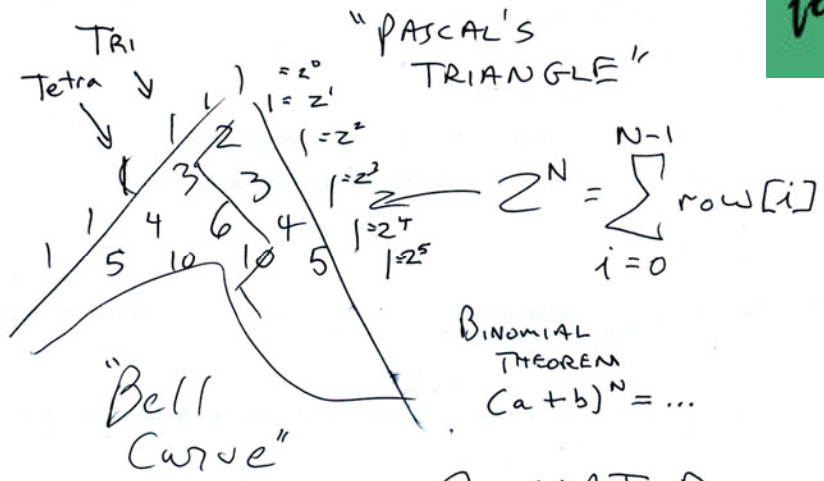


Pascal's Triangle and Sphere Packing: Designing a Bridge



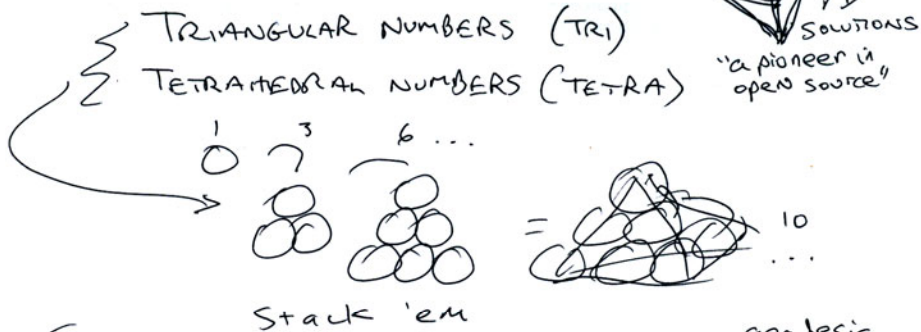
follow your curiosity



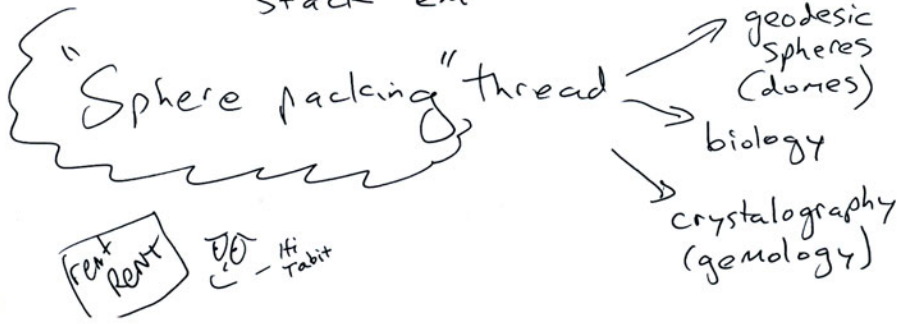
Pascal's Triangle is a grand central station of converging math threads, including Binomial Theorem and Bell Curve statistics.

"Gaussian"
HOW MANY WAYS TO REACH THE BOTTOM ROW...

MAJOR BRIDGE



Another grand central is the sphere packing thread.



A bridge between them is the fact that triangular and tetrahedral numbers appear in Pascal's Triangle.

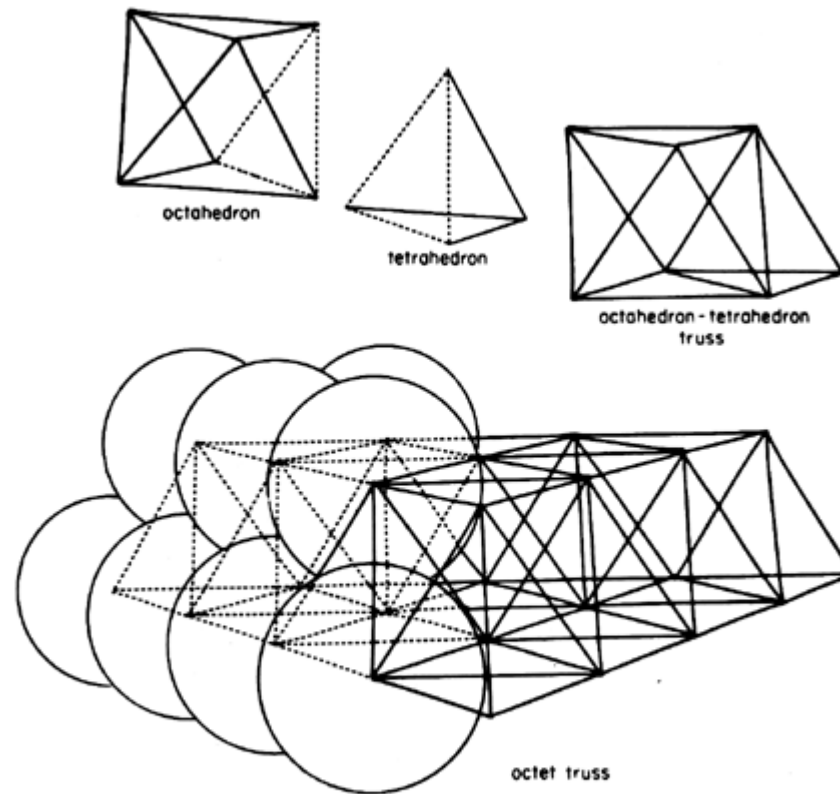


Fig. 420.01 Octet Truss.

