Equality – Diversity – Measurement - Notice

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Introduction

I have noticed simple things about numbers and distributions that I may have been told when I was younger and being taught or may have read since – they seem to have more connections and meaning now. I can explore and explain them better now.

Many humans fall back to binary thinking and in particular the idea of **equality**. Biases and fallacies abound in human thinking and there is a lack of willingness to investigate these or even recognize they exist. Hence we see people "doubling down" into their certain idiotological causes with disregard for information or balance – to the extent of demonizing those who dare to question and explore.

Certainty extremists and social justice warriors constantly grab attention – humans who **know how the world ought to be** – who should do what and how people should behave .. generally resulting with more power and money for themselves. Feminism is currently rampant in public service, universities and all forms of life. It started as an "Equality" movement and now after many decades it has morphed into a - *kill all men – find all men guilty – give women more money* - rant.

The Kill all men narrative has moved to science where Australian female "scientists" declare the Y chromosome unnecessary and due for extinction in 5 million years. Some say women "get on just fine" without men and hence the disappearance of men will be no great loss to humanity.

There seems to be real tensions between how governments treat people based on identity (identity politics as bigotry is now called) and the idea that every single person is different to every other person who has or ever will live and the tendency to group into special categories or groups for special treatment. Gender – now called sex – is a basic difference in humans due to the fact that we reproduce sexually. This difference is encoded in our DNA and represented physically in our human forms from the DNA upwards to everything created in our bodies. Recent research suggests that we have 3 billion haploid base pairs (about 2 metres long when stretched out) - which are paired/duplicated in segments into 23 chromosomes of varying length – except for chromosome 23 which contains either a pair of X haploids or an X and a Y haploid – each regular cell contains 6 billion base pairs of DNA which are used along with the mitochondrial DNA to create and maintain human beings. Humans have about 20,000 sequences (genes) of DNA in these chromosomes – where these sequences do a specific task – and these genes range in size from a few hundred base pairs to millions of base pairs in length.

We might imagine some basic DNA differences based on Gender. Males have the Y chromosome where females don't – they have two X lengths instead of the Males have an X-Y paired chromosome. The Y chromosome contains about 57 million base pairs which have about 450 genes sequences. 0.02% differences between men and women. (depending on how you measure things)

Recent research, however, suggests there are quite a few differences based on gender (1/3 of genes affected in some way) at the cellular and protein level – basically because of a flow on effect and interactions between proteins and genes (via RNA) – environmental factors and the proximity effect – i.e. the flow of random choices within the body - as well as the manifestation of the gross human form.

How these POSSIBLE differences manifest themselves is another issue and under constant investigation and research.

The question then becomes – **so what?** – Should people be treated differently because of gender? What about other group chromosome differences or other measures altogether? What about age? The number of telomeres they have? Health care based on telomere count? What about the no-hopers, the non-elites? How should people be treated differently and why? We know everyone is different in many different ways – why should we group people at all – for what purpose? What do we do with groups of humans? How? Intellect? Size? Colour? Should humans be treated differently based on identity or how they behave – their actions and choices? This leads to the notion of conduct of a person (morality as a general concept – rather than specific defined actions). Who of you feels up to declaring a certain valuation of all human life?

We know that humans vary from each other with DNA base pairs of between 0.1% and 0.5% – let's say 10 million base pairs. Anyone one of these can be different – hence we get a large combination of possible differences. This is a number too large for most humans to imagine. So Humans can be described as 99.5% the same with 0.5% possible difference.

Human's nearest relative has about 10 times the differences that humans can have between each other.

So this is why although many creatures can have shared DNA sequences – shared genes – small percentage differences can make very big differences. This is also why some philosophers argue that all life is the same – we should treat tapeworms just the same as humans – all equal. They misunderstand the large differences that small numbers in combinations can make – they do not understand complexity.

So this idea of defining, grouping, measuring for some socially constructed purpose – the various groupthink and then the rush to "equality" – same but different all the time – seems to be a constant human narrative. Many humans cannot understand or comprehend the issues around this – or if they do they are not able discuss and explore their thinking. Groupthink – failing to notice, doubling down and self delusions – we see this historically and now with feminists, communists, fascists, extremists - but it is NOT just their certain idiotology – it is also that they cannot and will not "see" – they **avoid noticing** things. But even then it requires more effort and skill than some people think to noticing things. Some people think that they have some view of the world which makes sense - but they cherry pick and obscure some things while emphasizing others – all the time comforting themselves and proudly building their own confidence

Looking at all the history and work of explorers – humans who thought and wrote and researched has been an educational and interesting exploration.

Some frames and models are emerging – I would like to develop them further. They may help provide context and thinking frames for others.

Framework

Nations, Groups, Individuals, Universe, Bounds, Constraints

Population

Individuals within Nations, Groups.

Questions

1. Why do humans repeat the ideas of equality as social justice?
2. What is the context for noticing, exploration, measurement and understanding?
3. What are some of the bounds of certainty and probability?

Initial Conditions

Individuals, Universe, Observe, Measure

Self reference

Bounds and Constraints

Initial Thoughts

I already have in my mind a way to explore measurement issues and provide some context via universal limits – Hubble constants, Planck limit. Using Metres as our yard stick measure - If we use the power law to raise 10 to the power of 26 we get the size of the observable universe. If we raise 10 to the power minus 35 we get Planck length – the smallest limit. So using the power law base 10 we get 61 orders of magnitude difference between our universal bounds and constraints – where each change in powers to the base 10 is considered an order of magnitude change.

We notice various things and various places in the order of magnitude range using various measurement techniques. The ability to observe – the frame of observation - seems related to the observer's size and mass.

The nematode – roundworm - https://en.wikipedia.org/wiki/Caenorhabditis_elegans Caenorhabditis Elegans has been fully genetically and biologically mapped – which is another story (It has its own website http://www.wormbook.org/) – the genetic similarities between this creature and humans is interesting – we have about the same number of genes and we share many genes which are more than 600 million years old. This creature's view of the universe is very different to our own. It is about 1 millimeter long and lives about 3 weeks.

What limits what we **notice** and can observe and what limits what it can notice and observe?

Notice - Thing – Same, Different, Like, Group, Order

https://humanistman.com/home/frames/meta-frames/

We **notice** humans as being the same yet all different thing. They are like each other in many ways and we can group and order them together.

We can choose a yardstick and measure their height – then get them line up in order from lowest height to highest height – if our yardstick is .0000001 metres then they would all be grouped in their own line in order because no humans are exactly the same height. Height is infinitely diverse. https://humanistman.com/wp-content/uploads/2019/03/07-Humanism-Meta-Frame-Equality-and-Diversity.pdf

If we choose a yardstick of 10 metres then all humans would be grouped in one line – they would all have equal height by that 10 metre yardstick.

So what we have is a problem choosing the yardstick and choosing the grouping technique related to that yardstick – so in 2 dimensional x/y type graphs we make choices about yardsticks and measurement for both the x and y directions – the scales and then display a count of objects that have been put into those groups with those scales.

Let us say we are going to use a scale of metres. We can line humans up against the yardstick but how to measure? All humans less than the height of 1 metre we decide to add to the number to 1 metre humans – i.e. if you are equal to or less than the measurement then you are counted for that measurement and excluded for others. Or we could say that if you are equal to or greater – then you count. Or we could say if you are closer to this than any other measuring point then you count for this one.

Ceiling, Floor (modulo), Bounded, average, min, max are all related to this technique.

These are the grouping methods – using the yardstick progressively against the humans.
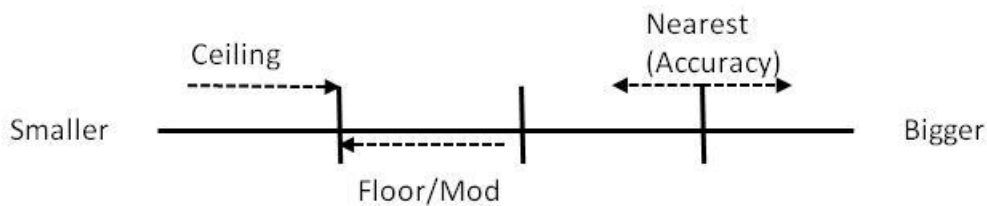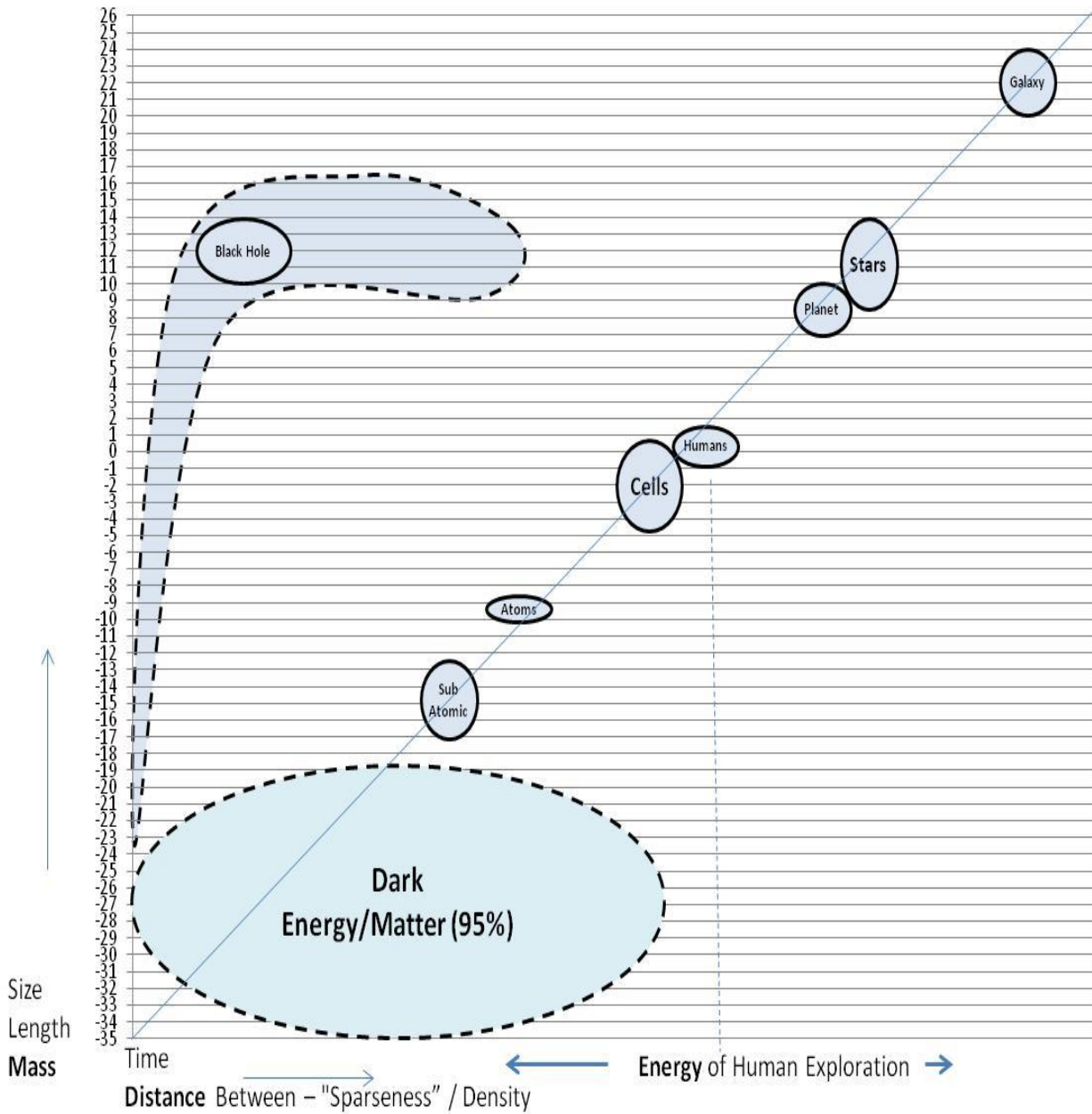

Also see The **Archimedean Property** https://en.wikipedia.org/wiki/Archimedean_property and P-adic numbers https://en.wikipedia.org/wiki/P-adic_number

So what happens if we change our frames and yardsticks?

Scale Perspectives – Base 10 relativities – Exponents – Linear -3/4

exp base 10

Is this a way of looking at Relativities in size, mass, density, energy, distance and time?

Just where does this 95% of the "dark" part of the universe reside between Universal boundaries - Hubble and plank limits? Do things coalesce and cluster into groups along some kind of linear pattern against an exponential graph?

Is the Energy to Mass ratio about ¾ for most things except black holes?

Groupthink –Feedback loops – Distractions - Programming

The feminist groupthink is quite entrenched – because of the constant feedback loops in the schools, universities, media, courts, public service, "Human" Rights, charities and politicians – all who keep re-enforcing their views of the world to each other. They become ever more smug and sure after each iteration of the feedback loop. Confirmation bias.

Groupthink examples abound but historically - Northern Ireland troubles – decades of conflict and death https://www.theirishstory.com/2015/02/09/the-northern-ireland-conflict-1968-1998-an-overview/ showed entrenched groupthink – as well as many other things. Lots of death and destruction. Key to this was the issue of a "**just cause**" – and with any just cause - violence, lies, abuse and inhumanity comes along with it just like any crusade**. Revenge** was there as well. Much of it was about belief systems (religion) and slight variations of the versions of the Catholic beliefs between groups separated by borders. Growing up in this time would have been difficult for young people – some converted to fight the war but also too - young people reacted to the world they were born into until there was enough impetus to stop the abuse, lies and destruction.

In 1994 an Irish Rock Band called **The Cranberries** released a song called "Zombies" https://www.youtube.com/watch?v=6Ejga4kJUts which was a worldwide hit and has been **watched over a billion times on youtube**. The refrain goes **"In your, head They are fighting – in your head, in your head – zombies, zombies, zombies, zombies …"** . These lyrics described the world 23 year old **Dolores O' Riordan** https://en.wikipedia.org/wiki/Dolores_O%27Riordan was seeing around her as she was growing up.

These words show insight into human groupthink and the almost brain-dead type behavior of people who keep repeating words in their head – running the same narrative over and over because their own internal circular narrative and smug belief in themselves is all they have – and they are willing to do or say anything to keep their narrative intact – **their confirmed biases in a feedback loop** - even premeditated murder.

Nazi Germany and many totalitarian countries know the power of repeating narratives – getting people to repeat simple phrases and words – simple ideas - **in their head, in their head** like zombies.

So phrases like "**MY** Cause is Just", "I am **Doing good** work", "Women are victims", "Males are Toxic", "I am a Good Person" – these little internal narratives on a constant feedback loop – apart from having a numbing zombie like effect also reduce the ability of the human to NOTICE things that may be going on which do not fit in their strong internally repeating narratives.

Indeed (why do say indeed! – am I Sherlock Holmes?) - things which do not fit the zombie like narratives are seen as distractions and a threat to the comforting inner world of their certain phrases and stories they tell themselves over and over. So they double down, run away, hide, lie, - do anything to stop that threat to their inner certain peace and comfort.

In the last Federal Election a female Labour Senator made a grand rally speech about the other side being "small' implying that they were small minded. What you have here is an example of **Smug Internal Universe** which is worth examining a bit further.

If you read a lot or do one thing a lot you tend to reward yourself for each next step – *Oh look I have learned something new – from baby's first step onwards.*

You will slow down a bit and start comparing to those you see around you. Then if positioning is your "thing" – if you personally love yourself (narcissists but also the "victims", never good enoughs, I cants , too hards, I'm no goods, etc) you might tend to define "Achievement" in life itself as belonging to you. Others – who achieve - simply do not compare to you. You become in your own mind – the accomplished one – the higher rank – the more capable human – it becomes all about you as an individual – not your behavior towards others or the actual job you do. So you get the smug Judiths and the "Nobel" knights, savages and victims – all who smugly position themselves as human beings as superior in some way to other humans. But you also get Smug Nihilists – the What's the pointers, you'll just failers, it will never workers, it is not my fault, I never had a chance, etc. https://en.wikipedia.org/wiki/Judith_beheading_Holofernes *The account of the beheading of Holofernes by Judith is given in the deuterocanonical Book of **Judith***

BUT – I Hear you say – surely we can be "good" at something?

Yes of course – be good at doing something – enjoy the work you do, the things you create – this is your internal universe – enjoy it. Others might appreciate the work you do as well – thank them and appreciate the interaction but why would anyone think they are a **better** Human than someone else just because they won an academy award for acting? **Stop positioning yourself compared to others** – focus on doing things.

