Super**e**conomics.ai

The 10 Technologies
&
The Combinatorial Explosion **V2**

Rough Draft – Research Paper
(Very Rough)

Short Summary for
Š-ŔÉŚ™ 2021⏤⌂≥É L

The Purpose of The AI is?

By Nick Ray Ball 11th May 2021

Technology 10.
S-World Angelwing – Ai

The Combinatorial Explosion
of Technologies 1 to 9

I was introduced to The Combinatorial Explosion by Paul Romer in his Nobel Speech on the 27th of November 2018 at the Marron Institute NYU Stern.

https://www.supereconomics.ai/video/Paul-Romer-NYU-Nobel-Lecture

In his Speech Romer says;

"**The process of the accumulation of ideas often referred to as technological change."**

 "Cities are engines of innovation, economic prosperity and opportunity, it's a place where ideas both come, and grow, and flourish, and are executed.'

"**But to have a theory that could satisfy a physicist**, I needed to dig down into what was the meaning of an idea. **How could we be precise about an idea and use the accumulation of ideas as a way to understand technological progress."**

"Now, one of the key elements of an idea is that it represents codified knowledge, its knowledge represented in symbols on a piece of paper or in bits these days. Because it is codified, it can be copied and shared, and then used by everybody on earth. And by sharing, I don't mean the kind of

sharing where we take turns, this is a sharing where everybody can use something like the Pythagorean theorem at the same time. If we want to, for example, create the kinds of right angles that we use in construction.

Paul Romer

A Bachelor of Science in Mathematics and Physics
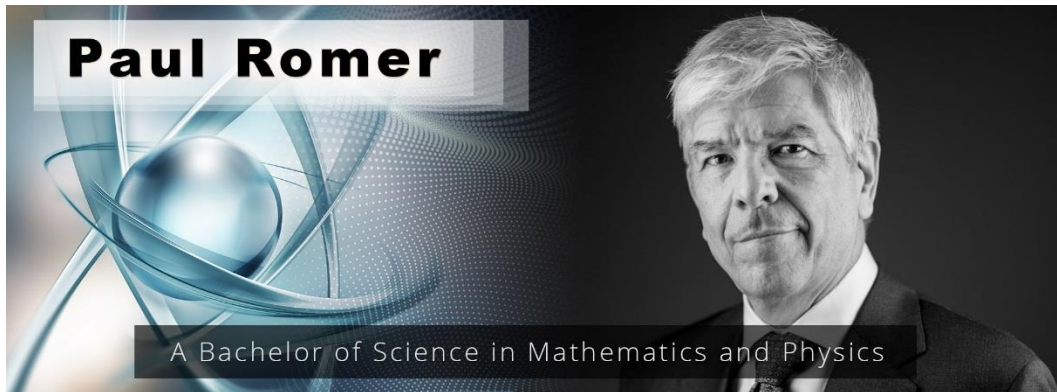
There's another concept that I need to flesh out about related to ideas, which is what computer scientists refer to as.

A Combinatorial Explosion.

If you have a number of elements that you can combine; you have 10 elements and combine them, we can calculate how many combinations can you make. If you have 20, we can calculate it again. Combinatorial explosion is a summary of the fact that the number of combinations explodes as you take more and more **raw different elements** that you can use to combine them." **(NRB: Note that in the case of the 10Ts each element will get larger over time as most subsystems are completed)**

Paul Romer

NYU — Marron Institute of Urban Management

"So, ideas mean that people are no longer are rivals, they can be our allies. This suggests a very important possibility, that we can take a set of us and expand it. We can draw a bigger circle, include more people inside

us, and treat them with at least indifference or the small appreciation that comes from membership in the set of us...

To continue reading some more of Paul's Speech;

http://www.supereconomics.ai/12.02_SuEc.1-2_Paul-Romer_NYU-Nobel-Prize-Winners-Lecture_(27-Nov-2018).pdf

Or watch the whole lecture; https://www.supereconomics.ai/video/Paul-Romer-NYU-Nobel-Lecture

THE COMBINATORIAL EXPLOSION

I struggled to complete Technology 10 S-World Angelwing, since creating it as M-System 16 in 2016 until Paul Romer introduced me to The Combinatorial Explosion in The autumn of 2018. It would still take 2 more years but now S-World Angelwing (Technology 10 of 10) can be simply described as the combinatorial explosion of technologies 1 to 9 and how best to use that data. We already have

Plus QuESC and the 87 Quintillion Histories, but we can discuss that later.

First, we must go back in time to 2016 and the first detailed description of the TBS – Total Business Systems (Technology 2). It was a good example of a negative Combinatorial Explosion. Like externalities can be good as well and called internalities the Combinatorial Explosion knife can cut both ways. Positive or Negative. In 2016 I made this 5-hour presentation on the various 3rd party software systems I wished to integrate into the S-Web web framework. Here is the link.

The Divergent CRM

The future of Consumer Relationship Management

By Nick Ray Ball 19th Feb 2016
http://blog.villasecrets.com/business-plan/system-software-framework/divergent-crm-the-future-in-consumer-relationship-management

Two years passed, and in the end, my conclusion was that each additional piece of 3rd parts software added to S-Web, the greater number of connections needed to be made and that some software would knock out some of the functionality of the other, like Bootstrap that overrides the CSS header tags in WordPress. I could go on, but I could see it was a losing battle, the more different 3rd parts software you used, the amount of work seemed to increase by about a magnitude, and it could not be done.

At that point, I did not know a combinatorial explosion from a bar of soap, but as I look back I can be proud of my solution. Which was to make all the software in house, within the web framework.

This was no small task, it took 5 hours of video to describe the TBS software in 2016, and it had about 70 systems. All relatively simple, but still a lot to program. The TBS in 2021 has 200 systems. Each of which either makes money, saves money or avoids landmines (like trying this with 3rd parts software.)

Where we start to look at the systems from a combinatorial perspective is not the 200 software functions or human systems of the TBS, Technology 2. It is how Technology 2 connects with Technology 1. S-Web (S-Web is everything web-based, websites, Facebook, Airbnb), and 3. S-World Business Network. Because Tech 2 x 1 is say 40 systems in S-Web and the 200 systems in Tech 2. the TBS, and so we multiply the number of systems in 11 by the same in 2. This is a very, very broad

strokes explanation. So, with only Tech 1 and 2, the combinatorial score is 200 x 40 = 8,000 different functions, and then the AI is crafted to work out which of those 8000 options are best suited for each different situation.

Next, as Technologies 1, 2 and 3 are all the same system we must add Technology 3. The Network.
Here are some useful links, that also detail many TBS and S-Web functions

http://network.villasecrets.com/the-secret/ch1/s-web-cms-framework-step-6-our-solution
Assisted by: http://network.villasecrets.com/the-secret/ch2/s-world-villa-secrets-network
And: http://network.villasecrets.com/the-secret/ch4/cds-content-delivery-system
And: http://network.villasecrets.com/the-secret/ch6/crm-nudge-ai
And: http://network.villasecrets.com/the-secret/ch9/crm-cc-the-company-controller
And: http://network.villasecrets.com/the-secret/ch10/UCS-Hawthorne-for-Richard-Thaler

So a new company has a far superior web presence and far simpler tools to customize than its first obvious competitor WordPress. It then has far superior business software and auto marketing functionality, and another 198 tricks up its sleeve. That's Technologies 1 and 2. And Technology 3 is essentially the Network. S-Web is made to be shared, and it receives a share of commissions, usually 12.5%.

