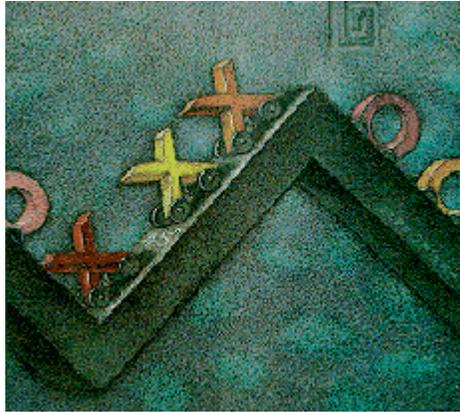# Gann analysis on point and figure charts

by Douglas Arend

Of the many analytical techniques attributed to W.D. Gann, perhaps none is more widely followed than the so-called geometric angles. Although applied generally to historical and intraday bar charts, this method also can be used with point and figure or, as they are sometimes called, reversal charts. In this case, the emphasis is on price alone rather than the combination of price and time.

P&F basics

Constructing daily point and figure (P&F) charts starts by determining the scale of the box (number of price ticks per square) and reversal (number of boxes necessary to change from advancing to declining). Using these parameters, plot only price changes that are greater than or equal to the box size and disregard movements of lesser amounts. Advances are indicated by columns of Xs and declines by Os. Although this technique also can record intraday price changes, I am focusing here on daily movements.

If prices have been advancing lately then a column of Xs is building. At the conclusion of each day record increases of at least the box size by adding the appropriate number of Xs in progressively higher boxes within the current column. If prices do not increase by one box size or more and, instead, decline by at least the reversal amount, move one column to the right and begin charting Os in the same manner, beginning one square below the highest X in the preceding column and moving progressively lower. Continue to record price changes in this way, ignoring movements of less than the box size and intraday fluctuations.

Assume you are charting soybean futures and have selected a 2-cent box size and 6-cent reversal (Figure 1). This is equivalent to an 8-tick box and 24-tick reversal since grain futures at the Chicago Board of Trade move in 1/4-cent ticks. Standard nomenclature for this chart is 2×6 (cents) or 8×24 (ticks). Assume further that prices have been advancing recently and you begin the graph when the contract is trading at $8.50 per bushel.

Place an X beside the price of $8.50. On the following day, prices trade in a range from $8.54 to $8.42. Because the high was four cents above the last recorded price, add another two Xs to the chart, each one representing a 2-cent move.

2x6 Point and figure chart

Day	High	Low		
0	8.50			
1	8.54	8.42	8.56	XX
2	8.55	8.40	8.54	X XOXOX
3	8.56	8.46	8.52	XOXOXOXOX
4	8.45	8.36	8 50	XOXOXOXOX
5	8.48	8.37	8.48	OXOXO OX
6	8.54	8.47	8.46	OXOX O
7	8.56	8.51	8.44	OXOX
8	8.55	8.47	8.42	OXOX
9	8.54	8.47	8.40	O OX
10	8.55	8.46	8.38	OX
12	8.52	8.45	8.36	O

FIGURE 1: *A soybean futures price series beginning at 8.50, plotted with a 2-cent box and 6-cent reversal.*

Gann angles

Degrees	# squares across	# squares up
7-1/2	8	1
15	4	1
26-1/4	2	1
45	1	1
63-3/4	1	2
75	1	4
82-1/2	1	8

FIGURE 2: *Because P&F axes are the same scale, drawing Gann lines becomes a matter of counting squares in the chart's grid.*

The procedure is to first identify the "correct" price-time ratio and then generate angle lines based on this proportion.

On the next day, prices ranged from $8.55 to $8.40. With only a one-cent increase from the previous high, you cannot add another X because this is less than the box size. But prices did decline from the previous high of $8.54 by more than the six-cent reversal amount. So, move to the right and start a column of Os beginning at $8.52 (one square below the recorded high) and ending at the new low of $8.40. This same procedure is followed after each new trading day.

While P&F charts do not relate price with time, it is nevertheless helpful to maintain some perspective on the period over which the charts are constructed. For this reason, a monthly designator (1,2. . .12) is sometimes substituted for an X or O to designate the beginning of a new month.

