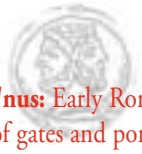
The Janus Factor

Gary Anderson



Ja'nus: Early Roman god of gates and portals, represented by two opposing faces, suggesting the two sides of a door. Janus symbolizes the two-sided nature of things.

Traders alternate between two modes. At times traders exhibit trend-following behavior. Relatively strong stocks are favored, while laggards are sold or ignored. At other times, the reverse is true. Traders-in-the-aggregate turn contrarian. Profits are taken in stocks that have been strong, and proceeds are redirected into relative-strength laggards. This paper presents the market as a system of capital flows reducible to the effects of traders' Janus-like behavior.

Arriving at a systematic view of a process may begin with a series of inferences or with one or two analogical leaps. Every model is ultimately the expression of one thing we hope to understand in terms of other things we do understand, and analogies, like pictures, are useful devices that simplify and clarify, particularly early on. In the end, understanding must be grounded on primitive notions, each of which pictures some part of the whole and which we agree to accept on intuitive merit.

As a foundation for method, two pictures are offered. First, we will look at feedback loops. Next, I will introduce a new approach to relative-strength. Then, the concepts of feedback and relative-strength will be fused to portray the market as a system of capital flows.

But the market is a hard taskmaster and demands that insights provided by analogical thinking be translated into explicit method. So, finally, I will offer two demonstrations of the power of the methods outlined in this paper.

Feedback Loops

Feedback is commonplace. Businesses routinely solicit feedback from customers, and that information is returned to the marketplace in the form of improved products and services. The best companies seek feedback continuously, and in the process convert information into long-term success. To a large extent such feedback determines winners and losers and, more generally, helps move the economy forward. In a free-market society feedback is pervasive, so it should come as no surprise that feedback is at work in the equities market as well.

There are two sorts of feedback--positive and negative.

A common example of **positive feedback** is the audio screech that occurs when a microphone gets too close to a speaker. Sound from the speaker is picked up by the microphone, then amplified and sent back through the speaker. Sound continues to loop through the system, and with each pass the volume increases until the limit of the amplifieris reached. All of this happens quickly, and the result is both loud and annoying.

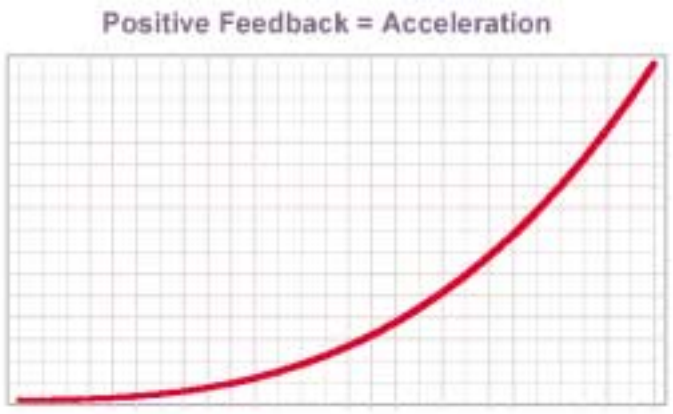
> IN SOME SEASONS, TREND FOLLOWING IS GOOD; IN OTHERS, REVERSING IS GOOD. THE PROBLEM IS HOW TO DIFFERENTIATE THE SEASONS IN ADVANCE.
> VICTOR NIEDERHOFFER, THE EDUCATION OF A SPECULATOR

Another, less common example of positive feedback is the nuclear "chain reaction", in which particles released from one area of nuclear material release a greater number of particles from areas nearby. The process accelerates rapidly until the whole mass is involved. The result is explosive.

A spreading fire is another example. A discarded match ignites the carpet. The fire spreads to the curtain, then up the wall. Quickly the whole room is in flames, and soon the entire house is burning.

In each of these cases an accelerating trend continues until some limit of the system is reached. The amplifier peaks out, the nuclear material is spent, or all nearby fuel in the house is burned up. Positive-feedback systems exhibit accelerating trends.