When you become **smug** – you stop learning and you spend your time signaling directly or indirectly to others that you are better than them. This is very annoying to the group **for some reason**. It might have something to do with you being smug and lazy and not doing your **fair share of work in tackling the complexity and uncertainty in the world** that the group has to contend with. You have become complacent and a **waste of energy** for the group.

So when anyone calls someone small minded it tells more about them and how they see themselves rather than any objective assessment of people around them.

The Australian Labour party seems to foster and develop this kind of smug and superior thinking. It comes mainly from the university *caste* but also too from a general positioning and grouping propaganda model that they all run in their own heads. Their shared feedback loop internal narrative that they prefer to keep running. It is not so much – JUST THE INTERNAL REPEATED narrative – the actual and ideas and intent – **but the preference to have a repeated narrative** instead of **exploring and discovering things** in the universe itself. This smug internal narrative of shared self delusions, self congratulation, self rewards, pats on the back, sniggering at others – the avoidance of making mistakes,

learning, being wrong or taking on really difficult things from a non idiotological perspective – this seems to me where the ability to notice, measure or be aware of things get quite damaged.

Let's also not forget the group, mob and crowd type reflexes – these things are real – humans get together in large groups and **will go along with the group** – they will behave as one creature with one idea and one intent – there is **enormous pressure to CONFORM**. I tend not to conform to what the group is doing JUST BECAUSE it's a group – I tend to evaluate things a bit more and examine it more closely. I noticed this first when I was about 4 and I stopped going to Sunday school – maybe I asked too many questions? Later when two of my school friends drowned in a river the Brindabellas – one boy went in and got trapped under the waterfall – the other went into to try to save him. As Red Hill Primary school vice captain I attended the service at the local church. When the priest said let us bow our heads and pray. I didn't. I looked straight ahead and remembered and thought about my school friends, death and sadness. I looked about and I was the only one not doing the group *thing*.

https://en.wikipedia.org/wiki/August_Landmesser *August Landmesser ([ˈaʊ̯ɡʊst ˈlantˌmɛsɐ]; 24 May 1910 – 17 October 1944) was a worker at the Blohm+Voss shipyard in Hamburg, Germany. He is known as the possible identity of a man appearing in a 1936 photograph, conspicuously refusing to perform the Nazi salute with the other workers*

This inability to notice anything is very strong – some people have no idea why they are saying something or doing something. Some take advantage of this unawareness in weak minded people to manipulate them and once in their power they become TOOLS for the manipulators to use.

Consider The Labour Party leader and possible prime minister of Australia – see how unaware he might be. https://7news.com.au/politics/parliamentary-vigil-for-murdered-family-c-717104 *Labor leader Anthony Albanese hoped the brutal murder **marked a turning point**. "**We have all failed, particularly men have failed**, the women and children of this country," he said*.

All the girls with candles are bowing their heads – waiting to hear what the great leader can offer up as wisdom. Things have gone quiet – strangely the feminists have stopped talking , having primed Anthony and left a great big silence into which Anthony feels he must **boldly** and **decisively** walk into (unaware of the set up) – this is his time , his "No Child Shall Live in Poverty". Does he anticipate applause – smiles, congratulations , reverence and indeed all kinds of rewards – for finally and insightfully on the spur of the moment – realizing exactly what is wrong with the world and providing such clarity and insight that everyone cannot help but imagine him as the next great leader of the nation – **yea verily** – humankind itself?

And so he demonizes all of the group - but that is not enough – there are special perpetrators we need to focus on – **ALL MEN HAVE FAILED – he claims with passive aggressive solemnity. And he happily groups children as belonging to women. Groupthink, divisiveness and abuse – all come so easily – has he been programmed or does he really believe this? Bigotry and groupthink. The lions/tiger/snakes/demons are all men.**

The feminists rub their hands with glee – another senior male politician falls for the trap – the list goes on. Keep publically abusing and demonizing all men.

These futile grand statements and gestures – the willing human sacrifices – in this case of everyone else but themselves – it seems to be a constant theme in humanity.

I remember **John Gorton** – he seemed to me to be someone with a deep appreciation of the fallibility of humans. He never seemed grandiose or smug – things always required a decision and he knew that nothing was perfect. He did his best. He was authentic and approachable in a way that humans understood. Completely at odds with the moral **posturers and grandstanders of today**. I would go to work and see him walking in "civic" in Canberra from time to time – completely unassuming – still maintaining his office after prime ministerial service and being engaged with life and the challenges it brings. 31 years in public office is a long time.

There are many kinds of mobs and group gatherings they all have different characteristics. Some are large political rallies full of cheering mobs – others are football stadiums of rival teams who drive up their hatred and loathing of each other's group – the Olympic Games allows multiple team mobs to assemble to practice their cheering, adoration and group activities. There is a huge range of passion and involvement displayed by humans who participate in these mobs actions.

So this is the crowd, hushed voices, reverence mob – the huge silence waiting for a voice to speak out – the anticipation of the grand statement – *Oh wont someone give us meaning and insight?* The mob demands. Something simple and uncomplicated to salve my ignorance and fear of complexity and uncertainty, they beg – anything rather than questioning for myself, thinking and working things out.

*Oh what will I say?   Oh I know - Something profound? How can I make up something quickly???? I Know - I will say What I think people WANT ME TO SAY – They are nodding at me – smiling – encouraging me – I open my mouth (words have been repeated to me so often these words come easily) "I am to blame" - "Mea Culpa". Oh good – they are nodding – I must have said the right thing – but they seem to want more – the silence is deafening – must I speak again?? Maybe I will try something even more profound – **ALL MEN ARE TO BLAME**. Now they are cheering me – it is so cathartic – **I FEEL better** – I feel accepted - I have finally learned the right thing to say – mummy I'm home at last - the girls are patting me on the back – but as they walk away I see their shoulders moving – it looks like they are giggling and laughing – what could they be laughing at?*

Normal – Distributions -Focus – Granularity – Comprehensive - Cohesive

So when we **focus on things** using the Focus – SCUTA framework we notice concepts of **coherent** and **comprehensive** come out.
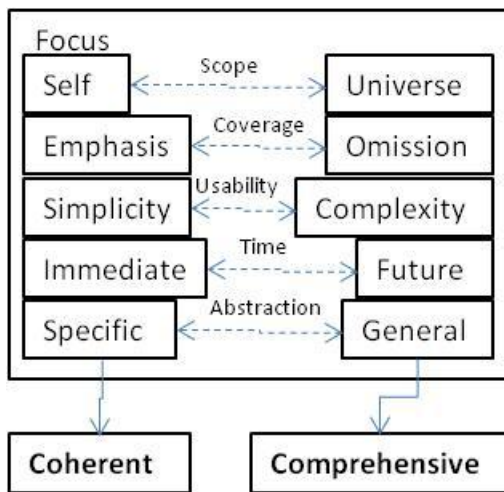
But what does this mean really? How can I improve the exploration of this?

So I created a normal distribution of 100 GROUPS OF THINGS – Humans – each human corresponds to a height – which has a number meaning height in metres 1.56252 is the 51st observation out the hundred groups – which means the largest – the mean, most common, mid point - the largest number of humans tend to have the height of 1.56252 as their height. **NOW THIS IS A BIT OF A TRICK!**

What I have done – in quite a tricky way - is **pre-determined that I want to produce a Normal curve** of 100 grouped items. I did this because we see so many graphs which look like this. So I did this so I could explore exactly what this means – So I can understand it.

I decided that the most common value was in the middle and where normally (get it?) the x axis would contain the yardstick measures – the length in metres - and the Y would contain the frequency count – the number of objects with that yard stick measure – I changed things.

I moved the yardstick value to the Y axis and I decided that the granularity of the groups was arbitrarily 100. I decided that all human beings on the planet must line up into groups and in each group they are measured the same height by a given method against the yards stick (Metres) maybe using the Floor method (Must be at least).

But this is no simple exercise! Imagine what needs to happen here – all these humans need to line up in height order – now as we know no two humans are precisely the same height! So then one long line of humans appears. I then say organize yourselves into exactly 100 groups - But how? This is not an instruction to count the number of humans and divide by a hundred and call that the fixed partition – no this is something else entirely. So I instruct them to pick a PARTITION value – a FIXED INTERVAL OF HEIGHT (so the MAXIMUM HEIGHT – ZERO and then divide that by One Hundred) - which is exactly the right value to produce one hundred groups of humans in ranked height order. Then I number the groups calling the middle group – which happens to have the most people in it the ZERO group and each group away is plus or minus one. I say the frequency – the number of humans in each group – AND HERE IS A BIG TRICK – is to be represented on the Y AXIS by **height as measured by the yardstick** using the floor method for every height LESS than the AVERAGE (The MOST COMMON height at the middle) AND THEN - to BE **MORE TRICKY** – After halfway (i.e. the middle zero point) I have to SUBTRACT The RELATIVE DIFFERENCE BETWEEN EACH GROUP in succession to get the Y Values where they are TALLER than the most common average height – the ZERO group.

In practice this means taking the average height group and ordering taller and shorter groups to each side in a grouping, ranking, sorting process – while simultaneously optimizing on a FIXED PARTITION for the yardstick of measurement.

Hence FREQ (the Y- AXIS) becomes a RELATIVE MEASURE to the AVERAGE HEIGHT. I could have used percentages instead, I could have normalized the normal to the AVREAGE HEIGHT to 1 (ONE) and every other group was relative to that – for example the groups two partitions away from the middle one would be calculated as – in this example – as 1.55711/ 1.56252 = 0.9965.i.e. fractions 1 – the highest group.

The Number of humans who are either 0.00037 (partition -49) metres tall or 3.12467 (Partition 49) metres tall is 0.00037/1.56252 = 0.00024 or 1,676,754 people if there were 7 billion humans.

Clearly nonsensical but illustrative for discussing the general model.

Here is what the **pretend human height data** looks like forced into a normal distribution:

Part_num	Freq	Rel-Diff(abs)	Alt_freq
-50	0.00027	0.00000	0.00027
-49	0.00037	0.00011	0.00037
-48	0.00052	0.00015	0.00052
-47	0.00073	0.00020	0.00073
-46	0.00101	0.00028	0.00101
-45	0.00138	0.00037	0.00138

-44	0.00188	0.00050	0.00188
-43	0.00254	0.00066	0.00254
-42	0.00342	0.00087	0.00342
-41	0.00456	0.00114	0.00456
-40	0.00604	0.00148	0.00604
-39	0.00795	0.00191	0.00795
-38	0.01038	0.00244	0.01038
-37	0.01347	0.00309	0.01347
-36	0.01736	0.00389	0.01736
-35	0.02221	0.00485	0.02221
-34	0.02822	0.00601	0.02822
-33	0.03562	0.00739	0.03562
-32	0.04463	0.00902	0.04463
-31	0.05555	0.01091	0.05555
-30	0.06865	0.01310	0.06865
-29	0.08426	0.01561	0.08426
-28	0.10270	0.01844	0.10270
-27	0.12431	0.02161	0.12431
-26	0.14943	0.02512	0.14943
-25	0.17838	0.02895	0.17838
-24	0.21146	0.03308	0.21146
-23	0.24895	0.03749	0.24895
-22	0.29105	0.04210	0.29105
-21	0.33792	0.04687	0.33792
-20	0.38962	0.05170	0.38962
-19	0.44612	0.05650	0.44612
-18	0.50728	0.06116	0.50728
-17	0.57283	0.06555	0.57283
-16	0.64237	0.06954	0.64237
-15	0.71538	0.07300	0.71538
-14	0.79116	0.07579	0.79116
-13	0.86892	0.07776	0.86892
-12	0.94772	0.07880	0.94772
-11	1.02651	0.07879	1.02651
-10	1.10415	0.07765	1.10415
-9	1.17945	0.07530	1.17945
-8	1.25117	0.07172	1.25117
-7	1.31806	0.06689	1.31806
-6	1.37892	0.06086	1.37892
-5	1.43261	0.05369	1.43261
-4	1.47808	0.04548	1.47808
-3	1.51445	0.03637	1.51445
-2	1.54097	0.02652	1.54097
-1	1.55711	0.01614	1.55711

0	**1.56252**	**0.00542**	**1.56252**
1	1.55711	0.00542	1.56794
2	1.54097	0.01614	1.58408
3	1.51445	0.02652	1.61060
4	1.47808	0.03637	1.64696
5	1.43261	0.04548	1.69244
6	1.37892	0.05369	1.74613
7	1.31806	0.06086	1.80698
8	1.25117	0.06689	1.87388
9	1.17945	0.07172	1.94559
10	1.10415	0.07530	2.02089
11	1.02651	0.07765	2.09854
12	0.94772	0.07879	2.17733
13	0.86892	0.07880	2.25613
14	0.79116	0.07776	2.33389
15	0.71538	0.07579	2.40967
16	0.64237	0.07300	2.48268
17	0.57283	0.06954	2.55222
18	0.50728	0.06555	2.61777
19	0.44612	0.06116	2.67893
20	0.38962	0.05650	2.73543
21	0.33792	0.05170	2.78713
22	0.29105	0.04687	2.83400
23	0.24895	0.04210	2.87610
24	0.21146	0.03749	2.91358
25	0.17838	0.03308	2.94667
26	0.14943	0.02895	2.97562
27	0.12431	0.02512	3.00073
28	0.10270	0.02161	3.02235
29	0.08426	0.01844	3.04079
30	0.06865	0.01561	3.05640
31	0.05555	0.01310	3.06950
32	0.04463	0.01091	3.08041
33	0.03562	0.00902	3.08943
34	0.02822	0.00739	3.09682
35	0.02221	0.00601	3.10284
36	0.01736	0.00485	3.10769
37	0.01347	0.00389	3.11158
38	0.01038	0.00309	3.11466
39	0.00795	0.00244	3.11710
40	0.00604	0.00191	3.11901
41	0.00456	0.00148	3.12049
42	0.00342	0.00114	3.12163
43	0.00254	0.00087	3.12250

44	0.00188	0.00066	3.12317
45	0.00138	0.00050	3.12367
46	0.00101	0.00037	3.12404
47	0.00073	0.00028	3.12432
48	0.00052	0.00020	3.12452
49	0.00037	0.00015	3.12467

So the X AXIS IS NOT SHOWN in the following graphs but DOES REPRESENT the increasing Heights as represented by the Alt_Freq column. This is just because I am focusing on the general nature of the normal distribution rather than the yardsticks.

Each Dot is one group or partition number.
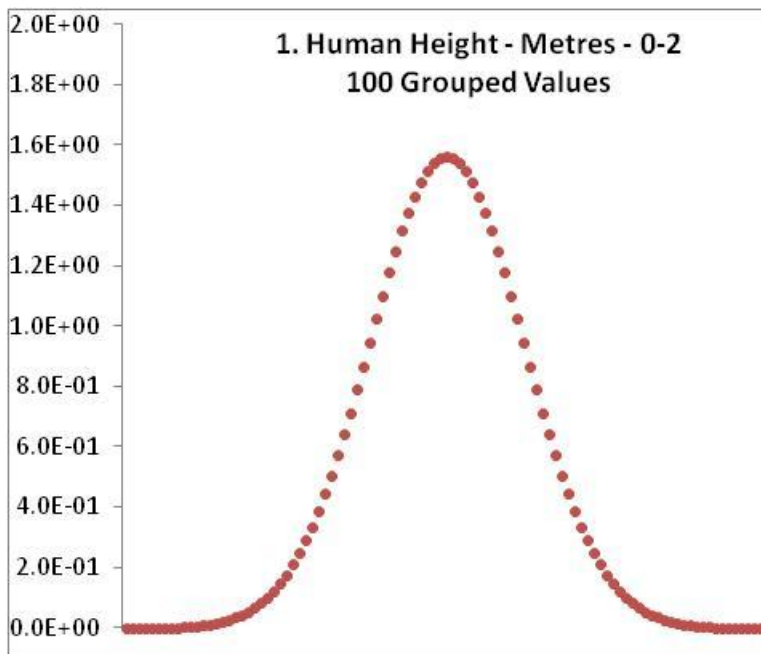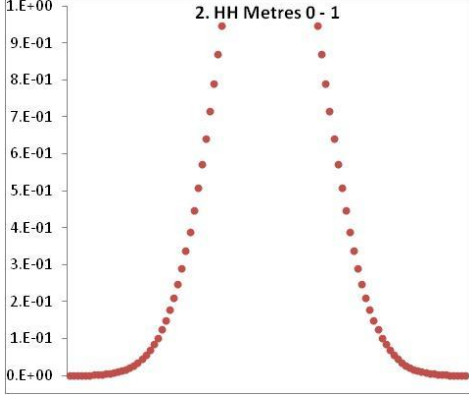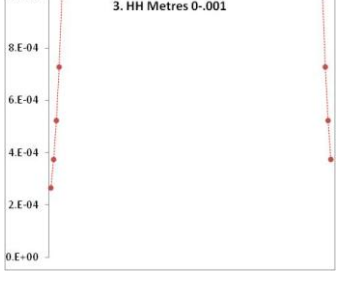
The point about the next series of graphs is to show a little more about what the focus model means. It is especially useful for examining the idea of CHERRY PICKING or using SINGLE GROUPS or INSTANCES. These graphs help **explore** the idea of COHESIVE and COMPREHENSIVE.