Gann angles

Gann focused on the spatial relationship between price and time in many of his methods. To him, market movement was determined by the interaction of these two elements and he sought ways to correlate them with each other.

Gann placed particular emphasis on past high and low prices, because he felt these were important indicators both in themselves and in the way they could be used to forecast future key points in the market. He introduced a series of techniques to derive such points from previous highs and lows.

Many of his methods are based on a system of eighths. The justification for this seems in part historical and in part empirical. In his book, *How to Make Profits in Commodities*, Gann noted: "[People] have become used to dividing the dollar into eighths, and they want to buy and sell on this basis." Gann selected a low or high price on a commodity chart and projected angle lines originating from it. These lines are supposed to indicate levels of support when drawn from a low price and resistance when plotted from a high.

The angles, themselves, represent a correlation between price and time. This relationship is fixed for each commodity and does not vary with a change in the price scale. The procedure is to first identify the "correct" price-time ratio and then generate angle lines based on this proportion.

On a typical bar chart, price is represented along the Y axis and time is measured on the X axis. Accurate angles measure one unit of time spanning the same distance as one unit of price. If scale for the two axes is not the same then an adjustment is necessary to compensate for any difference.

Angles are sometimes formed by counting up and over a given number and over a given number of units from a low price or down and over from a high, assuming an equal scale between the two coordinate axes. If dissimilar scales are used, then the count must be changed to correct for any difference. Figure 2 shows the number of horizontal and vertical units needed to construct the most common angles of 7-1/2, 15, 45, 63-3/4, 75 and 82-1/2 degrees on a 1:1 scale.

The unit count can be used as a shorthand reference for the individual angles. Using a 1:1 scale, the 7-1/2 degree line is drawn eight units over and one unit up, so it is called the 8×1 line. The 45-degree angle, representing equal price and time combinations, is known as the 1×1 line. The other angles can be described similarly.

Figure 4 shows lines of support originating from a commodity low. Resistance angles are formed the same way by reversing the vertical direction from up to down and counting from a high price.

In his own grain charts, Gann used a daily time scale on the X axis and a vertical price scale equal to one cent. A movement of one unit over and one unit up or down therefore represented one cent per day. If, for example, the Y axis was instead scaled in 4-cent intervals, then a move one square over and one square up would be equivalent to a 1×4 line of 75 degrees.

Why is it so important that the two scales on the chart be equivalent? One explanation relies on the Gann principle known as squaring price with time: a number of points up or down balancing with an equal number of time periods (hours, days, weeks, months or years). If a price range covered 30 cents, then a critical timing point on a daily chart should occur 30 days in the future. This 1:1 relationship can be plotted directly, provided the two coordinate axes are scaled equivalently.

Gann used a construction like the one shown in Figure 3 to calculate price and time combinations. He named this his Master Price and Time Chart. It is generated by a clockwise spiral emanating from the center in one-point increments.

The horizontal and vertical lines form a pattern sometimes called the Ordinal Cross. This configuration, together with the diagonals occurring at a 45-degree rotation to it, indicate key areas of support and resistance. These numbers can be combined with the prices along angle lines on bar charts to forecast probable turning points in the market. Because the Master Chart increases in one-unit intervals, it is important that the price chart follow a similar scale.

Among the several Gann angles, the 45-degree line is accorded the greatest weight. It represents movement in which one unit of time equals one unit of price. Above this line, we know that prices are advancing at a rate greater than (or declining at a rate less than) one unit for each unit of time. This indicates buying strength in the market. The opposite holds true when prices lie below the 45-degree line.

When angle lines intersect there is increased likelihood of an approaching market reversal. However, if prices break through such an area, this suggests that the current direction will continue further before a pullback occurs.

Angles on P&F charts

The focus shifts somewhat when projecting Gann angles on P&F charts. Since both axes on a P&F chart represent price, thereby assuring identical scaling, Gann angles can be drawn easily by connecting the appropriate number of squares.

Care must be exercised, however, when interpreting Gann angles on P&F charts. Because time is not an element of the chart, lines of support and resistance only signal the price levels of possible price reversals. The identical X and Y scale on these charts allows the construction of accurate angles without need for adjustment. Like many techniques, the angles can be given greater weight when confirmed by other indicators.

