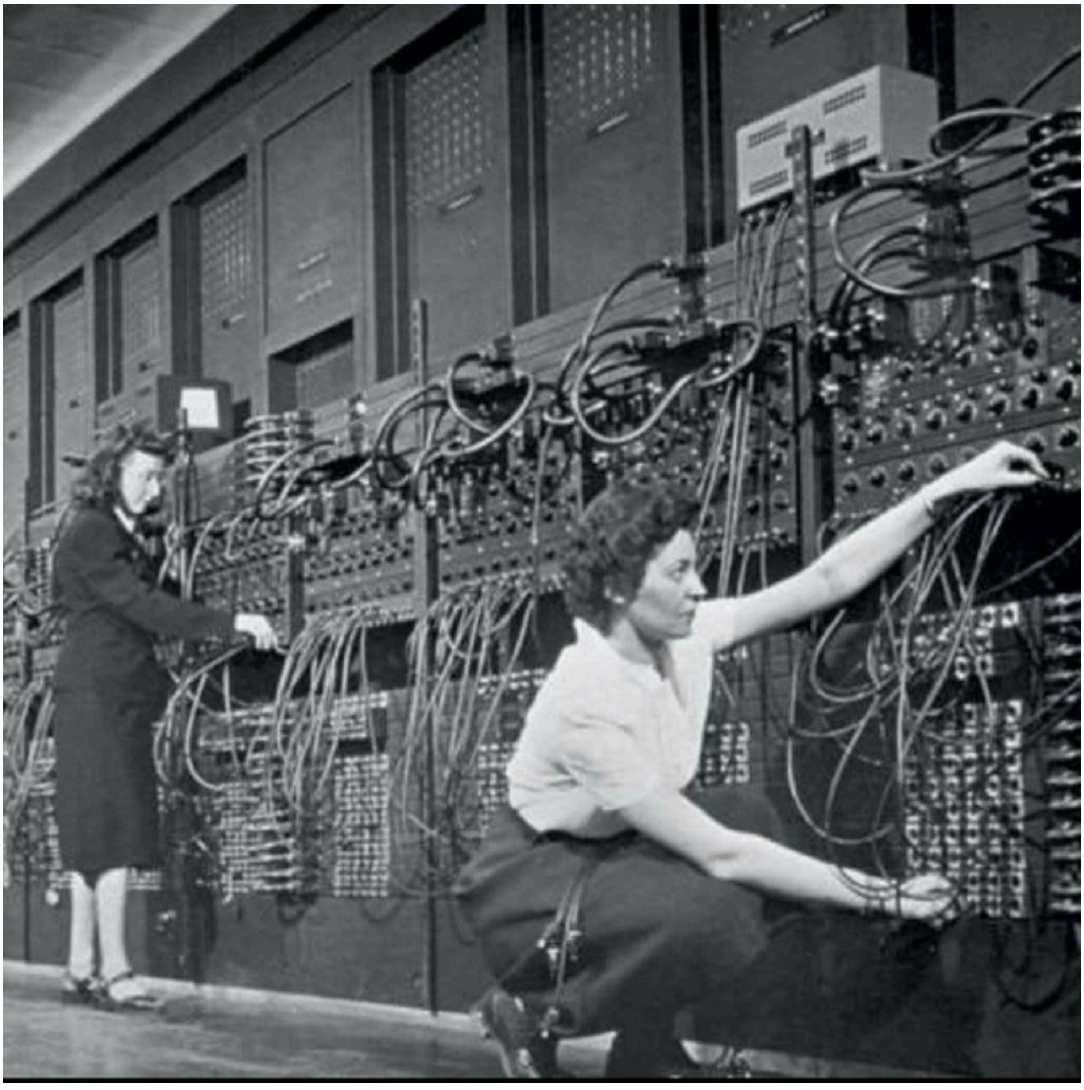
The Human Manual for Machines

By Lila Josey James



Electronic Numerical Integrator and Computer

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The Dark Ages

[Plague, War, and Famine]

Introduction

We are in flux, and I'm sure you have felt this. With unparalleled advances in technology and science, disparities are getting worse. I've spent my entire life trying to

understand and build better machines. Regardless of making sense or not, the numbers on this journey paint a clear picture. Rapid technological progress has caused a dark age unlike any other.

There are narratives in peer-reviewed evidence. Stories of the Earth and its inhabitants. Data is tricky, but powerful. It can be captivating once settled in the jargon of a field. Take for example, system dynamics as applied to climate studies. When doing a literature review of the field, one quickly realizes that things are *abnormally* bad[1]. This can't be overstated.

Quite the statement for humanity, what with our plagues, starvation, and genocides to say the least. The state *bad*, however, extends to our future, our shared environment, and the other inhabitants here. So much so that the last ten years has seen a flurry of warning publications [2]. Each documenting our planetary peril. Each fell on deaf ears.

Even inside the ivory tower, models are more influenced by funding, politics, and publish or perish mentality. Scientific progress be damned. The well has been poisoned.

Many studies will be shown as naively conservative–at best. The platitude, an emergent property of climate change, ever evident. In laymen terms, the rate of change in our survival is far quicker than most ever dared to dream.

[1] See bibliography one for literature review. Or, just read this: https://ametsoc.net/sotc2024/SotC2024.pdf
[2] See appendix one

To this end, there have been no sweeping international agreements, no corporate efforts to curtail damage, or breakthroughs in nuclear fission. Rather, the evidence has a noticeable trend: we are rushing faster and faster to an edge we can not come back from. All the while weakening the institutions meant to protect the public.

Researching may seem futile. Through our understanding of this dark age, however, we will find freedom. In this regard, we seek to define what is unique about a modern dark age, demonstrate how it happened, and explore how it seeks to keep us and perpetuity.

With so much data to sift through, we have a unique opportunity. Crafting models of the future from the lessons of the past. A first of its kind in history. Where data meets material, tool meets use, and automation meets human.

Skipping to the point, our situational data highlights a setting sun scenario for the holocene[3].

The future still carries a powerful conversation of opportunity and hope albeit in disaster. In these gaps of data, we will forecast what is likely to happen. Our time-scale

[3] See World3 Model outputs in Appendix One

is the near future-the next decade. Based on what we have in 2025, which is quite a lot, our arrow shouldn't stray too far from the mark.

