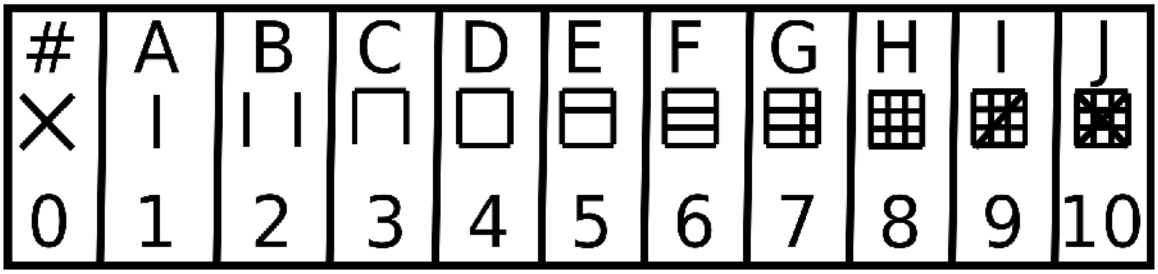
Math Patterns Volume #1

(by Justin M Coslor)

Base 10 Pictogram Metrics



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? ; : :: " ( ) [ ]

20091030 coslor, justin m.

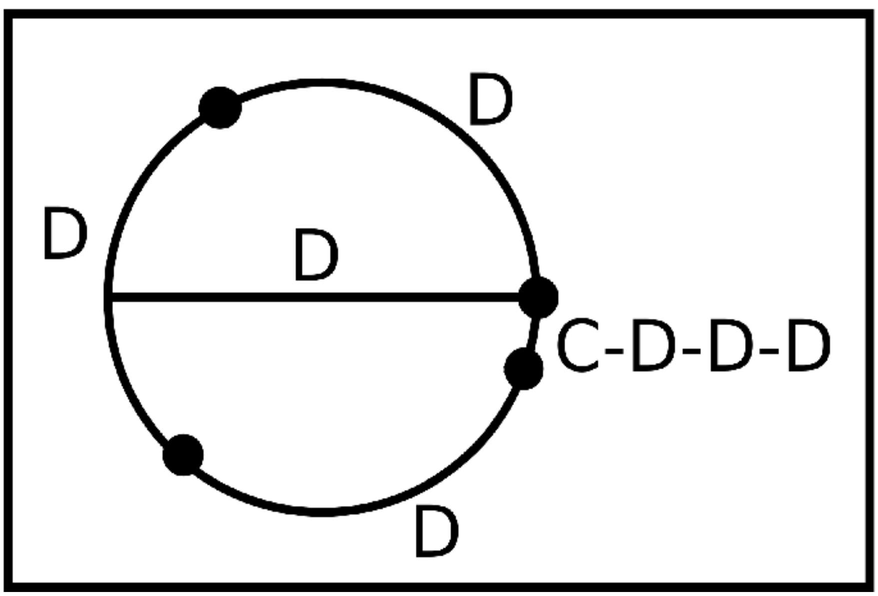
helix orbit

a circle or sphere

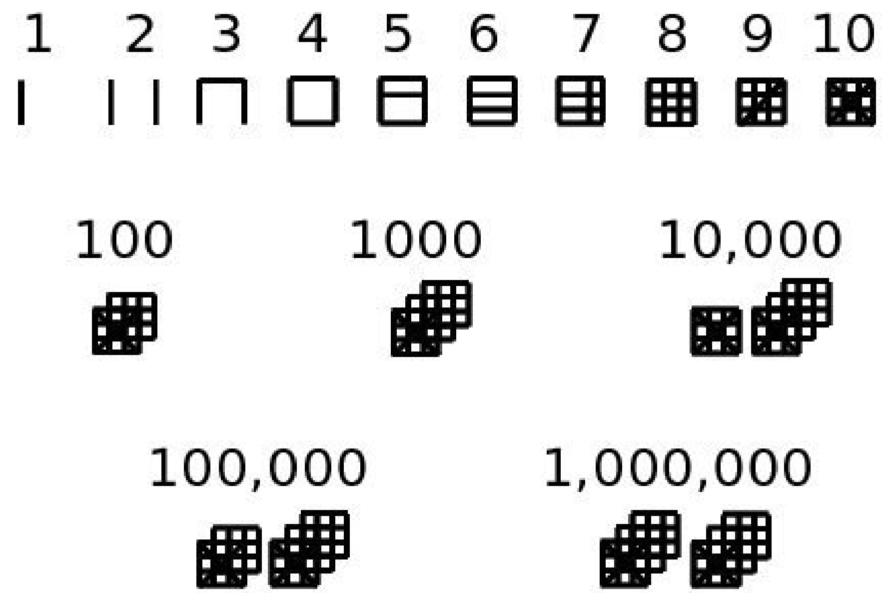
a spiral of sound

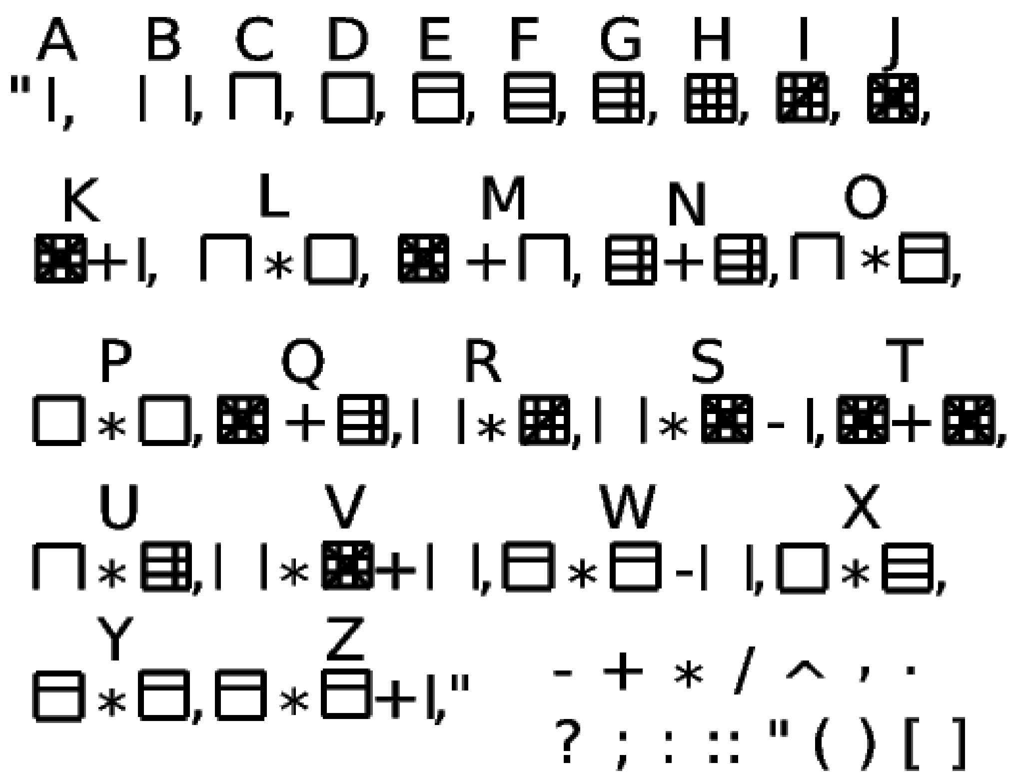
pi is the reciprocal

of across to around.