Figure 1

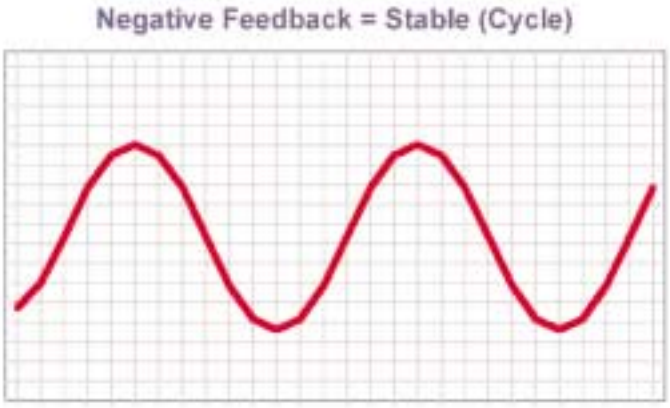


A good example of **negative feedback** is the thermostat, which cools a room as ambient temperature rises and heats as temperature falls. The thermostat stabilizes room temperature within a comfortable zone. Another example of negative feedback is the engine governor, commonly used to stabilize the output of industrial engines.

An interesting example of negative feedback is the predator-prey relationship. An increase in the predator population tends to put pressure on the prey population. However, a fall in the number of available prey reduces the number of predators who may feed successfully, and so the predator population declines. A decline in predators, in turn, boosts the prey population, and so on. The interaction of predator and prey

tends to stabilize both populations. Negative-feedback systems are stable systems, with *values fluctuating within a narrow range.*

Figure 2



Feedback in the Market

When traders respond to market events, they are closing a feedback loop. The actions of individual traders collect to produce changes in the market, and those actions prompt a collective response. Sometimes traders' aggregate behavior is amplified through positive feedback. In the case of positive feedback during a rising market, rising prices trigger net buying on the part of the aggregate trader. Net buying lifts prices, and higher prices, in turn, generate more buying. An accelerating advance results. Positive feedback in a falling market, on the other hand, develops when lower prices induce traders to sell. Net selling pushes prices down, and lower prices, in turn, encourage additional net selling, and so on, producing an accelerating decline. Positive feedback, when it occurs, produces a trend. Traders' aggregate behavior during these periods may be characterized as 'trend-following' (see Figure 3).

Figure 3

Positive Feedback

At other times feedback between market inputs and traders' aggregate response is negative. When negative feedback prevails, the composite trader reacts to rising prices by taking profits. That net selling puts pressure on prices. However, falling prices encourage traders to hunt for bargains among depressed issues. A strong bid for weakened stocks pushes prices higher again, and the cycle repeats (Figure 4).

Figure 4

Negative Feedback

When negative feedback drives traders' response to price change, price action tends to be choppy or corrective. Traders' behavior during these periods may be characterized as 'contrarian'.

A New Model of Relative Strength

Markets are risky. And risk, everyone knows, involves loss, or the possibility of loss. The connection we all make between risk and loss is intuitive and powerful. Because the probability of equity loss is greatest when markets are falling, a stock's ability to defend against loss is most critically tested, and therefore best measured, during periods of general market decline.

But rising markets are risky, too. Regardless of how well a stock defends against loss during falling markets, if it does not score gains as the market rises, the trader is subjected to another risk, lost opportunity. Because the probability of opportunity loss is greatest when the broad list advances, a stock's offensive qualities are best measured when the market is rising.

Picturing Offense and Defense

Webster's Dictionary defines a benchmark as a "standard or point of reference in measuring or judging quality, value, etc." A benchmark may be a published market index or the average performance of a universe of targets (stocks, groups, etc) under analysis. For our purposes, two benchmarks are required, one to measure offensive performance and the other to measure defensive performance. To accomplish this, the average daily performance of a universe of stocks is separated into two sets of returns. The first set includes only those days when average performance was either positive or flat. That set of returns makes up the offensive benchmark. The defensive benchmark is built from the balance of the daily returns, those during which average performance was negative.

Each target within the universe is compared separately to both offensive and defensive benchmarks. To produce an offensive score, the sum of the offensive benchmark's daily returns (flat-to-rising days) over some period--say, 100 days--is divided into the sum of the target's returns for the same days and over the same period. If the result of that calculation is 110, then the target is ten percent stronger than the benchmark on those days when benchmark returns are flat-to-rising. The target has an offensive score of 110.

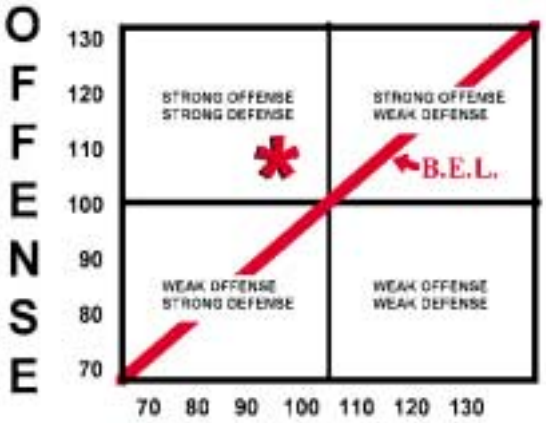
A similar calculation is made to determine defensive relative strength. The sum of the defensive benchmark's returns on negative-return days is divided into the sum of the target's returns for the same days. A result of 110 in this case indicates that the target is ten percent weaker than the defensive benchmark.

