bar chart. On the silver chart (Fig. 16), one island reversal is a top (A), another a bottom (B).

Going into the island reversal, the market leaves an "exhaustion gap," a price level where no trading takes place as traders seem to put everything into one last gasp to continue the trend. The "island" is a bar or several bars that push to a new high or low before closing on a low or high. On the right side is a "breakaway gap," a familiar sight as a market begins to move away from the previous trend and picks up steam.

Sell resistance, buy support

Another market axiom based on the concept of support/resistance suggests, "Sell double or triple tops; buy double or triple bottoms."

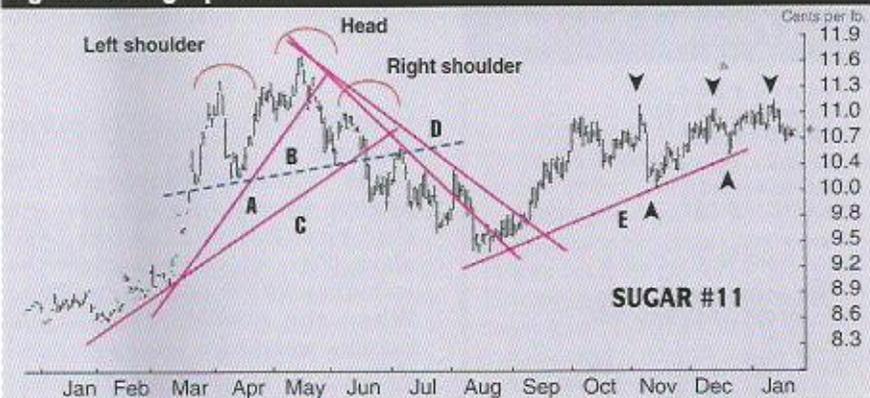
Note the first top around 96.60 on the three-month Eurodollar chart, (Fig. 17). As the chart produced an

ascending triangle pattern over the next five weeks, prices reached 96.60 two more times before being turned away as market resistance grew stronger. Similar patterns show up on the S&P 500 chart, (Fig. 18, previous page), with tops in the 472 area, and on the sugar chart (Fig. 21), with tops around 11.10¢ per lb.

So what do you do on the third or fourth thrusts at resistance in January? Pressure (note arrows on charts) from a rising trendline supports a strengthening market; pressure from resistance at an old top suggests a reversal. This is when trading at the "hard right edge of the chart" becomes much more difficult than looking at a chart in hindsight.

One approach is, until a market proves otherwise, these patterns should be treated as reversals and you should sell (cautiously! — here's where your money management skills are most important). If the market does break above resistance to form a larger continuation pattern, it would not be unusual for it

Fig. 21: Seeing a portrait



Sugar provides a head-and-shoulders top, a neckline (B) that is broken and tested and a series of tops that suggest a reversal. In this case, trading trendlines (A, C, D, E) looks good.

to settle back to the resistance line to check it out as the new support area.

Vs and saucers

Some volatile markets tend to spike up or down and then react in the opposite direction almost immediately in a reversal action that looks like a "V" on a bar chart. Others seem to take forever to establish what look like "rounding" or "saucer" tops or bottoms.

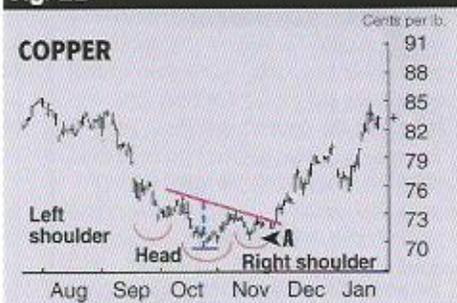
It's hard to catch a V top or bottom, and the saucer top or bottom may be so slow in developing that it will try any trader's patience.

Lumber, pork bellies, soybeans or metals might be better candidates for breathtaking V formations. But the weekly Kansas City wheat chart (Fig. 19) shows it can happen in a commodity where reversals normally take time. Note that as prices on the Chicago wheat chart (Fig. 20) broke above the right lip of the saucer in the \$3.20 per bu. area, they did so with a gap and then came back to test that area before moving out of the saucer bottom formation.

Head-and-shoulders

Perhaps it's just the name that makes it memorable, but head-and-shoulders tops or bottoms are among the best-known chart reversal formations. Sometimes traders stretch to see a head-and-shoulders, but the breaking of

Fig. 22



This copper chart shows that a head-and-shoulders, even if it doesn't always look perfect, works on the bottom, too, as the break above the neckline (A) reverses the old trend.

Source: FutureSource

a neckline does tend to provide good clues about market direction.

In a head-and-shoulders top, the market drives to a high, then reacts downward in what may be a flag continuation formation to form the "left shoulder." Then it propels itself back up to a new high to form the "head." As prices fall to complete the head, they hit a low reasonably in line with the bottom of the move between the left shoulder and the head before reacting back up in what may be another flag formation to form the "right shoulder." The top of the right shoulder is somewhat close to the top of the left shoulder but not as high as the head.

The "neckline" connecting the two lows formed by the shoulders is the key point. As prices move down from the right shoulder and penetrate below this neckline, that's the signal to sell. Some analysts measure the distance from the top of the head to the neckline and project that the bottom will be the same distance below the neckline, but that doesn't seem to be a sure thing on many charts.

To be a true head-and-shoulders, the formation needs to come at the end of an extended move, and the pattern of trading volume should

Fig. 19: Fast and slow turns

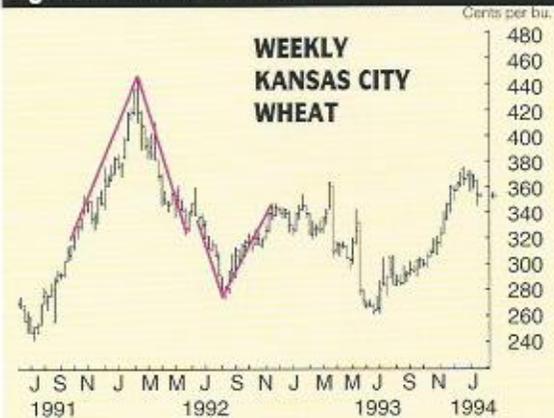


Fig. 20



Markets can turn abruptly in V tops and bottoms (above), or they may take a while, as the rounding or saucer bottom below illustrates. Each can present positioning issues.