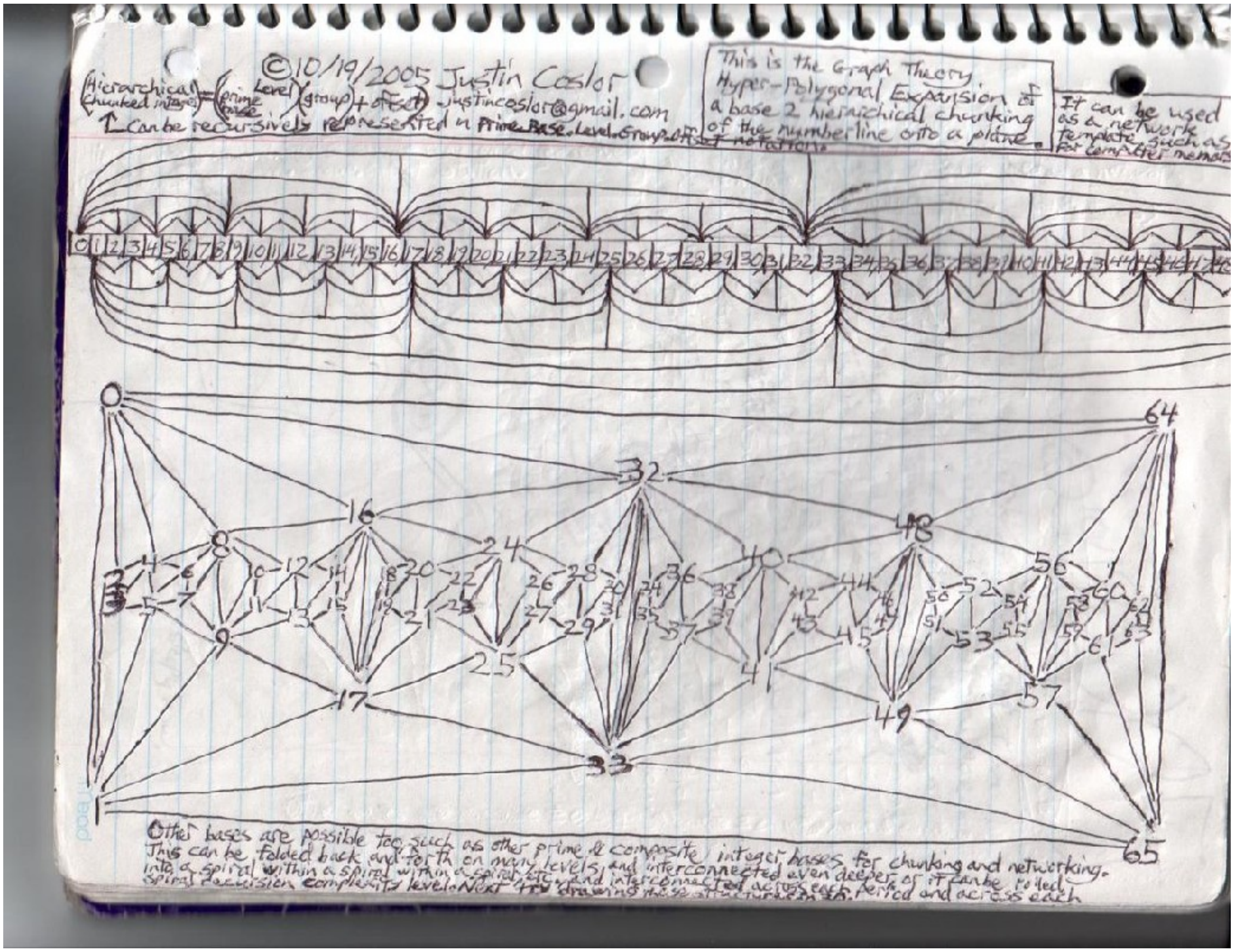


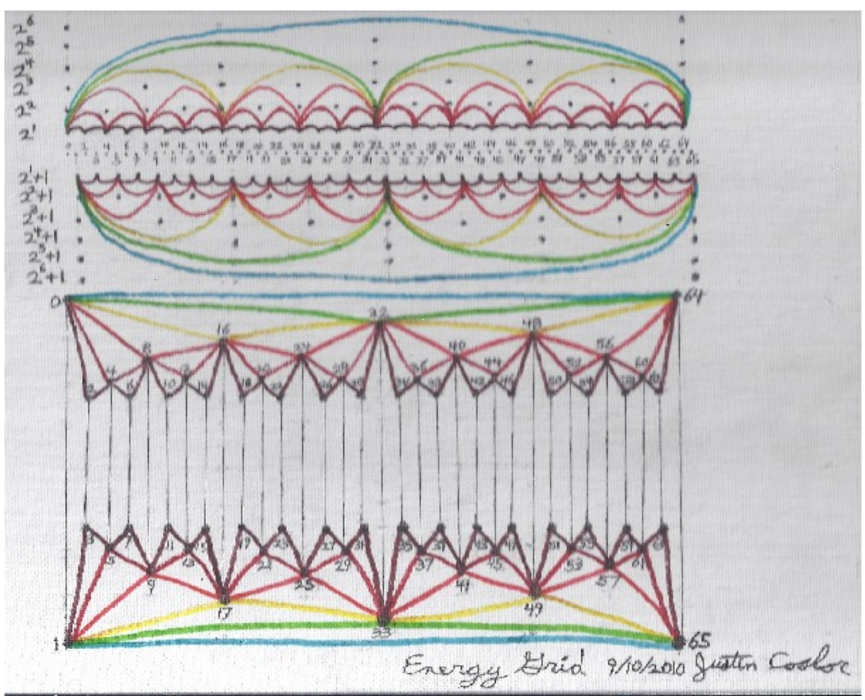
Base 10 Pictogram Metrics





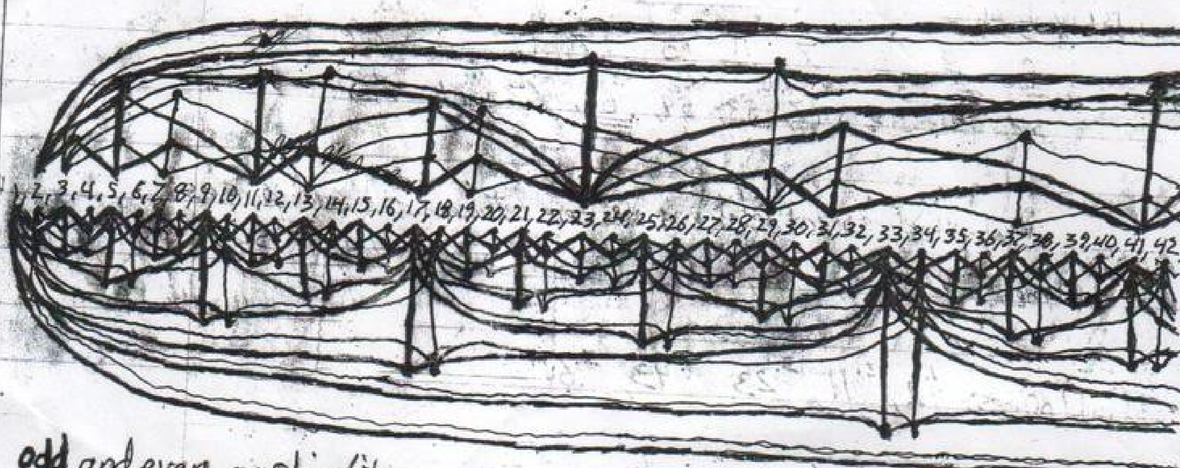
2. Energy Grid





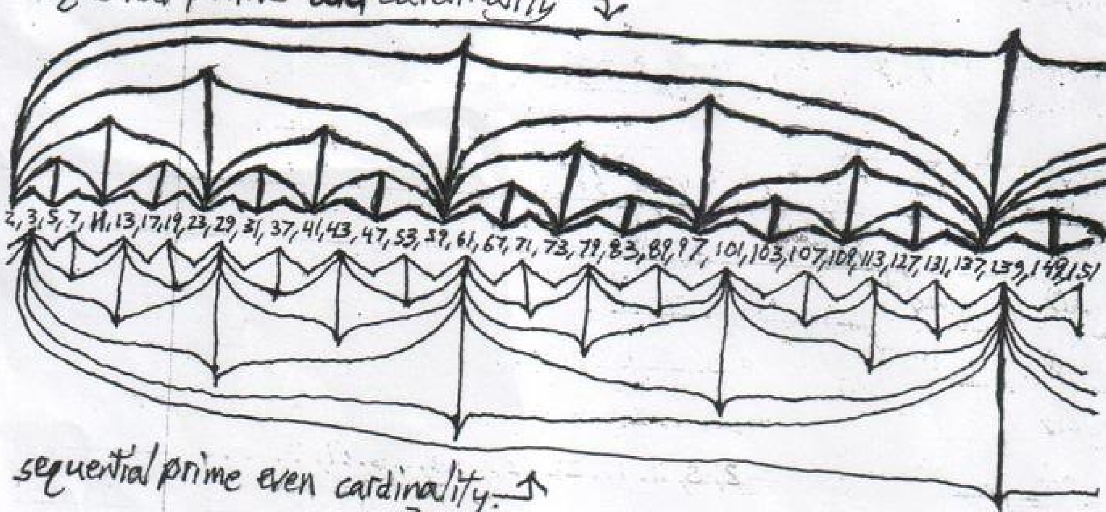
Look for patterns in this!

prime **odd** and even cardinality on the natural number system



odd and even cardinality on the natural number system

sequential prime **odd** cardinality



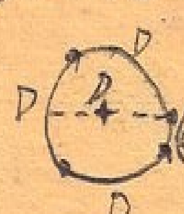
sequential prime even cardinality

3. Pi Geometry without decimals

11/3/2010 Justin Coslor -- Trigonometry Update.

Calculate equational trigonometry values accurately using the equation: $\frac{\text{Circumference}}{\text{Diameter}} = \pi$

π = 3 curved diameters + (Circumference − 3 curved diameters)



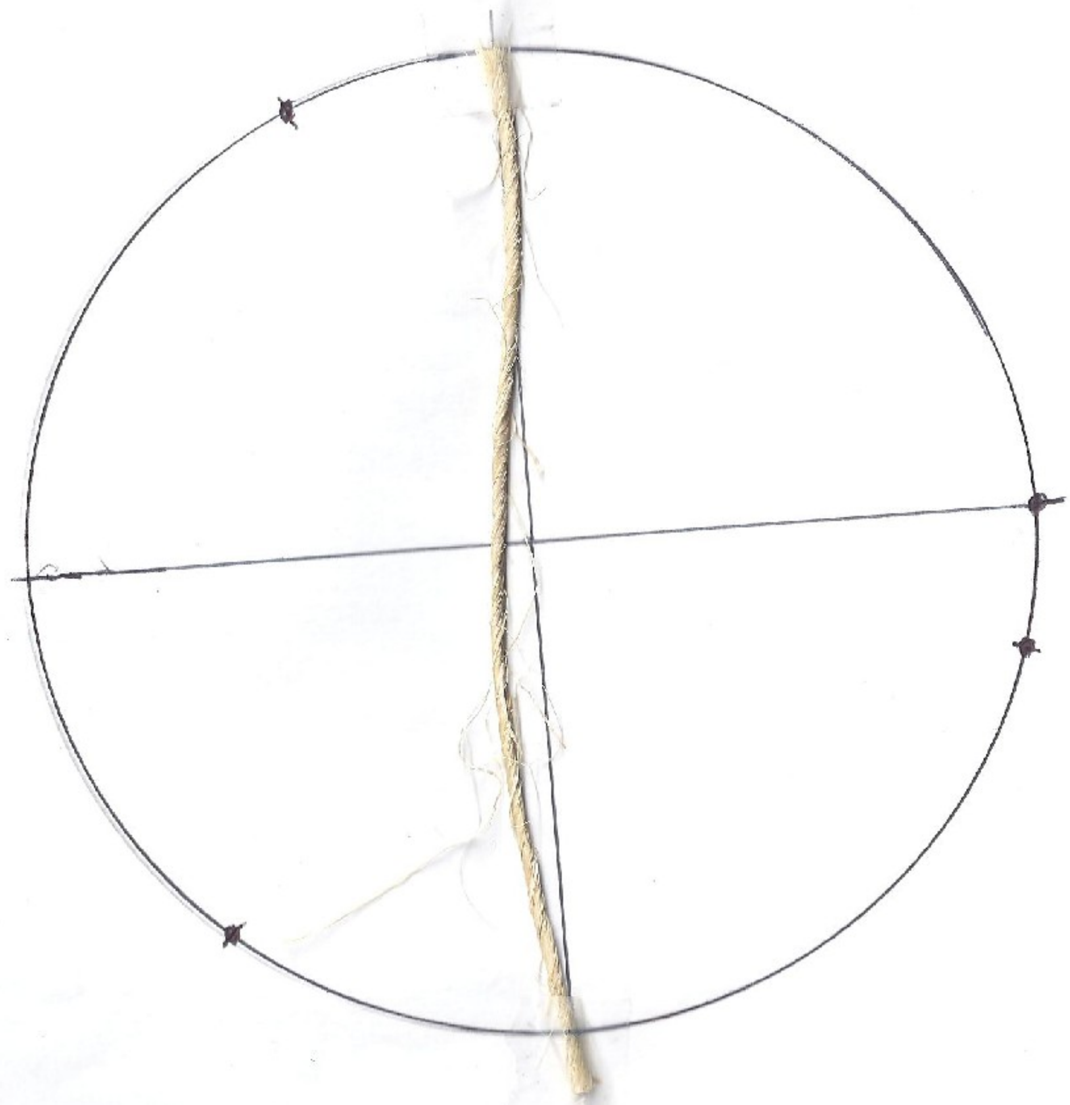
$\pi = D + D + D + (C - 3D)$

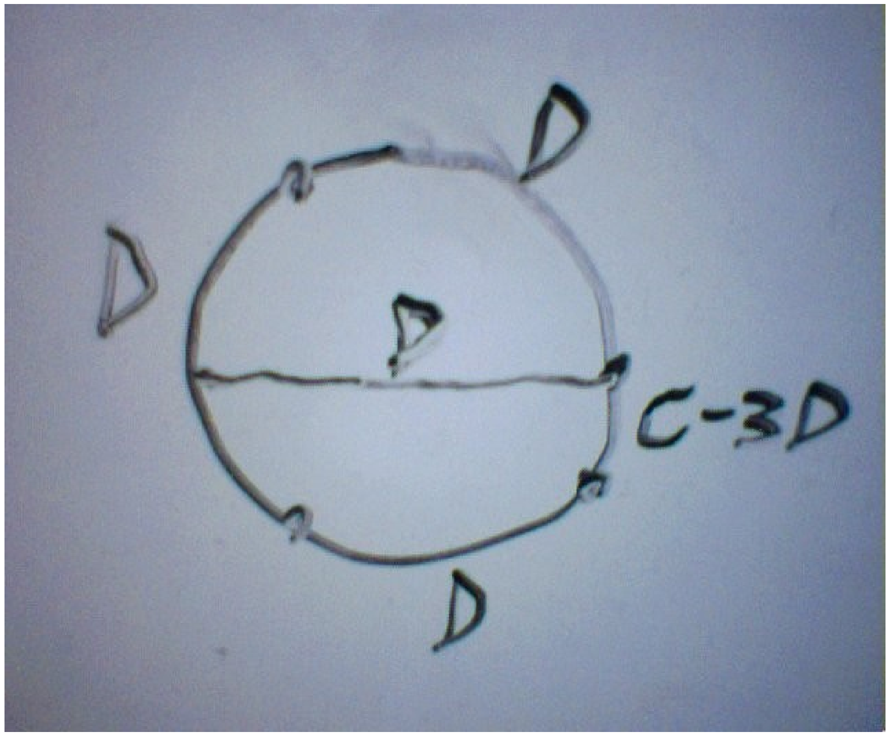
$\approx$ 3.14 curved diameters in every circle.

For trigonometry values such as sine, cosine, tangent, secant, cosecant, cotangent, etc related to the Pythagorean Theorem of $A^2+B^2=C^2$ and Euclidean Geometry.

Trigonometry canbe used for timespace orbit mapping and navigation, and for representing moment models of circular motion.