In some ways we can see the idea of **cohesion** visually as the normal graph above – we seem to have a "good" view of things. We have a frame that we can explain and seem to understand – we have numbers which have some meaning attached to them – in this case height – and we have objects we seem familiar with – humans – we understand about sorting, ranking and grouping – that we have arranged all humans on the planet into groups and we can see the relative differences between groups and **some kind of pattern** – **it seems like a balanced pattern** – it may be following some kind of rule or tendency.

But we arranged this deliberately and **chose the frame of reference**. We even **chose the techniques** for arranging and displaying the data. So the next series of graphs are all based on exactly the same data.

So if we are aliens in another galaxy - a long way from Earth - peering through time and space - we have to try to find the "right" frame of reference to examine this data – this information which exists on Earth and we try to make sense of.

ASIDE: Bob Doyle (philosophy) https://www.informationphilosopher.com/about/ and Leonard Susskind (physics) https://sitp.stanford.edu/people/leonard-susskind both share an **Information** view of the universe and Susskind helped Stephen Hawking eventually realize that some of Hawking's work on black holes was doubtful https://en.wikipedia.org/wiki/The_Black_Hole_War - research continues on black holes and information https://www.livescience.com/65683-sonic-black-hole-spews-hawking-radiation.html . I read Stephen Hawking's A Brief History of Time when it first came out and I found it very interesting and coherent for most of the book but it always seemed to me that I had not understood the complex stuff about the black hole radiation – I was either incapable of understanding or he was incapable of explaining it because he did not really understand it. Maybe a bit of both?

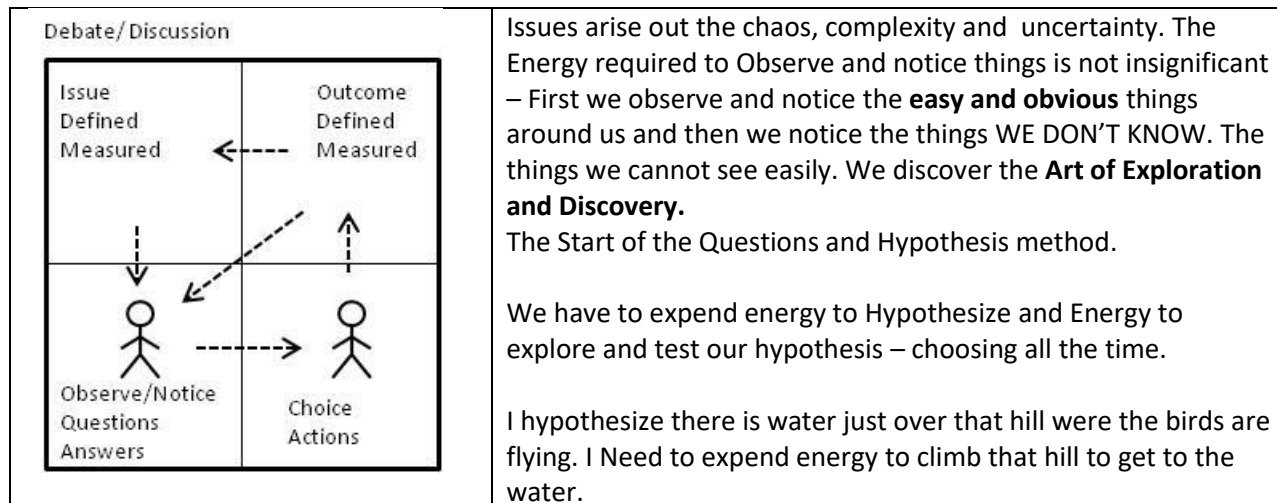|	
	2. In this we see what happens when we change one way of examining the information. Here we have a frequency 'yardstick' which is our lens of focus on the information and it ends at 1 meter – so all the groups over 1 metre simply do not appear to us. This might seem **coherent** to us. This less than comprehensive – but we might believe we have seen enough to understand. We might see we see a sensible pattern of two groups – both seem to have high "Density" towards zero and low density towards 1 metre. We might hypothesize lines continue in either direction out of our frame of reference in a variety of ways.
	3. This seems **sparse** – there are only a few observations – we are only seeing the smallest groups. This is not coherent or comprehensive. Here we are getting into the techniques of framing things in such a way that only some observations appear.

4. HH Metres 0 - 1,000	4. We have changed the same frequency yardstick but in this case we have made it very large instead of very small. So all we can see are a few bumps in the middle at the bottom. The focus seems comprehensive – but it is not granular enough – it gives us no real coherent view. We could assume that the pattern is a series of bumps – that the universe is composed of things which emerge as a series of slight ripples or bumps from **time to time.**
5. HH Metres 0 - 10,000	5. When the scale is very large all you see – barely at the very bottom of the scale - is a straight line which has a starting point and an end point. Well that seems very **coherent** to us – we might even think it is **comprehensive**. All things are lines which are straight and have start and end points - we could assume. We would have to use more abstractions – shift the focus – try to explore and discover more about this – or we could smugly assume the **world is flat**.
6. HH Centered on Zero - Middle Group of 100	6. Here we get the notion of groups – steps away from the high point. The other dimensions are changing – so instead of the frequency yardstick we are using the grouping yardstick – the high point we can easily see – in our current frame this is the thing we always see first or focus on – it stands out in some way to our senses. Near 1.6 – we say to ourselves. It seems coherent and comprehensive we see density clusters and patterns and we get some sense of having a good focus on things.
7. HH 5 groups either side	7. Here we frame it differently – we only notice the high points – the low values are difficult to see because we only narrow our focus to the first few groups either side of the high point. – like seeing mountain tops only on a cloudy day. There seems to be **no immediate reason** to think we are not being coherent and comprehensive. Of course there is more to explore and discover – we have at least two dimensions – each with two directions – there could be more to discover – but would make us think to do that? **What would invoke a question within us to explore this more?**
8. HH 0.5 groups either side	8. We see only the one grouped high point and we think that is the universe. Binary and singleton thinkers are happy with this view. It is one thing in one dimension – freq – it appears easily and with little effort or energy – it is the high point and most easily observed. We narrowed the groups even more to only .5 a group either side – hence no other groups appear. Our **immediate universe – closest neighbors.**

|		
9. HH 5000 groups either side		9. We really spread out the x axis so far that we only see a single line of dots with two densities – We might think it is one object bouncing backwards and forwards between two different places and the we are seeing **SNAPSHOTS IN TIME – because whenever we look at things we not only have to deal with our observation frame but also the event/time dimensions as well.**
10. HH Metres 0-10 500 Groups either side		10. We changed both axis frames just to see the shape differently
11. HH Metres 1-2 25 Groups either side		11. Again just the group on the x – axis – but here **notice** that you might think that your frame is comprehensive – after all the frame has gone out 25 partitions, groups or steps but notice that Y AXIS STARTS at 1 Metre instead of Zero – again this shows the issues with the sensitivity of our measurement – if **we can't see anything smaller than a metre we do not know it is there.** This is called **precision** and **accuracy**

Cherry picking can change all the dimensions to show just a certain view or frame that helps your argument. Corrupt humans choose only some observations and point in the frame OR manipulate the **time dimension**.
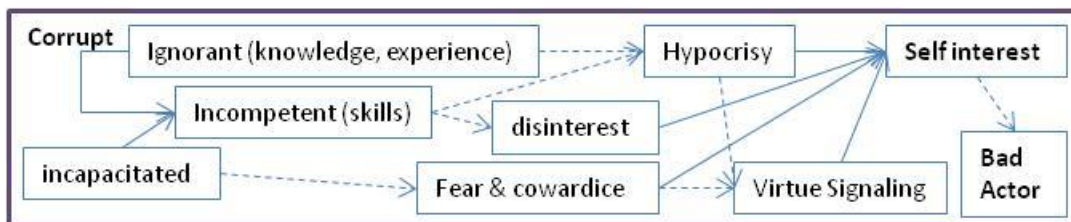

Comprehensive and **cohesive** information is **difficult to discover at the best of times** with the best people with the **best intent and focus**. It is not easy to use these tools and techniques to make sense of the world. Energy/effort is required to not only to explore the most obvious and easily observed but also to discover their limits and context for the frame itself. **Energy of Hypothesis** and **Energy of Active Exploration** (trial and error – action – doing things).

Issues arise out the chaos, complexity and uncertainty. The Energy required to Observe and notice things is not insignificant – First we observe and notice the **easy and obvious** things around us and then we notice the things WE DON'T KNOW. The things we cannot see easily. We discover the **Art of Exploration and Discovery.**
The Start of the Questions and Hypothesis method.

We have to expend energy to Hypothesize and Energy to explore and test our hypothesis – choosing all the time.

I hypothesize there is water just over that hill were the birds are flying. I Need to expend energy to climb that hill to get to the water.

There are so many possible explorations available – infinity itself – so when this gets corrupted by ignorant or lazy self interested bad actors – the group suffers from ignorance and a lack of knowledge. The group Telos suffers**. Chaos and change is real** and we are the survivors who have sustained a continued adaption to this universe of chaos, uncertainty and complexity.
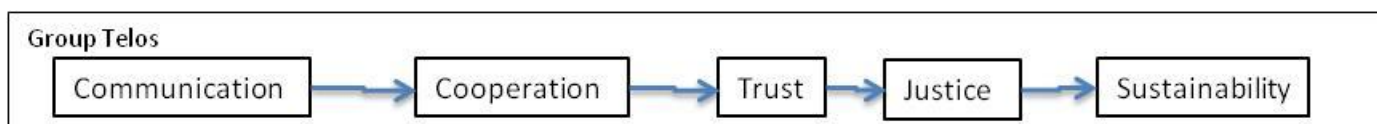
Or maybe we could be stuck in a very narrow frame for as long as we can survive change. This is the expense of the Darwinian adaption. Greater than 99% failure rate. We could end up in a narrow frame which only allows us to see some things – some times – we never quite see the whole picture. We cannot expand our choices. **How/ought/do we expand our horizons?**
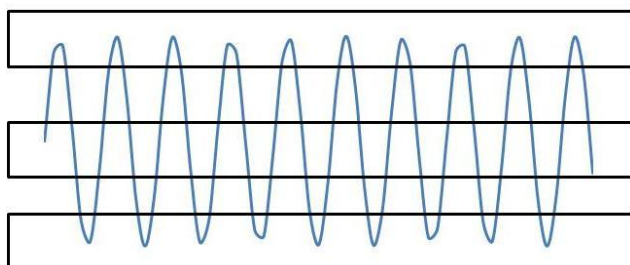
Events- Average – Noticing over time – Moving average

Events happen and we measure them in a time sequence. At the start of events we notice things very closely – we notice big changes and differences. As time goes on we tend to just notice things when they deviate from our expectations too much. We create for ourselves some kind of internal bounds system

based on our experiences. Dr W. Edwards Deming helped Japanese recovery post World War 2 by using quality control measures based on measurements of deviations from the average https://deming.org/ - and when to notice the manufacturing process may be producing less quality results so things could be fixed. Some use a 2 standard deviations from the mean as a **noticing threshold**.

We can use an **average** over all time – that is - we see all the events of all the universe that have ever happened and average them all.

We can use a **moving average from the first event** onwards – progressively adding each observation and averaging the result.

We can use a **bounded moving average (in this case – event/time)** – this starts with the first observation but once we get **past a limit** – say 20 observations – we only average the 20 most recent observations as each new observation comes in as a new event. This relates closely to the human life frame. Humans will say *this is "unprecedented"* – meaning they have never seen that event before in their lifetime – their "memory". This is where having a knowledge of the time dimensions and history helps understanding. It is also too why having new humans created frequently helps us notice what we might all **take for granted** and **fail to notice** any more.

Each dot is a new event observation – **notice** the sharp rates of change at the beginning but smother curves as time goes on - Also the ability to notice trends or changes depending on the size of the moving average. **All data here is the same as used in the human height graphs above** – except each observation is in a **random sorted order** – like humans are organizing themselves into group heights at different times and sequences. i.e. the dots are normally distributed but not across the event/time/sequence view.

You might call the moving average bounds the "Sensitivity" of the focus – or in my **focus model** – recognizing the **Time** dimension boundaries AND the **Abstraction** from the **Specific** (Observation) to the **General** (Average). **Coverage** too – **Emphasis** and **Omission** and in many analysis techniques **"outliers" will be ignored (Observations are removed) for the purposes of focusing on averages and trends (lines) as some kind of average prediction model and therefore a constant reduction of bounds limits and variations. Feminists, Communists, Socialists, Totalitarians and other extreme idiotologies do this all the time as methods to JUSTIFY Authoritarian measures.**

Deming would instead - focus on outliers - to observe that system problems might be emerging – things might need to change. **How do I know when and where to focus?**
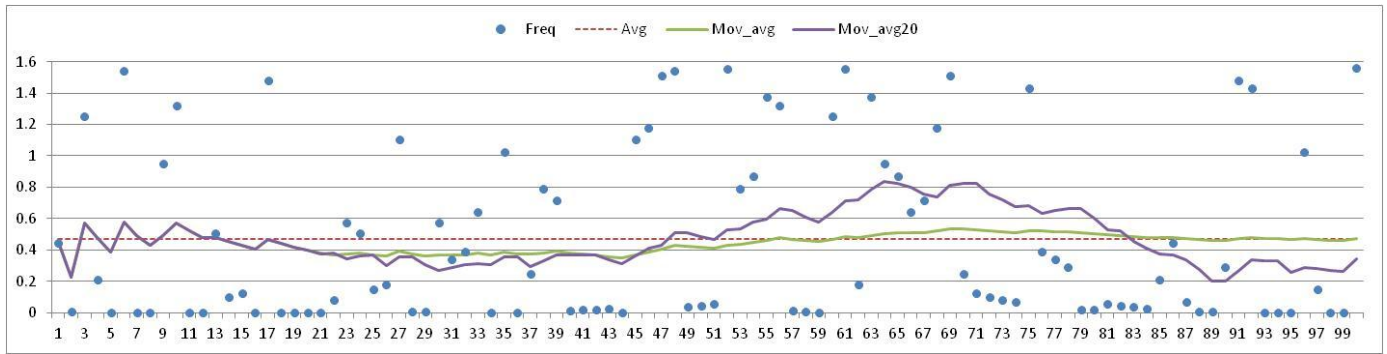
If we sort all observations as they come in into one ranked list smallest to largest and THEN DISTRIBUTE into two SORTED buckets (1st obs into bucket 1, 2nd obs into bucket 2, 3rd obs into bucket 1,..) in ascending order and the other in descending order we get:
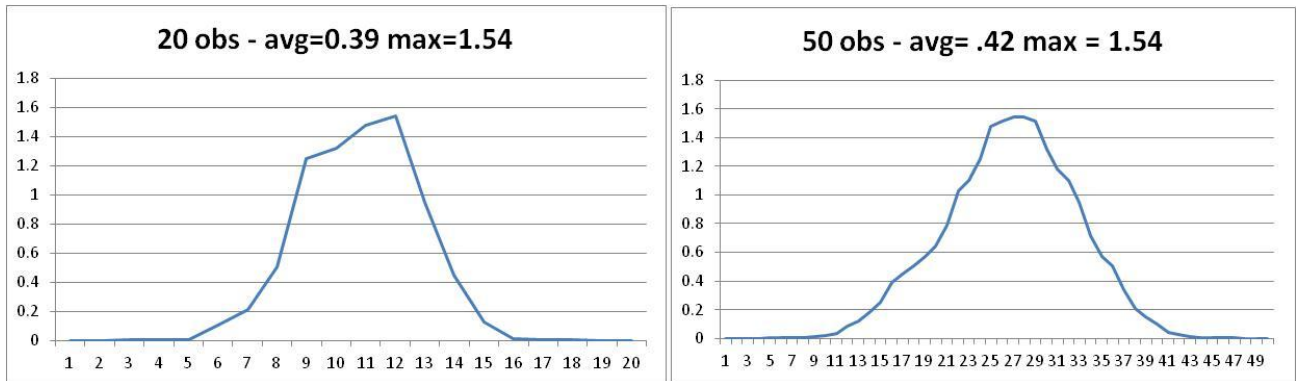
Which is like the idea of sampling over time/event. Notice here that the 1.54 in meaning - as we know it - is really the average human height in this example dataset – but we only see this as numbers and observations. So of we average the observations – sum/number of observations we get around 0.4 - it has a **different meaning**. Context provides meaning. Here the max means average human height.