Source: FutureSource

Barclays de Zoete Webb Ltd.
(Australia) (612) 247-7188,
fax (612) 259-5365

Chart Analysis Ltd. (U.K.)
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fax (44) (71) 439-4966

Chartcraft Inc.
(914) 632-0422, fax (914) 632-0335

CIMD Agencia de Valores (Spain)
(341) 562-9900, fax (341) 411-6609

CISCO
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Primeline
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Preview Professional Services
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RCO Financial Inc.
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The Rich Financial Group
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SMR Inc.
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SPH Inc.
(703) 590-8639

Spread Scope Inc.
(818) 782-0774, (800) 232-7265

Stoic Enterprises
(303) 233-2372

Wasendorf & Associates Inc.
(319) 268-0441, fax (319) 277-0880

be roughly the same as the pattern of prices.

The head-and-shoulders isn't always pretty or exact, as the examples illustrate. On the silver chart (Fig. 16), the island reversal formation (A) is part of the head. When the neckline (C) — just another trendline? — is penetrated, the price drop accelerates.

On the sugar chart (Fig. 21), the breaking of the neckline (B) coincides with the break of a longer-term trendline (C). Note that several weeks after breaking neckline support, the market comes back to test this line, which has become resistance. However, this is one of those markets where, at least in hindsight, it would have been simpler and more profitable just to have traded with the major trendlines (A, D, E).

The copper chart (Fig. 22, previous page), shows that all the same principles apply to head-and-shoulders bottoms. In this case, the right shoulder is a key reversal/island reversal (A).

It takes a little more imagination

Ms and Ws and swings

Perhaps the best chart reversal patterns are "M" tops and "W" bottoms. They may look quite similar to the double tops or bottoms described above, but Ms and Ws usually aren't that perfect. They also resemble the head-and-shoulders formation but are missing a shoulder.

The formations also are called 1-2-3 swings and can be fine-tuned to any time period. The primary thrust of some newsletter services is just identifying 1-2-3 swings.

In an M top such as on the Swiss franc chart (Fig. 23), prices hit a high, drop to a reaction low (1), rally back to a high (2) that is not as high as the previous high and then fall again. When prices drop below the reaction low (3), that's the signal to sell. If 2 goes higher than the previous high or if 3 does not drop below 1, forget the formation.

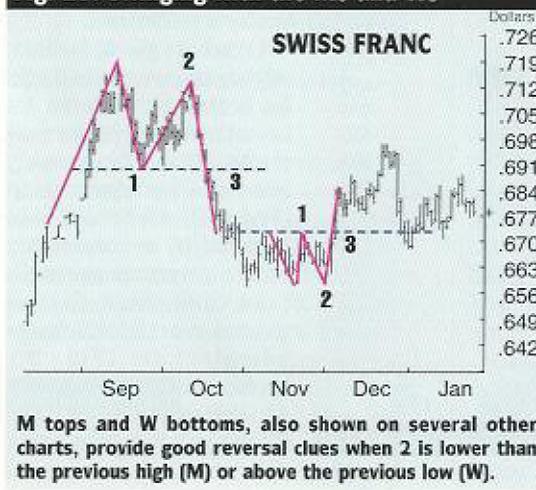
Note on the this chart that the 2 could have been placed two weeks earlier but that the potentially earlier 3 did not follow through with a drop below 1 to give you a sell signal.

A similar pattern can be seen on the W bottom. Also note the 1-2-3 counts on the corn (Fig. 15) and silver (Fig. 16) charts.

While 1-2-3 swings look easy to trade in hindsight, it's like the old Will Rogers' admonition: If a stock doesn't go up, don't buy it.

The scary part here comes at 3 where you want to enter the market. That's typically a more volatile area for trading, and you may not be able to get into a position you want. Or, because congestion often occurs at breakout

Fig. 23: Swinging with the Ms and Ws



Source: FutureSource

to see a similar formation on the corn chart (Fig. 15), where a possible "neckline" (B) is more level. You also can imagine a head-and-shoulders bottom on the right side of the T-bond chart (Fig. 14) with the left shoulder at 7, the head at 8 and a neckline at 116-24 (9). However, these examples do not occur at the end of extended down-moves so purists might be unlikely to consider them head-and-shoulders formations.

points, the market may go into a wide enough trading range that it tests your nerve — and your margin account.

But, as we concluded in the last article, that's the way it is at the hard right edge of the chart. Identifying trendlines and recognizing price patterns will help you, but chart analysis is still a subjective business that is only one part of the formula for successful trading.

FM

Moving Averages

There are many ways to identify trends. Using moving averages is the most popular. Here are some considerations for using this approach...

By the Editors of Futures

Even the most experienced trader who has developed a "feel" for what the charts are saying will admit reading a chart for trend clues can be a very subjective art.

Some trends, trendlines and price formations are obvious in hindsight, as pointed out in the two previous articles on traditional bar charts in this classic trading techniques series. But even when you spot a trend early, chart analysis often is not very precise, whether you are looking at a chart on a screen or using a pencil and a ruler on a printed chart.

One method to find more specific reference points for trends is with a moving average.

You probably are familiar with an "average" — "the numerical result obtained by dividing the sum of two or more quantities by the number of quantities," as Webster defines it. A moving average is simply an average of prices that "moves" as each new price becomes available.

A moving average provides exact prices for a mechanical trading system to enter or exit a market — no eyeballing a chart for trendlines and no judgments about the message a chart formation may be giving. Moving averages are probably the most popular way to detect price trends and are the basis of many trend-following trading systems.

There are several types of moving averages, hundreds of time periods to consider and countless possibilities for combining moving averages or setting up moving average-based trading strategies. Many traders today naturally turn to their computers and analytical software programs if they are interested in calculating and testing moving averages.

This chapter, however, will cover only some basic details of moving averages. All examples are based on U.S. Treasury bond futures, a good illustration of what happens to moving averages in both trending and congestion periods. All references to "day" apply to any time period chosen, from a minute to a month.