From
*Synergetics:
Explorations
In the Geometry
Of Thinking*, by
R. Buckminster
Fuller

http://mathforum.org/workshops/usi/pascal/pascal_triangular.html

http://mathforum.org/workshops/usi/pascal/pascal_tetrahedral.html

Using Python generators: A007318, A00217, A00292 (OEIS)

File Edit Format Run Options Windows

Help

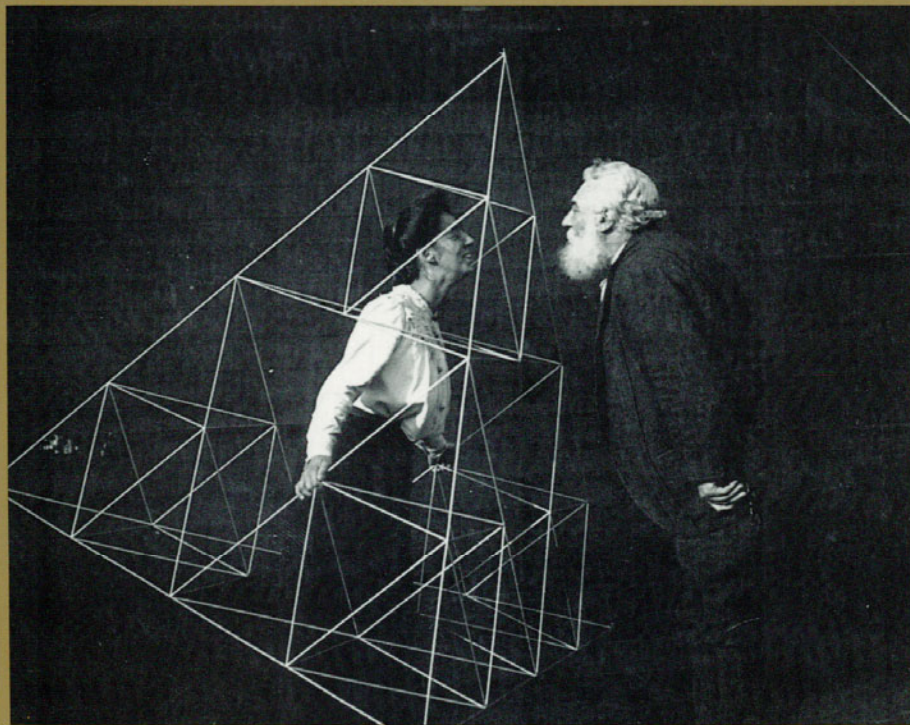
```
def pascal():
    """Generate successive rows of Pascal's Triangle
    http://www.research.att.com/~njas/sequences/A007318
    """
    row = [1]
    while True:
        yield row
        row = [ i + j for i,j in zip([0]+row, row+[0]) ]

def triseq():
    """Read triangular numbers from Pascal's Triangle
    http://www.research.att.com/~njas/sequences/A000217
    """
    pg = pascal()
    next(pg);next(pg) # skip first two rows
    while True:
        yield next(pg) [2]

def tetraseq():
    """Read tetrahedral numbers from Pascals Triangle
    http://www.research.att.com/~njas/sequences/A000292
    """
    pg = pascal()
    next(pg);next(pg);next(pg) # skip first three rows
    while True:
        yield next(pg) [3]
```

GENIUS AT WORK

Images of Alexander Graham Bell

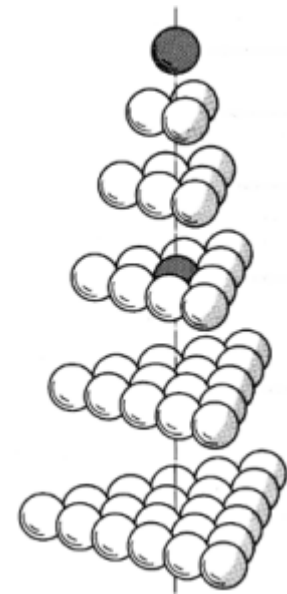


Dorothy Harley Eber
Prologue: R. Buckminster Fuller



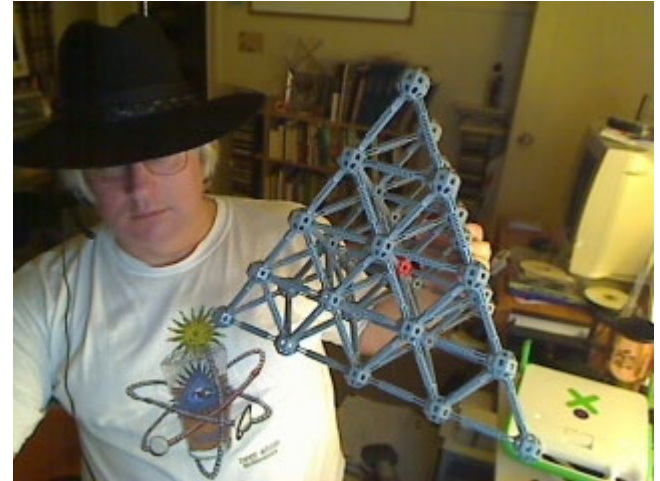
follow your curiosity

study your heritage



Kirby Urner

Kirby Urner, with a BA in philosophy from Princeton University, is a computer programmer and educator. He has developed computer literacy products for McGraw-Hill and is a former high school mathematics teacher.



Thank You! Be in touch: 4dsolutions.net