Starting with just a few clients in mind, the international real estate behemoth Sotheby's presents an interesting opportunity. And that is to give all 11,000 Sotheby's agents their own S-Web website and all that goes with it.

Given that Tech 1 and 2 are already in their own combinatorial explosion with 8,000 different systems that

either make money or save money or avoid landmines. It seems that we must now multiply that 8000 systems by as many of the Sotheby's agents that use the service. Let's say 2500 do, must we now multiply the 8,000 by 2,500?

And now we get to the point where I ask for help, on where we are now and the rest of Technology 10 S-World AngelWing (The AI).

Obviously, I would like Paul Romer's and Bill Gates's help with this section, I do hope they get along, I think there were some antitrust battles a long time ago. But also, the help of Peter Thiel, because this exercise started with 'The 'X' Forecasts.

THE **10** 'X' Forecasts
And The
Combinatorial Explosion

Below we see The Ten Technologies and on most a Macro and Micro x multiplier. This being the combinatorial explosion of the x scores given to Technologies 1 to 9.

The above version is a work in progress, I would update it to today's figures, but I need to make some hard drive space to get photoshop to work and I'm not in the mood.

And in any case, it's sometimes good to show your mistakes.

One of the main reasons for making the graphic was for Peter Theil and Founders Fund. Thiel's want of a small and exclusive system, that could at least and preferably could 250x like his investment in Facebook did.

The trouble was whilst S-Web probably was a 10x system in the making, I could only easily justify 2x in any setting and 4 x in a Grand Śpin Network. Especially if the person assessing did not have much time.

However, if we were to consider S-Web, Plus The TBS and The S-World Network, more than 10x was justified.

Of course, in Technology 7. S-RES at 3000% and that being a monopoly system there was more for Thiel and Founders Fund to look at. S-RES a single system is likely

to be more (in terms of x's) than Technologies 1, 2 and 3 combined.

And then came the question can we multiply the combined result of 1, 2, and 3, by 3000% (30x)

First, however, we need to agree on (a Thiel x not combinatorial score). So, let's give Technology

I AM HERE

My first experience with THE COMBINATORIAL EXPLOSION was—

the following blog I wrote on the various Software I wanted to add to the core CRM that was connected to our Web Framework; S-Web,

By Nick Ray Ball 19th Feb 2016

The Divergent CRM

The future of Consumer Relationship Management

http://blog.villasecrets.com/business-plan/system-software-framework/divergent-crm-the-future-in-consumer-relationship-management

The thing about my blog was, it contained 5 hours of video, just on the dozen or so different software systems that needed to be added to our CRM and CMS's. That's how long it took to describe all the software, just the software!

Soon after Vineeth, my highly skilled PHP programmer and I started work. First on the agenda was a completely new mobile website using J-Query-Mobile, an API connection to My-Booking Pal, and Live Chat. We were already connected to Google Analytics.

After about a year, I concluded that it was an impossible task, each set of 3rd Party software has its own system, and each created ever more connections, and each had its own way of doing simple things as essential as the price of each item.

What I had found myself entangled in was THE COMBINATORIAL EXPLOSION.

We shall look into some other examples of a Combinatorial Explosion in chess and other environments, for now, specific to S-World we need to give each of the technologies 1 to 9 an 'x' multiplier. Below we see an early version, that is not correct per se, but is nonetheless reasonably close enough to creating a talking point to be debated.

THE **10** 'x' Forecasts
AND THE
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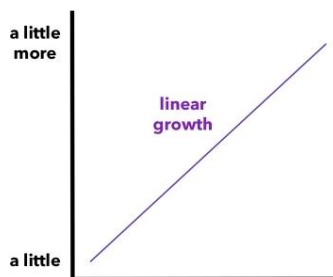

We are not saying Angelwing is a 576,000x Micro & 36,864,000x Macro in terms of 'x' forecasts we are saying that the more technologies we can apply the closer each venture will come to that kind of phenomenon and it's
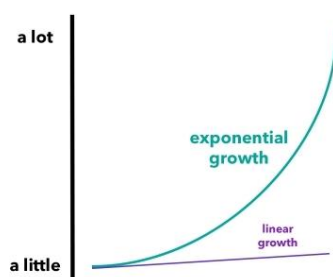
Angelwing's job + QuESC to facilitate as much of a combinatorial explosion as can be made. Then the AI's job to keep pointing out opportunities, assisted by the 87 Quintillion S-World UCS™ Histories (simulations)

But first, we need to understand the basic math of the combinatorial explosion, for which we shall work from http://www.torbair.com/blog/2015/12/26/4mvxoio4tc 8j28reqsbz449tlab4ss

Let's take a quick look at our old friend linear growth. You know, $y = mx$. Slowly, over time, you have more of something than you did the day before. Your growth rate is a constant, never accelerating or decelerating. Comforting, familiar - but slow. Here it is:

But then you hear about exponential growth - $y = m\wedge x$. Suddenly old dependable y = mx doesn't seem so great in comparison. Exponential growth is seductive. It's faster, bolder, and it looks way better on charts.

Just look at that green line. I don't know what we ever saw in linear growth, to be honest.

But let us consider combinatorial explosion. This is a mathematical effect that occurs when combinations of variables or nodes within a system are each connected to another, or when branching factors are considered in search problems (like when analyzing potential chess positions x moves ahead of the current position). A common numerical example would be *y = x!* (the factorial of x).

This is not a very compelling or impressive effect for small numbers (or small time frames, if that's our x-axis). Let's compare exponential growth to combinatorial growth.

When x = 5:

- exponential growth: *y = 2^x* = 2^5 = 32
- combinatorial growth: *y = x!* = 1*2*3*4*5 = 120

However, for just slightly larger x, such as x = 10:

- exponential growth: *y = 2^x* = 2^10 = 1024
- combinatorial growth: *y = x!* = 1*2*3*4*5*6*7*8*9*10 = 3,628,800

And for x = 20:

- exponential growth: *y = 2^x* = 2^20 = 1,048,576
- combinatorial growth: *y = x!* = 1*2*3*4*5 = 2,432,902,008,176,640,000 (or 2 quintillion)

Wow, you may be thinking. *A million of something isn't cool. You know what's cool? **2 quintillion.*** Forget exponential growth - combinatorial growth is sexy.

I have graphed the effect of combinatorial explosion slightly unscientifically below:

Back to Nick Ray Ball;

So, we see that a Combinatorial Explosion is multiplying the different systems, by each other, on each other.

When x = 5:

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I'll be honest, I can't work out the math used for exponential growth, for exponential growth already have my own mathematical principle called POP. Let's look at the 'Train' formulation of POP.
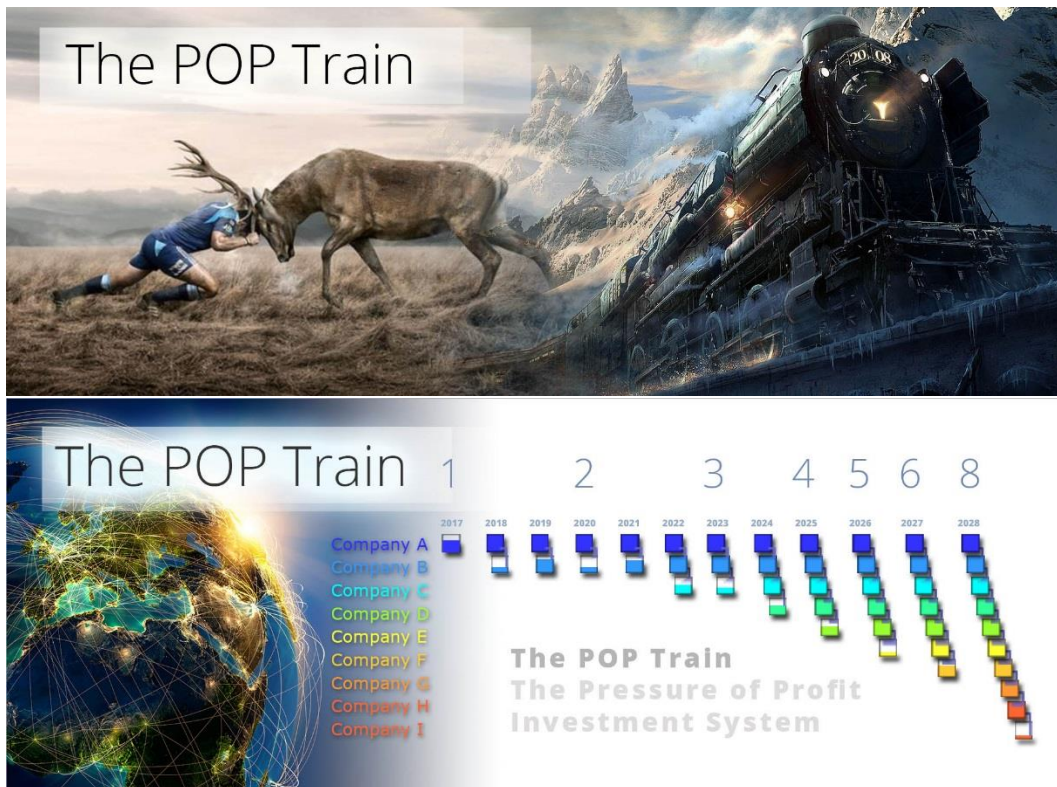
This was the first useful math I created, right at the begging, in S-World.biz 2011, for the birth of POP see www.s-world.biz/New-Sparta-2011.

The Following year AmericanButterfly.org, the second City building project was in Orlando Florida, assisted by the exponential POP Train law. In which we start with a network of companies, that due to the software, networks and business plan make a profit each year, and mostly make more profit each year thereafter because of the advantages of the network.

Because of such advantages, companies agree that at a certain measure of profit, (or cash flow) all additional profit/cash flow be poured into the creation of a new company (that we call a bucket), usually, an extension of the parent, like an Aluminium Windowmaker, let us call them TWF – The Window Factory, Might create a glass-making company as its first sub-company.

It is what follows next that makes it exponential, the second company bucket, that is being filled by the POP profit made from say 2,048 companies fills until it reaches its POP point and now you have all the POP profit from all companies in Network/City 1, plus all the new POP profit from all companies in Network/City 2, and we see this on the diagram if the law was followed eventually you have all the POP Profit from Network/Cities 11, and Network 12 has now reached such pace that it creates 2 new Network/Cities in a single year.

Of course, not all Networks/Cities will make even growth figures. (This was pre-S-RES remember) so I plotted the following. Where we see the results from a Super Grand Network created over 16 years. Essentially, to use today's jargon, A Grand Śpin Network and 16 Suburbs, created one a year.
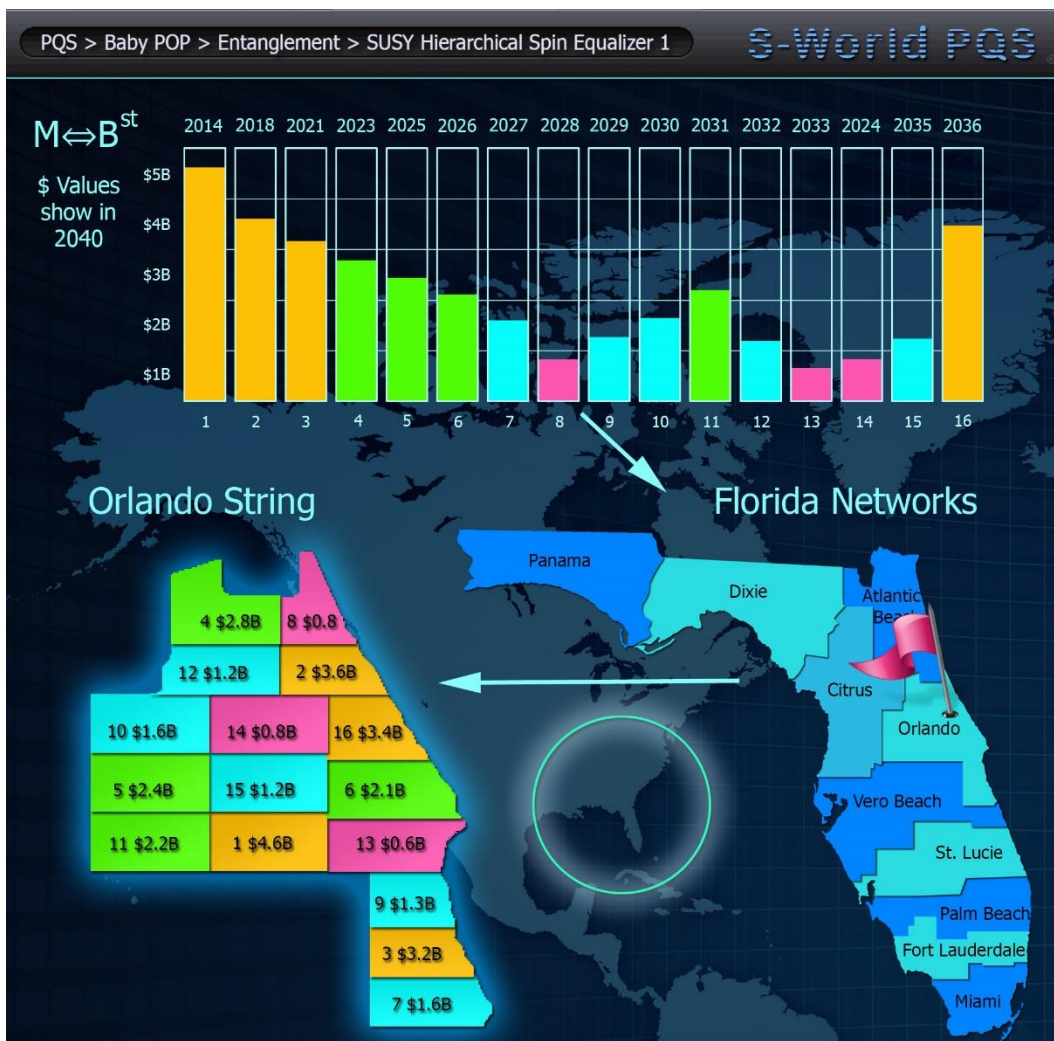
Above we see the very random nature of future cash flows back in 2012. However, there was a neat trick for making those Network Cities more predictable, which was to add a symmetry.