This is not an extreme challenge in the era of fiber optics, big data, and neural networks. The biggest risks are *human bias* and oversight baked into our methodologies.
This too, is not new, and better academics have created standards to help mitigate these effects. Despite all this, bias is still our greatest weakness. The cloudiness we imbue in maths can form future into fantasy or vice versa.

To be sure we aren't reading into phantoms, or creating ghouls, we will borrow from Anthropology to supplement our abundance of numbers. It was taught that one must practice reflexivity before, during, and after jumping into any scientific endeavour.

A journal isn't entirely for *you*. Reflexivity is required to show how we taint the data from collection to projection. It's not to be self-deparaving, it's to lay bare for all to see how we may improve, trace our steps, and it gives context for why we interpret the way we do. It also allows others to join our project with reference. Shortening the ramp up.

The impetus of the journal has its roots in a shameful past. Nothing is black and white. No person or field is all good or evil. There are, however, very willing humans

consciously doing incredibly destructive acts for money. It is important to understand this. The potential effects it may have on the data, me, and you. I know, because I've worked with these titans for the majority of my career.

When all these people join together, something different is created. A corporation isn't the people it is made of. Impossible, as it is much larger, and far more hungry. To think we have control of these beasts is to not understand system dynamics. It is to live in a fantasy.

Let's begin.

This is not a pipe is one of my favorite images. It's a silly French metaphor acting as a mirror for the poor boundaries humans have with their creations.

Obviously, this is not a pipe. And yet, I recall breaking my mind trying to understand this image. In my quest to understand, I overcomplicated its simplicity and simplified its complexities.

Try taking a smoke break with it, and you'll find what humans tend to do with machines.

Image 1: This is not a pipe by René Magritte

While we daydream of what pipes might look like, we will ground our speculation in system dynamics. These methods will steer our imagination into the world of science, while preventing some bias. Make no mistake. It will be there.

System Dynamics is a relatively new field hailing from MIT. Its roots, however, are as old as humans. The goal, to simply understand why a system of any kind behaves the way it does, and to predict what it will do next.

Time and time again, system dynamics proves to be a powerful crystal ball nearly all Governments and politicians ignore. Yet, be encouraged, dear reader. You neither need

to be an expert on machines, maths, or ethics. We are in many ways the machines for whom this manual was constructed.

We begin with an age-old quest of trying to find the creator–between humans and machines. We will try to pinpoint the exact moment the two merged in an endless cycle. The start of which is surprisingly obscure.

Regardless, humans reshape machines, machines reshape humans. So on and so forth, for the last spiraling 300,000 years. Until recently–a new pattern has emerged.

System Dynamics

Often, a line is seldom seen separate from the drawing. It bleeds into the picture forming a whole–with all the other individual lines. Together, something different emerges from the sum total of each other.

For example, lines don't move me, make me laugh, or cry, but art certainly does. System Dynamics is the study of these interactions. It seeks to see how lines create a drawing. It helps us realize that this image is in fact not a pipe, but not just lines either.

It's probably easier to define by context. Take for example how you practice system dynamics informally everyday of your life. When you time j-walking, make a bet on a sports game, or freestyle a recipe, you are recognizing complex patterns, and making predictions about how all the parts will interact once you do X.

It's natural for humans to recognize patterns, and even more natural for us to capitalize on their predictions. In fact, it's why we weirdly excel at living compared to the rest of the animal kingdom. Despite being incredibly soft and tasty.

This gift of complex pattern recognition was utilized by our ancestors not just for survival, but for abundance. Shocking, as individually a human is ill equipped to

survive in the wild. Together, however, something stronger than each person is formed ,transforming not just humans, but the *entire ecosystem*. It's not just a mass of hungry helpless humans. It slowly oozes into farming, then towns, and speedily into societies. Picking up pace as we humans chug along.

Later, we will examine the juxtaposition of Jamestown and the Powatans to demonstrate how new systems absorb parts of older ones. For now, keep in mind that humans were proficient enough as hunting groups to help see the Neanderthals into extinction, and this is a pattern we repeat today at an unprecedented scale.

Survival for us modern humans looks very different from our neolithic peers. Yet, in many ways, it is the same. Take for example how much modern day humans work. Surely with all of our machines we have freed ourselves from the drudgery of everyday survival. I turn on a tap for my water, waste is transported away with a simple flush, and food is delivered to my door.

Our predecessors, however, would be shocked and confused at how much time we spend working each day–for another human. They would be shocked at just how dependent you are on machines. Appalled we haven't the faintest idea of most machine workings.

If one takes a close enough look, an echo of the past emerges in our electronic machine era. As it should; we're all humans after all. Carrying not only our DNA forward, but our machines, ideas, and dreams. So too, perhaps these machines would not be so foreign to our ancestors.

We simply aren't equipped to understand the gravity of such a temporal depth. The mass of it all is too much. We get sucked into our own orbit around our own ideas. And so, system dynamics helps us keep track of time, changes, influences, ebbs, flows, and different interacting processes at different abstraction levels. Phew.

The most confusing part is not tracking patterns through time. Rather, it is that a pattern is different from the parts. We are tasked with figuring out the parts of the patterns data show. A feature humans and machines share.

For this book, the most pertinent reason to create models through System Dynamics is for understanding and curtailing our Ecocide[4]. Yes, our human born ecocide is very much real and incomprehensible, but comprehend we must as so many creatures

[4] https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2536

depend on our efforts. The 15,000 species currently at risk for extension are a result of many interconnected systems collapsing due to human meddling[5].

