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INTRODUCTION

HOW THIS BOOK DEVELOPED

This book began as a series of research reports presented in the Market Analytics Monthly Market Letter. The book is divided into five sections, titled 1) Opening Range Breakout, 2) Short Term Price Patterns, 3) Contraction and Expansion, 4) The Integration, 5) Other Useful Patterns. Each chapter appears in the original form of the research report. While I hope to have minimized any problems which may arise from the article format, the reader should note that there may still be certain redundancies and omissions which have gone uncorrected.

THE FRAMEWORK

The purpose of my research is to determine tradable market tendencies. I say these are tendencies because as of yet I have not been able to determine full cause. I began with the premise that the market followed mechanical laws, but have since taken a more moderate view and will say only that there are some aspects of price action that are predictable and only within the context that we are not omniscient. In statistical testing, my purpose is to derive general principles, rather than specific applications. The tests are excellent quantifications of price action, but they are incomplete, and the reader should apply them to his trading in the context of his own broader knowledge.

It should be noted that, though I have made extensive use of statistics, my focus is not on the rigorous application of statistical methods. As a trader, my purpose is to develop a framework for understanding the market. The statistics can provide an indication, but can only be integrated by an understanding of the market. It is this understanding, and not statistical tests for non-randomness, which is the best guide for analyzing the tests I have provided here. These tests have passed statistical analysis, but I have deliberately avoided including extensive digressions on such testing.

OPENING RANGE BREAKOUT (ORB)

Opening range breakout is defined as a trade taken at a predetermined amount off the open. It
should be noted that when I introduce this trading concept in Chapter One I use a mathematical technique, called the stretch, to determine the point of entry. In later testing you will notice that I use a constant value off the open rather than the stretch point. Experience has shown this to be a better method. As long as I used the same value throughout, I could generalize about market activity. In other words, all comparisons are made with similar values so as to develop a consistent context.

Chapter Three, "Moves Off The Open", is very important as a starting point in the testing. This chapter provides a control group for comparison with all other tests. Here, I have conducted tests on trades taken on the indicated amounts off the open on any day that a move of that size occurred. Conclusions about other tests throughout the book should be reserved for a comparison with this control group. This will provide a better understanding of the testing.

**SHORT TERM PRICE PATTERNS**

A short term price pattern is an analysis of recent price action in terms of previous closes, openings, range size and moves off the open. They attempt to quantify market action so as to test for significant directional movement. This section was inspired by Arthur Merrill's work conducted on the Dow Jones Industrial Index over a 20 year period from 1960 to 1980. He used closing prices only and tested all combinations with volume for each day. There are two main differences between my work and his. First, I have not included volume in my analysis. Second, I have found it to be much more fruitful to use direction of the open as the last piece of information in a pattern, rather than closing prices. In the futures market there is actually a supply/demand battle taking place on the open, whereas the structure of the Dow Index makes this impossible.

The price patterns allow us to take large amounts of information about the market and condense it into a workable unit. Market action can thus be tested. The tendencies found within the testing can then be used as a partial basis for taking action in the market place.

**CONTRACTION/EXPANSION**

The Contraction/Expansion Principle states that the market is constantly changing from a
period of movement to a period of rest and back to a period of movement. This interchange between the phases of motion and rest is constantly taking place. It would seem that one phase is directly responsible for the other's existence, but has not been proven in the general case. The evidence in this book suggests strongly that this principle applies to the particular case of price action off the open. There is an explicit proof for this in the first chapter of this section, "The Principle of Contraction/Expansion," on pages 105-114. Along with chapter three, this chapter sets a framework for the rest of the book.

INTEGRATION OF ORB, PRICE PATTERNS
CONTRACTION/EXPANSION

The three concepts, ORB, price patterns, and contraction/expansion, provide the basic framework for viewing the market. However, their power as tools for trading can be multiplied by integrating them into one system. The combination of these three can capture the essential action of the marketplace.

These categories can provide a logical dividing line between different types of price action. There is still work to be done, but this provides an excellent starting point.

In this section, you will note a reference to daily bias. This is the present working application of the work in the book, the aspect of the work which is most helpful in day-to-day trading. If I were to summarize the outcome of my studies, it would be: daily bias. This is not meant to be a mechanical technique, but a tool for analyzing the actions of the market.

OTHER PATTERNS OF INTEREST

The patterns which have previously been discussed are not the only ones which I have discovered. There have been many other patterns, which could be considered in the nature of side-roads. I have not found these to be as clearly applicable to the current work, and thus have not yet developed these in full. These patterns can be quite valuable, and should provide a direction for future research and integration.
OPENING RANGE BREAKOUT (ORB)

An Opening Range Breakout (hereafter called ORB) is a trade taken at a predetermined amount above or below the opening range. When the predetermined amount (the stretch) is computed, a buy stop is placed that amount above the high of the opening range and a sell stop is placed the same amount below the low of the opening range. The first stop that is traded is the position and the other stop is used as a protective stop.

The Stretch is determined by looking at the previous ten days and averaging the sum of the differences between the open for each day and the closest extreme to the open on each day.

There are days when a trade in only one direction is taken, this is called an Opening Range Breakout Preference (ORBP). Usually this is done in a market with a strong bias in one direction or just after a clear supply or demand indication. The procedure is similar to the ORB but the only order entered is the stop in the direction of the entry. The protective stop is entered only after the trade has been entered. One qualification to this is if the market trades to the stretch in the opposite direction first; the ORBP is nullified and the resting order is cancelled. This requires you to monitor the market during the session. Intraday market monitoring is not a sacrifice by any means and serves to enhance the system in most cases.

The ORB is effective after inside days that have a smaller daily range than the previous four or five days and for that matter after any day that has a daily range less than the previous six days (NR7) whether an inside day or not. Hook days also tend to precede big moves in one direction. A Hook day is any day that opens above or below the previous day's high or low then proceeds to reverse the previous day's close but does so with a narrowing daily range relative to the previous day.

The March Copper chart marked Hook, NR7 and IDnr4 displays examples of all the above mentioned patterns. Inside days with the narrowest range in four days (IDnr4) occur at c, e, g, i, n, o, and t. NR7's occur at a, d, f, g, h, j, m, n, p, and s. Hook days are h, q, and r. Notice the proximity of the next day's open to one of the extremes for that day and the general tendency of the close of the same day to be at the opposite extreme.

The ORBP provides an effective trade entry at times of a clear bias in one direction. In
particular, a running market when defined provides a very clear bias. On any inside day the ORBP should be taken. Inside days act as springboards for an immediate continuation in the direction of the run. The July Bean Oil Chart displays a running market between numbers one and two. Within that run inside days a thru e all resulted in successful ORB's with the open on or near the low of the session in each case. Direction is not as predictable at TD days; f., g. and h. but the ORB the following day in each case provides an excellent entry.

A gap in the direction of the run is a strong indication of continuation and an ORBP can be taken in the direction of the gap with an overnight position held if a big day follows. The October Sugar Chart shows three gaps (a,b,c) within a very defined upward run. Note the tendency for the open to act as the low of the day in each case. If an ORB to the downside had occurred, in this case, no trade would have been taken. Logically, any of the patterns preceding entry mentioned for the ORB can be utilized in an ORBP when the bias is clear.

Uphrust/Springs, Reversal Gaps, or any sharp reversal should be followed up with an ORBP in the direction of the reversal for at least two days afterwards if it confirms the intermediate trend. The Nov. Bean Chart displays upthrusts at 1,3 and 5 and Springs at 2,4 and 6. Note openings the days after the Springs and the marked tendency for them to occur near one extreme of the day. The upthrusts were not as successful. A clear upward bias did exist. Again, this is most effective after an inside day or NR7's.

In general the earlier in the session the entry is taken the better the chances for success. In fact, the ideal is an entry within the first ten minutes of the session. In that case an immediate continuation in the direction of the breakout is likely. When you get action like that the protective stop can be moved to break even very quickly and the trade is free. The more time that passes between the open and trade entry the lower the probability of success. Adjust the size of your position downward as the day goes on. The worst entry is just before the close when time is running out and it is difficult to realize a profit. It should be kept in mind that the objective of these entry techniques is to establish a position for a two to three day run, but this can be considered only if a substantial profit is realized by the end of the session.

After the trade is entered the clock starts
INSIDE DAY and RUNNING MKT.
ticking. The ideal trade will show a profit almost instantaneously. The longer it takes to move away from the point of entry the more vulnerable the position. In general stops should be moved to break even within one hour after entry. A market that displays greater tendency to trend should be given less than an hour. For example, the S&P usually takes no more than five to ten minutes before a clear getaway occurs. When judging the market action after entry compare it to the ideal, early entry with immediate profit and persistent follow through thereafter. Action that varies from the ideal is suspect.

The ORB can be utilized as a general indicator of bias every day. Whichever side of the Stretch is traded first will indicate bias in that direction for the next two to three hours of the session. If nothing else this information alone will help keep you out of trouble.

Multiple contracts can be used when entering on an ORB or ORBP. This allows for some profit-taking as the move continues -- guaranteeing at least some profit in the case of a pullback to the break-even stop. A trailing stop is also very effective.

If you miss the ORB and "Early Entry" occurred, any 3/8 to 1/2 retracement of the established range can be used as an entry point with stops beyond the 5/8 level. This technique can be utilized twice but becomes treacherous on the third retracement.

In summary, the open is a market primary. Without an understanding of its importance and the market action around it, it is difficult to come to correct conclusions about market direction. On certain days it acts as an ideal point of entry upon breakout. On any day that such a breakout occurs within the first ten minutes of trade, the information is overwhelmingly in favor of a continuation of that move. If one does not use these entry techniques systematically, he should at least utilize them as a general indicator of bias.
OPENING RANGE BREAKOUT II
EARLY ENTRY

Early Entry (EE) is defined as a large price movement in one direction within the first five minutes after the open of the daily session. This is ideal price action when using an ORB for entry. The open should act as one extreme.

I have observed two types of EE. The characteristics of a Type 1 EE are as follows. The first five minute unit has a larger range than normal (norm is roughly defined as the average of the preceding ten days' first five-minute ranges). Open of the day is on one extreme of the five minute bar and the close of the five minute bar is on the opposite extreme. The second five minutes shows an equal thrust in the direction of the first five minute period.

A Type 2 EE is extremely powerful and is characterized by an excessively large range in the first five minutes, quite possibly bigger than the previous twenty day's first five minute periods. An equal thrust in the next period is difficult to manage but a general drift in the direction of the first five minutes is likely with an acceleration after further accumulation has occurred.

One possible application is as follows: Use an ORB entry technique each day anticipating EE. If ideal action does not occur within the first 5-10 minutes, cancel orders. In a defined trend or running market it can be used to verify existing trend and use pullbacks of 3/8 to 1/2 of the existing daily range for entry.

An open outside the previous day's high or low sets up an intraday Upthrust or Spring in most cases. Computer tests show that on a move back into the previous day's range of two ticks, the market has a 67% chance of closing beyond that point. This is excellent advance information and when it coordinates with an early entry extreme, it has implications for the entire day's trade and quite possibly the next several days' trade if a reversal pattern forms on the daily chart.

The most important types of price action have been described already and occur in the first 5-10 minutes of trade, but there are times when even with a defined thrust the market will not follow through, and in fact, will sometimes reverse completely. This is defined as EE Failure and is associated with a momentum increase in the opposite direction of EE. Momentum can be assessed by the range of the time unit (5, 15, 30
minute bar) that is being observed. An increased range relative to the previous unit and units shows an increase in momentum. Ideally, this should not happen, and when it does it usually indicates an EE failure is occurring. As a rule, no counter move five minute unit (bar) should have a range larger than the first five minute bar. All such increases should confirm EE. In fact, any 5-minute bar against EE that is relatively large compared to previous bars that confirmed EE, will imply a shift in momentum and possibly EE failure. Neutral or confirming price action is crucial just after the EE indication. When Entry is taken on a pullback, narrow range bars should be present on the retracement. A counter move with a momentum increase is a warning that failure is occurring.

Chart 1 shows a Type II EE with good follow through in the second 5-minute period (a). An approximate 50% retracement of the established range then followed to 7623 without any visible momentum shift. Accumulation began at that point, as evidenced by the successively higher pivot lows on line (b). At (c) an expanding 5-minute bar to the upside was the first indication of an upcoming price advance. Bars continued to expand on the run without any counter bar expansion for the rest of the day.

Chart II shows similar action to Chart 1 but with thrust occurring persistently in the 15 minutes following EE (a) and Accumulation (b) occurred at higher levels. The lows in the accumulation area approximately retraced 3/8 of the established range and momentum dropped on the counter move.

Chart 3 displays a Type I EE with a reasonably-sized first 5-minute bar. Expansion occurred in the second 5-minute period showing a momentum confirmation (a). A counter momentum increase came later in the session at (b) and again at (c). Profits should be taken after an ORB entry when recognizable shifts in momentum occur like that at (b).

Chart 4's action is similar to 3's but to the downside. Momentum shifts occurred at (b) and (c) but ranges were not nearly as expansive as the first ten minutes (a). Note action immediately following (c), the narrow range drift and resulting move to new lows showed no following on the long side.

Two examples of EE failure are exhibited. Chart 5 shows a slight loss of momentum in the second 5-minute period but still is a valid Type I EE. The wide range counter move at (b) showed
MARKET ANALYTICS

VIDECON SERVICE 7812
BY ADP CONTREND
STAMFORD CT AF5
DISPLAY=2
MODE 36
BAR CHART 1-DAY
CBT U.S. T-BONDS 7800
SEP 85
STARTS 6/12/85
ENDING 6/12/85

++PAGE FULL++
TIME 2:05
FCLOS 7729
OPEN 7723
HIGH 7803
LOW 7705
LAST 7709
FREY 7708
TYOL 1525

SCALE 7700
004 POINTS/DIV
7670 7770 7790 7810 7830 7850

VIDECON SERVICE 624
BY ADP CONTREND
STAMFORD CT AF5 6200
DISPLAY=1
MODE 36
BAR CHART 1-DAY
CBT U.S. T-BONDS 6124
JUN 84
STARTS 5/14/84
ENDING 5/14/84

++PAGE FULL++
TIME 2:05
FCLOS 6114
OPEN 6127
HIGH 6204
LOW 6023
LAST 6109
FREY 6111
TYOL 1619

SCALE 6024
004 POINTS/DIV
6000 6020 6040 6060 6080 6100
trouble and the resulting inability of the market to rally with further shows of momentum at (c and d) shifted daily bias to down.

In Chart 6, a Type II EE occurred with immediate reversal in the second 5-minute period. Price action should not fall back into the first 5-minute bar as quickly as it did here. The penetration of the FR extreme at (b) with an increased range actually set up a good sale with a risk of 1 tic over (b's) high. Momentum increased again after (b).

A study of Early Entry is essentially a study of price action. The type of price action that takes place on EE shows that participants are urgent about entering the market. It is a distinct recognition of either a profitable or dangerous situation. It should be noted that directional moves of this nature are relatively rare and may occur only 10% of the time. Most days (70%-80%) exhibit rotation or choppy action and the first 5-10 minutes are sluggish and directionless without a clear movement away from the opening range.

Understanding the general nature of the market allows the trader to define a strategy in accordance with the early action. A clear EE and an ORB should not be faded and suggests that a one directional move is coming up. Absence of EE without clear getaway on an ORB calls for trading range action with a market generally unable to trend. When trading is defined one can anticipate reversals throughout the session.
MOVES AWAY FROM THE OPEN – CRITICAL POINTS

In a previous report I researched price moves off the open in the Cattle market. In this article I will do basically the same thing with other commodities. To simplify the research, I have organized two Tables for each market. One concerns rallies off the open and the other declines off the open. On each Table the left-hand side displays three price levels: 1) The open. 2) The 50% point between the open and the price movement off the open indicated horizontally on the top of the table. 3) The price level of the indicated price move itself. On the top horizontal portion of the Table is the designated price move off the open. In each Table there are four tested price moves. From the Tables you can determine what percentage of the time during the test period the market had a certain move off the open and then proceeded to close beyond the designated price level. (1, 2, or 3 on the left-hand side of the Table).

This study provides you with some new information. That is, instead of just a reading of the markets' ability to close beyond the open (1), you now have an intermediate point of reference (2) and also some idea of the markets' ability to continue after the indicated price move (3). This will assist you when you are considering a trade in the direction of the initial move off the open. Also, it will give valuable probabilities of success on entry during a counter-move of the initial move off the open. These counter moves in most cases never reach the open if the move is extended and it is a solid trend move. It is important to understand that in most cases there is at least one counter move of significance before the market begins to accelerate.

Day Structure and Moves Off the Open

The concept of Day Structure was introduced by Peter Steidlmayer with his Market Logic principles. Published work about moves off the open were originally done by Maxwell and then Hadaday. Many systems have incorporated some type of move off the open as an indication of entry. I have found that those measured moves off the open set the tone for the rest of the day. A move off
the open when accompanied by a range extension obviously has some interesting implications. Sometimes a reasonably good-size move off the open will occur within the first hour of trade. The logical approach thereafter is to enter a trade on a counter move back to the opposite extreme or to the open. One is assuming at that point that rotation will take place enough so that a profit can be taken on the trade. This is a logical conclusion supported by the percentages in the Tables. There are many times when the character of the market is indicated by just this type of extended move off the open and can be used effectively throughout the remainder of the session. It provides advanced information on day structure.

When the market is in a responsive mode it has a different character than when it is in an initiating mode. Generally, the counter moves are larger when in a responsive mode and gives you more time for entry. When the market is in an initiating mode the counter moves are stunted and may only get back to a 50% retracement level of the established daily range.

**Tic Volume and the 5-minute Chart**

I have suggested in previous reports that the ideal counter move should be taking place on low volume or a loss of momentum. This is sometimes true when looking at a 30-minute bar chart with tic volume. The opposite may be true when viewing a 5-Minute Bar Chart. High tic volume with a Spike after an extended counter move is usually a sign that the market is ready to begin a move back in the direction of the initial move off the open. High tic volume is defined as the highest volume reading in 7-10 periods. This is valid only after an extended move in one direction of 25-35 minutes at least. In other words, a climax on the 5-minute chart favors a reversal in the direction of the initial move off the open. This burst of activity shows a short-term panic by those who entered trades at the extreme of the initial move off the open. This poor trade location provides the energy for a climax on the counter move. High tic volume in the 5-minute time frame can be a good indicator but subsequent action must confirm that a climax has occurred by reversing back in the direction of the initial move off the open within 10-15 minutes of the climax.
Integrating Moves Away From the Open with Intraday Charts

An S&P 5-Minute Bar Chart with a histogram of tic volume is displayed. The open was approximately 271.00. A clear-cut rally off the open took the market to a high of 272.90. This was approximately 190 points above the open. If you refer to the Table provided on moves above the open for the S&P, a move of 160 points above the open has thereafter managed to close above the open 88% of the time. The Table also indicates that the market has closed 80 points above the open or more (50% of 160) 79% of the time. These are very high percentages and suggest that after a move of this magnitude you should look to buy a break.

Buying a break into one of these indicated price levels could be treacherous without the use of other tools. With this knowledge a Spike on high tic volume can be used for a point of entry. (A) shows the first increase of tic volume larger than the previous 7-10 bars. The counter move has carried 35 minutes to this point. This could have been a selling climax but the market's inability to trade above the Spike bar's high before making new lows negates that possibility. Twenty-five minutes later, at (B) another high tic volume reading appears with a Spike in the price action. The next 5 minute period succeeds in trading above the Spike bar high and action holds above this level for 10-15 minutes thereby confirming that the counter move is ending. It is not until later in the session at point (C) that tic volume readings run higher than the previous seven periods. New lows are made immediately though negating this as an entry point. At (D), the same price action is displayed as that of (C). (E) on a narrowing range displays the necessary qualities with the bars high penetrated in the next 5-minute period (F), but the inability to hold for 10-15 minutes and the subsequent move to new lows negates an entry. (F) again displays high tic volume and holds the low for 15 minutes with a penetration of the high of the Spike the second and third bar out from (F). This again indicates that the counter move is ending. The fact that the market was below the open on this counter move does not negate the potential for a rally. Although, price and volume action must confirm before entry is taken. Also, gratification had better be soon in coming given the late hour that this move is taking place. This procedure will
keep you from stepping in front of a high momentum move back through the open before any visible reversal.

The Tables

Several noticeable biases can be seen when studying the Tables. For instance, the S&P markets' percentages are significantly higher on moves above the open than on moves below the open. This reflects the bull market during most of the test period. The Beans lean to the downside with moves below the open showing higher percentages, Cattle to the upside and Bonds evenly distributed.

Approximations can be made on the percentages for levels that I did not indicate in the Tables. If one knows the percentage of a close 8 ticks above the open (Bonds) after a 16 tic rally a similar percentage can be assumed on the markets' ability to close 24 ticks above the open after a 32 tic rally. This will not be exact but it does indicate something about the market's nature.

The Market Principle

The tests support an important conclusion about the market's nature. That is, the market's tendency to carry in the direction of a defined move off the open. This was true in all cases except for the S&P on moves below the open. Integrating trend and short-term overbought/oversold indications can provide times of great clarity when trading. For example, if a long position is under consideration and the market opens and breaks 16 ticks below the open, the position can logically be considered with a more advantageous day structure on another day. This break gives the buyer leisure time before entering the position and provides the best possible trade location. The Market Principle under consideration is Trend, or more exactly Intraday Trend. It should not be ignored and an understanding of its importance will save one from foolish and costly points of entry.
### BONDS 1978-1987

#### MOVES ABOVE OPEN

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#### MOVES BELOW OPEN

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### S+P 1982-1988

#### MOVES ABOVE OPEN

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#### MOVES BELOW OPEN

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### BEANS 1970-1988

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### CATTLE 1970-1988

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#### Moves Above Open

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#### Moves Below Open

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### Soy Meal 1970 - 1989

#### Moves Above Open

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#### Moves Below Open

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### Corn 1970 - 1989

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PRICE ACTION OFF THE OPEN: CATTLE

This chapter provides eighteen different tests concerning price action around the open. Each test is associated with a particular point move away from the open; either 22, 50, 100 or 130 points. The question asked is: What has the market done after it has moved a certain amount of points above or below the open? The question is answered with the percentage of times the market has closed above or below the indicated price level. For example, No. 17 - a 130 point decline below the open. When the market has declined 22 points below the open at any time during the period 1970-1988, it has closed lower than 80 points below the open 87% of the time. It has closed below the open 98% of the time. This does not tell you whether an intraday rally to one of these points occurred after the initial 130 point decline. It only tells you of the chances for a close below those various levels. Chart A displays the 5-minute high/low for a 5-day period (Days A thru E). Each day the size of the initial move off the open and any move of consequence to the other side of the open is noted. The circles represent the counter-moves after the initial move off the open. These designated areas are logical spots for trade entry. The most noticeable feature of the chart is the consistency of the market to have large intraday counter-moves. Sometimes they retrace the entire initial move, providing interesting high probability entries. Chart B is an expanded version of Day E's price action. Note the initial move of 130 points below the open and the resulting counter-move. Potential sales exist at points 1, 2 and 3 into the open minus 50 and 80 level after such a clear move off the open.

(1)

22 POINT DECLINE BELOW OPEN

When the market has declined 22 points below the open it has:

Closed below the open plus 22 points \(85\%\)
Closed below the open \(71\%\)
Closed below the open minus 22 points \(58\%\)

INTEGRATION: The market shows a tendency to trend in the direction of a move off the open. Sell a low momentum rally after the initial decline.
(2)

**22 POINT RALLY OFF OPEN**

When the market has rallied 22 points above the open it has:

- Closed above the open plus 22 points **58%**
- Closed above the open **76%**
- Closed above the open minus 22 points **86%**

**INTEGRATION:** Supports the conclusion that the market has a tendency to trend after some definition of direction. Buy low momentum breaks after the initial rally off the open.

(3)

**22 POINT DECLINE OFF OPEN AFTER NR DAY**

When the market has declined 22 points below the open on a day that was preceded by a daily range less than 50 points it has:

- Closed below the open plus 22 points **93%**
- Closed below the open **82%**
- Closed below the open minus 22 points **54%**

**INTEGRATION:** A decrease in the open minus 22 point percentage when compared to No. 1 suggests difficulty on holding breaks after narrowing trade. This statistic could reflect the general upward bias. Watch for loss of momentum on rally to the open or higher after the initial decline. The 54% on the open minus 22 points statistic is too low to with the initial weakness.

(4)

**22 POINT RALLY OFF OPEN AFTER NR DAY**

When the market has rallied 22 points above the open on a day that was preceded by a daily range less than 50 points it has:

- Closed above the open plus 22 points **62%**
- Closed above the open **87%**
- Closed above the open minus 22 points **94%**

**INTEGRATION:** When compared to the tests on a move
22 points below the open, there is a significant difference. This implies that an upward bias was present throughout the test period. If Early Entry occurs go with the initial move above the open. Otherwise, buy a low momentum pullback to the open or just below the open. Do not step in front of a momentum increase to the downside, especially when it is moving to new lows for the day. Wait for a shift in momentum back to up on the 30-minute chart or 5-minute chart.

(5)

50 POINT DECLINE BELOW THE OPEN

When the market has had a 50 point decline below the open it has:

Closed below the open plus 22 points 94%
Closed below the open 88%
Closed below the open minus 22 points 79%
Closed below the open minus 50 points 63%

INTEGRATION: The percentages are not as high as a 50 point rally above the open. This suggests an upward bias present in the data. The percentage at the open is extremely interesting. Sales on low momentum pullbacks should be considered. The reasonably high chance of a close below the open minus 50 point level suggests that the more defined the trend during the session, the better the chance of it continuing. A 50 point move away from the open supplies a clearer definition of trend than a 22 point move.

(6)

50 POINT RALLY ABOVE THE OPEN

When the market has had a 50 point rally above the open it has:

Closed above the open plus 50 points 65%
Closed above the open plus 22 points 90%
Closed above the open 95%
Closed above the open minus 22 points 96%

INTEGRATION A definite improvement on the close at the open plus 50 point level when compared to No. 2. The logical conclusion is that 50 point move defines trend better than just 22 points.
The basic strategy on pullbacks obviously will have good results. The Cattle market is an excellent market for this type of strategy because of the many intraday swings that take place. My observation is that there are, on average, five-intradays trends or reversals per day in the Cattle market of significance supplying at least two opportunities for entry on counter moves.

(7)

50 POINT DECLINE BELOW THE OPEN AFTER NR DAY

When the market has had a 50 point decline below the open and the preceding day's range is less than 50 points it has:

Closed below the open plus 22 points: 96%
Closed below the open 90%
Closed below the open minus 22 points 83%
Closed below the open minus 50 points 64%

INTEGRATION: Entry on open minus 50 point level should be reserved for special situations such as Early Entry or an initial move out of a 2 to 3 day congestion area (2 Bar NR - 3 Bar NR). Watch for weak rallies for sales.