Arbitrary precision is equationally possible that way. For instance one could calculate with precisions of more accuracy than one yoctometer per yotta yotta light years.




D
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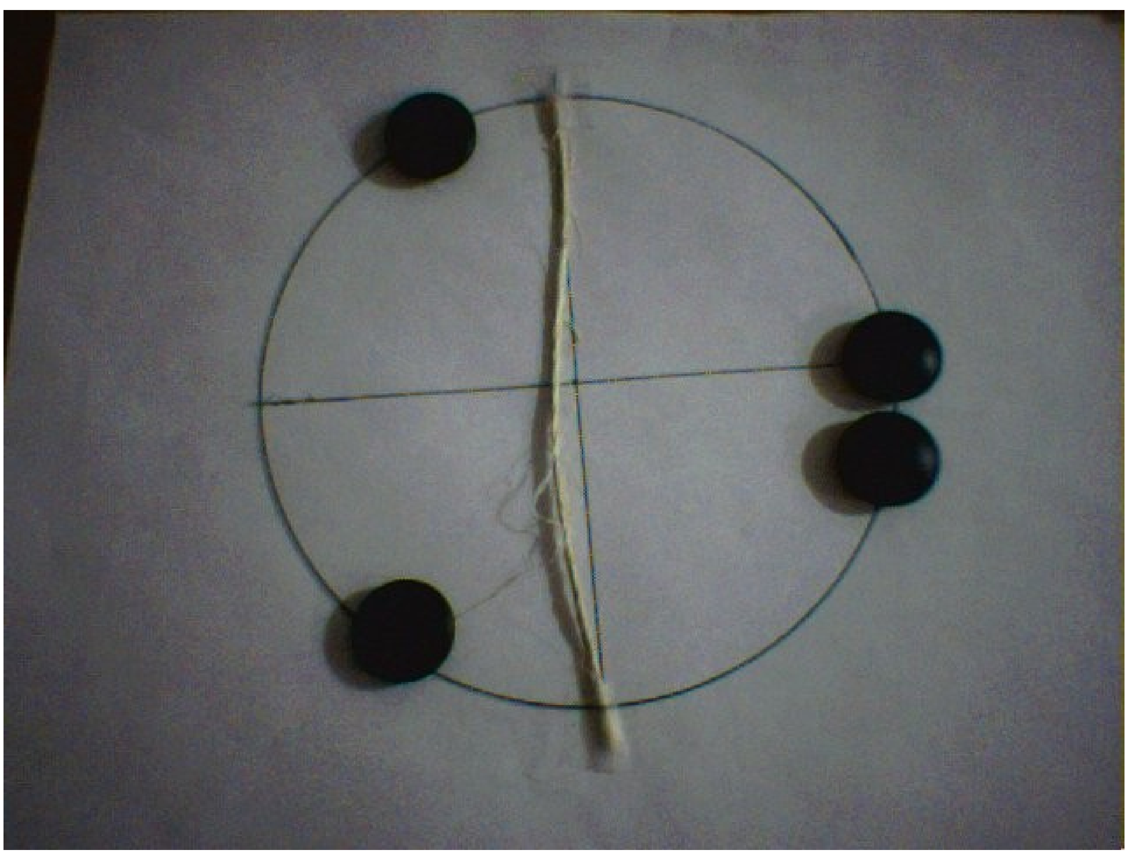
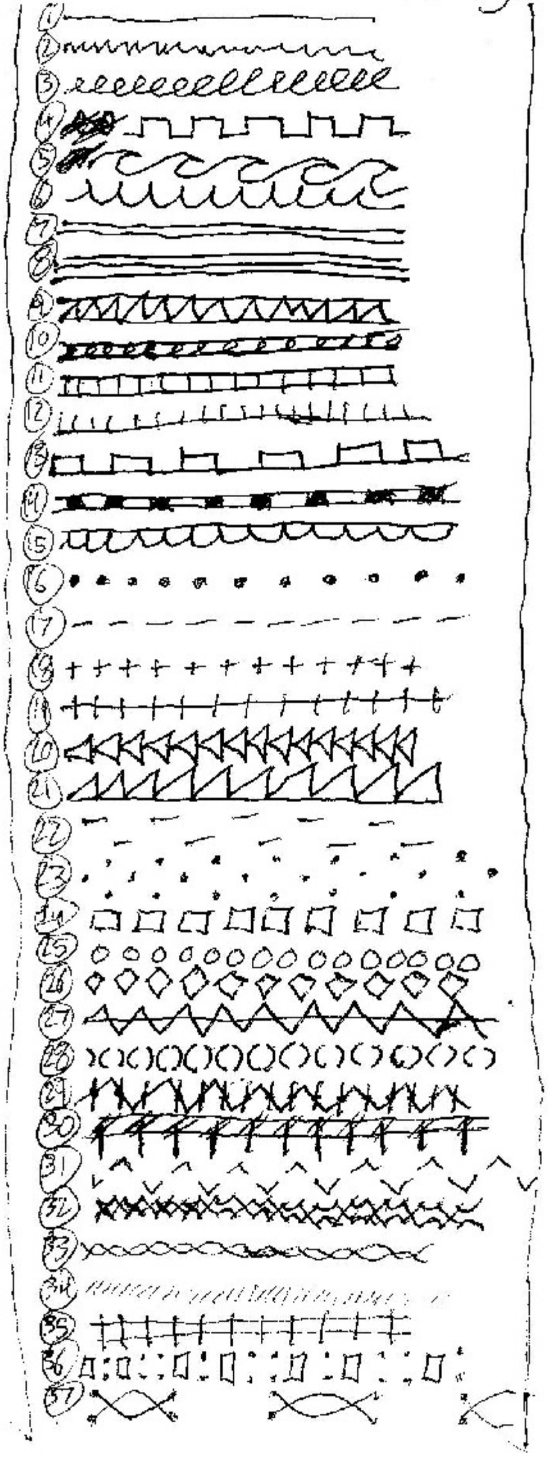


4. Ways to draw a line

7/24/2010 Justin Coslor

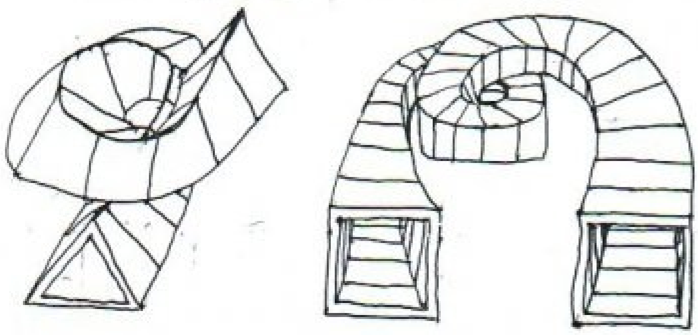
Various Ways To Draw A Line (For Art and Diagrams)
Good for Art student homework assignments.

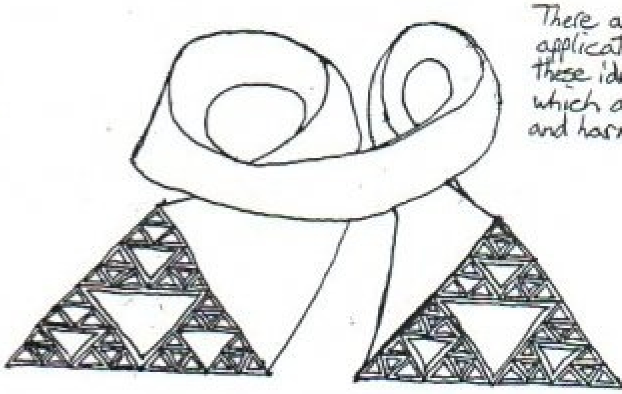


connections by space direction or direct
repetition layering
pictogram recursion
evolution of formations on timeline
decomposition state iteration
symmetry and parallels
repeating pictogram stroke count and stroke order
sewing machine stiches and knot theory patterns
pattern mixing

5. Fermat's Triangle Duct Design

More Spirals
Justin Coslor



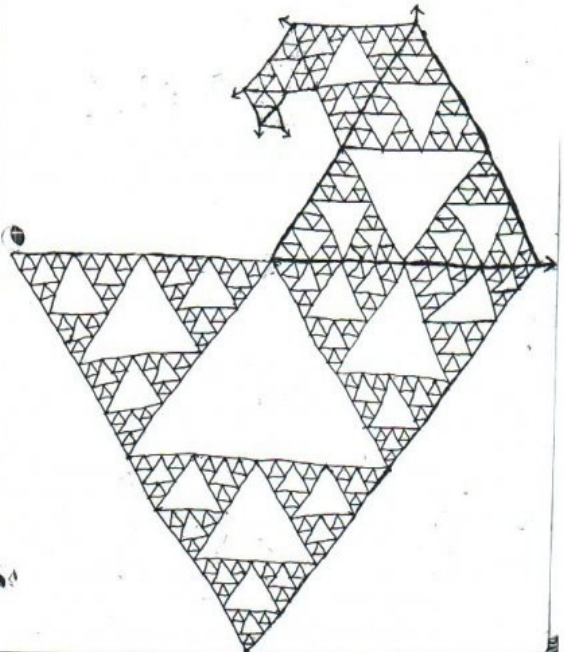


There are many applications for these ideas no doubt which are benevolent and harmless.

Triangle)

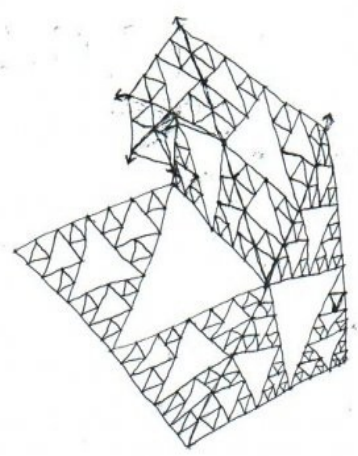
This is a recursive hollow spiral (based on Fermat's and/or Pascal's pattern that can be infinitely complex tomographically (inverse exponentially) (internally). The snowflake catacomb spiral is also a recursive hollow pattern that can be infinitely complex, though topographically (externally exponentially). I drew the snowflake catacomb spiral earlier today but called it a "Polyphase Ribbon Spiral".

Pyramid Spiral (side view)



Justin Coslor

Pyramid Spiral (3D view)

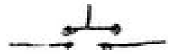


6. One Button Programmable Binary Computer

Justin Coslor December 20th, 2010 C.E.

20101220 Coslor, Justin M.
One button programmable computer.
[License: Universally Free for all use that does not treat anyone badly.]

Assume a binary memory unit for program entry input and another binary memory unit for program runtime output.



One button computer programming:
Single click = 1
Double click = 0
Triple click = Compute
Binary strings that are qualitative begin with a 1.
Binary strings that are ~~qualitati~~ quantitative begin with a 0.
Two triple clicks in a row means goto string # X, where X is a string order history number in binary beginning with a qualitative context qualitator that begins with a 1 and ends with a triple click followed by a pattern number that begins with a 0 and ends with a triple click.
Three triple clicks in a row acts as an ON/OFF switch that goes into a program entry mode when OFF (three triple clicks in a row) followed by a context qualitator followed by a pattern quantitator reference ~~ending in a triple click (compute)~~ followed by a binary computer program ending in a triple triple click. If the machine is in OFF mode (triple click, triple click, triple click) i.e. program entry mode, and then it is turned ON (another three triple clicks sequentially) then it goes into Run Program mode and awaits a context qualitator followed by a pattern quantitator (separated by a compute compute) and runs that program until it ends or until turned OFF.

Mathematical operators and subroutine functions are specified by the quantitative and qualitative prefixes of every binary string.

7. Sine Spiral Graphing Helix Trigonometry

The Unit Circle is a front view of a helix spiral.
The Cosine Wave is a top view of a helix spiral (X).
The Sine Wave is a side view of a helix spiral (Y).
The Z axis represents Time (Z).