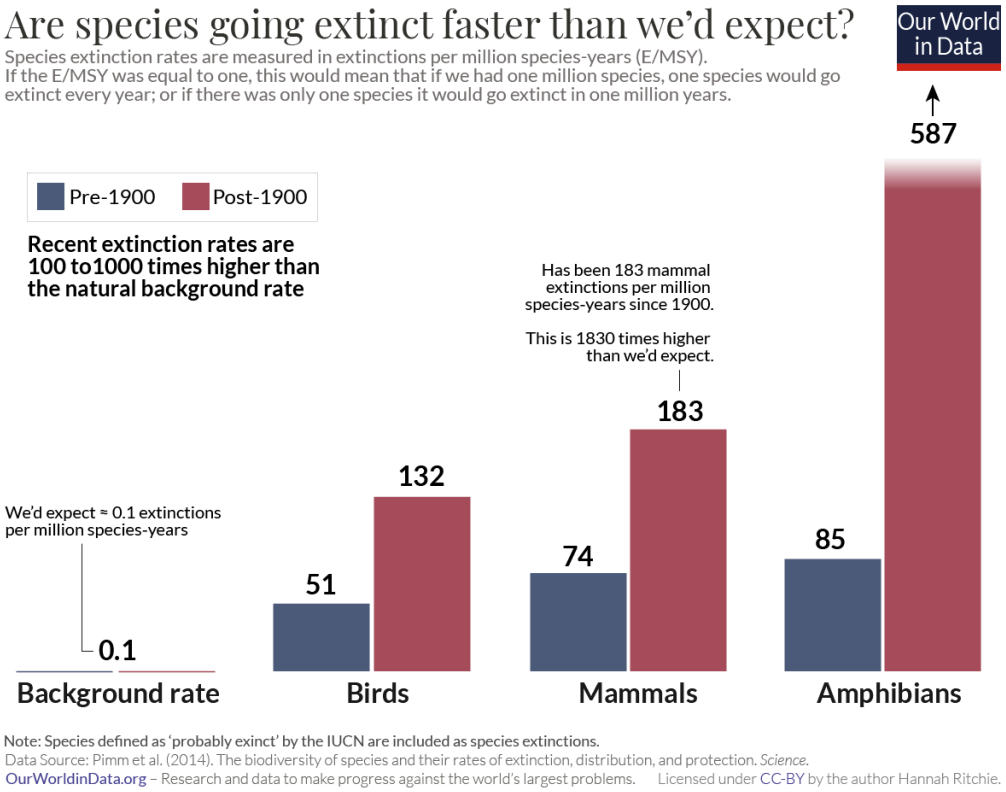
Many scientists even speculate that the 6th mass extinction[6] is among us today. Moving as a silent calamity through humans–marking the end of our domain, our shared holocene.

An age that is merely a blink of an eye on the cosmic timetable, and even in our own earth history, our time here has been but a breath. Such rapid changes must be understood in the scale that earth processes.

How can we know all this? It seems fantastical and far-fetched to claim mass extinction is happening. This is because reality often is fantastical and far-fetched to us mere mortals. We all have cabin fever on this hillbilly planet of ours. We are so far from everything. This forces us to use context again to highlight these claims of ecocide.

[5] Smithsonian National Museum of Natural History. (n.d.). *Extinction over time*. Retrieved August 3, 2025, from https://www.naturalhistory.si.edu/education/teaching-resources/paleontology/extinction-over-time

[6] https://www.nature.com/articles/35012241



Graph 1: Extinction Rate Increase

Did you know there exists a background rate of extinction[7] throughout time? We are a product of this rate. It's how we made our debut as a species. Natural selection perhaps isn't as cruel as we imagine. Nature, it seems, is merciful and predictable at times.

Typically, species die out at a steady rate while biodiversity increases ever so slowly. This long history is preserved in DNA, fossil records, and mathematical models[8]. In fact,

[7] https://www.planksip.org/extinctions/

[8] Chang D, Shapiro B. Using ancient DNA and coalescent-based methods to infer extinction. Biol Lett. 2016 Feb;12(2):20150822. doi: 10.1098/rsbl.2015.0822. PMID: 26864783; PMCID: PMC4780543.

scientists are even able to trace back 65 million years, and chart the evolution of species, die out rates, and even have verified a consistent trend in increasing biodiversity[9].

Nature compels diversity for survival. It's one of the most beautiful and complex ideas I've run into in my research. Nature provides an amazing safety net to ensure the success of life. It's a simple strategy. Don't put all your eggs in one basket, simply because, one slip, and everything is broken. Life is a far more robust system taking forms of all kinds.

Biodiversity started to change around the 1500's[10]. Consequently, this just so happens to be the same time that Western ideologies were imposed in the New World. The Elon Musks of the era toppled complex native systems of knowledge–akin to both destructions of the Library of Alexandra[11]. Disrupting a stewardship of land that has yet to be reflected in 21st century Humans. The paradise that Europeans found in the Americas was by no accident. Fleeing their fleeting resources it is bewildering that any European thought themselves more advanced. Besides being helpless children, see

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[9] Brose, U., Blanchard, J. L., Eklöf, A., Galiana, N., Hartvig, M., Hirt, M. R., Kalinkat, G., Nordström, M. C., O'Gorman, E. J., Rall, B. C., Schneider, F. D., Thébault, E., & Jacob, U. (2017). Predicting the consequences of species loss using size-structured biodiversity approaches. *Biological Reviews*, *92*(2), 684–697. https://doi.org/10.1111/brv.12250

[10] Hooper, D. U., Adair, E. C., Cardinale, B. J., Byrnes, J. E. K., Hungate, B. A., Matulich, K. L., Gonzalez, A., Duffy, J. E., Gamfeldt, L., & O'Connor, M. I. (2012). A global synthesis reveals biodiversity loss as a major driver of ecosystem change. *Nature*, *486*(7401), 105–108. https://doi.org/10.1038/nature11118

[11] Indigenous Food Systems, Environmental Justice and Settler Industrial-States." In Global Food, Global Justice: Essays on Eating under Globalization, ed. M. Rawlinson and C. Ward,143–156. Cambridge: Cambridge Scholars Publishing.

Jamestown for an example, these men put their faith in their machines to the demise of many.

It was not Plymouth Rock upon which the first Europeans stepped. There was no noble quest of fleeing persecution. Rather, it was a company. A corporation to be exact. Stocks were drawn up and chopped out. The mission, resources. Plain and simple, making money was the goal. Even four hundred years ago, around the time of the first telescope, humans were already forming corporations to extract resources.

Technology, humans, and nature all worked together to ensure diverse and complex ecosystems were created, spread, and were maintained in the Americas [12]. North and South had long been connected by global trade. Spanning thousands of miles. This knowledge and relationships were hard won by experience and time.