(8)

50 POINT RALLY ABOVE THE OPEN AFTER NR DAY

When the market has had a 50 point rally above the open and the preceding day's range is less than 50 points it has:

Closed above the open plus 50 points 64%
Closed above the open plus 22 points 91%
Closed above the open 95%
Closed above the open minus 22 points 98%

INTEGRATION: It is necessary to restrict entry on the open plus 50 point level to an Early Entry indication only. Otherwise, wait for the pullback. With the NR day percentages are better than without on the close above the open. This confirms the initial conclusion that better trends
occur after congestion-type days. Since 1986 the market has not closed below the open with this set-up in 17 occurrences. An uptrend has dominated since May of 1986 and as long as it prevails this type of statistic holds more significance.

(9)

50 POINT RALLY ABOVE OPEN WITH OPEN ABOVE MRT

When the market has rallied 50 points above the open and the open has been above the mid-range of the preceding day it has:

Closed above the open 91%

INTEGRATION: Not much improvement over the basic 50 point rally day. The main idea here is that the open above mid-range showed a move with trend or defined a more powerful move than average.

(10)

50 POINT DECLINE BELOW OPEN AFTER OPEN BELOW MRT

When the market has had a 50 point decline below the open after it has opened below the mid-range of the previous day it has:

Closed below the open 90%

(11)

100 POINT DECLINE BELOW THE OPEN

When the market has declined 100 points below the open it has:

Closed below the open minus 100 points 53%
Closed below the open minus 50 points 89%
Closed below the open 96%

(12)

100 POINT RALLY ABOVE THE OPEN

When the market has rallied 100 points above the open it has:
Closed above the open plus 100 points 52%
Closed above the open plus 50 points 91%
Closed above the open 97%
Closed above the open minus 20 points 98%
Closed above the open minus 50 points 99%

INTEGRATION: Logically, if a 50 point rally exhibits high percentages, a 100 point rally would provide greater definition still. Note from the open plus 50 or lower, probabilities of a higher close are outstanding. Surprisingly, there are many intraday counter moves after a rally of this proportion. Volatility is increasing when this occurs. The drop in percentage close above open plus 100 points leaves the market vulnerable at this level.

(13)

100 POINT DECLINE BELOW THE OPEN AFTER NR DAY

When the market has had a decline of 100 points below the open on a day that was preceded by a day with a range of less than 50 points it has:

Closed below the open minus 50 points 79%
Closed below the open 97%

(14)

100 POINT RALLY ABOVE THE OPEN AFTER NR DAY

When the market has rallied above the open by 100 points on a day that was preceded by a day with a range less than 50 points it has:

Closed above the open plus 50 points 80%
Closed above the open 100%

(15)

100 POINT RALLY ABOVE OPEN AFTER LOWER OPEN

When the market had an open 25 points or more below the previous day's close and then rallied 100 points above the open it has:

Closed above the open plus 50 points 86%
Closed above the open 98%

INTEGRATION: The idea here is that the gap lower
leaves a short-term oversold condition that provides more fuel to the initial move and subsequent rallies after counter moves. The statistics were not that much better than on any day with a 100 point rally.

(16)

100 POINT DECLINE BELOW OPEN AFTER A HIGHER DAY

When the market has an open 25 points or more above the previous day's close and then declined 100 points below the open it has:

Closed below the open $91\%$
Closed below the open minus 50 points $85\%$

(17)

130 POINT DECLINE BELOW THE OPEN

When the market has declined below the open by 130 points it has:

Closed below the open minus 80 points $87\%$
Closed below the open $98\%$

(18)

130 POINT RALLY ABOVE OPEN

When the market has had a 130 point rally above the open it has:

Closed above the open plus 80 points $93\%$
Closed above the open $100\%$

INTEGRATION: There were not many occurrences of this type, but the upward bias in the price data asserted itself again (Compare to No. 17). An outstanding chance of closing above the open but the $93\%$ at open plus 80 points is even more interesting given the likelihood of a 50 point counter-move after such an extensive move.
PRICE PATTERN STUDIES I

This is the first in a series of chapters on computer-tested price patterns. My intention is to provide the readers with objective statistical data that can be used as a reference in their trading.

In this study I have tested all possible two, three, four and five day close to open patterns for the T.Bond Futures market from 1978 to 1987. Three items are provided to explain the information. 1) A listing of patterns (Table A). 2) A graphic display of a pattern (Chart B). 3) A chart of June Eurodollars with examples of two of the patterns (#5: (---)), (#12: (++)) Chart C. The Eurodollar chart is used in place of T.Bonds to display an actual day session open. The chart service used shows T.Bond night session opens on the daily bar chart. This study should be used in conjunction with day session opens only.

The primary objective of this study is to determine whether an intraday bias exists from open to close given the previous price pattern. A secondary objective is to define profitable trading systems.

A Compaq 386 personal computer with a custom-written program for system development was used to test the patterns. The program uses system-oriented, so the patterns are displayed as "systems". To determine an intraday bias refer to the "% Profitable" column on Table A. To estimate if the system is profitable refer to the "Total Profit" column also on Table A.

Table A shows, beginning with the left-hand column, the System (Pattern) Number, the Pattern, Entry, Number of Trades, Percentage of Winning Trades, the Average Dollar Amount of all Winning Trades, the Average Dollar Amount of all Losing Trades, and the Total Profit (Gross) before commission and slippage. In the Pattern column, (+) symbolizes an up closing; (-) a down closing relative to the previous day. The exception is the sign on the far right, which represents the open of that day and the point of entry for the trade.

Refer to System #5 on Table A and the first pattern on Chart B. The pattern is two lower closes with a lower open. This is represented by three minus signs; (---) on Table A in the Pattern column. Beginning from left and working right, the first pattern on Chart B shows a daily bar with the closing price displayed. Immediately to the right of the daily bar is the closing that
represents the next day's close (lower) and is the first minus sign in the (---) pattern. The next dash is also a lower close than the previous day and is the second minus sign in the (---) pattern. The last minus sign in the pattern (---) is the (X) on Chart B which represents the open. In summary, you have a lower close relative to the previous day followed by another lower close, followed by a lower open. In this case a long position was taken on the open of the third day and exited on the close of the third day. In all cases trade entry is on the open (shown as the last minus or plus sign in the pattern) and trade exit on the close. No stops were used in the tests.

The dates of entry on all possible buys after two lower closings and a lower open (#5) and all sales after two higher closings and a higher open (#12) are listed on Chart C. On the chart itself each daily bar shows the open (entry) with a dash on the left of the bar. The dash on the right of the bar is the close (exit).

I conclude that a bias does exist from open to close, as evidenced by the fact that many of the patterns produce 60% or better results. Regarding the systems, gross profits are high enough on some to warrant a system trade. However, that is not the best application. Better systems do exist and I recommend further research using the most profitable patterns as the focus of the research. Note patterns 5, 9, 12, 13, 21, 24, 25, 29, 30, 33, 36, 44, 45, 52 and 53 all of which will provide a good start in system development.

Some practical applications are to coordinate the patterns with support/resistance, angles and trend lines. For instance, an open on an important angle of support when a strong upward bias is indicated increases the validity of the support. Watch action around the open for confirmation of the bias before entering a trade. Another application is to place stops to enter just above or below the open in the direction of the bias (ORB - refer to ORB article also in this issue for a complete explanation of this technique). This should be done early in the session to anticipate early (urgent) entry on the part of market participants. Early entry (Defined in Concepts Section of this letter) usually results in a big move for the day.

The patterns can also be used to enter when a trend has been defined. For example, pattern #48; a buy after three up days, a lower day and a lower open reflects a strong up market with a one day counter move. The lower open provides an
excellent chance for low risk entry. The objective is new highs for the move. Note the high percentage profit (63%). I have observed that most of the best profits in this pattern come in strong uptrends. In trading ranges it is not as profitable.

I do not use these systems methodically in my trading but find them to be a useful starting point in system development. Increased and narrowing daily ranges can be applied successfully to the basic close/open patterns to form some very reliable systems. In fact, daily range differences relative to the previous day, or days, may be one of the most important concepts in system testing.
In the previous chapter, I presented all possible two thru five day open to close (O/C) patterns. In this report I have tested all two thru five day close to close (C/C) patterns. Entry was assumed on the last close of the pattern with exit on the next day's close. Stops were not used.

A listing of the patterns is given in Table 8. Also a chart of June bonds is displayed highlighting pattern 24: (---+).

I have three objectives in this study. The first is to determine whether a bias exists from close to close. The second is to isolate profitable systems. The third is to use the patterns with a decisive bias to structure trade entry with other techniques for further system development.

Table 8 shows, from left to right, the pattern number, the pattern itself, whether a buy or sell was taken, the number of trades of the pattern, percentage profit, and the gross profit.

The June Bond Chart shows five patterns (a thru e) with a, c and e profitable while d and f were losers. The left hand corner of the chart shows an example of the pattern; (---+) and the entry point. On Table 8, #24, under the Pattern column the pattern (---+) shows two lower closings followed by two higher closings all relative to the close immediately preceding it. Entry was taken on the close of the last day. In this case, it was higher and a sell was indicated. The trade was exited on the next day's close (the "X" on insert chart).

Refer to the % profitable column for bias and verify with the Gross profit column. The larger the number the stronger the bias. Large gross profits will also give some indication of the system's validity, but slippage and commission must be subtracted from the profits to get an accurate reading. This is accomplished by taking the number of trades and multiplying by commission and estimated slippage per trade. When a strong bias is indicated further system development is pursued.

The results for these patterns are less impressive than those for the open to close patterns in the previous chapter. Because of the marked difference, I conclude that the bias breaks down the longer the position is held. Risk increased dramatically as indicated by the substantial drop in gross profits. On the other
hand the C/C patterns do provide a viable beginning for further system development. In fact these patterns are the brainchild of the O/C patterns.

When an O/C entry is preceded by a high profitability C/C pattern there are some interesting results. For example, pattern #24 (---++) was profitable 56% of the time when selling, with $16,30 gross profits. On its own this is not that impressive, but, if you wait for the next day's open and sell it if it is higher and exit on the close the results improve to 60% profitability and $22,244 gross profits. In addition, if the day before entry, the last day of the C/C pattern, a wide spread day occurred and the sell was taken on the higher open there is a dramatic improvement. 85% profitability with $13,837 Gross profits on just a third of the trades of the previous pattern.

An 85% winning system is quite an accomplishment. A variation of the last pattern is a sale with a 1 tic stop above the open. Results were as follows, 52% winners with $10,500 Gross profits and average winners were 4 times the size of average losers. This is the beginning of some excellent low risk entry techniques. It may difficult to appreciate the value of a system with only 50% winning trades but with as small a risk as 1 tics, 50% is an extraordinary result.

In summary, these patterns can be used for indications of bias every day. It is prudent not to trade against the bias unless information clearly suggests otherwise. These basic patterns provide a sound base for further research. Any high percentage profitability system will result in great rewards when experimenting with the variables.
## B. Bonds Close to Close Patterns

<table>
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<tr>
<th>Pattern #</th>
<th>Pattern</th>
<th>B/S</th>
<th># Trades</th>
<th>% Profit</th>
<th>Gross Profit</th>
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PRICE PATTERN STUDIES III
SOYBEANS OPEN TO CLOSE

In this report I have tested all combinations of four closings with either a higher or lower open the day after the last close. The data utilized was Soybean open, high, low and close prices from 1970 to 1988. This resulted in thirty-two pattern variations. The primary objective of this study is to determine if a bias exists from open to close given the previous price pattern. The secondary objective is to define profitable trading systems.

A Table (C) of the patterns is provided that includes, beginning with the left-hand column, the System Number, the Pattern, Entry, Number of Trades, Percentage of Winning trades, the Average Dollar Amount of all Winning Trades, the Average Dollar Amount of all Losing Trades and the Total Gross Profit. In the Pattern column, (+) symbolizes an up closing, (-) a down closing relative to the previous day. The exception is the last sign on the far right of the pattern which represents the open of that day and the point of entry for the trade.

There are five days involved in each pattern. The day of entry is Day 1. The day immediately preceding the day of entry is Day 2. Each previous day is Day 3, 4, 5, etc.. (Refer to Diagram 1). For example, Pattern 30 shows that on Day 5 there is a lower close than the previous day (-) (Day 6 not shown). Day 4 has a lower close than day 5 (-). Day 3 has a lower close than Day 4 (-). Day 2 has a higher close than Day 3 (+). Day 1's open is lower than Day 2's close (-). A sale is assumed and entry is taken on Day 1's open with trade exit on Day 1's close. A positive Gross Profits figure is the only criterion used to determine trade direction (Buy/Sell). Consequently all patterns show a profit. The preferable entry is shown in Table C - in the column labeled B/S. In some cases this produces a percentage profit below fifty percent but because of the high average win, Gross Profits are positive. Some cases also show a smaller average win than average loss but the percent profitability is very high producing a positive Gross Profit. These are borderline patterns that may or may not have any predictive value. You should consider all of these factors (Percent Profit, Average Win to Average Loss, and Gross Profits) when assessing the validity of a pattern.

A natural limitation exists in Soybeans that
does not exist in T.Bonds. That is, the potential intraday price move is larger in T.Bonds than Soybeans ($4,000 to $3,000 respectively) and in some instances the limit was $6,000 in T.Bonds. All things considered, the Beans perform as well as if not better than T.Bonds in this type of basic test. Table D shows a comparison between the Soybeans and T.Bonds and includes the trade direction and percent profitability. My purpose here was to determine if there are patterns in each market. If so, it would seem to suggest some consistency in price behavior from commodity to commodity. Eight out of thirty-two had different biases, suggesting some difference in behavior between the two markets. There were some marked differences in numbers 3, 4, 15 and 17 with opposite trade direction on reasonably high percent profitability.

You will notice in Table C that the biggest winning trades were sales (Patterns 1, 14, 25, 30). There were no buys over $10,000 Gross Profit. The percentage winner seemed to favor the upside but Gross Profits definitely favored the short sales. T.Bonds displayed a better balance in the category of Gross Profits.

As mentioned above, Pattern 30 was a sale on Day 1's open. The generic pattern produced 94 trades in which fifty-nine percent were profitable. Winners averaged $403 and losers averaged $210. Gross Profits were $13,987. This pattern actually tested better than most of the patterns especially in the Average Dollar Win/Loss area. An attempt to improve on this pattern produced some interesting results. If you add an expanding daily range on Day 2 relative to Day 3, it accounts for sixty-three of the ninety-four trades of the generic patterns (Diagram 2). Profitability dropped to fifty-one percent but profits were relatively stable at $82,206 and a $421 to $170 Win/Loss ratio. Percentage profitability increases dramatically when you change Day 2 to a narrowing range rather than an expanding range (Diagram 3). This accounts for 30 trades with 67% profitability. Gross Profits were $5,581 and it displayed a $415 to $332 Win/Loss ratio. This is adequate but not nearly as rewarding as T.Bonds. In general I have so far found it very difficult to come up with high profitability, high Win/Loss ratio short-term trades in the Soybeans. The more involved patterns that usually work very well in the Bonds and S&P do not have the same consistency in the Soybeans. This suggests that intraday volatility is necessary for short-term pattern consistency.
## Market Analytics

### Soutbeau Open to Close

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### Comparison of Beans/Bonds

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The Table provided herein can serve as a useful reference. The best results come from creative shifts in the variables within the pattern such as demonstrated above. Range differences, defining momentum and one-day patterns such as Outside Days and Inside Days are very useful. In upcoming chapters, I will introduce studies about all possible range variations in the final day of the pattern.

In summary, one can assume that there are some patterns that do indicate a decisive bias from open to close in the Soybean market. These biases were as distinct as in the Bond market with five day patterns more profitable to the downside. Generally, five-day patterns do not produce high profits but can still be used as a basis for system development but system development has not proved to be as promising in Soybeans as in other markets.
PRICE PATTERN STUDIES IV
CATTLE AND S&P OPEN TO CLOSE

For your reference I have tested all combinations of four closings with either a higher or lower open the day after the last close for the Cattle and S&P markets. The data utilized was open, high, low and close prices from 1970 to 1988 for Cattle and from 1982 to 1988 for the S&P. This resulted in thirty-two pattern variations. The primary objective of this study is to provide a reference of historical bias from open to close for each market.

A Table B of the patterns is provided that includes, beginning with the left-hand column, the System Number, the Pattern, Entry, Number of Trades, Percentage of Winning Trade, Average Dollar Amount of all Winning Trades, Average Dollar Amount of all Losing Trades and the Total Gross Profit. In the Pattern column, (+) symbolizes an up closing, (-) a down closing relative to the previous day. The exception is the last sign on the far right of the pattern which represents the open of that day and the point of entry for the trade.

There are five days involved in each pattern. The day of entry is Day 1. The day immediately preceding the day of entry is Day 2. Each previous day is Day 3, 4, 5, etc.. (Refer to Diagram 1). For example, Pattern 30 shows that on Day 5 there is a lower close than the previous day (-) (Day 6 not shown). Day 4 has a lower close than day 5 (-). Day 3 has a lower close than Day 4 (-). Day 2 has a higher close than Day 3 (+). Day 1's open is lower than Day 2's close (-). A sale is assumed and entry is taken on Day 1's open with trade exit on Day 1's close. A positive Gross Profits figure is the only criterion used to determine trade direction (Buy/Sell). Consequently all patterns show a profit. The preferable entry is shown in Table C - in the column labelled $/S. In some cases this produces a percentage profit below fifty percent but because of the high average win, Gross Profits are positive. Some cases also show a smaller average win than average loss but the percent profitability is very high producing a positive Gross Profit. These are borderline patterns that may or may not have any predictive value. You should consider all of these factors (Percent Profit, Average Win to Average Loss, and Gross Profits) when assessing the validity of a pattern.
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### S&P Open to Close

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<th>No. of Trades</th>
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<th>Avg. Loss</th>
<th>Gross Profit</th>
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<td>2,805</td>
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This chapter is an extrapolation of open-to-close tables provided in previous price pattern studies. The primary objective of this study is to provide a reference of overnight bias when a position trade is under consideration. These tables along with price action of profit already in the trade and your general assessment of the market should all be considered when considering a position.

The tables that are provided show the pattern number (column A). The previous 4 day's closes with the right most close the most recent closing (column B). All closings are relative to the previous day's close. The direction of the open after the indicated 4 day closing pattern (column C) that occurred most after and the percentage of time that such an open took place.

Logically, the highest percentage patterns present possibilities for system trades. I will leave that to your curiosity and suggest that the previously-mentioned addition to the patterns be used in the decision-making process. As stated before, this is presented mainly for your reference. I would not find myself without this knowledge in hand when considering an overnight position. It should be noted that there are many times when price action is overwhelmingly in favor of a move counter to the bias indicated historically. This serves to highlight the primary status of price action. A recent example of this point is the Soybean market since mid-May where a systematic following of the historical bias would have been disastrous.
### Soybean Close to Open Probabilities

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<thead>
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<th>No.</th>
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<th>Percentage of Time</th>
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<td>++++</td>
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<tr>
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<td>57%</td>
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<td>57%</td>
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<tr>
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<td>50%</td>
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</table>

### Cattle Close to Open Probabilities

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<td>59%</td>
</tr>
<tr>
<td>2</td>
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<td>DOWN</td>
<td>53%</td>
</tr>
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<td>++++</td>
<td>DOWN</td>
<td>58%</td>
</tr>
<tr>
<td>4</td>
<td>++++</td>
<td>UP</td>
<td>58%</td>
</tr>
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### S&P Close to Open Probabilities

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<th>PERCENTAGE OF TIME</th>
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<tr>
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</table>

This reflects an upward bias through the test period (1982-1988); note the dominance of a higher open on 75% of the patterns.

### Bonds Close to Open Probabilities

<table>
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<th>NO.</th>
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<tr>
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This is a study of range expansion and its impact on the market. Other analysts have assumed that Range Expansion has an impact on price action on the day or days following range expansion. With the computer it becomes very easy to test this assumption. To begin with, it is necessary to set up a control or standard of comparison. So I borrowed from a previous study (Price Pattern Studies I - Bonds Open/Close Studies). In that study I tested all 2, 3, 4 and 5 day patterns in the T.Bond market 1978-1986. In order to make a proper comparison I did the exact same test with only one added variable, that was, an expanding daily range relative to the previous day's range on the second to last day of each price pattern. From there it is possible to make direct comparisons between Price Pattern Studies I O/C Bias and the Price Pattern with the added variable of range expansion. To briefly review what this Table A is showing, refer to Pattern #5 (---). Simply, this pattern is two lower closings and a lower open. This is read from left to right. An entry is assumed on the open or the minus to the far right of the pattern. Exit was on the close of the same day, thus the name open to close patterns. All patterns are set up in the same manner but as you can see become more complex as more days are included. Regardless of the number of days, the (+) or (-) sign in the pattern is always relative to the day immediately preceding it and are closings unless it is the last (+) or (-) sign in the pattern which is an open.

My conclusion from that comparison is that there is a definite bias in the direction of the range expansion the day immediately following. Over 75% of the time the price pattern showed either a percentage profitability favoring the bias of the range expansion and/or an average win/loss ratio that made it clear that the range expansion was influencing the price pattern. There was one problem with the comparison: an obvious upward bias which was in effect throughout the period. This was reflected in the inability of the range expansion to have an appreciable impact on patterns ending with (--) or (++) in the control study almost all patterns ending with (--) showed an upward bias from open to close. The same was true for the study on range expansion.
and in some cases it actually produced a better trade. This was contrary to expectations. Logically, the market should exhibit a bias in the direction of the range expansion but in fact the range expansion seemed to be acting as a selling climax rather than a momentum increase.

This was baffling, and the thought occurred to me that this was not a vigorous enough definition of range expansion. Consequently, I decided to make a comparison between very simple 3-day patterns and five variables one for each test (Refer to Table 8). The variables were: the narrowest range relative to the previous three days (NR3), Narrow Range relative to the previous day (NR), Control which included all possible patterns either narrowing or expanding, Range Expansion relative to the previous day (RE), and a Range Expansion greater than the previous three days (RE3). There was thought to be enough of a contrast between Range Expansion 3 and Narrow Range 3 to give decisive evidence one way or the other on the Range Expansion impact on subsequent price action. The four patterns studied were: A higher close followed by a higher open (++), a lower close followed by a higher open (--), a higher close followed by a lower open (-+), and a lower close followed by a lower open (--) I assumed that a simple comparison between the NR3 and the RE3 in each pattern group would give me the information that I was looking for. In the case of the (++), pattern both the NR3 and the RE3 were profitable sales with similar win/loss ratios. The only difference was the amount of total profit which favored the NR3. This is logical and in the case of an expanding range to the upside and subsequent higher open (RE3) should not be as good a sale as on a day without as much definition preceding it. It was not totally conclusive. A comparison of RE3 and NR3 in the (-+) shows some clear differences. Both are profitable buys but percentages favor the NR3 pattern and win/loss ratio with total profits obviously favoring the NR3 over the RE3. Again, this is logical, for a day that exhibits an expanding range to the downside theoretically is increasing momentum and the subsequent higher open should not be as favorable a buy relative to a day lacking such definition. The clearest difference comes in the (++) pattern where the profitable trades are actually in the opposite direction. The narrowest range in three days followed by a lower open proved to be a profitable sale 61% of the time with a win/loss ratio of 1.17:1, and total profits of $15,181. The same pattern with
## Bond Open to Close Systems

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<th>PERIOD</th>
<th>BUY/SELL</th>
<th>#TRAINS</th>
<th>$ PROFIT</th>
<th>AVE. WIN</th>
<th>AVE.-LOSS</th>
<th>TOTAL PROFIT</th>
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<td>597</td>
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## MARKET ANALYTICS

### COMPARISON OF:

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### RANGE EXPANSION 3 VS. NARROW RANGE 3 ON ONE-DAY PATTERNS

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<td>(CLOSE TO CLOSE (C/C))</td>
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the largest range in three days to the upside prior to a lower open proved a profitable buy 48% of the time with a 1.10 : 1 win/loss ratio and profits of $417. Total profits obviously are not dramatic in the case of the buy on the RE3 pattern but there is a distinct contrast between the RE3 and the NK3 supporting the conclusion that range expansion does have an impact on subsequent price action. Where it is not so clear is the pattern of a lower close followed by a lower open (--) where a momentum increase actually produced a better buying opportunity than on a day where there was no such range expansion. This can be explained by the dominant upward bias throughout the test period.

 Nonetheless, it still seemed inconclusive that a range expansion was consistently impacting the subsequent price action. Therefore, a third test sequence was done, this time taking into account only a higher close or a lower close. Again, the variables of an expanding range relative to the previous three days and a narrowing range relative to the previous three days were used in a direct comparison between the two. Entry was on close to open (C/O) and close to close (C/C) for either an overnight trade into the next day's open or a trade from the given day's close into the next day's close. The thought here was that if range expansion was actually effecting the price action it would most likely show up from close to open and if it was a particularly strong effect it would carry into the close of the next day.

 On a lower close and the close to open trade the NK3 proved to be a better sale in all respects except for a slight difference in win/loss ratio. A lower close with a close to close trade showed buys for both RE3 and NK3 but as expected the NK3 proved to be the better buy with win/loss ratio and total profits reflective of this. In the case of a close to open trade after a higher close there was a distinct difference favoring a buy in the direction of an NK3 over that of an RE3. In the case of a close to close trade after a higher close the RE3 actually reflected a profitable buy whereas the NK3 was a profitable sale clearly demonstrating the RE3's effect on the following day's price action.

 From the tests exhibited in Table C and Table B it is clear that the open acts as a climactic element in the price pattern. My observation is that most of the profits were made on the close to open trade not on the open to close trade. In fact, the momentum increase had run its course by
the time or the next day's open. This would suggest that if one was interested in trading in the direction of a momentum increase one should consider profit-taking on the next day's open after the range expansion.

These tests conclusively support the theory that range expansion affects subsequent price action. However, as demonstrated, there are some difficulties and it would appear that profit margins drop considerably the longer one is in the trade after the momentum increase. Also, what I think to be the most important piece of information taken from these tests, is that the trend is a stronger influence than short-term momentum increase or decrease. In other words, the underlying intermediate, long-term trend will take precedence over a momentum increase indicated by a range expansion against the trend. Range expansions with trend hold more significance than against trend. The psychology involved could be something as follows: In a strong uptrend new shorts are constantly entering the market trying to pick the market top. The isolated range expansion to the downside brings in more shorts. The high percentage open lower the following day has very little follow through and somewhere around mid-session after a bullish day structure the shorts begin to cover. Emphasis should be placed on the necessity of integrating other market concepts along with range expansions. Without a firm grasp of the concept of day structure and a clear picture of the underlying trend a trader will run into difficulties using range expansion on its own.
OPEN TO CLOSE BIAS AND RANGE EXPANSION
S+P AND SOYBEANS

In this report I have provided six Tables:

TABLE A: S+P Open to Close - closing prices 2 to 5 days back and Day 1's opening direction. A trade is taken on Day 1's open and exited on the close of Day 1.

