

The Crown pattern

Here's a way to use some specific calculations to improve the odds of trading a variation of a classic chart pattern — on an intraday basis.

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Classic" chart patterns such as triangles, flags, pennants, head-and-shoulders and double bottoms are interpreted as continuation or reversal patterns that signal a move in a certain direction when they complete.

However, as more people become aware of a pattern, its effectiveness decreases. A pattern can become distorted and subject to "false breakouts" — a move in the expected direction that quickly fails and takes the market in the opposite direction. Over time, more experienced traders started using pattern setups to exploit uninformed traders trapped by false breakouts.

In a way, the head-and-shoulders (H&S) pattern is itself a failed retest. As shown, in the top pattern in Figure 1 (right), the market moves up, pulls back, then rallies again to point C, taking out the previous high. On the next pullback, price makes a pivot low (point D) at about the same level as the previous pullback low.

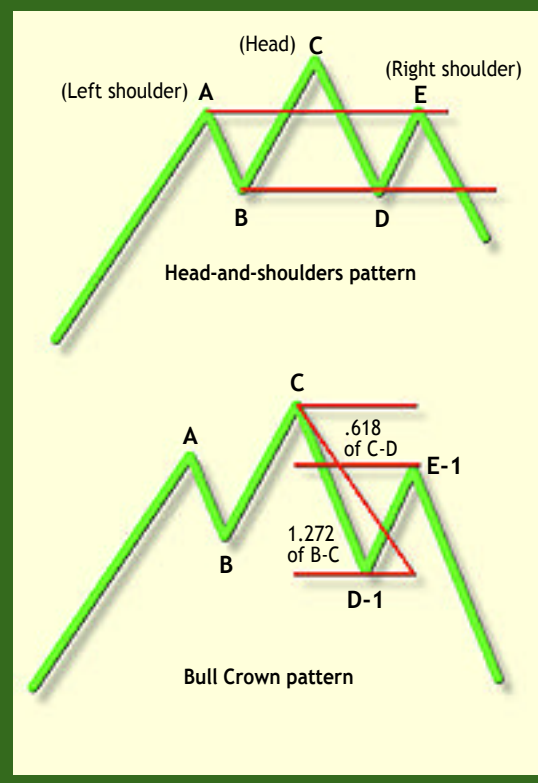
However, on the following rally, price fails to take out the point-C high and makes a lower pivot high at point E — a failed test of the previous (point C) high. Traders typically look to short the market when it breaks down below point D. Simple and clean, right?

Not really. In his 1935 book, *Profits In The Stock Market*, H. M. Gartley wrote about a pattern that has been called the "Gartley" ever since. The Gartley pattern is a failed H&S characterized by the Fibonacci relationships (see "The Fibonacci series," opposite page) of the pattern's different price swings.

The Gartley pattern follows the path of a typical H&S pattern, except that instead (in the case of an H&S top) of resulting in a downside price

FIGURE 1 FROM HEAD-AND-SHOULDERS TO BULL CROWN

The Bull Crown pattern (bottom) is similar to the head-and-shoulders formation, but it incorporates Fibonacci relationships that make identifying and trading the pattern easier.



reversal, price turns back up. Once the H&S traders get short and price breaks below point D, the market rallies 1.272 or 1.618 times the preceding downswing to make a new high. This forces the short sellers to cover and further fuels the rally.

The Gartley pattern illustrates the difficulty of knowing whether a pattern that looks like a typical H&S pattern will actually follow through as expected or take off in the opposite direction. As a result, trading the basic H&S pattern is a 50-50 proposition at best.

The "crown" pattern is an H&S variation that uses Fibonacci relationships to better identify turning points. Also, by augmenting the crown pattern with the TIKI indicator (see "The TICK/TIKI indicator," right) and other tools, you can dramatically improve the odds associated with trading the standard H&S pattern.

Crown patterns

The crown formation, which can occur at tops (bull crown) or bottoms (bear crown), is similar to the H&S, but the two patterns have important differences. The top of Figure 1 shows the classic H&S formation, in which pivot-low D and pivot-high E form at about the same level as previous comparable pivot points B and A.