Related ideas – Exploration and Questions

TWOS: DNA has 2 base pairs of sugars and each pair can have a reverse direction – an opposite orientation A-T, T-A, G-C, C-G. I think this 2, pairs, binary and direction thing – or alignment is a pretty strong feature and may represent something fundamental – not only about life – but the universe itself. I am not sure how to make sense of it or use it.

¾ power scaling observed in animals related to mass, observed by Kleiber in 1932, seems to relate to optimization of path choices. i.e. 3 energy units to 4 mass units. The idea that depending on the size of the animal depends on the heartbeat rate and speed at which they experience things. Somehow we all get the same metabolism (energy) relative to our mass – mass is related to volume(distance)/density functions. Small creatures like ants move very quickly – big animals more slowly. They see the world differently – time and space looks different to them.

In scaling – magnitudes – **surface area grows more slowly** than size – length – mass. So to grow in size takes more mass than you realize – expanding the boundaries. This concept is like the logistics supply chain issues. How to model transport, communication and supply chains? Maybe Erlang's communication model – maybe not just the time dimension but also the distance/mass dimensions as well – is this the same concept?

Boyle's law is relates **pressure** to 1 divided by the **volume** – looking like a Benford Series.

Avagadro's constant make ensures molecular **mass** and **volume** are **constantly related** at given pressure and temperature. But this is always expressed in terms like "at room temperature and pressure". So does the relationship change shape or does it break down entirely when we are at smaller and larger values of mass and volume?

We also get **Coulomb's law** on Electro Magnetic interactions and **Newton's Law** of gravitation – between **two objects** – given as the inverse square rule – **force,energy** over **distance** between **mass.**

Karl Schwarzschild's calculations shows some relationships between radius, Pi, Standard Gravity parameter, Compton wavelength, mass, energy for Einstein's equations – applying from small to large bodies. 1/2 emerges as a constant in one formula.

POWER LAW: If we take the power law as **Euler step type things** along a choice path from the observer – we get the notion that the ¾ power law – raise to power 3 then find fourth root (or vice versa https://www.mathsisfun.com/algebra/exponent-fractional.html) - instructs – *take 3 doubling type steps from here and then four halving type steps to a new position.* Where as a negative exponent puts a 1 (identity – the thing) at the top and then calculates the expression under the one – in essence – asking the question like above except – *take myself (one) and divide by a number repeatedly.* So 8 raised to the power -1 has nothing to do with your starting point – the starting point is always one – it is all about repeated division – in this case divide 1 by 8 once. 8 to the power -2 is divide 1 by 8 times 8 (so the number underneath is a positive power). So the meaning of a simple positive integer power and a negative integer power have two different meanings. They are asking two different questions – two different dance instructions on the number line which is why the slope changes so dramatically at 1,1 or y=f(x) where y is the answer and f is the function or question.

SO WHY don't I really understand power laws ?

- 4 raised to the power 2/1 (the one is implied) is 4 SQUARED (Multiplication by itself - a type of doubling) = 16. Each power is a recursive SQUARING – double yourself where you are.
- 4 raised to the power ½ is 4 SQUARE ROOT (Division by itself – a type of halving) = 2. Each power is a repeated SQUARE – What number did you have to multiply by itself to get here?

We could call 4 raised to the power -2 = 4 halved = 2 – we could make that convention just to keep doubling and halving notation consistent. ***So why the fraction power?? It's a completely different dance routine. What problem does this notation solve – why did we use ½ notation for square roots?***

So we could say 4 raised to the power ½ is to take the position of identity at one and divide by 4 twice.

But then what about the instructions for 4 raised to the power -1/2 ?? It all seems to get a bit messy.

It seems related to fractional – division and multiplication rules but using the conventional method we get that problem of the "switch" in meaning between negative and positive exponents – a change of direction. Dancing on the number line - The dance routines are all about:

- Your starting point OR Your destination (Where are you starting from for the dance or where you should end up after the dance has finished)
- The number of steps to take
- The Relative (recursion) size of the step – the interval. (e.g. take a step of 2 forward then use that point as part of your next forward calculation. Or take where you are now and find the spot backwards where you had to be to get here in 2 steps forward.)

E.g. So 4 raised to POSITIVE numbers (including fractions i.e 1/1 =1, 2/1 = 2) is all about a dance routine with squaring/doubling and square root/halving **from the starting position at 4**. Double/square by the Enumerator and square root/Halving by the denominator recursively. **4 is also the interval** to use.

4 Raised to any NEGATIVE numbers is a different dance routine following different rules and having a completely different meaning. Currently all based on **starting at 1** and dividing or multiplying by a calculation. In this calculation **4 becomes the interval**.

This is why I don't like the power laws – they do not represent a coherent statement of what is happening on the complete number line and they entrench – just by the rules – the need to use imaginary numbers all the time. At best the power laws are a partial statement of a function represented by THREE partial functions – one for negative fractions, one for positive fractions and a special one for ZERO (the cheat to get from zero to 1). I might have to reinvent the power law to get clarity around the dance routines – especially for positive and negative directions and multiplication and division routines.

Maybe I should look at the Octonian numbering system https://en.wikipedia.org/wiki/Octonion or some other hypercomplex number system https://en.wikipedia.org/wiki/Hypercomplex_number *In 1958 J. Frank Adams published a further generalization in terms of Hopf invariants on H-spaces which still limits the dimension to 1, 2, 4, or 8.* **So only 4 possible dimensions? I don't like it when they imbed e or pi in the formulas because I think they are imbedding the problem. I want to go beneath that.**

https://en.wikipedia.org/wiki/Lagrange%27s_four-square_theorem implies that all natural numbers can be represented by adding 4 squares – does this mean that (like 4 prime numbers – 4 unique path
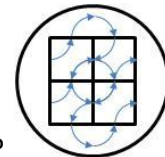
choices) we are in a universe of 4 where the universe itself is the 5th dimension?

These things generally converge around the basic problems of logic and philosophy – like Cantor's https://en.wikipedia.org/wiki/Georg_Cantor and other set theories – simple language issues like

is/not/like/different – consists of, etc and the problems of adding and subtraction. Recursion and iteration mostly (initial self reference is unavoidable) sit above this in the dance routine – the rules – the process - but it is like we have to invent a new number routine after each change in complexity of the dance routine – functions, instructions Programming Language Theory https://en.wikipedia.org/wiki/Programming_language_theory . Turing https://en.wikipedia.org/wiki/Turing_machine invented a simple machine to test instructions in a forwards and backwards integer mode – like a number line and Paul Erdos (Paul Erdős) https://en.wikipedia.org/wiki/Paul_Erd%C5%91s posed a problem https://en.wikipedia.org/wiki/List_of_conjectures_by_Paul_Erd%C5%91s which Terrence Toa explored along the same simple number line. It's the constant search for a neat dance floor and a neat dance routine.

 So Euler's Number 2.71828 – represents a ratio of some kind of the first step of energy/mass to get **to** one and the general ratio of each step – the limit – the shape of the curve – It is often called a Natural growth **function.** So power laws are all about the doubling (multiplying yourself by yourself – Squaring) function - How many steps of doubling yourself to get somewhere – somewhere new or where you are now. This is why is a growth function because we have some many things related to this idea of doubling. So is the Circle – or more explicitly pi – the result of the first double? Here I am at a point and now let us expand into time and space?

The **Euler–Riemann zeta function** seems interesting as well.

Also see https://en.wikipedia.org/wiki/Feigenbaum_constants 4.66 represents the ratio of the **steps in time** between **events** (mass/energy) – from harmonic frequencies to order and chaos. **BUT NOT JUST TIME**. This number **appears in fractals** and simple recursive functions i.e. it is a function of recursions – NOT just a function of Life or the universe. It is a function of the nature of numbers - as we define them – and using the output of one calculation using just EQUALITY, ADDITION/SUBTRACTION and MULTIPLICATION (Squaring) as input into the next calculation using the same function. $F(x) = a - x^2$

The Golden Ratio 1.618 , Fibonnaci – the recursive growth functions. These are usually power law functions relating **mass** to **function** in positive directions for growth and negative (1 divided by) for decay, half lives - repeated functions which are time independent.

So we get the **power law instructing us** in two ways and two directions. The **rate of change** parameters. The rate of change of what? and why is there two different types – the negative to positive and the fraction to whole numbers?

Interesting too is Archimedes and Galileo Galilei with the laws around surface areas of a sphere and the volume/density and mass and the relationships of power laws.

There are so many similar math constants – everyone is trying to tie everything together.

Zipf's law – path of least resistance *The principle of least effort is another possible explanation: Zipf himself proposed that neither speakers nor hearers using a given language want to* ***work any harder***

than necessary to reach understanding, and the process that results in approximately equal distribution of effort **leads to the observed Zipf distribution,** Benford and other negative power laws all seem related – around optimal choice paths – paths of least resistance – with Benford – I think representing the limit of optimal choice. Human surnames, first name choices follow Zipf's law, Benford ties directly to the concept of numbers in order on a fixed number plane. The normal distribution however? seems to represent those things which are like attributes – the choices of energy, events and mass – more related to ongoing activity than fixed observation. Abundance of atomic particles seems like this kind of least effort choice as well. http://www.astronoo.com/en/articles/abundance-of-the-elements.html. None of this is clearly understood by anyone on the planet – what does it mean? why?

However: ***Vitold Belevitch*** *in a paper**, On the Statistical Laws of Linguistic Distribution** offered a mathematical derivation. He took a large class of well-behaved statistical distributions (not only the normal distribution) and* *expressed them in terms of rank*. *He then expanded each expression into a* **Taylor series**. *In every case Belevitch obtained the remarkable result that a **first-order truncation of the series resulted in Zipf's law**. Further, a **second-order truncation** of the Taylor series **resulted in Mandelbrot's law**.*

So at one extreme is the **certainty of mass** and the other extreme is the **energy of exploration and hypothesis – change and choice**. Through these paths and choices we change from a least resistance diminishing returns type view to a Central limit Theorem – a variation around a peak value. Might this be the idea instead of optimizing for LEAST ENERGY instead optimizing for MOST CHOICE? Might this been the balance between the routine short cuts and the explored territory and the random walk – the real chaos of randomness and discovery – the product of **living systems** themselves? The type of universal bounds?

Living Systems :Author(**James Grier Miller**) :Year(1978) :Keyword(Planet Science Life) https://archive.org/details/LivingSystems/page/n41 https://en.wikipedia.org/wiki/James_Grier_Miller https://www.panarchy.org/miller/livingsystems.html *This is a complex beautiful text that should be read by all those who intend to put the so-called social sciences on a **truly scientific basis** in order to reach a unification of knowledge, at least as far as methodology is concerned.*

As stated by the author: "If the social sciences were to formulate their problems, whenever possible, in the way which has proved most convenient for the natural sciences over centuries, unification of all the sciences would be accelerated." And this is a very urgent task if we want to get out of the **obscurantist nonsense** **that still characterizes much of social analysis and social remedies***.*

13.1 Stress, strain, and threat. There is a range of stability for each of numerous variables in all living systems. It is that range within which the rate of correction of deviations is minimal or zero, and beyond which correction occurs*. An input or output of either matter-energy or information which, by lack or excess of some characteristic,* **forces the variables beyond the range of stability***, constitutes stress and produces a strain (or strains) within the system. … **Stress may be anticipated**. Information that a stress is imminent constitutes a threat to the system. A threat can create a strain. **Recognition of the meaning of the information of such a threat** must **be based on previously stored (usually learned)***

information about such situations. A pattern of input information is a threat when - like the odor of the hunter on the wind, or a change in the acidity of fluids around a cell, or a whirling cloud approaching the city - it is capable of eliciting processes which can counteract the stress it presages…. 13.1.1 Lack stress. Ordinarily there is a standard range of rates at which each sort of input enters a system. If the input rate falls below this range, it constitutes a lack stress… 13.1.2 Excess stress. If the input rate goes above this range, it is an excess stress.

Engineers would understand this concept immediately – **stress testing** – also this concept is used in computer systems as well – designing stress tests requires a high degree of skill and experience – large amounts of knowledge passed down throughout time – stored collected and valued. Not thrown away and discarded with some faddish cheap wisdom. All of the Cathedrals in Europe that stood the test of time were built by people who knew about stress, knowledge and how to value things. They knew too about variability and history and possibilities. They knew about materials, maths, chaos, weather.

Things have to work under low stress – survive and maintain - but also perform under high stress conditions as well – the best operating limits. There are optimal choices on "**Right Sizing**" – investments in energy and mass for things – if is not used enough – it decays – if it is used too much – it wears out. **This is a universal**.
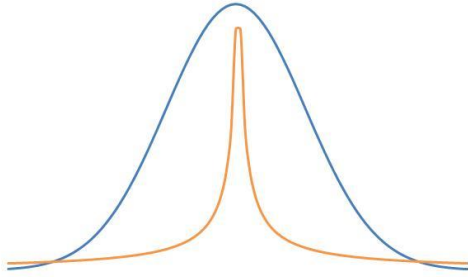
Lately in Australia – the skillsets have been in decline in a number of areas. The shortcuts are being taken – the **knowledge has become obscured** and lost to be **replaced by nonsense** driven from identitarians, feminists and other **faddish extreme idiotologies**. Information is being lost, destroyed and over written. Computer systems fail often – especially in government.

One example occurs to me of differences or ways of examining why humans **display both power laws** (Zipf/benford) and (Guassian/CLT) - human height changes for each human over time (Normal) but Name doesn't (Zipf).

Cities do grow and shrink slowly in size (Zipf/Benford – negative power law) – there is some certainty of mass – **yet** the people within the city are highly energetic individuals (Normal/Gauss/choices/paths/pi/sums divided by observations). **Is rate of change part of the difference?**

Distributions - things that are not forced, truncated, biased, arbitrary – not too many constraints – tend to common distributions using power law functions. Many look Gaussian or like Zipf. https://humanistman.com/wp-content/uploads/2020/07/Optimizing-Between-Extreme-Distributions-Social-Justice.pdf

So the power laws problem is not just me but it is recognized by others.
http://www.gutenberg.org/files/38079/38079-pdf.pdf **LOGARITHMICO-EXPONENTIAL SCALES** in Orders of infinity, the 'Infinitärcalcül' of Paul Du Bois-Reymond :Author(**Godfrey Harold Hardy**) :Year(1910) :Keyword(Planet Development Science)
https://archive.org/details/ordersofinfinity00harduoft/page/n7/mode/2up
http://www.gutenberg.org/ebooks/38079 https://catalog.hathitrust.org/Record/000580153

So G. H. Hardy recognizes Paul Du Bois-Reymond's work as of particular importance and Paul shows great insight into infinity and **SPECIAL PROBLEMS CONNECTED WITH LOGARITHMICO-EXPONENTIAL SCALES**.

But Vi Hart also saw some of this with WAU http://www.science4all.org/article/eulers-identity/

Also too the concept of 'orders of infinity' is discussed – as if there is some relativities to infinity. I think we get too many *approximations, approaching, if we ignore, sufficient and insufficient, convergent, divergent, limits, etc* – in this exploration.

*6. The importance of the logarithmico-exponential scales. It is none the less true that **no one** yet has succeeded in defining a mode of increase genuinely independent of all logarithmico-exponential modes. Our **irregularly increasing functions oscillate, according to a logarithmico-exponential law of oscillation**, between two logarithmico-exponential functions; the functions of §5 were constructed expressly to fill certain gaps in the logarithmico-exponential scales. No function has yet presented itself in analysis the laws of whose increase, in so far as they can be stated at all, cannot be stated, so to say, in logarithmico-exponential terms. It would be natural to expect that the arithmetical functions which occur in the theory of the distribution of primes might give rise to genuinely new modes of increase. But, so far as analysis has gone, the evidence is the other way.*

… It is often necessary to obtain approximations to such functions as f(x+a)/f(x),…

This just looks the same as the general Mandelbrot function to me. The idea of a feedback loop – recursion – in this case exposing the power law idea as well but the issue about divisions and multiplication in general as opposed to a kind of modulo operation. In other words - the break into the infinite decimal dimensions instead of the whole number dimensions. I would **prefer** to put this on the dance floor of the number lines rather than the dance steps of the functions.