TABLE B: S+P Range Expansion and Open to Close Bias - same as Table A except Day 2 had an expanding daily range relative to the previous day.

TABLE C: Soybean Open to Close - same as Table A but for Soybeans 1970-1988

TABLE D: Range Expansion and Open to Close Bias for Soybeans - same as Table B but for Soybeans 1970-88.

TABLE E: Comparison of NR4, NR, RE4, RE and control group trades taken from open to close in the S+P. Two days only with opening direction and the previous day's closing direction indicated.

TABLE F: Same as Table E but for Soybeans 1970-88.

Possible use for Tables:
1) Reference of open to close bias given a certain price pattern.
2) Provides ideas on possible systems development with a high percentage pattern as the underlying indicator of the system.
3) Provides comparison of Range Expansion with days without Range Expansion to validate or invalidate previous theories on the subject.

Conclusion from Tests:
Range Expansion does not necessarily imply continuation; in fact, it is more likely to indicate end of move at least the day after the range expansion.

Application:
Observe subsequent action to a range expansion and assess its ability to - Case A: Exceed the high of a day with an expanding range down and - Case B: Exceed the low of an expanding range up. Strength is indicated in Case A and weakness in Case B. If subsequent action does not occur as in the above cases the momentum indicated by the range expansion will resurface.
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PRICE PATTERN STUDIES VIII

PURPOSE: To determine if the previous day's close (closings) and today's open have an impact on price direction. This was accomplished by testing every variation of open and closing prices from two to five day periods. A trade was taken hypothetically on the opening price. The direction of the trade was determined by total profits.

2-5 DAY PATTERNS: In the column marked pattern on Table A. Number 1 shows (---). From left to right this is read the close of yesterday is less than the close of two days ago and the open of today is less than yesterday's close. Each pattern is read the same way (from left to right) with the open always the plus or minus on the far right.

TABLE A-D: Displays the results of these tests. The information provided is as follows:
1) The pattern number (1-60)
2) The pattern
3) Whether the trade was a Sell (S) or Buy (B). This is determined by total profits.
4) Number of trades throughout the test period.
5) Percentage of profitable trades.
6) Average of Winning Trades and average of Losing Trades.
7) Total Profits, slippage and commission were not included.
Note: Table A and C's patterns display closing and opening prices only. Table B and D include a range expansion in the last close of each pattern. Range expansion is defined as a daily range larger than the previous day's daily range from high to low.
Swiss Franc 1975-1988

CONCLUSION: These patterns provide the trader with a reference to the individual characteristics of each market. A quick check of each day’s prices relative to each other and the opening price, provides you with an idea of the days' possibilities.

APPLICATION: Observe intermediate trend and if the price pattern confirms the intermediate trend, trade more aggressively in that direction. In the case of a price pattern indicating a bias counter to the intermediate trend observe caution on entering new positions.

NOTE: Additional tables have been added to this report. Instructions for their use are the same as in the above report.
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SWISS FRANC RANGE EXPANSION AND OPEN-TO-CLOSE HND

TOTAL PROFIT: $2,050
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### Crude Oil Range Expansion and Open-to-Close Bias

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## Live Hogs Open-to-Close Patterns

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2 DAY PATTERNS WITH
OPENING RANGE BREAKOUT (ORB)

PURPOSE: To test a basic, frequently-occurring price pattern to determine if a bias exists daily.

2 DAY PATTERN: The close of yesterday (2) relative to the day before's close (3) and the open of today (1) relative to yesterday's (2) close.

ORB: A trade taken with entry at a predetermined level above or below the open.

TABLE: (2 DAY PATTERNS WITH ORB)
Displays the results of these tests. The information provided is as follows:
1) The entry level above or below the open.
2) The 2-day pattern.
3) Whether the trade was a buy or sell. This is determined by Gross Profits.
4) Number of trades throughout the test period.
5) Percentage of profitable trades.
6) Average of Winning Trades and Average of Losing Trades.
7) The ratio between the Average Win and Average Loss.
8) Gross Profits; slippage and commission were not included.

TEST DATES:
Bonds: 1978-1986

OBSERVATIONS: 1) These simple patterns provide many high percentage trades.
2) Previous day's close does have some impact on the next day's bias after the open and move off of the open.

APPLICATIONS: 1) Use high percentage trades for reading on daily bias.
2) Take trades in direction of intermediate trend when 2 day pattern confirms trend.
3) Use as base for more complicated system development.
### Open-to-Close Patterns with O&H

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### 2 and 3 Day Patterns

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<th>1 Close</th>
<th>1 Open</th>
<th>2 Close</th>
<th>1 Open</th>
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#### Two-Day Pattern with ORB:
This pattern is comprised of yesterday's close and today's opening direction. An Opening Range Breakout trade is taken thereafter.

#### Three-Day Pattern with ORB:
This pattern is comprised of yesterday and the day before's closing direction and today's opening direction. An ORB trade is taken thereafter.
3 DAY PATTERNS WITH OPENING RANGE BREAKOUT (ORB)

PURPOSE: To test a basic, frequently-occurring price pattern to determine if a bias exists daily.

3 DAY PATTERN: The close of 2 day's ago relative to the close of 3 days ago. The close of yesterday relative to the close of 2 days ago and the open of today relative to yesterday's close.

ORB: A trade taken with entry at a predetermined level above or below the open.

TABLE: (3 DAY PATTERNS WITH ORB)

Displays the results of these tests. The information provided is as follows:
1) The entry level above or below the open.
2) The 3-day pattern.
3) Whether the trade was a buy or sell. This is determined by Gross Profits.
4) Number of trades throughout the test period.
5) Percentage of profitable trades.
6) Average of Winning Trades and Average of Losing Trades.
7) The ratio between the Average Win and Average Loss.
8) Gross Profits: slippage and commission were not included.

TEST DATES:

OBSERVATIONS: 1) These simple patterns provide many high percentage trades. The most astounding percentages occur on moves above the open showing sale and moves below the open showing buy. This is contrary to normal percentages on moves off the open and provides valuable insight into the characteristics of markets.

APPLICATIONS: 1) Use high percentage trades for reading on daily bias.
2) A variation is to fade price action off the open when percentages suggest to do so.
## Market Analytics

### Open to Close Patterns with OBP

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<th>M/E</th>
<th>PROFIT</th>
<th>MARKET Cơ</th>
<th>MARKET M</th>
<th>AVG.WIN</th>
<th>AVG.LOS</th>
<th>M/L RATIO</th>
<th>COMB. PROFIT</th>
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<th>MARKET M</th>
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<th>AVG.LOS</th>
<th>M/L RATIO</th>
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THE PRINCIPLE OF CONTRACTION/EXPANSION

The principle of Contraction/Expansion is defined as the market phenomenon of change from a period of rest to a period of movement back to a period of rest. This interaction between the phases of motion and rest are constantly taking place, with one phase directly responsible for the others' existence. Diagram (A) displays an example of the operation of this principle. Below the last six vertical bars a letter (E) or (C) denotes whether the bar displays a Contraction (C) or Expansion (E). This principle is applicable to any time frame. For the purposes of this report I will use a daily open, high, low and close data.

In order to establish a means of applying this principle to actual profitable trading, the computer has been utilized. Tests were run on a method of trading called opening range breakout.

Trend Day is defined as a day when the first hour's trade comprises less than 10% of the day's range or the market has no dominant area of trade throughout the session. Trend days are characterized by an opening near one extreme and a close on the opposite extreme of the daily range. Trend days fall into the category of expansions.

To establish some sort of basis for comparing action after an expansion or contraction, a control group was established. Table (A) shows the percentages of trades taken off the open (ORB) along with the same for two contraction patterns — NR4, NR7, and two expansion patterns — WS4, WS7. The column labelled "Control" is the control group. In both the control group and the four patterns, trades were taken off the open at a predetermined level above and below the open. A (B) or (S) next to the percentages indicates if the trade was profitable as a buy or a sale. The percentage reflects the profitability of the buy or sale.

The control group results made one thing obvious, that the move off the open by the predetermined amount usually was profitable if followed in that direction. In other words, buys were profitable when taken after a move above the open and sales were profitable when taken after a move below the open. In most cases the further the market moved away from the open the better the chances of continuation.

Four price patterns were tested for profitability on an ORB after the pattern. Two were contraction patterns (NR4 and NR7) and two were expansion patterns (WS4 and WS7). The patterns are defined below. Diagrams are provided for each pattern.

NR4 - The narrowest daily range relative to the previous three day's daily ranges compared individually. (Diagram C, Table B).
WS4 - (Widespread 4) A day with a daily range that is larger than any of the previous three day's daily ranges. (Diagram D, Table C).
NR7 - A day with a daily range that is narrower than the previous six day's daily ranges compared individually. (Diagram E, Table D).

WS7 - (Widespread 7) A day with a daily range that is larger than any of the previous six day's daily ranges compared individually. (Diagram F, Table E).

These patterns allow for a comparison of results between trades taken after contractions and expansions in the direction of the move off the open. The following comparisons will illustrate something about market behavior. Percentages are reverses and profits indicated as a negative if the trade reflected other than a buy above the open or a sale below the open (refer to Table C and E).

1) Refer to Table A. An average of all percentages under the column labelled, "NR7" was 64%, "NR4" 64%, "Control" 57%, "WS4" 54% and "WS7" 52%. The more pronounced the expansion, the smaller the percentage chance of following through in the direction of an ORB.

2) Refer to Table B, C, D, E under Gross Profits. A cumulative total of Gross Profits for the contraction patterns vs. expansion patterns on trades in the direction of the move off the open showed $710,000 for contractions on 7,313 trades and $102,000 for expansions on 7,524 trades. Profits were seven times larger for ORB trades after contractions than after expansions. This clearly indicates that follow through is significantly greater after contractions than after expansions.

3) I compared the percentage profitability to the control group, the contraction patterns showed better results 30 out of 32 times. The expansions showed worse results 29 out of 32 times. This is another way of illustrating the cumulative percentages in (1) but gives you a better idea of what makes up those figures.

Clearly something is going on here. The suggestion from these results is that one should be looking to go with a forceful move off the open after a contraction and not willing to do so after an expansion. In fact, fading price action off the open, with trend, after an expansion is a consideration. Other patterns can help with the decision on whether to fade a move off the open along with previously-mentioned market context. If nothing else, one should be aware of the dangers of ORB trades the day after a big directional day. Caution is necessary after expansions. This is when the most attention is given to the market by the novice traders who invariably get caught in whipsaws and trendless markets.
A. **CONTRACTION/EXPANSION**

**CONTRACTION/EXPANSION PRINCIPLE:** The market is a phenomenon that constantly changes from a period of movement to a period of rest and back to a period of movement. This interchange between the phases of motion and rest are constantly taking place with one phase directly responsible for the other's existence.

B. **ORB**

**OPENING RANGE BREAKOUT (ORB):** Is a trade taken at a predetermined amount above or below the opening range.

**TREND DAY:** When the first hour's trade comprises less than 50% of the daily range or the market has no dominant area of trade throughout the session. Characterized by an opening near one extreme and a close on the opposite extreme of the daily range.
### Pattern Percentage Comparison Table

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<th>W57</th>
<th>W57</th>
<th>L0</th>
<th>L0W4</th>
<th>2BAR</th>
<th>DOJI</th>
<th>DOJI</th>
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<th>BARE</th>
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<td>864</td>
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<td>876</td>
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<td>875</td>
<td>865</td>
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<td>882</td>
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**WIDESPREAD 4 (WS 4):** Is a day with a daily range that is larger than any of the previous three day's ranges.

### WS 4 (Charts)

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WIDESPREAD 7 (WS 7): A day with a daily range that is larger than any of the previous six day's ranges.

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<tr>
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<td>OPEN MINUS 50 PTS.</td>
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<td>OPEN MINUS 150 PTS.</td>
</tr>
<tr>
<td>BEANS</td>
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<td>OPEN MINUS 5 CENTS</td>
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<td>OPEN MINUS 10 CENTS</td>
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<tr>
<td>CATTLE</td>
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<td>OPEN MINUS 50 PTS.</td>
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A. OPENING RANGE BREAKOUT (NR 4)

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<th>AVERAGE LOSS</th>
<th>WIN/LOSS RATIO</th>
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DIAGRAM A: An NR4 (2) with an Opening Range Breakout up (1). After the NR4 on Day 2 the market opens on Day 1 and rallies a predetermined amount above the open. A buy is made on a stop at the predetermined level with an exit on the close of the day 1. The results are shown in the table provided.

DIAGRAM B: An NR4 (2) with an Opening Range Breakout down (3). After the NR4 on Day 2 the market opens on Day 1 and declines a predetermined amount below the open. A sell is made on a stop at the predetermined level with an exit on the close of the day 1.
### Market Analytics

#### Opening Range: Frequency

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<th>B/S</th>
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<th>APR/AVG</th>
<th>APR/AVG</th>
<th>M/L LOSS</th>
<th>M/L RATIO</th>
<th>GROSS PROFITS</th>
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<td>129</td>
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**NR 7:** is a daily range that is narrower than the previous six days compared individually.

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112
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<th>Open - 4 Ticks</th>
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## Market Analytics

### Opening Range Breakout

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INSIDE DAYS IN THE S&P

Computer studies suggest that Inside Days (ID) provide very reliable entries in the S&P market. The data used in the studies is daily open, high, low and close prices from 1982 to 1987. All of the following patterns are defined for a computer but can be seen easily on a daily bar chart.

Pattern 1: (Diagram 1) This pattern is simply an inside day followed by a sale(s) on a lower open or buy (b) on a higher open. Entry is on the open with an exit on the same day's close with no stop. This procedure produced sixty-eight percent winning trades with profits of $18,000 after an $18 commission. This is a reasonably high percentage and suggests a strong bias in the direction of the open after any ID.

Pattern 2a is defined as an ID with a higher close than the previous day followed by a higher open (refer to Diagram 2a). A buy is taken on the open and exited on the close. The same is done on the sales (Pattern 2b, refer to Diagram 2b) if there was an ID with a lower close followed by a lower open. Again, stops were not used. There were forty-four trades as such with seventy-four percent of them profitable. Net profit was $14,914. The percentage has improved and profits are better per trade than Pattern #1. This supports the premise that the closing effects the next day's action and potential breakout.

Further tests uncover some variations to above results. Although the opening direction after an inside day appears to be a valid indicator of upcoming direction, there are some specific patterns that show very high percentage profitability without the use of the previous day's closing direction. Specifically, two patterns; one a sale (Pattern No. 3), one a buy (Pattern No. 4). Pattern 3: (Refer to Diagram 3) The day of entry is called Day 1. The day immediately preceding the entry is Day 2 and each preceding day - 3, 4, 5, etc. On Day 1 an open lower than Day 2's mid-range and lower than Day 2's close is necessary. Day 2 must be inside of Day 3. Day 3 must have a higher low than Day 4. A sale is made on the open of Day 1 with exit on the close of Day 1. Profits were eighty percent with winning trades five times the size of losing trades. The only shortcoming is that only ten trades could be found from 1982-1987. Pattern 4 is similar to Pattern 3 with opposite parameters. The only exception is the open on Day 1 need only to be higher, not above mid-range. So to review (Diagram 4), Day 1 a higher open than Day 2. Day 2 inside Day 3. Day 3 lower high than Day 4. Results were as follows. Ninety-one percent profits $60 to $200 average winner to average loser. No stops were used. Only eleven patterns to the upside were found. The market action implied in each pattern is a short-term trend with a loss of momentum on the Inside Day. The open on Day 1 is in the opposite direction of the trend and is an indication of a
shift in sentiment. This shift in sentiment causes those who still have existing positions against the opening direction to liquidate longs or cover shorts. Participants covering their positions is more than enough to tip off a directional move.

A slightly different perspective on the same type of pattern is to look for a retracement to the previous day’s close after the opening and take a position at that point in the direction of the open. I tested four patterns to demonstrate this principle. Pattern 5 (Diagram 5) shows an Inside Day with a lower close on Day 2 than Day 3. Day 1’s open is above Day 2’s close. The chances are sixty-two percent that the market will close above Day 2’s close on Day 1.

Pattern 6 (Diagram 6) is an Inside Day on Day 2 with a higher close than Day 3. Day 1’s open is above Day 2’s close. The chances are seventy-nine percent that the market will close above Day 2’s close on Day 1.

Pattern 7 (Diagram 7) shows an Inside Day on Day 2 with a lower close than Day 3’s close. Day 1’s open is below Day 2’s close. The chances are fifty-nine percent that the close on Day 1 will be lower than Day 2’s close.

Pattern 8 (Diagram 8) shows an Inside Day on Day 2 with a higher close than Day 3’s close. Day 1’s open is below Day 2’s close. There is a sixty-seven percent chance that the market will close below Day 2’s close on Day 1. How can you use this information? It suggests a strong bias in the direction of the open especially after a higher open. The prolonged bull market obviously had an impact on these results but in general, a counter move back to Day 2’s close after the opening direction is known, should be observed for a loss of momentum and possible entry in the direction of the open.

Another totally different test in the S&P has some interesting implications and could be tied in with the previous patterns. On any day that the market has moved two hundred points above the open intraday, it has closed above the open ninety percent of the time. Also, on any day that the market has moved two hundred points below the open it has closed below the open eighty-eight percent of the time. This was during the period from 1982-1988. An application of these results is as follows: Enter in the direction of the initial trend on any low momentum move back to the open and exit on the close of the session. This can be done after the initial trend is established with a two hundred point move in one direction off the open. The main qualification is price action on the pullback. A high momentum move back through the open leaves the initial two hundred point move in question. This can also be applied after an Inside Day very effectively.

I think it is necessary to shed light on how extraordinary the results for Inside Days are. A test on a sale of a higher open or buy of a lower open with no other information to work with provides a winning trade fifty-six
percent of the time when exiting on the close the same day of entry. This suggests a natural tendency for the market to reverse the opening direction by the time of the close. This natural tendency is reversed after an ID. Why? What is it about an ID that produces follow through after the open? An ID is narrower than the previous day. Any narrowing day shows loss of momentum and when within a previous day’s range it forms a congestion area. A congestion is directionless trade with the market searching for new information. A temporary state of balance or equilibrium exists. There is a tendency for the market to trend after a congestion. If an Inside Day is a valid congestion, it will produce an imminent trend day. One can assume from the above tests that there is a tendency to trend after these patterns (ID). These tests support the premise that Inside Days are valid congestion areas. It appears that market participants act on the first piece of information indicating trend after the Inside Day—the open. Also, the direction of the close on the ID will provide further clues on the direction of the breakout when added to the information of opening direction. The increase in percentage profit and relative profits when these variables are added supports this conclusion.

Why do these indications work so well in the S+P? The S+P generally is an urgent market. The distinguishing characteristic of this market is its tendency to trend throughout the session. This market is notorious for big, fast moves intraday. Peter Steidlmayer (Market Logic) calls it a One-Time Frame market. One may reason that in a One-Time Frame market the inside day is a more reliable indication of upcoming trend than in a Two-Time Frame market.

The market principle that is in force is contraction/expansion. The Inside Day is contraction, and in a One-Time Frame market 1-Day contraction is all that is necessary to tip off a directional move. In summary, the above tests suggest that an Inside Day is a valid congestion area and it follows that all breakout rules for congestion areas should be implemented after an Inside Day forms. The resulting breakout is expansion.
Inside Day

Opening Range Breakout (ORB) is defined as a trade with entry taken at a predetermined amount above or below the opening range. In this report the predetermined amount (the Stretch) has been determined through observation. Once the Stretch has been determined a buy stop is placed that amount above the high of the opening range and a sell stop is placed the same amount below the low of the opening range. The first stop that is traded is the position.

Inside Day (ID) is defined as a narrow range day that has its daily range completely within the previous day's range. More specifically, an Inside Day's high is less than the previous day's high and the Inside Day's low is greater than the previous day's low.

Diagram A and B demonstrates the Inside Day (Day 2) and the Opening Range Breakout technique implemented on the day following the Inside Day (Day 1). The hypothesis is that Inside Days precede trend day activity and consequently successful opening range breakouts. The Table entitled Opening Range Breakout (Inside Days) tests this hypothesis. It displays the results of trades taken in the Bond, S&P, Bean and Cattle markets during varying periods that employed the opening range breakout technique after an Inside Day. There were four tests per market with the only difference being the point of entry above or below the open. For example, in the Bond market tests were conducted on an entry 16 ticks above the open (Open plus 16 ticks); 8 ticks above the open (Open plus 8 ticks); 8 ticks below the open (Open minus 8 ticks); and 16 ticks below the open (Open minus 16 ticks). Displayed to the right of each of the entry points are the results of a trade taken from the entry point with an exit on the close of the same day of entry. Displayed is the Number of Trades, Percentage of Profitable Trades, Average Dollar Amount of each Winning Trade, Average Dollar Amount of each Losing Trade, the Ratio between the Average Winning and Average Losing Trade's Dollar Amount and the Gross Profits before commission or slippage. Stops were not used and if the market traded both above and below the opening range the given amount, a buy and a sell could be registered. This Table provides an objective means for determining if the Inside Day is actually preceding successful Opening Range
Breakouts. If so it can be established as one of the causes of trend days.

I found it useful to compare the results in the Table to the results of an Opening Range Breakout taken on any day regardless of the previous day's price pattern. The book "Market Analytics" provides percentages for Opening Range Breakouts taken on any day. I have provided a Table of percentages comparing the control group (any day) and the Inside Day. In all cases except the S&P (moves below the open) and Cattle (moves above the open) the percentages of profitable trades in the direction of the breakout improved, sometimes dramatically. Take for example the Bonds entry 15 ticks above the open showing an improvement to 76% from 60%. Out of the 16 possible entry points in the four markets only four of the entries provided lower percentages after an Inside Day. This means that 75% of the tests showed improvement. I think this to be conclusive.

A Chart labeled Inside Day (Sept. Eurodollar '88) is provided displaying nine Inside Days. Notice the day's action following the Inside Day and close proximity of the open of that day to one of the extremes. Particularly numbers 1, 3, 8 and 9.

The Bond and Bean markets show the best results on the trade after an Inside Day. I should add with the addition of a night session in the Bond market some changes have occurred. Primarily, a general lack of trendiness and loss of volatility.

An analysis of price action is necessary when utilizing the Opening Range Breakout in any situation. Ideally, on a day that a trade is taken with this technique there should be no momentum increases against the trade. The market should be able to maintain the direction of the original move off the open without moving in the opposite direction at an accelerated rate. In the best cases the previous half-hour low is not violated in an up move and vice-versa in a down move. Also, new highs occur every hour at least or again the opposite, new lows every hour in a down move.

The tests do suggest that Inside Days are valid precursors of trending action and can be integrated into a trader's philosophy. As with most of my work I am attempting to determine cause. In this case the cause of trend days. In upcoming reports computer studies will be done on the other patterns previously mentioned and any
new patterns that I suspect to be legitimate cause of trending action intraday.

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<th>% ON ANY DAY</th>
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<tr>
<td>Bonds</td>
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<td>60%</td>
<td>74%</td>
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<td>Open minus 50 pts.</td>
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## MARKET ANALYTICS

### OPENING RANGE BREAKOUT INSIDE DAY

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<th>AVG. LOSS</th>
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**Diagram A:** An Inside Day with an Opening Range Breakout up. After the Inside Day on Day 1 the market opens on Day 1 and rallies a predetermined amount above the open. A buy is made on a stop at the predetermined level with an exit on the close of Day 1. The results are shown in the Table provided.

**Diagram B:** An Inside Day with an Opening Range Breakout down. After the Inside Day on Day 2 the market opens on Day 2 and declines a predetermined amount below the open. A sell is made on a stop at the predetermined level with an exit on the close of Day 2.
## Market Analytics

### Opening Range Breakout (Inside Day)

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<th>Currency</th>
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<th>Tics</th>
<th>B/S</th>
<th># Trades</th>
<th>% Profit</th>
<th>Avg Win</th>
<th>Avg Loss</th>
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<td>292</td>
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<tr>
<td>OPEN</td>
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<td>31</td>
<td>B</td>
<td>65</td>
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<td>61</td>
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<td>TO</td>
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<td>B</td>
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<tr>
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<td>857</td>
<td>540</td>
<td>4250</td>
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</tbody>
</table>
INSIDE DAY (ID)

CHART INSIDE DAY (ID): Nine Inside Days are displayed on the above chart. Price action tends to expand the day following an Inside Day and generally will produce a Successful Opening Range Breakout. Note the days following Inside Days 1, 3, 6, 8 and 9. The open is within one tic of the extreme on those days with sizable range expansion occurring.
DOJI LINES AND NR

In previous chapters on opening range breakouts mention was made of inside days, narrow range days and hook days as indicators of upcoming trend days. These days have been found to precede trend days in many cases. In a continuing effort to isolate the cause of trend day action I have run across a new concept that categorizes price action. This categorization generally produces trending activity the next day. It is called "Doji Lines". This is a Japanese word describing a comparison between the open and the close of the daily session. It is written about a book entitled "The Japanese Chart of Charts" by Seiki Shimizu.

A Doji Line is then defined as a day that shows the difference between the open and closing prices to be very small. Very small is relative but I have attached quantities to this open to close difference which I have observed to meet the definition. The Doji Line is said to indicate market indecision. It is said that these lines precede market turning points. The strategy is to look closely at the movements that follow the Doji Line and to be ready to enter the market aggressively once subsequent price action gives a clear indication of the market's direction. Logically, the opening range breakout technique would seem a valid means of determining the direction of price action after a Doji. A Doji is similar to a neutral or non-trend day in the Market Logic principles. In fact, Steidlmeyer suggests after a Non-Trend day to go with initiating activity much like the suggestion for strategies after a Doji Line. I have also, as previously mentioned, suggested taking opening range breakout trades after various congestion patterns.

I have included tests for the T.Bonds, S+F and Bean markets that include a definition for a Doji line and a subsequent trade taken a given amount off the open. The Tables provided show these results along with a comparison of price moves off the open on days when a Doji may or may not be present. I have also included a definition for a Narrow Range day. It was defined by a particular point value rather than a relationship to the previous day's range. This allows for a comparison between the results of a Doji Line and the results of NR day. Results were impressive and confirmed the conclusion that a Doji Line precedes reversal action or trend-type action. In
some cases percentages increase by 20%-30% in favor of a trade after a Doji Line. The tests of narrow range day defined by a particular point value were also conclusive. The point value chosen for the narrow range day was determined by observation. This is a different way of categorizing congestion from an NR7 Day and allows for entry on a day that is not necessarily narrower than the preceding day. NR7 by definition requires the day in question to be narrower than the preceding six days. The results of combination Doji and defined range narrowing are also presented for your reference.