Offensive and defensive performances of a target are pictured graphically in Figure 5. The vertical axis displays offensive performance. The offensive benchmark is indicated by a horizontal line that divides the vertical axis equally. A score above 100 indicates that the target's cumulative return during positive-return days exceeds the offensive benchmark's. A weak offense under-performs the benchmark and earns a score below 100.

The horizontal axis shows defensive performance. A vertical line bisecting the matrix designates the defensive benchmark. A strong defensive score of less than 100 places the target to the left of the vertical benchmark. A weak defense generates a defensive score above 100 and locates the target to the right of the vertical benchmark.

A target in the position marked with an asterisk (Figure 5) has an offensive score of 110 and a defensive score of 95. This target has outperformed the benchmark both offensively and defensively.

Figure 5



The Benchmark Equivalence Line (BEL)

Notionally, there are infinite combinations of offensive and defensive performance that match the overall performance of the average stock (benchmark). These combinations range from very weak offense plus very strong defense to the other extreme of excellent offense together with very poor defense. All possible combinations of offense and defense that tie the universe's average performance comprise the Benchmark Equivalence Line (BEL).

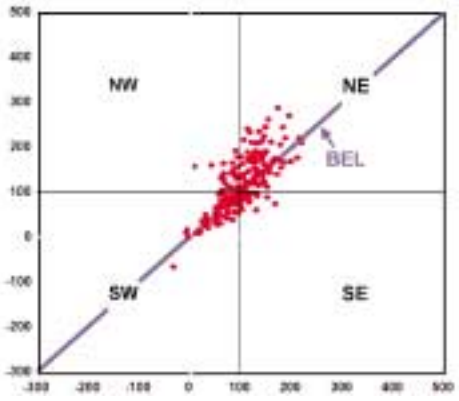
A target with an offensive/defensive score of, say, 110/110 has rallied ten percent more than the offensive benchmark during rising periods. The target has also fallen ten percent more than the defensive benchmark during declining periods. When offensive and defensive performances are combined, overall performance of the target matches the average performance of the universe. The target is simply more volatile than the benchmark. Similarly, a score of 90/90 matches average performance, but in this case the target is less volatile than the benchmark. The original benchmark (100/100) *at all volatilities* comprises the BEL. The BEL is shown in Figure 5 (above) and forms a straight line that runs diagonally through the matrix.

A target's location anywhere northwest of the BEL indicates that combined offensive-defensive performance is better-than-benchmark, while a location to the southeast of the BEL marks worse-than-benchmark performance. The further NW of the BEL, the more a target's performance has exceeded benchmark performance. The further to the SE, the more a target has fallen short of the benchmark.

The next chart (Figure 6) pictures a universe consisting of the Standard & Poor's 100 plus the NASDAQ 100 as of mid-December, 1998. The market has suffered through a sharp summer decline, and confidence in the new advance is still weak. Traders are risk-averse and contrarian. Relative strength differences (NW-SE) are small and eclipsed by differences based on volatility (SW-NE). As a result, stocks hug the benchmark and arrange themselves along the BEL.

Figure 6

December 15, 1998

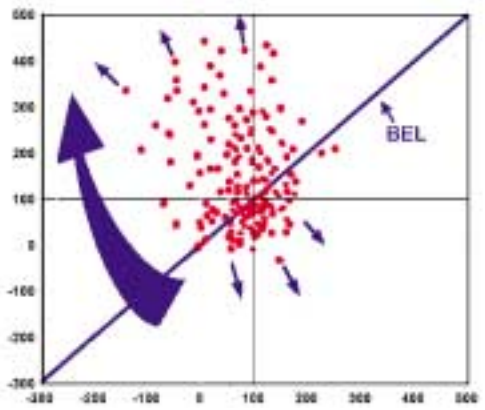


How Positive Feedback Expands the Universe

During periods of positive feedback, traders buy into strength and sell into weakness. Whether the overall market is rising or falling, capital flows from weaker to stronger issues. As the process continues, relatively strong stocks become even stronger and relatively weak stocks become still weaker. The period from December 1998 through March 2000 marks a period during which traders' aggregate behavior was dominated by trend following. Traders engaged in a virtuous positive-feedback cycle that drove the strongest stocks to new extremes of relative strength. Laggards rallied, but not as well as the average stock, and so continued to drift below the BEL as their relative strength declined. Figure 7 shows the 200-stock universe in March 2000, near the end of that expansion phase, and pictures the flow of capital from weak targets SE of the BEL to stronger targets NW of the BEL.