XYZ forms a helix spiral.

There can also be spirals around spirals recursively that represent complex circular motion.

Sine Spiral Graphing

A new method of graphing motion called "Sine Spiral Graphing" was developed by me when I was 16. It allows for simultaneously graphing the sine and cosine curves of an object in motion, three-dimensionally. Sine and cosine, when graphed simultaneously in two dimensions, look like two staggered intersecting waves traveling in the same general direction. (Fig. 1) There has been a need for developing better methods of graphing an object's two-dimensional (flat) motion through space over a period of time that more clearly shows the progression of travel. At present, mapping three-dimensional motion using different variables is more complicated, but could be a further application of the principles presented in the "Sine Spiral Graphing" method. The "Sine Spiral" is based on the spiral shape of two-dimensional circular motion graphed in three dimensions using this new graphing technique. The name is derived from the general name of the sine wave combined with what the actual 3D graph looks like: a spiral. This technique could be helpful for scientists and students alike in many applications. Some possible application for the Sine Spiral could be:

- Plotting the motion of a bead in a hula hoop as it spins around one's waist.
- Calculating the position of various atomic/subatomic particles moving in relation to each other over time.
- Plotting the velocity and position of a point on an automobile wheel as sit spins down a runway or curvy hilly road.
- Plotting the motion of a baseball spinning through the air as it travels forward to the catcher over a period of time.
- Calculating the motion of a point on a bowling ball as it rolls down the lane over time.
- Calculating the speeds and positions of a set of points, on various gears at work, in a clock in relation to each other over time.
- Calculating the motion of a point on a rocket ship, or of a point on a space satellite as it orbits a planet.
- Plotting the movement of a chicken in a tornado.

All of these examples listed present graphing difficulties when depicted on a normal graph. The motions in these examples could be calculated on a computer and represented in a simulated fashion to show the actual movement in space for one point in time at a time. Concurrent Sine Spiral graphs can also be drawn for comparison of points on multiple moving objects. However, it would be difficult to graphically represent these motions for all points in time all at once. A simulation could be like a video, where one can only view one place on the video at a time. Viewing forward and reverse at the same time is not logistically possible on a video. However, when motion is three-dimensionally graphed on a computer using a Sine Spiral, it is possible to view these motions for all points in time all at once. A very effective way to manipulate and browse three-dimensional graphs (such as a Sine Spiral) on a computer is with Virtual Reality equipment. With Virtual Reality equipment, the perspective of the viewer can freely move around in space (on the graph) and see the 3D objects in one's graph from any perspective. In a Virtual Reality graph, the user can have total control over what is viewed and how it is viewed.

Understanding the trigonometric functions of sine, cosine, tangent, and their inverse counterparts is a necessity for understanding Sine Spiral Graphing. Trigonometric functions of real numbers, called "Circular Functions" (or Wrapping Functions), can be defined in terms of the coordinates of points on the unit circle with the equation x^2+y^2=1 having its center at the origin and a radius of 1. (Fig. 2)

There are three elements in a two-dimensional trigonometric function: the angle of rotation (sigma), the radius of the rotation r, and the (x,y) position of the point at that angle and radius. As can be seen in Figure 3, the x and y portions of the graph are always perpendicular to each other. Thus a right triangle is formed between the x, y, and radius sides. Right triangle rules can therefore be applied to this point in space (Brown/Robbins 190).

Such trigonometric functions as sine and cosine can be applied to the triangle formed by rotation. These functions, sin and cos, are of fundamental importance in all branches of mathematics. One can use points other than those on the unit circle to find values of the sine and cosine functions. (Fig. 4) If a point Q has coordinates (x,y), and it is at angle sigma in reference to the origin, (cos sigma) = x/r and (sin sigma) = y/r. To obtain a rough sketch of a sine wave, plot the points (t, sin t) (Fig. 5), then draw a smooth curve through them, and extend the configuration to the right and left in periodic fashion. This gives the portion of the graph shown in Figure 5 (Swolowski 78).

A cosine can be graphed in the same fashion by simply shifting the graph 90 degrees to the right. (Fig. 6) An object's circular motion can be described by either a sine wave or a cosine graphed in the same fashion. Such a wave is composed of the object's radius of rotation and the period (number of degrees in on cycle) per unit of time that it rotates. Seeing an object's sine and cosine graph simultaneously greatly helps in visualizing the object's motion analytically compared how it found in real life. Watching an animation of an object spinning is the same as seeing the x and y coordinates (cosine and sine) of the object for each frame of the animation, one frame at a time. This is because one could see a scale view of its whole two-dimensional motion over a period of time. Visualizing an object's true motion in nature from merely looking at a graph of its sine or cosine can be difficult to conceptualize. For this reason, the Sine Spiral may be an improvement in current co-linear graphing (Fig. 7).

Velocity over the period of one rotation on a sine curve can be measured by dividing the distance traveled in one rotation by the amount of time it takes to complete that one rotation. Velocity = change in distance/change in time + direction.

Any change in velocity (a change in time) will change the distance between peaks of the spiral. The whole Z-axis around which the spiral revolves represents time passed. When the velocity is constant, the distance from peak to peak in the spiral is constant or each distance from one peak to another peak is the same. (Fig. 6) Therefore, if the distance from one peak to another changes somewhere in the spiral, this indicates that the velocity has changed at that point in time.

Within the Sine Spiral, some of the variables that can change in the object's motion are velocity, radius of rotation, position of axis of revolution, and the scale upon which measurements are based. The shape of this spiral is an indication of any and all of these variables. The change in the shape of the spiral correlates to the change in one or more of these variables. (Fig. 7)

Webster's Third New International Dictionary defines a spiral as "A three-dimensional curve (as a helix) with one or more turns around and axis." In current circular motion, the sine of the angle of rotation provides a Y value (Sine=Y/Radius of Rotation), while the cosine of that same angle provides and X value (Cosine=X/Radius of Rotation). These X and Y values are all that is needed to draw the two-dimensional models of rotation known as the sine curve and the two-dimensional models of rotation known as the sine curve and cosine curve (or sine wave). To my knowledge it has not been thought possible to graph this same motion in three dimensions though, because one needs an X, Y, and Z coordinate in order to graph in 3D. There can be an X and Y coordinate by finding the sine and cosine of a unit circle. All that is needed is a Z coordinate to make the circular motion graphable in three dimensions.

That Z coordinate could be representable by time, or speed of rotation, or even the period of degrees it takes for one complete rotation. In a sine wave, the period is 360 degrees. Using the period of degrees in one rotation, one can find a constantly increasing Z coordinate by dividing the current number of degrees traveled by the period of degrees it takes to complete one rotation. In short, degrees/period. The period can be depicted by a set amount of time. Finding a ratio between something that can be used as a reference point (one second v.s. the number of degrees in one rotation) to one's current progress in that measurement scale (number of seconds that have passed v.s. number of degrees that have been traveled) determine where one is on the Z-axis.

By dividing one's progress by a predetermined scale of reference, a new dimension can be generated in which to plot on a graph in order to illustrate this in three-dimensional fashion. This new dimension can be called the "Z-axis". Now that there is an X, Y, and Z dimension available, a three-dimensional model of an object's progress through its path of circular motion is possible.

For 3D motion, one can draw three spirals over the same T axis and where two of the spirals intersect, plot a point. Connecting the dots between the points gives one a tri-spiral (a spiral or shape that represents 3D motion over time). One can continue plotting the points with several objects and where the tri-spirals intersect, the objects intersect. One can break down the tri-spiral to find out where the X, Y, and Z coordinates are in space and the time coordinates of the intersection.

To use the Sine Spiral to map the 3D motion throughout time, one could mark the spiral with tags (or color code it) that tell one when and how far down the Z-axis it travels. Then to graph several objects to compare their motions and positions to each other, one can have a computer draw lines of the same color of the Z-tag, linking all of the objects that intersect on the two planes like the ZX plane, or the ZY plane. That way, one could identify when objects like planets line up on a plane or intersect.

There is much to benefit from in being able to graph an object's progress at the same time as its position in space. One can see time from an outside perspective and also see how an object's motion, position, and speed relate to any point in time. In many circumstances, it may be very useful to finally be able to get to see the general shape of an object's travel through all points in time all at once. This new method of graphing circular motion in three dimensions is the "Sine Spiral".

The graph forms a regularly spaced spiral whose axis is a straight line equidistant from the perimeter of the spiral. Changing the radius of rotation around a center axis changes the radius of the spiral around the Z axis. Changing the center of rotation in two-dimensional space (X, Y coordinates) makes the Z axis of the sign spiral curve up, down, or to the sides when graphed (instead of the normal straight line Z-axis).

For instance, an air hockey puck pinning in place would have a regular sign spiral that represents a point on the puck's perimeter that is traveling in a circle. Now if the spinning puck were to be slid across an air hockey table, that same point (on the perimeter of the puck) would have an irregular sine spiral whose radius would be constant, but the Z-axis around which the graph spirals would instantaneously bend at a ninety degree angle.

A computer can easily generate this three-dimensional picture of an object "N" at point "T" in time if the speed of travel is irregular (or at the ratio of degrees traveled to the period of one complete rotation if the speed is constant). (Fig. 8)

Graphing any two-dimensional motion (motion that moves in any direction on a flat plane), or rotation in three-dimensions using time or progress as the third dimension allows one to look at time from an outside perspective. The Sine Spiral can be used to graph any such two-dimensional motion, or any number of combinations of such motion. It can be used to graph several objects moving around in 2D (flat) space on the same plane. The Sine Spiral can be used to graph an object which has a rotation within a rotation, and so on (Fig. 9). In this case, each next level of rotation is on an incrementally larger scale. To view some of the higher levels of rotation, one must graph the object's motion over a longer period of time. This concept can relate to complex motions of a longer period of time. This concept can relate to complex motions of a large scale found in, for example, the universe. Sine Spiral graphing can literally be used to graph the motion of every particle in perceivable universe for all points in observable time, simultaneously (by bending the Z-axis appropriately to accommodate changes is axis orientation). Using the Sine Spiral, graphing motion in the Z-axis, or time, requires one to employ a means to mark or reference the Sine Spiral in order to distinguish how deep down the Z-axis the motion has traveled.

Without a Sine Spiral, one can only pick three-dimensions to see on a graph for all points in those dimensions. One could have X, Y, and Z coordinates on a 3D graph all at once, but only for one point in time per graph. Or one could illustrate motion in any two dimensions for all points in time using the Sine Spiral. Here are some of the dimensions from which one can choose: X, Y, Z, and Time. One can have four or more dimensions on a graph by selecting 3 variables form out of the X, Y, Z, and Time, as well as any number of descriptive, qualitative, categorical, computational, or other quantitative dimensions. These kinds of dimensions may appeal/apply to one's senses and could be described in "real" dimensions such as the Z-axis and others.

With 3D applications using this concept (once improved methods of graphing 3D motion with the sine spirals are better developed), other more complex spirals can be mapped. Such 3D applications could include the universe in their motion through space throughout all time to see where certain ones meet or line up), and graphing the motion of particles of a sun during a supernova (the spiral would look similar to a tangent spiral as described below). The Sine Spiral may be an improvement in the graphing of nonlinear and linear motion. With the help of the recent Virtual Reality technology, most any computer can be used to build 3D models such as Sine Spirals. We can construct and view a Sine Spiral and have complete control over the graph, viewing it in 3D space as if it were physically here.

There are many new math applications and theorems that may apply to this concept. Different types of spirals are possible with the general Sine Spiral method. Such shapes could include the Sine Tube (a sine spiral whose period is infinitely small), the Tangent Spiral (which uses a sine spiral whose period is infinitely small), the Tangent Spiral (uses the equation Tan sigma = (y/r)/(x/r) for the x and y coordinates), and the secant spiral (uses sec sigma = 1/(x/r) for the coordinate and csc sigma = 1/(y/r) for the y coordinate). Also, in either two-dimensional or three-dimensional motion (when a graphing method is available), an object can be spinning in a circle within a circle (each level of rotation incrementally bigger than the previous), and this will make a very special type of Sine Spiral that looks like a spiral within a spiral within a spiral, etc., depending on how many levels of rotation are going on. More new math applications are sure to be found that can apply to the Sine Spiral as it is used.