Abbreviations were used in the Tables to present all relevant information. For example, refer to the first test in the section on Bonds (Table A). The left-hand column reads: 8 tic Doji; Open minus 16 tics; Sell. This is the general format used throughout the Tables and means the following: The difference between the open and close of yesterday is less than 8 tics (8 tic Doji). Today the market drops 16 tics below the open (Open minus 16 tics) where a sale was taken (Sell) with an assumed exit on the close of the same day. The results of this definition are shown directly to the right in the Tables. In this case it shows 203 trades with 71% profitable trades. The Average Winning trade was $343 and the Average Losing trade was $289. The ratio between the average winner and the average loser was 1.18 to 1, with Gross Profits before commissions and slippage at $32,985. This was for the period 1978 thru 1986. This is the format generally used to define the pattern. A definition for the Narrow Range will read as NR less than number of tics or points or cents. Note the fourth pattern in the section on Bonds. This means that yesterday's range was less than the designated point value. Throughout the Tables I designate Doji; with point value only such as 7 Doji or 50 Doji and will use a (-) or (+) sign instead of the words minus or plus. This is to save space. As you look through the Tables you will see many very profitable trading systems. It should be remembered that slippage and commission were not calculated in the results. An immediate systematic implementation of these techniques could be disappointing. As in any breakout system the slippage will be greater because the order is executed with the momentum of the market. Other stops could be present at the time of entry providing for bad fills.

As is the case with all my work, I am attempting to define the market's nature so as to
trade effectively. I am not a system trader. My premise is that one's judgement has to enter into the trade and the only way to do this effectively is through practice and a logical integration of the market knowledge at hand. The tests provide objective information over long time spans. From the tests certain inferences can be made.

An example of a Doji Line is given in Diagram 1. The left-hand bar is how it looks on a vertical bar chart (A) and the right-hand bar is how it is displayed by Shimizu in the "Japanese Chart of Charts" (B). In this case (B), the close was less than the open, so the open to close range is displayed in black. If the close was above the open, the box would have been clear. This is supposed to have an impact on upcoming price. Diagram 2 displays the Doji with a hypothetical defined NR Day (a). The action following is a representation of a Trend Day on the vertical bar chart.

In Chart A (Sept. S+P), 1 thru 7 illustrates 7 Doji Lines (50 points) with resulting 100 point moves above the open the following day. It is apparent from the Chart that some days are more successful than others. Profit-taking techniques and an excellent understanding of intraday market action are necessary to optimize the results.

A comparison between percentage profits for days preceded by a Doji and NR with that of a normal day without a Doji and NR proves interesting. (A complete study of moves away from the open on every day during 10-28 year test periods is presented in the book, "Market Analytics". On a normal day a sale 16 tics below the open was 56% profitable, with Doji 8 it was 71% profitable. On a normal day a buy 16 tics above the open was 60% profitable, with a Doji 8 it was 66% profitable.

In the S+P on any day that a buy was taken 160 points above the open it was 58% profitable, with a Doji 50 and R1 less than 200 it was 63%. On any day, a sale 160 points below the open was only 49% profitable, with a 50 Doji and R1 less than 200 points a sale was 67% profitable. Quite an improvement.

The Soybean market provides some of the most startling results. On any day that a buy was taken 10 cents above the open it was 60% profitable. With a Doji 5 it was 64%. On a sale any day 10 cents below the open it was 63% profitable, with a Doji 5 it was 67%. A Doji 5 with the daily range less than 10 cents improved to 76%.

In an effort to continue to define the cause
### Soybean - 1970-1988

<table>
<thead>
<tr>
<th>Condition</th>
<th>E Trades</th>
<th>% Profit</th>
<th>AVG.WIN</th>
<th>AVG.LOSS</th>
<th>WIN/LOSS Ratio</th>
<th>Gross Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 cent doji; open minus 5 cents; sell</td>
<td>444</td>
<td>65%</td>
<td>$311</td>
<td>$764</td>
<td>1.09 : 1</td>
<td>$45,091</td>
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<td>5 cent doji; open minus 10; sell</td>
<td>259</td>
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<td>$326</td>
<td>$305</td>
<td>1.08 : 1</td>
<td>$37,980</td>
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<td>R1 less than 10; open minus 5; sell</td>
<td>673</td>
<td>68%</td>
<td>$286</td>
<td>$210</td>
<td>1.32 : 1</td>
<td>$64,400</td>
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<td>179</td>
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<td>$337</td>
<td>$385</td>
<td>1.27 : 1</td>
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<td>147</td>
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<td>$197</td>
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<tr>
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<td>$247</td>
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<td>$40,019</td>
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<td>413</td>
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<td>$283</td>
<td>$273</td>
<td>1.00 : 1</td>
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<td>279</td>
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<td>$320</td>
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<td>$22,000</td>
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<td>61%</td>
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<td>$302</td>
<td>0.90 : 1</td>
<td>$15,011</td>
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<td>$112</td>
<td>2.47 : 1</td>
<td>$8,308</td>
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<td>492</td>
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<td>$224</td>
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</tr>
<tr>
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<td>160</td>
<td>60%</td>
<td>$204</td>
<td>$309</td>
<td>1.53 : 1</td>
<td>$9,283</td>
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</table>

#### Diagrams

1. **Doji**
   - A: High
   - B: Low

2. **Doji and NR**
   - A: High
   - B: Low
   - a: NR indicator
### BONDS 1978-1988

<table>
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<tr>
<th># TRADES</th>
<th># PROFIT</th>
<th>AVG.WIN</th>
<th>AVG.LOSS</th>
<th>WIN/LOSS SATIO</th>
<th>GROSS PROFITS</th>
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</thead>
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<tr>
<td>0 TIC DOJI; OPEN MINUS 16 TICS; SELL</td>
<td>202</td>
<td>71%</td>
<td>$343</td>
<td>$560</td>
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<td>220</td>
<td>66%</td>
<td>$366</td>
<td>$277</td>
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<tr>
<td>5 TIC DOJI; OPEN MINUS 6 TICS; SELL</td>
<td>240</td>
<td>62%</td>
<td>$387</td>
<td>$743</td>
<td>1.48 : 1</td>
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<td>64%</td>
<td>$206</td>
<td>$203</td>
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<tr>
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<td>195</td>
<td>66%</td>
<td>$328</td>
<td>$356</td>
<td>0.92 : 1</td>
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<tr>
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<td>240</td>
<td>60%</td>
<td>$311</td>
<td>$269</td>
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</tr>
<tr>
<td>7 DOJI; OPEN PLUS 13 TICS; BUY</td>
<td>250</td>
<td>64%</td>
<td>$354</td>
<td>$345</td>
<td>1.02 : 1</td>
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### S&P 1987-1988

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<th>AVG.LOSS</th>
<th>WIN/LOSS SATIO</th>
<th>GROSS PROFITS</th>
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<td>182</td>
<td>38%</td>
<td>$571</td>
<td>$551</td>
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<tr>
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<td>63%</td>
<td>$107</td>
<td>$266</td>
<td>1.46 : 1</td>
</tr>
<tr>
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<td>225</td>
<td>60%</td>
<td>$183</td>
<td>$433</td>
<td>1.02 : 1</td>
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<tr>
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<td>64%</td>
<td>$47</td>
<td>$294</td>
<td>1.62 : 1</td>
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<tr>
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<td>67%</td>
<td>$419</td>
<td>$291</td>
<td>1.19 : 1</td>
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<tr>
<td>0 RI LESS THAN 200; OPEN - 100; SELL</td>
<td>108</td>
<td>59%</td>
<td>$470</td>
<td>$490</td>
<td>1.14 : 1</td>
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<tr>
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<td>53%</td>
<td>$418</td>
<td>$414</td>
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<tr>
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<td>$434</td>
<td>$382</td>
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<tr>
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<td>178</td>
<td>63%</td>
<td>$304</td>
<td>$222</td>
<td>1.47 : 1</td>
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of trend days I look for other ways to define price action. The Doji Line and NR day are excellent additions to previous explanations of cause. These little-known market concepts give sound justification for attempting to integrate new information into your trading approach. An open mind and an understanding of all available market concepts can only help the trader. As you can see by the test results Doji Lines and a defined NR are logical integrations of such market concepts.
DOJI AND ORB

PURPOSE: To test for profitability of an ORB trade after a Doji Day.

DOJI: Defined as a day when the open and the closing price are approximately the same.

ORB: A trade taken with entry at a pre-determined level above or below the open.

TABLE A: Displays the results of these tests. The information provided within the Table is as follows:
1) The maximum difference between the open and close on the Doji Day.
2) The entry level above or below the open.
3) Whether the trade was a Sell (S) or Buy (B). This is determined by Gross Profits.
4) Number of trades throughout the test period.
5) Percentage of profitable trades.
6) Average of Winning Trades and Average of Losing Trades.
7) The ratio between the Average Win and Average Loss.
8) Gross Profits, Slippage and commission were not included.

TEST DATES:
- Bonds: 1978-1986

CONCLUSION: Percentages definitely suggest trending is taking place after a Doji Day. The amount of trades in each test increases the significance of the percentages and provides a reliable addition to market judgement.

APPLICATION: Observe Intermediate Trend. If the ORB the day after a Doji is in the direction of the trend, follow the trade systematically. If the ORB is counter trend then wait for a counter move to enter a trade. In general, do not fade price action off the open as aggressively as on a normal day.
<table>
<thead>
<tr>
<th></th>
<th>Date</th>
<th># Traded</th>
<th># Profit</th>
<th>High</th>
<th>Low</th>
<th>W/L Ratio</th>
<th>Gains/Losses</th>
<th>Outcomes Profit</th>
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</thead>
<tbody>
<tr>
<td>BONDS</td>
<td>Open + 10 ticks</td>
<td>6</td>
<td>110</td>
<td>$276</td>
<td>$383</td>
<td>0.38:1</td>
<td>9,780</td>
<td>9,780</td>
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<tr>
<td>5 PT.</td>
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<td>$311</td>
<td>$289</td>
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<tr>
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<td>$262</td>
<td>$263</td>
<td>1.48:1</td>
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<tr>
<td>Open + 10 ticks</td>
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**Diagram:** Doji and ORB. On Day 2 the market forms a Doji. A Doji is defined as a day when the open and the close are approximately the same. On Day 1 a trade is taken in the direction of the initial move off the open (ORB) and exited on the close. Table A reflects the results of this type of action.
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NR 4

A trade taken at a predetermined amount above or below the open of a given day is called an Opening Range Breakout. This report covers trades of this sort on the day following an NR 4 pattern. NR 4 is defined as a day with a daily range that is narrower than the previous three days daily ranges compared individually. Diagram A and B demonstrates the NR 4 and the Opening Range Breakout technique implemented on the day following the NR 4. NR 4's occur in both diagrams on Day 2 with ORB's following on Day 1.

As in previous studies the hypothesis is that the NR 4 tends to precede trend day activity and consequently successful Opening Range Breakouts. The Table titled Opening Range Breakout (NR 4) tests this hypothesis (Table A). It displays results for four markets during varying time periods. There are four tests per market, with the only difference between them the point of entry above or below the open. After you have familiarized yourself with ORB in the Market Concepts and Definitions section, you should find this to be self-explanatory. Trades were assumed to be entered on stop at the indicated level with exit on the same day's closing.

A chart labeled NR 4 (October '88 Cattle) is included to display the NR 4. The day's action following the NR 4 and the position of the open of that day relative to the high or low is instructive. NR4's are displayed on the days indicated by letters.

The tests on Table A were consistent throughout for all the markets. No tests exceeded 70%. All tests but two show 60% or better. The best results occur in the Bean market. Cattle shows surprising success on entry 25 points off the open in either direction. It has been my observation that the Cattle is not as reliable as the other markets with this technique.

The number of trades was high indicating the frequency of the pattern. This pattern and a resulting move off the open appears on average once in every 8-10 market days. The win/loss ratio is not that good. Gross profits were high because of the frequency of the pattern.

The comparison of NR 4 with any day shows a general increase in reliability for ORB after the NR 4. This comparison is demonstrated in Table B. In 15 of 16 comparisons the NR 4 showed a higher percentage of winning trades than the control group. The only exception was a buy 50 points above the open in the Cattle market. In that case, Cattle tested 63% after an NR 4 and 65% on any day. This is very strong evidence that NR 4's have some immediate relationship with trending action. With results as consistent as this it is safe to attribute cause of trending to the NR 4. Obviously this is not an exclusive
attribute and other patterns have been indicated to have a causal effect.

The general principle that is appearing again and again throughout the testing is contraction/expansion. There is a relationship between any narrow, directionless day with trending action on the following day. If one observes a bar chart it becomes apparent that this contraction occurs almost always just before a trend move. There are times when a trend move takes place without contraction. For instance, in the case of a 2-3 day run but in most cases the first day out in a run is usually preceded by a noticeable contraction.

A word of warning about the tests. Gross profits are not supported of system trades and when commission and slippage is added profits are reduced dramatically. My intention is not to provide a close-end system. I intend only to define the market's nature using these elementary statistical techniques. If a high percentage system (75%) is found with a win/loss ratio of over 2 : 1, a mechanical trade can be considered.
### Opening Range Breakout (NR 4)

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<td>402</td>
<td>406</td>
<td>.98 : 1</td>
<td>19,779</td>
</tr>
</tbody>
</table>

| S&P 87-88 |
| Open Plus 160 Pts. | 145        | 62      | 21,093   | 21,021    | 1.07 : 1       | 42,234       |
| Open Plus 80 Pts.  | 233        | 67      | 1,065    | 568       | 1.22 : 1       | 84,886       |
| Open Minus 00 Pts. | 231        | 59      | 790      | 961       | .82 : 1        | 16,195       |
| Open Minus 160 Pts. | 140       | 61      | 750      | 1,116     | .67 : 1        | 2,295        |

| Beans 75-79 |
| Open Plus 10 Cents | 204        | 62      | 3301     | 5458      | .70 : 1        | 4,712        |
| Open Plus 8 Cents  | 418        | 66      | 276      | 275       | .84 : 1        | 22,025       |
| Open Minus 5 Cents | 400        | 63      | 417      | 313       | 1.33 : 1       | 56,956       |
| Open Minus 10 Cents| 183        | 68      | 440      | 294       | 1.54 : 1       | 40,406       |

| Cattle 70-78 |
| Open Plus 50 Pts. | 126        | 63      | 5140     | 1172      | 1.07 : 1       | 17,948       |
| Open Plus 20 Pts. | 606        | 64      | 164      | 259       | 1.09 : 1       | 24,192       |
| Open Minus 25 Pts. | 608       | 60      | 199      | 141       | 1.13 : 1       | 22,702       |
| Open Minus 50 Pts. | 113        | 64      | 181      | 145       | 1.23 : 1       | 14,184       |

**NR 4:** The narrowest daily range relative to the previous 3 day's daily ranges compared individually.

### Diagram A

An NR4 (2) with an Opening Range Breakout up (1). After the NR4 on Day 2 the market opens on Day 3 and rally's a predetermined amount above the down. A buy is made on a stop at the predetermined level with an exit on the close of Day 1. The results are shown in the table provided.

### Diagram B

An NR4 (2) with an Opening Range Breakout down (1). After the NR4 on Day 2 the market opens on Day 3 and declines a predetermined amount below the down. A sell is made on a stop at the predetermined level with an exit on the close of Day 1.
## Opening Range Breakout

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<th>Avg Loss</th>
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<td>Wheat 70-89</td>
<td>Open +12 1/2 Cents</td>
<td>B</td>
<td>447</td>
<td>62</td>
<td>176</td>
<td>194</td>
<td>14010</td>
</tr>
<tr>
<td></td>
<td>Open +11 1/4 Cents</td>
<td>B</td>
<td>678</td>
<td>59</td>
<td>172</td>
<td>170</td>
<td>18591</td>
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<tr>
<td></td>
<td>Open +11 1/4 Cents</td>
<td>S</td>
<td>654</td>
<td>55</td>
<td>195</td>
<td>187</td>
<td>18322</td>
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<tr>
<td></td>
<td>Open -12 1/2 Cents</td>
<td>S</td>
<td>427</td>
<td>58</td>
<td>206</td>
<td>153</td>
<td>33381</td>
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</tbody>
</table>
### Opening Range Breakout

**Comparison between ORR without pattern and after AN. NR. 4**

<table>
<thead>
<tr>
<th></th>
<th>% on Any Day</th>
<th>% After NR. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bonds</strong> 78-88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPEN PLUS 16 TICS</td>
<td>60%</td>
<td>64%</td>
</tr>
<tr>
<td>OPEN PLUS 8 TICS</td>
<td>55%</td>
<td>57%</td>
</tr>
<tr>
<td>OPEN MINUS 8 TICS</td>
<td>50%</td>
<td>59%</td>
</tr>
<tr>
<td>OPEN MINUS 16 TICS</td>
<td>56%</td>
<td>61%</td>
</tr>
</tbody>
</table>

| **S&P 500 82-88** |              |               |
| OPEN PLUS 150 PTS. | 58%          | 62%           |
| OPEN PLUS 80 PTS.  | 55%          | 57%           |
| OPEN MINUS 80 PTS. | 49%          | 59%           |
| OPEN MINUS 160 PTS. | 49%         | 61%           |

| **Beans 70-88** |              |               |
| OPEN PLUS 10 CENTS | 60%          | 62%           |
| OPEN PLUS 5 CENTS  | 56%          | 66%           |
| OPEN MINUS 5 CENTS | 58%          | 63%           |
| OPEN MINUS 10 CENTS | 63%         | 68%           |

| **Cattle 70-88** |              |               |
| OPEN PLUS 50 PTS. | 65%          | 63%           |
| OPEN PLUS 25 PTS.  | 58%          | 61%           |
| OPEN MINUS 25 PTS. | 68%          | 60%           |
| OPEN MINUS 50 PTS. | 63%          | 64%           |
DOJI AND NR 4 WITH ORB

PURPOSE: To test for profitability of an ORB trade after a Doji/NR 4 Day.

DOJI: A day when the open and the closing price are approximately the same.

NR 4: A day with a narrower daily range than any of the previous 3 day's daily ranges.

ORB: A trade taken with entry at a predetermined level above or below the open.

TABLE A: Displays the results of these tests. The information provided is as follows:
1) The maximum difference between the open and close on the Doji Day.
2) The entry level above or below the open.
3) Whether the trade was a Sell (S) or Buy (B). This is determined by Gross Profits.
4) Number of trades throughout the test period.
5) Percentage of profitable trades.
6) Average of Winning Trades and Average of Losing Trades.
7) The ratio between the Average Win and Average Loss.
8) Gross Profits, Slippage and commission were not included.

TEST DATES: Bonds: 1978-1986

CONCLUSION: Percentages definitely suggest trending is taking place after a Doji/NR 4 Day. The amount of trades in each test increases the significance of the percentages and provides a reliable addition to market judgement.

APPLICATION: Observe Intermediate Trend. If the ORB the day after a Doji is in the direction of the trend, follow the trade systematically. If the ORB is counter trend then wait for a counter move to enter a trade. In general, do not fade price action off the open as aggressively as on a normal day.
### A.

#### DOJI AND NR4 WITH OPENING RANGE BREAKOUT

<table>
<thead>
<tr>
<th></th>
<th>R/S</th>
<th>STRATEGY</th>
<th>PROFIT</th>
<th>AVG.WIN</th>
<th>AVG.LOS</th>
<th>W/L RATIO</th>
<th>ODDS RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOND</td>
<td>OPEN + 16 TICS</td>
<td>B</td>
<td>46</td>
<td>65%</td>
<td>8275</td>
<td>3247</td>
<td>1.02 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN + 8 TICS</td>
<td>B</td>
<td>34</td>
<td>66%</td>
<td>289</td>
<td>358</td>
<td>.81 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 8 TICS</td>
<td>S</td>
<td>115</td>
<td>65%</td>
<td>382</td>
<td>233</td>
<td>1.30 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 16 TICS</td>
<td>S</td>
<td>28</td>
<td>72%</td>
<td>337</td>
<td>373</td>
<td>.90 : 1</td>
</tr>
<tr>
<td>RAP</td>
<td>OPEN + 100 PTS.</td>
<td>B</td>
<td>02</td>
<td>55%</td>
<td>545</td>
<td>730</td>
<td>.75 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN + 50 PTS.</td>
<td>B</td>
<td>105</td>
<td>58%</td>
<td>673</td>
<td>630</td>
<td>1.07 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 50 PTS.</td>
<td>S</td>
<td>111</td>
<td>63%</td>
<td>604</td>
<td>432</td>
<td>1.50 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 150 PTS.</td>
<td>S</td>
<td>66</td>
<td>67%</td>
<td>582</td>
<td>444</td>
<td>1.31 : 1</td>
</tr>
<tr>
<td>SRENS</td>
<td>OPEN + 10 CENTS</td>
<td>B</td>
<td>127</td>
<td>66%</td>
<td>220</td>
<td>355</td>
<td>.65 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN + 5 CENTS</td>
<td>B</td>
<td>231</td>
<td>69%</td>
<td>278</td>
<td>311</td>
<td>.87 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 5 CENTS</td>
<td>S</td>
<td>211</td>
<td>61%</td>
<td>380</td>
<td>269</td>
<td>1.41 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 10 CENTS</td>
<td>S</td>
<td>81</td>
<td>68%</td>
<td>407</td>
<td>381</td>
<td>1.08 : 1</td>
</tr>
<tr>
<td>CATTLE</td>
<td>OPEN + 10 PTS.</td>
<td>B</td>
<td>209</td>
<td>67%</td>
<td>121</td>
<td>119</td>
<td>1.02 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN + 5 PTS.</td>
<td>B</td>
<td>404</td>
<td>63%</td>
<td>140</td>
<td>105</td>
<td>.70 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 5 PTS.</td>
<td>S</td>
<td>397</td>
<td>60%</td>
<td>149</td>
<td>128</td>
<td>1.16 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 10 PTS.</td>
<td>S</td>
<td>217</td>
<td>63%</td>
<td>143</td>
<td>145</td>
<td>.99 : 1</td>
</tr>
</tbody>
</table>

#### DOJI AND NR4 WITH ORB

**Diagram:** Doji/NR 4 and ORB. On Day 1 the market forms a Doji and the narrowest day in 4 days. Day 1 is defined as a day when the open and close are approximately the same. NR 4 is defined as a day narrower than any of the previous 3 days. On Day 1, a trade is taken in the direction of the initial move off the open (ORB) and exited on the close. Table A reflects the results of this type of action.
<table>
<thead>
<tr>
<th></th>
<th>OPEN + 8 TICS</th>
<th>OPEN + 4 TICS</th>
<th>OPEN - 4 TICS</th>
<th>OPEN - 8 TICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EURCOCOLLAR</strong></td>
<td>19</td>
<td>34</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td><strong>3-4-49</strong></td>
<td>58</td>
<td>56</td>
<td>58</td>
<td>53</td>
</tr>
<tr>
<td><strong>J-YEN</strong></td>
<td>117</td>
<td>115</td>
<td>115</td>
<td>56</td>
</tr>
<tr>
<td><strong>75-89</strong></td>
<td>56</td>
<td>46</td>
<td>175</td>
<td>123</td>
</tr>
<tr>
<td><strong>SWISS FRANC</strong></td>
<td>61</td>
<td>61</td>
<td>364</td>
<td>236</td>
</tr>
<tr>
<td><strong>75-89</strong></td>
<td>102</td>
<td>103</td>
<td>292</td>
<td>236</td>
</tr>
<tr>
<td><strong>D. MARK</strong></td>
<td>63</td>
<td>48</td>
<td>170</td>
<td>148</td>
</tr>
<tr>
<td><strong>75-89</strong></td>
<td>102</td>
<td>94</td>
<td>231</td>
<td>190</td>
</tr>
<tr>
<td><strong>GOLD</strong></td>
<td>81</td>
<td>60</td>
<td>414</td>
<td>433</td>
</tr>
<tr>
<td><strong>75-89</strong></td>
<td>100</td>
<td>103</td>
<td>362</td>
<td>397</td>
</tr>
<tr>
<td><strong>CRUDE OIL</strong></td>
<td>87</td>
<td>63</td>
<td>262</td>
<td>295</td>
</tr>
<tr>
<td><strong>85-89</strong></td>
<td>27</td>
<td>27</td>
<td>128</td>
<td>152</td>
</tr>
<tr>
<td><strong>CORN</strong></td>
<td>66</td>
<td>67</td>
<td>124</td>
<td>133</td>
</tr>
<tr>
<td><strong>70-89</strong></td>
<td>122</td>
<td>68</td>
<td>168</td>
<td>133</td>
</tr>
<tr>
<td><strong>HAY#</strong></td>
<td>123</td>
<td>108</td>
<td>195</td>
<td>154</td>
</tr>
<tr>
<td><strong>70-89</strong></td>
<td>123</td>
<td>108</td>
<td>195</td>
<td>154</td>
</tr>
</tbody>
</table>
INSIDE DAY/NR4 (IDNR4)

In the report entitled Opening Range Breakout IV, studies were conducted on an Opening Range Breakout after an Inside Day. In the following report, Opening Range Breakout V, a study was done on an Opening Range Breakout after an NR4 pattern. Both proved conclusively to be predecessors of trend-type action. In Opening Range Breakout I, the first report on the subject, mention was made of the ID/NR4 pattern. In this report I address the ID/NR4 pattern.

As in previous reports the hypothesis is that an ID/NR4 tends to precede Trend Day activity. Trend Day activity implies that a successful ORB has occurred. The assumption was made that the two patterns combined, which were both successful individually, would tend to produce even a clearer indication.

The above assumptions were examined several ways. First, by a direct test of the pattern ID/NR4 with various entry points on either side of the open. Results are shown in Table A. Secondly, a comparison of the percentage of winning trades between the ID/NR4, ID, NR4 and on any day where an ORB was taken. This is exhibited in Table B.

To demonstrate the pattern and how it may appear on a vertical bar chart Diagram A and B are provided below Table A. Also, a Chart marked ID/NR4 is provided displaying 9 actual days of this type and the resulting price action.

Table A provides conclusive evidence that the ID/NR4 has a causal effect on trending action. Note the percentage profits in the Bond market 8 and 16 ticks above the open. An extraordinary win/loss ratio is shown for an entry 16 ticks above the open of 2.34 to 1. The Soybean market in both directions and the Cattle market on the sell side also displayed high probability results.

Table B provides more evidence that the ID/NR4 precedes trending action. In 15 of 16 tests the ID/NR4 showed a higher probability of success on an ORB than a similar ORB taken on any day. This suggests that the more defined the congestion area the better the chances of Trend Day activity the following day. The assumption that the ID/NR4 would provide a better indication of Trend Day activity than any of the patterns individually also was verified. Eight of sixteen ORB's after the ID/NR4 showed a higher probability
of success than any of the three other groups tested. Again, this would suggest that the contraction/expansion principle is valid.