Below I entangle the most profitable network with the least, for all networks making 8 Grand Networks, and we see below that action makes them a whole lot more predictable.
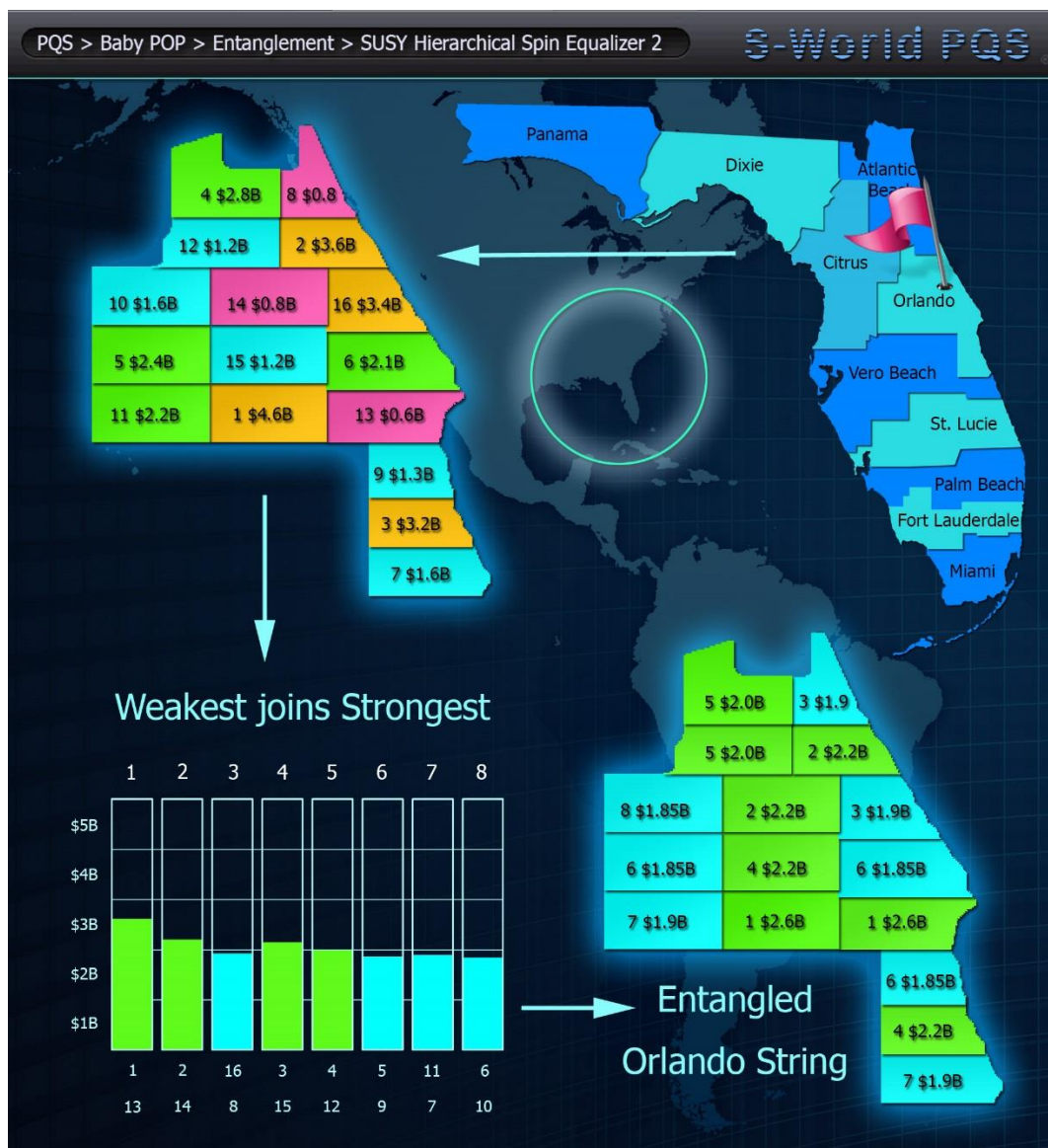
Moving forward in time we come to S-World History 1. (in 2017) Which uses POP and its exponential power to start with a Technology 3 company, in this case, Villa Secrets which needs to make $167,772.16 every year and spend it on creating 2 new companies, and after 2 years these new companies to the same, make $167,772.16 to create new

companies each year, and that by 2076 created more than 50% of global GDP.

<div style="background:#9ef5c4">

S-World UCS™ History 1

VIDEO 7__Philosophic String Theory - The Green Symmetry
"The notion that this is the smallest constituent is paradoxically not at odds with the statement that it may also be the whole ~~universe~~ economy.
www.supereconomics.ai/video/7
4 minutes 23 Seconds | **18th Feb 2018**   ★★★★★
www.angeltheory.org/book/2-4/super-coupling
Spreadsheet tab; Super Coupling 1.03 (History 1)

</div>

This helped answer a philosophical string theory riddle I had been considering after hearing Prof. Michael Greens 'Smallest Constituent' notion.

"The notion that this is the smallest constituent is paradoxically not at odds with the statement that it may also be the whole universe."

Could in the case of History 2 be rewritten

"The notion that this is the smallest constituent is paradoxically not at odds with the statement that it may also be the whole ~~universe~~ economy."

Where the many companies are all vanishingly small at the begging, in fact, they don't exist yet.

Of course, after a while, this idea grew to become History 2, and then History 3, which creates Grand Śpin Networks from literally nothing. This set of books aside, there are no Grand Śpin Networks today.

For more on POP, in 2012; http://americanbutterfly.org/pt2/spiritually-inspired-software/to-infinity-and-back-again#baby-pop

http://americanbutterfly.org/pt2/spiritually-inspired-software/strings-of-life#the-angel-pop-principal

http://americanbutterfly.org/pt3/the-network-on-a-string/prequal-cfm-and-pop

http://americanbutterfly.org/pt3/the-network-on-a-string/cfm-pop-analogies

http://americanbutterfly.org/pt3/the-network-on-a-string/angel-pop-global-benefits

A must-read essay was added in December 2017; https://www.angeltheory.org/book/2-2/the-flap-of-a-butterflys-wings

Also good is; http://www.angeltheory.org/book/2-4/super-coupling and http://www.angeltheory.org/book/2-3/the-network-on-a-string#Angel-POP-2012-to-2017

Most recently 64 Reasons Why Complete Book has about 40 pages on POP;

09.91__Book 3. 64 Reasons Why – Complete-Book (UCS History 3)
https://www.supereconomics.ai/09.91__SuEc.3__64-Reasons-Why__Complete-Book__(2-Feb-2019-to-18-Oct-2020).pdf
404 Pages | 84,920 Words | 17th Dec 2018 to 15th Jan 2019   ★★★★★ ✫✫

Lastly two cool POP graphics from
https://www.angeltheory.org/book/2-2/the-flap-of-a-butterflys-wings