Graphing three-dimensional motion with the Sine Spiral is more difficult to do, but can be done effectively. Graphing three-dimensional motion using the Sine Spiral needs further refinement at this time, but will hopefully be available for use in the near future. There are many new avenues that open up as people figure things out in science and math. The Sine Spiral may be another door in mathematics ready to be opened up and entered. Through this door may be a whole new way to look at things, a way to see objects in nonlinear motion from a standpoint outside of time.

Works Cited:

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Tampa, FL: Mariner Publishing Co., 1980.

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Boston: Prindle, Weber & Schmidt, Incorporated, 1982.

Sin θ and Cos θ graphed simultaneously in Two dimensions

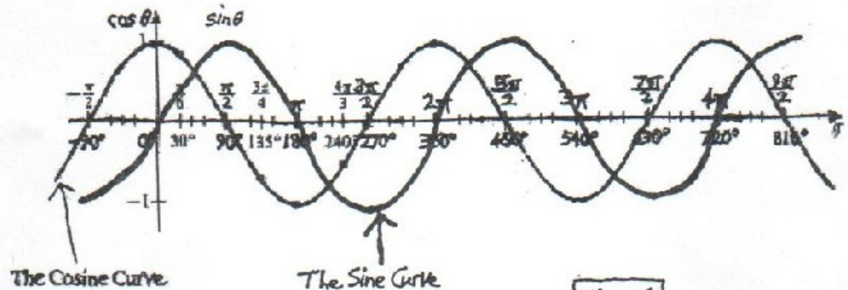


Figure 1

We will define the trigonometric functions of real numbers, called circular functions (or wrapping functions), in terms of the coordinates of points on the unit circle. We consider the unit circle with equation

$$x^2 + y^2 = 1$$

having its center at the origin and a radius of 1 (see Figure 1).

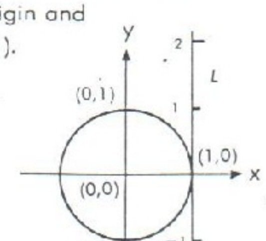
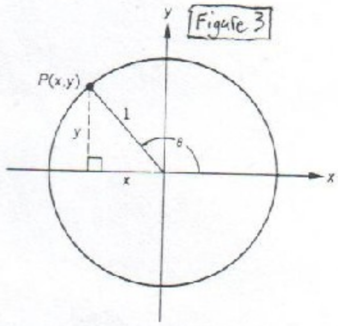


Figure2

Figure 3



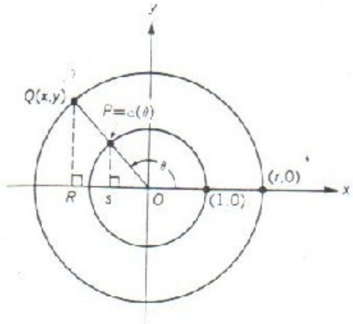
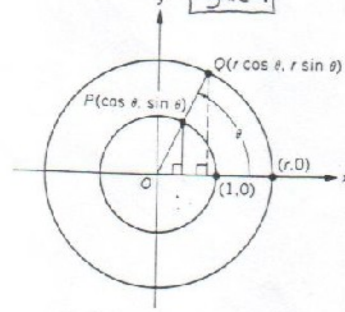
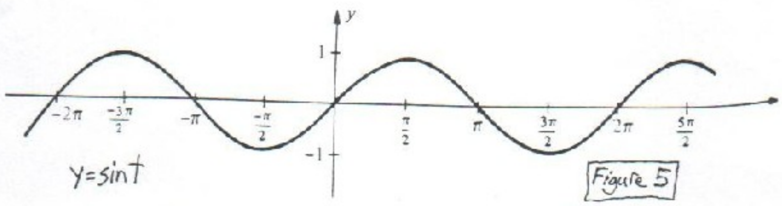


Figure 4

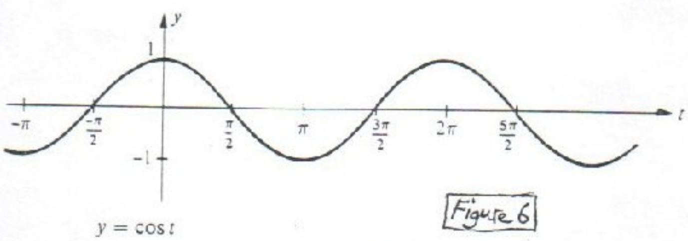


t	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	π	$\frac{5\pi}{4}$	$\frac{3\pi}{2}$	$\frac{7\pi}{4}$	2π
$\sin t$	0	$\frac{\sqrt{2}}{2}$	1	$\frac{\sqrt{2}}{2}$	0	$\frac{-\sqrt{2}}{2}$	-1	$\frac{-\sqrt{2}}{2}$	0

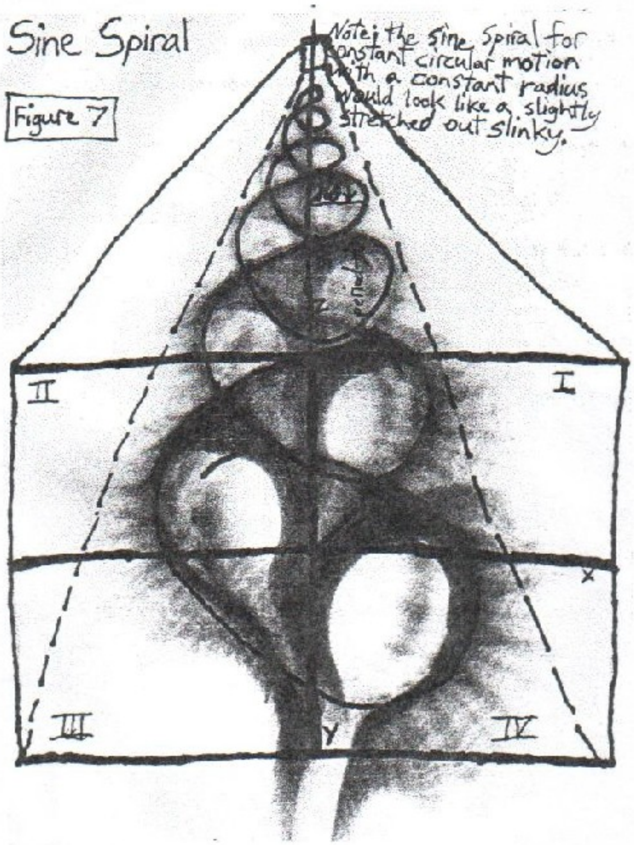
To obtain a rough sketch we may plot the points $(t, \sin t)$ listed above, draw a smooth curve through them, and extend the configuration to the right and left in periodic fashion. This gives us the portion of the graph shown in Figure 2.27. Of

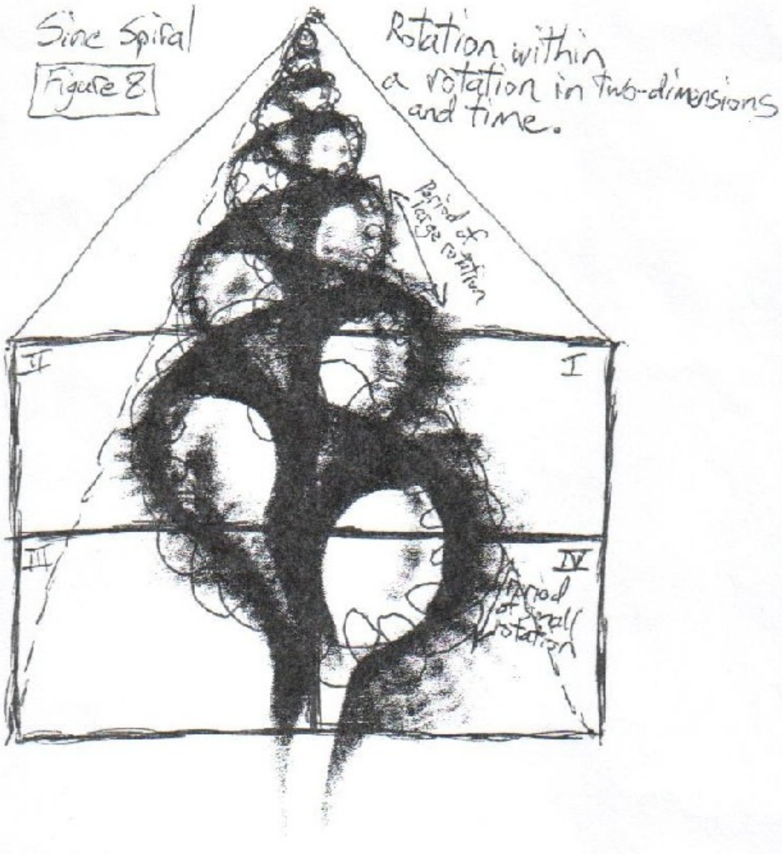


Note that the graph of $y = \cos t$ can be obtained by shifting the graph of $y = \sin t$ to the left a distance $\pi/2$.



$y = \cos t$

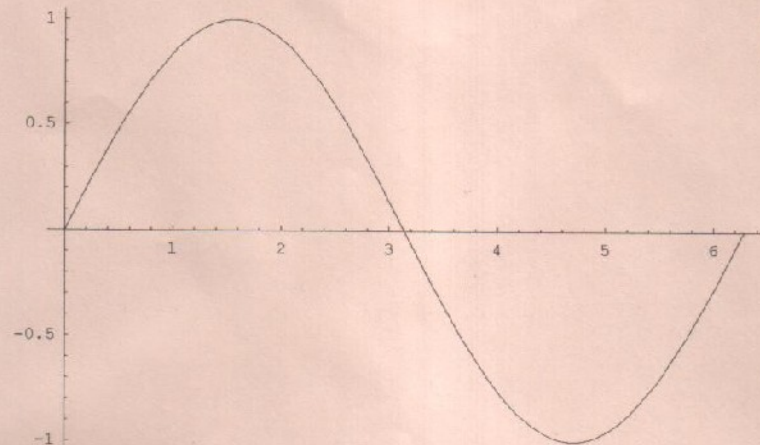



Sine Spiral
Figure 8
Rotation within a rotation in two-dimensions and time.
Period of large rotation
II
I
III
IV
Period of small rotation

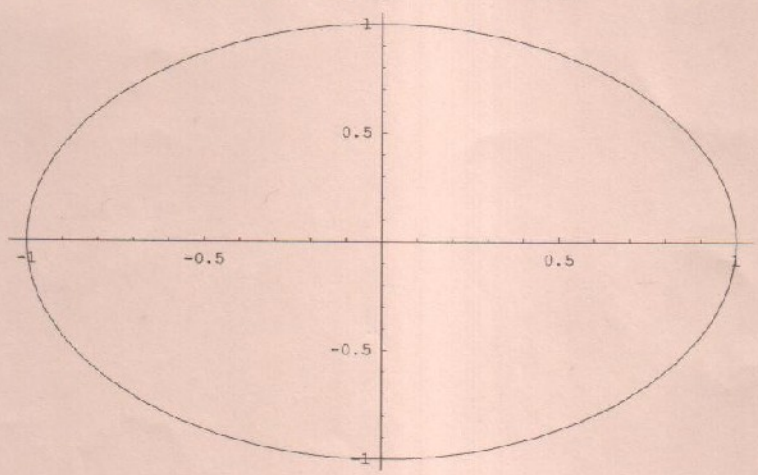
*special thanks to Joshua Tepper in 2005 at Carnegie Mellon University for helping me program my sine spiral Graphing algorithms into Steven Wolfram's Mathematica visualization software to produce these next four pages of visuals.

