

"A Special Report on Forecasting Prices"

HOW FIBONACCI, ELLIOTT and GANN HELPED ME FORECAST THE 1987 STOCK MARKET CRASH

*(and maybe next one that is just around the
corner!)*

By George J. Slezak

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YOU SHOULD BE FOREWARNED THAT SYSTEMS WHICH TRIGGER FREQUENT TRADING SIGNALS AS PART OF A DAY TRADING STRATEGY CAN RESULT IN SUBSTANTIAL COMMISSIONS AND FEES.

REGULATORY DISCLOSURES REGARDING HYPOTHETICAL RESULTS

HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM.

ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS. PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. THE RISK OF LOSS EXISTS IN FUTURES TRADING.

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THEORY AND BACKGROUND

FIBONACCI

Leonardo Fibonacci (1170-1240), a medieval mathematician who made early contributions to number theory, may be better known today to traders than he is to scientists.

Fibonacci derived the number sequence that bears his name from a hypothetical problem involving a multiplying population of rabbits. The Royalty at the time commissioned him to calculate how many rabbits would be produced over a year from a single pair. (Obviously concerned about a rodent problem in her vegetable garden.) His answer was an order where 1 male and 1 female would reproduce resulting in a total of 3, 3 would result in 5, 5 would result in 8, etc. This answer to the problem was one of the first recursive number sequences known in Europe. The sequence was 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc., where each number is the sum of the previous two numbers.

1 male and 1 female would reproduce
resulting in a total of 3

$$1 + 1 = 3$$

This sequence has been observed in the structure of many aspects of nature; sunflower seeds, pine cones, our solar system, and even spiraling galaxies. The ratio between numbers in the series approaches Ancient Greek Phi, 1.618..., a number used as a base relationship in ancient Greek art and architecture. Even the Great Pyramids in Egypt are perhaps found to have been built in this relationship.

The following is the base of the number system that has become known as the "Fibonacci ratios":

$$0.618 \text{ divided by } 1.618 = 0.382$$

$$1 \text{ divided by } 1.618 = 0.618$$

$$0.618 \text{ times } 1.618 = 1$$

$$1 \text{ times } 1.618 = 1.618$$

$$1.618 \text{ times } 1.618 = 2.618$$

$$2.618 \text{ times } 1.618 = 4.236$$

$$4.236 \text{ times } 1.618 = 6.853$$

$$6.853 \text{ times } 1.618 = 11.088$$

To illustrate the application of the series in nature, review the following table of the approximate distance from the Sun and the "inner planets" in our solar system.

Earth 97 million miles from the Sun

Mercury 36 million miles from the Sun: 97 times .382 equals 37

Venus 67 million miles from the Sun: 97 times .618 equals 60

Earth 97 million miles from the Sun

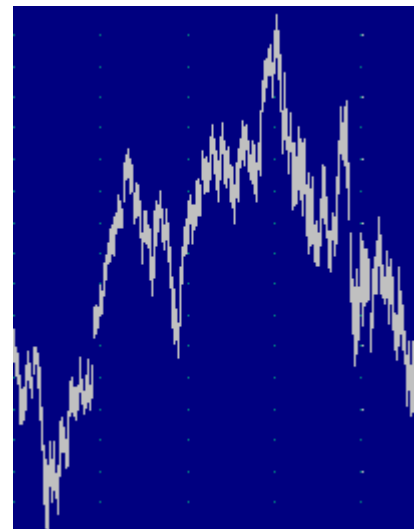
(So Mercury is .382 the distance of the Earth from the Sun, and Venus is .618 the distance of the Earth from the Sun. Interesting application, give or take a few million miles.)

ELLIOTT and GANN

R.N. Elliott and W.D. Gann separately published a series of articles and papers in the 1930's studying the stock market, and its perceived rhythm and structure. The purpose of their studies was to develop a method to forecast stock market movements (to tell the future) and thus reap the benefits of having next weeks Wall Street Journal before it is published.

Elliott wrote articles explaining that he saw "waves" in the market movements and developed the "Elliott Wave" theory of the markets. **He saw that often the relationship of the wave structure was in the ratio of the "Fibonacci series."**

A capsule summary of Elliot Wave is that markets fit into a wave structure, and by identifying the potential current structure one could provide a vision of the future. The basic structure is that of 5 waves: in an up trend rising in waves 1, 3, and 5; and falling in between in waves 2 and 4. The 2 and 4 waves were corrective in that they pulled back .382 or .618 the previous up wave. **The whole five leg sequence then equaled 1 of a higher degree and it started all over again.**



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$$1-2+3-4+5=1$$

Elliott saw that in the series there were recurring patterns and often one pattern would follow another.

Gann and Elliott studied
the "order" of the Stock Market

W.D. Gann wrote "Everything moves in cycles as a result of the natural law of action and reaction. By a study of the past, I have discovered what cycles repeat in the future." Gann found relationships in price **and time** that tended to repeat in the cycles of the market. Gann focused on 1/3 and 2/3 retracements as an evaluation of strength or weakness, and considered 50% increases and decreases of probable importance. Gann structured market trends around the 45 degree trend line (half of straight up or 90 degrees), and the 27.5 degree line, and the 72.5 degree line.

