

pi*1000) Princeton Economic Confidence Interval, and after further discussion with Dr. John Vyden of UCLA in 2000-2001, put forward the following basic hypothesis and assertion in our February 2001 article *Measuring Financial Time: The Magic of Pi*:

If one learned in high school that the circumference of a circle is $2\pi r$, and this measures a complete circle's perimeter -- a full cycle or rotation so to speak -- might not this law of physical matter also apply to financial market behavior?

To us, this seems like such an obvious a hypothesis to test, and empirically we have done so in a variety of past market letters. Our most recent forecast (shown in the monthly S&P chart below as of Nov 30, 2004) was that December 30-31, 2004 would be a significant market turning point. This was a forecast that we repeated incessantly throughout last year.

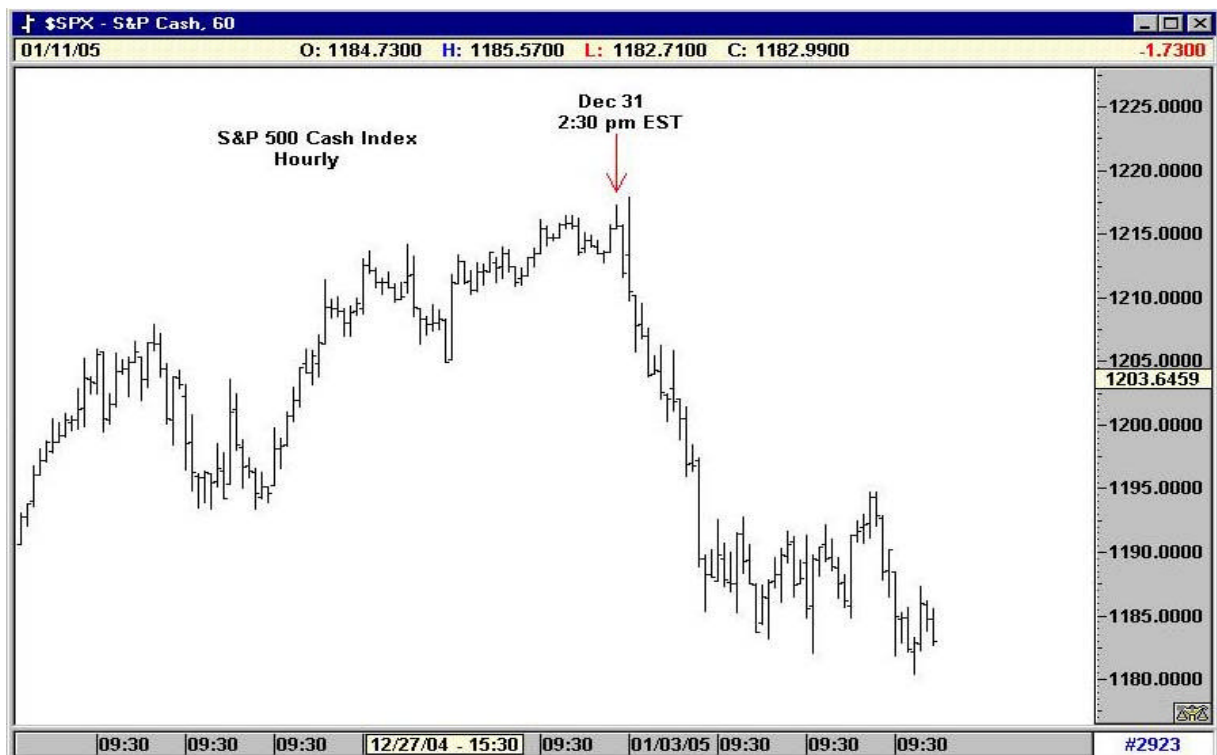


Looking at the chart below, we also had a leaning during parts of last year that Dec. 30-31, 2004 was likely to be a high – although we unfortunately waffled on this forecast on more than a few occasions -- particularly during the 2004 summertime period. Our natural fundamental knowledge of an over-levered U.S. economy made us at times fear a crash low instead. Only after stocks took off in October did the alignment of December 30-31 as a high become more clear, and by then it was almost too late to do anything about it.



Red lines originally drawn in Spring 2004 as one possible market path, with chart above as of Nov. 2004

And what of course happened during our Dec. 30-31, 2004 time window? A variety of financial markets experienced sudden sentiment and price reversals -- led by a significant reversal in U.S. equity markets. The intraday high tic for the S&P 500 was specifically near 2:30 p.m. on Dec 31st, 2004 with just a small overshoot higher in the pre-trading session of Jan 3, 2005.