Simple moving average

Day	Close	Sum
May 18	105.0625	
May 19	105.625	
May 20	105.625	
May 21	105.15615	
May 24	105.6875	
May 25	105.5	
May 26	106.3125	
May 27	106.5	
May 28	105.78125	
June 1	107.25	1058.4999 divide by 10 = 105.84999
June 2	107.25	1060.6874
June 3	107.46875	1062.53115
June 4	106.90625	1063.8124

A simple moving average is an average of a selected number of prices.

$$MA = (P1 + P2 + \dots + Pn)/n$$

where P1 is the price for day 1, P2 the price for day 2, etc. and n is the number of days in the moving average.

The table shows the calculation using closing prices for a simple 10-day moving average at the beginning of the T-bond chart shown. On June 2 add the close for that day and drop the close for May 18, on June 3 add that close and drop May 19, etc. as the average moves through time.

In its simplest form, when prices are above the moving average line on the chart, you are long; when they go below the moving average, you are short. The 10-day moving average triggers several false signals during the long uptrend. The 20-day moving average is further from the market and has fewer signals but takes longer to get in and out of positions. Neither fares well in the choppy period after November.

105-27
106-2
106-8
106-12

Fig. 24: Simple 10-day moving average

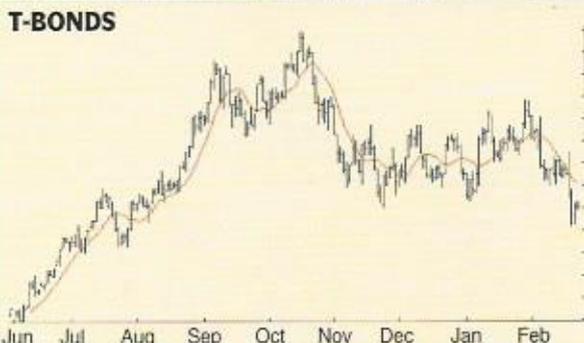


Fig. 25: Simple 20-day moving average



What price? Before you get into a moving average system, you must determine what price to use. Many moving averages use the closing price at the end of the day (time period). However, the close may not totally represent the tone of the market. You may use an average of the open, high, low and close. Or you may use a moving average of the highs and another moving average of the lows to produce an envelope or channel on the chart. Or you may use a moving average of a five-day or 10-day average price.

You have many choices, and they are not all limited to price. You can also build moving averages involving volume, technical indicators or other market inputs. Your only limitation is your imagination.

Whatever price you use, keep in mind your moving average will lag the market because all the numbers you use are from the past. Your choice of prices won't change that.

How many prices? Next you must choose the number of days to include in a moving average. The shorter the time period, the more likely the moving average will fluctuate erratically and the more trading signals you will get, especially in futures markets. A longer time frame will give you a smoother moving average but may be slow getting you in or out of trades.

Much of the choice depends on how close to the market you want to be. Some traders select time periods related to price cycles and may have different moving average periods for every market. Some go with the popular studies. The length of the moving average will be one of the most crucial decisions you make.

What average? A *simple moving average* places equal value on every price for the time span selected. You add all five, 10, 15 (or as many prices you want) together and divide the sum by the number of prices used. When you get a new price, add it into the calculation and drop off the oldest price. In a simple 10-day moving average, the price 10 days ago is as important as the price today.

But suppose you think the most recent prices are more important than older prices. A *weighted moving average* puts more emphasis on today's close than on the close 10 days ago. Fig. 26 shows one way, but

Fig. 26: Weighted moving average

Day	Close	Weight	Sum
May 18	105.0625	x 1 =	105.0625
May 19	105.625	x 2 =	211.25
May 20	105.625	x 3 =	316.875
May 21	105.15615	x 4 =	420.6246
May 24	105.6875	x 5 =	528.4375
May 25	105.5	x 6 =	633
May 26	106.3125	x 7 =	744.1875
May 27	106.5	x 8 =	852
May 28	105.78125	x 9 =	952.03125
June 1	107.25	x 10 =	1072.5
		Total: 55	

A weighted moving average gives more value to recent prices — in this case, the June 1 price is multiplied by 10, the previous day's price by 9 and so on down to the May 18 price 10 days ago multiplied by only 1. The sum is divided by 55, the number of weights. The result is a weighted moving average of 106.4 compared to 105.27 for the simple moving average for the same period.

5835.96835
divide by 55 =
106.108515 106.4

you can weight a moving average several ways to make it more responsive to current market action.

As a new price is added, the oldest drops out of the time window with both the simple and weighted moving averages. That may eliminate a valuable piece of information. The current value in an *exponential moving average* includes all preceding prices for that market, even those before the time period of the moving average, although the impact of the older data diminishes as new points are added.

An exponential moving average uses a smoothing constant, usually between 0.01 and 0.30, that varies with the length of the moving average. Today's value depends on the value calculated for yesterday. See Fig. 27 for details on how an exponential moving average is calculated.

Regardless of the type you choose, the basic principle of a moving average system is that if there is more buying pressure than selling pressure, price will be above the average and the market will be in an uptrend; if there is more selling pressure, price will drop below the moving average, indicating a downtrend.

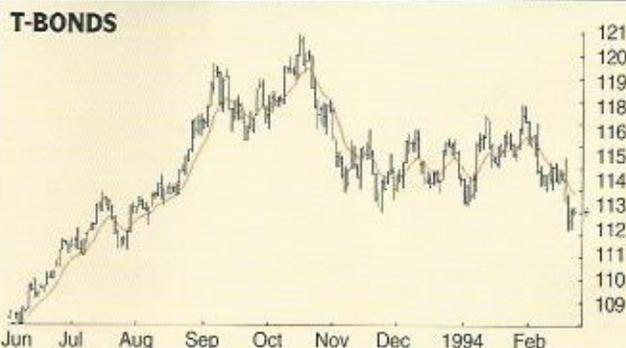
Moving average systems trade these crossovers: Buy when prices move from below the moving average line to above; sell when prices go from above the line to below. To

reduce whipsaws, some add other wrinkles: The price must move a certain percent or price increment above or below the moving average, for example, before a position is taken or before a stop is activated.

Is one enough? A simple system might use the relationship of prices to just one moving average to generate its signals. But some incorporate short-term, medium-term and long-term moving averages to improve the odds that a signal really does indicate a new trend.

Popular combinations include four, nine and 18 days, and five, 10 and 20 days. The late Richard Donchian made moving averages popular with futures traders several decades ago when he developed and traded a system that included five- and 20-day moving averages (and several other parameters).