Jimi Hendrix & POP, Wild and Free
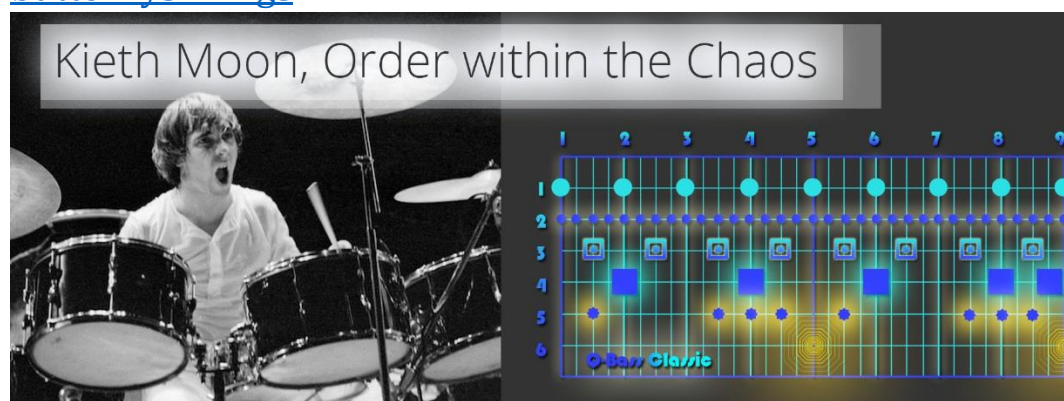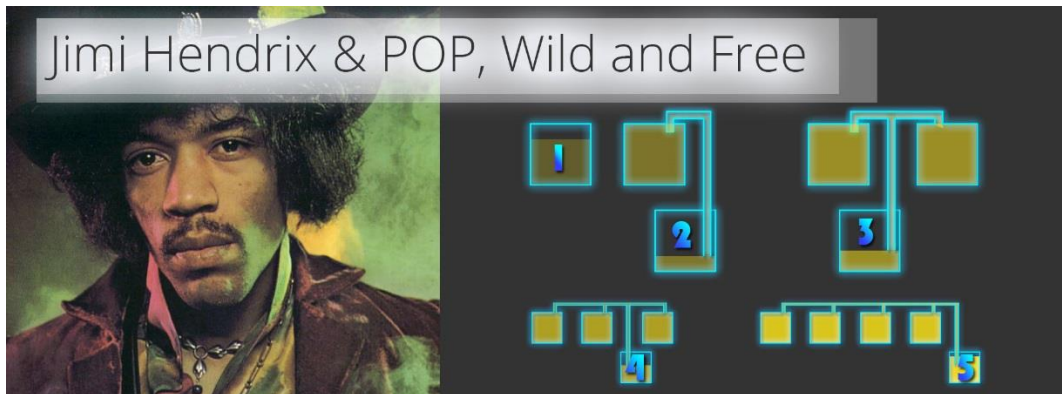
And now we go back to The Combinatorial Explosion.

Returning to the section before exponential math a few pages back:

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1*2*3*4*5 = 2,432,902,008,176,640,000 (or 2 quintillion)

As I said I can't work out the math used for exponential growth, I had originally used a simple example, that is buried in the S-World Library. I have however found another example where the math is clear.

The Curse of Dimensionality – Combinatorial Explosions

https://www.datarobot.com/blog/the-curse-of-dimensionality-combinatorial-explosions/#:~:text=Combinatorial%20explosions%20occur%20in%20some,intractable%20to%20brute%20force%20solutions.

Combinatorial explosions occur in some numeric problems when the complexity rapidly increases, caused by the increasing the number of possible combinations of inputs. This explosion in complexity can make some mathematical problems intractable to brute force solutions. Combinatorial explosions are a manifestation of the curse of dimensionality.

The problem of combinatorial explosions occurs frequently in insurance pricing. For example, I have data for an auto/motor insurance pricing project, and it has 27 rating factors. My rating structure could use anywhere from 0 to all 27 of these rating factors, and I want to find the best combination of rating factors. How many combinations will I have to search through?

Number of Rating Factors	Number of Combinations
0	1
1	1
2	2
3	6
4	24
5	120
6	720
7	5,040
8	40,320
9	362,880
10	3,628,800
11	39,916,800
12	479,001,600
13	6,227,020,800
14	87,178,291,200
15	1,307,674,368,000
16	20,922,789,888,000
17	355,687,428,096,000
18	6,402,373,705,728,000
19	121,645,100,408,832,000
20	2,432,902,008,176,640,000
21	51,090,942,171,709,400,000
22	1,124,000,727,777,610,000,000
23	25,852,016,738,885,000,000,000
24	620,448,401,733,239,000,000,000
25	15,511,210,043,331,000,000,000,000
26	403,291,461,126,606,000,000,000,000
27	10,888,869,450,418,400,000,000,000,000

If it took me only 1 minute to analyze each combination (and that's faster than I've ever been able to work), then it would take me approximately 21,515,067,731,468 billion years to try each combination. To put this into perspective, the universe is only 13.8 billion years old!

But this is only a small part of the problem. Some rating factors interact with each other. For example, auto/motor insurers often find an interaction between the age of the driver and their gender.

Young drivers tend to cost more, and male drivers tend to cost more, but young male drivers cost even more than can be explained by the individual effects of age and gender. Generalized linear models (GLMs), one of the most popular statistical tools for actuaries, do not automatically capture such interactions. The user must explicitly define each interaction, definition both the which combinations have interactions, and the 3D mathematical function that describes that interaction. This rapidly increases the number of models that actuaries must test. The pricing problem becomes even more intractable than ever.

Because of this, some insurers hire huge teams of actuaries who do nothing but search through combinations of rating factors, looking for incremental improvements in their pricing models.

New and Awesome

https://www.freecodecamp.org/news/combinatorics-handle-with-care-ed808b48e5dd/
+
https://www.mathsisfun.com/combinatorics/combinations-permutations-calculator.html

Combinations and Permutations Calculator

Calculate 10 Technologies Permutations, then discuss The 87 Quintillion Histories, which helps choose the best combinations of effects/actions for each TBS Startup, and then adjust as time passes.

Think there should be only a handful of major tasks, this from probably 100,000,000,000 or more Permutations, in some way that I must later define, the 87 Quintillion Histories should help cancel out most of the combinatorial choices. Maybe like

renormalization, and the cancelling of infinities. Maybe just clearing out the clutter.

https://en.wikipedia.org/wiki/Curse_of_dimensionality#Combinatorics

Combinatorics [edit]

In some problems, each variable can take one of several discrete values, or the range of possible values is divided to give a finite number of possibilities. Taking the variables together, a huge number of combinations of values must be considered. This effect is also known as the combinatorial explosion. Even in the simplest case of binary variables, the number of possible combinations already is, exponential in dimensionality. **Naively, each additional dimension doubles the effort needed to try all combinations.**

Original and Best Introduction

THE **TEN** 'x' FORECASTS

9. **Grand Śpin Networks**
Net-Zero Charter Cities
2x Micro
8x Macro
Suburb Sale 57.6x

$A^{st} < B^{st}$

10. **S-World Angelwing**
The Combinatorial Explosion
1,152,000x Micro
73,728,000x Macro
Return on $10 million = 34,980x

7. **Š-RÉŚ**™
Financial Engineering
Increase to Money Supply
30x

$A^{st} < B^{st}$

8. **Net-Zero DCA Soft.**
Dynamic Comparative
Advantage
Special Projects
30x

5. **S-World VSN**
Virtual Social Network
16x
+ VSN™ MLS 37.8x

$A^{st} < B^{st}$

6. **S-World UCS**™
87 Quintillion Histories
5x Micro
10x Macro
Shaping The Future **+**1000x

3. **S-World** *Villa Secrets*
Network and MBA Stuff
4x Micro
8x Macro

$A^{st} < B^{st}$

4. **S-World Film**
Film, Media, Advertising
-4x

1. **S-Web**™
S-World Online
2x Micro
4x Macro

$A^{st} < B^{st}$

2. **The TBS** (⚲)
Total Business Systems
4x Micro
8x Macro

Welcome to Technology 10. S-World Angelwing, which sits upon Technologies 1 to 9 creating a combinatorial explosion of all their assets. What that means is each technology as an 'x' multiplier, from 2x Micro and 4x Macro for Technology 1. S-Web which means given an advanced version of this technology it will double the investment return on a micro project or quadruple (4x) the return for a macro network (over 1000 companies)

As we go up the totem pole, we then count each step as another multiplier. However, not all technologies apply to all business types. And even if they do, some will apply more, and some will apply less. The figures we see are then averages. What we are looking to do is create the best advice for new companies, given their skills, what technologies should we prioritize in their default version.