In a bull crown pattern, pivot D extends below the previous pivot, forming a downswing that usually extends 1.272 times the previous leg up (B-C). Price then rallies .618 of the distance from C to D-1, creating pivot E-1 (see the pattern at the bottom of Figure 1).

The formation of pivot D-1 well below the previous pivot breaks the pattern's price symmetry and establishes momentum in the opposite direction. When price rallies to form E-1, it is actually making a normal .618 Fibonacci retracement before continuing lower. The degree of quantification and expectation provided by applying Fibonacci calculations gives the crown formation an edge over the standard H&S pattern.

Figure 2 (p. 62) shows a complete bull crown pattern. Most traders will still consider this an H&S-type pattern because, for the most part, they are only looking at the left and right shoulders (and, of course, the head in the middle). However, the fact that the pivot low after the right shoulder extends well below the pivot after the left shoulder

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The TICK/TIKI indicator

The TICK is a short-term (intraday) indicator that measures the bullish (up-ticking) or bearish (down-ticking) activity in NYSE stocks throughout the day. TIKI is the symbol for the same indicator calculated on Dow Jones Industrial Average (DJIA) stocks; some data services also calculate the TICK for Nasdaq stocks.

The TICK/TIKI is a breadth indicator that gives traders an intraday look at the "internal" strength or weakness of the market — that is, the strength or weakness beyond whether the overall market is up on a point or percentage basis. By comparing the number of stocks advancing to stocks declining, the indicator reflects the market's up or down momentum at a given moment.

For example, if the DJIA index is up marginally but down-ticking stocks are consistently outnumbering up-ticking stocks (and the number of down-ticking stocks is increasing, reflected by a downtrending TIKI indicator), it is likely only a relative handful of strong stocks are propping up the overall market. When buying completes in these stocks, a down move may result.

Two contrarian uses of the TICK/TIKI indicator are to look for divergence between price and the indicator, and to use high or low TICK/TIKI readings to identify momentum extremes — similar to how many traders use oscillators such as the relative strength index (RSI) or stochastics to locate overbought and oversold points.

A divergence occurs when price makes a new high (or low) but the TICK/TIKI makes a lower high (or higher low), failing to confirm the price move and warning of slackening momentum. A related phenomenon would be a steady trend in the TICK/TIKI that runs counter to the trend of the market. Extreme high or low TICK/TIKI readings can accompany market climaxes.

Because the TICK/TIKI is a snapshot of the market at a given moment (and is thus very volatile), it can be deceptive. As a result, the TICK/TIKI is commonly smoothed with a 10-period moving average to remove some of its "noise" and better reveal the indicator's direction and patterns.

The Fibonacci series

The Fibonacci series is a number progression in which each successive number is the sum of the two immediately preceding it: 1, 2, 3, 5, 8, 13, 21, 34 and so on.

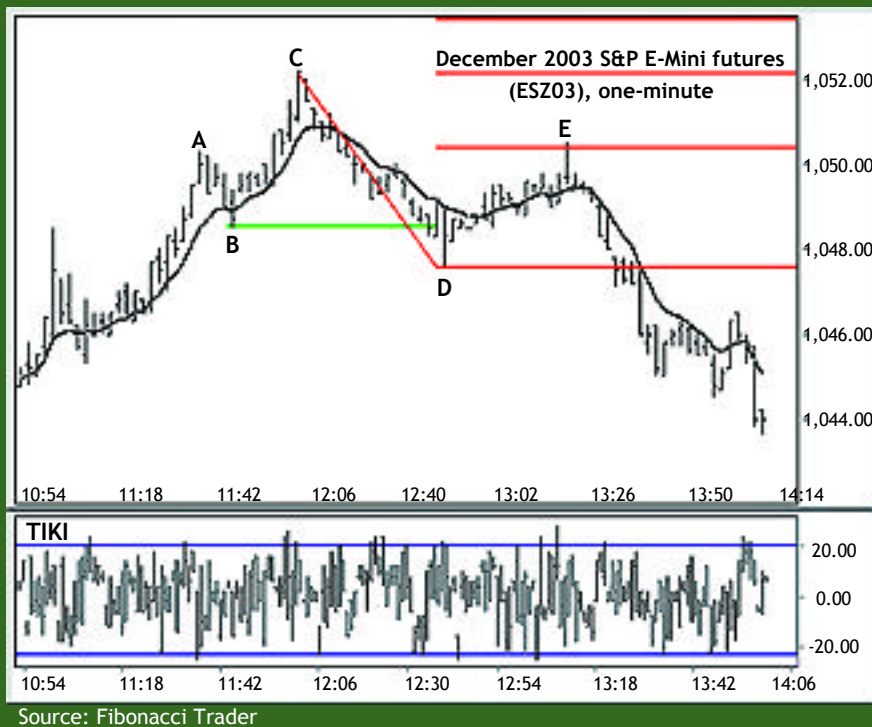
As the series progresses, the ratio of a number in the series divided by the immediately preceding number approaches 1.618 (1.62), the so-called "golden mean" found in the dimensions of the Parthenon, the Great Pyramid, and many natural phenomena. The inverse, .618 (.62), has similar significance.