Fig. 27: 10-day exponential moving average



An exponential moving average includes all previous prices and features a constant that smooths the average.

$$EMA_t = EMA_{t-1} + (k * (P_t - EMA_{t-1}))$$

where EMA_t is today's exponential moving average

EMA_{t-1} is yesterday's exponential moving average

P_t is today's price

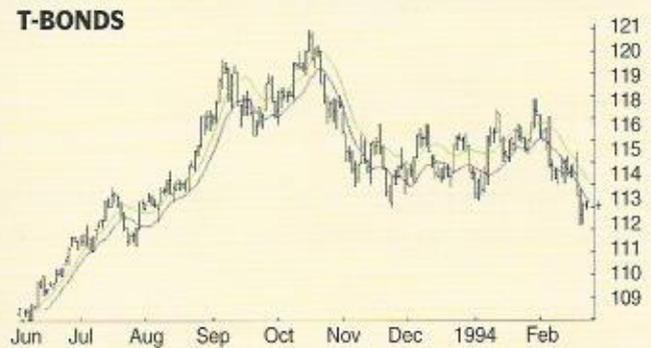
k is the exponential smoothing constant calculated by the formula $k = 2 / (n + 1)$ with n as the length of the moving average.

For a 10-day moving average, $k = 2 / (10 + 1) = 2 / 11 = 0.1818$. For a 20-day moving average, k would be 0.09523.

The 10-day EMA on this chart hangs closer to price action than the simple 10-day moving average.

Fig. 28: Combining moving averages for trading signals

Putting several moving averages together is one attempt to get more reliable signals. This chart uses closing prices for simple five-, 10- and 20-day moving averages. The uptrend shows a nice alignment of prices and moving averages until July. Then the most sensitive moving average (five days) falls through both the 10-day and 20-day averages, and the 10-day average drops below the 20-day average briefly. That would normally be a signal to reverse from long to short. However, the five-day moving average quickly climbs above the other averages again, the signal for another reversal back to long as the uptrend resumes.

Fig. 30: High-low moving averages

This channel is formed by a simple moving average of the highs for the last 10 days and another simple moving average of lows for the last 10 days, another possible way to combine moving averages. Typically, you would use the bottom moving average of the lows as the crossover line in an uptrend and the top moving average line of highs in a downtrend. Prices dip into the channel a number of times during the long uptrend but produce only one bad reversal signal when they drop below the moving average of lows in July.

Source: FutureSource

You can combine moving averages in a variety of ways, especially if you trade multiple contracts. The basic signal comes when a shorter moving average moves above or below a longer one.

Ideally, you'd like prices and the moving averages to line up — in an uptrend, prices are on top with the short-term, medium-term and long-term moving averages in that order below prices (see Fig. 28, "Combining moving averages for trading signals"). If the short-term average falls below the medium-term average, that can be your signal to get out of some contracts or

go flat, instead of reversing your entire position as some always-in-the-market systems dictate. If the short-term average continues to fall through the long-term average, get out of all long positions and go short.

You also can use moving averages to make envelopes or channels and then trade the relationship of prices to that channel (see Fig. 30, "High-low moving averages," above). You can set up all kinds of other criteria with combinations of moving averages.

Sometimes a moving average will work best if you shift today's moving

average value to a point other than today. For example, a simple moving average for a 10-day period reflects price action for the last 10 days, so perhaps today's moving average value should be placed halfway through that time at day five. The moving average line then would always be five days behind the current day's price.

Or you may want to advance the moving aver-

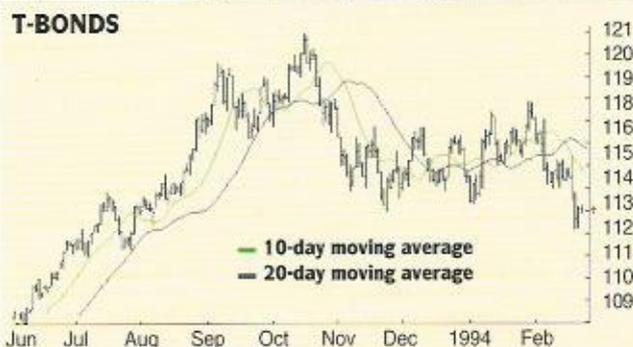
age a few days. As a lagging indicator, typical moving averages don't provide targets for future prices. But shifting today's moving average value ahead establishes another reference point for prices and may reduce false signals (see Fig. 29).

As with other moving average techniques, you have many choices you can test in this area.

Moving average truths No matter which moving averages you try or how many twists you give them, you will discover that moving averages:

- are not perfect.
- work great in markets with long-lasting trends. But so do most other trend-following methods.
- can be simple to calculate and easy to follow — or quite complex.
- will never get you in at the bottom or out at the top, so you give up a lot of profit potential compared to other methods. The best you can do is capture part of a move — and hope that part is long enough to be profitable.
- do offer a mechanical, non-emotional means to get on the big move.
- also generate many false signals and can chew you up in whipsaws if a market turns from a trend into a trading range. You cannot avoid this unless you abandon your moving average system. This can be a big test of your trading discipline.

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Fig. 29: Displacing the moving averages

This chart shows simple 10-day and 20-day moving averages displaced half of their length ahead — today's value for the 10-day moving average is plotted five days ahead of today's price and the 20-day moving average is placed 10 days into the future. This approach keeps you in your long positions through the July setback during the long uptrend, but the turns appear to be long and costly — and nothing looks good on the right side of the chart.

Source: FutureSource

Oscillators

Knowing whether or not “the trend is your friend” can be made much easier by oscillators. Here are five of the most popular...

By the Editors of Futures

Market professionals classify technical indicators into one of two categories: trend-following indicators and oscillators. Trend-following indicators help identify both bullish and bearish price trends but usually are lagging indicators — that is they switch direction after price trends have reversed direction.

But oscillators help find turning points in trending and range-bound markets and usually are leading indicators — they often turn prior to prices changing direction. These are useful tools in identifying overbought and oversold market extremes by helping a trader time trade entry and exit points.

An overbought condition exists when an oscillator reaches a high level associated with highs in the past; the reverse is true of an oversold situation — it reaches low levels associated with bottoms in the past. Overbought and oversold levels are indicated by horizontal lines on the chart around an equilibrium point, usually zero. When an indicator goes beyond these reference lines, it signals a possible change and may help pick a top or bottom for that market.