So Elliott looked for relationships of 1 increasing to 1.618, and retracements of .618 back and .382 back. And Gann looked for relationships of 1 increasing to 1.5, and retracements of .666 back and .333 back, and evaluated the strength or weakness of a trend based on the mathematical slope of the trend.

Elliott saw the relationship of the planets listed above as "Nature's Law."

Gann saw a similar "Law of Nature" in our Solar system:

Earth to Sun distance times .333 equals Venus

Earth to Sun distance times .666 equals Mercury

PUTTING THEM TOGETHER

It seems to me that they both saw the same "natural order", plus or minus a few percentage points. (After all, they were both looking at the same market!) I apologize to the many purist "Elliott Wavers" and "Gann 45ers" if they find my brief summary above incomplete. I have been studying markets for over 20 years and I often see these few brief similarities in the principles of Elliott and Gann show up in the markets on a regular basis.

The Natural Order

I view the process of the multiplication of rabbits , "the natural order," to be similar to the process of the multiplication of traders or investors. When two get a good idea, they share it (or telegraph it through market action) with another. Then the three become five, and on and on. Eventually, the market has so many players going the same way, that when it starts to go the other way, they all see the same thing and try to get out! That's why the "bear" side of the market is so fast. The population has grown so large and so smart, there is no one left "not in" to let anyone out. (That is why "volatility" increases in a declining market. The beginnings of a down market have the greatest number on investors/traders participating in the market.)

BUT THERE ARE DIFFERENCES!

I have however, identified one very significant difference in my understanding of how traders apply the writings of Elliott and Gann; **Gann traders are more flexible** (probably because Gann found out he was wrong so often; probably because he lived longer).

When an Elliott wave structure doesn't fit, they find an "alternative" structure to plug in. Gann traders look more at Gann lines and Gann levels as possible support and resistance, which if broken then suggest we will continue on to the next level. **More of a "decision point" type of strategy.**

If 1+1 equals more than 2, then maybe it equals 3

Pit traders often use "swing or pivot" points when day trading, which to me is more of a Gann approach to trading. They sell just before it gets to 5,000 hoping to buy back at 4950. If it gets above 5005, then they cover and buy aggressively pushing for 5050. Elliott wavers go short at 4998.25, and go broke at 5060.

MY OWN APPROACH TO FIBONACCI, ELLIOTT AND GANN IS TO CONSIDER THAT

SOMETIMES IT ACTUALLY WORKS!

(and sometimes it doesn't)

It did in the 1987 crash, and I called it! I had applied what I then called my Gann/Elliott/Fibonacci approach to the markets and had a guess that there was trouble possible in the markets.

FIGURING RETRACEMENTS

As I explained above, the more traditional use of Fibonacci ratios is to forecast price support levels for the market in a change of direction. If we go from a market low of 100 to a high of 200, then pause for a correction, most technicians look for support about a third back (or .382), then half way back, then two thirds back (or .618). If you exceed two thirds back you may have a change of trend. (I use this approach regularly in my day trading of the S&P futures and the US Bond futures.)

"FIRST LEG FORECAST"

I figured that if the distance from the Sun to the Earth could forecast the location of Mercury (About a third of the distance between the Sun and Earth), *then if I new the distance of the Sun to Mercury and guessed that there might be other planets that were related in distance to the Fibonacci series,*

couldn't I forecast the distance to the next planet (at about 1.6 times as far from the sun as Mercury?) and then to Earth? (at about 2.6 times as far from the sun as Mercury?)

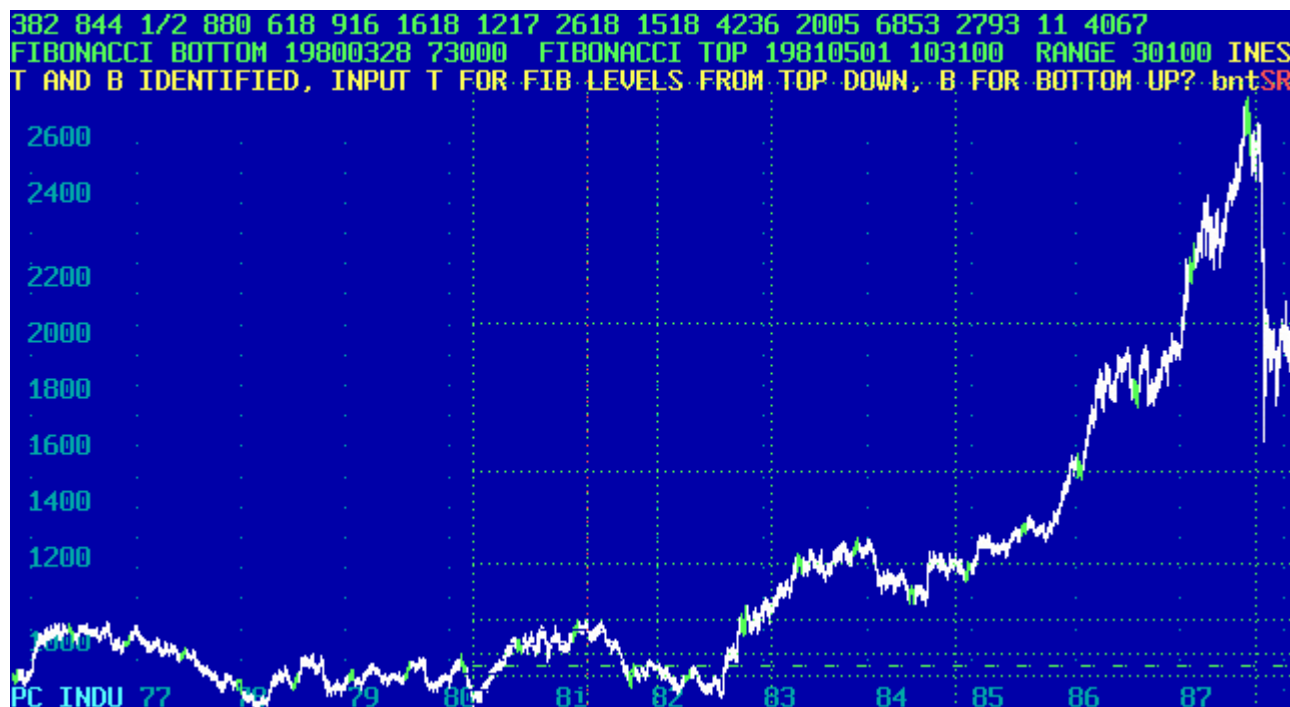
In July of 1987, (the top in 1987 was August 25, at 2748 on the Dow) I was doing some work on the market because it was trading weird. I was studying the longer term market moves and saw that the then current market movement seemed to have begun way back in 1980. I was reading some market history on how clear, with 20/20 hindsight, the Elliott Wave's explained the market, and thought that **at some time in the future they will perfectly explain the current market**, when they had the benefit of studying it when it became history.