Number Problems

It seems I have quite a few problems with numbers – each time I think about it and examine things a bit more closely **I have more questions**. Maybe these are all the questions I failed to ask at school as we moved quickly through each step of learning and learned how to do the habits rather than examining what was really happening.

I learned about modula math at school. It was the first step on the way into division (think cutting up a pie) which was then the step into fractions and ratios. Then multiplication and power laws. I have problems with each one of these steps because assumptions and decisions are being made at each progression of technique which are not fully exposed. At the age of seven I can remember doing the 2 times multiplications in my head repeatedly – learning the process over and over until I found very large numbers – powers of 2 in my head – and all the steps along the way.(I remember I could push it to around a billion in my head – 10 places)

 I started out with an infinite number line. I wanted the infinite number line to be stable and well defined – it is infinite – it starts at zero, it has directions of movement which come from an INITIAL first step and then become a FIXED DIRECTION. https://humanistman.com/wp-content/uploads/2020/05/Questioning-Numbers.pdf. So the **problem with set theory** is trying to **overcome recursion** – initial self reference as illustrated by [Russell's Paradox](). The other problems are always zero and infinity so with the various maths we get attempts to reconcile this with symbols, logic or number theory. I suppose – to some extent - I have tried to move all those problems to the one spot – the infinite number line as I describe it and then use consistent – coherent and cohesive rules on that permanent defined line rather than keep inventing new lines with new properties. I **just** (is there **justice** in number lines?) want the one line and **if the dances along the number line show problems** with the "dance floor" – **then I can re-examine** the dance floor (number lines/plane) rather than the dance steps (the functions and instructions). I might need multiple dance floors but I want to be **really clear** on which one I am using and why. Is this some kind of preferred systems architecture? I prefer to architect maths, language, structures and processes a **CERTAIN** way – Do I think I am **optimizing** for least energy or most sustainability?

Rule 1. Zero and Infinity exist
Rule 2. Each Step is a fixed position on the permanent number line.
Rule 3. The First step away from ZERO towards INFINITY is in a direction
Rule 4. There are 2 directions which are fixed RELATIVE TO the direction set by the initial first step.

The direction answers the questions where have I come from and where am I going to which we generally refer to as + and - PLUS/MINUS and we think of as "progress" or cause/effect.

This is similar to the Erdős discrepancy problem in that we only have two directions and we only have simple add and subtract functions – positioning on the number line. https://www.simonsfoundation.org/event/the-erdos-discrepancy-problem/ - which is really a further exploration and support for the existence of infinity.

I will work with whole numbers first and then move to decimals later – decimals I suspect are represented by infinite number lines at each step (think Y axis crossing the X Axis) – to represent decimal positions – before and trailing positions – (minus, plus). There may be a rule that the X line must be parallel with the original X line – ending up with infinite x lines crossing infinite y lines. – i.e. you only OUGHT to operate on one of the X lines at one dance routine. **Maybe** the general problem of approximations, approaching, etc – are to do with people trying to describe dance routines across two dimensions of infinity at once?

Initial Conditions – Choices - Dimensions

This is the step from nothing to something - One of the big questions. In Maths it is going from ZERO to ONE. The problem is whether ZERO is EXISTENCE or NOT. This is called the initial self-reference problem – the big question – let us just ignore that question because it is circular. Read about it with all the
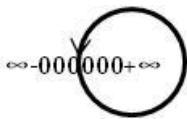
history of philosophy if you want.

I WANT to figure out my number line!!!

How about we take ourselves back to The Seven Bridges problem – Euler. See https://humanistman.com/wp-content/uploads/2020/04/16-Humanism-%E2%80%93-Complexity-Structure.pdf and https://humanistman.com/wp-content/uploads/2020/04/Pattern-Worship-Choice-God.pdf

Falling out of chaos into existence and noticing things – maybe we land on this "bridge" like thing and there are two different end points. Which ever one we go to first becomes 'progress', forward or positive direction and as long as we leave breadcrumbs we can keep our direction aligned? Where do we get attracted to first?

A Single Number line is the main dance floor but what about the NEXT step – the 2nd dimension? A Rule – must proceed to the next higher step or back to the start? These endpoint choices and paths are looking a little "random" in space just with the numbers 1,2,3,4,5 in 2 dimensions. The Pythagorians probably did all this already somewhere.
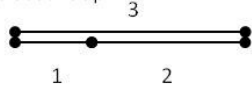
Maybe another rule – 1 and 2 must stay on a straight line? – There must be at least two things in each dimension?

Leaving 1,2,3 on the number line before going into the next dimensions gives the **most choice** and short cuts
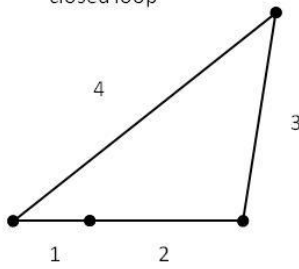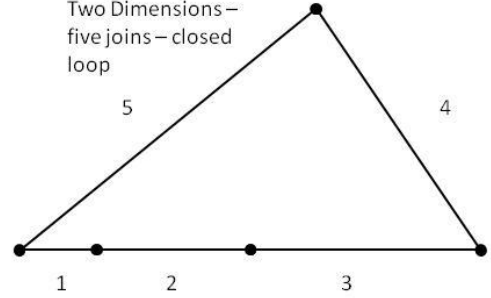
One dimension– one join - open
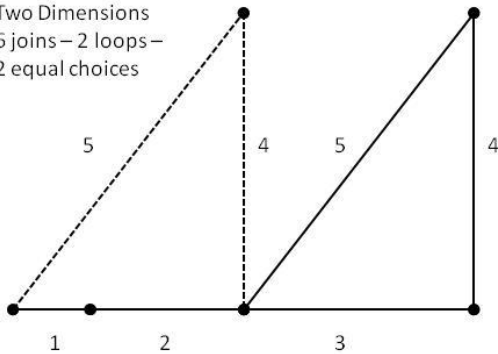
1

1   2
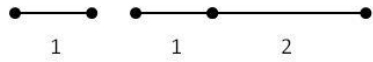
one dimension – three joins – closed loop

3

1   2

Two Dimensions – four joins – closed loop

4

3

1   2

Two Dimensions – five joins – closed loop

5   4

1   2   3

Two Dimensions 6 joins – 2 loops – 2 equal choices

5   4   5   4

1   2   3

Two Dimensions 8 joins – four loops - four choices – 2 equal – 2 unequal

5   4

1   2   3
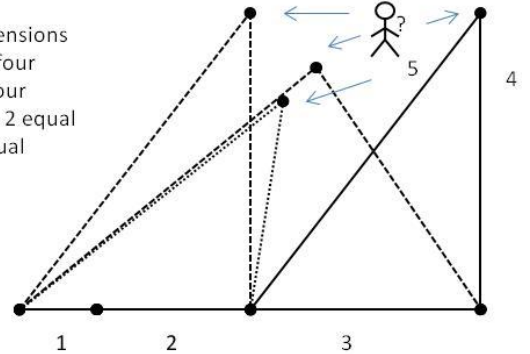
What about short cuts?
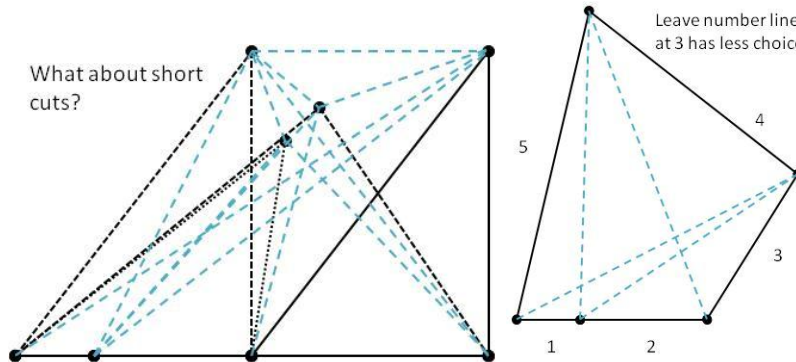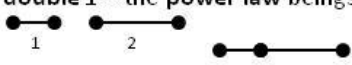
Leave number line at 3 has less choice?

5   4

3

1   2

Two dimensions – 4 on the number line – closed loop 6 connections – 1 choice – 3 short cuts

6   5

1   2   3   4
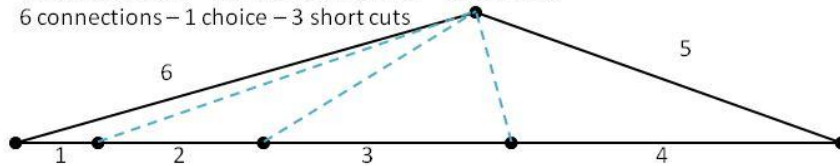
Two dimensions – 5 on the number line – unconnected – incomplete – dead end – prime number

7   6

1   2   3   4   5
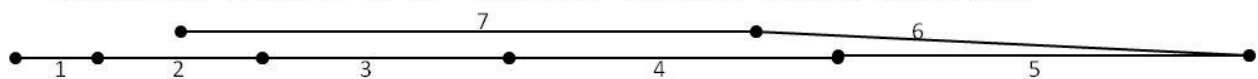
1 & 2 join – 1 is half 2 – 2 is double 1 – the power law beings
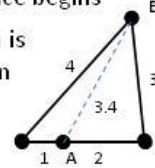
1   2

Single number line

3 joins – direction choice begins

Single number line with direction

4 joins – path choice begins

Another dimension is required to maintain cohesive loop. Integrity.

Going from a to b has equal options and a possible shortcut

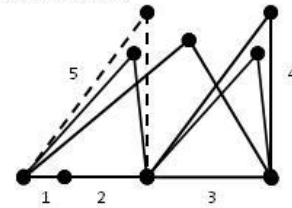Short cut becomes energy optimization strategy 3.4 instead of 5 – 32% saving

5 joins - design choices – approach the circle or easier shortcuts – fixed length paths or learn more shortcuts?
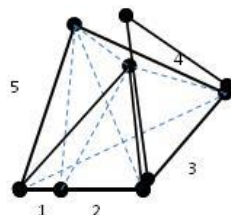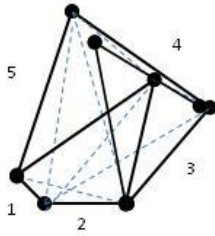
1 & 2 share the same dimension – same number line
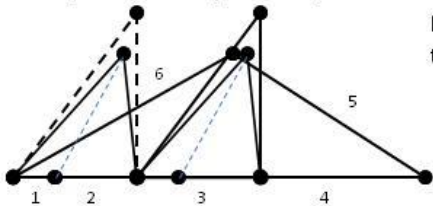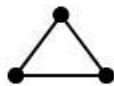
More choice? and reused paths and patterns – less path distance for shortcuts – optimal energy and functions

I am not sure 6 adds any value – it seems to push the 4-5 path away

Maybe 6 is too costly to keep in the loop
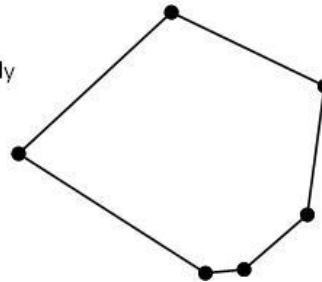
This is the point where tension between order and "equality" arises

Normal functions – explored a little further

Using the same data of normalized height we can see that for the previous normal graphs we can see that I asked the humans to organize themselves along the X axis to exactly one hundred partitions. I then made the Y axis stand for the "Height" of each group – EXCEPT for the taller groups – instead of the Height measure going up it went down on the Y-Axis because it was representing FREQUENCY – the number of humans proportional to the AVERAGE.
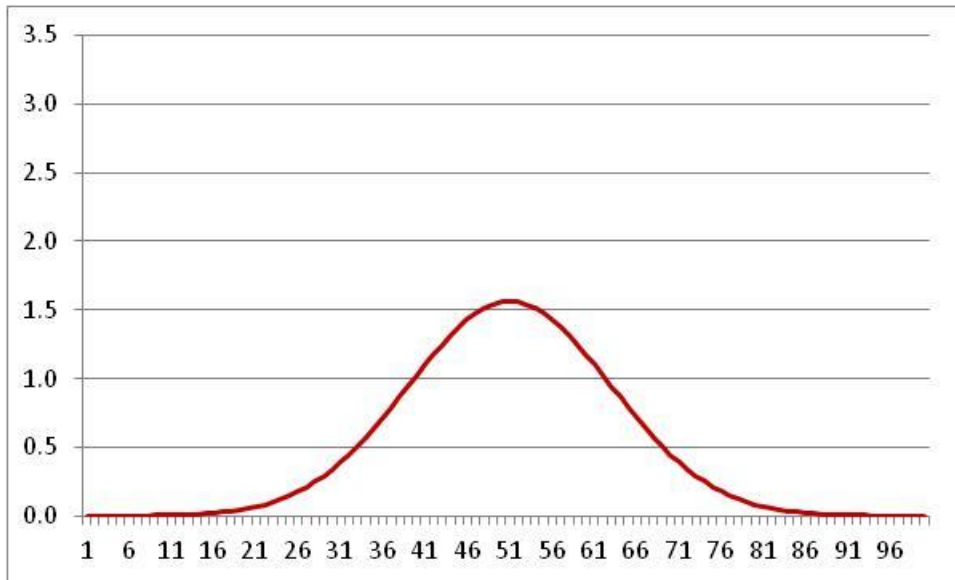
But then I thought what about trying to plot actual height as well against this graph. We note that the **maximum value for the 'height"** the value for the 100 partitions is 3.12467 metres (absurd of course) but never the less – we told them to choose the partition size – the standard yardstick which would produce exactly 100 partitions normally distributed. So we know that the partition size is 0.0312467 metres. So that should look like a straight line.

But then we have this **weird mix of things being displayed** – the height represents all of humanity – the average height which we arbitrarily have decided is **1.56252 metres tall.** We then made the x axis exactly 100 partitions where all the humans are supposed to line up. Then as a special trick we decided to call the middle partition – the group of humans with the average height – we decided to call the Y-Axis – their height – using a fixed number line yardstick as well – EXCEPT we swapped the direction after the middle point. SO WHAT IF we changed the curve so it increased instead of decreased after the middle point? Using Alt_Freq (adding the increments each partition step)

So all of this curve and partition choices seem important too – we have fixed number lines – so the "dance floor" has not changed – just the choice of bounds and rules. I seem to have "scaled" the frequency and the measurement to the same value so I can observe the relationship. There are many techniques for doing this – trying to fit curves to straight lines and trying to understand what deviations from straight lines or curve patterns mean. Most statistical functions are based on these kinds of techniques – many using triangles, pi and squaring techniques to get areas and "distance" from a perceived straight or curved **standard line**. Now let us look at the same graph with only Dots – fixed observations in space and time - not imaginary continuous lines.

2.9 2.8 2.7 2.6 2.5 2.4 2.3 2.2 2.1 2 1.9 1.8 1.7 1.6 1.5 1.4 1.3 1.2 1.1 1

43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83

■ size
● Alt_Freq
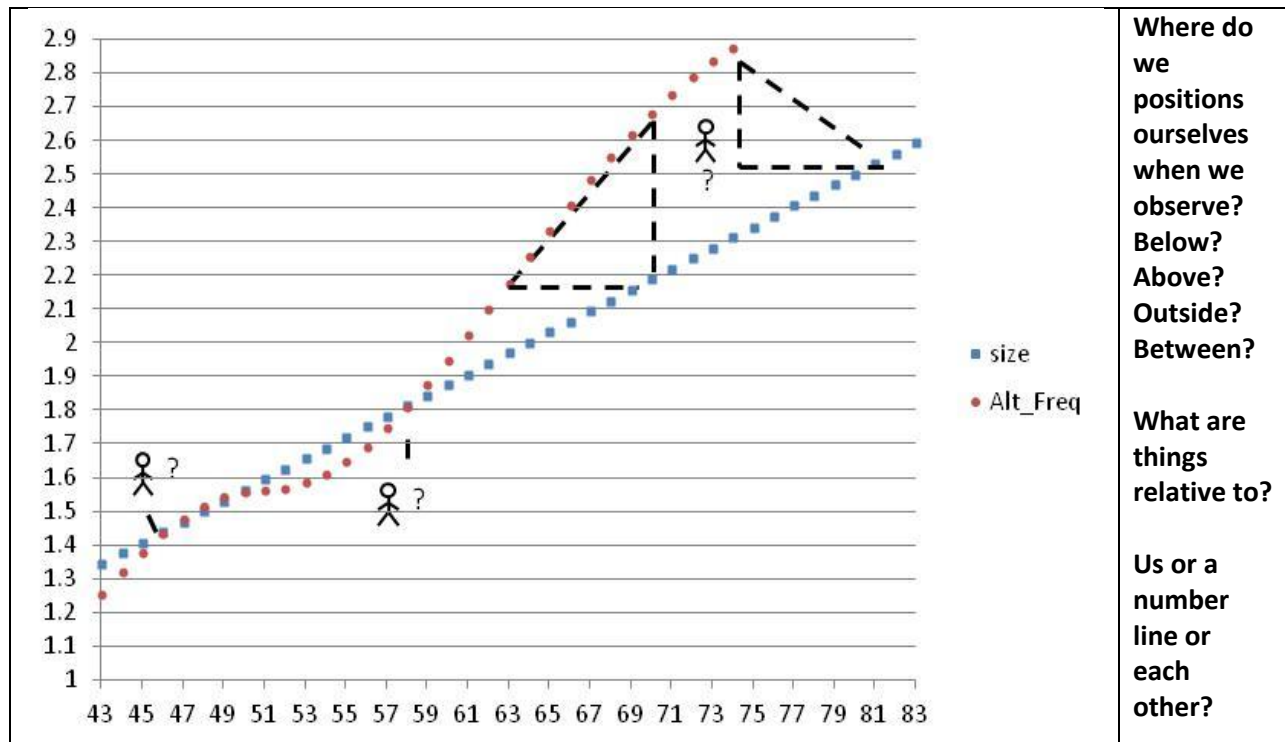
Where do we positions ourselves when we observe? Below? Above? Outside? Between?