Some traders use fairly complex variations and combinations of Fibonacci numbers to generate price forecasts; a basic approach is to use ratios derived from the series to calculate likely price targets. The most commonly used ratios are .382, .50, .618, .786, 1.00, 1.272 and 1.618. Depending on circumstances, other ratios, such as .236 and 2.618, occasionally are used.

For example, if a stock broke out of a trading range and rallied from 25 to 55, potential retracement levels could be calculated by multiplying the distance of the move (30 points) by Fibonacci ratios — say, .38, .50 and .62 — and then subtracting the results from the high of the price move. In this case, retracement levels of 43.60 [$55 - (30 \times .38)$], 40 [$55 - (30 \times .50)$] and 36.40 [$55 - (30 \times .62)$] would result.

FIGURE 2 BULL CROWN

Bull crowns resemble head-and-shoulders patterns, but the pivot low (D) following the head (C) extends well below the pivot low preceding the head (B).



(as much as 1.618 of the B-C upswing) improves the odds of an eventual downside reversal.

Bear crowns are equivalent patterns that occur after down moves and signal upside reversals. The relationship between the price swings is the same as that for bull crowns. For simplicity, the remainder of the article will discuss bull crowns.

Pattern rules

Crown patterns can be traded using only a handful of rules. First, for a bull crown to form the market must be rallying. The market should then pull back and turn back up, forming points A and B, as shown in Figure 2. In this case, price closed above the 20-period moving average at point A, then closed below the 20-period moving average at point B. Once price has moved to a new high, takes out point A and closes above

The Ergodic Candlestick Oscillator (ECO)

The Ergodic Candlestick Oscillator (ECO), which is described in William Blau's book, *Momentum, Direction, and Divergence* (John Wiley & Sons, 1995), incorporates two concepts: "double smoothing" and the Candlestick Indicator (CSI).

Double smoothing: To create a smoothed price series while minimizing the lag associated with moving averages, Blau applied an initial exponential moving average (EMA) to price, and then performed a second "double" smoothing of the first EMA using a second EMA.

An EMA is a type of weighted moving average that uses a "smoothing constant" (a) to emphasize more recent prices. Here is the formula for an EMA:

$$EMA = (1-a)P + a(EMA_{(t-1)})$$

where

P = price

$EMA_{(t-1)}$ = yesterday's EMA

The following formula shows how the smoothing constant relates to the lookback period of a simple moving average (SMA):

$$a = 2/(n+1)$$

where

n = the lookback period for a simple moving average

For example, to create the EMA equivalent of a 20-day SMA you would use a smoothing constant of .095 ($2/[20+1]$).

Double-smoothed price (EMA_{Double}) uses the EMA of the closing price:

$$EMA_{Double} = (1-a) EMA + a(EMA_{Double(t-1)})$$

where

$EMA_{Double(t-1)}$ = yesterday's EMA value

Blau uses the notation " $EMA(EMA(P,r),s)$ " for the double-smoothed price series; " s " represents the shorter-term period length for one EMA, " r " represents a longer-term period length for the second EMA, and " P " represents price.