I knew "if" this was an important top, "they" would break it into a five leg sequence, and that they would find the relationships that would make it fit perfectly into the Fibonacci series. After all, if they could explain the last 200 years, they would obviously find a way to continue to explain the markets!

I thought, if this was the top, they would say the whole market sequence fit the 1 to 5 leg count in Fibonacci proportions.

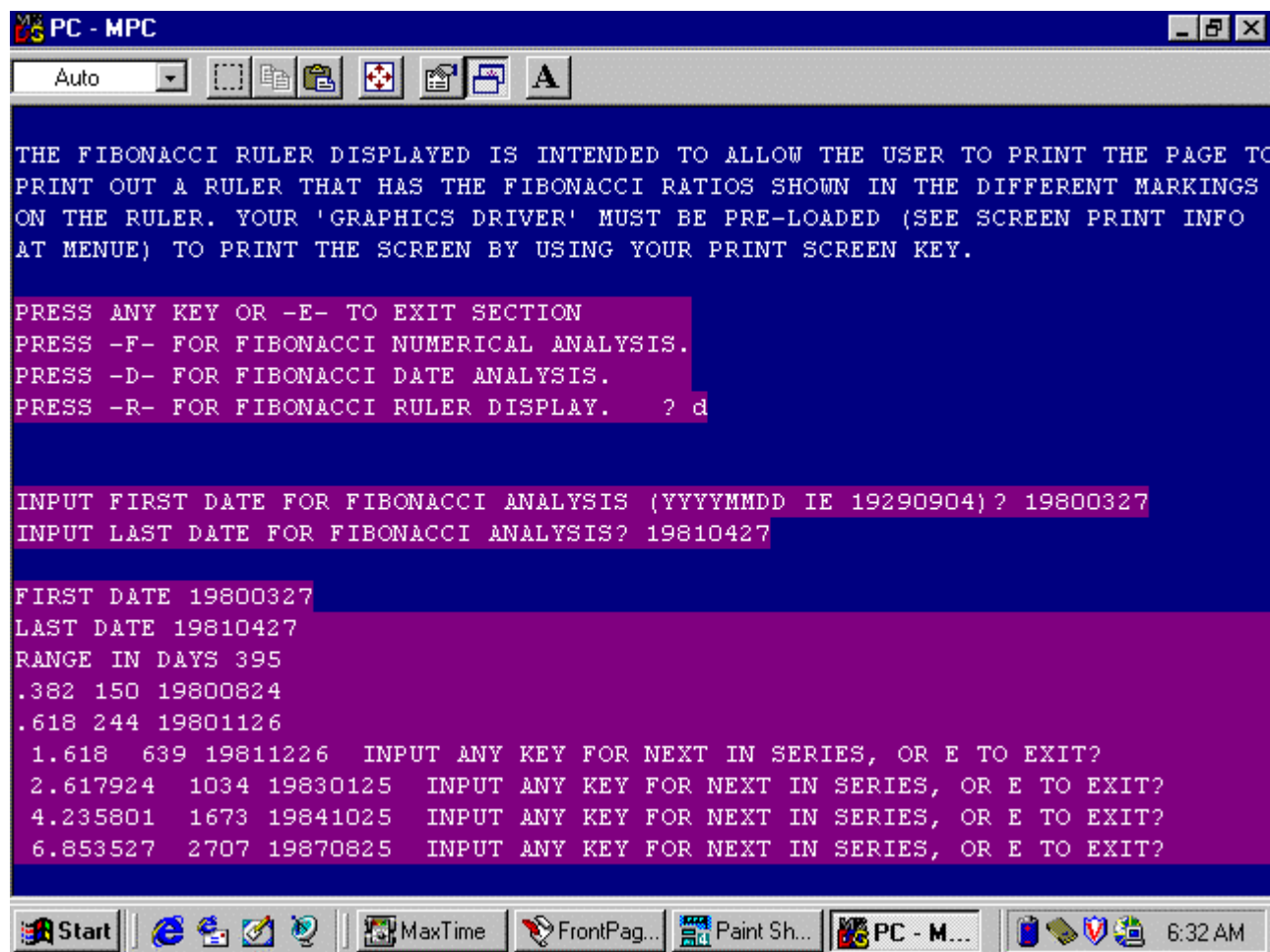
So looking at a long term chart, I thought it looked like the current bull began out of the 1980 low, because it was simply the lowest price since the 1974 bottoms. I fooled around with my computer and programmed it to plot the Fibonacci sequence based on a measurement of what might have been the "first leg."