Some system trades can be taken given the statistics provided. In particular the Bond and the Bean markets provide high probability systems trades. The best results are achieved when mixing the knowledge gained about the market's nature from these tests with daily historical bias as provided by the previous several days' closings. A high percentage 5-day pattern ending with an ID/NR4 is an ideal entry point.
## MARKET ANALYTICS

### OPENING RANGE BREAKOUT

<table>
<thead>
<tr>
<th></th>
<th>NO. TRADES</th>
<th>% PROFIT</th>
<th>AVG.WIN</th>
<th>AVG.LOSS</th>
<th>WIN-LOSS RATIO</th>
<th>GROSS PROFIT</th>
</tr>
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<tbody>
<tr>
<td>BEEF</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPEN PLUS 16 TICS</td>
<td>31</td>
<td>81</td>
<td>3438</td>
<td>5187</td>
<td>2.14 : 1</td>
<td>59,848</td>
</tr>
<tr>
<td>78-86 OPEN PLUS 8 TICS</td>
<td>80</td>
<td>88</td>
<td>402</td>
<td>290</td>
<td>1.38 : 1</td>
<td>48,623</td>
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<tr>
<td>OPEN MINUS 8 TICS</td>
<td>97</td>
<td>83</td>
<td>314</td>
<td>274</td>
<td>0.99 : 1</td>
<td>4,979</td>
</tr>
<tr>
<td>OPEN MINUS 16 TICS</td>
<td>28</td>
<td>69</td>
<td>209</td>
<td>364</td>
<td>0.79 : 1</td>
<td>2,489</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S&amp;P</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>OPEN PLUS 160 PTS.</td>
<td>32</td>
<td>66</td>
<td>998</td>
<td>1,040</td>
<td>0.95 : 1</td>
<td>9,020</td>
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<tr>
<td>82-83 OPEN PLUS 80 PTS.</td>
<td>62</td>
<td>55</td>
<td>997</td>
<td>907</td>
<td>1.10 : 1</td>
<td>8,750</td>
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<tr>
<td>OPEN MINUS 80 PTS.</td>
<td>54</td>
<td>88</td>
<td>778</td>
<td>602</td>
<td>1.29 : 1</td>
<td>5,898</td>
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<tr>
<td>OPEN MINUS 160 PTS.</td>
<td>58</td>
<td>83</td>
<td>922</td>
<td>712</td>
<td>1.01 : 1</td>
<td>7,470</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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</tr>
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<td>REINS</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>OPEN PLUS 10 CENTS</td>
<td>30</td>
<td>69</td>
<td>411</td>
<td>227</td>
<td>1.57 : 1</td>
<td>8,040</td>
</tr>
<tr>
<td>70-85 OPEN PLUS 5 CENTS</td>
<td>12</td>
<td>71</td>
<td>304</td>
<td>267</td>
<td>1.14 : 1</td>
<td>14,288</td>
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<tr>
<td>OPEN MINUS 5 CENTS</td>
<td>64</td>
<td>65</td>
<td>342</td>
<td>328</td>
<td>1.04 : 1</td>
<td>7,812</td>
</tr>
<tr>
<td>OPEN MINUS 10 CENTS</td>
<td>27</td>
<td>78</td>
<td>338</td>
<td>420</td>
<td>0.80 : 1</td>
<td>4,250</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATTLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPEN PLUS 50 PTS.</td>
<td>60</td>
<td>58</td>
<td>137</td>
<td>114</td>
<td>1.18 : 1</td>
<td>1,200</td>
</tr>
<tr>
<td>73-80 OPEN PLUS 25 PTS.</td>
<td>116</td>
<td>83</td>
<td>139</td>
<td>148</td>
<td>0.96 : 1</td>
<td>3,505</td>
</tr>
<tr>
<td>OPEN MINUS 25 PTS.</td>
<td>109</td>
<td>61</td>
<td>164</td>
<td>136</td>
<td>1.20 : 1</td>
<td>4,956</td>
</tr>
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<td>OPEN MINUS 50 PTS.</td>
<td>91</td>
<td>70</td>
<td>142</td>
<td>138</td>
<td>1.08 : 1</td>
<td>2,373</td>
</tr>
</tbody>
</table>

![Diagram A](image1)

**Diagram A:** ID/NRA with an Opening Range Breakout up. After the ID/NRA on Day 2 the market opens on Day 1 and rallies a predetermined amount above the open. A buy is made on a stop at the predetermined level with an exit on the close of Day 1. The results are shown in the table provided.

![Diagram B](image2)

**Diagram B:** ID/NRA with an Opening Range Breakout down. After the ID/NRA on Day 1 the market opens on Day 1 and declines a predetermined amount below the open. A sell is made on a stop at the predetermined level with an exit on the close of Day 1.
<table>
<thead>
<tr>
<th></th>
<th>R/S</th>
<th># TRADES</th>
<th>% PROFIT</th>
<th>AVG WIN</th>
<th>AVG LOSS</th>
<th>GROSS PROFIT</th>
</tr>
</thead>
</table>
| **EURODOLLAR**  
84-85 | 16  | 69%      | 134      | 56.4   | 1245     |              |
| OPEN - 4 TICS  
84-85 | 29  | 68%      | 153      | 60.3   | 2134     |              |
| OPEN - 8 TICS  
84-85 | 21  | 57%      | 154      | 56.4   | 1245     |              |
| OPEN - 16 TICS  
84-85 | 8   | 50%      | 262      | 142    | 542      |              |
| **S. FRANC**  
75-89 | 48  | 73%      | 173      | 167.5  | 2675     |              |
| OPEN + 40 TICS  
75-89 | 90  | 52%      | 231      | 234    | 812      |              |
| OPEN - 20 TICS  
75-89 | 87  | 49%      | 262      | 221    | 1612     |              |
| OPEN - 40 TICS  
75-89 | 49  | 51%      | 341      | 244    | 2682     |              |
| **D. MARK**  
78-89 | 91  | 52%      | 148      | 97     | 1937     |              |
| OPEN + 20 TICS  
78-89 | 90  | 52%      | 172      | 138    | 4312     |              |
| OPEN - 20 TICS  
78-89 | 50  | 55%      | 195      | 175    | 2362     |              |
| OPEN - 40 TICS  
78-89 | 53  | 63%      | 176      | 116    | 2912     |              |
| **OIL**  
83-89 | 43  | 63%      | 288      | 233    | 1299     |              |
| OPEN + 20 TICS  
83-89 | 22  | 55%      | 240      | 235    | 1329     |              |
| OPEN - 20 TICS  
83-89 | 96  | 54%      | 390      | 215    | 6830     |              |
| OPEN - 40 TICS  
83-89 | 47  | 56%      | 404      | 370    | 6630     |              |
| **CRUDE OIL**  
88-89 | 18  | 61%      | 200      | 142    | 1209     |              |
| OPEN + 10 TICS  
88-89 | 36  | 28%      | 179      | 78     | 2039     |              |
| OPEN - 10 TICS  
88-89 | 38  | 46%      | 258      | 139    | 1259     |              |
| OPEN - 20 TICS  
88-89 | 14  | 43%      | 133      | 98     | 310      |              |
| **COEN**  
70-89 | 81  | 56%      | 78       | 96     | 18       |              |
| OPEN +3 1/2 CENTS  
70-89 | 78  | 58%      | 82       | 78     | 1180     |              |
| OPEN -1 1/4 CENTS  
70-89 | 76  | 50%      | 81       | 58     | 1633     |              |
| OPEN -2 1/4 CENTS  
70-89 | 34  | 56%      | 87       | 45     | 325      |              |
| **WHEAT**  
78-89 | 101 | 60%      | 151      | 166    | 4012     |              |
| OPEN +2 1/2 CENTS  
78-89 | 125 | 56%      | 175      | 167    | 4200     |              |
| OPEN +2 1/4 CENTS  
78-89 | 150 | 50%      | 174      | 169    | 1625     |              |
| OPEN -2 1/2 CENTS  
78-89 | 96  | 50%      | 178      | 167    | 1978     |              |
Inside Days: Nine Inside Days with the narrowest range relative to the range of each of the previous three days are marked on the above chart. This was during an unusually strong period in the Bond market (1986). Results for Opening Range Breakouts to the upside after ID/NR's were as high as 85% with excellent win/loss ratios. Underline the size of daily ranges the day following the ID/NR and the tendency for the open to be very close to the low of the session. This is especially evident in letters a, e, f, g, and i.
<table>
<thead>
<tr>
<th></th>
<th>OPEN PLUS 16 TICS</th>
<th>OPEN PLUS 8 TICS</th>
<th>OPEN MINUS 8 TICS</th>
<th>OPEN MINUS 16 TICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BONDS (78-86)</td>
<td>60%</td>
<td>55%</td>
<td>56%</td>
<td>56%</td>
</tr>
<tr>
<td></td>
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<td>62%</td>
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</tr>
<tr>
<td></td>
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<td>63%</td>
<td>64%</td>
<td>65%</td>
</tr>
<tr>
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<td>81%</td>
<td>80%</td>
<td>63%</td>
<td>69%</td>
</tr>
<tr>
<td>S&amp;P (82-88)</td>
<td>58%</td>
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<td>49%</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
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<td>61%</td>
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<td>56%</td>
<td>53%</td>
</tr>
<tr>
<td>SOYBEANS (70-82)</td>
<td>60%</td>
<td>56%</td>
<td>58%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>70%</td>
<td>67%</td>
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</tr>
<tr>
<td></td>
<td>62%</td>
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<td>78%</td>
</tr>
<tr>
<td></td>
<td>69%</td>
<td>71%</td>
<td>66%</td>
<td>70%</td>
</tr>
<tr>
<td>CATTLE (70-88)</td>
<td>65%</td>
<td>58%</td>
<td>58%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>55%</td>
<td>55%</td>
<td>60%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
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<td>60%</td>
<td>64%</td>
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<tr>
<td></td>
<td>55%</td>
<td>63%</td>
<td>61%</td>
<td>70%</td>
</tr>
</tbody>
</table>
The general purpose of this report is to test the market principle called contraction/expansion. More specifically this report will test the price pattern (called NR 7) and provide information on high probability mechanical techniques that can be applied to trading.

The contraction/expansion principle is defined as the interchange within the market between the phases of motion and rest. In other words, the interchange between congestion (contraction) and trend (expansion).

NR 7 is defined as a daily range that is narrower than the previous 6 day's daily ranges when compared individually. The contraction/expansion principle and NR 7 are tested by taking a trade on an Opening Range Breakout (ORB) the day after an NR 7. Opening Range Breakout is a trade taken at a predetermined level above or below the open.

The chart on the following page labelled NR 7/ORB demonstrates the test. Day 2 is narrower than any of the previous 6 day's. On day 1 a trade is taken in the direction of the initial move off the open (ORB) and exited on the close. Table A provides the results of these tests: 1) The entry level above or below the open. 2) Whether the trade was a buy or sell. This is determined by Gross Profits. 3) Number of trades throughout the test period. 4) Percentage of profitable trades. 5) Average of Winning Trades and Average of Losing Trades. 6) The ratio between the Average Win and Average Loss. 7) Gross Profits: Slippage and commission were not included. Test dates were Bonds, 1973-1986, S&P, 1982-1988, Beans, 1970-1988 and Cattle, 1970-1988.

Two observations can be made about these tests. First, all trades taken on a move above the open showed profitable buys and all trades taken on a move below the open were profitable sales. Second, all percentages were higher for the ORB after an NR7 than an ORB taken on any day (Table B). These two observations suggest that the contraction/expansion principle is valid and that expansion is in fact taking place after the one day contraction (NR 7). ORB provides information on the direction of the expansion. The percentages also suggest that trending is taking place.

Results show some profitable mechanical techniques. It should be noted that results can be
### Opening Range Breakout

<table>
<thead>
<tr>
<th></th>
<th>81</th>
<th>744</th>
<th>$439</th>
<th>$373</th>
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<tr>
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<td>OPEN + 16 Ticket</td>
<td>94</td>
<td>676</td>
<td>381</td>
<td>284</td>
<td>0.50 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN + 8 Ticket</td>
<td>124</td>
<td>632</td>
<td>414</td>
<td>429</td>
<td>0.96 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 8 Ticket</td>
<td>153</td>
<td>623</td>
<td>414</td>
<td>429</td>
<td>0.96 : 1</td>
</tr>
<tr>
<td></td>
<td>OPEN - 16 Ticket</td>
<td>98</td>
<td>694</td>
<td>372</td>
<td>394</td>
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<td>Gap</td>
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<td>195</td>
<td>662</td>
<td>284</td>
<td>287</td>
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<td></td>
<td>OPEN + 60 Pts</td>
<td>239</td>
<td>674</td>
<td>284</td>
<td>306</td>
<td>0.33 : 1</td>
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<tr>
<td></td>
<td>OPEN - 60 Pts</td>
<td>227</td>
<td>623</td>
<td>417</td>
<td>352</td>
<td>1.24 : 1</td>
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<tr>
<td></td>
<td>OPEN - 160 Pts</td>
<td>94</td>
<td>604</td>
<td>716</td>
<td>647</td>
<td>1.10 : 1</td>
</tr>
</tbody>
</table>

### E

**NR7 ORB**

```
8 7 6 5 4 3 2 1
```

**NR 7:** Is a daily range that is narrower than the previous six days compared individually.
<table>
<thead>
<tr>
<th>Currency</th>
<th>84-85</th>
<th>75-85</th>
<th>75-89</th>
<th>83-89</th>
<th>79-89</th>
<th>79-88</th>
<th>79-87</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open + 8 Tics</td>
<td>B</td>
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<td>72</td>
<td>146</td>
<td>121</td>
<td>2274</td>
<td></td>
</tr>
<tr>
<td>Open + 4 Tics</td>
<td>B</td>
<td>96</td>
<td>60</td>
<td>168</td>
<td>166</td>
<td>4672</td>
<td></td>
</tr>
<tr>
<td>Open - 4 Tics</td>
<td>S</td>
<td>92</td>
<td>58</td>
<td>159</td>
<td>121</td>
<td>472</td>
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<tr>
<td>Open - 8 Tics</td>
<td>S</td>
<td>42</td>
<td>56</td>
<td>175</td>
<td>127</td>
<td>249</td>
<td></td>
</tr>
<tr>
<td>Open + 20 Tics</td>
<td>B</td>
<td>103</td>
<td>50</td>
<td>219</td>
<td>192</td>
<td>1222</td>
<td></td>
</tr>
<tr>
<td>Open + 10 Tics</td>
<td>B</td>
<td>172</td>
<td>58</td>
<td>181</td>
<td>132</td>
<td>1350</td>
<td></td>
</tr>
<tr>
<td>Open - 10 Tics</td>
<td>S</td>
<td>201</td>
<td>60</td>
<td>190</td>
<td>125</td>
<td>1106</td>
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<tr>
<td>Open - 20 Tics</td>
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<td>108</td>
<td>50</td>
<td>210</td>
<td>98</td>
<td>528</td>
<td></td>
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<tr>
<td>Open + 40 Tics</td>
<td>B</td>
<td>115</td>
<td>70</td>
<td>241</td>
<td>194</td>
<td>2300</td>
<td></td>
</tr>
<tr>
<td>Open + 20 Tics</td>
<td>B</td>
<td>207</td>
<td>54</td>
<td>240</td>
<td>756</td>
<td>6456</td>
<td></td>
</tr>
<tr>
<td>Open - 20 Tics</td>
<td>S</td>
<td>210</td>
<td>55</td>
<td>227</td>
<td>156</td>
<td>1812</td>
<td></td>
</tr>
<tr>
<td>Open - 40 Tics</td>
<td>B</td>
<td>123</td>
<td>50</td>
<td>277</td>
<td>254</td>
<td>1849</td>
<td></td>
</tr>
<tr>
<td>Open + 20 Tics</td>
<td>B</td>
<td>107</td>
<td>61</td>
<td>224</td>
<td>128</td>
<td>10624</td>
<td></td>
</tr>
<tr>
<td>Open + 10 Tics</td>
<td>B</td>
<td>242</td>
<td>52</td>
<td>216</td>
<td>151</td>
<td>9350</td>
<td></td>
</tr>
<tr>
<td>Open - 10 Tics</td>
<td>S</td>
<td>226</td>
<td>58</td>
<td>177</td>
<td>129</td>
<td>8487</td>
<td></td>
</tr>
<tr>
<td>Open - 20 Tics</td>
<td>S</td>
<td>118</td>
<td>50</td>
<td>187</td>
<td>170</td>
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<td>Open + 40 Tics</td>
<td>B</td>
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<td>56</td>
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<tr>
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<td>208</td>
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<td>355</td>
<td>220</td>
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<td>Open - 20 Tics</td>
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<td>54</td>
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<tr>
<td>Open - 40 Tics</td>
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<td>117</td>
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<td>439</td>
<td>336</td>
<td>13440</td>
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<td>B</td>
<td>83</td>
<td>62</td>
<td>166</td>
<td>212</td>
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</tr>
<tr>
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<td>110</td>
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<td>175</td>
<td>173</td>
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<td>65</td>
<td>176</td>
<td>140</td>
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<tr>
<td>Open - 20 Tics</td>
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<td>63</td>
<td>263</td>
<td>80</td>
<td>4829</td>
<td></td>
</tr>
<tr>
<td>Open + 2 1/2 Cents</td>
<td>B</td>
<td>139</td>
<td>66</td>
<td>93</td>
<td>121</td>
<td>2624</td>
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<td>Open + 1 1/4 Cents</td>
<td>B</td>
<td>255</td>
<td>63</td>
<td>100</td>
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<td>5380</td>
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<tr>
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<td>S</td>
<td>221</td>
<td>62</td>
<td>122</td>
<td>120</td>
<td>9550</td>
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<tr>
<td>Open - 2 1/4 Cents</td>
<td>S</td>
<td>128</td>
<td>67</td>
<td>140</td>
<td>71</td>
<td>6320</td>
<td></td>
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<tr>
<td>Open + 2 1/2 Cents</td>
<td>B</td>
<td>240</td>
<td>65</td>
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<td>8672</td>
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</tr>
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<td>B</td>
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<td>174</td>
<td>190</td>
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<tr>
<td>Open - 1 1/4 Cents</td>
<td>S</td>
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<td>152</td>
<td>12900</td>
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<tr>
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<td>S</td>
<td>230</td>
<td>60</td>
<td>210</td>
<td>137</td>
<td>12987</td>
<td></td>
</tr>
</tbody>
</table>
improved dramatically on entries on counter moves after the initial move off the open. One example of this is an entry on a 1/3 retracement of the 80 or 160 point move off the open in the S&P market.

**TABLE B**

**OPENING RANGE BREAKOUT, % PROFITABLE TRADES**

<table>
<thead>
<tr>
<th></th>
<th>ON ANY DAY</th>
<th>AFTER AN NR 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BONDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open plus 16 tics</td>
<td>60%</td>
<td>74%</td>
</tr>
<tr>
<td>Open plus 8 tics</td>
<td>55</td>
<td>64</td>
</tr>
<tr>
<td>Open minus 8 tics</td>
<td>56</td>
<td>62</td>
</tr>
<tr>
<td>Open minus 16 tics</td>
<td>56</td>
<td>64</td>
</tr>
<tr>
<td><strong>S&amp;P</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open plus 160 points</td>
<td>58</td>
<td>67</td>
</tr>
<tr>
<td>Open plus 80 points</td>
<td>55</td>
<td>61</td>
</tr>
<tr>
<td>Open minus 80 points</td>
<td>49</td>
<td>62</td>
</tr>
<tr>
<td>Open minus 160 points</td>
<td>49</td>
<td>60</td>
</tr>
<tr>
<td><strong>BEANS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open plus 10 cents</td>
<td>60</td>
<td>66</td>
</tr>
<tr>
<td>Open plus 5 cents</td>
<td>56</td>
<td>67</td>
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<tr>
<td>Open minus 5 cents</td>
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<td>63</td>
</tr>
<tr>
<td>Open minus 10 cents</td>
<td>63</td>
<td>71</td>
</tr>
<tr>
<td><strong>CATTLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open plus 50 points</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>Open plus 25 points</td>
<td>56</td>
<td>59</td>
</tr>
<tr>
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<td>51</td>
</tr>
<tr>
<td>Open minus 50 points</td>
<td>63</td>
<td>61</td>
</tr>
</tbody>
</table>
With the unit of information called the vertical bar the door to the development of market concepts is opened. In this report I introduce a price pattern that I have developed called Two Bar NR (2 Bar NR)*. This pattern is an example of the ability to formulate market concepts with the aid of the vertical bar chart. The vertical bar is a unit of information that subsumes several pieces of information like the open, high, low, close and range of any time unit under consideration. The vertical bar serves to reduce these five pieces of information into an integrated single unit of information that is easily grasped and recognized. The comparison of vertical bars with each other is the next step in the cognitive process and is the beginning of the formation of a market concept. A market concept is defined as a mental integration of two or more units of information possessing the same distinguishing characteristics (vertical bar), with their particular measurements omitted. In this case, 2 Bar NR is an integration of two vertical bars with a relative limitation on its measurement when compared to other 2 Bar units. Specifically, 2 Bar NR is defined as the narrowest two day range relative to any two day range within the previous twenty market days.

Market concepts represent condensations of market knowledge which make further study possible. 2 Bar NR represents a condensation of the market concept called congestion or contraction. Contraction is subsumed within the market principle of contraction/expansion which states that the market, having a specific nature, is constantly changing from a period of movement to a period of rest and back to a period of movement. This interchange between the phases of motion and rest are constantly taking place with one phase directly responsible for the other's existence. 2 Bar NR represents this market principle and provides a means of quantifying contraction in any market environment. This is possible because of the open-ended nature of the concept 2 Bar NR. Because it is not dependent on a constant measurement it represents contraction in a volatile or narrow market period. In other words, contraction is a relative condition that can occur even in a volatile market.

Once a market concept is formulated it is tradable. In this study an ORB trade was taken the day after the 2 Bar NR formed. ORB is defined
as a trade taken at a predetermined amount above or below the opening range. The assumption is that with a contraction of this type trending action would follow the direction of the breakout. Another assumption was that because this pattern exhibits a more defined contraction that trending would take place over the next several days also.

Table A through H test these assumptions and confirms them. The tables illustrate 1). the amount above or below the open that the trade was initiated 2). the number of days into the trade (zero indicates an exit on the close the same day of entry, five indicates an exit on the close five days after the entry.) 3). whether the trade was a buy or a sell (this was determined by gross profits only). 4). the percentage profitability on each trade (no stops were used on the tests). 5). the number of trades. 6) the average of all winning/losing trades. 7). and Gross Profit (Gross Profit did not include commission or slippage.

A chart of Eurodollars marked 2 Bar NR displays 5 such patterns. The tendency of the market to place the high or low of the day on the open, or close to the open, is impressive. The ability to expand the daily range is also noteworthy and is a good example of the potential that exists when this pattern forms.

Several observations can be made about the results of the tests on 2 Bar NR. Of the 128 individual tests there were 32 tests that lasted from the open to the close of the same day. Eighteen of those showed the highest percentage probability of success relative to the other three in the group. The open to close trades (O) represented 25% of the total sample. This 25% accounted for 56% of the highest probability trades.

The Eurodollars, Bonds and Crude Oil displayed reasonably high percentages on 2 and 5 day trades. These three markets coincidentally also have the highest open interest and volume of all markets.

It should be clarified that although these tests are presented in a rough system format, it is not advised that they be traded as such. The purpose of all my work is to determine the markets' nature. This market concept assists me with that. When applying the 2 bar NR (or any market concept) the full context of the market must be considered. I define market context as the integration of the trend, price action, price pattern studies, and support/resistance. The primary is the trend and overrides all other particulars of market context.
2 BAR NR: Is the narrowest range from high to low of any two day period relative to any two day period within the previous 20 market days.
The idea behind this pattern originated from Wyckoff's Last point of Supply or Last point of Support. These were described by Wyckoff as periods of price action that displayed unusually narrow ranges and low volume. They occurred just after a period of accumulation or distribution and just before a mark up/mark down phase. The 2 bar NR is an attempt to quantify this type of take off point prior to a trend.

There is some similarity to Steidlmayer's ending distribution also. An ending distribution is loosely defined as a point at which the market is ready to begin a new movement. It is displayed by a loss of movement or no distribution.

It has been my observation that once the market has moved away from the open in one direction, after a 2 bar NR, it should not return to the opening price. This type of price action would disqualify the day as a trend day. Trending action is the ideal and is expected after the pattern. If a new phase is beginning, it should be obvious, and unnecessary to ask yourself if the trade was correct. You would know by the immediate profit.

The breakdown of the wave (Elliott) on a five minute chart is another means to determine a successful breakout. After the initial move off the open, which most likely will be wave 1 of a 5 wave sequence, the wave 2 correction should not retrace more than 61.8% of wave 1. If it does, the move is suspect. Also, a clear five waves in the proposed wave 1 should be seen. This would imply that at least 1 more 5 wave sequence was upcoming.

When the 2 bar NR has formed it is helpful if it is holding on an important angle of support/resistance (this includes trendlines). In fact, some of the best ORB trades occur after the market opens on an important price angle.

A trailing stop can be used with the logic of the above mentioned theories as reference points. For instance, after the initial move off the open a stop can be placed on the open. Also, after a wave one is surpassed a stop can be placed at wave 2. If an acceleration occurs in your favor a stop can be placed on the opposite side of a low volume point left by the acceleration.

When considering a position for more than one day, the next day's price action is informative. A gap in your favor is the ideal with a move off the open in the direction of the gap still better. This is a defined sign that an impulse wave is in progress.

The market has a natural tendency to move against the previous day's closing direction.
Computer tests validate this (see "Price Pattern Studies" in the book Market Analytics). The ability of the market to buck this bias is an indication of the market's condition.

The Two Bar NR assists in the development of market concepts and quantifies contraction very effectively. Results on the tests are promising and suggest that this pattern is worth integrating into a market philosophy. In future reports I will present the 3 through 8 bar NR series that I have developed.
### T. BONDS 1978-86

<table>
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<th>NO. OF DAYS IN TRADE</th>
<th>BUY/SELL</th>
<th>% PROFIT</th>
<th>NO. OF TRADES</th>
<th>AVERAGE WIN</th>
<th>AVERAGE LOSS</th>
<th>GROSS PROFITS</th>
</tr>
</thead>
<tbody>
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<td>3</td>
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<td>34</td>
<td>41343</td>
<td>31358</td>
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<td>3</td>
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<td>34</td>
<td>1103</td>
<td>1124</td>
</tr>
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<td>791</td>
<td>344</td>
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<td>432</td>
<td>605</td>
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### GOLD 1975 - 88

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THE FORMATION OF MARKET CONCEPTS: 3 Bar NR and ORB

In this report I have introduced another contraction pattern called 3 Bar NR. Three Bar NR is defined as the narrowest 3 day range relative to any 3 day in range within the previous 20 market days. Trade was assumed on a stop on either side of the opening range the day after the pattern formed (ORB). The trade had four different exit points as follows: the close of the same day, the next day close, the close 2 days out and the close 5 days out. The pattern is exhibited in the chart marked 3BarNR. The results of the tests on 9 markets are shown in table A thru I.

