PRICE ANGLES – GANN VS GEOMETRIC

GERALD MARISCH

INTRODUCTION

William Delbert (W.D.) Gann was an early 20th-century trader. His proprietary daily trading methods used many inputs, such as those for mathematics, astrology, astronomy and seasonal changes.

Rumors abound about the relative success - or failure - of Gann. Legions of literary works (including my own "Gann" book) have been written about this legendary trader and his techniques. Teaching Gann trading methods has spawned a closet industry. An all-inclusive review of his methods is certainly beyond this article.

What *can* be introduced and reviewed here is the basis for Gann's techniques, called **GANN ANGLES**, and a common error of equating them to Geometric Angles.

WHAT ARE GANN ANGLES?

Trend lines have probably been the basis of technical analysis since technical analysis began. A very basic trend line usually connects two or three lows in a BULL market or two or three highs in a BEAR market. Prices "violating" these lines (going beyond these trending limits) suggests a change in the price's trend direction.

Gann expanded the trend-line concept by asserting that TWO factors - price *and* time - are needed to establish a truer "trend line" for a specific market. *Price* ("*rise*") is only the first factor for defining a market's trend line. The second factor is the *time needed* ("*run*") for prices to rise or fall. A **GANN ANGLE** is a "trend line" that reflects the number of "price units" which trend during a "unit of time".

A Gann Angle is indicated by the mathematical-ratio expression of the "number of price units trending up or down (rise)" by the "rate of time needed for the 'rise'(run)". An example of a Gann Angle in this format is *1x1*. A 1x1 indicates that prices are rising or falling by 1 "unit" of price in 1 "unit" of time.

The next "steeper" Gann Angle is a 2x1; price is rising at *twice* the rate but in the *same amount of time* as a 1x1 Gann Angle. After a 2x1, the most-commonly used Gann Angles are the 4x1 and 8x1; in rarer occasions there can be a 3x1 and 16x1.

Gann Angles with a "shallower" slope - those that are approaching the horizontal - are defined as 1x2 (price is rising at *half* the rate but in the same amount of time as a 1x1 Gann Angle), 1x4 and 1x8.

What is the appropriate "ratio" for determining a market's Gann Angles? Unfortunately, there is not a chart or spreadsheet of which I know that will automatically reflect the correct ratio for a market (each market's "ratio" is different). Determining the correct ratio is a subjective exercise, the explanation for which is well beyond this short article. There are however, computer programs that analyze past price activity over time and yield a "correct" ratio for that market's Gann Angles.

<u>*HOW ARE GANN ANGLES USED?*</u>

Gann Angles are usually drawn from significant Highs and Lows. What constitutes "significant" depends of course on the time frame that's being used. Fewer High and Low "significant" points will appear on a daily chart than on a 1-minute chart.

There are several uses for Gann angles, among which are:

1)   *Is it a BULL or BEAR market?*

- Prices remaining *above* an upward-sloping 1x1 Gann Angle are considered to be in a BULL, or rising, trend.

- Prices remaining *below* a downward-sloping 1x1 Gann Angle are considered to be in a BEAR, or falling, trend.

2)   *Turning Points*

A Gann chartist usually draws a minimum of 7 Gann Angles from each "significant" High and Low. Considering that:
- Gann charts are usually daily charts
- Prices are plotted for Gann analysis from the issue's *first day of trading*
- Specific colors are used to identify the *degree* of a Gann Angle, a Gann price chart can be imagined to be a maze of criss-crossing lines.

Each intersection of lines identifies the time (week, day, 30-minute bar, etc.) of a potential turning point. The *number* and *degree* of Gann Angles that intersect at a specific point in time determines the anticipated degree of probability for a "change-in-trend" to occur at that time. For example, when 2, 1x1s, a 2x1 and an 8x1 intersect at a point in time, there is a greater chance for a change in trend than if only 2, 1x8s intersected at that same time.

3)   *Support and Resistence*

Gann's theory holds Gann Angles offer *Support* and *Resistance*.

In a BULL market, if prices are rising along an upward 4x1, and begin to "break" the 4x1, prices will find *Support* at the next lower Gann Angle - in this case, a 2x1.

In a BEAR market, if prices are falling along a downward 4x1 - and begin to "break" the 4x1 - prices will find *Resistence* at the next higher Gann Angle - in this case, a 2x1.

If prices break a 1x1, either rising or falling, a major change-in-trend direction can be expected.

Now that you're an expert in Gann Angles, we'll address the main issue of this "article-ette" - the legitimacy of Gann Angles equating to Geometric Angles.