I had the following chart:



The first leg (the range of the 1980 to 1981 market) times 1.618 gave me 1217. This was the "area of the 1983/84 top, interesting. The next "forecast level" 1510 (the range of the first leg times 2.618 added to the low of the first leg), we didn't blink, but the next was 2005 (the range of the first leg times 4.236 added to the low of the first leg) , seemed important, then at 6.853 it gave 2790.

Remember, I wasn't forecasting the market, I was forecasting what the "Fibber's" might eventually tell me about the market. **Elliott should be happy because the price levels looked pretty neat, but Gann said the order of the markets was in "price AND time," so I tried to use time.**



The table above shows that if I multiply the number of CALENDAR DAYS from the low to the high of the first leg in 1980/81 times the Fibonacci series, I end up with certain dates. At 6.853 times the number of days of the first leg forecast a date of August 25, 1987!

(The exact date of the top in 1987.)

The exact date of the top in 1987!!!

The calculations are:

FIRST DATE 19800327

LAST DATE 19810427

RANGE IN DAYS 395

.382 times 395 range = 150 days added to 3/27/80 = 19800824

.618 244 19801126

1.618 639 19811226

2.617924 1034 19830125

4.235801 1673 19841025

6.853527 times 395 range=2707days added to 3/27/80 = 19870825!!!!!!!!!!!!

If I continue the sequence that gave the day of the 1987 top I get the following dates:

11.08901 4380 19920324

17.94201 7087 19990822

I was still being doubtful. If 1980 to 81 was "1", then 81 to 82 as "2", 82 to 83 was "3", and 84 to 87 was what "they" would call an "extended" 5. If it was an "extended 5", then would the pieces of "5" fit the sequence? (Leg 5 is generally the last "leg" into the top.)



The leg from the 1984 low to early 1985 times the Fibonacci sequence gave a price level of 2666. We had just got barely over 2700, pretty good!

OK, would the final thrust from the 1986 low also say the same thing? The chart below gave a price level of 2750, almost incredible, the actual high was 2746 on August 25, 1987!



Even the final daily last leg from April to August had the pieces fit into the "Mr. Fibonacci's" and "Mr. Elliott's" sequence. They were getting my respect. (Even the number of calendar days in the above chart fit the Fibonacci sequence!)

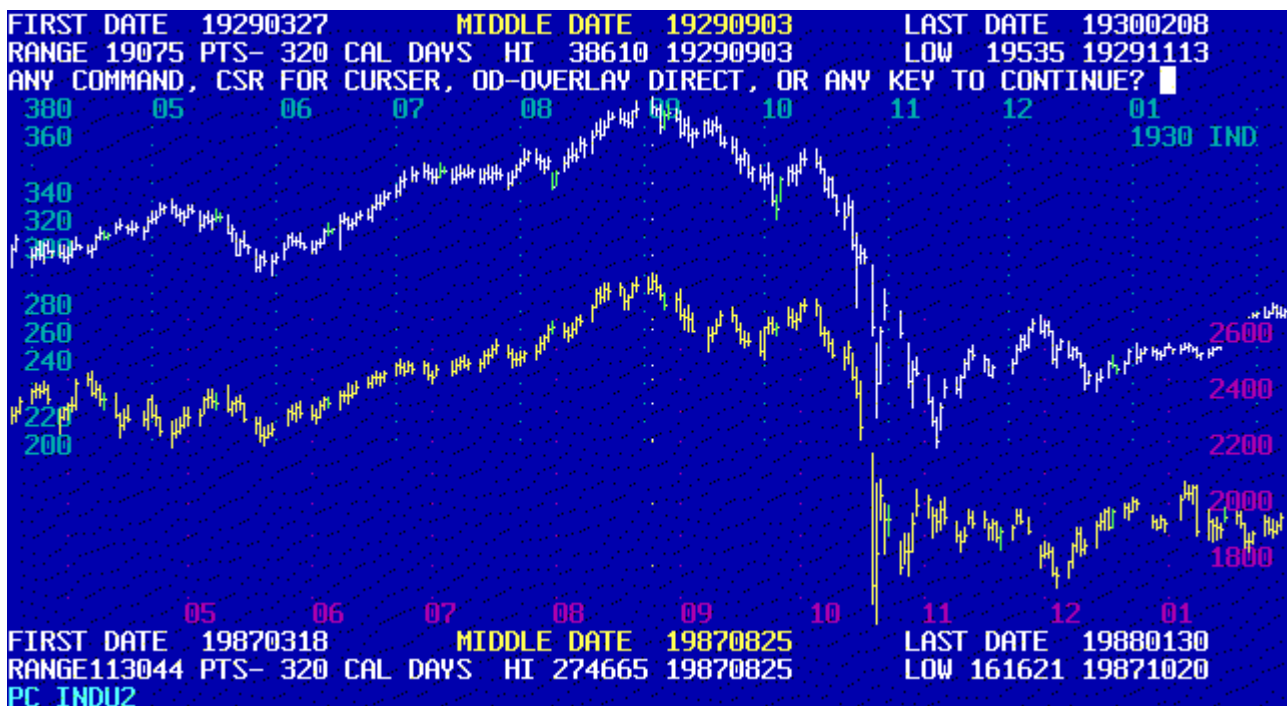
And in 1987 even $1 + 4 = 5$!!!