The 3 Bar NR is a market concept that defines a period of rest (contraction). Tests suggest that after a defined period of rest persistent trends follow (expansion). This idea is a derivative of Wyckoff's Last point of Supply and Last point of Support. The concept that I have introduced quantifies the Contraction/Expansion principle and the above Wyckoff concepts and allows for objective testing.

The psychological implications of a pattern of this type are interesting. In general, as the pattern is forming speculators are absent. In fact they tend to ignore a market that has contracted to such an extent. This is the point where the market is most ready to move and presents an explosive opportunity. It is ironic that so little initial interest is given to the move out of this pattern. It is well-trained traders that recognize these opportunities and provide the force that takes the market into a trend. I suggest that the patterns be looked at very carefully as they form in order to anticipate the upcoming action. Again the quantification of this pattern allows you to do just that.

The tests show several things 1) That there is a marked tendency for the market to trend intraday the day after the pattern has formed 2) That the overall trend of the market has an impact on the patterns ability to continue the trend 2 to 5 days after the pattern has formed. This is different from the 2 Bar NR which shows trending in the direction of the breakout regardless of the trend (chapter 2 Bar NR). 3) Each market behaves differently after this pattern forms. Some markets work better with a 3 Bar NR (a contraction of greater duration) than with a 2 Bar NR.
A practical application of the tests is as follows: Trades should be considered on an OVB just after the pattern forms and positions taken if a profit is visible on the close of the first day. The market should continue to move in the direction of the breakout for the period of the position. A move back to the pattern should not occur. If it does, the position should be re-evaluated.
3 BAR NR: is the narrowest range from high to low of any three day period relative to any three day period within the previous 20 market days.
## MARKET ANALYTICS

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### Market Analytics

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**Rents 1978 - 86**
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TWO DAY PATTERNS AND ORB WITH CONTRACTION/EXPANSION

CONTRACTION/EXPANSION

In the study titled the Contraction/Expansion Principle I presented results of tests conducted on the WS4 and WS7. These were compared to the NR4 and the NR7 patterns. All were compared to a control group that made no reference to range size. This was revealing and gave some preliminary evidence that contractions promote directional moves while expansions restrict directional moves.

2 DAY PATTERNS AND ORB

In a separate study titled 2 Day Patterns and ORB all combinations of the previous day's closing direction and the opening direction of the day of entry were tested with an ORB. This showed some clear deviations from the norm. The norm has been established as price continuation in the direction of the move off the open.

COMBINING CONTRACTION/EXPANSION WITH 2 DAY PATTERNS AND ORB

In this study I have integrated Contraction/Expansion with 2 day price patterns and ORB. By combining the two studies I hope to provide you with a better understanding of what is taking place in the market day to day. More importantly, I will present you with an application to actual trading. To do this I find it necessary to establish a definition for trend and bias. The integration of the two produces a method that can be used in conjunction with already existing market indicators. Before I can explain this method of application clearly, an explanation of the tests, tables and diagrams is called for.

RESULTING COMBINATIONS

To begin with the combination of studies incorporates the following variables: 1) The direction of yesterday's close compared to the day before yesterday's close. 2) The direction of today's open relative to yesterday's close. 3) The size of yesterday's daily range relative to either the previous day (in the case of an NR or WS), the previous 3 days (in the case of NR4 and WS4), or the previous 6 days (NR7 and WS7). 4) An entry is assumed on a move off of today's open by an indicated level, an ORB.
The above combinations result in 28 possible price patterns. These patterns are approximated in diagram (A). For example take the first pattern in the column marked NR7 in the row marked (--). This pattern shows a lower close and the narrowest day in seven days (NR7) in the second day of the pattern. This is followed by a lower open. In other words (--) with an NR7. An entry is assumed on a predetermined level off the open.

**DEFINITIONS OF RANGE VARIABLE**

In Diagram A there are 7 possible price patterns that are referred to. The definitions of each are: NR7 - A decrease in daily range relative to the previous 6 days' daily ranges compared individually. NR4 - A decrease in daily range relative to the previous 3 days' ranges compared individually. NR - A decrease in daily range relative to yesterday. CONTROL OR NORM - No reference to daily range size. WS - An increase in daily range relative to yesterday. WS4 - An increase in daily range relative to the previous 3 days' ranges compared individually. WS7 - An increase in daily range relative to the previous 6 days' ranges compared individually.

**TABLES AND HISTORICAL RESULTS**

With the diagrams, detailed tables showing the historical results of each pattern are provided. Each tables title describes the contents. The tables provide the following information: 1). The entry level above or below the open. 2). The Two day pattern. 3). Whether the trade was a buy or sell. 4). The number of trades throughout the test period. 5). Percentage of profitable trades. 6). Average dollar amount of all winning trades and the average dollar amount of all losing trades. 7). The ratio between the average win and average loss. 8). Gross profits, slippage and commission were not included. Each table also indicates the dates of the test period for each market.

**MARKET PRIMARIES**

There are three Market Primaries integrated in this study. The first is direction. This is represented by the previous day's close and today's opening. The second is momentum, represented by yesterday's daily range (NR7,NR4,NR,WS,WS4,WS7). The third is price action, represented by the move off the open (ORB). These patterns comes closer to capturing the market's identity than any
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Note: The diagram contains symbols and placeholders for data representation.
patterns that I have defined previously. The results are startlingly different from any previous tests. A quick check of the patterns before the market’s open will provide a broad brush view of what the potential is for the day.

TRADING APPLICATION

I have worked out a preliminary method to apply the research to actual trading. In order to do this, it is necessary to integrate another fundamental of the market with the price patterns, trend. Trend is defined by 1-day swings. A market that trades above a 1-day swing top is said to be in an uptrend. A market that trades below a 1-day swing bottom is said to be in a downtrend. Definitions of 1-day swing can be found in work done by Gann.

Diagram B provides a picture of the interaction of bias and trend. Daily Bias is determined by reviewing the historical studies of price patterns that assume a trade at or around the open. I begin by looking at the previous 4 day’s closing direction and the last closings day’s range with (if larger than the previous day I use range expansion table) today’s opening direction. These studies are provided for you in tables A, B, C, and D for the Bond and Yen markets.

A hypothetical trade is taken on the open in this case. The next patterns that I check are those that refer to the previous day’s closing direction and today’s opening direction with the reference to yesterday’s range size. An entry is assumed on a hypothetical move above or below the open. So, to review, I check the 5-day pattern and range size with entry on open and the 2-day pattern and range size with entry on an ORB.

Diagram B displays the strategy in each situation. If trend is up and all of the studies test as buys a long position is established on the open. If trend is down and bias is down a short position is taken on the open. This is the most aggressive trade. The assumption is that the market will move in the direction of bias and trend off of the open. Stops on these type of trades can be placed an amount off the open that has been established as significant enough to indicate that the bias and trend are not working or are being overwhelmed by price action.

There are two other possibilities that call for a different strategy. In an uptrend with a downward bias the strategy is for a buy on a break into support or for a buy on a break by an amount that has been observed to be recurring in the
| BIAS | → | UP | | | DOWN |
|------|---|----|---|---|
| TREN | ↓ | ↓  |
| 1A   | BUY OPEN | 1B | BUY BREAK |
| UP   | | | | |
| DOWN | SELL RALLY | 2B | SELL OPEN |
| DOWN | | | | |
market. In other words, do not buy strength, buy breaks. In fact it is dangerous to buy strength in any situation because of the poor trade location.

In a downtrend with an upward bias, sell rallies at resistance and sell after rallies of an amount that has been observed to be recurring in the market.

MEASURING COUNTER MOVES

A word about the market's tendency to correct by similar amounts is appropriate now. This phenomenon has been called balance by other analysts. It is simply the tendency of the market to break off highs in an uptrend and rally off of lows in a downtrend by equal amounts. The trend is said to be fully in force until the market has a counter move of greater magnitude than it previously has had throughout the trend. The knowledge of the size of those counter moves allows for excellent trade location and useful parameters for money management. For instance, it has been observed in the Bond market that when a trend is in force counter moves will run between 3-4 tics and 7-8 tics. Positions can be entered 4 tics off any high or low with 2 tic stops. This is a very short term trend and may run for an hour at the most. A 7-8 tic counter move encompasses a larger time frame. In this case positions can be entered on a 7-8 tic counter move with a stop of 4 tics. A move further than 12 tics should be viewed as a change of character. I recommend the use of hourly charts for determining the size of those counter moves.

The entry on the open is a dynamic play and is reserved for a clear bias and trend. It also is helpful if the market is completing a counter move. It is at that point that the trend is most likely to resume with force. A forceful move during the day is likely to leave a day structure with the open on either the high or the low of the day. This is what you should look for when entering on the open. Activity counter to this should be viewed as a character change.

DETERMINING DAILY BIAS

To help clarify the process of determining daily bias I will take you through it by example in the following. Daily Bias as I have described it is dependent on the results of historical testing of certain basic price patterns. If, for instance, the previous 4 closings were all higher relative to the previous day and both a higher and
lower open test as sales, two units of a downward bias are intact (refer to tables A-D). It is necessary that 5 of 6 patterns test as sales to indicate a downward bias. I then test the previous days closing direction and today's possible opening directions followed by a designated move off the open (ORB) (refer to tables E thru R). If the moves above the open test as sales, which is unusual, and the moves below the open test as sales, a downward bias is intact. This example would actually show 6 of 6 patterns testing as sales. It is only necessary to have 5 of 6 indicating the same direction to establish a bias for the day. I assume that I do not know the opening direction. If the 5 and 2 day patterns test as sales you have a complete downward bias. This is where it becomes interesting to enter on the open if trend is also in the direction of daily bias.

In this report I have provided you with all the above tests in the Bond and Japanese Yen markets. When I began searching for a way to determine daily bias I would look at the control group figures only. It became clear that this was not enough. A higher day with the largest range in 6 or more market days (WS7) is different than a higher day with the narrowest range in 6 market days (NR7). One displays high momentum and an increase in momentum and the other either a loss of momentum or no momentum at all. I found a reference to momentum that was already integrated in the pattern essential. This became clear after observing the differences in the tests with the added reference to range size.

**MARKET CONCEPT FORMATION**

This study is a perfect example of market concept formation. Each pattern provides a neatly filed concept of the market. Reference to what the market has done in the past is fast. The pattern integrates several very complex difficult to define market primaries, direction, momentum and price action.
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Total Profit: $2,998

Note: The table details the number of trades, profit, and total profit for different patterns of open-to-close movements in the Japanese Yen market.
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<td>$ PROFIT</td>
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<td>AVG LOSS</td>
<td>W/L RATIO</td>
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<td>-----</td>
<td>----------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
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2-DAY PATTERNS AND OPP-CONTROL
DOWNS 1978-1987

<table>
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<th>B/S</th>
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<th>AVG WIN</th>
<th>AVG LOSS</th>
<th>W/L RATIO</th>
<th>GROSS PROFITS</th>
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### G

**2 DAY PATTERNS AND ORPH WITH NR4**
**GONDS: 1978-1982**

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<th>Avg. Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
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<td>20</td>
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### H

**2 DAY PATTERNS AND ORPH WITH NR5**
**GONDS: 1978-1987**

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<th>Avg. Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
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<td>2</td>
<td>57</td>
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<td>394</td>
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### I

**2 DAY PATTERNS AND ORPH WITH NR7**
**GONDS: 1978-1982**

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<th>Avg. Loss</th>
<th>W/L Ratio</th>
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### 2-Day Patterns and Other with NYMEX
#### 1978-1988

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<th>Avg.Loss</th>
<th>W/L Ratio</th>
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### 2-Day Patterns and Other with NCAER
#### 1978-1988

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<td>234</td>
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### 2-Day Patterns and Other with WBZ
#### 1978-1988

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<td>225</td>
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### MARKET ANALYTICS

#### Z-DAY PATTERNS AND ORD. WITH MS. J.TKN. 1/97/99

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#### Z-DAY PATTERNS AND ORD. WITH MS. J.TKN. 1975-1990

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#### Z-DAY PATTERNS AND ORD. WITH MS. J.TKN. 1975-1990

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</tr>
<tr>
<td>4</td>
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<td>266</td>
<td>158</td>
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<td>5</td>
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<td>122</td>
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<td>6</td>
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<td>3,428</td>
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<tr>
<td>7</td>
<td>113</td>
<td>531</td>
<td>193</td>
<td>217</td>
<td>0.80 : 1</td>
<td>128</td>
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</tbody>
</table>
THREE DAY PATTERNS AND ORB WITH
CONTRACTION/EXPANSION

SUBJECT OF INQUIRY

This study is a continuation of the methodical testing of short term price patterns as derived from vertical bar charts. This is viewed from the context of a hypothetical trade taken after a move of a predetermined amount off the open called an ORB. My ultimate purpose is to establish what the nature of the market is. In other words I am attempting to determine the markets identity. The particular objective of this study is to provide a trading strategy and to further define Daily Bias and how it is utilized in this trading strategy.

DEFINITION OF TERMS

To begin with it is important that I define the terms that I use throughout the study. To some they will be new but once grasped the rest of the work will be easily understood.

In an attempt to generalize the markets behavior I have introduced 7 categories of price patterns that relate to the size of daily range. These are meant to capture the price action taking place in patterns such as inside and outside days or upthrust/spring reversal. They refer to yesterday's price action in this study (day 2). The day of entry on all trades is referred to as today (day 1). The categories are as follows:

NR7 - A decrease in daily range relative to the previous 6 day's daily ranges compared individually.
NR4 - A decrease in daily range relative to the previous 3 day's ranges compared individually.
NR - A decrease in daily range relative to yesterday's daily range.
CONTROL - No reference to daily range and includes all day's regardless of range size.
WS - An increase in daily range relative to yesterday.
WS4 - An increase in daily range relative to the previous 3 day's ranges compared individually.
WS7 - An increase in daily range relative to the previous 6 day's ranges compared individually.

Along with the categorization of range size is the THREE DAY PATTERN. Three day pattern is simply the previous 2 day's closing direction and today's opening direction. If the three day
patterns are integrated with the 7 categories of range size there are 56 possible variations. 
The actual trade was assumed on a move off the open of an indicated amount, this is called an ORB.
Each test includes the above ingredients in some combination. For example (refer to diagram A) one combination could be two higher closings and a higher open (day's 3 thru 1 respectively) with the narrowest day in 5 day's yesterday (day 2). This would be referred to as a (++++) with an NR7. A trade is taken on both a move above today's higher open (day 1) and a move below today's higher open.

**TABLES AND DIAGRAMS**

Tables of the results are provided for the Bond market from 1978-87 and the D.Mark from 1975-1989. The title of each table indicates which of the 7 categories of range size was tested. The body of the table is in the same format that has been used in previous studies and provide the following when read from left to right: 1). The entry level above or below the open. 2). The three day pattern. 3). If the trade tested as a buy or sell (B or S). 4). The number of trades throughout the test period. 5). Percentage of profitable trades. 6). Average dollar amount of all winning trades and the average dollar amount of all losing trades. 7). The ratio between the average win and average loss. 8). Gross profits, slippage and commission were not included.

Diagram A provides an example of one of the patterns, a +++ NR7. Diagram B approximates all the combinations possible when integrating three day patterns and the 7 range categories.

**APPLICATIONS**

Prior to the market opening each day the tables can be referred to. This will provide some ideas on the days potential price action. Using an earlier example if the last 2 days had higher closings and yesterday's range was the narrowest in 5 market days the table titled NR7 should be used. Because you do not know the opening direction today or which direction the market will move off the open all possibilities should be checked. In this case the (+++) and (++-) pattern would be utilized for a higher or lower open respectively. In each case two possibilities exist, a move above and below the
open. For the Bond market the tests after a higher open (+++ ) would show a 56% profitable buy on a move above the open and a 63% profitable sale on a move below the open. After a lower open (++-) and a move above the open a 36% profitable sale was indicated. After a lower open and a move below the open a 70% sale was indicated. The same tests in the D.Mark show buys in all cases. In the Bond market given no other information sales would be taken after a lower open. Action would be observed after a higher open for more information. In the D.Mark a buy on the open could be taken because of the overwhelming indications for a rally.

Of course it is not advised that trades be taken without some reference to trend. If trend is up and the patterns test as buys an aggressive buy can be taken. If trend is down and the patterns test as buys caution should be observed, in fact in most cases sales on rallies would be the best strategy. The primary indicator should be trend.

Systematic trades are not recommended on the information provided in the tables. The problem with this type of approach is that markets change and there are no stops used in the tests. This allows for the possibility of a move above and below the open on the same day. It is my observation that the opening price can be very advantageous and to wait until the indicated move off the open occurs puts you at a disadvantage.

**DAILY BIAS**

If an overwhelming amount of patterns indicate the same thing a bias is said to exist in the market. I call this Daily Bias given the short time frame employed in the tests. This can be checked against tests of other types such as the 2 day patterns (Refer to the last Research Report ) or the 5 day patterns with entry on the open. Also particular patterns such as Inside Days can be referred to. If they are in agreement and trend is also in agreement an aggressive trade on the open should be initiated.

**CONCLUSION**

These tests provide an invaluable start towards a general definition of market action. The patterns seem to represent market action very well. The NR patterns tend to capture contraction patterns such as Inside days and
narrow range days just by their definition. The WS patterns capture high momentum moves and the action that results after moves of this sort. A check of these patterns prior to each day's market can give insight into the day's potential. The results of these tests will in some cases appear contrary to expectations. This is especially so in the case of the WS patterns. In another series of tests with the exit extended out several day's, results do come closer to expectations. I will be presenting this information in future studies.
## Market Analytics

### Open-Hi-Close Patterns with 0/1

<table>
<thead>
<tr>
<th>R/B</th>
<th>#Trades</th>
<th>Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
</tr>
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<tbody>
<tr>
<td>OPEN + 8 TICS ---</td>
<td>D</td>
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<td>66%</td>
<td>$517</td>
<td>328</td>
<td>1.87 : 1</td>
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<tr>
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<td>B</td>
<td>127</td>
<td>45%</td>
<td>408</td>
<td>358</td>
<td>1.13 : 1</td>
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<tr>
<td>OPEN + 8 TICS ---</td>
<td>S</td>
<td>129</td>
<td>54%</td>
<td>461</td>
<td>379</td>
<td>1.23 : 1</td>
</tr>
<tr>
<td>OPEN - 8 TICS ---</td>
<td>S</td>
<td>111</td>
<td>55%</td>
<td>514</td>
<td>397</td>
<td>1.31 : 1</td>
</tr>
<tr>
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<td>52%</td>
<td>420</td>
<td>367</td>
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<tr>
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<tr>
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<td>168</td>
<td>52%</td>
<td>449</td>
<td>362</td>
<td>1.24 : 1</td>
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<tr>
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<td>S</td>
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<td>63%</td>
<td>387</td>
<td>371</td>
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<tr>
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<td>64%</td>
<td>343</td>
<td>347</td>
<td>0.99 : 1</td>
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<td>S</td>
<td>155</td>
<td>53%</td>
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<td>44%</td>
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<tr>
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<td>438</td>
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<td>395</td>
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### 2 Day Patterns and ORR+ Control

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<th>#Trades</th>
<th>Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
</tr>
</thead>
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<td>207</td>
<td>175</td>
<td>1.18 : 1</td>
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<td>84%</td>
<td>179</td>
<td>129</td>
<td>1.29 : 1</td>
</tr>
<tr>
<td>OPEN + 10 TICS ---</td>
<td>S</td>
<td>186</td>
<td>58%</td>
<td>216</td>
<td>145</td>
<td>1.49 : 1</td>
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<td>53%</td>
<td>100</td>
<td>160</td>
<td>1.15 : 1</td>
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<td>64%</td>
<td>160</td>
<td>151</td>
<td>1.06 : 1</td>
</tr>
<tr>
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<td>S</td>
<td>237</td>
<td>53%</td>
<td>175</td>
<td>171</td>
<td>1.44 : 1</td>
</tr>
<tr>
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<td>S</td>
<td>210</td>
<td>56%</td>
<td>197</td>
<td>232</td>
<td>0.01 : 1</td>
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<tr>
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<td>84%</td>
<td>155</td>
<td>101</td>
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<td>188</td>
<td>56%</td>
<td>167</td>
<td>145</td>
<td>1.15 : 1</td>
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<tr>
<td>OPEN - 10 TICS ---</td>
<td>S</td>
<td>165</td>
<td>55%</td>
<td>187</td>
<td>147</td>
<td>1.27 : 1</td>
</tr>
<tr>
<td>OPEN + 10 TICS ---</td>
<td>S</td>
<td>194</td>
<td>62%</td>
<td>197</td>
<td>164</td>
<td>1.27 : 1</td>
</tr>
<tr>
<td>OPEN - 10 TICS ---</td>
<td>S</td>
<td>189</td>
<td>60%</td>
<td>187</td>
<td>175</td>
<td>1.06 : 1</td>
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<tr>
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<td>170</td>
<td>59%</td>
<td>188</td>
<td>184</td>
<td>1.62 : 1</td>
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<td>204</td>
<td>50%</td>
<td>203</td>
<td>172</td>
<td>1.22 : 1</td>
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### 3-Day Patterns and Open with NR
**Bonds 1970-1987**

<table>
<thead>
<tr>
<th>B/N</th>
<th># Trades</th>
<th>% Profit</th>
<th>Avg. Win</th>
<th>Avg. Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
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<tbody>
<tr>
<td>OPEN + B TICS ---</td>
<td>10</td>
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<td>$302</td>
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<td>$336</td>
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<td>$309</td>
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<td>1,229</td>
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### 3 Day Patterns and DRS** with NR4
**Bonds 1970-1987**

#### Open + 8 Tics

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<th>B/S</th>
<th># Trades</th>
<th>% Profits</th>
<th>AVG.Win</th>
<th>AVG.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
</tr>
</thead>
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<td>78%</td>
<td>588</td>
<td>297</td>
<td>2.05 : 1</td>
</tr>
<tr>
<td></td>
<td>Open + 8 Tics</td>
<td>5</td>
<td>58</td>
<td>313</td>
<td>266</td>
<td>.61 : 1</td>
</tr>
<tr>
<td></td>
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<td>19</td>
<td>50</td>
<td>503</td>
<td>291</td>
<td>2.05 : 1</td>
</tr>
<tr>
<td></td>
<td>Open + 8 Tics</td>
<td>14</td>
<td>67</td>
<td>679</td>
<td>307</td>
<td>2.13 : 1</td>
</tr>
<tr>
<td></td>
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<td>20</td>
<td>410</td>
<td>245</td>
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<td>64</td>
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<td>471</td>
<td>328</td>
<td>1.63 : 1</td>
</tr>
<tr>
<td></td>
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<td>57</td>
<td>241</td>
<td>266</td>
<td>1.19 : 1</td>
</tr>
<tr>
<td></td>
<td>Open + 8 Tics</td>
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<td>62</td>
<td>447</td>
<td>329</td>
<td>1.12 : 1</td>
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<td>50</td>
<td>363</td>
<td>268</td>
<td>1.37 : 1</td>
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<td>17</td>
<td>50</td>
<td>229</td>
<td>161</td>
<td>1.98 : 1</td>
</tr>
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<td>307</td>
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<td>590</td>
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<td>31</td>
<td>63</td>
<td>405</td>
<td>497</td>
<td>.90 : 1</td>
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### 3-Day Patterns and Open with WS2

#### Bonds

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<th>% Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open - B Ticks +++</td>
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<td>65%</td>
<td>550</td>
<td>250</td>
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<td>61%</td>
<td>580</td>
<td>230</td>
<td>2.43 : 1</td>
<td>7,100</td>
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<td>500</td>
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<td>0</td>
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<td>56%</td>
<td>540</td>
<td>500</td>
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<td>1,024</td>
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<tr>
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<td>55%</td>
<td>310</td>
<td>400</td>
<td>0.81 : 1</td>
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<tr>
<td>Open - B Ticks +++</td>
<td>50</td>
<td>56%</td>
<td>320</td>
<td>360</td>
<td>1.00 : 1</td>
<td>9,600</td>
</tr>
<tr>
<td>Open - B Ticks ++</td>
<td>60</td>
<td>55%</td>
<td>320</td>
<td>360</td>
<td>1.70 : 1</td>
<td>3,400</td>
</tr>
<tr>
<td>Open - B Ticks +</td>
<td>75</td>
<td>54%</td>
<td>310</td>
<td>400</td>
<td>1.83 : 1</td>
<td>1,000</td>
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<td>Open - B Ticks -</td>
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<td>52%</td>
<td>320</td>
<td>400</td>
<td>1.00 : 1</td>
<td>2,000</td>
</tr>
<tr>
<td>Open - B Ticks ---</td>
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### 3-Day Patterns and Open with WS2

#### Bonds

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### MARKET ANALYTICS

#### 3 DAY PATTERNS AND ORB* WITH MR.

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#### 3 DAY PATTERNS AND ORB WITH MS.

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### 3-Day Patterns and O% with N84

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### 3-Day Patterns and O% with N82

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### 2-Day Patterns and OHS* with W54

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DAILY BIAS
GOLD 1975-1989

SUBJECT

In this study I continue testing short term price patterns derived from vertical bar charts. A hypothetical trade is taken $2.00 off the opening price in either direction. I call this an "opening range breakout" (ORB). The purpose of this study is to provide a trading strategy with the use of daily bias.

DEFINITION OF TERMS

The terms used to define the price patterns will be new to you, so I will define them. I came to these definitions in an attempt to categorize the market's behavior. I felt that if I could generalize the market's behavior it would allow me to capture the essential action that theoretically would influence the upcoming price action. I have established seven categories of price patterns that relate to the size of yesterday's daily range. The categories are as follows:

NR7 - A decrease in daily range relative to the previous 6 day's daily ranges compared individually.
NR4 - A decrease in daily range relative to the previous 3 day's ranges compared individually.
NR - A decrease in daily range relative to yesterday's daily range.
CONTROL - Any day, no reference to the size of the previous day's range.
WS - An increase in daily range relative to yesterday.
WS4 - An increase in daily range relative to the previous 3 day's ranges compared individually.
WS7 - An increase in daily range relative to the previous 6 day's ranges compared individually.

Along with the categorization of range size is the THREE DAY PATTERN. Three day pattern is simply the previous 2 day's closing direction and today's opening direction. If the three day patterns are integrated with the 7 categories of range size there are 56 possible variations.