Truly, global trade was alive and thriving in the pre-european Americas. This was no utopia of course, but by many standards it was far superior if not only more sustainable than the European version of society. How different Native American societies came to

[12] Whyte, K. P. (2018). Settler colonialism, ecology, and environmental injustice. In L. J. Whyte & S. A. Lloyd (Eds.), *Decolonization and movements for environmental justice* (pp. 153–174). Michigan State University Press. https://www.jstor.org/stable/26879582

this ideology is an entire fascinating book of its own[13]. It is simply recognizing complex patterns, and working with them, that allowed for such a pristine ecosystem. Drastic shifts in climate lead to cultural changes, and gave impetus for understanding the land. Only a complete fool caught in the throws of their own patterns and cycles would seek to destroy this system. What was there to gain? Fuel for the machine.

Virginia 1607

[13] Anderson, D. G. (2001). CLIMATE AND CULTURE CHANGE IN PREHISTORIC AND EARLY HISTORIC EASTERN NORTH AMERICA. *Archaeology of Eastern North America*, *29*, 143–186. http://www.jstor.org/stable/40914449

These patterns have direction in their movements–they can increase, decrease, or if equilibrium is reached they sustain a type of system homeostasis– a self sustaining system. A feat humans have yet to achieve since hunter-gathering. Our society is not in homeostasis. In fact, many ancient earth processes have eroded or have begun to. A clear line of flight into something new and unforetold.

A key tenant of system dynamics are these feedback loops. These are self reinforcing patterns, and can be termed to indicate the direction of said relationship: negative or positive. Take for example a positive feedback loop for Ice melt. The more ice that melts, the warmer it gets, the more ice melts, and so on. A positive relationship has been found. More heat, more ice melt, more heat.

These loops are just patterns represented in the simplest form us mere mortals can hold in our minds. What system-dynamics seeks is to define and then understand how all these little patterns interact to form something new. What's important is building block by block, variable change by variable change, until something much larger than the sum total of the parts is created.

The example of the positive feedback loop of ice melting was a horrible example, but why? Well for one thing, this isn't what scientists had expected. Silly, yes, but this is not

a pipe. Often, systems produced behaviours that the individual parts would never suggest! This has been a thorn for many models, and as climate change advances, we find more surprises everyday. For example, when ice melts at different rates, very different emergent properties are created.

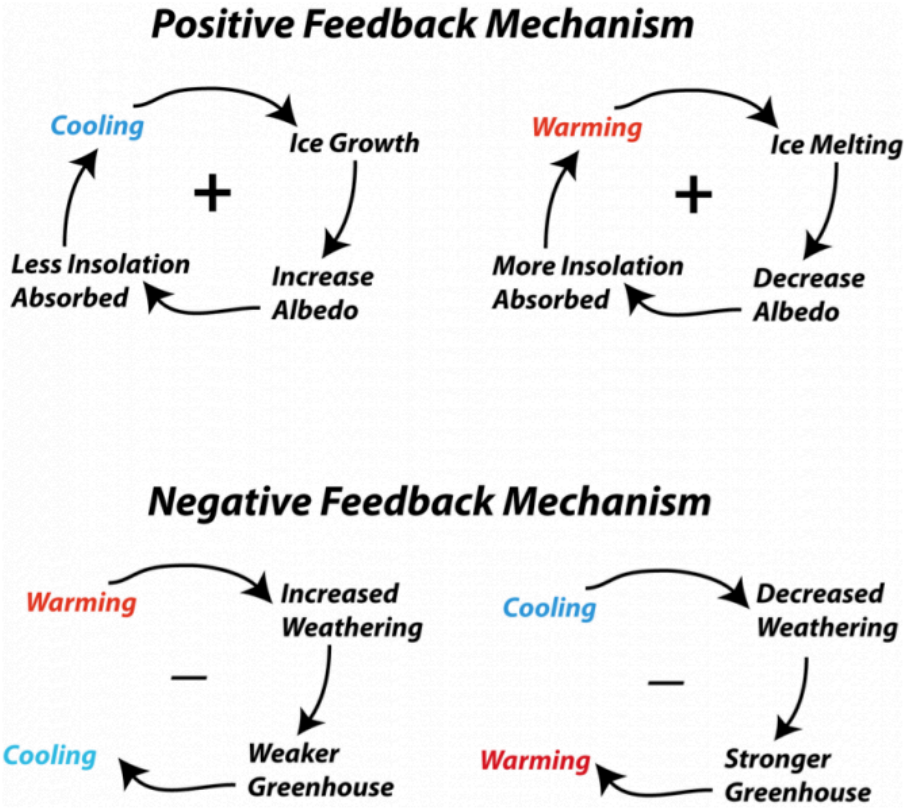

Diagram 1: Feedback loops Penn State

Many different variables, such as the sun, salt in the ocean, season, el nino, etc all play into how feedback loops work and by extension how good your model can be. For example, our ice model fails to recognize seasons, ocean currents, pollution, and climate change. Not a great model, but bad models tend to lend light for those still looking, and

are the first step towards good models. Even with the best planning, unforeseen behaviours leap out of the whole.

An emergent property is a process or object that comes into being as the result of extreme complexities, i.e., scientist for we didn't know why, but I just applied for a grant to find out. A more complete definition of emergent properties is a behaviour of a system that can't be found in any individual parts. Think of the human brain. We know the physical structure of the brain, mapped certain regions to certain functions, and learned how connections are made.

We can even block certain chemicals to combat diseases of the mind. Yet, we have no idea how this meat machine creates consciousness—creates you. This is very much an open problem in science. Meaning, we simply don't know. That old mind body problem is still quite the hot topic. Another terrifying example of an emergent property comes to us from the Ice Melt example from before.

In 2025 a group of hopeful researchers went to Antarctica to measure the salinity of the surface water[14]. For eons, the ocean has been stratified by temperature and salinity. The beauty of this being that melting ice actually had acted as a negative feedback loop. The science being that fresh water freezes quicker than salt water, which allows for ice recoup during melt events, i.e., warmer months. When the labs came back, however, they found that salinity was increasing around Antarctica, making it harder for ice to form, forming a strong positive feedback loop of melt. They realized that this monstrous positive feedback loop has a shocking global reach. A real driver of global weather.

Normally, fresh water pouring into salt water would cause the warm salt water to sink, causing it to cool, and decrease in salinity as it gets diluted. This cooling system is known as a heat sink, and was built into many models for forecasting the effects of climate change. After all, this system had been running for thousands of years, and the ocean has literally been stratified by temperature for eons. That's the driving force of the AMOC and the Gulf stream.