In the large Elliott Wave sequence 1 up 2 dn 3 up 4 dn 5 up to the top! In the following chart the 4th leg correction before going into the extended 5th leg to the 87 top was from a high in December 1983 to a low in July 1984. The range of this correction times the Fibonacci series measured to the area of the 1987 top. Even the last corrective period in March 1987 to July 1987 (leg 4 of the last leg to the top) measured to the top in 1987 - to the day!



So you can see from the above, I had a "convergence" of price and time forecasts that suggested we were at a top in the market!

So I read a little deeper into Elliott and Gann, and then looked for market patterns because maybe we were at a top! The first place I went was to the 1929 top, and the following is the comparison that I followed day by day.



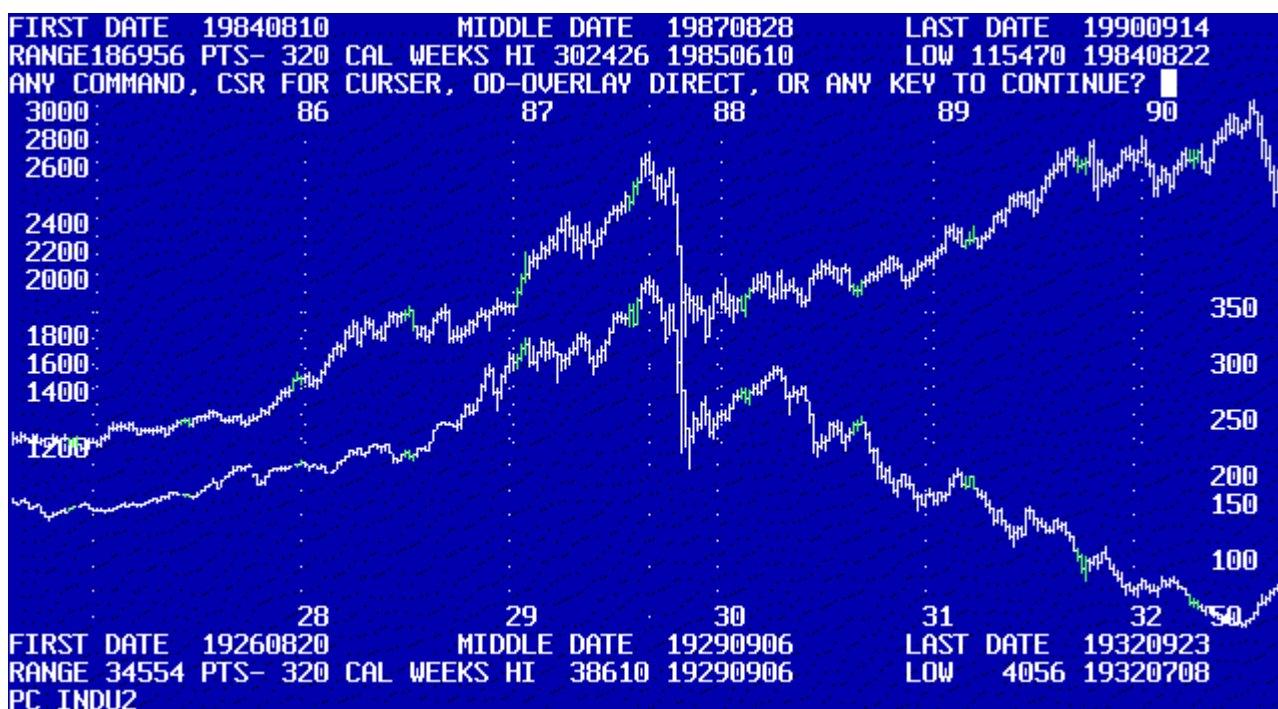
In 87 I thought this sequence was remarkable, I had studied past market tops and saw a incredible similarity to the 1929 top. **I plotted out 1929 with the progress of 1987. The market stalled at the area of the time and price forecasts of the "Fibonacci" series and the daily pattern was tracking the pattern of the 1929 top. This gave me a lot of "strength" to believe that the pattern would continue. I actually "called" the crash to the day! I made a fortune.**

I shared my thoughts and comments with literally hundreds of traders in the S&P pit (I was a local in the S&P at that time). Many didn't believe it, but, because they were aware of the "possibility" I hoped it helped them make a great deal of money.

The comparison was SO GOOD that eventually I lost a fortune in 1988 waiting for the depression to get started!

The weekly comparison of the market up to 1929 with 1987 looked so good that I loaded up with short positions, I was sure the depression was just around the corner. **It was, but only for me!**

"I had become an Elliott purist." I thought the market was pre-destined to follow a certain path. I was wrong.



The "post 87 crash" market (top) compared with the "post 29 crash" market.