Sine Spiral Graphing page 9/12

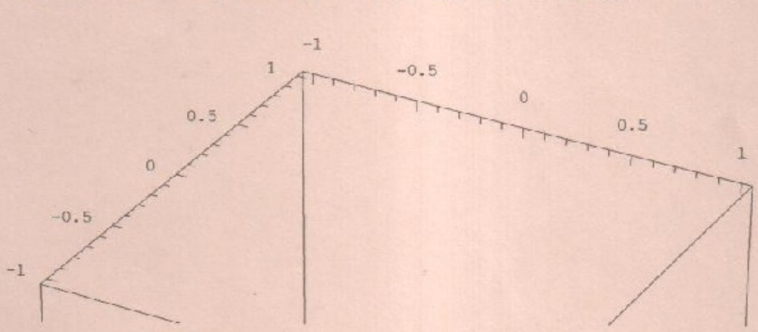
In[2]:= **Plot[Sin[x], {x, 0, 2 Pi}];**



In[3]:= **ParametricPlot[{Cos[t], Sin[t]}, {t, 0, 2 Pi}];**

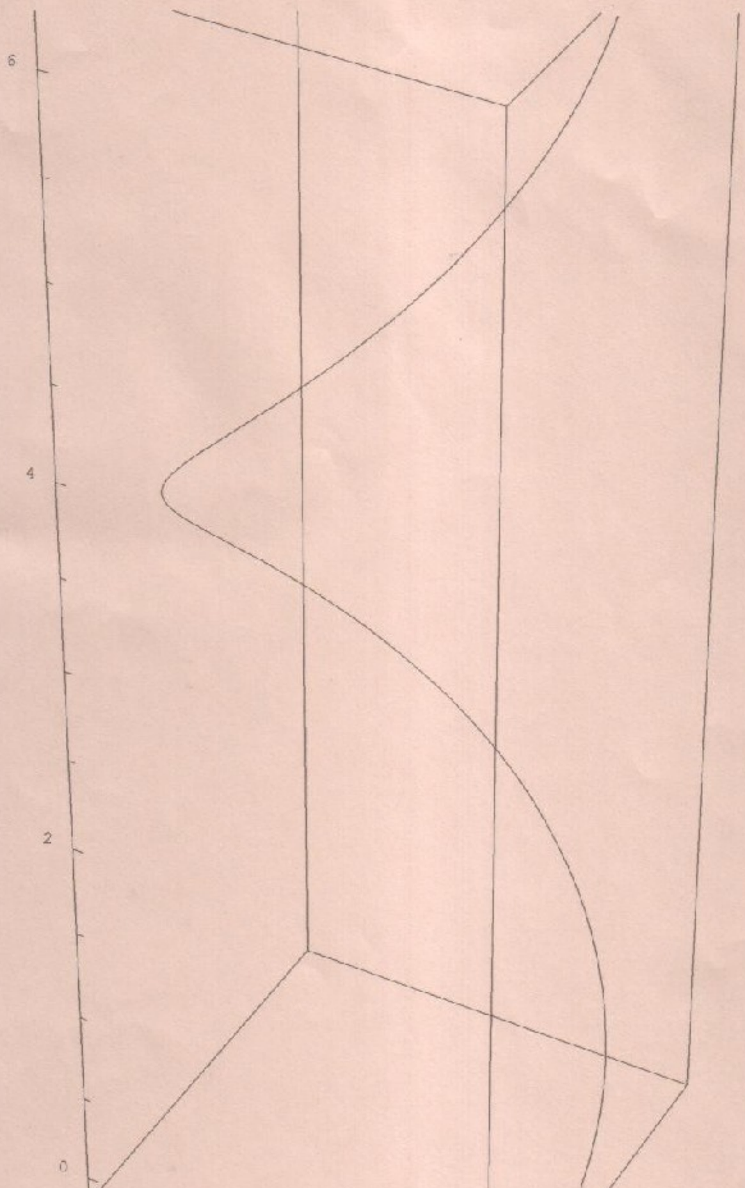


In[5]:= **ParametricPlot3D[{Cos[t], Sin[t], t}, {t, 0, 2 Pi}];**



Sine spiral graphing page
10/12

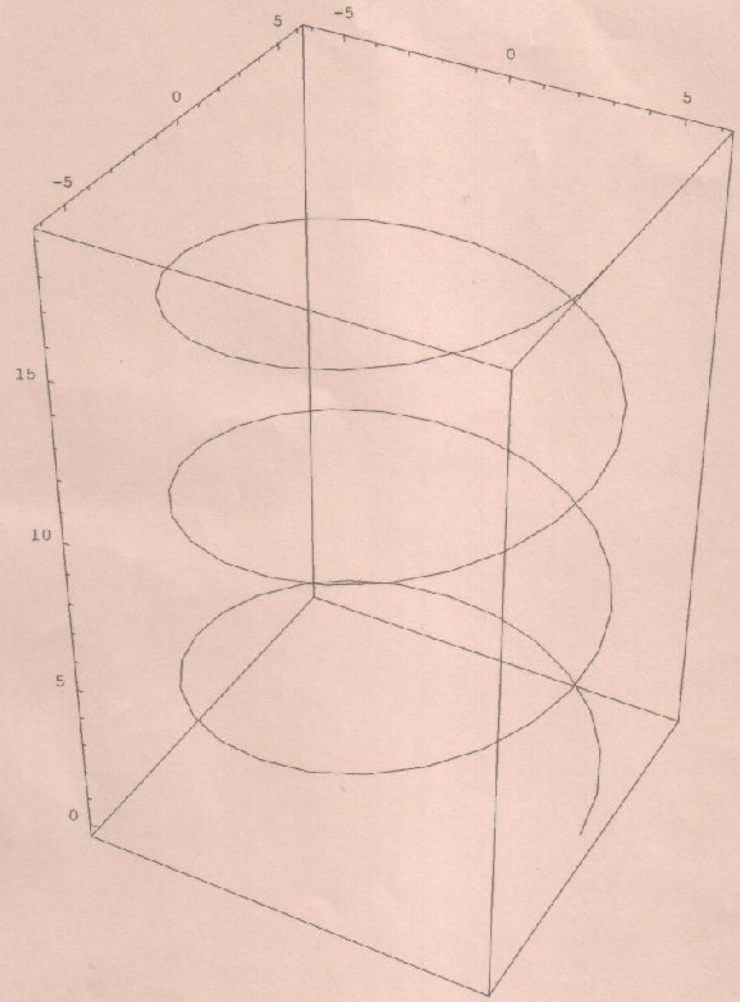
Visual produced in steven wolfram's mathematica with the assistance of Joshua Tepper



Sine Spiral Graphing page 11/12

Visual produced in Steven Wolfram's Mathematica with the assistance of Joshua Tepper


```
In[6]:= ParametricPlot3D[{6 Cos[t], 6 Sin[t], t}, {t, 0, 6 Pi}];
```



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Sine Spiral Graphing page 12/12

Visual produced in Steven Wolfram's Mathematica with the assistance of Joshua Tepper

```
In[10]:- ParametricPlot3D[{20 Cos[t], 20 Sin[t], t}, {t, 0, 20 Pi}, PlotPoints → 1000];
```

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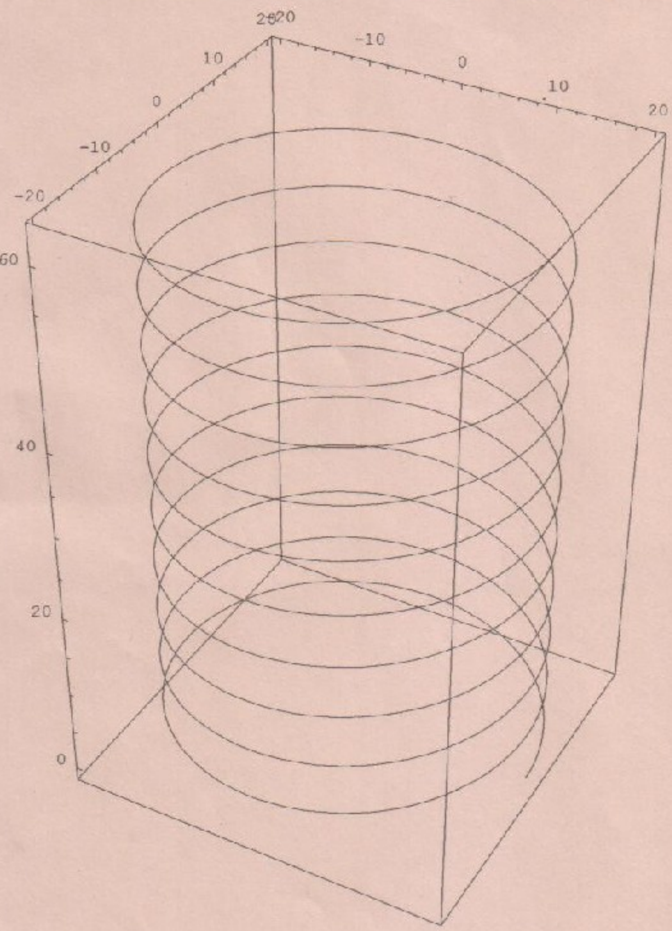
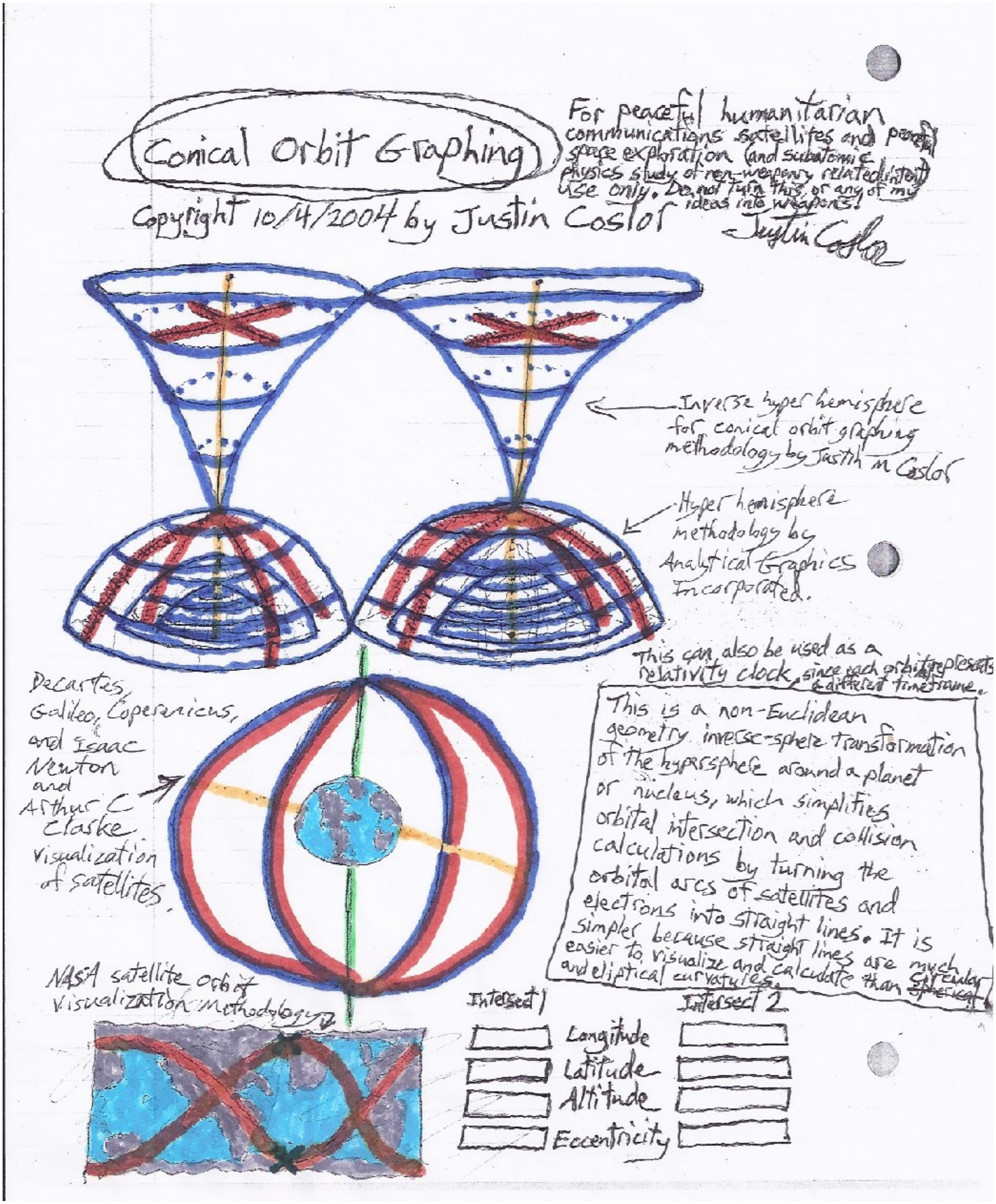