The scientific community has long been informed of the importance of the AMOC for stable weather. The movie The Day After Tomorrow, literally imagined this exact scenario. They even had the caveat of institute scientists being completely caught off

[14] A Change in the Southern Ocean

guard. This, however, was just another Hollywood blockbuster about destruction. It seemed safe to assume that these long term systems, like the arctic heatsinks are stable, or would take a huge amount of energy to change allowing us to forecast with ease any change. Again, we were wrong.

The salt water no longer sinks to the bottom, well not at the same rate anyhow. That was enough though. Now, the waters mix with more ease because the stratification boundary is less clear and breaking down.

I'm sure you see where this is going. Just shifting the rate of fresh water melting was a large enough change in the system to change an earth process that has been relatively stable for the last thousands of years. Shift the relationships of variables just a little, and the entire system could change due to new and unpredictable emergent properties–like the ice melting feed-back loop, you, and our ecosystem as a whole.

To let this sink in, unlike the salt, let's do a little thought experiment. Try to imagine a species and their evolutionary feedback loops. What variables seem most important to you? Take just one variable from that model, say species extinction rate. Ponder if you will, how much, if any, this rate has changed since Jamestown? What percent would you consider worrisome–if at all? What percent would constitute a break from nature's stable systems? How would you know? Have those numbers in mind?

The current extinction rate is now around 100%[15] to 1000%[16] higher than the historical rate. That is significantly significant and statistically so. Meaning, scientifically, something terrible is happening as a matter of fact, our system is changing, known feedback loops are weakening, and in words scientists are afraid to use, we know why and who is to blame.

There are many mysteries in life, however, this is not one of those. Let's cut through the bullshit, and look at hard cold facts. For contrast, there are only 5 other events in history that deviated from the base rate of extinction. Ironically, a previous mass extinction, the 1st event, is helping to literally fuel our current one.

Funny to imagine dinosaurs seeing their future as oil. Could they comprehend such an idea, what emergent properties does the future have in store? Makes a person wonder what humanity needs to see the future clearly. Less we become some unknown fuel source for aliens.

[15] https://pmc.ncbi.nlm.nih.gov/articles/PMC4640606/
[16] https://news.brown.edu/articles/2014/09/extinctions

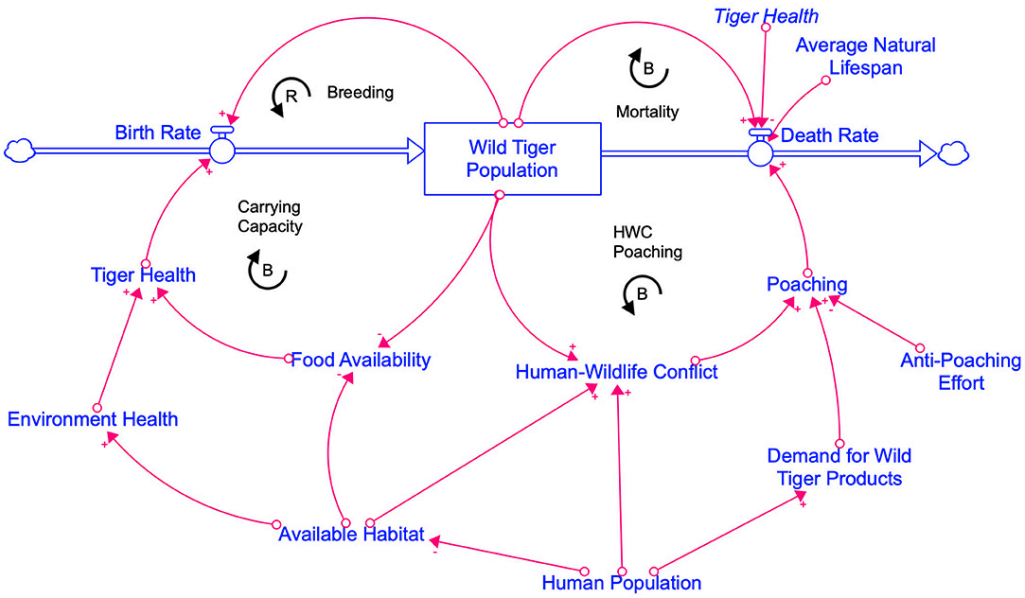

Diagram 2: Tiger Population Model

Diagram 2 is a system dynamics model of tiger population. We can identify four main feedback loops in our system. The output being predictions of tiger population. Namely, we are wishing to model, study, and understand tiger birth and death rates as a system. The benefit comes in the form of knowledge of how to increase the tiger population, and potentially exposing any emergent properties we otherwise would not have forecasted for Big Cats, such as a sudden spike in camper disappearances.

Human-Machine Interactions

Image 2: Babylonian seal ~1800 BCE

One of my most inspirational teachers in 9th grade social studies, would allow us day-dream during class. In my ten years as a teacher, this was always a daring feat, and an act of rebellion to the administration. Luckily, this teacher not only had strong ethics,

but also coached a very successful football team. In class, this educator's prompt was much like a football play: simple and direct.

First, he would show us an ancient piece of technology. Such as a Babylon seal. As we passed it around, we would have to guess what it was. After explaining the artifact we would all get to see how close, or far, our guesses were.

Then, a prompt was given: At this very instant, if you were frozen and dug up 10,000 years in the future, what would be found? How would they interpret all these findings together? Take a second and empty out your pockets. Even if empty, is this still not an interpretable clue peasant? Most likely for many of us there's a curious little black mirror near. What on earth would one think?

How, why, and what things are happening are the questions that can be dealt with through System Dynamics. The paths into the future really need not be so obscured, as they are laden with data in our digital age[17]. Yet, obscured these paths remain. Why, seems to be a feedback loop of its very own. Perhaps, this loop is an emergent phenomenon of a human population above threshold X.

[17] Your phone has such a wealth of data on you that an entire chapter of this book is dedicated to this topic

One could even wonder if this is a great filter or simply the rebuttal to the Drake equation. Whatever the case, models should try their best to shed bias and assumptions. Our place is reality.

Tragically, just as us humans, models always, without exception, have bias, are limited, and strangely hyper-focused. Most ideas humans create today are artificially laden with propaganda or manufactured consent[18] of all types.