I'M A LITTLE OLDER AND WISER

Develop a trading strategy

If Elliott and Gann are right in saying there is a "natural order," and if we can actually see that pieces sometimes fall into that order, then, we SHOULD use the individual pieces to forecast. Just because the "weatherman" is wrong sometimes, it doesn't mean we don't listen to his forecasts.

The distance from the Sun to Mercury (first leg forecast) is 36 million miles.

Can we multiply that distance times 1.618 and forecast that there may be a planet there? $36 \text{ times } 1.618 = 58$ million miles to look for Venus.

Can we take that distance and forecast Earth? $58 \text{ times } 1.618 = 94$ million miles from the Sun to find Earth.

Can we take the distance of Earth from the Sun and forecast another planet?

Mercury 36 million miles: $97 \text{ times } .382$ equals 37

Venus 67 million miles: $97 \text{ times } .618$ equals 60

Earth 97 million miles: $97 \text{ times } 1.618$ equals 156 (Mars is 142 million miles from the sun)

Can I use the ratios in series to find the distance of other planets? ($156 \text{ times } 1.618$ equals 253, $253 \text{ times } 1.618$ equals 410, $410 \text{ times } 1.618$ equals 664, $664 \text{ times } 1.618$ equals 1075, $1075 \text{ times } 1.618$ equals 2831, (Neptune is 2795 million miles from the Sun. See I can forecast the distance to Neptune!)

But it is not quite exact. Let's try some other multiplication's:

$2831 \text{ times } 1.618$ equals 4580

Mars 142 million miles: $142 \text{ times } 1.618$ equals 229

Asteroids

Jupiter 483 million miles: $483 \text{ times } 1.618$ equals 781

Saturn 887 million miles: $887 \text{ times } 1.618$ equals 1436

Uranus 1783 million miles: $1783 \text{ times } 1.618$ equals 2884

Neptune 2795 million miles: $2795 \text{ times } 1.618$ equals 4522

Pluto 3670 million miles: $3670 \text{ times } 1.618$ equals 5937

Goofy between 4522 and 4580 million miles:

(yet to be discovered based on the "convergence" of the Earth distance forecast and Neptune forecast.)

**So I have a "forecast" of another planet in our solar system
between 4522 and 4580 million miles from the Sun.**

Does that mean I should bet the farm that it is there?

No! (Been there, did that.)

BUT IF I'M OUT "TREKKING" IN THAT NEIGHBORHOOD, SHOULD I ASSUME THE BLIP ON THE RADAR SCREEN IS A MISTAKE AND JUST GO CRASHING INTO THE YET UNDISCOVERED PLANET?

That's also not a good idea.

My "Gann" approach to Fibonacci/Elliott I try to use the information as a **decision point**,

That's why I now follow what I call my "Gann" approach to Fibonacci/Elliott. I try to use the information as a **decision point**, much like the pit traders trading on "pivots" - If it gets there be careful, sell below and trade short, buy above and trade long. Just say there is a POSSIBILITY that something might be going on in that area! **If nothing shows up on the radar in that area, then just keep going on, after all we did not assign it a probability, just a possibility.**

In my commodity trading today, I study market movements. I look at the Commitments of Traders. I study seasonal patterns. I look for market correlation's. I view the strength or weakness of the trend. I regularly check the first move/first leg forecast levels for identifying possible support or resistance. When I think we are at an important price area, instead of radar, I use a variety of "technical tools," Stochastics, RSI, patterns, etc. If those tools show trouble in the area, I go with them. If they then sound an all clear, then I'll step aside.

One important conclusion I have after twenty years of trading is that "technical analysis" was probably born in a "bear market." Technical indicators seem to work best when we have the maximum population actively trading. In a quite dull market, the market can jump around, and often do strange things. But in a bear market, the market is on a mission (to save it's butt) and technical indicators that show the short term swings tend to be reliable trading aids.

When I issue trade recommendations to my clients I try to explain the "strategy" that had me focus on a market, then show the technical indicators that helped me time the entry to the trade. Stop loss points and profit objectives are based on the logical levels that would indicate success or failure of the trade.

Reasonable stop loss and profit objectives are essential to every trade. The 1987 top was NOT the beginning of the end of the world! There have been many many more trade opportunities and will continue to be more.

George Slezak

Executive summary of the above:

**1 + 1 can = 3, and
sometimes 1 + 4 equals 5**

I wrote the above story in 1989 (and had a version of it published in the July 1989 issue of Futures Magazine) **to explain how to use Fibonacci ratios to forecast prices. To help the interested reader I created the following tool, the "First leg Forecast Ruler" to help you do it.** (With my permission, Ira Epstein offered the article and Ruler as a promotion in radio advertising in 1989.)