8. Conical Orbit Graphing



6-28-2003 note about my conical satellite orbit graphing idea --

I do think the conical satellite orbit graphing idea I thought of last year could still be something valuable in detecting and calculating collisions and for 3D space junk detection. It's based on the hypothesis that if you compress a half-sphere into the shape of a cone, the 180 degree arcs become straight lines, and straight lines are easier to represent. Elyptical orbits would just be straight lines at an angle, each line representing the orbital path of an object in space. Where two or more lines intersect, a collision is possible at that point by either accellerating or decellerating the objects that the lines represent. Each object in a hemisphere cone is represented by a maximum and minimum altitude, and an angle representing the direction in which the object is travelling. There is one cone for each hemisphere. The neat thing about the conical format is that you can see how a bunch of objects, travelling in different directions at various altitudes, stack up along a common line of altitude protruding through the center of the planet, and how this line of altitude intersects each of those objects at two points in time along various their paths of travel. It is a way to group a set of satellites (or other objects in orbit) by a single line protruding through the center of the earth out into space (with a longitude and lattitude coordinate for each hemisphere from which the line emerges). All sorts of nifty computer software functions can be incorporated into this as well, such as having a 2d map of the planet as a clickable image map that generates a unique pair of orbit cones for each coordinate (one cone for each hemisphere for objects travelling 360 degrees or more around the planet). It would have a timing component as well. Also a range component that highlights any possible collisions within a certain proximity. You should also be able to zoom in and out and watch the satellites travel along their path lines in realtime, using live or recorded data. It would help if most modern satellites were equipped to detect the space junk and satellites around them and relay it back to the ground so that the world has a constantly updated fairly accurate map of all of the objects and space junk in orbit around the earth, since space flight has been compared to flying through a high speed shooting gallery. Ideally some kind of Star Trek force-field shields or something are needed for the safety of that hazard but a good 3D navigation map can't hurt. For each satellite the computer can run a conical orbit graphing collision detection test for each point in time along it's projected path of travel. The main use of conical orbit graphing as I see it however, is for detecting collisions at points along a line of altitude, using one pair of cones for each point in time (or as a 3D interactive video). The user should be able to pick a time and x-y coordinate, see the satellites that intersect that line of altitude, then zoom in on the part of the path of the satelite that they are interested in, then click on a point in that path, and a new set of cones will be generated using that point as an altitude line in the center of the cones so that you can then see what possible collisions and path intersections there are for that point in the satellites flight path-time. All as straight lines so that it's easier to comprehend in complex situations. The computer calculations might even be quicker than calculating arcs. I'd assume ellyptical arcs to be the most computationally intensive, but they too could probably be represented as straight lines in the software. It would be a 3D software tool for visualization and collision-interception calulation. There might be other uses for it that I haven't thought of yet (such as charting asteroids around Saturn; though hopefully it won't be used for, or even be useful for, any kind of weapon system). I haven't written any of the code yet or figured out much of the math to make it possible yet.

Justin Coslor 6/28/2003

9. Physics concepts: space compression as gravity such that mass = gravity.

We are currently living in the Holocene epoch of the Quaternary period, of the Cenozoic era, of the Phanerozoic eon of the Planet Earth 2/3 of the way out on the Orion branch of the Milky Way Galaxy in the Virgo Supercluster.

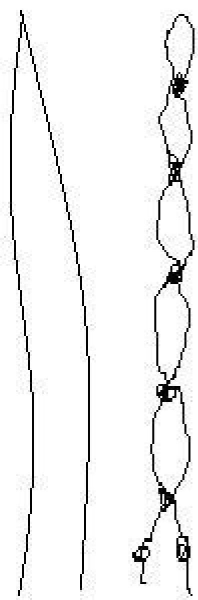
"Mass = Gravity" is the starting point of plurality, broken down into variables and constants from there. Space holds a compression, in that space is potential for motion, and matter is compressed space so it has an increased potential for motion, and thus a gravitational attraction to other matter. Also, when space is dilated it repels motion through it like the wake of a supernova.

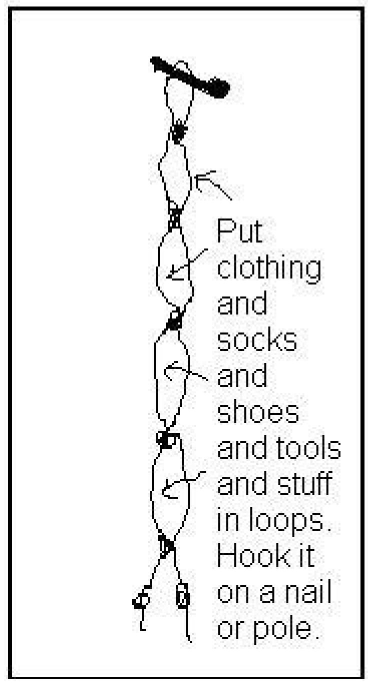
Exponent equations can represent space orbits, thus spirals around spirals, and so on. Deep space position movement could be represented as the motion of rotating along orbits, such as helices and other spirals.

10. Twine Storage Shelf Knot-work Design

8/1/2010 Justin Coslor
Portable Shelf Knotwork Idea
For Appropriate Technology and Survival Kit
[License: Public Domain, free for everyone to use.]

Start out with rope or cord or twine or string and fold it in half and tie double knots along its length to hold food or objects in it like shelf space, and it can be carried in a suvival kit to go with camping supplies.





11. Rope Folds

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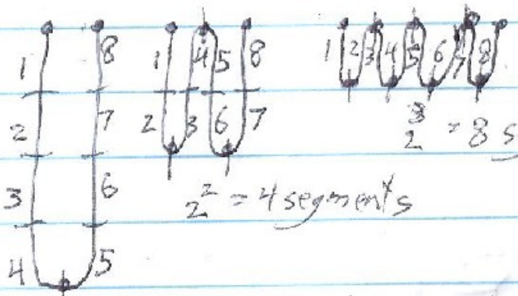
Rope Folding Algorithm

$2^0 = 1$ segment



$2^1 = 2$ segments

$2^2 = 4$ segments

$2^3 = 8$ segments

$2^n = 2_1 \cdot 2_2 \cdot 2_3 \cdots 2_n$

$\log_2$ segments = folds

Each time a rope is folded in half the number of rope segments increases by a power of two, for instance if a rope is folded in half once it has 2^1 segments, if it is folded in half twice it has 2^2 segments and so on.

Addition Chart Possibilities

V+N=Z

1+1=2
W=1

1+2=3
W=1

1+3=4
2+2=4
W=2

1+4=5
2+3=5
W=2

1+5=6
2+4=6
3+3=6
W=3

1+6=7
2+5=7
3+4=7
W=3

1+7=8
2+6=8
3+5=8
4+4=8
W=4

1+8=9
2+7=9
3+6=9
4+5=9
W=4

1+9=10
2+8=10
3+7=10
4+6=10
5+5=10
W=5

1+10=11
2+9=11
3+8=11
4+7=11
5+6=11
W=5

1+11=12
2+10=12
3+9=12
4+8=12
5+7=12
6+6=12
W=6

So it seems that with each even number and continuing on to the odd number after it the number of sum possibilities in the addition chart increments by one. I will attempt to form a proof for this if it is true or not true or something else.

An application for this could be for determining cross domain relations for alternative route mathematics such as for logic or spoken language such as for finding how many different ways there are to form a statement or to describe an idea or question and what that could be given an exact methodology.

Notice that small numbers have fewer addition chart possibilities and that the larger numbers get the more addition chart possibilities there are in sequential pairs.

1+12=13
2+11=13
3+10=13
4+9=13
5+8=13
6+7=13
W=6

1+13=14
2+12=14
3+11=14
4+10=14
5+9=14
6+8=14
7+7=14
W=7

1+14=15
2+13=15

3+12=15
4+11=15
5+10=15
6+9=15
7+8=15
W=7

1+15=16
2+14=16
3+13=16
4+12=16
5+11=16
6+10=16
7+9=16
8+8=16
W=8

1+16=17
2+15=17
3+14=17
4+13=17
5+12=17
6+11=17
7+10=17
8+9=17
W=8

1+17=18
2+16=18
3+15=18
4+14=18
5+13=18
6+12=18
7+11=18

8+10=18
9+9=18
W=9

1+18=19
2+17=19
3+16=19
4+15=19
5+14=19
6+13=19
7+12=19
8+11=19
9+10=19
W=9

1+19=20
2+18=20
3+17=20
4+16=20
5+15=20
6+14=20
7+13=20
8+12=20
9+11=20
10+10=20
W=10

1+20=21
2+19=21
3+18=21
4+17=21
5+16=21
6+15=21
7+14=21

8+13=21
9+12=21
10+11=21
W=10

1+21=22
2+20=22
3+19=22
4+18=22
5+17=22
6+16=22
7+15=22
8+14=22
9+13=22
10+12=22
11+11=22
W=11

Hypothesis:
For All Z not equal to 2
If V+N=Z
Then (V+1)+(N-1)=Z

Given: V,N,Z,W are in the Natural Number System
Proof: When Z is even then V+N / Z = 2W
and when Z is odd then V+1 + N-1 = Z such that Z-1 = 2W

Wednesday, November Fourth, Two-Thousand and Nine. Justin M Coslor.
11/04/2009

13. Prime Number Neighborhoods and Prime Number Midpoint Divisors

Prime Number Neighborhoods

(prime numbers are depicted as "@" and midpoints are depicted as "---")