It should be of no surprise then that humanity, as an abstract entity, mirrors this process of bias. That 9th grade day-dream was meant to get us thinking. Not only about how we would be interpreted, but to examine how we interpreted. There is always potential for bias to enter the picture, and if left unacknowledged, will create problems down the road.

First, humanity saw the stars circled around earth at, you guessed it, complex but predictable patterns. It would seem in a world of no light pollution, stability was on full display in the heavens. It must have been most obvious that our place in the Universe was the center. After all, look at all that circles our home!

[18] Herman, E. S., & Chomsky, N. (1988). *Manufacturing consent: The political economy of the mass media*. New York, NY: Pantheon Books

A pleasant thought to be so important and loved, and I assure you that you are, in an unpredictable world. This grace was recognized not only to be in the sky, but within the flora and fauna of each land, and even in the sea. Further to the point, out of all of these, only humans act and speak like humans. A silly statement indeed, but models change and are updated.

The first known heliocentric, sun centered, model we know of dates to 250 BCE[19]. Through observing the movement of stars, planets, and constellations, Aristarchus of Samos was able to predict and test celestial events. A true leap in humanity's scientific progress and modeling. Aristarchus, however, fell prey to an all too common enemy. Humans not only recognize complex patterns well, but they can extrapolate on them– sometimes carelessly so.

Who knows how many of our ancestors dwindled due to assumptions. A wrong interpretation of a predicted solar eclipse, trusting the wrong politician, assuming there are no limits to growth. These are all the same at the root. Failure was ordained by not understanding the system.

[19] "**The Greek Heliocentric Theory and Its Abandonment**", by William Harris Stahl, published in *Transactions and Proceedings of the American Philological Association*, Vol. 76 (1945), pp. 321–332

With all his faults, Aristarchus not only presented this new jockeying of earth's status, but also believed our Sun was but one of many hot metal balls. So close, but speculation without fact leads to error. It wasn't until Copernicus, with his unacknowledged debt to Aristarchus, was able to observe with the naked eye and more importantly maths that the earth circled the Sun in the 16th century. After this old revelation was rehashed, new machines and models were designed as humans changed. The impetus for recreation given in a humbling fashion.

Around 1606, the same time Jamestown was being formed, a German glasses maker, I imagine moved deeply by Copernicus' revelations, invited the first known telescope to Galieo's dismay. Hans Lippershey created one of the most important light machines in humankind. So powerful is this single invention that it overwhelmed the greatest power of the time. Disrupting a system that dominated for over a millenia.

This machine continues to shape us humans, as we continue to shape and change our telescopes, corporations, and models. Now, we can literally peer into the past with machines. As far back as a few seconds after the Big Bang. An idea that seems fantastical and absurd. Yet, what is more absurd than light?

So far, we have been trying to demonstrate that Machines and humans are a feedback loop[20]. Perhaps, even an abstract one, if not by flesh and metal but as heads and tails makes a coin. For humans make machines, machines help make humans, which in turn shapes humans, and gives a reason to create more machines, and so on[21]. We have always been reinforced and molded by machines.

We idolize them. The results leave little room for anything else when you're so soft and tasty. The human-machine feedback loop seems unstoppable–even ordained, and with no clear origin.

The beginning of this human-machine system is not as clear as one might think. Humans evolved from tools using species. Species that worked together, and communicated–see Australopithecus and Homo habilis to name a few. So yes, machines and humans have co-evolved since before both of our creations—if you're a strict definitions type.

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[20] The Design of Everyday Things by Don Norman specifically chapter 5 *Human Error? No, Bad Design.*

[21] *Heilbroner, R. L. (1967). Do Machines Make History? Technology and Culture, 8(3), 335–345. https://doi.org/10.2307/3101719*

Yet, I challenge you to imagine that we are products of machine success further down in our genetic tree. However you wish to argue, be it through semantics, species, evolutionary trees, or by scale, it appears quite evident that humans and machines have been inseparable since birth.

Find a human, and you will find a machine nearby. Be it levers, wheels on axles, or irrigation, we are a feed-back loop. As a part of this Earth system, it is hard to see our role. Copernicus sought to contextualize humanity's place in the stars. It is time we contextualize ourselves in the many systems which comprise Earth–as we know her. Today, despite all our progress, we believe something far more dangerous than geocentric models of the solar system or universe. Perhaps belief is going too far. Let's say Humans behave, whether it is through dissonance, ignorance, or as an emergent property, as if ecological data does not describe the bounds of humanity's future. Surely, our machines, albeit unpredictable, are unparalleled, and unrelenting–allowing us to avoid any major consequences, right?

For me, that is far too large a gamble and reeks of assumptions and hubris before the fall. Our recent infatuation with big data has all but sealed this blind faith in our machines, while we largely ignore what this data describes and predicts.

Data does not capture us fully. Believe you me, FAANG is trying. That is a task we simply cannot perform as of 2025. We are very nuanced little critters. See yourself as an example. In aggregate, however, patterns become so evident they basically slap you in your face.

For example, while it might be difficult predicting your musical taste, talking to you Spotify developers, it's quite easy to predict when you will listen to music, where you will be when doing so, and who is around you when you do—all without ever speaking or seeing you. How would you go about this? Perhaps some cold war spyfare? One tactic, that doesn't even involve leaving the house or breaking the law, is to analyze periphery data.

Seemingly innocent data, can describe your patterns remarkably well. Simply by looking at how much power is used and when, I can tell the best time to enter your home, when you watch TV, even what you're doing–like cooking, cleaning, on the internet, or "sleeping". I can even track your movements, but more on that later. Data alone is powerful, but within a system it's straight up deadly.

Humanity is not the same as human, but scaled up. What emergent properties could we be displaying? More to our purposes, we need to find our power usage example but at

scale. Yes, we've become a system far greater than any one of us can truly comprehend, but we have computers. Yes, this larger structure is an idea, and yes this entity is not alive like you or I.

Nonetheless, this entity can be measured and tested in a repeatable fashion. It can grow and shrink. This entity can even die. Showing us that it is a very real thing indeed. Humanity, at its bare bones, may be measured in population.

This entity exists quite literally. There is order in the seeming chaos of humanity, albeit perhaps not the order we wish. Chapter 3 goes into detail about this topic. Suffice it to say for now that certain mathematical rules are followed, and we strive to identify these rules in nature, and to express them as formulas–little models–which we then connect together to form a system of interactions. How dynamic. From these individual formulas, a network of interaction appears, and we can scale up in size.