Some of the declines in other indices such as the NASDAQ 100, NASDAQ Composite, and Russell 2000 have been even more dramatic, all down in the -4% to -7% region over the first seven trading days of the year.

The euro also left at least a temporary top of some significance against the U.S. dollar, with its last spike higher coming around 1 p.m. on December 30th, 2004.



So our cycle date does appear to have been of great significance. But going back to our earlier discussion of the academic community trying to prove the fractal behavior of financial markets, we still can't mathematically prove that pi cycles exist beyond empirical observation. Maybe someday we will, or someone else will, but for now, we have simply made the intuitive and empirical leap that such cycles do exist. Yet to our mind, this hypothesis is so clean, simple, and yet powerful that it leaves Mandelbrot's entire book (which we recently read) looking like plebian fare.

Admittedly, Mandelbrot almost gets there when he makes statements such as:

"To me, the power and wealth of the New York Stock Exchange or a London currency-dealing room are abstract; they are analogous to physical systems of turbulence in a sunspot or eddies in a river." (page 6, *The (Mis)behavior of Markets*)

But then Mandelbrot does not make the leap to tie fractal rhythms in any way to Fibonacci or pi rhythms so prevalent in the physical world. He builds hypothetical charts from fractal price behavior, occasionally inserting a random "directional reversal" in his work by the flip of a coin, but never stops to think that these reversal points might somehow be related to some mathematical rhythm -- a mathematical constant of some sort -- or even perhaps subject to the forces of entropy as in physics. He ends up calling technical analysis "a false illusion" of

something that appears to see patterns of support and resistance, but really doesn't see anything other than fractal randomness. As an entire goal for his book, Mandelbrot simply ends up dismissing the traditional Gaussian "normal distribution" assumption for market price behavior and replaces it with a "far wilder" distribution driven by fractal behavior. By so doing, he espouses a very modest goal:

"...[M]y research could help people avoid losing as much money as they do, through fool-hardy underestimation of the risk of ruin....My scientific approach to markets have been emulated by a new generation of those who call themselves 'econophysicists.'" (pages 6-7, *The (Mis)behavior of Markets*)

But Mandelbrot, as a mathematician, seems to be taking such shallow steps, and setting such obvious goals. Anyone who lived through the Crash of 1987 or the Crash of 1929, or even far more minor events such as the precipitous October 1998 decline in USD/JPY, already knows that financial markets regularly experience "non-normally" distributed periods of extreme movement and stress – so called "fat tail" events. Anyone who has worked with Black-Scholes options pricing models, and more sophisticated "jump diffusion" and "stochastic pricing" of options, already knows that market volatility simply is not constant as the Black-Scholes options pricing formula so blithely assumes. Instead, markets tend to experience much of their volatility in occasional "jump moves." I did not need to read Mandelbrot's entire book to know this, nor did I need to be told that fractal rhythms more easily replicate "fat tail"-filled return distributions than Gaussian distributions.

One quote that Mandelbrot sites from early mathematician Henri Poincarre on page 44 of his book did hit a chord in my mind:

"A scientist worthy of his name, above all a mathematician, experiences in his work the same impression as an artist; his pleasure is as great and of the same nature."

Thus, here at Sandspring.com, we approach our own analysis of market behavior more from an *artistic* perspective than a purely scientific one. Maybe this is something genetic in my own psyche. I specifically am the son of a NYSE Specialist market-maker and an impressionist artist. What should that combination perhaps produce as its progeny? A chartist with an appreciation for Fibonacci certainly seems logical to expect. Taking this line of thought one step further, and at risk of sounding a bit like some sort of deranged numerology guy, I was born on 8-23-58, with each digit of my birth date a Fibonacci number. Add 8, 23, and 58 together, and 89 results – another Fibonacci number. So perhaps I was somehow destined to grow up with a fascination and appreciation for Fibonacci rhythms in financial price behavior.

But enough already on academic fractal theory, and my own personal oddities of thought. The readers of these pages want to know our market views, not necessarily our theoretical justification for our entire approach.

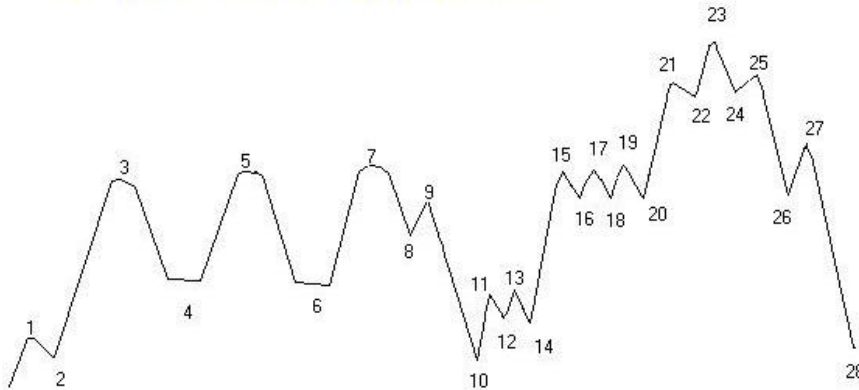
So here goes with a 2005-2006 forecast.