GANN vs GEOMETRIC ANGLES

An all-too-common confusion about Gann Angles is that they equate to Geometric Angles. Many sources claim that Gann and Geometric Angles approximate each other by the following scale:

GANN	GEOMETRIC
1x8	12.5$^{\mathrm{O}}$
1x4	26$^{\mathrm{O}}$
1x2	32$^{\mathrm{O}}$
1x1	45$^{\mathrm{O}}$
2x1	63$^{\mathrm{O}}$
4x1	75$^{\mathrm{O}}$
8x1	89$^{\mathrm{O}}$

This is not true and can be proven in two ways - By Theory and By Illustrations.

BY THEORY

First, recall from your high-school geometry that a line segment "radiating" from a *static* Point 0,0 to some *dynamic* (movable) Point in Space forms a geometric angle with the imaginary horizontal line "running through" Point 0,0. The line segment and the horizontal line can form any angle - from 0$^{\mathrm{O}}$ to 360$^{\mathrm{O}}$.

Since Point 0,0 is stationary, only the "movable" point determines the angle of the line segment generating from Point 0,0.

An example of this are trend lines as described in *WHAT ARE GANN ANGLES?* (p.1). A line begins at some High or Low (Point 0,0) and then connects ("radiates") to two or three subsequent Highs or Lows ("Points in Space") within the evolving trend ("Space").

Second, let us now suppose that Point 0.0 *is also moveable.* An angle forms as our line segment connects with a Point in Space. A ratio can be established between the movable Point 0,0 and the Point in Space.

As long as the ratio between the Point 0,0 and the Point in Space *remains constant* (such as with a Gann Angle), then the resulting line segment will always intersect "Space" (price) at the same location.

OK, I know...now you're totally lost and confused. If one picture is "...worth a thousand words...", then 2 pictures should speak volumes!

BY ILLUSTRATION

On ps. 4 and 5 are two charts generated with TradeStation Technologies$^{\mathrm{TM}}$ 2000*i* software. Both charts will illustrate that Gann Angles *do not* equate to Geometric Angles.

CHART 1

Chart 1 is a 5-tick segment (each bar represents only about 35 seconds!)
of the December, 1991 futures contract for the Standard and Poors 500 Index
(**SP Z1**) for **11/2/01**. A 5-tick chart better defines price activity.

Time range is from **9:27** AM to **10:19** AM, Chicago time. Price range is
from **1085.00** to **1078.00**. The *specific* 2-dimensional "Space" for Price and
Time is relevant, although any price and time scale can be used *as long as they
remain constant*. Both scales serve to define the boundaries of our "Space".

Two solid, heavy line segments appear on the chart
- A **1x1 GANN ANGLE** generated by TradeStation™'s
  default "points-per-bar" Gann ratio, and
- A **45° GEOMETRIC ANGLE.**

Both lines radiate from a **MAJOR HIGH** of **1084.00** occurring at **9:28** AM,
Chicago time. This is our "Point 0,0".

Note that the **1x1 GANN ANGLE** and the **45° GEOMETRIC ANGLE**
DO NOT not intersect Price at the same location.
- The **1x1 GANN ANGLE** intersects Price on Bar **2** at **1081.30**.
- The **45° GEOMETRIC ANGLE** intersects Price on Bar **1** at **1081.30**.

Ya think that if the **1x1 GANN ANGLE** equated to the **45° GEOMETRIC
ANGLE**, there would not be **2** lines but only **1** line?

CHART 2

Chart 2 is of the same 5-tick price activity as Chart 1 - prices for the **SP Z1** futures contract between **9:27** AM and **10:19** AM, Chicago time, on **11/2/01**.

The Price range for "Space" however has changed to **1086.00** to **1078.00**. This affects the Geometric Angle but not the Gann Angle.

1)   The line that *was* a Geometric Angle of **45°** *is now* at a **38.8^O** angle and appears as a "dotted" line; prices are still intersected on Bar **1** at **1081.30**.

2)   The **45°** Geometric Angle now intersects prices on Bar **3** at **1080.30**.

3)   The **1x1 GANN ANGLE** remains unchanged with respect to its locations for "Price" and "Time"; it still intersects price on Bar **2** at **1081.30**.

Don't believe Chart 1 and Chart 2? Get out your protractor and check for yourself. Do Gann Angles and Geometric Angles equate to each other? **HARDLY!**

- - - - - - - - - - - -

GERALD MARISCH IS PRESIDENT OF A PRIVATE TRADING FIRM, DOVER CAPITAL INVESTMENTS, INC (WWW.SPFUTURES.COM), AND CAN BE EMAILED TO GM@SPFUTURES,COM.