Each test includes the above ingredients in some combination. For example, (refer to diagram A) one combination could be two higher closings and a higher open (days 3 thru 1 respectively) with the narrowest day in 6 days yesterday (day 2). This would be referred to as a (+++) with an NR7. A trade is taken on both a move above today's higher open (day 1) and a move below today's higher open.
TABLES AND DIAGRAMS

Tables of the results are provided for the Gold market from 1975-89. The title of each table indicates which of the 7 categories of range size was tested. The body of the table is in the same format that has been used in previous studies and provide the following when read from left to right: 1) The entry level above or below the open. 2) The three day pattern. 3) If the trade tested as a buy or sale (B or S). 4) The number of trades throughout the test period. 5) Percentage of profitable trades. 6) Average dollar amount of all winning trades and the average dollar amount of all losing trades. 7) The ratio between the average win and average loss. 8) Gross profits, slippage and commission were not included.

Diagram 8 approximates all the combinations possible when integrating three day patterns and the 7 range categories.

APPLICATIONS

Prior to the market opening each day the tables can be referred to. This will provide some ideas on the day's potential price action. Using an earlier example if the last 2 days had higher closings and yesterday's range was the narrowest in 6 market days the table entitled NR7 should be used. Because you do not know the opening direction today or which direction the market will move off the open, all possibilities should be checked. In this case the (+++ ) and (++- ) pattern would be utilized for a higher or lower open respectively. In each case two possibilities exist. a move above and a move below the open.

DAILY BIAS

If all of the tests indicate the same thing (all buys or all sales), a bias is said to exist in the market. I call this Daily Bias given the short time frame employed in the tests. This can be checked against tests of other types such as the 2 day patterns or the 5 day patterns with entry on the open (refer to previous reports). Also, particular patterns such as Inside Days can be referred to. If they are in agreement and trend is also in agreement an aggressive trade on the open should be initiated.

CONCLUSION

These tests provide an invaluable start towards a general definition of market action. The patterns seem to represent market action very well. The NR patterns
tend to capture contraction patterns such as Inside Days and narrow range days just by their definition. The WS patterns capture high momentum moves and the action that results after a move of this sort. A check of these patterns prior to each day’s market can give insight into the day’s potential.

The results of these tests will in some cases appear contrary to expectations. This is especially so in the case of the WS patterns where a continuation in the direction of the WS is a logical assumption. In another series of tests with the exit extended out several days, results do come closer to expectations. I will be presenting this information in future studies.
### 3-Day Patterns and One-Year Control
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### 3 Day Patterns and OHLC M4

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### J Day Patterns and OHLC M4

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### 3-Day Patterns and Order MS1
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<th>AVG. LOSS</th>
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### 3-Day Patterns and Order MS7
**Gold 1975-1989**

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5 SEGMENT STUDY AND OPENING RANGE BREAKOUT

It is the goal of my research to discover determining factors within the market so as to formulate generalizations (principles) and laws about its behavior. I attempt to do this with a form of statistics. The statistics are derived from the study of the market within the context of particular units of information known as vertical bars. In this case a unit of market information. This unit of information subsumes other units of information such as the open, high, low, close, volume, and range. It is through comparison of these units of market information that generalizations are inferred. This is the inductive principle of concluding laws from the characteristics of individual cases. With an understanding of these laws certain logical conclusions can be drawn. Once market principles, laws, are established certain types of behavior can be known and follows logically. This is deduction, which is the process of reasoning in which we conclude from general law or principle to a particular instance falling under the general law or principle. For example, The market Principle of Contraction/Expansion implies certain things about the market, namely, that a price bar tends to expand its range just after the bar preceding it has narrowed it's range. This market principle was derived inductively through testing and observation. Once the law is defined deduction begins. My premise is that a sound understanding of these market principles is necessary to successful trading. Without them, or without a system that takes these principles into account success will be limited. In this particular research report the inquiry was stated as follows; does the position of the open and close within the previous daily bar's range have an impact on the next day's price action. To answer this question an opening range breakout trade was implemented the day following the open to close relationship noted. Opening Range Breakout (ORB) is defined as a trade taken a predetermined amount above or below the opening range. Defining the open to close relationship required the division of the days price bar (refer to Diagram 1, Day 2) into 5 equal segments of price. Each segment was numbered 1 thru 5, 1 being the bottom segment of the bar and 5 the top segment of the bar. The position of the open and close of Day 2 relative to these segments could then be noted. Tables A and B display the results of the ORB taken on day 1 after each possible open to close relationship.

Table A and B displays the following: 1) The segment that Day 2's open and close were in. There were 25 possible variations. 2) The results of an ORB trade taken on a move above the open and on a move below the open. Therefore two trades are taken for each open to close variation making 50 possible trades for each market. 3) If the trade was profitable as a buy (B) or a sale (S). This was determined by
Gross profits only. 4) The number of trades taken. 5) The percentage of winning trades. 6) The average dollar amount of all winning trades and the average dollar amount of all losing trades. 7) The ratio between the average win and average loss. 8) The gross profits. Table A is the Bond market from 1970-1986 and Table B is the Soybean market from 1970-1988.

In both markets 29 out of 50 trades were profitable sales. In the bond market when the close was in an equal or lower segment relative to the open 17 trades were buys and 13 trades were sales. When the close was in an equal or higher segment 20 trades were profitable as sales and 10 were profitable as buys.

The Bean market showed 15 buys and 15 sales when the close was equal to or less than the open and 17 sales vs. 13 buys when the close was equal to or above the open. Both markets showed similar results for the following combinations, 2/5 sells, 5/2 buys, and 1/1 buys.

The 3 highest percentage trades in the Bean market were 1/2, open minus 5¢, sell 79%; 5/4, open - 5¢, sell 78%; 2/4, open-5¢, sell 74%. In the Bond market, 2/3, open-8 tics, sell 87%; 4/5, open-8 tics, sell 78%; 2/2, open-8 tics, sell 78%.

The most apparent generalization that can be made about this study is the tendency of the market to go down (on Day 1) the day after the market has closed above the open (on Day 2), and the tendency of the market to rally (on Day 1) after the market has had a close lower than the open (Day 2) the previous day. This is particularly evident in the Bond market after the market has had a close above the days open. 20 out of 30 trades showed profitability on the sell side. This suggests a short term overbought condition. This is useful information and can help dampen the natural euphoria that occurs on trend days or a day that has closed in your favor.

After a preliminary review of this study it was difficult to determine any other principle that this relationship between open and close demonstrated. This does not mean that the tests had no value. In fact, the percentages and win/loss ratio on some of the individual patterns was remarkable. This suggests that the tests can be used effectively as a reference in combination with other price pattern studies.

![Diagram 1](image-url)
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<td>MIN MAX</td>
<td>AVG.VOL</td>
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<td>16. C/2 Open + 25 Ticks</td>
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<td>51k</td>
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<td>62k</td>
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<td>66k</td>
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<td>88</td>
<td>56k</td>
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<td>190</td>
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<td>55k</td>
<td>146</td>
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<tr>
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<td>121</td>
<td>63k</td>
<td>179</td>
</tr>
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<td>B</td>
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<td>50k</td>
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<td>184</td>
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<td>62k</td>
<td>198</td>
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<tr>
<td>G/2 Open - 25 Ticks</td>
<td></td>
<td>63</td>
<td>56k</td>
<td>224</td>
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OPEN TO CLOSE TRI-SEGMENT STUDIES WITH ORR* 

The inquiry in this report is stated as follows: Does the position of yesterday's open and close within yesterday's price range have an impact on today's direction? To answer this question an opening range breakout trade was taken after the day in question. To methodically test the open to close relationship the day before, yesterday's price range was divided into 3 equal segments of price. The bottom segment was labeled 1, the middle 2, and the top segment 3. It was then determined into which segment the open occurred and into which segment the close occurred. For example, Table A(Eurodollars) shows as number one O/3 and C/3. This means that the open and close of yesterday were both in the top third of the daily range. The trade was then taken at the indicated points off the open. Again in the case of Eurodollars, the trade was taken 4 tics above the open(open + 4 tics) and another trade was taken 4 tics below the open(open - 4 tics). The trade was exited on the close of the same day.

All the tables have the same format. Some contracts will have different levels of entry(T.Bonds 8 and 16 tics, and Live Cattle 25 and 50 points).
<table>
<thead>
<tr>
<th>WONDS</th>
<th>D/S</th>
<th>Trades</th>
<th>$Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>Win-Ratio</th>
<th>Gross Profit</th>
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<tbody>
<tr>
<td>1. O/3</td>
<td>C/3</td>
<td>Open + 16 ticks</td>
<td>$8</td>
<td>$7</td>
<td>$605</td>
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<td>2. O/3</td>
<td>C/2</td>
<td>Open + 8 ticks</td>
<td>$8</td>
<td>$6</td>
<td>$382</td>
<td>$187</td>
<td>2.04 : 1</td>
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<td>3. O/3</td>
<td>C/1</td>
<td>Open + 16 ticks</td>
<td>$8</td>
<td>$5</td>
<td>$317</td>
<td>$277</td>
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<tr>
<td>4. O/2</td>
<td>C/3</td>
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<td>$5</td>
<td>$317</td>
<td>$277</td>
<td>1.18 : 1</td>
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<td>5. O/1</td>
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<td>Open + 16 ticks</td>
<td>$11</td>
<td>$5</td>
<td>$442</td>
<td>$222</td>
<td>1.04 : 1</td>
</tr>
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<td>6. O/2</td>
<td>C/1</td>
<td>Open + 8 ticks</td>
<td>$11</td>
<td>$5</td>
<td>$442</td>
<td>$222</td>
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<td>$11</td>
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<td>C/2</td>
<td>Open + 8 ticks</td>
<td>$11</td>
<td>$5</td>
<td>$442</td>
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<td>1.04 : 1</td>
</tr>
<tr>
<td>9. O/1</td>
<td>C/1</td>
<td>Open + 16 ticks</td>
<td>$11</td>
<td>$5</td>
<td>$442</td>
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### OPEN-TO-CLOSE TRIP-SEGMENT STUDIES WITH ORD

<table>
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<tr>
<th>JAPANESE YEN</th>
<th>B/S</th>
<th>#Trades</th>
<th>#Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
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<tr>
<td>1. 0/3</td>
<td>Open + 20 ticks</td>
<td>43</td>
<td>65</td>
<td>$186</td>
<td>$136</td>
<td>1.38 : 1</td>
<td>$1,337</td>
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<td>Open - 20 ticks</td>
<td>39</td>
<td>60</td>
<td>159</td>
<td>141</td>
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<td>1,182</td>
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<td>65</td>
<td>279</td>
<td>171</td>
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<td>73</td>
<td>52</td>
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<td>100</td>
<td>1.00 : 1</td>
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<td>163</td>
<td>54</td>
<td>206</td>
<td>197</td>
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<td>52</td>
<td>56</td>
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<td>200</td>
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<td>29</td>
<td>220</td>
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<td>2,775</td>
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<td>235</td>
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<td>175</td>
<td>47</td>
<td>222</td>
<td>165</td>
<td>1.38 : 1</td>
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| 7. 0/1       | Open + 20 ticks | 45 | 57 | 288 | 95 | 3.17 : 1 | 5,607 |
| 2/1          | Open - 20 ticks | 34 | 59 | 208 | 98 | .81 : 1 | 575 |
## Open-to-Close Tri-Segment Studies With OOB

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<th>EUR</th>
<th>JPY</th>
<th>CAD</th>
<th>CHF</th>
<th>NZD</th>
<th>SGD</th>
<th>HKD</th>
<th>IDR</th>
<th>BRL</th>
<th>INR</th>
<th>CNY</th>
<th>RUB</th>
<th>SEK</th>
<th>TRY</th>
<th>GBP</th>
<th>JOD</th>
<th>DKK</th>
<th>MXN</th>
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## Open-to-Close Tri-Segment Studies With OOB

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### MARKET ANALYTICS

#### OPEN-TO-CLOSE TRI-SEGMENT STUDIES WITH OANDA

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<tr>
<th>CRUDE OIL</th>
<th>S/S</th>
<th>#Trades</th>
<th>%Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
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<tr>
<td>1. 0/3</td>
<td>Open + 10 pts.</td>
<td>$ 33</td>
<td>47</td>
<td>$ 266</td>
<td>$ 179</td>
<td>1.47 : 1</td>
<td>$ 160</td>
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<tr>
<td>C/3</td>
<td>Open - 10 pts.</td>
<td>$ 76</td>
<td>02</td>
<td>$ 325</td>
<td>$ 120</td>
<td>2.71 : 1</td>
<td>2.779</td>
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<tr>
<td>2. 0/3</td>
<td>Open + 10 pts.</td>
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<td>27</td>
<td>$ 190</td>
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<td>10</td>
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<td>1.04 : 1</td>
<td>1,129</td>
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<td>Open + 10 pts.</td>
<td>$ 154</td>
<td>54</td>
<td>$ 217</td>
<td>$ 154</td>
<td>1.41 : 1</td>
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<td>$ 154</td>
<td>51</td>
<td>$ 222</td>
<td>$ 194</td>
<td>1.15 : 1</td>
<td>3,070</td>
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<td>Open + 10 pts.</td>
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<td>59</td>
<td>$ 121</td>
<td>$ 154</td>
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<td>61</td>
<td>$ 779</td>
<td>$ 70</td>
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<td>$ 153</td>
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#### OPEN-TO-CLOSE TRI-SEGMENT STUDIES WITH OANDA

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<th>%Profit</th>
<th>Avg.Win</th>
<th>Avg.Loss</th>
<th>W/L Ratio</th>
<th>Gross Profit</th>
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### Open to Close Tri-Segment Studies with ORE

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<th>Avg.Loss</th>
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## Open to Close Tri-Segment Studies with ORD

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<th>Avg Win</th>
<th>Avg Loss</th>
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## Open to Close Tri-Segment Studies with ORB

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S&P GAPS AND OPENING RANGE BREAKOUT (ORB*)

PURPOSE: To test the impact on price of a price gap above or below the previous day's close. To test this, ORB's of 80 and 160 points were taken above and below the open after gaps of 20, 40, 60, 80, 100, 150, 200, 300 and 400 points either up or down. A comparison of the results of these ORB's with ORB's taken on any day provide a valid control group comparison.

Conclusions:
1) The bigger the gap, the more likely the market is to go in the direction of the gap.
2) An ORB in the opposite direction of the gap becomes less profitable and eventually unprofitable the bigger the gap.
3) Volatility increased dramatically as the gap enlarged.

Applications: If the gap is not filled or if the market on the day of a gap cannot return to the previous day's price range by mid-session, the chances of continuation are high. Obviously, the larger the gap the more likely for this to occur.

On a large gap ignore ORB against the gap unless it is occurring within the first 5-7 minutes. In that case, profits must be visible within a half-hour after entry.

The following tables include:
1) The size of the price gap relative to the previous day close.
2) The entry level above and below the open.
3) Whether the trade was a buy or sell.
This is determined by Gross Profits.
4) Number of trades.
5) Percentage of profitable trades.
6) Average of winning and losing trades.
7) Gross Profits: slippage and commission were not included.
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FORMATION OF MARKET CONCEPTS
(GAP AND ORB)

A concept is a mental integration of two or more units which are isolated according to specific characteristics and united by a specific definition. In concept formation, the uniting involved is not a mere sum, but an integration, i.e., a blending of the units into a single new mental entity which is used thereafter as a single unit of thought (but which can be broken into its component units whenever required). The following is taken from the "Ayn Rand Lexicon" under the definition of Integration. The original work was introduced in Ayn Rand's "Introduction to Objectivist Epistemology". This integration is an essential part of understanding. For our purposes, as traders, integration allows for the automatic use of huge amounts of information about the market that can then be applied in a split second.

When applying this definition of a concept and process of integration to the market, the term market concept better describes the particular cognitive tool. To restate, referring to the market, market concept is a mental integration of two or more units (vertical bars, ticks) which are isolated according to specific characteristics (size, amount, position of open and close, etc.) and united by a specific definition (NR7, 2Bar NR, 3Bar NR, NR4, WS7, etc.). The uniting involved is not a mere sum, but an integration, i.e., blending of the (vertical bars) into a single new mental entity (market concept) which is used thereafter as a single unit of thought (but can be broken into its component vertical bars whenever required). This process allows us to create a mental filing cabinet of market concepts which would otherwise be impossible to digest.

This process of integration is practiced in the analysis section of the market letter. This should shed some light on the motivation for such a rigorous analysis using so many different market theories. The crucial portion of the analysis is the integration section. Although, admittedly, these are much more abstract market concepts, the exercise is useful and is representative of the thought process.
The present research report deals with the market concept "gap". A gap, as defined in this report, is an opening above or below the previous day's close by the indicated amount. Traditionally, gap has been defined in narrower terms, as an open outside of the previous day's range. Gaps if held throughout the day indicate high momentum in the direction of the gap and suggest that the trend will continue over the next several days. The directional indication is dependent on this gap's holding into the close. Ideally there will be some follow through during the session in the gap's direction. As will be seen in the following tests it is very difficult for the market to follow through after a gap and it appears as the exception rather than the rule.

Tables of the results of various size opening gaps and of opening range breakout trades (ORB) taken after the gap are provided for eight markets. The Tables indicate the size of the the gap followed by the amount above or below the open a trade was taken. Thereafter it is indicated whether the trade off the open was profitable as a buy or sale (B or S), what percentage profitability occurred, the number of trades in each case, the average dollar amount of winning trades and the average dollar amount of losing trades, followed by gross profit, not including slippage and commission. The tests serve as the working material for determining the nature of the each market. It should be noted that no stops were used in the tests, consequently a move above and below the open could have occurred on the same day. If this happened I counted both trades; obviously one had to be a loser. It has been my observation that the further the market moves in one direction off the open the less likely for it to move to the other side of the open.

The results were interesting. First of all, the markets tested contrary to earlier tests of the same type done on the S&P. The S&P generally displayed continuation in the direction of the gap as the size of the gap increased. This characteristic was the opposite in the Bond market where price tended to reverse the gap direction regardless of the gap size. In general, reversals of the gap were the rule not the exception.

Each market's characteristics will be dealt with individually.
BONDS: Generally reverses the direction of the gap. Movement counter the gap was relatively easy as displayed by number of trades. Caution should be observed on trades in the direction of the gap unless information is overwhelmingly in favor of a continuation. Take counter trades in the absence of Early Entry and look for a trade back to the gap or the previous day’s settlement.

EURODOLLARS: Similar to the Bond market.

JAPANESE YEN: Clear upward bias throughout the test period. Some significant percentages on buys above and below the open.

GOLD: Generally a fade market after the gap. Profits were realized on trades counter the gap. Percentages were not remarkable but did provide some hints on market direction. Suggestion is for trades taken only after initial counter-gap action is observed.

CRUDE OIL: Tests did not provide clear cut information but seemed to lean in favor of the market continuing in the direction of the gap.

CATTLE: Gap direction is generally reversed. Systematic trades are not recommended given the low percentages. A clear ability to move off the open in the opposite direction of the gap was demonstrated. Caution should be observed on trades in direction of the gap and trades considered counter gap.

BEANS: Only 9 buys out of a possible 32 trades, a clear downward bias. Do not go with a move in the direction of the gap unless the gap is only 5 cents. Anything greater should be viewed with caution. On a gap lower of 10 cents or more look at rallies to sell, but on gaps higher do not buy breaks. Consider sales on gaps up.

Each market displays its own peculiar characteristics throughout the test periods. This could be attributed to trend during the test periods. The one exception may be the Soybean market, which clearly showed a downward bias. As a rule, trades taken in the direction of gaps should be done cautiously and in coordination with other information (price action, Early Entry). There were very few instances where systematic trades were called for. The information can best be used as a reference to the general characteristic of each market after gaps.

Evidence clearly suggests that Opening Range Breakout trades are not something that should be taken every day. Other information
must be integrated when considering a trade of this type - a gap is just one of those considerations.

The first part of this report dealt with concept formation. It is with this particular theory of knowledge (Ayn Rand's Objectivist Epistemology) that I approach all my work. This provides a necessary context and definitively demonstrates the significance of technical analysis as a cognitive tool. This is my intention. Previously, Technical Analysis has been justified merely on pragmatics: does it work/make money? With a philosophical base of this type (pragmatism) it is easy for the random walk school to overturn technical analysis' premises. Technical Analysis and all its variations arose from a human need to determine the nature of the market. Once the nature of the market is determined, trading can be profitable.
GAP: An open above or below the previous day's close by a predetermined amount.
### MARKET ANALYTICS

**BNC GAP 1978 - 1986**

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<th>AVE. WIN</th>
<th>AVE. LOSS</th>
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### Eurodollars Gap 1984 - 1989

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Note: The numbers in the table represent the average profit, win, and loss for each category. The 'GROSS PROFIT' is the total profit for that category.
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**KEY:**
- GAP: Interval
- BUY/SELL: Direction
- NO. OF: Number of trades
- PROFIT: Profit
- TRANKS: Number of trades
- AVG. WIN: Average win
- AVG. LOS: Average loss
- GROSS PROFIT: Total gross profit
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### MARKET ANALYTICS

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UPTHRUST AND SPRING REVERSALS

Upthrust is defined as a price move above a pivot top followed by a wide spread reversal to the downside that meets the following criteria:

1) It closes below the two previous days' closings.
2) The close is below the pivot top.
3) The close is below the opening and the mid-range of the day.
4) The daily range is greater than the previous day's range.

Diagrams of five tested variations are provided.

This type of price action implies that aggressive supply has entered the market enough to shift momentum completely. In most cases new longs were entering the market on the move above the pivot top. The reversal puts these longs in a losing position that either is held long-term or is liquidated over the next day or several days. In some markets it provides a very powerful bias to the downside over the next three day period.

I have tested the Bond market for this type of behavior and found it to produce results in line with the traditional concept of an upthrust as an indication of supply. Diagram 1 displays a simple upthrust where the reversal occurs the day after the pivot is formed. The pivot top is on Day 3 in this case and the reversal (upthrust) on Day 1. The test was for a short sale taken on the close of Day 1 and exited three days later on the close (Exit not shown in the diagram). All tests were during the period 1978 thru 1987. Results were as follows: 87% Winning Trades, Average Winner – $940; Average Loser – $625. Stops were not used. Eight occurrences.

Diagram 2 displays a pivot on Day 4 with two intervening days between the pivot and the upthrust. Day 2 could have been above the pivot also but the reversal occurred on Day 1. Results were as follows: 55% Winning Trades; $869 Average $587 Average Loser on eleven occurrences. Not quite as good as Pattern 1 but it is difficult to draw conclusions about the individual patterns because of the infrequent occurrences.

Pattern 3 (Diagram 3) shows the pivot on Day 5 with Day 2 and 3 allowed to vary anywhere in the price pattern. With the reversal on Day 1 and a sale on the close there were 59% Winning Trades with $906 - Average Winner and $941 Average Loser on seventeen occurrences.
Pattern 4 (Diagram 4) places the pivot on Day 6. 70% of trades were profitable. Average Winner was $1,081; Average Loser - $1,192 on 20 occurrences.

Pattern 5 (Diagram 5) displays some unusual results. The pivot is now on Day 7. A profitable trade occurred 64% of the time on a long position taken on the close rather than a short position. In other words, the results reverse. This was a loser 36% of the time on a short sale with Average Wins at $918 and Average Losses at $805, on 14 occurrences. This test suggests that when you move too far away from the pivot, the validity of the reversal and supply indications diminishes - enough so that you should be aware of a move potential against the upthrust within the next three days.

If the upthrusts that were associated with pivot tops from Day 3 to 6 as indicated in Diagrams 1-4. Results were as follows: 56 Trades; 38 Winners; 18 Losers for 68% Profitable Trades. Total Profits: $35,986; Total Losses: $17,298. Average Winner - $947. Average Loser - $961. Total Gross Profits - $18,690. These are reasonable results considering that stops were not used and it was a three day trade. In general, when stops are used losses will remain smaller. Also, on a three day time span much can happen adversely to the trade. To be able to conclude with 68% accuracy that the market will close below a certain price level. In this case the close of the upthrust provides some interesting opportunities.

Several things can be done to enhance these results. Primarily anticipating the upthrust before it happens and entering the market at the high end of the upthrust's price range is the best possible trade that can be made. This is where much of my work has lead me; that is, to anticipating reversals rather than waiting for them to occur. This can be accomplished with an understanding of intraday price action. For this discussion I would like to concentrate simply on the entry or the close of the upthrust. The absolute ideal is for the market to gap lower the day after entry and never trade back to the entry level. This provides immediate gratification but is extremely rare. In fact, it is more likely that the market will attempt to rally at some point the day following the upthrust. If the market shows little or no momentum on the rally attempt and a move to new lows for the reversal occurs, it confirms the supply indication. The worst possible price action is a rally taking the
UPTHRUST: Defined as a price move above a pivot top followed by a wide spread reversal to the downside that meets the following criteria. 1) It closes below the two previous closings. 2) The close is below the pivot top. 3) The close is below the opening and the mid-range of the day. 4) The daily range is greater than the previous day's range.
market back up through the mid-range of the upthrust with a close above this area. When this happens, the chances for a move above the upthrust increase dramatically. In general, the mid-range of the upthrust should not be violated by any rally. Logically, this implies that the lower the close in the bar of the upthrust, the better the chance that it will remain below the mid-range thereafter. Intraday monitoring of the position the day or day's after entry should help give early clues to the validity of the upthrust.

The tests conducted in this report only dealt with three day trades. Price action should be considered when entering this trade. For instance, if price gaps lower and aggressively moves through a previously-established trading range low or pivot bottom of consequence, a longer-term trade should be considered. Occasionally, upthrusts precede major moves in the direction of the reversal especially if a clear area of distribution has occurred prior to the upthrust.

It should be noted that not all markets display the systematic success that the Bonds did. In fact, sales on upthrusts in the S&P market produced a profitable buy if entered on the close 73% of the time during the period 1982 thru 1988. This reflects the upward bias present through the test period but observation suggests that each market has its own character and should be considered separately. Tests on Cattle suggest that moves take more time to develop after the upthrust than in most markets, but it general many major highs are associated with this pattern.

The necessity to observe prior action after the upthrust cannot be over-emphasized. A keen understanding of price action is imperative. Systematic entry on this indication should be avoided on a daily bar indication. Some interesting results can be attained on the intraday bar charts (hourly, half-hour) but even there a rally attempt in the bar immediately following the upthrust is likely providing a much better entry than the close of the upthrust.

The Spring is exactly the same as the upthrust but with opposite parameters. A Spring is defined as a price move that carries below a pivot bottom that is followed by a wide spread reversal day that meets the following criteria:

1) The two previous closings are closed above.
2) The close is above the pivot bottom.
3) The close is above the opening and mid-range of the day.
4) The daily range is greater than the previous day's range.

This type of price action implies that aggressive demand (buying) has entered the market on the move to new lows. The subsequent reversal leaves a significant number of now shorts trapped below the pivot bottom. An understanding of mechanical swing trading methods will help one visualize the type of participants that are trapped below the pivot; for by its nature, swing trading will prompt new sales as a pivot bottom is penetrated. This is the worst entry and trade location in the business. Tests were conducted on the Spring Reversal that were similar to the Uptrend but in reverse. A long position was assumed on the close of the Spring and exited in three days. Stops were not used and price data for the tests was for the period 1978 thru 1987.