First, let us assert in real time, and contrary to Mandelbrot's beliefs: discernable patterns do emerge from fractal market behavior, and while these patterns may not have absolute predictive power, they can certainly shift the odds toward a correct market interpretation and positioning.

Along these lines, we do see a strong probability that the same topping pattern that we first described in 2000 within our article, *Three Peaks and a Domed House – Revisited* (see:

<http://www.sandspring.com/articles/tp.html>) may currently be taking place in current U.S. equity markets – with current markets effectively now starting a slide down the right side of the final topping process of the domed house formation. This is reasonably clear on a weekly chart of the S&P 500, and particularly clear on a chart of the Internet Interactive Index (shown on the following page).

George Lindsay's idealized
"Three Peaks and the Domed House"...

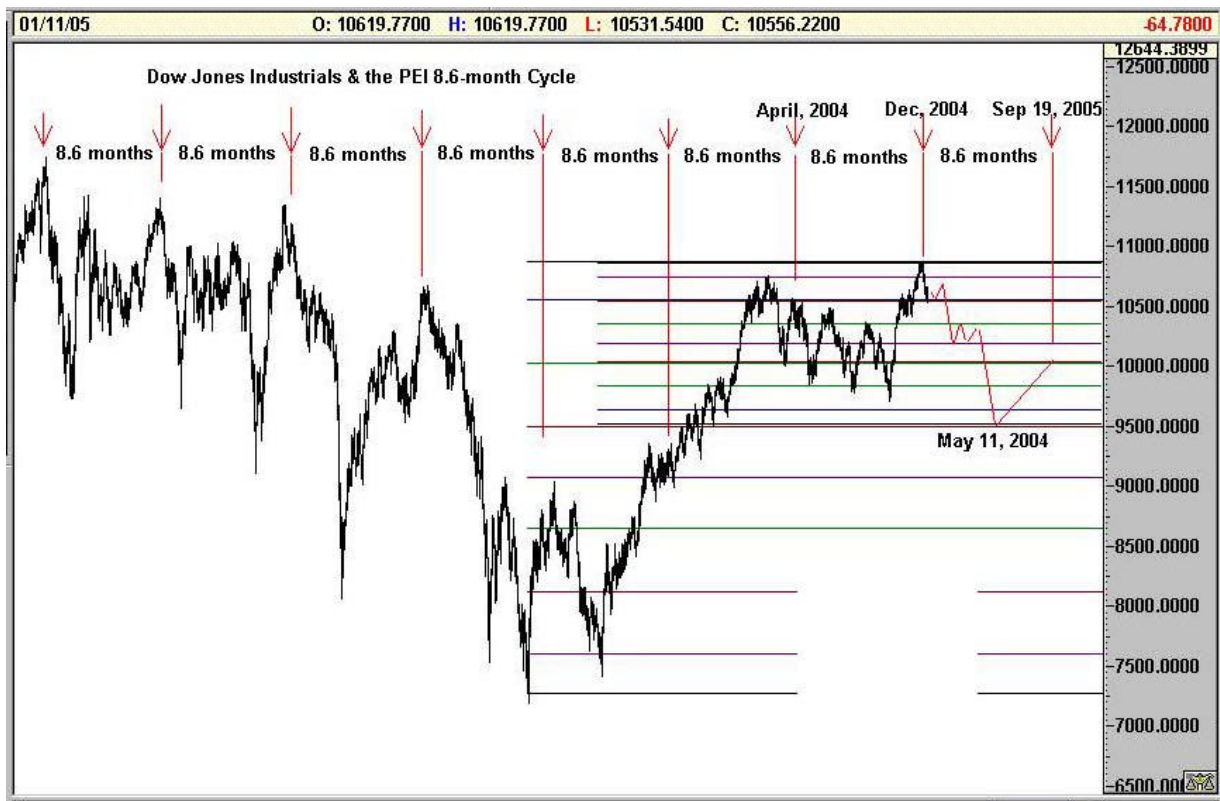




Our best estimation is that the Interactive Week Internet Index is currently near Lindsay's Point 24 (due for a small bounce), which would then leave the projected level of approximately 153.50 as a logical area to expect a point 26 low. From there, another small point 27 bounce should transpire, before an eventual slide to around 117.50 – **a total decline of approximately one-third from this Index's recent high.** Any Travelzoo and Amazon holders should take careful note: this should be a *huge* decline overall – particularly in low quality speculative stocks. Meanwhile, value-king Jeremy Grantham at GMO in Boston will almost assuredly be smiling by the time this all finishes.