Here are five of the most popular oscillators and how they are used.

Moving Average Convergence/Divergence (MACD)

Developed by Gerald Appel, this indicator consists of two lines: a solid line called the MACD line and a dashed line called the signal line. The MACD line consists of two exponential moving averages, while the signal line is composed of the MACD line smoothed by another exponential moving average (exponential

moving averages were discussed in the previous chapter.

To complete the standard calculation of the two lines, you must:

1. Calculate a 12-period exponential moving average of closing prices;
2. Calculate a 26-period exponential moving average of closing prices;
3. Plot the difference between the two calculations above as a solid line. This is your MACD line;
4. Calculate a nine-period exponential moving average of the MACD line and plot these results as a dashed line. This is your signal line.

The most useful signals generated from this system occur when the solid (MACD) line crosses the dashed (signal) line. A buy signal occurs when the solid line crosses below the dashed line and a sell signal occurs when it crosses above the dashed line. On the S&P 500 chart (Fig. 31), the MACD indicator overlays price

and shows the indicator and its signals in action.

Momentum

Momentum measures the change in a commodity's price with time. Alexander Elder, in *Trading for a Living*, notes the calculation of the momentum indicator compares the current period's price to the price of a selected previous period. Specifically:

$$M = P_c - P_n$$

where M = momentum, P_c = current period's price and P_n = price n periods ago.

The length of time used for the prior period is a matter of personal preference and time horizon of the trader. A narrow window of less than five periods would be short-term in nature while six to nine periods would be considered intermediate; 10 or more would be a longer time perspective.

Fig. 31: MACD and the S&P



Remember, for a buy signal (B), watch for the solid (MACD) line to cross below the dashed (signal) line. For a sell signal (S), the solid line will cross above the dashed.

The most common value is 10 periods prior. Momentum is positive if today's price is higher than your past period's price and negative if not.

Momentum indicators give their best trading signals when they diverge (go in the opposite direction from prices). There are two types of divergences — bullish and bearish.

Bullish divergence occurs as price falls to a new low while the oscillator refuses to set a new low. This often signals the end of a downtrend. Look at the daily U.S. T-bond chart (Fig. 32). A bullish divergence occurs in the third week of November when prices set a new low but the momentum indicator doesn't confirm this new low. Actually, it falls only about a third of the way as low as the previous downtrend at the beginning of November. This bullish divergence gave the signal that this downtrend was about to reverse and head up, as it subsequently did.

Conversely, a bearish divergence occurs when price reaches new highs and the indicator doesn't confirm it by also reaching new highs. Looking at Fig. 32 again, you can see this formation occurring when price reaches new highs around the middle of October and the indicator doesn't confirm it, leading to a signal that prices are headed for a correction — as they did in November (a hefty one at that).

Relative Strength Index (RSI)

Developed by Welles Wilder, the Relative Strength Index (RSI) addresses the two major flaws of momentum — the need to have a constant band against which to compare price movement and the ability to smooth the ebb and flow of price movement.

Sharp up or down movement 10 days ago (in the case of a 10-day momentum line) can cause pronounced shifts in the momentum line even if current prices are relatively stable, giving false signals. Also, different commodities may have different "overbought" and "oversold" levels. RSI corrects these two concerns by smoothing the movement and by creating a constant range from 0 to 100.

The formula for calculating RSI is as follows:

$$RSI = 100 - (100 / (1 + RS))$$

where RS = average of the days closing higher during the interval

Fig. 32: Bonds have momentum, too



Two examples of divergence: Point A is bearish, point B is bullish.

Source: Omega Research

divided by the average of the days closing lower during the interval.

The RSI indicator is plotted on a vertical scale of 0 to 100. The general rule of thumb is overbought levels are at 70% and oversold levels are at 30%. When the reading of the indicator surpasses 70, an overbought condition exists. An oversold condition exists with readings below 30.

Similar to momentum, a trader should look for bullish and bearish divergences to occur when trading with RSI. A 14-day interval is commonly used, but personal fine-tuning and experimentation always is needed. As you can see in the copper chart (Fig. 33), a slight oversold condition occurs at the end of October and two large overbought conditions exist at the end of December and

January, which preceded sizable corrections.

Stochastics (K%D)

The stochastics indicator created by George Lane measures the relative position of the closing price within a given time interval. This indicator is based upon the premise that prices tend to close near the upper portion of a trading range during uptrends and near the lower portion of a trading range during downtrends. When prices close in the middle of the range, this suggests a sideways market. There are two components to this calculation, the %K value and the %D value. The %K is calculated as follows:

$$\%K = \frac{C - L_n}{H_n - L_n} * 100$$

Fig. 33: A little RSI with your HG?



Even within a longer term trend, RSI picked up short-term moves.

Source: Omega Research

where C = closing price of current period, L_n = lowest low during n time periods, H_n = highest high during n time periods and n = number of periods.

The %D value is the moving average of the %K value. The simple moving average calculation is:

$$\%D = 100(H_n/L_n)$$

where H_n = the n period sum of $(C - L_n)$ in the %K formula and L_n = the n period sum of $(H_n - L_n)$ also in the %K formula.

These formulas produce two lines that oscillate between a scale of 0 and 100. As with the other oscillators, a stochastic value below 30% suggests an oversold condition, while a value greater than 70% suggests an overbought condition.

Some simple trading rules apply in the use of the stochastics indicator. A sell rule would be to sell when the fast (%K) crosses over the slow (%D) and both are pointing down, but are still above the 70% level. A buy signal would be triggered when the fast crosses the slow, and both point up, but are below the 30% level.

Another type of signal occurs when the stochastics indicator diverges from a price move similar to momentum and RSI. As you can see in the feeder cattle chart (Fig. 34), three sell signals are highlighted along with two buy signals prior to sizable moves.