Going Back in Time to
The Divergent CRM

My first experience with THE COMBINATORIAL EXPLOSION was— the following blog I wrote on the various Software I wanted to add to the core CRM that was connected to our Web Framework; S-Web,

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After about a year, I concluded that it was an impossible task, each set of 3ʳᵈ Party software has its own system, and each created ever more connections, and each had its own way of doing simple things as essential as the price of each item.

What I had found myself entangled in was THE COMBINATORIAL EXPLOSION. Albeit I did not know it until today (12ᵗʰ May 2021), as until today I had been working on THE COMBINATORIAL EXPLOSION as a macro benefit, in software and AI design. As it happens it can be both, but it's more often described as a hindrance, not a benefit.

Let's look at it as a hindrance, first, the classic example is in teaching chess to an AI.

https://www.oxfordreference.com/view/10.1093/oi/authority.20110803095626338

In the game of chess, the number of choices at each level increases by the branching factor, which may typically multiply the options by 20 or more at each move. Although in theory, it should be possible to analyze the game of chess from start to finish, the number of states to be examined is so enormous that it is completely impractical, not only at present but for any conceivable computer in the future. (To appreciate this, consider an example: if one million game states can be examined each second and the branching factor is 10, then to analyze 6 moves ahead takes 1 second, to analyze 12 moves takes 11 days, and to cover 18 moves takes nearly 32 000 years.)

One of the main thrusts of artificial intelligence work has been to find ways, such as heuristic search, to circumvent the combinatorial explosion.

So to analyze 6 moves ahead takes 1 second, 12 moves takes 11 days and 18 moves take 32,000 years.

Think of this but replace the chess moves branching factor, with different items of software, and the different significant effects each item of software can provide. By the time we get near 15 different systems, it would take a great many years to make the connections.

And in fact, it was a futile pursuit.

But, could be done, if we make our own software, and did not use 3rd Party Software, recreating the functions I wanted all within the same framework and rigid system architecture.

About a year later I wrote this article on The TBS; Total Business Systems (Technology 2 of 10).

http://network.villasecrets.com/the-secret/ch1/s-web-cms-framework-step-6-our-solution

Assisted by: http://network.villasecrets.com/the-secret/ch2/s-world-villa-secrets-network
And: http://network.villasecrets.com/the-secret/ch4/cds-content-delivery-system
And: http://network.villasecrets.com/the-secret/ch6/crm-nudge-ai
And: http://network.villasecrets.com/the-secret/ch9/crm-cc-the-company-controller
And: http://network.villasecrets.com/the-secret/ch10/UCS-Hawthorne-for-Richard-Thaler

Each one of these, including the 70 different functions in the TBS would be programmed directly. And S-Web (Technology 1) would be our starting point.

Three and a half years later, in 2021 we have had our own COMBINATORIAL EXPLOSION inside of S-Web in the Homepage CMS Programme, in which we looked at the top 20 sections from www.CapeVillas.com and made it so, a rank amateur could completely remake and customize their homepage, in such a simple way, it's for age 6 and older. You just choose the section you like and place it, then change the text, and photos, which is also stupidly simple because you do it almost directly on the homepage itself.

Let me make a quick video; Add VIDEO Plus MyList-MyWebpage function to show us already making advanced individual software components, creating what seem to be unique advances. Also, show the CDS (Content Delivery System)

But even in the S-Web Homepage CMS we came across a

smaller Combinatorial Explosion as we had about 12 different Rows. Fortunately, most already worked with each other, for example, all the rows on the CapeVillas homepage worked with each other. But when I pulled in rows of content from the search results page layout (widget7?) some conflicts needed to be fixed.

The way to progress in S-Web is simple enough, any new Rows must be added to a page with all other rows on, an all Rows page, then each row must be rigorously tested.

This can get us part of the way, but as for then connecting the TBS, no way, with 70 systems in 2017 and probably 200 systems now in the development queue, plus the other 7 Technologies!!!

That's Combinatorial City.

All functions must be made to work with all others all at the same time, this needs some serious planning, but it's not impossible should we get considerable assistance from Microsoft for example.

In regards to Patents, since 2017 it's all original, but chances are many systems are patented, so much and maybe even most equity in S-World will be given to companies we want patents or technical assistance from, regionally and globally.

Reverse Engineering the Combinatorial Explosion

Now here's where it gets interesting, as we heard earlier when I heard of the Combinatorial Explosion from Paul Romer, it was not a negative concept that one must avoid like the plague, but rather a positive, each system, is designed to make a benefit, to make money, save money, or avoid landmines. So, let us say we spent a cool $1billion on the 200 odd TBS functions, so that's 200 ways to make money, save money, or avoid landmines. And maybe 50 will be pertinent to the average business. When we add up the effects on a large pool of businesses, we will eventually get our first, 'x' Forecast. Maybe the 50 functions make the

business 4 times more likely to succeed and scale relative to business without S-World, remembering with S-Web, we ideally want to see each member make a dozen or so websites and maybe 100 over the years, no other business has that. Instead of star employees leaving for competitors or making their own businesses they can join S-Web and pay a share of earnings to the parent company.

(Scale – Sotheby's 11,000 websites, each with its own TBS)

That's just one of more than 10 ways S-Web can make a difference.

And the COMBINATORIAL EXPLOSION then becomes the 10 and later 50 S-Web systems and the 200 odd TBS Systems.

(Show COMBINATORIAL EXPLOSION for Just Technology 1 and 2.)

It's not the right math, more short cut math, but if we were to say that S-Web gave a 4x result for travel and real estate (20% of global sales) (I would say GDP, but it does not work like that, there is no GDP on a second-hand house, so most money spent on property is not registered as GDP, but in terms of money, I'd say travel and real estate were about 20% (Last time I looked Travel was 9%) so real estate at 11% sound about right.

So, if S-Web is 3x (Which is 7x lower than Peter Theil and Founders Fund would consider as a VC investment.) But then the 200 systems of the TBS were proved to be 6x, then in place of adding the benefits 3+6=9, it's 3x6=18x

The above math is wrong I believe!!!

So, all the 200 TBS systems make a single website 6 times as efficient, and all these systems are repeated/remade on different S-Web specialize and scale web platforms creates the 18x

Same for VSN…

Tech 3 is the business plan and micro-network

If I am wrong, where I am right is jumping to Technology 7 and the mighty 30x, this can be multiplied by each of the other technologies,

I am here

One thing that is very important in the 'x' Forecast is the law of diminishing and no returns, if there is only one core customer out there, the benefits can't make more than one sale. Actually, this is not true, as many befits are in marketing and making more customers, but say for instance we were targeting the 1000 serious clients from AdWords, a 1,000,000 x capacity, is limited to 1000, so one can't make more sales that can be made.

Give an example of 3rd system, maybe Villa Secrets at 3x show explosion, Make this system the 11,000

Show Sotheby's sale, S-Web is now 11,000 and each with all 200 TBS functions. Now on this sale, the x on S-Web can be in the hundreds. 11,000 will make more than a few hundred competitors, and, in fact, it should make 11,000 competitors. In terms of global market share…
Then use that figure to ascertain its x value at maybe 250.

So now we have 250 (linier?) x S-Web 3x x TBS 5x

Now we get into the potential double-counting, like the GDP accounting problem that brought is the CFV (The David A. Moss Cash Flow to GDP Variable), but we have an additional level that differentiates between linear, exponential and combinatorial results.

To make sense of that this is a must-follow link

http://www.torbair.com/blog/2015/12/26/4mvxoio4tc8j28reqsbz449tlab4ss

I'm going to drop in the key features from the article;

I will, for now, jump to the Wikipedia answer to the question of a combinatorial explosion.