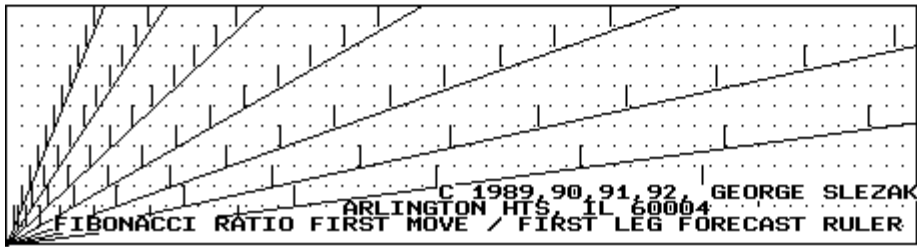
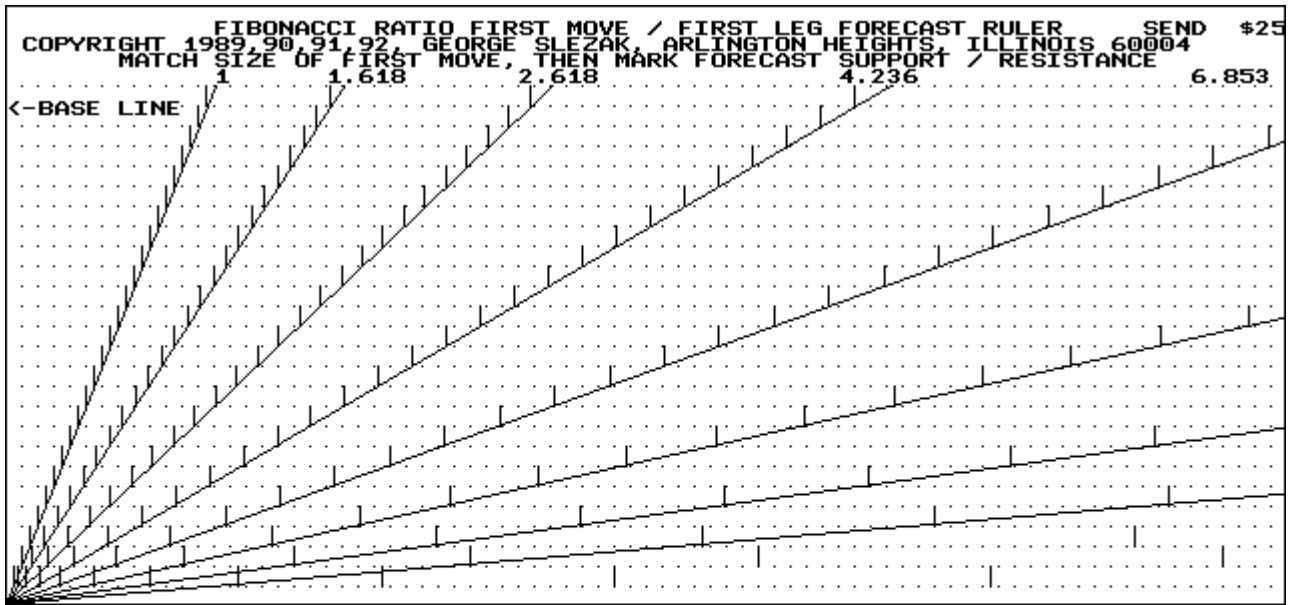
Fibonacci First Leg Forecast Ruler

The ruler is a tool that can be used to measure the first leg, from base line to a mark, then go straight up in the column to the next mark to find 1.618 etc etc the distance.

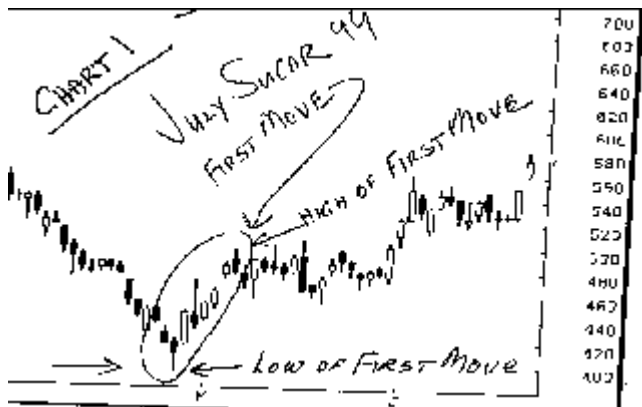
The ruler could be printed out, then copied onto clear plastic (for projection overlays) then laid on top of a paper chart or screen. I still have a "Fib ruler" in my briefcase today that I made in 1989. I find it a useful way to make a quick review of a chart.

When I made the ruler I added a 45 degree line to be able to apply some Gann techniques and was quite amazed at how often the Gann ideas were similar to Elliott wave ideas. From the 45 degree line I marked the distances 1.618 from that line and added additional lines. When you compare the lines with other "Gann Fan tools" you can see that Elliott and Gann were very close to seeing the same things!

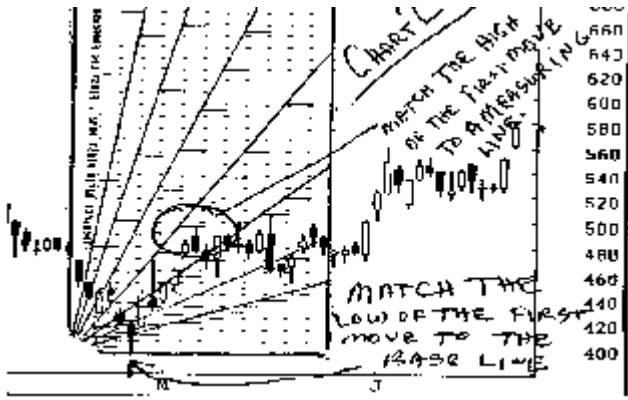
(To print the ruler on paper separately, right click of the picture and print it. Then copy it on to clear projector sheets. Laminate it so it won't scratch off.)