What are things relative to?

Us or a number line or each other?

If we saw just this – **what would make us think the red dots and blue dots are connected? Is it just being close together in time and space? Maybe they just happened to be taking random walks and have no relationship to each other at all?** No dot is an accomplice to any other dot's actions – they are all innocent until proven guilty.

All we see is a series of dots – are they just images in time? Do they all exist at the same time? Which dots have any relationship to any other dot and why?

Mandelbrot – Energy – Hypothesis – Exploration – Discovery – Choice - Notice

I examined Mandelbrot and chaos again but I am going to do a lot more work later on that. But I can use Mandelbrot to illustrate the ideas of energy and exploration – hypothesis – and as the idea of noticing – taking note of. **No human understands the Mandelbrot set**. There are many things that humans do not understand at all – things that seems strange – and **there always will be**.

We can think and explore. We can have ideas expressed as algorithms and we can constantly ask questions like what? And what if we chose? Computers can do this very efficiently once we tell them the rules about where to look and how to go about it.

So we can use the idea of the Mandelbrot program – in this case the PYTHON program I adapted below – to go out as the journeyman – the prodigal son – to see the world and come back with a little photo album of his discoveries in the big wide world. Then we can all sit around and have some kind of communal "slide night" or "show and tell" of what is out there in the big wide world. After all – this prodigal son has expended an **enormous amount of energy** to explore and the least we can do is listen to his tale.

So I designed the Explorer to keep records and accounts of the journey – I said – I want to know how much energy and time you have expended on each journey. Keep a log. This will **help** decide/choose which paths to take and which **options to choose** for further journeys. So we have logs and pictures – which are kept and stored so we can examine them and explore them more while he is doing the **busy work** of the journey.

We place ourselves at zero – at the centre of the universe and give ourselves two infinite number lines and two directions by which we can specify how far to explore. The limits. But we also specify the size of the steps the explorer must use – whether they jump whole steps or just little tip toeing smaller steps in between a whole steps.

We are generally thorough – **comprehensive in our scope and coverage**. We want our explorer to examine every single step in every direction and do a task at each step. It is like we are staking out a huge field in the Australian bush and we are going to examine every single square metre for the number of special ants which may live in that patch. But we are specific in the process as well because we say **here is your tool to use** to examine – in contains a little digger of a certain size that when did dig in one spot and find no ants then the next place you dig is determined by the function we give you – take where you dug and add a fixed increment to tell you where to dig next. And as each result comes up again then function determines where to dig next before your are **allowed to take** the next step.

So the tool and repeating digging method is fixed – but also we say we are going to limit the number of times the explorer can dig in each step – we could say dig only once and then move on or dig 1000 times and then move on. **So we are less comprehensive in the digging at each step – the coverage. We have to try to limit the time and find the right levels of abstraction. We are finding some kind of Optimal Focus – because infinity is very large. Why stay digging in one step for the rest of your life?**

Then we use the idea of how many digs did it take to find something? Sometimes things are found very quickly – in just a few digs. Sometimes there is quite a lot digging to find something. The count of the number of times you had to dig to find something becomes a colour we can display on our photo.

Now the digging process in Mandelbrot is really not about *finding* – it is more about *Not finding.* **When you have exceeded the bounds – then move to the next step. So it is really about counting how long it takes to exceed the bounds.** So – if I made the bounds infinite and the number of iterations infinite – then the "bounds" are never escaped. So the main task is to try to understand what the bounds really mean. **No human - as yet - understands the Mandelbrot set.**

I am not happy with the use of complex numbers – specifically the notion of the square root of minus 1 means that pi is also imbedded and hence infinity. It is like the ongoing search for the biggest prime numbers but coming from the other direction.

So even though there are lots of numbers - we can draw a picture with colours which helps us visualize the work that our very comprehensive busy explorer did. And we can focus on the high level numbers- the instructions, rules and bounds we gave to our explorer when he did his job.

I instructed my explorer to go out and explore on my home computer. I used PYTHON code for the job and at no time did my computer use more than 15% of the CPU capacity. Memory was required to remember things (Breadcrumbs – you have to know where you are and where you have been) and there are limits which you can notice. Now we can talk about threads and parallelism – i.e. the idea that we have multiple explorers all operating at once at different patches doing their patch. Indeed nothing lends itself to parallelism more than this type of simple function. You will note that this opens up the whole notion of process design and even social theories regarding agriculture, supply chains, logistics, public services, transport, mazes, puzzle solving, optimization, etc. You will also notice the concept that instead of each explorer following strict instructions – maybe they innovate and try different rules and techniques within each patch? **DON'T LET THE CERTAIN SOCIAL JUSTICE ENGINEERS NEAR THIS.**

This is why understanding simple models like Mandelbrot can be intriguing to humans. There is so much to explore and discover – see **Numberphile** on internet https://www.numberphile.com/ – youtube channel. https://www.youtube.com/user/numberphile Also see 5's trick https://www.youtube.com/watch?v=IMY2_yzDm9I with 5 and pi – unexpected pi turns up take 1 and divide any number of 5's. Then take the sin of that and the result looks like the pi digits to a different power. https://www.youtube.com/watch?v=FFftmWSzgmk What's so special about the Mandelbrot Set? – Numberphile Ben Sparks https://www.geogebra.org/m/Npd3kBKn

In my thinking - I am trying to think at a level that paid professionals have devoted their career to. Is that a problem? Should white shirts and expertise prevail or do we all need to understand? **Trust me I am a feminist extremist and all moral authority resides in me?**
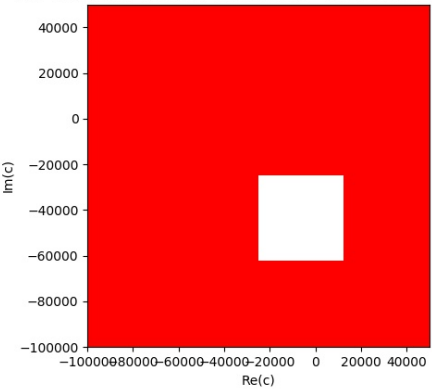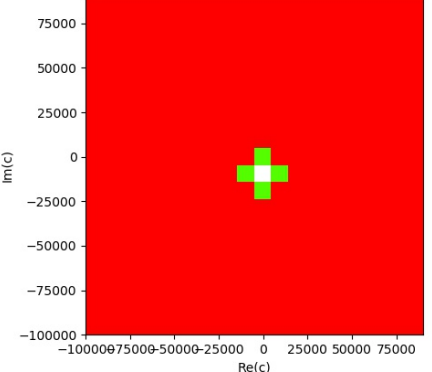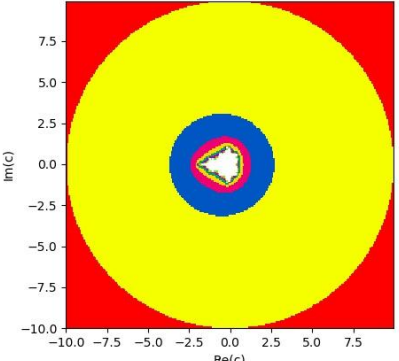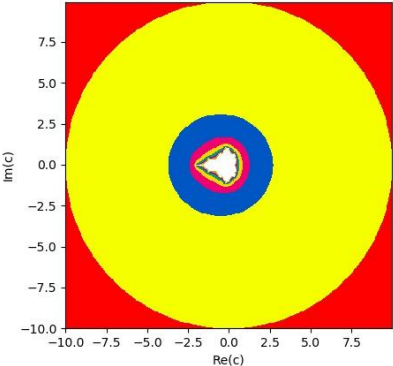
Mandelbrot Explorations
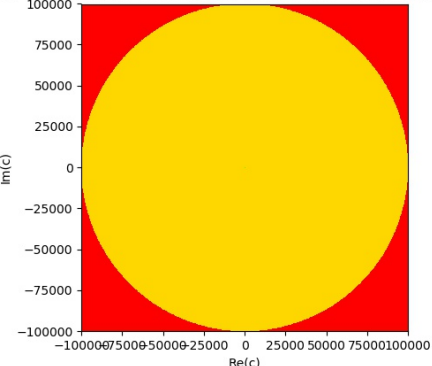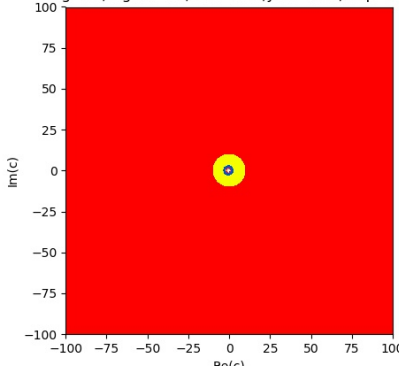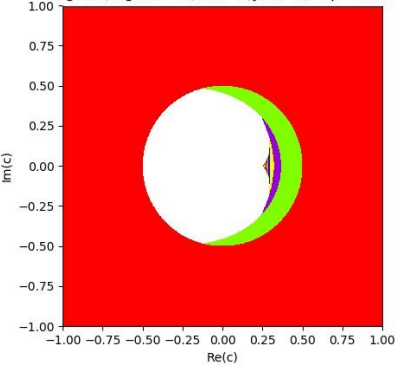
I played around with my program. It is sub optimal – I did not care about speed or neatness. It was pure play and discovery. "Mistakes" were made - some programs did not run because the parameters caused problems – but I did not investigate each one too much – I just gave them a quick look and keep on collecting results so I could examine a set of information – to see if there were trends or patterns. I was concerned about the data, information and conceptual exploration. I make mistakes all the time.
I created some variables using the loop counts and elapsed time.
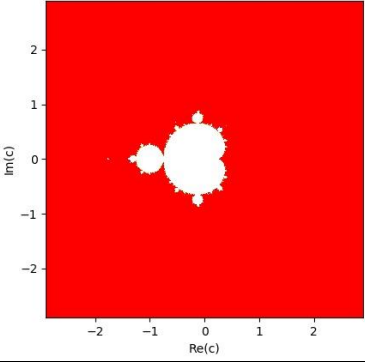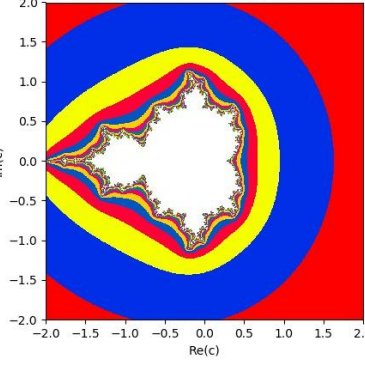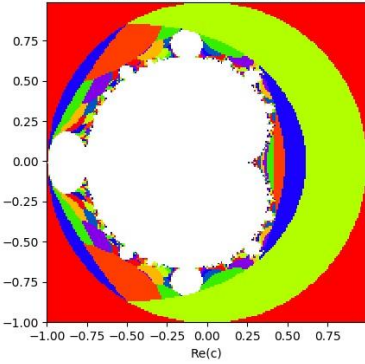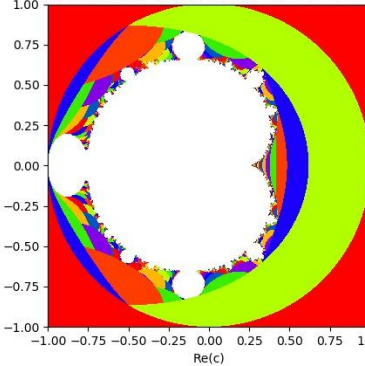
I also tried to **express the Energy required in human terms** – I tried to **calculate effort** in terms of a Day, year or lifetime **of a human** – giving them 30% rest for sleep. Travelling distances took more energy over bigger distances (loopout and step) – digging took effort also (loopin). I ranged the effort from powers – i.e. 1 is 1 but 10 is 2, 100 is 3, .01 is 2, .001 is 3 – each step away (power) from one was 1 added to the multiplier because there is more effort required the further you get away from the 1. A "distance" cost.

I also subjectively coded each picture produced from zero to 5 for NOTICE, COMPREHENSIVE and COHESIVE – which I could then sum and compare to EFFORT. So instead of seeing this as just numbers and a computer we can imagine a little human explorer out on a journey of discovery. I added some basic numbers for the explorer – to start the exploration (take instructions, get organized and ready) and to return and report.

These are all images from the Mandlebrot formula centered on zero, zero - See program for more info.

Mandelbrot loopout=16,loopin=24,seconds=0.1463 mg=10,rnglim=10,xlim=100000,ylim=100000,step=50000.0	This had high Utility. Not a lot of effort but really wide range +- 100,000 distance units (say metres) and steps (50,000 metres at a time) and just a little digging (rng=10).
	Produced something which seems really noticeable.
	It seems comprehensive and cohesive in a way as well. Notice = 3, Comprehensive = 3, Coherent= 3, U = 156.4285
Mandelbrot loopout=400,loopin=502,seconds=0.1402 mg=100,rnglim=10000,xlim=100000,ylim=100000,step=10000.0	This seems interesting and with only 502 inner loops.
	Notice=5 Comprehensive =3 Coherent=3 Utility= 1149 Total Days Work = 3
	Kind of like a quick broad brush exploration of a large area. Maybe this is the truth?
Mandelbrot loopout=56169,loopin=108389,seconds=0.3239 mg=10,rnglim=10,xlim=10,ylim=10,step=0.0845	Twice as many inner loops to out loops but we see more changes – it's a little fuzzy but intriguing.
	Notice=5 Comprehensive =3 Coherent=3 Utility= 946 Total Days Work = 4

Mandelbrot loopout=160000,loopin=309149,seconds=0.6596
mg=10,rnglim=10,xlim=10,ylim=10,step=0.05

Twice as many inner loops to out loops but we see more changes – it's a little less fuzzy but still intriguing. A bit sharper – more granular.

Notice=5
Comprehensive =4
Coherent=3
Utility= 881
Total Days Work = 5

Mandelbrot loopout=1000000,loopin=1795352,seconds=3.5327
mg=10000,rnglim=100000,xlim=100000,ylim=100000,step=200.0

This seems highly comprehensive and coherent – it's a simple circle – surely nature prefers simplicity – this must be the correct view?
Notice=5
Comprehensive =5
Coherent=5
Utility= 324
Total Days Work = 17
We did a lot more work – we worked really hard on this – it must be right?

Mandelbrot loopout=4000000,loopin=4037294,seconds=11.1445
mg=10,rnglim=10,xlim=100,ylim=100,step=0.1

There is something in the distance – a fault of the lens?

Notice=2
Comprehensive =2
Coherent=2
Utility= 559
Total Days Work = 4

Mandelbrot loopout=1000000,loopin=5258355,seconds=4.8686
mg=30,rnglim=0.5,xlim=1,ylim=1,step=0.002

Zoomed in a little closer. 23 days work.

Notice=5
Comprehensive =2
Coherent=2
Utility= 140
Total Days Work = 23

Mandelbrot loopout=2102500,loopin=954207765,seconds=474.8107
mg=10000,rnglim=10000,xlim=2.9,ylim=2.9,step=0.004

Well this must be right. We have done a lot of work – over 6 man years not just a few days – nearly a billion inner loops!