The S&P picture in Lindsay terms is a bit less clear. If a tiny bit of support initially holds near 1175-1177, we would certainly add to shorts on any bounce back towards 1201. But the only real region of any significant support that we currently spy resides all the way down in the 1148-1152 region. As shown on the S&P chart, we now see 1045 on the S&P to be beckoning as a “natural attractor” level on a longer-term basis.

Elsewhere, in terms of time, we see in the updated Dow Jones chart below a PEI rhythm that would suggest a low in the market on or about May 11, 2005, with a bounce into September 19, 2005. For a reasonable-minded person looking at Fibonacci support and resistance bands, a May low around 9,500, followed by a September high near 10,030 might be one possibility. But N.B.: *Other more extreme moves could certainly transpire.* We have depicted here our minimum and most “palatable for publication” expectation only.



From a September 2004 bounce, late January 2006 would then be expected as another minor low, with yet another bounce into June 6-8, 2006. Last year, we said that 6/6/06 (sign of the devil) might be a low, but with Dec. 30-31, 2004 now firmly marked as a high, the PEI rhythm suggests this period of time as a minor high instead.

Then, after another minor low in mid-October 2006, we see some market ebullience developing into late Feb 2007 ($\pi \times 1000$ from the July 20, 1998 high, and $2 \times \pi \times 1000$ from the 1989 Nikkei high), but an ultimate low of great significance not forming until June 16-18, 2011. This latter date window will be a full $2 \times \pi \times 1000$ days from the early 1994 equity market low, and approximately $\pi \times 1000$ days from the 2002 market low. If the technical condition appears oversold during this window, and Sandspring.com is still around, we may well have a very different tone during that time window than our bearish and skeptical perspective today.

Some of these forecasts have obviously been adjusted from when we first penned our longer-term "Cycle Thoughts" article back in August 2001 – an article that also tried to tie in the PEI cycle to the longer-term Kondratieff cycle. Re-reading that paper today, we fully admit that we did get some longer-term cycle orientation and directional turns "upside down," but we also proudly note that we properly forecast a pick-up in inflation developing from 2001 through 2004, "fueled by a likely war" (such prediction being made pre 9/11) but with this inflation being punctuated at the same time by periods of debt default (let that read events such as the subsequent Enron, Worldcom problems, etc.) where the Fed would be pushing on a string to stave off debt deflationary pressures. We also forecast at that time that "inflationary pressures would likely only take off from 2005 onwards."

Will inflationary pressures accelerate?

The gold and oil markets have of course turned lower of late after peaking in the 4th Quarter of 2004. And folks like Bob Prechter now warn us of an imminent commodity market collapse.

To be honest, we just don't see such developing on an intermediate to longer-term basis, but instead, will stand by our original forecast that inflation and stagflation will be on people's lips more and more in 2005 and beyond.

Could the gold market trade down between now and mid-year? Sure, and it would be far healthier for it by shaking out many of the current weak-handed speculators. \$389-400 or even \$355 are possible – but the latter would be an extraordinary buying opportunity. On a bigger picture basis, using Fibonacci band rhythms shown below, we now expect gold to be on a high near \$610 by the February 2007 PEI date, followed by a major decline into its standard 8.5-year cycle low on or around the PEI date in April 2009. A cycle low at this time fits gold's approximate 8.5-year rhythm originally depicted back in our 2000 "Cyclical Commodity Turns" article.

So we are not long gold now, but we are looking for an opportunity to get re-involved – likely within the May/June time window. This is where a seasonal low for gold often transpires before Christmas season jewelry manufacturer re-stocking. Hopefully such time will also bring a bargain price.



Would Mandelbrot ever dare to offer such forecasts? And if our forecasts do come to pass to any greater or lesser extent, how would Mandelbrot ever subsequently explain such forecasting precision and success? Let's certainly hope that he and others can look back at these pages someday and realize how myopically shallow current academic attempts at financial fractal

theory are within the academic world. Conversely, the understanding of pi and Fibonacci market rhythms is becoming increasingly appreciated within the practical world of investing. As our business and our passion, hopefully Sandspring.com will continue to be part of this growing appreciation for fractal rhythms.

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