Figure 7

Capital Flow During Positive-Feedback Periods



March 13, 2000

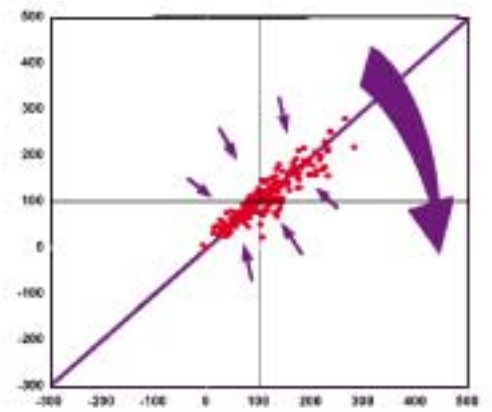
When feedback is positive, capital is pumped into strong targets NW of the BEL, and so the relative strength of those targets tends to improve. As relative strength improves, strong targets migrate toward the NW. On the other hand, relatively weak targets are drained of capital and so become relatively weaker. Weak stocks move to the SE and further away from the BEL. Positive feedback in both rising and falling markets produces a northwesterly flow of capital and causes the universe to expand.

As the universe expands, the strongest stocks push well into the NW quadrant. Movement toward the NW indicates that relatively strong stocks are not only outpacing the benchmark during advances but also finding exceptional support during weak market periods. Improvements in both offensive and defensive scores provide evidence that these stocks are under active sponsorship.

How Negative Feedback Contracts the Universe

During periods of negative feedback, capital flow across the BEL is reversed. In the aggregate, traders have turned from trend-following behavior to contrarian behavior. Traders buy only once stocks are considered cheap, and profits, when they come, are taken quickly on rallies. As a result, trends are not durable, and price action is range-locked or corrective.

Figure 8



Capital Flow During Negative-Feedback Periods
November 8, 2002

Driven by negative feedback, capital flows out of stronger issues NW of the BEL and into weaker stocks to the SE. Stocks that have been strong lose relative strength and fall back toward the BEL. On the other hand, stocks with a recent history of weakness, pumped by an infusion of capital, migrate in a northwesterly direction toward the BEL as relative strength improves. Negative-feedback periods produce a southeasterly flow of capital and cause the universe to contract. Figure 8 shows the universe in November 2002, near the end of a long contraction phase, and pictures the flow of capital under negative-feedback conditions.

Confidence

The current of capital alternates back and forth in a cycle repeated over and over as the universe of stocks expands then contracts. But what is it that prompts traders, as if with one mind, to push stocks to relative-strength extremes before pulling them back toward the benchmark?

It is confidence in the trend.

It takes confidence to buy into strength and to let profits ride. When traders, for whatever reasons, become confident of a bullish trend, they defer profits and chase strong stocks into new high ground. Stocks that do not participate in the trend are ignored or sold. Trends accelerate, and profits, for those trading with the trend, come easily.

On the other hand, when traders are confident of a bearish trend, the weakest stocks are liquidated or shorted aggressively, and proceeds are held in cash or shifted to stronger stocks that defend well in a falling

market. Trends are durable, albeit negative, and traders willing to sell into the trend are rewarded.

In either case, confidence in the trend leads to trend-following behavior. The controlling dynamic is positive feedback. Relatively strong stocks out-perform weaker issues, and the universe expands.

The dynamic is quite different once traders lose confidence in the trend. Risk-averse and contrarian, traders respond negatively to price change. Buying is focused on oversold "bargains", and profits are taken in stocks that have rallied. Trends are short-lived and unreliable, and profits are elusive. Stocks with a recent history of relative strength fall back toward the BEL while laggards improve, and the universe contracts.

Red Shift

There is a shift of color toward the red end of the spectrum in the light emitted by the most distant galaxies. Astronomers cite this as evidence that these galaxies are moving away from us at the fastest speeds as the universe expands.