But before I do a very good link is

In mathematics, a **combinatorial explosion** is the rapid growth of the complexity of a problem due to how the combinatorics of the problem is affected by the input, constraints, and bounds of the problem.

Combinatorial explosion is sometimes used to justify the intractability (the trait of being hard to influence or control) of certain problems.[1][2] Examples of such problems include certain mathematical functions, the analysis of some puzzles and games, and some pathological examples which can be modelled as the Ackermann function.

Seems it can be a good or a bad thing, if one has many major coding or logic problems, each conflict, creating new conflicts when routed a certain way then that's bad.

https://www.oxfordreference.com/view/10.1093/oi/authority.20110803095626338
~~The exponential growth rate experienced in many search problems. For example, in the game of chess, the number of choices at each level increases by the branching factor, which may typically multiply the options by 20 or more at each move. Although in theory, it should be possible to analyze the game of chess from start to finish, the number of states to be examined is so enormous that it is completely impractical, not only at present but for any conceivable computer in the future.~~

~~One of the main thrusts of artificial intelligence work has been to find ways, such as heuristic search, to circumvent the combinatorial explosion.~~

https://www.encyclopedia.com/computing/dictionaries-thesauruses-pictures-and-press-releases/combinatorial-explosion
combinatorial explosion The exponential growth rate experienced in many search problems. For example, in the game of chess, the number of choices at each level increases by the branching factor, which may typically multiply the options by 20 or more at each move. Although in theory, it should be possible to analyze the game of chess from start to finish, the number of states to be examined is so enormous that it is completely impractical, not only at present but for any conceivable computer in the future. (To appreciate this, consider an example: if one million game states can be examined each second and the branching factor is 10, then to analyze 6 moves ahead takes 1 second, to analyze 12 moves takes 11 days, and to cover 18 moves takes nearly 32 000 years.)

One of the main thrusts of artificial intelligence work has been to find ways, such as heuristic search, to circumvent the combinatorial explosion.

https://www.encyclopedia.com/science-and-technology/computers-and-electrical-engineering/computers-and-computing/artificial-intelligence#1O11artificialintelligence

An AI program may be designed to modify the rules it is given or to develop entirely new rules.

What is combinatorial explosion?
Combinatorial explosion is the exponential growth rate at which most programs grow. The goal of AI is to avoid the combinatorial explosion issue as much as possible.

NRB: But if we reverse engineer it…

The combinatorial explosion issue occurs when a number of possible combinations are created by increasing the number of entities. A small increase in the number of entities quickly increases the number of computations that need to be done and will cause it to reach the computational limit.

The following graph clearly visualizes the problem:
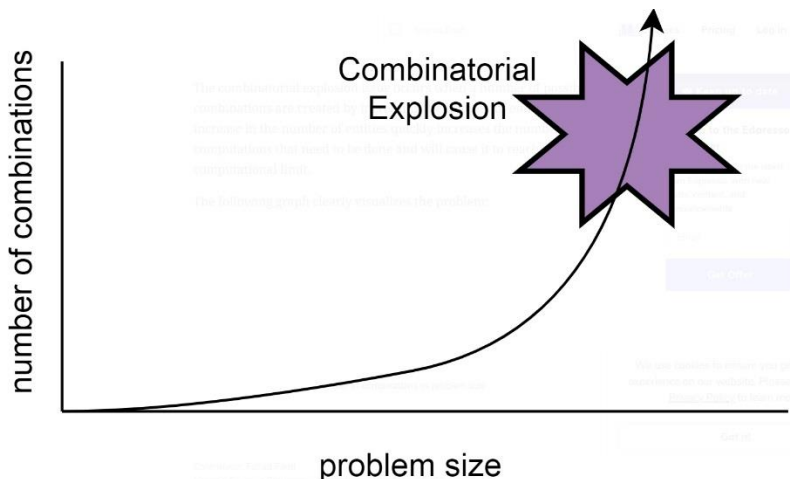
Number of combinations vs problem size

If you were to use 10 units of time on Technology 1/Magazine Maker, it will create between 50 and 100 units of money.

Many, many systems are automated and one really has no idea that to produce a Magazine and Video and distribute as widely as can be done via this system it would take a skilled person about a year to complete, it will take you about 30 days. 2 hours a day.

http://www.torbair.com/blog/2015/12/26/4mvxoio4tc8j28reqsbz449tlab4ss

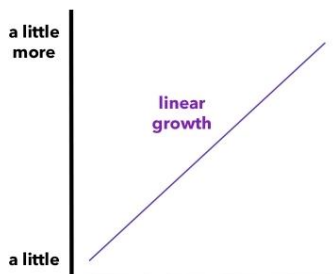# Exponential Growth Isn't Cool. Combinatorial Explosion Is.

December 26, 2015

So much of the tech industry is obsessed with exponential growth. Anything linear is dying or has been dead for years.
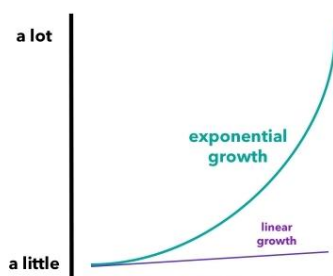
Moore's Law had transistor density doubling every two years. Available bandwidth is increasing exponentially - perhaps 50% annually. Every digital product needs viral exponential growth - invite two friends who invite two friends and so on until you have seven billion active users. Everything is a hockey stick that you're praying doesn't turn into a parabola.

But looking for exponential growth just isn't good enough anymore. It turns out that the things that grow exponentially can un-grow just as exponentially. Optimizing for exponential growth might mean sacrificing stickiness, user engagement, and satisfaction. You're fighting churn and struggling to support your networks. And worst of all, exponential growth isn't even the fastest growth there is.

Let's take a quick look at our old friend linear growth. You know, $y = mx$. Slowly, over time, you have more of something than you did the day before. Your growth rate is a constant, never accelerating or decelerating. Comforting, familiar - but slow. Here it is:

But then you hear about exponential growth - $y = m^x$. Suddenly old dependable $y = mx$ doesn't seem so great in comparison. Exponential growth is seductive. It's faster, bolder, and it looks way better on charts.

Just look at that green line. I don't know what we ever saw in linear growth, to be honest.

But let us consider combinatorial explosion. This is a mathematical effect that occurs when combinations of variables or nodes within a system are each connected to another, or when branching factors are considered in search problems (like when analyzing potential chess positions x moves ahead of the current position). A common numerical example would be *y = x!* (the factorial of x).

This is not a very compelling or impressive effect for small numbers (or small time frames, if that's our x-axis). Let's compare exponential growth to combinatorial growth.

When x = 5:

- exponential growth: *y = 2^x* = 2^5 = 32
- combinatorial growth: *y = x!* = 1*2*3*4*5 = 120
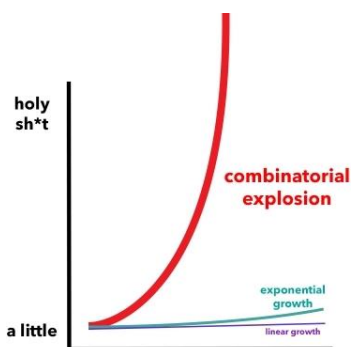
However, for just slightly larger x, such as x = 10:

- exponential growth: *y = 2^x* = 2^10 = 1024
- combinatorial growth: *y = x!* = 1*2*3*4*5*6*7*8*9*10 = 3,628,800

And for x = 20:

- exponential growth: *y = 2^x* = 2^20 = 1,048,576
- combinatorial growth: *y = x!* = 1*2*3*4*5 = 2,432,902,008,176,640,000 (or 2 quintillion)

Wow, you may be thinking. *A million of something isn't cool. You know what's cool? **2 quintillion.*** Forget exponential growth - combinatorial growth is sexy.