Pattern 6, (Diagram 6), shows a Spring on Day 1 with a pivot bottom on Day 3. Results on a long position were 44% Winning Trades; Average Winner - $1,554; Average Loser - $981 on 9 occurrences.

Pattern 7, (Diagram 7) with the pivot bottom on Day 4 produced 71% Winning Trades with Average Winner - $1,318 and Average Loser - $843 on 7 occurrences.

Pattern 8, (Diagram 8) with the pivot on Day 5 produced 42% Winning Trades with Average Winner - $451 and Average Loser - $363 on 12 occurrences.

Pattern 9, (Diagram 9) produced 48% Winning Trades with Average Winner - $1,335 and Average Loser - $1,280 on 23 occurrences. Total Gross Profit was $682 over the period.

To illustrate the point about subsequent price action to the Uptrend and Spring, a test was run on Pattern 9 with a stop 1 tic below the mid-range of the Spring day. Winning Trades dropped to 35% but Average Winners were $1,355; the same as without a stop. Average Losers were reduced to $539 per trade. This left a +$2,747 Net Profit.

It is apparent that from the results of the tests on Springs that systematic trades on the Spring day's close can be dangerous. Trade location can be improved dramatically over this type of entry. This does not invalidate the Spring as a legitimate means of assessing the market's condition. In fact, it highlights the necessity to use it for that purpose alone and not as a system.

The cumulative totals for the Spring are as follows: 25 Winners and 26 Losers. Total Gross Profits - $29,756. Total Gross Losses - $24,149.
SPRING: Defined as a price move that carries below a pivot bottom that is followed by a wide spread reversal day that meets the following criteria. 1) The two previous closings are closed above. 2) The close is above the pivot bottom. 3) The close is above the opening and the mid-range of the day. 4) The daily range is greater than the previous day’s range.
Average Winner - $1,190. Average Loser - $832.
Total Gross Profits on 51 trades +$5,607; 49%
Winning Trades.

It should be mentioned that these tests represent nine possible types of Springs/Upthrusts
and they all include price above the pivot on the
day of an upthrust and price below the pivot on
the day of a Spring. This leaves out the
possibility for a gap day that does not trade
beyond the pivot. Also excluded are pivots more
than six days back from the reversal. The other
phenomenon that is not included in the case of
multiple pivots in the vicinity of the reversal.
For the purposes of demonstration I have used just
these basic patterns. The results will not be
affected dramatically. Another 20%-30% more
trades occur if these parameters are added to the
existing criteria. This is not necessary for my
purpose, which is to demonstrate the nature of
Spring and Upthrust. I have made it clear that it
is not a recommended means for trading
systematically off the daily chart.
BULL AND BEAR HOOK DAYS

In "Opening Range Breakout 1", Bear Hook was mentioned as a valid predecessor of Trend Day action. In this report computer tests are provided to determine the validity of this assumption. Bear Hook is defined as a day in which the open is below the previous day's low and the close is above the previous day's close with a narrow range relative to the previous day. As implied by the name thereof is a tendency for the price action following a Bear Hook to move to the downside.

To test the pattern an Opening Range Breakout was taken the day after the pattern. To review, ORB is defined as a trade taken at a predetermined amount above or below the opening range. Table A displays the results for the Bear Hook day. Results clearly show a downward tendency after the pattern. This is indicated by 13 of the 16 possible tests showing as profitable sales. The Bond market is particularly conclusive with high percentage sales on moves below and above the open.

Bear Hook days have provided clearer indications than Bull Hook days in general. I will provide results for Bull Hook next chapter. It must be pointed out that in the first chapter of the book no mention was made of the tendency of the market to move in one direction after the pattern. But it is clear from these results that the pattern is not valid for a buy directional trade and should be only pursued to the downside. One exception is in the case of a gap above the Bear Hook day with a move above the open and the ability of the market to hold the gap thru mid-session.

A chart is provided showing Bear Hook patterns for the period 8/15 thru 11/4 in the Dec. T.Bonds. Notice price action on the day following the patterns and the tendency for the market to place the open on the high of the day.

In a further review of Table A 13 out of 16 possible trades showed profitable sales. The S+P market was the only market that showed Gross Profits high enough on the buy side to consider a trade. This occurred because of the tremendous upward bias throughout the test period. Otherwise, the only other market to show buy was Cattle on the open plus 50 points. Note Gross Profits were only $80 though. This is a phenomenal result. Cross currents are at work.
here and should be noted. In general, on any given day the market tends to continue in the same direction as its initial move off the open. Given no other information other than the open and the initial move off the open, one should assume continuation. On the other hand, the Bear Hook clearly does not support this general concept. In fact, it suggests the exact opposite. This is essential knowledge. Knowledge of the exception to a general rule can help the trader save money. This obvious contradiction to the general principle of intraday trending provides an idea for future testing. There are more types of price action that occur that do not favor a bi-directional ORB. Isolating this type of price action will do much to increase ones understanding of the market.

In summary, use Bear Hook Days for Opening Range Breakout to the downside. This pattern provides another reference and filter to the ORB technique. When trading, in general, do not go against a high percentage bias, especially when that bias also favors the intermediate term trend.
**Bear Hook (ORB):** Is a day in which the open is below the previous day's low and the close is above the previous day's close with a narrow range.
## Opening Range Breakout VII

### Bear Hook Day

<table>
<thead>
<tr>
<th>Buy/Sell</th>
<th>NO. OF TRADES</th>
<th>% Profit</th>
<th>Avg. Win</th>
<th>Avg. Loss</th>
<th>Win/Loss Ratio</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bonds</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Open Plus 16 Tics S</td>
<td>8</td>
<td>75</td>
<td>812</td>
<td>658</td>
<td>1.57:1</td>
<td>1,409</td>
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<tr>
<td>Open Plus 6 Tics S</td>
<td>24</td>
<td>67</td>
<td>365</td>
<td>662</td>
<td>.54:1</td>
<td>7,903</td>
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<tr>
<td>Open Minus 8 Tics S</td>
<td>30</td>
<td>70</td>
<td>435</td>
<td>145</td>
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<td>Open Minus 16 Tics S</td>
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<td>65</td>
<td>440</td>
<td>125</td>
<td>3.52:1</td>
<td>4,093</td>
</tr>
<tr>
<td><strong>S &amp; P</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Plus 160 Pts. B</td>
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<td>166</td>
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<td>6,999</td>
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<tr>
<td>Open Plus 80 Pts. B</td>
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<td>340</td>
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<tr>
<td>Open Minus 80 Pts. S</td>
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<tr>
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<td>80</td>
<td>721</td>
<td>2912</td>
<td>.24:1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Beans</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Plus 10 Cents S</td>
<td>14</td>
<td>43</td>
<td>481</td>
<td>315</td>
<td>1.52:1</td>
<td>362</td>
</tr>
<tr>
<td>Open Plus 6 Cents S</td>
<td>28</td>
<td>36</td>
<td>668</td>
<td>297</td>
<td>2.24:1</td>
<td>1,325</td>
</tr>
<tr>
<td>Open Minus 10 Cents S</td>
<td>20</td>
<td>60</td>
<td>610</td>
<td>159</td>
<td>3.9:1</td>
<td>4,080</td>
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<tr>
<td>Open Minus 5 Cents S</td>
<td>13</td>
<td>62</td>
<td>470</td>
<td>312</td>
<td>1.5:1</td>
<td>2,200</td>
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<tr>
<td><strong>Cattle</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Plus 50 Pts. B</td>
<td>16</td>
<td>63</td>
<td>63</td>
<td>92</td>
<td>.68:1</td>
<td>80</td>
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<tr>
<td>Open Plus 25 Pts. S</td>
<td>34</td>
<td>41</td>
<td>209</td>
<td>97</td>
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<td>Open Minus 25 Pts. S</td>
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<td>63</td>
<td>200</td>
<td>167</td>
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<tr>
<td>Open Minus 60 Pts. S</td>
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<td>81</td>
<td>155</td>
<td>124</td>
<td>1.25:1</td>
<td>1,544</td>
</tr>
</tbody>
</table>
BEAR HOOK DAY: The above chart displays three Bear Hook Days (A, B, C) and an Opening Range Breakout the following day. There is a marked tendency for the market to move to the downside after a Bear Hook. Days 8/13 and 9/16 display modified Bear Hooks which are similar to Bear Hooks but without the open below the previous day's low.
BULL HOOK DAYS

Bull Hook is defined as a day in which the open is above the previous day's high and the close is below the previous day's close with a narrowing range. The Bull Hook, as suggested by its name, is said to be a bullish indication and in most cases will be followed by a move to the upside the day or days following the Hook. As you will see by the tests run in this report, this is not always the case.

To test this pattern a trade is taken on an Opening Range Breakout the day following the Bull Hook. Opening Range Breakout is defined as a trade taken at a predetermined amount above or below the open. The results of this test are shown in the Table entitled, "Bull Hook Day". This Table shows a bias to the upside after the pattern. Eight out of 16 trades were profitable as buyrs. The most conclusive evidence of an upward bias after the Bull Hook is the amount of Gross Profits that were accumulated on the buy side; $30,051 on the buys and $7,954 on the sales. Clearly this demonstrates an upward bias after the pattern.

The Bear Hook showed cumulative profits for all markets at $41,768 on the sell side and $37,728 on the buy side. A bit more convincing bias when compared to the Bull Hook. When you exclude the S&P from these figures there are only $480 in profits on buys after a Bear Hook.

Observation of market action is recommended after either pattern. A quick move (Early Entry) in the direction of the bias off of the open is the ideal. A move of this type against the bias would suggest caution. The Bull Hook also is enhanced when the market opens lower on the day following. This provides greater potential and goes along with a natural inclination of the market to fill the gap between the open and the previous day's close. If the closing price of the Hook Day is then traded continuation to the upside is likely.

In general, the Bull Hook did not display the consistency of the Bear Hook. Nevertheless, the test results provide enough evidence of a predictable bias after the Bull Hook. Maybe just a hint but sometimes that is all that is necessary.

The Bull Hook integrated with trend and price action studies is useful. Ideally, if trend is
up, the open is lower than the close of the Bull Hook, and Early Entry Buying occurs, a high probability trade is provided. Also, if an important Angle of support is in the vicinity of this type of price action confidence is added.

Another thing to consider when assessing the trade is whether a large Buying Extreme had occurred in the location of the open on any day beforehand. Quite naturally support will come into the market at this point.

It should be noted that this is one of the best results on buys above the open that I have seen in the Cattle market. 78% on a 25 point move above the open after a Bull Hook is extraordinary. Win/Loss ratio also remained reasonably high.
### Bull Hook Day

<table>
<thead>
<tr>
<th>Initial Price</th>
<th>Long</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B/N</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open + 15 Tics</td>
<td>B 17</td>
<td>S 17</td>
</tr>
<tr>
<td>Open + 8 Tics</td>
<td>B 23</td>
<td>S 23</td>
</tr>
<tr>
<td>Open - 8 Tics</td>
<td>B 24</td>
<td>S 24</td>
</tr>
<tr>
<td>Open - 16 Tics</td>
<td>B 13</td>
<td>S 13</td>
</tr>
</tbody>
</table>

### S & P

<table>
<thead>
<tr>
<th>Initial Price</th>
<th>Long</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open + 160 Pts.</td>
<td>B 14</td>
<td>S 14</td>
</tr>
<tr>
<td>Open + 90 Pts.</td>
<td>B 20</td>
<td>S 20</td>
</tr>
<tr>
<td>Open - 90 Pts.</td>
<td>B 16</td>
<td>S 16</td>
</tr>
<tr>
<td>Open - 160 Pts.</td>
<td>B 8</td>
<td>S 8</td>
</tr>
</tbody>
</table>

### Eurais

<table>
<thead>
<tr>
<th>Initial Price</th>
<th>Long</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open + 10 Cents</td>
<td>B 10</td>
<td>S 10</td>
</tr>
<tr>
<td>Open + 5 Cents</td>
<td>B 23</td>
<td>S 23</td>
</tr>
<tr>
<td>Open - 5 Cents</td>
<td>B 19</td>
<td>S 19</td>
</tr>
<tr>
<td>Open - 10 Cents</td>
<td>B 7</td>
<td>S 7</td>
</tr>
</tbody>
</table>

### Cattle

<table>
<thead>
<tr>
<th>Initial Price</th>
<th>Long</th>
<th>Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open + 50 Pts.</td>
<td>B 21</td>
<td>S 21</td>
</tr>
<tr>
<td>Open + 25 Pts.</td>
<td>B 37</td>
<td>S 37</td>
</tr>
<tr>
<td>Open - 25 Pts.</td>
<td>B 37</td>
<td>S 37</td>
</tr>
<tr>
<td>Open - 50 Pts.</td>
<td>B 32</td>
<td>S 32</td>
</tr>
</tbody>
</table>

**Bull Hook (ORB)**

- **Buy**
- **Open**
- **Sell?**

**Bull Hook Day**: A Bull Hook occurs on Day 2. A Bull Hook is defined as a day with a higher open than the previous day's high followed by a lower close with a narrowing daily range. The next day (Day 1), a trade is taken on the initial move off the open, preferably to the upside.
MARKET CONCEPTS AND DEFINITIONS

ACCUMULATION (ACC) - is the establishment of an investment or speculative position by professional interests in anticipation of an advance in price.

ACTIVITY (INITIATING) - Activity is initiating for other time frame buyers when it occurs above or within the previous day's value area. It is initiating for other time frame sellers when it occurs below or within the previous day's value area.

ACTIVITY (NORMAL DAY) (N) - Occurs when the pioneer range is comprised of the first time period or the first two time periods.

ACTIVITY (NORMAL VARIATION OF NORMAL DAY ACTIVITY) (NV) - Occurs when the first time period or the first two time periods back-to-back comprise 50%-60% of the pioneer range.

ACTIVITY (RESPONSIVE) - Activity is responsive for other time frame buyers when they are responding to the market created opportunity of lower prices, in other words, price below value. It is responsive for other time frame sellers when they are responding to the market created opportunity of higher prices, in other words, price above value.

ANGLE - A line extended from particular pivot points on a bar chart with an exact, predetermined slope for the purpose of anticipating price turning points and also used to approximate oscillations over and under the angle, analogous with the center of gravity in the movement of a pendulum.

1 X 1 ANGLE - The primary angle moving one unit of price by one unit of time. One unit of time can be as small as five minutes and as large as a month or year. One unit of price should approximate fifty dollars and consist of one, two, four or eight minimum price changes (tics such as $1 cont, .025, etc. ...). This sometimes appears as a 45 degree slope, but not always. The 1 X 1 Angle is a constant and therefore slope can vary on various scaled charts.

AUCTIONS (INITIAL) - establish the market's initial balance and reflect the attitude of the day time frame trader.

AUCTION TOP - occurs when the market falls quickly away from an auction high. It is indicated by a tail of single prints which show that the other time frame trader was competing for opportunities at that level.

AUTOMATIC RALLY (AR) - is a technical rebound that occurs just after a selling climax usually very short-lived but sometimes produces large moves.

AUTOMATIC REACTION (ARF) - is the opposite of automatic rally occurring after a buying climax.

BREAKOUT (BO) - is a decisive move through an area of resistance or support. Usually characterized by a wide spread and close of the day in the direction of the breakout.

BUDGE - is a sudden expansion of price or volume.

CLIMAX (BUYING) (BC) - is a situation characterized by the
highest intensity of speculative demand occurring within an uptrend. Usually accompanied by a (WS) day and the highest volume registered within the uptrend. This situation only occurs after the move has been in effect for some time. This condition marks the approaching end of a particular uptrend.

**CLINITAX (SELLING) (SC)** - is a situation characterized by the highest intensity of speculative supply occurring within a downtrend. Usually accompanied by a (WS) day and the highest volume registered within the downtrend. This situation only occurs after the move has been in effect for some time. This condition marks the approaching end of a particular downtrend.

**CLOSE** - is the last trade registered in the time period under consideration.

**CONGESTION** - is a series of trading days with no visible progress in either direction. Usually associated with narrow range days or non-trend days.

**CONTRACTION** - Market behavior represented by a conagostion or dormant period either short-term (ID) or long-term (8 Bar NR) and usually reaching its narrowest phase at the end of the period.

**CONTRACTION/EXPANSION PRINCIPLE** - suggests that the market as a phenomenon is constantly changing from a period of movement to a period of rest and back to a period of movement. This interchange between the phases of motion and rest, congestion and trend, or trading range and breakout, are constantly taking place with one phase directly responsible for the other's existence. This phenomenon is most apparent when viewing the market from the context of price moves off the open.

**DAY (INSIDE) (ID)** - is an (NR) day which has its daily range completely within the previous daily range.

**DAY (NEUTRAL) (NU)** - occurs when there are secondary auctions in both directions - up and down.

**DAY (NON-TREND) (NT)** - The first hour's range comprises 100% of the day's range and all subsequent time brackets trade over the same prices as the initial balance area. Characterized by a narrow daily range and low volume.

**DAY (NON-TREND/NEUTRAL) (NT/NU)** - is a narrow range day lacking discernable bias in either direction. Bias in this case is determined by the position of the close within the daily range.

**DAY (OUTSIDE) (OD)** - is a day in which the high and low prices are, respectively, higher and lower than those of the preceding day.

**DAY (TREND) (TD)** - is a wide spread day with the open and the close near opposite extremes.

**DAY (TREND IMAGES) (TDE)** - When the pioneer range comprises less than 10% of the day's range or the market has no dominant area of trade throughout the session. Characterized by each half-hour periods continuing in the direction of the initial move out of the pioneer range.
DAY (WIDE SPREAD) (WS7) - is a day with a daily range that is larger than any day's range relative to the previous six days. It indicates momentum.

DEMAND - Product existing to buy in the market.

DISTRIBUTION (DIST) - is the establishment of an investment or speculative position by professional interests in anticipation of a decline in price.

EARLY ENTRY (EE) - A large price movement in one direction within the first fifteen minutes after the open of the daily session. The open should act as one extreme. Probability of continuation is 90%.

EARLY ENTRY (TYPE 1) (EE1) - Characterized by the first five-minute period's close on one extreme and the day's open on the opposite extreme with the range relatively large. The second five minutes shows an equal thrust in the direction of the first.

EARLY ENTRY (TYPE 2) (EE2) - Characterized by an excessively large range in the first five-minute period (larger than EE1) with a general drift in the direction of the thrust the rest of the day. Again, open is on the opposite extreme from the close of the period.

EARLY ENTRY FAILURE (EEF) - After Early Entry, a loss of momentum and subsequent shift in momentum counter to the direction of EE resulting in a move back through the early established extreme.

EXPANSION - The market action that occurs at the conclusion of contraction and is characterized by (WS) days or (WS7) days. This action usually is the beginning of the next trend.

EXTREME - Pivot top/bottom on bar chart. Two or more single prints (ticks) at high or low of developing or completed daily profile chart.

FADE - A position taken opposite to the direction of the initial move off the open on a given day. This is usually considered when the initial move off the open is in the opposite direction of the prevailing trend and price patterns studies confirm the trend.

FRAME TRADERS (DAY TIME (DFT)) - Market participants who intend to transact business in today's session. Mostly they are local floor traders providing market liquidity.

FRAME TRADERS (OTHER TIME) (OTFT) - Market participants who did not originally intend to trade in today's session. These traders operate within a longer-term personal time frame.

GAP - is a day in which the daily range is completely above or below the previous day's daily range. When viewing intraday charts a gap may appear on just a higher or lower open without exceeding the previous days high or low.

GAP (REVERSAL) (RG) - The low of the last day is completely above the preceding day's action with the close reversing at least two closings; with a close above mid-range and the open. This records a very strong change in sentiment; a general narrowing downtrend is required on a (RG) up and the opposite on a (RG) down.
**GAP (PATTERN) (PG)** - Similar to (RG) but the gap does not have to be above/below the previous day's range; only the close.

**HOOK (BEAR)** - is a day in which the open is below the previous day's low and the close is above the previous day's close with a narrow range.

**HOOK (BULL)** - is a day in which the open is above the previous day's high and the close is below the previous day's close with a narrow range.

**HYPODERMICS (HPO)** - is a deliberately forced, fast mark-up in price. The purpose of hypodermics is the stimulation of uninformed buying in order to facilitate distribution.

**LAST POINT OF SUPPLY (LPST)** - A narrowing low volume price range (possibly 2 Bar NR) that occurs just prior to the commencement of a mark up phase. Analogous to Springboard.

**LAST POINT OF SUPPORT (LPS)** - A narrow, low volume price range (possibly 2 Bar NR) that occurs just prior to the commencement of a mark up phase. The market is said to be in equilibrium at this moment.

**MARKET** - is any organized exchange where buyers and sellers can meet to exchange their good, in this case futures contracts.

**OPEN** - is the first trade registered in the time period under consideration.

**OPENING RANGE BREAKOUT (ORB)** - is a trade with entry taken at a predetermined amount above or below the opening range. When the predetermined amount (The Stretch) is computed, a buy-stop is placed that amount above the high of the opening range and a sell stop is placed the same amount below the low of the opening range. The first stop that is traded is the position and an (ORB).

**ORB PREFERENCE (ORBP)** - The procedure is similar to the (ORB) but the only order entered is the stop in the direction of the entry. The protective stop is entered only after the trade has been entered. The exception to this is if the market trades to the stretch in the opposite direction first, then the (ORBP) is nullified and the resting order is cancelled.

**PIVOT BOTTOM (PB)** - is a day in which the low is below the low of the preceding day and the low of the following day.

**PIVOT TOP (PT)** - is a day in which the high is above the high of the preceding day and the high of the following day.

**PRELIMINARY DEMAND (PD)** - is a high volume, wide spread day that produces a short-lived rally in a mark down phase. This occurs sometime before the selling climax and is the first sign of demand.

**PRELIMINARY SUPPLY (PS)** - is a high volume, wide spread day that produces a short-lived reaction in a mark up phase. This occurs sometime before the buying climax and is the first sign of supply.

**PRICE IMBALANCE** - A disproportionate amount of product on one side of the market.

**PRICE MOVEMENT** - results from an imbalance between supply/demand.

**RALLY** - is a short-term advance in the price.
RANGE (DAILY) (DR) - is the difference between the high and low of a given day.
RANGE (MID) (MR) - is the exact mid-point between the high and low of a given day.
RANGE (NARROW) (NR) - is the smaller daily range relative to the previous day.
NR4 - is a daily range that is narrower than the previous three days compared individually to the day in question.
NR7 - is a daily range that is narrower than the previous six days compared individually to the day in question.
2 BAR NR (2NR) - is the narrowest range from high to low of any two day period relative to any two day period within the previous twenty days.
3 BAR NR (3NR) - is the narrowest range from high to low of any three day period relative to any three day period within the previous twenty days.
4 BAR NR (4NR) - is the narrowest range from high to low of any four day period relative to any four day period within the previous thirty days.
8 BAR NR (8NR) - is the narrowest range from high to low of any eight day period relative to any eight day period within the previous forty days.
OPENING RANGE (OR) - is the first thirty seconds of trade of each trading day.
PIONEER RANGE - The first column in the profile graphic establishing initial balance. More accurately, the range of the first hour of trading in any commodity other than Stock Indexes, where the range from open to 1:30 is considered the pioneer range.
RANGE (WIDE SPREAD) (WS) - is an increased daily range relative to the previous day.
RANGE EXTENSION - When the initial balance area (pioneer range) is disturbed by other time frame traders. Or when price moves out of the pioneer range in either direction.
REACTION - is a short-term decline in the price.
RESISTANCE (R) - is opposition to advancing prices caused by an increase in available supply.
REVERSAL (FOUR DAY CLOSE) (4DCR) - After four closes in close proximity to each other a (WS) day occurs with a close above/below the previous four closes. Close of (WS) should be above/below opening and (MR).
REVERSAL (THREE DAY CLOSE) (3DCR) - the close is above/below the previous three days. The high/low is above/below the previous three days. The low/high is above/below the low/high of the last three days. The close is above/below the open and mid-range with a (WS) bigger than the average of the last three days.
REVERSAL (THREE DAY HIGH) (3DHR) - Three narrow range days are followed by a wide spread day closing above/below the high/low of the three day period. Close must be above opening and mid-range for the day.
SHAREOUT - is a deliberately forced price reaction whose purpose is that of stimulating public selling in order to facilitate the accumulation of speculative positions.
SHOW OF STRENGTH (SOS) - A decisive rally after a secondary test of the low, taking the market above the high of the automatic rally. Accompanied by higher volume than the previous rallies and the secondary test.

SHOW OF WEAKNESS (SOW) - A decisive break after a secondary test of the high, taking the market below the low of the Automatic Reaction. Usually accompanied by higher volume than previous selloffs and the secondary test.

SPRING (SP) - occurs when price moves below a pivot bottom and a wide spread reversal ensues as follows:

1. Two previous closes are reversed
2. Close is above pivot bottom
3. Close is above opening and mid-range
4. Daily range is greater than the previous day's range

SPRINGBOARD - is a condition in the price movement of a market that has completed preparation and has been brought to a point where the market may move into a mark up or mark down period. A springboard can be recognized by the unusually narrow trade relative to the previous day's action.

STEPPING DOWN - In a downtrend when the market holds similar sloping angles of resistance off of successively lower pivot tops within the trend. Generally, this indicates an acceleration of the existing trend.

STEPPING UP - in an uptrend when the market holds similar sloping angles of support off of successively higher pivot bottoms within the trend. Generally, this indicates an acceleration of the existing trend.

STRETCH - is determined by looking at the previous ten days and averaging the sum of the differences between the open for each day and the closest extreme to the open.

SUPPLY - Product (Futures contracts specifically) existing to sell in the market.

SUPPORT (S) - is opposition to declining prices caused by an increase in available demand.

TAIL - A price period with the bulk of the trade and close for the period on one extreme with very little trade on the other extreme. Synonymous with Spike, sometimes forming Upturts/Springs. It is the predecessor of most major reversals.

TAIL (TOP OR BOTTOM) (TT or BT) - The market closes higher for three days in the top part of the trading range.

TERMINAL SHAKEOUT - A congestion area taking place above and in the vicinity of an important pivot top that ends with Spring-type action. The result is an extensive area of accumulation with long-term bullish implications.

TERMINAL UPTHRUST - A congestion area taking place above and in the vicinity of an important pivot top that ends with Upturst-type action. The result is an extensive area of distribution with long-term bearish implications.

THRUST - is a comparison between the price difference of successively lower pivot bottoms. A reduction in the difference between pivot bottoms shows a momentum loss. An
increase in the difference with each lower bottom shows a momentum increase. The same analysis can be applied to successively higher pivot tops.

**UPTHRUST (UT)** - occurs when price moves above a pivot top and a wide spread reversal ensues as follows:

1. Two previous closes are reversed
2. Close is below pivot top
3. Close is below opening and mid-range
4. Daily range is greater than the previous day's range.