ON THE MOST ECONOMIC GEOMETRY OF PEACE

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Thesis

We humans, with a soul, may learn from recent advancements regarding natural complexity in order to find peace...
Pythagorean theorem

\[ a^2 + b^2 = c^2 \]

\[ a = b = 1 \Rightarrow c = \sqrt{2} \approx 1.4142 \ldots \]
A game for kids

\[ h = (0.7 \cdot 2)^3 \]
A game for kids

\[(p + q)^n\]

\[\begin{array}{c}
p \\
\hline \\
q \\
\end{array}\]

\[\begin{array}{c}
1 \\
1 1 \\
1 2 1 \\
1 3 3 1 \\
\end{array}\]

game defines a multiplicative \textbf{cascade}
After $n = 12$ levels

intertwined thorns via layers having distinct densities
ultimate support on each of the layers is dust
game generates a multifractal measure
Another game for kids

50%  0  1/3

50%  2/3  1

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Another game for kids

cascade yields equal disjoint thorns over dust
varying the hole size gives topologically the layers on first game

Moral: the two games are intimately related
Accumulated clay

...simply from the dynamics of the games notches above: \( P(1/2) = 0.7, \ P(1/4) = 0.49, \) etc.

plateaus below: \( P(1/3) = P(2/3) = 0.5, \) etc.
Accumulated clay

cumulative sets have no derivatives and are locally flat
they universally have maximal lengths:
\[ d\{(0, 0), (1, 1)\} = 2, \ p \neq 1/2, \ h \neq 0 \]
...also found combining the games and adding randomness
A veritable deception

a devil’s staircase...
Fully developed turbulence
(Meneveau and Sreenivasan, 1987)

\[ Re = v \cdot L/\nu \gg 1 \]

layers in one-dimensional turbulence as in first cascade
dissipation: atmospheric, boundary layer, wake of a cylinder...

\[ p = 0.7 \]

universal
Our turbulent times

inequities
discrimination
competition
forced equality
disparities
fear

selfish postures and actions

2/3 of the world under poverty

6,000 kids die a day for lack of water

violence and terror...
An optimal system?

$p = 0.7 \quad n = 20$

5, 10, 20 and 40% largest thorns have 57, 70, 84 and 95% of the mass
An optimal system?

\[ p = 0.7 \]
\[ n = 20 \]

5, 10, 20 and 40% largest thorns have 57, 70, 84 and 95% of the mass

this is quite close to **USA**: 59, 71, 84 and 95%, **Gini**: 40.8 vs. 40

**Moral**: as both cascades **dissipate** the energy, if we ride them, they lead us to “bite the dust”
Common sense code for peace

run cascade in reverse to achieve unity
“cut mountains and fill valleys” to restore equilibrium
live at low Reynolds numbers to avoid violence
Common sense code for peace

run cascade in reverse to achieve **unity**
“cut mountains and fill valleys” to restore **equilibrium**
live at **low** Reynolds numbers to avoid violence:

\[ Y = X \]
\[ d = \sqrt{2} \]

50-50

**a unique** solid solution without **thorns** and **dust**
the **hypotenuse** is the pathway of **peace**!

**Moral**: humbly love everyone to find **unity**, \( 1 = 0.999... \)
A veritable invitation to the origin...
Equilibrium is an improbable point

it is hypocritical to judge if we are “far away” from the point
a convex surface is found for a finite number of levels:
balance is found easily aided by gravity
in truth there is darkness between 6 and 9...
Power-laws and natural complexity

\[ P[X \geq x] \sim x^{-c} \]

earthquakes, avalanches, hurricanes, floods, volcanic eruptions, forest fires

utter violence...
Power-laws and inequalities
(Vilfredo Pareto, 1896)

\[ \log N(x) = \log A + m \cdot \log x \]

30th to 85th percentiles of world income distribution
(After Di Guilmi et al., 2003)
Power-laws and wars
(Lewis Fry Richardson, 1960)

\[ \log P(S \geq s) = 1.27 - 0.41 \log s \]
\[ R^2 = 0.985 \quad N = 97 \]

(After Cederman, 2003)
A bit more of common sense

avoid mechanisms that generate the violence in power-laws:

- multiplicative cascades
- preferential attachments
- highly optimized tolerance
- self-organized criticality...

(After Bak, 1996)

there is no “invisible hand” but ours:
“humans without scale” abuse their power and yield power-laws...
A bit more of common sense

avoid mechanisms that generate the **violence** in power-laws:

- multiplicative cascades
- preferential attachments
- highly optimized tolerance
- self-organized criticality...

(After Bak, 1996)

there is no “**invisible hand**” but ours:
“humans without scale” abuse their power and yield power-laws...

...it is best to adopt **zero** power: \[ \frac{1}{\text{power}} = 1 \]
CONGA TO INFINITY

$0! = 1$, $0 + 0 = \infty$, $1 + 1 = 1$, $1/0 = \infty$, $x^0 = 1$, $0 \to \infty$

*Shanti Setú to dance...*

This is the conga
of a lovely trinity,
o dance your conga
intently to infinity. (2)

The zero admired
is one very pretty,
and zero plus zero
adds up to infinity.

A one with another
joins a lovely rite,
and zero below one
is truly all might.

The zero as power
is the same divinity,
and a twist of nothing
arrives to infinity.

*Shanti Setú to ponder...*

This is your conga
enjoy its affinity,
join in the conga
of a lovely trinity. (2)

A zero rewired
is one of pure light,
and zero with zero
is I tell you a delight.

A one with a one
o united vicinity,
and a circle down
yields again infinity.

The halo on top
o saintly neophyte,
with a zero weaved
o expels all fright.

To dance...
To zero is,  
the one you see,  
and to infinity. (2)

The zero is a key  
leading to be humble,  
the zero o loves well  
o it never crumbles,  
the one is how it is  
always precious pointer,  
the one o rings a bell  
with its real wholeness.

To zero is,  
the one you see,  
and to infinity. (2)

The zero is a key  
always a good shelter,  
the zero o loves well  
there is no one better,  
the one is how it is  
more than little angel,  
the one o rings a bell  
driving to the center.

To infinity. (8)  

Shanti Setú inspiring...

To zero is,  
the one you see,  
and to infinity.

Let’s all repeat...

To zero is,  
the one you see,  
and to infinity.

One more time...

To zero is,  
the one you see,  
and to infinity.

O how nice!

To zero is,  
the one you see,  
and to infinity.
all proceeds to aid needy in Africa and Colombia
For other lessons based on complexity please visit:
http://puente.lawr.ucdavis.edu/peace.htm

For explicit Biblical connections please visit:
http://puente.lawr.ucdavis.edu/chaos_complexity_christianity.htm