I have graphed the effect of combinatorial explosion slightly unscientifically below:

Um. Okay. Maybe it's more dangerous than sexy. Like, too hot to handle.

Combinatorial explosion is not the kind of growth anything is equipped to handle. If this is searching branches in a chess position, or if it's any number of issues in artificial intelligence, we're looking at evaluation times that increase from seconds to millennia as complexity increases.

The reason for the huge disparity between growth rates is clear - **instead of the base unit increasing exponentially, the number of possible paths or connections between base units is increasing**

exponentially. Big difference. That's why we have developed methodologies like heuristic search to cut search times and better handle combinatorial explosion.

Our individual brains already work combinatorially. We have perhaps 100 billion neurons, and "each neuron may be connected to up to 10,000 other neurons, passing signals to each other via as many as 1,000 trillion synaptic connections, equivalent by some estimates to a computer with a 1 trillion bit per second processor." Adding another 1 billion neurons wouldn't be considered 1% growth - it's a huge expansion in the number of possible connections and signals.

Can Networks Explode?

Okay, so combinatorial growth is awesome, but overwhelming. So let's say you're focused on achieving normal hockey-stick, exponential adoption for your product. You definitely won't see combinatorial explosion in your monthly active users or file uploads. Those kinds of metrics are going to stick to exponential growth - at best.

But what if instead of looking at the number of users, we looked at the efficacy of users on a social network? We can then see how the productive power of a social network can indeed increase combinatorially, and to our great benefit.

Before we do that, let's look at Facebook, a network that has exhibited strong exponential growth even as it approaches the carrying capacity of the internet. That's great, really. But if users only connect and converse with their existing real-life friends, no new connections or paths are formed. You may discover a friend of a friend on occasion, and you may add them as a friend but never directly converse. **The productive power of the social network, or even your power within it, cannot be said to have increased since no new paths were added and no new communication was made.** This is pretty realistic - Facebook as a product doesn't encourage you to add strangers as friends or converse with them; it mostly funnels you into a news feed populated with lucrative advertising space.

LinkedIn does a little better - it encourages you to make connections with people you don't know in real life or to refer your friends to new professional contacts. The focus on professional goals like networking and job-seeking is helpful here. Direct communication is limited though - either you use InMail (a slow, email-like messaging feature) or speak in LinkedIn groups (essentially old-school bulletin boards). In this case, your productive power has increased somewhat, and the productive power of the overall network has increased as well with new paths established and additional communications sent. But the means of communication are so bad, your individual network's power is still limited.

Now, look at a chat-based productivity tool like Slack. Within a workplace environment, user growth and carrying capacity are determined by the number of employees in the workplace. We certainly can't expect exponential growth in active users, and likely not in the total number of interactions. However, because network participants are organized and motivated by intent and the platform is built on real-time messaging, **the number of possible connections and the frequency of connections can lead to a**

strongly productive network that continually generates new concepts, especially when properly managed and nurtured.

There's a few additional advantages here. The creative power of the group is increased due to flexible group sizes - two users can add any other single user to a chat and have a materially different productive conversation. Also, the users themselves can seek out or break off conversations, thus helping to prune the explosion of new communications. Users determine whether ideas and strategies generated by these connections are likely to be useful to other users and can share as needed across the network.

Imagine if we combined the exponential growth of Slack users and groups with the combinatorial explosion of productive power enabled by individual Slack networks. Suddenly we start to see an entirely new paradigm for social communication that's focused around productive generation of ideas, content, art and action across networks of engaged users. Different disciplines and expertise interbreed and birth revolutionary concepts. A beneficial combinatorial explosion of productivity and culture ensues! Rejoice, humanity!

Maybe that's overstated. But look, all Facebook's exponential growth ever got me was a bunch of cats in my news feed. I never see those billions of users. As far as I know, their existence only helps Facebook optimize their advertising product.

In my mind, it's time to stop focusing on the hockey sticks, and keep our eyes on the puck. **Social communication needs to move away from the echo chambers of Facebook and back into real-time, diverse networks enabled by modern, powerful, purposeful social tools.**

So let's start collaborating combinatorially. Let's see what we build. Let's move fast and make things.

Tor Bair

EDITs from the Rough Draft Research Paper

The Combinatorial Explosion is essentially a computer science term for complex systems that have distinct elements, and when connected the elements from one system can interact with the elements from the second system, and a third, fourth and more. S-World Angelwing is then the Combinatorial Explosion of 9 such complex interplaying systems, Technologies 1 to 9 seen below in their 2016 to 2020 M-Systems design.
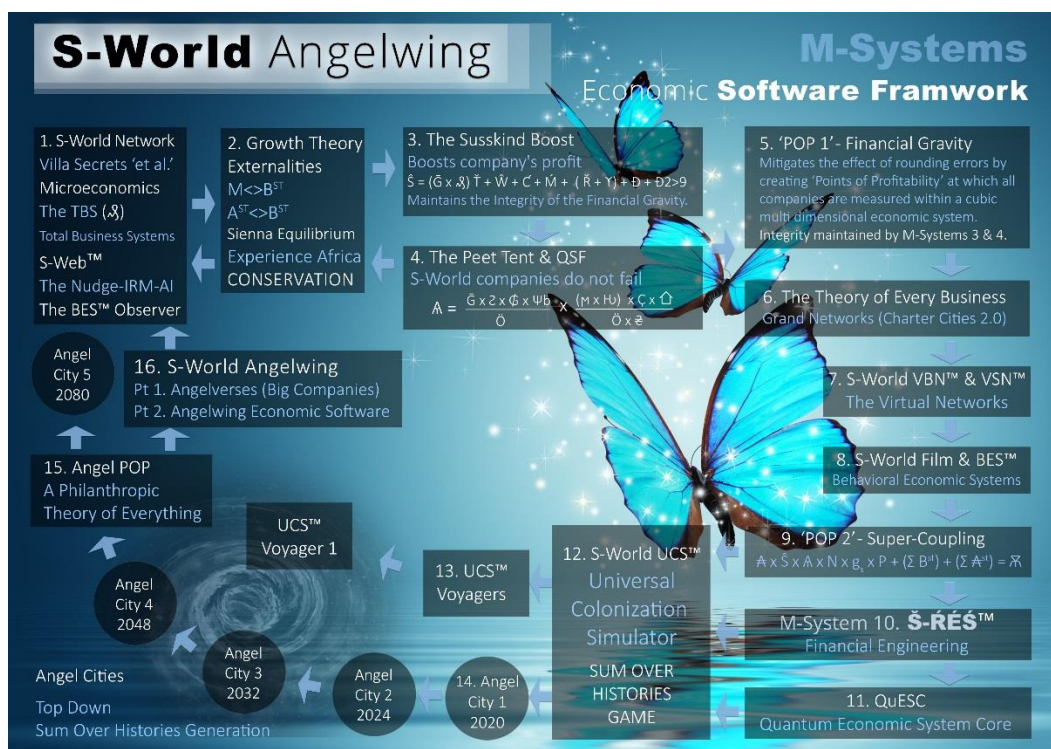
Or stepping further back to 2012 we see the previous PQS (Predictive Quantum Software) design, clearly showing some of the different elements that become the parts of the Combinatorial Explosion.