Something like that happens in a universe of stocks. During bullish expansions, the strongest stocks, those furthest from the BEL, book the strongest forward gains. Perhaps stronger relative strength attracts greater demand from trend-following traders. In any case, the best immediate gains during such periods are most likely to come from targets near the furthest extreme of relative-strength.

Similarly, during bearish expansions the best short profits are likely to come from the weakest stocks and groups. Even during contracting markets, the best opportunities on the long side are consistently provided by the most laggard issues. Generalizing, *the most profitable opportunities consistently come from targets furthest from the BEL.*

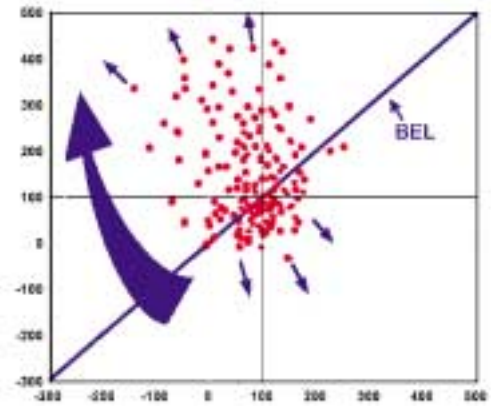
The Spread

The spread in performance between relatively strong and relatively weak targets offers a running picture of expansion and contraction. The Spread is calculated as the difference in forward performance of relatively strong vs. relatively weak targets. One may choose to compare the average forward performance of all targets NW of the BEL with that of all targets SE of the BEL. To make the comparison, all targets NW of the BEL on day d are identified, as well as all targets SE of the BEL. Then the average performance for each set of stocks on the following day (d+1) is calculated, and the difference between the two averages is determined. The resulting number is the daily performance spread between all strong and all weak targets. Daily spreads are cumulated to create The Spread.

The next chart (Figure 9) shows both the average performance as well as The Spread of the 200-stock universe from January 1999 to April 2003. Periods during which The Spread rises indicate an expanding universe driven by positive feedback. Traders are confident in the trend and their behavior is characteristically trend-following. Trends develop momentum and persist. Periods during which The Spread rises are shaded.

Figure 9

200-Stock Average vs. The Performance Spread



January 1999 to April 2003

Unshaded areas bracket periods during which The Spread fell, the universe contracted, and traders were risk-averse and contrarian. Market action is turbulent and long-lasting trends are hard to find. In this whipsaw-prone environment, even tight risk-control may not save the trader from accumulating outsized losses.

There is, however, one notable exception to this dreary contrarian outcome: after a significant decline, oversold, volatile laggards rise fastest during the initial phase of a new advance. During these periods, contrarian long positions in laggard issues are likely to produce superior short-term profits. But for this one exception, a falling Spread is a signal for caution.

The generally rising trend of the Spread from the spring of 1999 through March 2000 (shaded area 1, Figure 9) indicates that the universe of stocks was expanding throughout a long positive-feedback cycle. Traders favored relative-strength leaders, and the most profitable strategy was to own the strongest stocks and groups.

Despite the continuation of a bull market in prices, the Spread's sharp decline in March of 2000 (2) warned that traders had lost confidence in the rising price trend. The fact that prices continued to advance during this contrarian period suggests that traders attempted to reduce risk, not by moving to cash, but by replacing bulled-up leaders with laggard issues.

During period 3 The Spread recovered as prices continued to rise, but by period 4, during which the average fell as The Spread rose, it was clear that momentum had tipped to the downside. Traders were gaining confidence in the declining trend.

Period 5 shows a typical contrarian pattern. Price moves irregularly within a trading range.

Period 6 offers traders the first good opportunity to trade the short side in synch with the trend. The average stock fell as The Spread rose, our indication that positive feedback was operating in a declining trend. Under these conditions, weak stocks fall faster and further than stronger issues, and the best strategy is to sell or to sell-short relative-strength laggards.

Another big wave of selling is supported by a rising Spread in period 7. Momentum, as measured by the trend of The Spread, is now quite strong, and prices tumble to new lows.

A solid contrarian rally featuring oversold laggards (8) returns the average to long-term resistance. Early in a contrarian rally, as The Spread begins to dip and the average stock begins to advance, the best strategy is to buy volatile laggards in the expectation of good, though likely short-term, profits.

After that corrective rally, the average declines again in three consecutive waves of selling under increasing momentum (9, 10 and 11). Since mid-2000, periods of downside momentum have been progressively longer, and prices have fallen further with each event.