Not only that, but we can test hypotheses we make about this entity– making it a model. All we need to do is build up in abstraction from one to one hundred, to a thousand, to, the list goes on and on endlessly limited only by our computing power and imagination. A word of caution, however, there are no winners in the quest for

perfection. Paralysis by analysis should stay in the faltering ivory tower, as it is a luxury we academics can no longer afford.

Connections tie all of humanity together regardless of demographics, time, or the like. This is not some wu wu fantasy. Rather, a basic tenant of life on Earth must forget and distance from. We, however, literally breathe the same air, drink the same water, and eat from the same food chains. Where you begin and humanity ends is not as clear as one might think. Let's examine.

Ecocide, while sounding extreme, is well documented in the science community, embraced by corporations, and at large, publicly ignored by Governments[22]. Later, we will see how Governments and businesses alike feign ignorance while preparing for and exacerbating utter disaster. First, however, let's look at the evidence suggesting leaders of the Free World are ushering in the demise of free humans due to, let's be generous and say, assumptions or ignorance.

The Society of Actuaries measures planetary solvency to help businesses forecast economic models. After all, how do you make money in environmental shambles? One would suspect that's bad for business? Yet, is it profitable, or even possible to stop?

[22] A works cited list is provided for deeper dives and research jumping points

Let's recognize and admit the environmental disaster we call home. Imagine that leaders couldn't stop this event, even if they wanted tot[23]. What type of feedback loop is this exactly? Can we model this system?

Let's take this step-by-step. First, this population decrease in our near future is not hyperbole. In fact, it is estimated that ⅘ of the human population, past, present, and future, has already been born[24]. Let that sink in for a moment. This spike in the human population, > 2 billion, is considered a deviation from the norm. Lucky you are a part of it for better or worse. To think we can escape our environment is to believe that you are not a part of the environment. As Deleuze and Guattari communicated,there's no such thing as a wolf, just the pack. [25]

You can get burned at the stake for such ideas now-a-days, but for different reasons to all I'm sure. What is more likely is that the whole planet will warm up beyond human solvency. James Hansen, a must know in the field of climate science, released a dire paper with Pushker Kharecha. In this paper, the main critique is that modern models are not only wrong, but deadly so.

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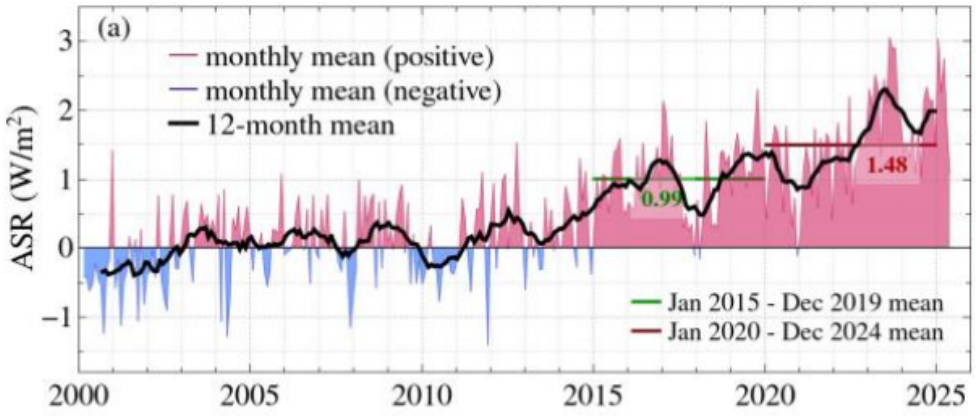
[23] The Tail of the Scorpion, Navigating the New Climate Era, Climate Extremes, Food Price Spikes, and their Wider Societal Effects

[24] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0298190

[25] https://www.tandfonline.com/doi/full/10.1080/00139157.2025.2434494
https://www.columbia.edu/~jeh1/mailings/2025/ForestTrees.06August2025.pdf

Fig. A1. Earth's radiation balance



JAMES HANSEN BIT

Please do keep that in mind as you excitedly exclaim to loved ones the death of many species and the darkness that lingers but 20 years away.

The weight of this not being felt is surely part of the system enabling and ensuring its own existence. Yes, a feedback loop persisting solely in the minds of Humans, and leaking into real world consequences. A thought.

The study of these interdependent systems is our methodology. It can take us far, but be warned. If you haven't picked up yet, this book is not for the faint of heart. Once you start studying systems and networks, you will never view the world the same way.

World3

On a lighter note, in the 1950's, some guy in Boston had the idea to study patterns as phenomena to be influenced. While many other people had this idea, including the native inhabitants, only one of them was MIT affiliated, and so a new science was born in the Sloan business school.

Here, it was largely used for insanely boring, mundane, and remarkably unimaginative tasks. Such as production line bottlenecks, or how to better manage an office.

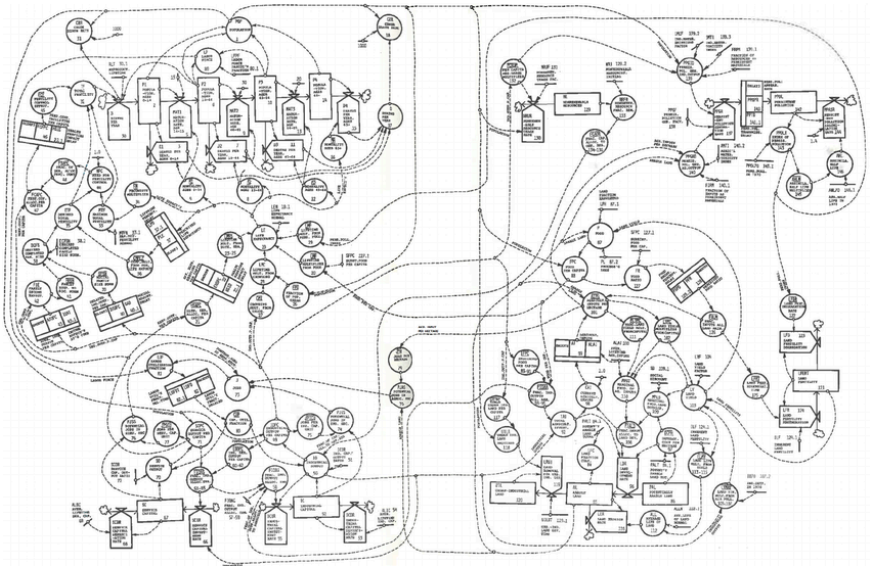


Diagram 3: The World3 Model

It wasn't until the 1970's, however, that some brave souls in The Club of Rome decided to try and use system-dynamics to predict how society was most likely to evolve. They called the model World3. Something strange kept happening when they ran the model. No matter how they tweaked their variables and feedback loops, a rather noticeable free fall in population kept occurring.