Williams' %R (%R)

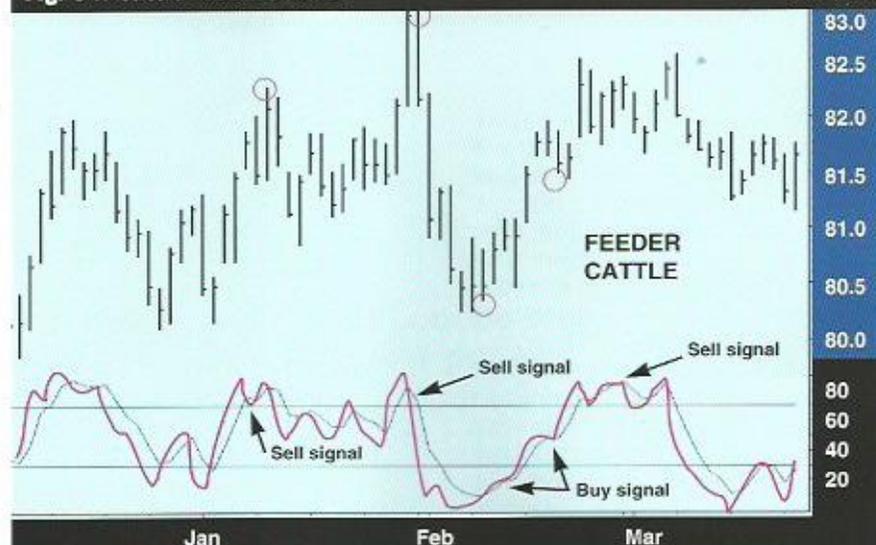
Williams' %R oscillator, attributed to Larry Williams, is a variation of the stochastics indicator previously discussed. Because the two oscillators are essentially the same, only minor modifications to the formula are required. The formula for calculating %R is:

$$\%R = H_n - C/H_n - L_n$$

where H_n = highest high of the period, C = close of the current period and L_n = lowest low of the period.

The %R oscillator differs from the %K formula in the stochastics indicator because the outcome of each formula is inverse to the other. In other words, %K compares the close with the lowest low, whereas %R compares the close with the highest high. Similar to other oscillators, %R is plotted with horizontal zones of 20% and 80%. When the indicator has a reading of 80% or greater it signifies an overbought condition. Similarly, a reading of

Fig. 34: Cattle feed off K%D



Stochastics signal moves when the two averages (represented by the lines) cross.

Source: Omega Research.

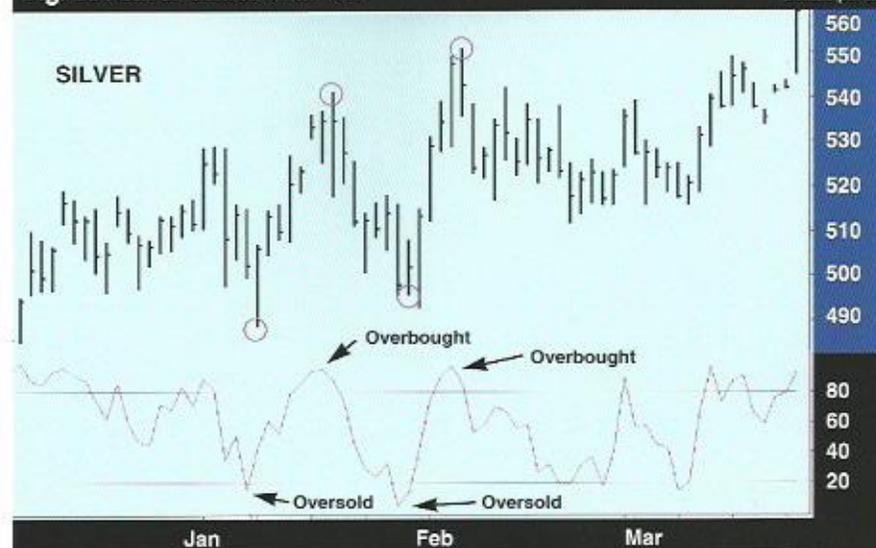
less than 20% signals an oversold condition. The Williams' %R oscillator provides the trader an alternative view of a market situation. Looking at the silver chart (Fig. 35), oversold conditions occur in both early and late January while overbought signals are generated in mid-January and early February, all on market tops or bottoms!

Simple logic Oscillators can be calculated on any set of price bars from tick through multi-year. The concepts are mathematical relationships and span any set of data points. The beauty of these formulas is they can be completed with a calculator if you chart manually, but are already included in most

technical analysis software packages for the computer chartist. While these indicators can be useful in the analysis of the direction of a market, they should not be used alone. An oscillator's effectiveness comes in conjunction with other indicators so when multiple indicators are sending similar signals, the percentages shift to your side.

And if you're wondering where the letters used in these indicators came from, (K%D, %R) don't search too far past your bowl of alphabet soup. George Lane, creator of K%D, was experimenting with 28 different oscillators, each using a different letter of the alphabet and "K" and "D" just happened to stick **FM**

Fig. 35: Silver shines with %R



Larry Williams' %R indicator identifies market extremes.

Source: Omega Research.

Market Sentiment

Using the collective opinion of traders can be an accurate tool for forecasting short-term tops and bottoms. Here are tools to accomplish that...

By the Editors of Futures

Expert traders know one of the keys to successful futures trading is suppressing emotions; it's at peaks and troughs — crucial market turning points — that judgment, clouded by emotions, can land them on the wrong side of the market. However, those same traders also will admit knowing what other traders are feeling toward the marketplace adds a strong dimension to their trading.

Because sentiment is such an elusive market force, it has been notoriously difficult to quantify. Some get informal reversal signals by watching newspaper and magazine market stories, knowing the media tends to be bearish at lows and bullish near highs.

A more concrete way of measuring traders' collective sentiment is by tracking changes in volume and open interest. These two figures can give depth to price analysis by revealing how strong hands (successful traders) position themselves as the price moves.

Volume is the total number of contracts bought and sold during each trading session. (Because futures trading is a zero-sum game, the longs and shorts in the market must be equal, therefore if volume is up 4,000, then 4,000 contracts were purchased during the session and 4,000 were sold.) Ken Shaleen, in his book *Volume and Open Interest*, best describes it as a measure of a market's "urgency." By watching how volume fluctuates in relation to price you can get a feel for how eager bulls and bears are to add to their current positions.

A general rule of thumb for an "ideal" bull market: Volume will go up with price. If prices fall for a time against the dominant trend, the upmove is not in jeopardy as long as volume decreases with price. (The reverse is true in a bear market.) This low-volume sell-off reveals longs are in no hurry to take profits and the major price trend eventually should prevail. Warning of a reversal also can come from "breakout" and "blowoff" volume, extremely high levels that can mark the beginning or end of a trend (see "Cotton volume and open interest," Fig. 37).