The Spread discloses the direction of capital flow within a universe of targets and offers a new and precise definition of 'momentum'. Traders may use The Spread not only to identify profitable trending periods but to avoid difficult markets as well. Indeed, these indications are consistent enough to support reliable trading rules. Those rules are listed below:

1. When The Spread is rising, and relative-strength leaders are advancing, buy the strongest stocks and groups;
2. When The Spread is rising, and relative-strength laggards are declining, sell or sell short the weakest stocks and groups;
3. After a decline, if The Spread is falling and relative-strength laggards are advancing, buy the weakest stocks and groups.

Testing The Spread

A protocol was devised to back-test the efficacy of The Spread. To isolate the effect of The Spread, simultaneous long-short trades were assumed in order to neutralize the impact of market direction. The sole pre-condition for trades was the immediate direction of The Spread.

Figure 10 summarizes five separate computer back-tests of a market-neutral strategy based on the direction of The Spread. The method employed is simple, direct and free of any attempt to optimize outcomes. The Spread is used to determine whether the universe of 200 stocks is expanding or contracting. If The Spread rises (universe expands), long positions are selected from relatively strong stocks and short positions are selected from relatively weak stocks. Positions are reversed when The Spread falls (universe contracts). The net percentage change for the *following day* (close to close) resulting from long and short positions is cumulated. No leverage is assumed.

No allowance is made for commissions or other costs. As with any back-test, results are theoretical and are intended only as a demonstration of the validity and power of the methods developed in this paper.

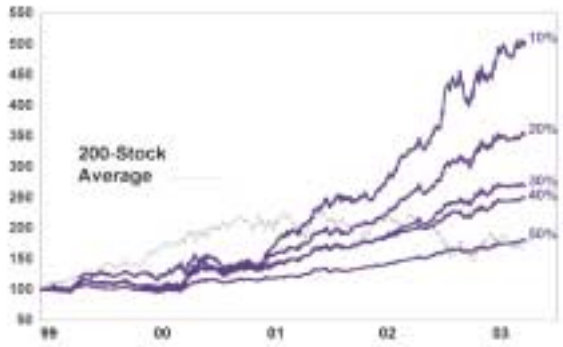
The back-test was made assuming stock-sets of varying size. "10%" tags the overall performance that results from trading only the strongest and the weakest ten percent of the universe. That set posted a gain of 404% with a maximum draw-down of 14%. Over the same period (4.3 years), the 200-stock average gained 69%, with a maximum draw-down of 39%.

Set-size was increased incrementally by ten-percent until the relatively strong half of all stocks were positioned on one side of trades and the relatively weak half on the other ("50%"). Each set tested scored a higher net gain and a smaller maximum draw-down than the 200-stock average.

The best overall performance came from the set of stocks (10%) nearest the two relative-strength extremes of the universe. This result is consistent with the "Red Shift" phenomenon discussed above.

Figure 10

Market-Neutral Results vs. 200-Stock Average



Postscript

Markets make sense. Price series are not chaotic, but are carried along on currents of underlying capital flow. As we have seen, those currents may be observed through their effect on price. Moreover, a proper reading of capital flows can lead to consistent trading success.

Skeptics hold that operations based only on observed price changes cannot succeed. Markets are moved by news, they argue, and since, by definition, news cannot be predicted (or it would not be news), price movement cannot be anticipated. It is a short step to conclude that price data are not linked and that price series follow a random walk.

Skeptics fail to take into account that price activity is also news. As we have noted, traders respond to news of price change, just as they respond to other sorts of news. By their collective response traders forge causal links between past price data and current price movement.

Price data are linked because traders link them.

Granted, markets are the free and spontaneous creation of buyers and sellers motivated only by insular self-interest. Yet the whole of their activities assumes a shape and flow beyond the intent of any individual trader. Out of the chaos of daily trading, something new, orderly and recognizably human emerges. At bottom it is hope and fear, measured by the rhythms of expansion and contraction in a process as relentless and as natural as breathing or the beating of a heart.

Biography

Gary Anderson has been a principal of Anderson & Loe since 1990. Over that period, Gary has provided stock market consulting and advisory services to an international clientele of professional asset managers, including banks, mutual funds, hedge funds and financial advisors. Gary's work has been featured in *Barron's* (October 1994), and his work has been published in *Technical Analysis of Stocks and Commodities.* Gary publishes a weekly comment, *Equity Portfolio Manager* (equitypm.com), and he is the primary author of *Traders Boot Camp* (tradersbootcamp.com), an online educational service.