Notice=5
Comprehensive =4
Coherent=3
Utility= 12 (low utility)
Total Days Work = 2190

Mandelbrot loopout=1000000,loopin=6242810,seconds=5.6142
mg=20,rnglim=20,xlim=2,ylim=2,step=0.004

We have smooth and rough and gradual change – maybe now we understand? But it only took 14 days?

Notice=5
Comprehensive =4
Coherent=4
Utility= 192
Total Days Work = 14

Mandelbrot loopout=40000,loopin=480302,seconds=0.4762
mg=30,rnglim=1,xlim=1,ylim=1,step=0.01

Well this is a bit neater – at least there is a circle and I like circles. It is one of my biases. Is this better than the one above? I only worked 5 days – how can I keep my job?

Notice=5
Comprehensive =4
Coherent=3
Utility= 881
Total Days Work = 5

Mandelbrot loopout=400000000,loopin=4800632114,seconds=3356.0645
mg=30,rnglim=1,xlim=1,ylim=1,step=0.0001

I followed the same technique above but I did much more work. Nearly 5 billion digs!!! Yes I know it looks at lot like the one above – hardly different at all – a little more coherent – but it was worth it!
Notice=5
Comprehensive =4
Coherent=4
Utility= 0
Total Days Work = 14930

40 Years work – I kept my job!
And met lots of people at digging conferences.

Exploration is high cost and uncertain. Children playing learn un hindered – they discover, learn and build new techniques and algorithms on the fly – they change things while they are "out in the field". Don't abuse explorers or sit in your certain smug idiotological biases when you meet an explorer.

Recent Investigations

Fairly wide ranging on old philosophy and history – looking at questions, patterns – revisited Hannah Arendt's repeated messages of **Plurality** and **Freedom** – which seemed to be addressed at the issue of continued tyranny and totalitarian binary extremist tendencies and excessive freedom or sameness. It seems she recognized the natural tensions of opposite demanding concepts which seemed to have developed in the philosophical world around the time of Empedocles.

Also quickly revisited numbers – and a quick look at Mandelbrot and numberphile.

Recent Documents

A handbook of the history of philosophy : for the use of students :Author(**E Belfort Bax**) :Year(1886) :Keyword(Group Development Philosophy) https://catalog.hathitrust.org/Record/100189739 https://archive.org/details/handbookofhistor00baxe https://archive.org/details/in.ernet.dli.2015.213352

Feminism in extremis :Author(**E Belfort Bax**) :Year(1902) :Keyword(Group Development Feminism) https://marxists.catbull.com/archive/bax/1902/12/feminism.htm https://en.wikipedia.org/wiki/Ernest_Belfort_Bax

A History of Philosophy in Epitome :Author(**Albert Schwegler**) :Year(1864) :Keyword(Group Development Philosophy) http://www.gutenberg.org/ebooks/41412 https://archive.org/details/historyofphiloso00schwiala

Upanishads :Author(Many) :Year(-1000) :Keyword(Group Development Philosophy) https://www.ancient.eu/Upanishads/ http://yogananda.com.au/upa/Upanishads01.html http://vedicheritage.gov.in/upanishads/

Many :Author(**Archimedes**) :Year(-230) :Keyword(Planet Development Science) http://www.gutenberg.org/ebooks/7825 https://archive.org/details/worksofarchimede00arch/page/n9/mode/2up http://www.gutenberg.org/ebooks/7825

Dialogues Concerning Two New Sciences :Author(**Galileo Galilei**) :Year(1638) :Keyword(Planet Development Science) https://oll.libertyfund.org/titles/galilei-dialogues-concerning-two-new-sciences https://archive.org/details/dialoguesconcern00galiuoft https://en.wikipedia.org/wiki/Two_New_Sciences

Orders of infinity, the 'Infinitärcalcül' of Paul Du Bois-Reymond :Author(**Godfrey Harold Hardy**) :Year(1910) :Keyword(Planet Development Science)

https://archive.org/details/ordersofinfinity00harduoft/page/n7/mode/2up
http://www.gutenberg.org/ebooks/38079 https://catalog.hathitrust.org/Record/000580153

Recent Messages

*'Men in the **plural**, that is, men in so far as they live and move and act in this world, can experience meaningfulness **only because they can talk with and make sense to each other and to themselves**.' :Author(**Hannah Arendt**) :Year(1958) :Source Document(**The Human Condition** Page 4) :Keyword(Humanism Communication Group)*
http://sduk.us/afterwork/arendt_the_human_condition.pdf
https://archive.org/details/ArendtHannahTheHumanCondition2nd1998_201703

*'**Plurality** is the condition of human action because **we are all the same, that is, human**, in such a way that **nobody is ever the same as anyone else who ever lived, lives, or will live**' :Author(**Hannah Arendt**) :Year(1958) :Source Document(**The Human Condition** Page 8) :Keyword(Politics Plural Group)*
http://sduk.us/afterwork/arendt_the_human_condition.pdf
https://archive.org/details/ArendtHannahTheHumanCondition2nd1998_201703

*'... can prevent the **destruction of the common world**,...This can happen under conditions of radical isolation, where **nobody can any longer agree with anybody else**, as is usually the case in **tyrannies.** But it may also happen under conditions of **mass society or mass hysteria**, where we see all people suddenly behave as though they were members of one family, each **multiplying and prolonging the perspective** of his neighbor.' :Author(**Hannah Arendt**) :Year(1958) :Source Document(**The Human Condition** Page 58) :Keyword(Politics Plural Group) http://sduk.us/afterwork/arendt_the_human_condition.pdf*
https://archive.org/details/ArendtHannahTheHumanCondition2nd1998_201703

*'Human plurality, the basic condition of both action and speech, has the twofold character of **equality and distinction**. If men were not equal, they could neither understand each other and those who came before them nor plan for the future and foresee the needs of those who will come after them. If men were not distinct, each human being distinguished from any other who is, was, or will ever be, they would need neither speech nor action to make themselves understood.' :Author(**Hannah Arendt**) :Year(1958) :Source Document(**The Human Condition** Page 175) :Keyword(Politics Communication Group) http://sduk.us/afterwork/arendt_the_human_condition.pdf*
https://archive.org/details/ArendtHannahTheHumanCondition2nd1998_201703

*'..or to put it another way, whether the **capacity for action** does not harbor within itself certain **potentialities** which **enable it to survive** the **disabilities of non-sovereignty**.' :Author(**Hannah Arendt**) :Year(1958) :Source Document(**The Human Condition** Page 236) :Keyword(Choice Mistakes Group)*
http://sduk.us/afterwork/arendt_the_human_condition.pdf
https://archive.org/details/ArendtHannahTheHumanCondition2nd1998_201703

*A History of Philosophy in Epitome :Author(**Albert Schwegler**) :Year(1864) :Keyword(Group Development Philosophy) http://www.gutenberg.org/ebooks/41412*
https://archive.org/details/historyofphiloso00schwiala
*The Two Powers.—Whence now can arise any becoming, if in matter itself there is found no principle to account for the change? Since **Empedocles** did not, like the Eleatics, deny that there was change, nor yet, like Heraclitus, introduce it in his matter, as an indwelling principle, so there was no other course left him but to **place, by the side of his matter, a moving power**. The opposition of the one and the many which*

had been set up by his predecessors, and which demanded an explanation, led him to ascribe to this moving power, two originally diverse directions, viz.: **repulsion and attraction**. The separation of the one into the many, and the union again of the many into the one, had indicated an opposition of powers which Heraclitus had already recognized. While now Parmenides starting from the one had made love as his principle, and Heraclitus starting from the many had made strife as his, Empedocles combines the two as the principle of his philosophy. The difficulty is, he has not sufficiently limited in respect to one another, the sphere of operation of these two directions of his power. Although, to **friendship belonged peculiarly the attractive, and to strife the repelling function**, yet does Empedocles, on the other hand, suffer his strife to have in the formation of the world a unifying, and his friendship a dividing effect. In fact, the *complete separation* of a dividing and unifying power in the movement of the becoming, is an *unmaintainable abstraction*....

1. Relation of the **Sophistic Philosophy** to the Anaxagorean Principle.—Anaxagoras had formed the conception of mind, and in this had **recognized thought as a power above the objective world**. Upon this newly conquered field the Sophistic philosophy now began its gambols, and with childish wantonness delighted itself in setting at work this power, and in destroying, by means of a subjective dialectic, all objective determinations. The **Sophistic philosophy**—though of far more significance from its relation to the culture of the age than from its philosophy—had for its starting principle the breach which Anaxagoras had commenced between the subjective and the objective,—the **Ego and the external world**. The subject, after recognizing himself as something higher than the objective world, and especially as something above the laws of the state, above custom and religious tradition and the popular faith, in the next **place attempted to prescribe laws for this objective world, and instead of beholding in it the historical manifestation of reason, he looked upon it only as an exanimated matter, upon which he might exercise his will**....

1. The Christian Idea.—The Grecian intellectual life at the time of its fairest bloom, was characterized by the immediate sacrifice of the subject to the object (nature, the state, &c.): the full breach between the two, between spirit and nature, had not [Pg 158] yet arrived; the subject had not yet so far reflected upon himself that he could apprehend his own absolute worth. **This breach came in, with the decay of Grecian life, in the time after Alexander the Great.** As the objective world lost its influence, the thinking consciousness turned back upon itself; but even in this very process, the bridge between subject and object was broken down. The **self-consciousness had not yet become sufficiently absorbed in itself to look upon the true, the divine, in any other light than as separate from itself, and belonging to an opposite world**; while a feeling of pain, of unsatisfied desire, took the place of that **fair unity between spirit and nature** which had been peculiar to the better periods of the Grecian civil and artistic life. New Platonism, by its overleaping speculation, and, practically, by its mortification of the sense, made a last and despairing attempt to overcome this separation, or to bury itself within it, by bringing the two sides forcibly together. The attempt was in vain, and the old philosophy, totally exhausted, came to its end. Dualism is therefore the rock on which it split. This problem, thus left without a solution, Christianity took up. It assumed for its principle the idea which the ancient thinking had not known how to carry out, affirming that the separation between God and man might be overcome, and that the human and the divine could be united in one. The speculative fundamental idea of Christianity is, that God has become incarnate, and this had its practical exhibition (for Christianity was a practical religion) in the idea of the atonement and the demand of the new birth, i. e. **the positive purifying of the sense from its corruptions, instead of holding it, as asceticism, in a merely negative relation**.

From the introduction of Christianity, monism has been the character and the fundamental tendency of the whole modern philosophy. In fact, the new philosophy started from the very point at which the old had stood still. The turning of the self-consciousness upon itself, which was the standpoint of the post-

Aristotelian speculations, forms in Descartes the starting-point of the new philosophy, whose whole course has been the reconciling of that opposition beyond which the old could not pass.

2. Scholasticism.—It very early resulted that Christianity came in contact with the cotemporaneous philosophy, especially with Platonism. This arose first with the apologists of the second century, and the fathers of the Alexandrian church. Subsequently, in the ninth century, Scotus Erigena made an attempt to combine Christianity with New Platonism, though it was not till the second half of the Middle Ages, from the eleventh century, that there was developed any thing that might be properly termed a Christian philosophy. This was the so-called Scholasticism.

*The effort of Scholasticism was to **mediate between the dogma of religion and the reflecting self-consciousness; to reconcile faith and knowledge.***

*'The action and reaction of Dogmatism and Scepticism is a **constant phenomenon in the history** of the higher thought of mankind, the thought into which the speculative element enters. If an **uncritical Dogmatism is a monstrosity, a constructionless Criticism** is an absurdity. The difference is that an uncritical Dogmatism may have an appearance of stability sufficient to deceive the ignorant and unwary, but mere **empty Scepticism**, which is the outcome of a constructionless Criticism, wears an air of unreality on its face and is adopted, for the most part, **as a pose.**' :Author(**E Belfort Bax**) :Year(1906) :Source Document(**Essays in socialism; new and old Criticism and Hypercriticism**) :Keyword(Development Debate Group) https://www.marxists.org/archive/bax/1907/essays/index.htm*

https://www.marxists.org/archive/bax/1907/essays/22-monstrous.htm
The "Monstrous Regiment" of Womanhood
*All parties, all sorts and conditions of politicians, from the fashionable and Conservative west-end philanthropist to the Radical working-men's clubbite, seem (or seemed until lately) to have come to an unanimous conclusion on one point – to wit, that the **female sex is grievously groaning under the weight of male oppression**. Editors of newspapers, keen to scent out every drift of public fancy with the object of regaling their "constant readers" with what is tickling to their palates, will greedily print, in prominent positions and in large type letters expressive of the view in question, whilst they will boycott or, at best, publish in obscure corners any communication that ventures to criticise the popular theory or that adduces facts that tell against it. Were I to pen an impassioned diatribe, tending to prove the villainy of man towards woman, and painting in glowing terms the poor, weak victim of his despotism, my description would be received with sympathetic approval. Not so, I fear, my simple statement of the unvarnished truth.*

*Now, I think it will be admitted, as a general principle at least, by all parties in the present day, that **equality before the law**, as it is termed, is the first condition of liberty, and that where you have respect of persons in this connection, you are destitute of the primal elements of personal freedom. According to the popular theory just indicated, respecting the position of women, we might expect to find every law framed in such a way that women should invariably come off less than second best in any dispute with men: in short, that law would be enacted and administered solely to the advantage of men. **Is this so in actual fact?***

*Let us first take our existing marriage laws. We shall find that in England whilst the **woman is practically relieved of all responsibility for the maintenance of her husband**, he can be compelled by poor law to maintain her under a penalty of three months' hard labour for leaving her without provision, should she choose to apply to the parish. On anything that by latitude of interpretation can be deemed ill-usage*

or neglect, she can, if rich, obtain judicial separation with alimony from the divorce court, or, if poor, a **magisterial order for separation with weekly maintenance from the police court***. Jackson versus Jackson has decided that a* **wife can leave her husband at will,** *that he cannot raise a finger to compel her to remain with him or to come back, neither can she be imprisoned for contempt of court for refusing to obey an order for restitution of conjugal rights; in other words, it is decided that the contract of marriage is the single case of a contract which* **one of the contracting parties is at liberty to break without reason given, and without compensating the other party***. But it is well to remember that it is* **only one of the parties that has this liberty***, for* **Bunhill versus Bunhill gives the wife the right to follow an absconding husband and break into his house, if necessary, for the purpose of compelling cohabitation***. He, on his part, is precluded by the decision in* **Weldon versus Weldon** *from obtaining* **restitution of conjugal rights even by way of action; he is liable, however, for his wife's postnuptial torts, so that she has only to slander or libel some person without his knowledge or consent, and whilst she comes off scot free, even though possessed of property, the husband can be cast in damages.** *Trespass to land, trespass to goods, injuries done through negligence, all these actions coming under the legal definition of "torts,"* **render the husband liable, no matter what private wealth the wife may possess.**

Now, let us take the single instance on the opposite side – the perennial grievance of the woman's-righter which is deemed sufficient, apparently, to swallow up everything else. How often do we hear it said in tones of intense indignation, as conclusively proving the vile tyranny of man, that while the husband can obtain a divorce from his wife on the ground of adultery alone, the wife, in order to obtain such relief, has to prove an additional charge of cruelty. I think that there is no greater evidence of the bogus character of the sentiment talked on this question than the fact that this trumpery argument is the only one its votaries can adduce. Apart from the circumstance, well known to students of the Divorce Court, that it is the uniform practice of judges to **twist every act of impoliteness or trivial ill-temper on the part of the husband into "legal cruelty,"** *the reason of the distinction must be obvious to any one not blinded by his or her prepossessions on the subject. I am certainly the last to advocate any binding on either side, and would gladly* **see divorce obtainable by the properly formulated demand of either party,** *but it is quite clear that under our present conditions of society with its bases of individual property-holding, whilst it would be grossly unfair to continue to enforce marital responsibility on a man for a woman* **whose offspring was of doubtful paternity***, the grievance on the side of the woman against the man in case of adultery has* **no more than a sentimental significance***: Even then, when the* **case becomes gross, as where a strange woman is introduced under the common roof, the wife can obtain relief on the elastic plea of technical or legal "cruelty."** *One would think that if the bewailers of the* **pretended oppression of woman** *do not want to make themselves ridiculous, they would drop this preposterously* **"manufactured" grievance***, since it is obvious that the distinction made in this case is entirely owing to the economical liabilities of the husband from which the wife has the good luck to be exempt. Looking at the matter all round, I think, then, no one can deny that the* **existing marriage laws are simply a "plant" to enable the woman to swindle and oppress the man.** *[1]*

Turning now from the civil law to the criminal law, we find a similar – or even greater – disparity of treatment. From the beginning of the nineteenth century, of course, whilst flogging, the tread-mill, and other **brutal forms of punishment have been retained for male offenders,** *they have been* **abolished for females,** *so that though a man may be subjected to torture and degradation for mere breaches of prison discipline, a* **woman is exempted from them for the most heinous crimes***. As happened a* **few years ago in Ireland, a woman may torture her children to death and there is no outcry for the lash, yet surely if you do not flog the female child-torturer you have no right to flog any other human being.** *The sex-favouritism of modern penal law is made more conspicuous by the ever-recurring howl of the "base,*

bloody, and brutal" grand juror for the lash to be applied to new classes of offences (for men of course). But the most atrocious instances of sex-privilege occur in connection with the Criminal Law Amendment Act of 1885. Whilst the abduction of a girl under eighteen, or the seduction of one under sixteen, involves the man concerned in serious penalties, the girl or the woman gets off scot free, and this even though she may have been the inciting party. This is carried to the extent that a young boy of fourteen may be himself induced to commit a sexual offence by a girl just under sixteen – **that is to say, nearly two years his senior – and he can be sentenced to imprisonment, followed by several years in a reformatory, whilst the law holds the inciting girl absolutely guiltless.** The villainy of such an enactment is unparalleled, more particularly when one considers that a girl approaching sixteen is often practically a woman, whilst a boy of fourteen is seldom more than a child. ….