1@	63	125	187	249	311@	373@	435	497	559	621
2@	64---	126	188	250	312---	374	436---	498	560---	622
3@	65	127@	189	251@	313@	375	437	499@	561	623
4---	66	128	190	252	314	376---	438	500	562	624
5@	67@	129---	191@	253	315---	377	439@	501---	563@	625---
6---	68	130	192---	254---	316	378	440	502	564	626
7@	69---	131@	193@	255	317@	379@	441---	503@	565	627
8	70	132	194	256	318	380	442	504	566---	628
9---	71@	133	195---	257@	319	381---	443@	505	567	629
10	72---	134---	196	258	320	382	444	506---	568	630
11@	73@	135	197@	259	321	383@	445	507	569@	631@
12---	74	136	198---	260---	322	384	446---	508	570---	632
13@	75	137@	199@	261	323	385	447	509@	571@	633
14	76---	138---	200	262	324---	386---	448	510	572	634
15---	77	139@	201	263@	325	387	449@	511	573	635
16	78	140	202	264	326	388	450	512	574---	636---
17@	79@	141	203	265	327	389@	451	513	575	637
18---	80	142	204	266---	328	390	452	514	576	638
19@	81---	143	205---	267	329	391	453---	515---	577@	639
20	82	144---	206	268	330	392	454	516	578	640
21---	83@	145	207	269@	331@	393---	455	517	579	641@
22	84	146	208	270---	332	394	456	518	580	642---
23@	85	147	209	271@	333	395	457@	519	581	643@
24	86---	148	210	272	334---	396	458	520	582---	644
25	87	149@	211@	273	335	397@	459---	521@	583	645---
26---	88	150---	212	274---	336	398	460	522---	584	646
27	89@	151@	213	275	337@	399---	461@	523@	585	647@
28	90	152	214	276	338	400	462---	524	586	648
29@	91	153	215	277@	339	401@	463@	525	587@	649
30---	92	154---	216	278	340	402	464	526	588	650---
31@	93---	155	217---	279---	341	403	465---	527	589	651
32	94	156	218	280	342---	404	466	528	590---	652
33	95	157@	219	281@	343	405---	467@	529	591	653@
34---	96	158	220	282---	344	406	468	530	592	654
35	97@	159	221	283@	345	407	469	531	593@	655
36	98	160---	222	284	346	408	470	532---	594	656---
37@	99---	161	223@	285	347@	409@	471	533	595	657
38	100	162	224	286	348	410	472	534	596---	658
39---	101@	163@	225---	287	349	411	473---	535	597	659@
40	102---	164	226	288---	350---	412	474	536	598	660---
41@	103@	165---	227@	289	351	413	475	537	599@	661@
42---	104	166	228---	290	352	414---	476	538	600---	662
43@	105---	167@	229@	291	353@	415	477	539	601@	663
44	106	168	230	292	354	416	478	540	602	664
45---	107@	169	231---	293@	355	417	479@	541@	603	665
46	108---	170---	232	294	356---	418	480	542	604---	666
47@	109@	171	233@	295	357	419@	481	543	605	667---
48	110	172	234	296	358	420---	482	544---	606	668
49	111---	173@	235	297	359@	421@	483---	545	607@	669
50---	112	174	236---	298	360	422	484	546	608	670
51	113@	175	237	299	361	423	485	547@	609	671
52	114	176---	238	300---	362	424	486	548	610---	672
53@	115	177	239@	301	363---	425	487@	549	611	673@
54	116	178	240---	302	364	426---	488	550	612	674
55	117	179@	241@	303	365	427	489---	551	613@	675---
56---	118	180---	242	304	366	428	490	552---	614	676
57	119	181@	243	305	367@	429	491@	553	615---	677@
58	120---	182	244	306	368	430	492	554	616	678
59@	121	183	245	307@	369	431@	493	555	617@	679
60---	122	184	246---	308	370---	432---	494	556	618---	680---
61@	123	185	247	309---	371	433@	495---	557@	619@	681
62	124	186---	248	310	372	434	496	558	620	682

So it seems that the midpoints of odd odd spacings are divisible by 3 (with the exception of spacings of size 11+12n), and the midpoints of even odd spacings are divisible by 2, and the midpoints of Twin Primes are divisible by 6.

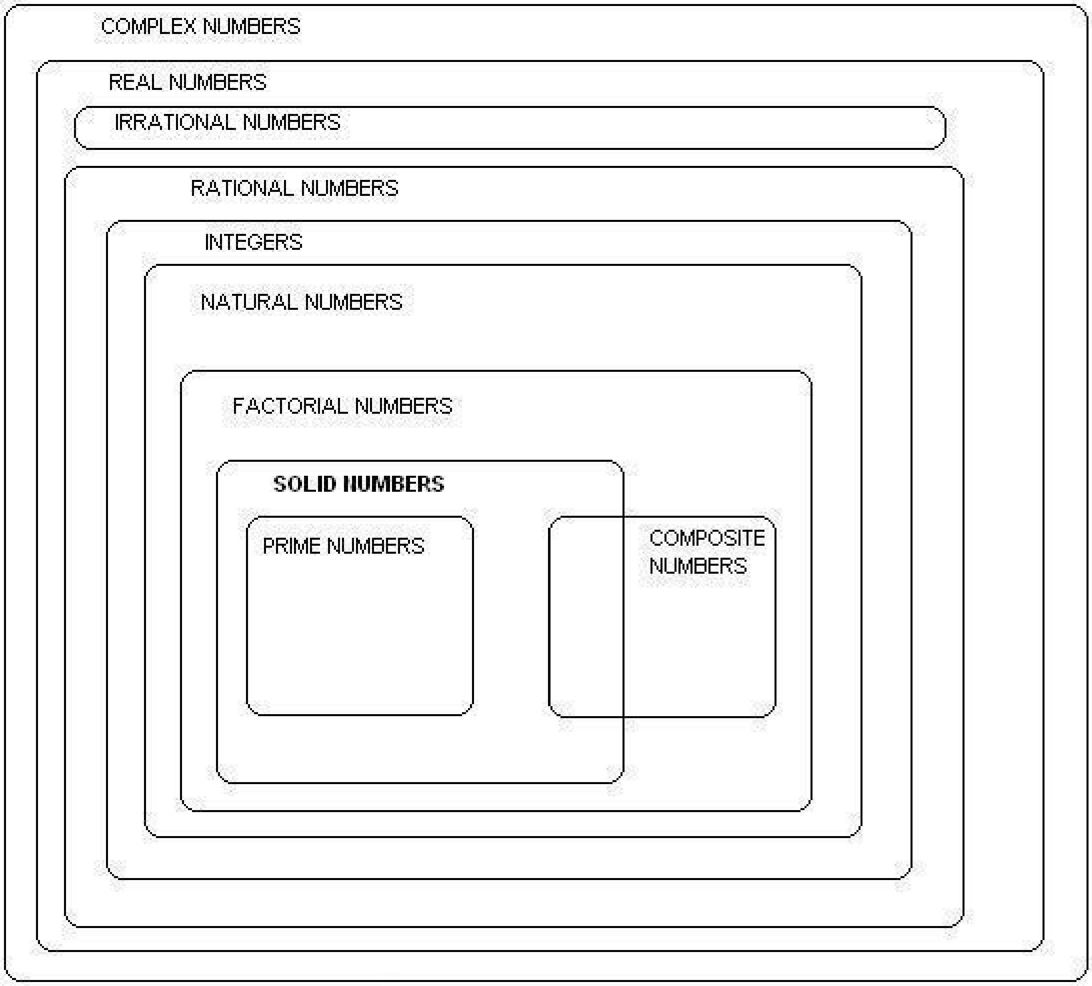
2/7/2011 Justin M Coslor
Prime Number Representation

"Prime numbers are bridges that connect the Rational Number System to the Natural Number System."

It is possible to represent numbers in the manner of putting each decimal place along a perpendicular number-line like cubes of cubes, etc. For example, if we want to represent all two-digit prime numbers we can make the Y axis represent the least significant digit for 0 through 9 and the X axis can represent the second least significant digit for 0 through 9, and that way we can place a point at each XY intersection to represent two-digit numbers as 00 through 99. If we want to represent three-digit numbers we can make an XYZ grid like a stack of ten XY grids, such that the Z axis represents the third least significant digit as 0 through 9 to represent number 000 through 999. When X = 0 through 9, and Y = 0 through 9, and Z = 0 through 9; a row of ten such XYZ cubes numbers can represent four digit numbers. Ten columns of ten rows of XYZ cubes can be used to represent numbers that have five digits. An XYZ cube made of one-hundred XYZ cubes could represent numbers up to six digits in length. That pattern can continue, or be programmed in terms of a multidimensional memory array. Prime Numbers could be represented in that manner.

14. Solid Number System

20100826-Coslor-Justin-M--Solid-Numbers



20100825-Coslor-Justin-M--Solid-Numbers
What if we introduce the concept of a solid number as the product of all prime numbers up to any particular natural number? It would be similar to a factorial but would not repeat any prime number multiple times in its divisibility. Solid numbers would therefore be a subset of the natural number system, and prime numbers would therefore be a subset of the solid number system. For example: an ongoing list of all sequential solid numbers would start out as follows. . . (prime solid numbers are in parenthesis for clarity.) . . .
(1),(2),(3),(5),6,(7),10,(11),(13),14,15,(17),(19),21,22,(23),26,(29),30,(31),33,etc. 4,8,9,12,16,18,24,25,27,32,etc are not solid numbers because they are divisible by one or more prime number exponents whose exponent is 2 or larger, thus those are prime repetitions, and therefore not solid.

15. PICForm combined with the Dewey Decimal System

20100909 Justin Coslor
Qualitative and quantitative dimensions form variables.
Networks of variables form patterns.
Networks of patterns form contexts.

20101102 Justin M Coslor --- PICForm Control Structure for Search Engines

I had an idea recently about a control structure for PICForm (Possibility Thinking: Explorations in Logic and Thought, ISBN: 9780615242651), and I was thinking that it could add some fine-grained epistemological control to forensic science, law, and library science, particularly when used in conjunction with the Dewey Decimal System. The PICForm control structure could also be used for the design of a computerized search engine. It goes something like this: ABC.DEF.GHI and could be recursive. Question marks replace any of the parts of it not used in a particular instance.
Cross-Domain Relations go from domain to domain where the range is the same.
(CDR's link domains whose range overlaps.)

E is the cross-domain relation that relates context D to context F.
D is the context that pattern ABC is part of.
F is the context that pattern GHI is part of.
B is the word-sense-triangulation operator that relates variable A to variable C.
H is the word-sense-triangulation operator that relates variable G to variable I.
A is a qualitative variable. C is a quantitative variable.
G is a qualitative variable. I is a quantitative variable.

In ABC.DEF.GHI, E --> ABC : D :: GHI : F
Such a structure could relate knowledge structures
from one Dewey Decimal System book to another.
PICForm is patterns in contexts formalized, and is
for formalized epistemological knowledge representation.

Patterns in Contexts, a theory of knowledge representation.

Information, by its very nature, is a division. Yet it strives to become whole again, and at the very least, to become balanced. If knowledge is represented as patterns in contexts, then thinking might be learning, applying, and organizing that knowledge, creatively or otherwise.

Analogies mimic patterns across contexts via Cross-Domain Relations. Cross-Domain Relations go from domain to domain when the range is the same, as an overlap. That is the basis of Analogical Reasoning. As Aristotle said in the first paragraph of his book 'Poetics', "The arts are mimicry." Perhaps the Arts are like patterns, and the Sciences map the contexts. Science is about setting goals and asking networks of questions to experimentally explore the unknown using logic and methodology such as computation and reason. Context is one kind of framework.

Contexts are composed of configurations of patterns (a setting, like a continuum of text). Patterns are composed of configurations of variables. Variables are composed of configurations of first principle dimensional properties, such as quantifiers and qualitative adjective descriptive comparisons. Their application via relational frameworks (such as semantics and syntax, or operator systems) can simulate the meat of metaphor, as two analogies juxtaposed by similar relational frameworks that form a cross-domain relation in an overlap of meaning or intention or something else.

If data has recognizable features, then it is a pattern. Repetition is what makes a symmetry. Repetition makes a pattern's features recognizable. Information is a symphony of symbolism and symmetry. Every pattern in every context is unique to the properties and axioms of the contexts that they exist in. An axiom is a self-evident truth.

A symmetry is an example of an internal algebra. Unique symmetries have a prime number of repetitions or symmetry partition sections. Prime numbers are the balance points in the Universe. Unique symmetries are atomic repetitions, and are the simplest form of patterns, distinct from perceptually apparent random chaos. I do not believe in ultimate randomness. I do believe that there are many reasons for everything.

All truth is but an approximation of a deeper truth. Knowledge is information that contains meaning. Language is permutations of semantics, governed by syntax and context, with meaningful intention. Yet people tend to not see patterns that they are not shown. We are surrounded by answers, but they are all meaningless and are often impossible to detect without knowing at least some of the questions that their existence is derived from. Without a question / answer connection, there is no consciousness, and awareness would not exist. Awareness is not the same as instinct.