Open interest, or the total number of long and short positions left open (unfilled) at the end of each session, is an important indicator of how willing traders are to enter into a new position. The actual open interest number is not as crucial as its change from the previous session:

1. Open interest goes up only when a new long position is matched by a new short position.
2. Open interest goes down as longs and shorts liquidate positions.
3. When open interest is unchanged, the net number of contracts remained the same.

Open interest reflects the key fact that every winning futures position must be offset by a losing one; it is these "losers" that spark action. In a bull market, open interest increases as new positions by longs (winners) are offset by new shorts (losers); each time new contracts enter the market from both sides, fuel is added to the bulls' fire.

Conversely, declining open interest shows the losers

Fig. 36: Beneath the surface

Price							
Volume							
Open interest							
Analysis	Healthy bull market. Longs have the strong hand while someone is willing to sell at each higher price level. Uptrend will continue as buying is attracted into the market.	Healthy bear market. Shorts have the advantage; bulls are buying as prices decline, adding to their losing positions and fueling the downtrend.	Technically weak due to short-covering. Often signals a market in transition as a top nears.	Liquidating market. Decline likely to continue until prices become low enough to attract buyers.	Price neutral scenario.	Losing and non-performing positions are leaving. Market is now susceptible to a change in direction (though which direction is unclear.)	Storing energy for a major move. Once a breakout occurs, it's likely the trend will be sustained due to the buildup of open interest.

Fig. 37: Cotton volume and open interest



The late-November spike in volume, coupled with a building open interest, revealed the makings of a strong bull move. Blowoff volume in mid-April marked the beginning of the end.

Source: FutureSource

(shorts) lost confidence in the trend and are backing out of their positions — effectively taking the wind out of the rally's sails (see Fig. 36, "Beneath the surface").

Some caveats to keep in mind:

- Open interest in most physical commodity markets has an element of seasonality that must be factored into price analysis. Compare the current open interest to a five-year average (usually tracked alongside each other) to lend validity to the current pattern.
- Traditionally, the public favors buying into an uptrend, shying away from short trades. As a result, the "ideal bear market" of falling prices on rising volume and open interest may offer fewer trading opportunities than a bull market because positions tend to liquidate sooner on the short side.
- Volume and open interest in a trending market act as coincident indicators. Using them alone to predict a market turn generally is less than 20% accurate; use them to supplement signals from other trend-following indicators. (In a sideways market open interest can be a leading indicator: A strong build-up in open interest warns the market is storing energy for a breakout — but it won't reveal in which direction!)
- Cash-settled markets periodically show sharp declines in open interest as the contract months roll over.

Married to the mob? While volume and open interest show what traders think the market is doing "right now," other studies in market sentiment have resulted in effective leading indicators that show where traders think the market is going. This work is based on a major premise of mass psychology: When the majority of people (in this case, traders) agree, they usually are wrong. And, the stronger the agreement and the more emotional the issue, the higher the probability the "mob" is wrong.

This theory, known as "contrary opinion," stands apart from technical and fundamental analysis as it focuses not on why traders take certain positions, but rather on what posi-

tions they take.

In the 1960s, James Sibbet and Earl Hadady, founders of California-based Market Vane Corp., created "Bullish Consensus," a scale measuring how market advisors from leading newsletters and brokerage houses felt toward specific markets, ranging from 0% (bearish) to 50% (neutral) to 100% (bullish). For example, if 65 of 100 respondents indicate they are bullish Treasury bonds, the Bullish Consensus for T-bonds is 65%, leaving 35% bearish. Market Vane surveys professional advisors on the assumption their clients will act on their advice and move the markets. (Responses are weighted more heavily in proportion to how many traders an advisor represents.)

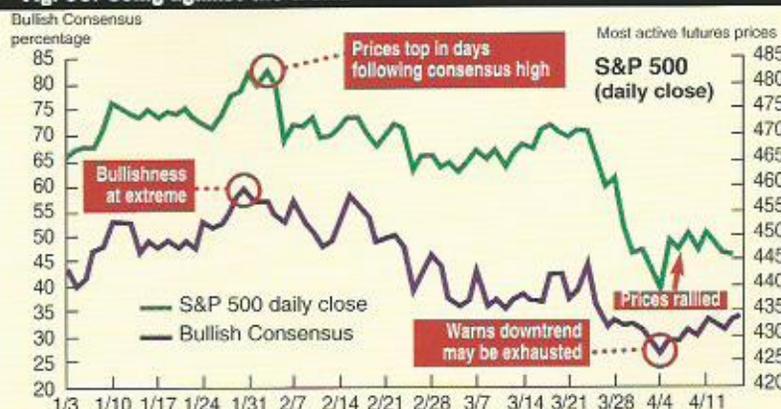
Anyone with the means and motivation to survey a sample of traders can measure trader sentiment. Glen Ring, editor of *Trends in Futures* newsletter, uses an "Attitude Index" derived from sentiment readings from a collection of physical commodity markets to track prices of the Commodity Research Bureau Index.

Another measure of market sentiment growing in popularity is the Daily Sentiment Index (DSI), developed in 1987 by Mark and Deb Lively and Jake Bernstein of MBH Commodity Advisors Inc. This index is similar to Market Vane's, but is based on a daily survey of a random sample of the general trading public.

Sentiment indicators track price very closely and, though not perfectly, often predict short-term market tops and bottoms (see Fig. 38, "Going against the crowd"). By watching "extremes" in sentiment, significant trend reversals sometimes can be spotted two to three days ahead of the actual turn in price. When extrapolated to the entire trading population, samples of traders' opinions reveal when a market has too many buyers or sellers and a reversal is imminent (see Fig. 39, "Boiling point").

For example, when DSI readings reach 90% or higher, a market is extremely bullish and overbought; when it falls to around 10% or lower it is bearish and

Fig. 38: Going against the crowd



Because the S&P 500 combines both the stock and futures markets, traders often are faced with wild swings and hard-to-predict price moves. Sentiment helps filter through the "noise," giving support to short-term buy/sell signals.

Source: Market Vane Corp

oversold. With this in mind, contrarian traders trade with the trend until sentiment reaches an extreme — then take the opposite position.