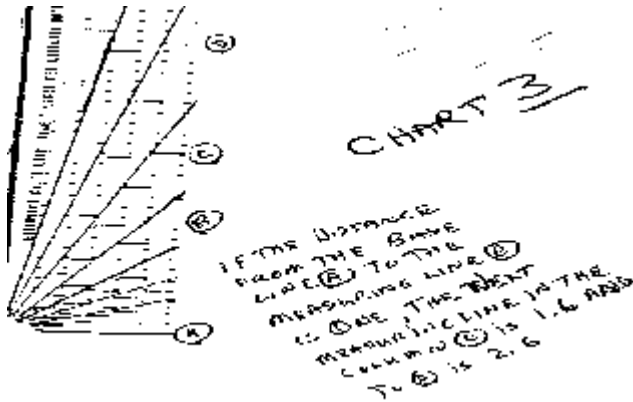
Let me try to show you how to use the ruler. The following chart is July Sugar, and I identify the first leg of the up move as being from the low to the high of the 7th trading day after the low. (I define the first move as continuing as long as there is a series of higher lows.)



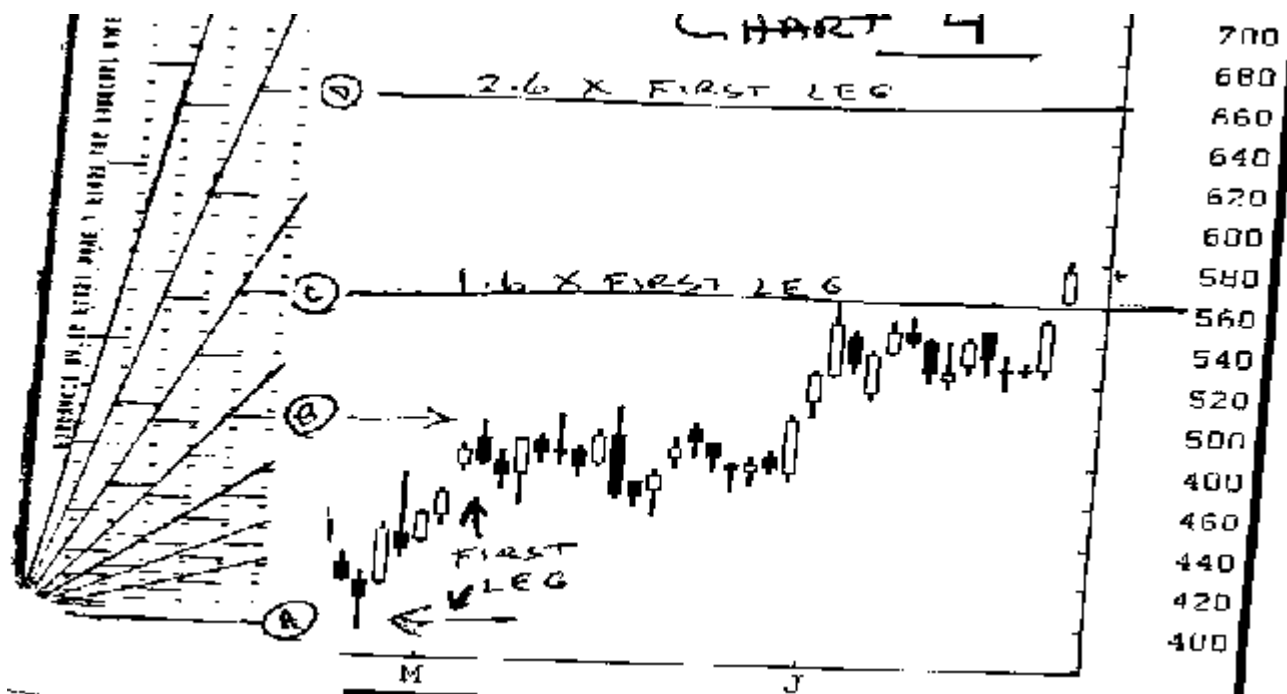
Then you place the ruler over the chart and match the low to the "baseline" and move the ruler until you find a measuring mark that matches the high.



If the distance from the low (a) to the identified measuring mark (b) is 1, then if you continue higher IN THE COLUMN, the next measuring mark (c) is 1.6 times the distance (a) to (b) distance. The next measuring higher in the column is 2.6 the distance on (a) to (b), and could be considered the second resistance level.



You can see how in the following chart Sugar held the first calculated resistance. then exploded through heading for the next higher level.



The Lines that look much like a "Gann Fan" can be used instead of the little measuring lines. Simply match the range on the first move low to high, then go straight up on the ruler to the next line to find the next level that is 1.6 times the range of the first.

In 1989, the above ruler was pretty slick for laying on top of a computer screen or chart book. Since then, many computer-charting services have developed with data delivery over the internet, and most have tools to make "Fibonacci extensions."

To use most of those tools you simply click on the high and the low of the leg, and the 38.2% and 61.8% retracements are shown as well as extensions of the designated leg to 1.6, 2.6 and 4.236 etc.

Following is a 60 minute chart of the S&P using the Q Chart online charting service.

With your cursor you can drag the first leg of the decline and have forecast support levels at 1.6, 2.6, and 4.2 times the range of the first leg.



Hope you find this discussion useful.

Good luck and good trading

George Slezak