Information Theory: The Birthplace of Logic, Statistics, and Cryptography

Patrick Ryckman

February 2026

Abstract

Imagine you have an idea, it can be any idea, it could even represent this idea in this paper, or maybe it means something else. Lets call it x, now imagine a second idea, different from the first. Let's call it y. I have no way of knowing any difference between x or y unless you give me information about your idea. That applies at all scales, from a human level understanding, all the way down into quantum vacuum energy. Therefor: Information itself must be a literal force of nature because math itself is connected to logic and that is connected to our real world by your idea. It must be therefor then connected to physics somehow, but also Newtons simple force calculations as well. Information represents the weight of math itself, because there is no other scale which is relevant to pure math. $x + y = z$ in that line of thinking then, where your idea and my idea combine to make a new idea. and $a^2 + b^2 = c^2$ becomes an equation that governs the exchange of information, geometry is just the name we gave to it. This very fundamental and simple principle is shown in the first few polynomial expansions of Pythagoras scale: $a^2 + b^2 = c^2$

Read to the final conclusion for the true ending.

1 Introduction

The most basic and fundamental concept of math, is also the most powerful and meaningful equation. 1=1 . It represents equivalence. If you have two ideas, it doesn't matter what they are, it doesn't matter what scale we are even talking about. I have no way of telling them apart, unless you give me information about them. Therefor, from my perspective they are the same thing. I can also have an idea, it might not be the same as your idea, but it represents an idea. If I have a second idea, I also cannot tell you how it is different from my first idea, without giving you information about my first idea. Therefor, the logic forces that our first idea is the same, but our second idea is not the same. Our first idea represented the same object in math. 1=1 But our two different ideas can be added together. 1+1=2 That's already a new idea, and it becomes the

birthplace of geometry, but it is also the birth place of information, the concept of "the secret", cryptography, and statistics.

2 The setup and Scale

If your first idea = my first idea then 1=1 We already know from pythagoras that $x^2 + y^2 = z^2$ Notice that if x and y represent each our ideas, then this equation just says 1+1=2 There is no other possible solution if we don't share information between each-other. Then, what would be the source of information we would share? There is nothing relevant to the world in this equation, except numbers themselves. Notice a few things about this equation. If you plot this on a graph. It automatically creates two orthagonal lines. That represents your idea and my idea, we have no information about them, except that they are different. If you square it, the polynomial expansion gets bigger, but it still remains a perfect circle. $(x^2 + y^2) + (2xy^2) = 2$ Now they are different still, except now the difference is expressed in terms of pi compared to the number 2. This curvature orthagonal relationship can be repeated. Each time we repeat this operation, we get what represents a new idea. A new type of information. Which is now relevant somehow, to the information which we previously had. That relationship is given scale and meaning by the terms inside of it. It still represents just x and y, but there are more terms. Expanding this again continuously results in even more terms, it becomes incredibly complex very quickly. Since we agreed that our idea represented 1, that forces the relationship, that math itself must be therefor the source of weight on the Universe. Simply by following Pythagoras setup, we get all the forces of nature, at the quantum scale, at newton scale, and all fields of math that study the world.

Due to the nature of this scale coming from the weighted curvature of math itself and the idea of 1=1 ,

earth that represents your existence from your perspective, gravity would sit at the lowest level. Therefore, the equation I just gave for 2 = G The coefficient itself represents the Constant G, it comes from the relationship between time and distance. Not because I declare it so, but because it must, it is nature of algebra to make those conclusions, and it is the nature of statistics to study their implications.

Relative size for each dimension can be found by expanding the polynomial. By doing so, coefficients show up, that expand in complexity and size very quickly. The relationship between all of these terms are the fundamental relationships of numbers and mathematics itself. And logic sits at the edge of that, requiring no further formal proof on it's own other than what was already described. Logic becomes the boundary between information and the secret.

Here are the first few dimensions of expanded polynomials.

$$\text{Dimension } 1 = x = 2$$
$$\text{Dimension } 2 = x^2 + 2y = 2$$
$$\text{Dimension } 3 = x^4 + 4y + 2x^2 + y2 = 2$$
$$\text{Dimension } 4 = (x^8 + 8y) + 6x^4 + 4y + 4x^2 + 2y + 4x^2 + 6y) = 2$$

We start with x = 2 because it represents two ideas, two pieces of information. Yours and mine. It gives the entire system of math itself a sense of weight.

We know, that 2 different ideas, are not the same as 1 idea, therefor in dimension 2 we repeat the process of dimension 1 to get the next dimension.

These equations represent the weight of math itself, and therefor must represent information itself.

3 Logic, the birth of Statistics, The essence of the secret and Calculus

Expanding these incredibly complex calculations, results in a scale of growth that is consistent with natural constants of known mathematics, like e, and the collatz conjecture spiral symmetries we see on Universal scales, and electron orbitals we see on the Quantum scale. Pure math statistics and calculations can be performed on these expansions which give optimized predictions of their output. This represents investigating a secret, this represents information, and collaboration on a human level. It's even now possible to formally link cooperation and game-theory from pure mathematics to the real world.

The polynomials in the above equations represent a perfect circle, of circumfrence 2. They represent a fully balanced equation. Therefor, the entire equation reduces back to $x^2 + y^2 = 2$ Representing a fully shared idea. However, if a person perfectly offbalances that equation, equal to the difference between addition and multiplication, the equation becomes perfectly off balanced in a very specific way. $x^2 + 2y = 2$ It creates a symmetry between all layers of dimension where each one is asymmetric to the one before it. Therefore, they are all assymetric to eachother, but combined, they are all symmetric in comparison to yourself. The 2y represents your 2 ideas, they are different and separate to you, but you cannot give anyone information about 1 without inherently giving information about the other, the x^2 represents someone elses idea, they are different to them, but they are the same to you. This logic shows inequalities between functional operators, tied directly to your perspective of the world and how that affects the trade between information between you and another person, or 2 point like particles.

This could lead to understanding the physical forces of DNA and proteins.

But it also allows to study forces and fields more relevant to everyday human experiences, such as gravity. The Philosopher writing this paper suggests, that physics not only can be represented this way... but it must be, by the very definition of logic we took to get here. And the first polynomial expansion comes from acceleration, ie, gravity. Proven by Huygens as acceleration $A = V^2/R$ Where we re arrange the terms to see $V^2 = x^2 + y^2 = z^2$

4 Conclusion

See end of conclusion for a full understanding. If this tiered dimensional mapping is true: known physical constants like G would naturally be one of the lowest tiers, and easiest polynomial expansion to figure out. Higher energy interactions such as quantum energy, vacuum energy would require working this polynomial expression out into bigger formulas, and this concept of information exchange itself must exist through the same dimensional building mechanics. Information itself should be able to transmit in the same way conceptually, somehow.... Therefor, Gravity itself represents information. In that method of thinking, everything represents information. Therefore this Polynomial expansion must represent information itself, and that comes from calculating root 2, and Pi, to whatever level of precision you want to have, in a way which is relevant to the decision you are making.

For example, I could move forward in any direction, therefor, every direction is forward. If hope exists, it must exist forward from here, in some direction, which we could approximate somehow... That is exactly what our brain already does. That is what life already does.

We are all Universal Approximators. You can get to any future you want to have for yourself. Just go forwards in the correct direction.

For the true ending see abstract.