The next step in creating the ECO is calculating the Candlestick Indicator (CSI), which is the double-smoothed difference between the open and close of each price bar divided by the double-smoothed difference between each bar's high and low. The result is multiplied by 100:

$$CSI = [(EMA(EMA(close-open,r),s))/(EMA(EMA(high-low,r),s))] * 100$$

The CSI measures momentum based on how each bar closes relative to its range. Closes at the upper end of each bar's range and above the opening price indicate strength. Closes at the lower end of each bar and below the opening price indicate weakness.

A trend in either direction will produce persistent positive or negative readings, and the double-smoothing technique will create a smooth indicator line that rises if the market is in an uptrend and falls if it is in a downtrend.

One benefit for intraday traders is the CSI calculation does not reference the previous bar's close. Consequently, large opening price gaps will not cause the indicator to fluctuate dramatically.

the 20-period moving average (point C), watch for another pullback.

At this point, price must do two things: 1) close below the 20-period moving average; and 2) trade below point B. When it takes out point B it should extend either 1.272 or 1.618 times the upswing from point B to point C, subtracted from point C (measured from high to low). This forms point D. (Note: When measuring the Fibonacci extensions, the move is considered valid if it is between the next lowest and next highest Fibonacci ratio.)

When point D is established, look for the market to rally and close above the 20-period moving average, as well as retrace .618 of the down move from point C to point D. At point E an official bull crown has formed — meaning, the pattern is having a “crowning effect” on the bull move or swing.

Intraday momentum

After a crown pattern is established, the TIKI indicator is used to trigger a trade. When price has rallied .618 of the point C to point D swing and closed above the 20-period moving average, look for a TIKI reading of +24 or greater and for price to hold steady.

At this point, look to short the market. The futures are in the process of retesting the high (point C) and the cash market, represented by the DJIA, is giving it all it has. For example, a TIKI reading of 28 means 29 Dow stocks are being bought and only one is being sold ($29 - 1 = 28$). If 28 up-ticking big board stocks can't push the DJIA up, odds are the current up swing will fail the second the TIKI fails.

The second major indicator used in this approach is the HiLo Activator. The HiLo Activator is a moving average that is above price in a downtrending market and below price in an uptrending market, providing a trailing stop point as a position progresses. The indicator is, by default, a 21-period moving average of the lows or highs, depending on where the market closes. If price closes above the HiLo Activator, the indicator is a moving average of the lows; when the market closes below the HiLo Activator, the indicator flips and becomes a moving average of the highs. After price has retraced to point E and the TIKI reaches

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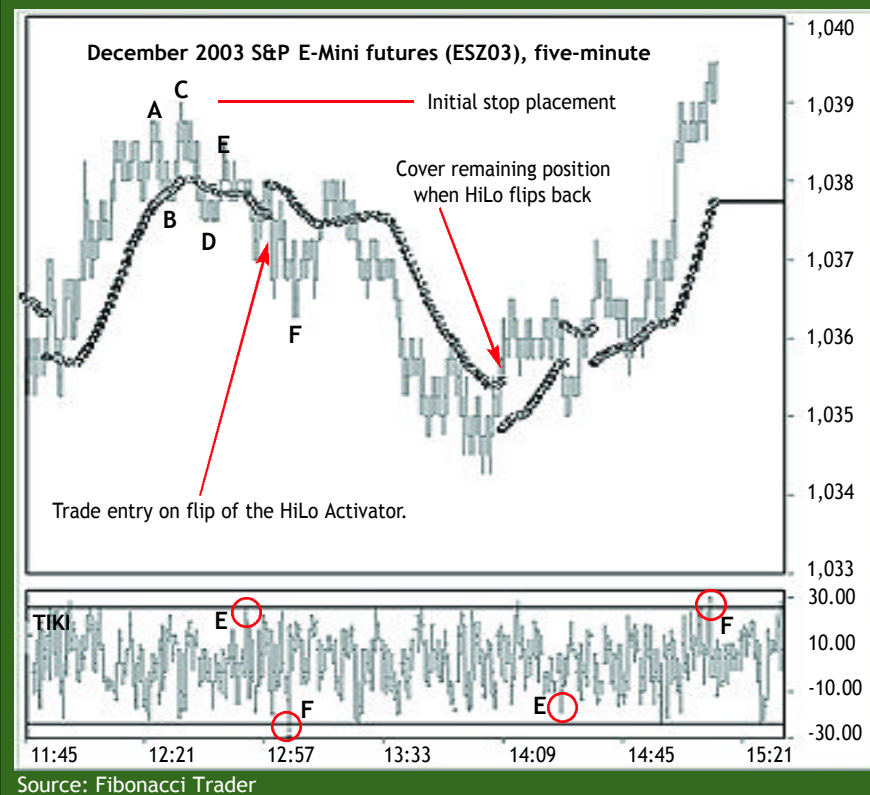
FIGURE 3 ANOTHER TOOL