Contrary opinion, like any other indicator, is not 100% accurate. A 5% reading will not always predicate a rally. What sentiment can do is warn which markets show a high probability of changing direction — and give traders a

“window of opportunity” to verify its signals. Because an extreme reading can last for several days or longer, sentiment indicators should only be used as “companion” tools to other timing indicators like Moving Average Convergence/Divergence (MACD), stochastics and Relative Strength Index (RSI).

Sentiment readings, much like human emotions, can swing wildly. The DSI for T-bonds has been known to fall from 50% to 9% in one day. A simple moving average of sentiment readings will tone down that volatility. A three-, five- or nine-day moving average works best, without “smoothing” away all emotion. Some

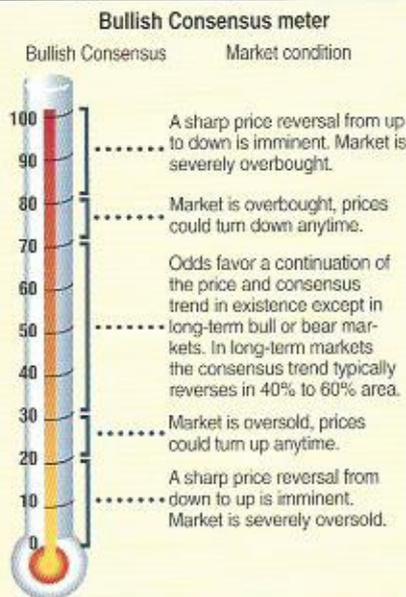
traders using DSI wait for extreme readings from all three moving averages as well as the raw data before entering a contrarian trade (see Fig. 41, “Smoothing the extremes”).

Extremes vary: While gold can read 95% bullish or higher, a stock reading in the upper sixties is considered overbought. (It hit 69% before the October 1987 crash.) Historical data provides the best reference point.

Using sentiment indicators often can be a test of patience; sometimes only four or five contrarian trades develop during any given year (see Fig. 40, “A second opinion”). However, it can be just as valuable as a warning sign telling you when it’s time to tighten stops, lighten positions or stand aside completely.

“Insider” information Another reliable measurement of trader sentiment comes from the Commodity Futures Trading Commission’s (CFTC) Commitments of Traders report. By analyzing how commercial hedging

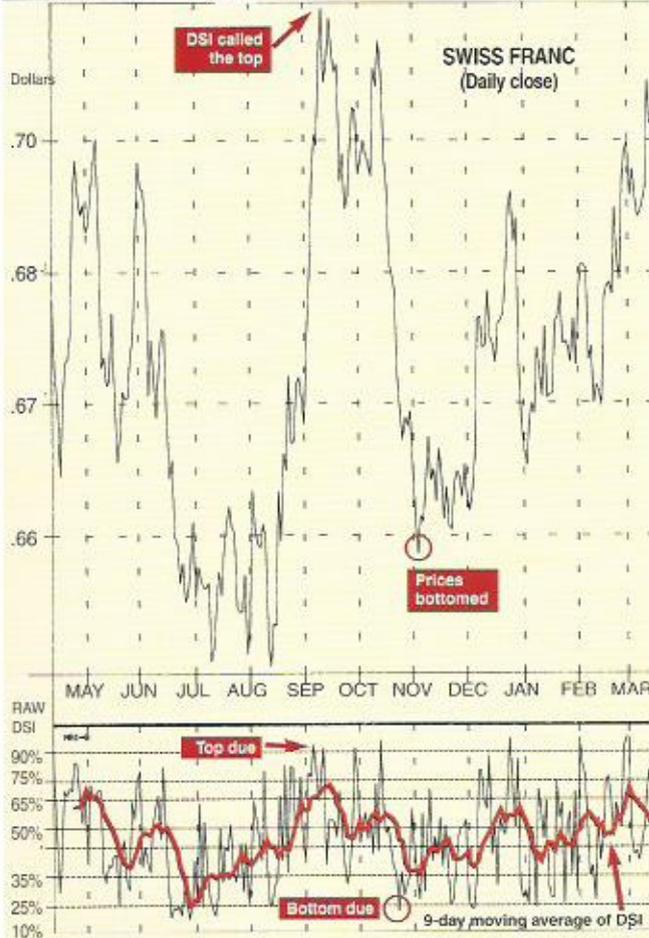
Fig. 39: Boiling point



Knowing how to analyze market consensus can give advanced warning of overbought and oversold conditions.

Source: *Contrary Opinion*, by Earl Hladady

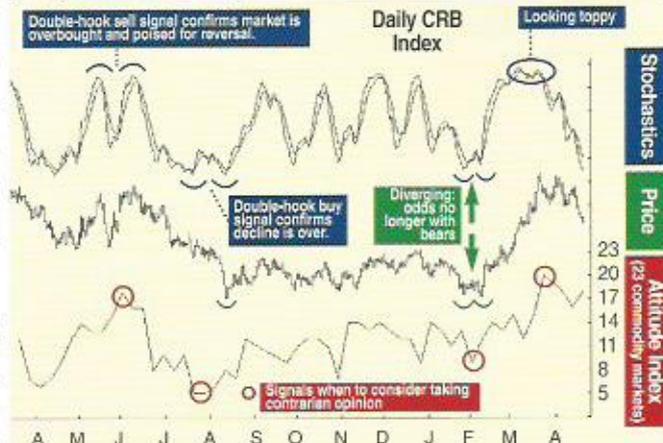
Fig. 41: Smoothing the extremes



Sentiment can warn of trend changes just days before they occur. In early September, raw DSI data called for a top as it hit an extremely bullish 90%; the actual top followed soon after. DSI’s late October low signaled a rally was likely.

Source: MBH Commodity Advisors Inc.

Fig. 40: A second opinion



Sentiment’s overbought/oversold readings used with other timing indicators give strength to buy and sell signals — and security to traders taking a contrarian position.

firms position ahead of key reports, traders often can get an “inside track” on near-term price direction.

Just by their sheer size and capacity for collecting and analyzing large volumes of market-moving information, commercials often have advance knowledge of a trend change — and/or the leverage to make it happen. Look over their collective shoulder as they maneuver; they can be surprisingly accurate in their prognostications. Steve Briese, editor of *The Bullish Review*, reports watching commercials can provide a 67% accuracy rate in predicting market moves.

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