Recent People

Diogenes Laertius :Year(180) :Keyword(History) https://en.wikipedia.org/wiki/Diogenes_La%C3%ABrtius http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0258 https://iep.utm.edu/dioglaer/

George Henry Lewes :Year(1817-1878) :Keyword(Philosophy) https://onlinebooks.library.upenn.edu/webbin/book//lookupname?key=Lewes%2C%20George%20Henry%2C%201817%2D1878 https://en.wikipedia.org/wiki/George_Henry_Lewes http://www.gutenberg.org/ebooks/author/3529

Vitold Belevitch :Year(1921-1999) :Keyword(Science) https://en.wikipedia.org/wiki/Vitold_Belevitch https://en.wikipedia.org/wiki/Belevitch%27s_theorem https://www.scribd.com/document/415054919/Classical-Network-Theory-Vitold-Belevitch

Holly Krieger :Keyword(Numbers) https://www.dpmms.cam.ac.uk/~hk439/ https://www.youtube.com/user/numberphile https://www.lms.ac.uk/sites/lms.ac.uk/files/files/Krieger_Whitehead_citation.pdf

References

1. *Forbes - Editors' Pick|124,131 views|Jan 21, 2020,02:00am EST How Far Is It To The Edge Of The Universe? Starts With A Bang* **Ethan Siegel** *Senior Contributor Starts With A Bang Contributor Group Science The Universe is out there, waiting for you to discover it. https://www.forbes.com/sites/startswithabang/2020/01/21/how-far-is-it-to-the-edge-of-the-universe/#3879d9fc55a3 When we take all of the available data together, we arrive at a unique value for everything together, including the distance to the observable cosmic horizon: 46.1 billion light-years. 10 +26 metres*
2. *Forbes - 47,751 views|Jun 26, 2019,02:00am EDT What Is The Smallest Possible Distance In The Universe? Starts With A Bang* **Ethan Siegel** *Senior Contributor Starts With A Bang Contributor Group Science The Universe is out there, waiting for you to discover it.https://www.forbes.com/sites/startswithabang/2019/06/26/what-is-the-smallest-possible-distance-in-the-universe/#4a930f8848a1 10 -35 metres – Planck length*
3. *Human Genome project https://www.genome.gov/genetics-glossary/Base-Pair*
4. *Human Genome - Wikipedia https://en.wikipedia.org/wiki/Human_genome*

5. Chromosome https://en.wikipedia.org/wiki/Chromosome Human cells have 23 pairs of chromosomes (22 pairs of autosomes and one pair of sex chromosomes), giving a total of 46 per cell

6. https://ghr.nlm.nih.gov/primer/basics/gene In humans, genes vary in size from a few hundred DNA bases to more than 2 million bases. The Human Genome Project estimated that humans have between 20,000 and 25,000 genes.

7. https://www.ncbi.nlm.nih.gov/books/NBK22266/

8. https://www.genome.gov/about-genomics/fact-sheets/Chromosomes-Fact-Sheet The unique structure of chromosomes keeps DNA tightly wrapped around spool-like proteins, called histones. Without such packaging, DNA molecules would be too long to fit inside cells. For example, if all of the DNA molecules in a single human cell were unwound from their histones and placed end-to-end, they would stretch **6 feet**.

9. Genome Data Viewer https://www.ncbi.nlm.nih.gov/genome/gdv/

10. Gershoni, M., Pietrokovski, S. The landscape of sex-differential transcriptome and its consequent selection in human adults. BMC Biol 15, 7 (2017). https://doi.org/10.1186/s12915-017-0352-z https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-017-0352-z

11. Biology of Sex Differences - Sex Differences https://bsd.biomedcentral.com/

12. Max Planck Institute For Chemical Biology https://www.ice.mpg.de/ext/index.php?id=1641 **How does cooperation evolve?** July 23, 2020   No. 10/2020 (218) Researchers unravel why organisms frequently help each other In nature, organisms often support each other in order to gain an advantage. However, this kind of cooperation contradicts the theory of evolution proposed by Charles Darwin: Why would organisms invest valuable resources to help others? Instead, they should rather use them for themselves, in order to win the evolutionary competition with other species. A new study led by Christian Kost from the University of Osnabrück **now solved this puzzle**. The research project was performed in collaboration with the Max Planck Institute for Chemical Ecology (Current Biology, July 2020, DOI 10.1016/j.cub.2020.06.100). The research team led by Christian Kost used bacteria as a model system to study the **evolution of mutual cooperation**. At the beginning of the experiment, two bacterial strains could only grow when they provided each other with essential amino acids. Over the course of several generations, however, the initial exchange of metabolic byproducts developed into a real cooperation: both partners increased the production of the exchanged amino acids in order to benefit their respective partner. **Even though the increased amino acid production enhanced growth when both partners were present, it was extremely costly when individual bacterial strains had to grow without their partner.** The observed changes were caused by the fact that individual bacterial cells had assembled into multicellular clusters. In these cell groups, **cooperative mutants were rewarded. The more resources they invested in the growth of other cells, the more nutrients they received in return from their partners**."This kind of feedback represents a previously unknown mechanism, which promotes the evolution of cooperative interactions between two different organisms," says Christian Kost, leader of the study. Although the study was performed with bacteria in a test tube, the mechanism discovered can most likely explain the evolution of cooperation in many different ecological interactions. Original Publication: Preussger, D., Giri, S., Muhsal, L., Oña, L., Kost, C. (2020). Reciprocal fitness

feedbacks promote the evolution of mutualistic cooperation. Current Biology, DOI: 10.1016/j.cub.2020.06.100 https://doi.org/10.1016/j.cub.2020.06.100

13. https://en.wikipedia.org/wiki/Chimpanzee_genome_project *Differences between individual humans and common chimpanzees are estimated to be about 10 times the typical difference between pairs of humans* https://www.genome.gov/Pages/Research/DIR/Chimp_Analysis.pdf

14. *Differences between men and women are more than the sum of their genes July 31, 2015 6.15am AES Jenny Graves Jenny Graves is a Friend of The Conversation.* **Distinguished** *Professor of Genetics, La Trobe University* https://theconversation.com/differences-between-men-and-women-are-more-than-the-sum-of-their-genes-39490

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17. *Banavar JR, Moses ME, Brown JH, et al.* **A general basis for quarter-power scaling in animals**. *Proc Natl Acad Sci U S A. 2010;107(36):15816-15820. doi:10.1073/pnas.1009974107* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2936637/

18. https://en.wikipedia.org/wiki/Schwarzschild_radius

19. *January 12, 1999 Of Mice and Elephants: A Matter of Scale Graphics From the Small to the Huge, how body size and energy consumption differ Like an Ant, Only Bigger?, strenth vs. proportion By GEORGE JOHNSON* http://hep.ucsb.edu/courses/ph6b_99/0111299sci-scaling.html

20. *Physicists solve 35-year-old mystery about quarks Number of proton-neutron pairs in an atom determines how fast particles move Date: March 4, 2019 Source: American Friends of Tel Aviv University Summary: Physicists now know why quarks, the building blocks of the universe,* **move more slowly inside atomic nuclei**, *solving a 35-year-old-mystery.* https://www.sciencedaily.com/releases/2019/03/190304121449.htm *The researchers discovered that the speed of a quark depends on the number of protons and neutrons forming short-ranged correlated pairs in an atom's nucleus. The* **more such pairs there are in a nucleus, the larger the number of slow-moving quarks within the atom's protons and neutrons**. *Atoms with larger nuclei intrinsically have more protons and neutrons, so they are more likely to have a higher number of proton-neutron pairs. The team concluded that the larger the atom, the more pairs it is likely to contain. This results in slower-moving quarks in that particular atom.*

21. *The Y chromosome is disappearing — so what will happen to men? The Conversation/By Darren Griffin and Peter Ellis, University of Kent Posted FriFriday 19 JanJanuary 2018 at 12:48pm, updated FriFriday 19 JanJanuary 2018 at 5:57pm* https://www.abc.net.au/news/2018-01-19/y-chromosome-disappearing-what-will-happen-to-men/9342994

22. *Metanexus* **Understanding Natural Hierarchies through Big History** – **William Grassie** https://metanexus.net/great-matrix-being/ *All phenomena, all academic disciplines, and all economic activity can be located in reference to these hierarchical scales. It is this great matrix of bottom-up and top-down causality that allows complexity to grow.Humans are not at the top of the scales of size and time, but somewhere in the middle. On the energetics, information-ingenuity, sentience-consciousness, and emergent complexity scales, however, humans are off the chart. The human niche is particularly favored in the matrix for the time being—each of us a nexus of causal relationships (physical, biological, social, economic, psychological, mental),*

realizing extraordinary flows of energy and ingenuity, intensities of subjective experience, and accelerating transformations in the modern period. In our drive toward specialization and division of labors, we rarely reflect on these natural hierarchies and what they might mean for our understanding of science, self, and society. "The ongoing fragmentation of knowledge and resulting chaos are not reflections of the real world but artifacts of scholarship," writes Harvard biologists E.O. Wilson in his book, Consilience: The Unity of Knowledge.[14] Vartan Gregorian, president of the Carnegie Corporation, similarly observes:The fundamental problem underlying the disjointed curriculum is the fragmentation of knowledge itself. Higher education has atomized knowledge by dividing it into disciplines, subdisciplines, and sub-subdisciplines— breaking it up into smaller and smaller unconnected fragments of academic specialization, even as the world looks to colleges for help in integrating and synthesizing the exponential increases in information brought about by technological advances. The trend has serious ramifications. Understanding the nature of knowledge, its unity, its varieties, its limitations, and its uses and abuses is necessary for the success of democracy… We must reform higher education to reconstruct the unity and value of knowledge.[15]This is not a problem isolated in the ivy towers of universities. It is an acute problem also for all of us, who have personbyte and firmbyte limits, but who also need to understand a world that is rapidly changing due to science, technology, and globalization.

23. *Fractal Institute* https://fractal.institute/hidden-numbers-and-basic-mathematics-in-the-mandelbrot-set/
24. *Report on City of Perth Lord Mayor - Corruption* https://www.ccc.wa.gov.au/publications/reports/page/report-city-perth-lord-mayor
25. *Partitions* https://en.wikipedia.org/wiki/Partition_(number_theory)
26. **Deming's System of Profound Knowledge** https://deming.org/explore/sopk/ *Dr. Deming's holistic approach to leadership and management ties together seminal theories in four interrelated areas:* **appreciation for a system**, **knowledge of variation**, **theory of knowledge** *and* **psychology**. *The System of Profound Knowledge promotes transformation through an essential* **outside "lens"** *which can benefit anyone and any organization.*
27. Fractal Foundation https://fractalfoundation.org/
28. Wolfram fractal https://mathworld.wolfram.com/Fractal.html
29. http://www.fractal.org/
30. https://www.youtube.com/watch?v=N92w4e-hrA4 Numberphile - Dr Holly Krieger.
31. **Daddy of Big Numbers** https://www.youtube.com/watch?v=X3l0fPHZja8 (Rayo's Number) – Numberphile , https://www.numberphile.com/

Mandelbrot Python program

```
from pylab import *
from numpy import NaN
# ================================================================
# Basic Mandelbrot - using PYTHON
# Uses Not a number Nan from nypy and plot functions from matlib
```

```python
# also uses inbuilt complex number format 1j to multiply Y each time
#rng = 10
#rnglim = 10
#xlim = 1.2
#ylim = 1.2
#step=.002
# ============================================================
rng = 1000 #Parameter - integer from 10 to about 50 - for inner loop iterator
rnglim = 10 #Parameter - usually integers around 2-5 - for escaping inner loop
xlim = .3 #Parameter - usually no greater than about 3 decimal - x axis
ylim = .3 #Parameter - usually no greater than about 3 decimal - y axis
step=0.001 #Parameter - has huge effect on time cost - usuualy no more than 2 magnitudes less than x
and y
# ============================================================
Wdir = 'E:\\RESEARCH\\ORANGE WORK\\'
loopout = 0 #Counter
loopin = 0 #Counter
print ('Started')

ofstring = str("rng="+str(rng) + ",rnglim="+str(rnglim))
ofstring = str(ofstring+ ",xlim="+str(xlim)+",ylim="+str(ylim) + ",step="+str(step))
tic = time.perf_counter()
# ============================================================
# functions for inner loops -
# for loop iterates n as integer to give the number when escaping loop > abs(rnglim)
# This integer number is then mapped to colours in imshow
# a comes in as a complex number - x + 1j * y
# ============================================================
def m(a):# changes the sign for negative by negatives
    z = 0
    global loopout
    global loopin
    loopout=loopout+1
    for n in range(1, rng):
        loopin=loopin+1
#            z = z**2 + a
        if z < 0:
            z = -(z**2) + a
        else:
            z = z**2 + a
        if abs(z) > rnglim:
            return n
    return NaN
def m1(a):# The original Mandebrot squared
    z = 0
    global loopout
    global loopin
    loopout=loopout+1
```

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```python
    for n in range(1, rng):
        loopin=loopin+1
        z = z**2 + a
        if abs(z) > rnglim:
            return n
    return NaN
X = arange(-xlim,  xlim, step)
Y = arange(-ylim,  ylim, step)
Z = zeros((len(Y), len(X)))
# Main call to inner loop functions - uses python inbuilt complex number format 1j to multiply Y
# I will change this in later versions to use basic math functions
for iy, y in enumerate(Y):
    for ix, x in enumerate(X):
        Z[iy,ix] = m1(x + 1j * y)
# Hardcoded the call to either m function or m1 function above
plt.imshow(Z, cmap = plt.cm.prism, interpolation = 'none', extent = (X.min(), X.max(), Y.min(), Y.max()))
plt.xlabel("Re(c)")
plt.ylabel("Im(c)")
plt.title("Mandelbrot")
toc = time.perf_counter()
print(f"Finished in in {toc - tic:0.4f} seconds")
# Some mucking around with strings to put in various titles and files
runstring = str("loopout="+str(loopout)+",loopin="+str(loopin) + "," + str(f"seconds={toc - tic:0.4f} "))
plt.title("Mandelbrot "+runstring+"\n"+ofstring)
outf =Wdir+'Mandelbrot_'+'X_'+str(xlim)+'_Y_'+str(ylim)+'_Step_'+str(step)+'_rnglim_'+str(rnglim)
outf1 =outf+".txt"
outf2 =outf+".jpg"
outf3 = Wdir+'Mandelbrot_log.txt'
of1 = open(outf1, "w")
print("OPENED OUPUT POSTION FILE", outf1)
ofstring= outf1+","+runstring+","+ofstring+"\n" #put filename into txt file record.
print(ofstring)
of1.write(ofstring)
of1.close()
savefig(outf2) # Saves the graph to file
of3 = open(outf3,"a+") # Append the log file
of3.write(outf1+","+str(xlim)+","+str(ylim)+","+str(step)+","+str(rnglim)+","+str(rng)+","+str(loopout)+","
+str(loopin)+ "," + str(f"seconds={toc - tic:0.4f} ")+"\n")
of3.close()
# Show the graph - at this point it has already been saved to file
plt.show()
```