The Ergodic Candlestick Oscillator (ECO, middle panel) signals the condition for a short trade when the indicator histogram drops below its moving average (dots).



FIGURE 4 BULL CROWN SHORT TRADE

After a short trade is triggered, partial profits are taken when the TIKI indicator makes an extreme (-24 or lower) reading in the opposite direction. The HiLo Activator then functions as a trailing stop.



+24 or higher, watch for the HiLo Activator to flip to the short side.

An additional tool

The Ergodic Candlestick Oscillator (ECO) is another indicator that can confirm momentum is wavering when price is retesting the high of the pattern. This is signaled by a declining ECO that falls below its moving average, as is the case at point E in Figure 3 (p. 63).

The ECO is a momentum indicator similar to tools such as stochastics and the moving average convergence-divergence (MACD) indicator. Figure 3 shows the ECO as a histogram, with a 34-period moving average represented by the dots accompanying each bar. For more information, see "The Ergodic Candlestick Oscillator" (p. 62).

If the Ergodic Candlestick Oscillator's moving average is above the indicator histogram, it validates a short trade. After entry, use the HiLo Activator to trail the stop. It can be adjusted as to how much room you want to give the trailing stop — for example, exiting a trade on a move two, three or four ticks above the HiLo Activator.

Time frame

Crown patterns can form in any market and on any time frame. However the longer the time frame, the more risk you must assume.

When day trading the S&P500 E-Mini (or other E-Mini futures contracts), try using either one-, three- or five-minute charts (55-, 233-, and 377-tick charts) to find trade setups.

The TIKI chart should always be a one-minute chart, in order to identify the pattern completion on as timely a basis as possible. Once a crown pattern presents itself, it is important the TIKI have a reading of +24 or higher (-24 or lower for bear crowns) to complete it. (The horizontal lines on the TIKI chart at the bottom of Figure 4, p. 63, are set to +22 and -22 to make it easier to see extreme readings of +24/-24.)

Trade entry

Enter the trade (at the market) when the most recent price bar closes lower and the HiLo Activator flips in the direction of the trade just after point E. The initial stop placement is above the last pivot high; if the risk presented by the trade is higher, pass on the trade.

Exit half the position when a TIKI reading of -24 or lower occurs (+24 or higher for a long trade after a bear crown), as shown at point F in Figure 4. The HiLo Activator then functions as a trailing stop on the remaining contracts. (Covering the entire position after a TIKI reading of -30 is another viable option.)


If you do not have the HiLo Activator, you can calculate a 20-period moving average of the highs and a separate 20-period moving average of the lows. Alternately, you can use a simple 20-period moving average and enter a trade when price closes below or above the average (others may choose to wait until the entire bar is above or below the average). Of course, everyone should back-test to find what works best within the context of his or her overall trading style.

Figure 5 (below) shows a bear crown in the S&P 500 E-Mini futures. Trade entry

occurred just after the pullback to point E when the HiLo Activator flipped below the price series and the TIKI hit -24. Half the position was liquidated when the TIKI registered a +24 reading at point F, and the remainder of the position was exited on the close.

Improving the odds

Bull and bear crowns combine several analytical tools: By adding Fibonacci calculations and market internals to this chart formation, you can improve the odds of capturing a reversal when the market retests its most recent high or low.

When the pattern has fulfilled its Fibonacci requirements, the TIKI shows whether the market is "giving its all" when price has stalled. When the TIKI fails, a trade is signaled. 

For information on the author see p. 10.

FIGURE 5 BEAR CROWN LONG TRADE

When the trailing stop indicator flipped below price after swing low E, a long trade was entered. The initial risk point is the preceding swing low at point C.