Many traders are familiar with the 1×1 line on P&F although most do not seem to recognize its equivalence to the Gann 45-degree angle. Perhaps for this reason, few traders construct the other Gann lines on P&F charts. This is an unfortunate omission, because frequently the remaining angles will confirm levels of support and resistance indicated by 45-degree lines drawn from other points.

Master price and time chart

FIGURE 3: Master price and time chart

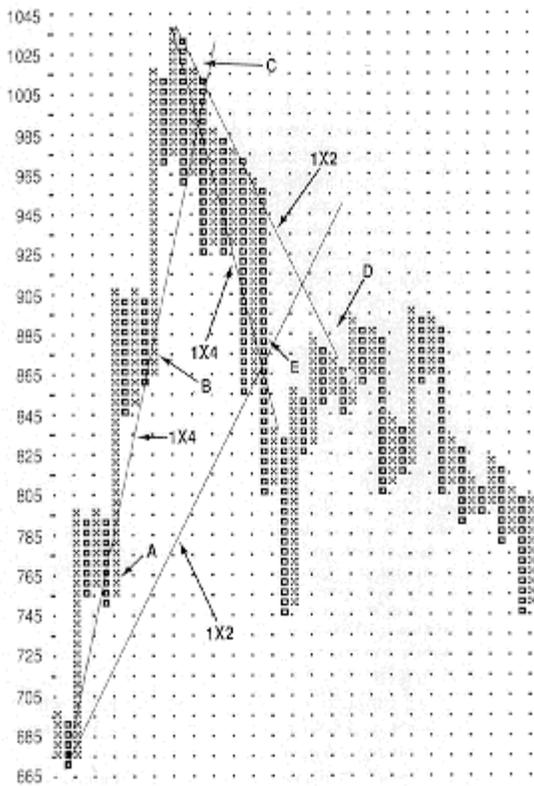November 1988 soybeans, 5x15

FIGURE 4: *The 1×4 angle line drawn from the low of $6.80 on this chart with a 5-cent box size and 15-cent reversal forecasts support.*

Figure 4 is the P&F chart for November 1988 soybean futures with a 5-cent box size and 15-cent reversal. Areas of support forecast by the 1×4 angle line drawn from the low of $6.80. I would expect buying to enter the market near points A, B and C. In fact, the market did fall to or near A and B, but broke through at C.

Among the several Gann angles, the 45-degree line is accorded the greatest weight.

The same phenomenon occurred on the short side at points C and D. The 1×2 resistance line extending from the high of $10.45 correctly forecasts breaks at $10.20 and $8.85.

Resistance at point C was strengthened by the intersection of the 1×2 down from the high with the 1×4 above the low. While the significance of this point was increased by this intersection, we did not know whether it would act as support or resistance until prices neared it. Because the market was trading below the intersection in the column before C, I interpreted the point as resistance and could have taken short positions against it.

A penetration of intersection areas signals a continuation in direction. Point E is the intersection of the 1×4 resistance line from the high and the 1×2 support line from the low. The break in price below this level suggested that further downside movement was ahead and, in fact, prices continued to fall another $1.15/bushel before encountering support.

I have found that applying Gann angles to P&F charts is a helpful component in overall commodity price analysis. By filtering out small fluctuations, P&F charts facilitate tracking larger moves and the Gann lines better identify these moves as they develop.

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References

Cohen, A.W. [1987], "How To Use the Three-Point Reversal Method of Point & Figure Stock Market Trading," 9th ed., New Rochelle, NY: Chartcraft.

Gann, W.D. [1976 (Originally 1942)], "How to Make Profits in Commodities," Pomeroy, WA: Lambert-Gann.

Jacobs, Larry B. [1986], "How to Make and Use Time/Price Overlays," Springfield, MO: Halliker's.

Kahn, Phyllis [1980], Who was W.D. Gann?, *Commodities* (now *Futures*), January.

Kansas City Board of Trade [1985] "How To Use Your New Opportunity Angles Tool," Kansas City: KCBOT.

Kaufman, F.J. [1978] "Commodity Trading System and Methods," New York: John Wiley & Sons.