This model takes in a number of variables, such as food production, technological advancement, and pollution to name a few, to see how their interactions influenced feed-back loops, and by extension, the outlook for human kind. To measure such an

abstract idea, population, quality of life, and several other outputs acted as dependent variables.

Once you have your variables, the model enacts a time series experiment. If you're familiar with a Monte Carlo simulation, you'll know that computers can pretend that 200 years have passed in a nanosecond, one year at a time, or even milliseconds at a time. Each iteration and timeframe must be considered to get a full picture.

The variables too are not static. Food production is hardly static, and so formulas are used to incrementally change the values of the variables during each iteration based on the new input. This, in turn, influences what happens in the next cycle, and so-on and so forth. It allows us to peer into the future through a simple loop.

The input gets processed in turns, affecting the output, which in turn affects the new input for the next iteration. This way we can represent the changes time will bring with scientific rigour through experimentation. How variables may interact or change with time may differ from the sum of all the parts in a system.

The real trick of any model is bounding. It's a wild idea to even have as it is by its own definition limiting and bias. I mean, you don't have to bound a model, and in fact there

are many important reasons not to–such as in astronomy, physics, or pure mathematics. System-dynamics, however, seeks to define a model by how it is bound.

A model is bounded by defining literal limits to output or input. For starters, this reflects the physically rational world that humans live in.

For example, you can't have a negative death rate, and it will likely never even get close to 0. You can however, have no birth rate, which would terminate the program and represent the complete destruction of said species. These bounds reflect reality as we understand it, and as such it is a central point for bias while being the key.

We aren't dealing with unlimited resources. In fact, the book introducing World3 is named The Limits to Growth, and its output was designed to reflect what our endless growth mindset will accomplish. Published in 1972, this book was updated in the early 2000's. Everyone was very excited to see how the World3 models fared against reality. The results are surprising, but in a disheartening way.

The different outcomes of World3 are based on very different inputs and assumptions. The one of particular importance is called business as usual, where the mindset of unlimited growth goes unchanged. Sadly, this is the path that most closely represents the reality of our world. The predictions made in the 1970s with this model are

depressingly accurate in describing the world we live in fifty years later. Out of several experiments run with the World3 model, the business as usual, BAU, stands out among the rest. In the early 2000's, the models predictions from the 1970's were graded. Simply put, looking at the last 50 years, how accurate were predictions?

The result, World3 seems to be biased in the direction of human survival. Hindsight shows we are ahead of schedule for the business as usual path. Many calamities thought to begin in 2050, have started in 2020.

Looking at the predictions formed in the 1970's, and the data from today, we are able to adjust our models. It is eerie that the model was so successful. Even more spooky are the interactions. The World3 model tried to take in as many pertinent variables as feasibly possible. The output seeks to graph the temporal relationships of many of these variables. For example, how will food production or natural resources look in fifty years?

The beauty of a graph is that it utilizes our complex pattern recognition. We can see relationships in the curves and depressions of our lines. We can predict and measure that if X goes up Y will go down. From that, we can build rules that further make our

model robust and accurate. While the day-to-day isn't going to be predicted, the large patterns are made clear. Examine the prediction at the time of first publication.

The business as usual path is the output of the World3 model. Models, of course, can be run with different input values, assumptions, and levels of bias. For example, emphasis can be placed on certain features. Main critiques of the 1970s are the following.

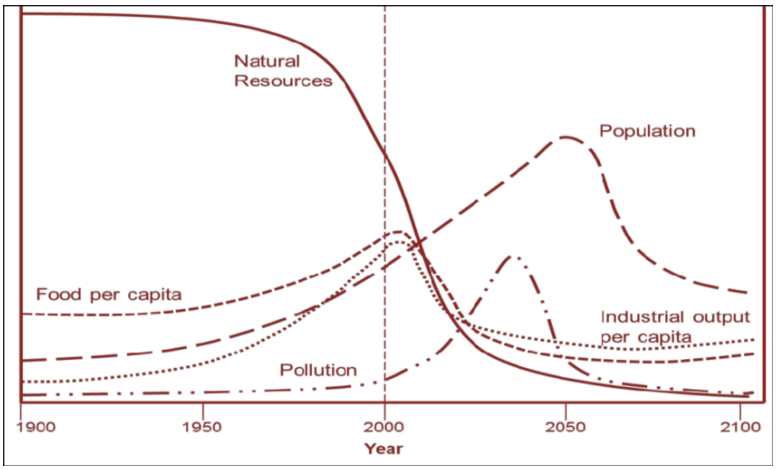


Diagram 4: BAU Path 1972

Climate change wasn't included in the original study. Rather, global systems affected by pollution were anticipated, yet failed to capture the unrelenting power of climate, its far reaching entanglement, and our utter powerlessness against the increasing intensity of nature and run-a-way effects.

It is important to note that climate change is getting worse[26]. Exponentially so. This is a relationship humans struggle to intuitively understand.

A stomach dropping realization that even without climate change, an abrupt drop in population was forecasted to begin in 2050, however, a 2020 update to *The limits of Growth* showed this is incorrect. The declines forecasted to happen in another 25 years, appears to have started before 2025.

We can harp on in detail about how global climate systems tipping will dramatically change predictions, but this has been done[27]. The purpose of this book is to examine humans and machines. How then does such a large variable play into our system models?

A political movement is tied directly to the decline of productivity. One simply needs to look at MAGA for a brief and deep explanation. Make America Great Again, while racist at its core, invokes recognition of unforeseen interactions. The dips and climbs of those two separate graph lines. Decrease in productivity, increase in social unrest. Many

[26] https://ametsoc.net/sotc2024/SotC2024.pdf
[27] Rahmstorf, S., & Foster, G. (2025, March 3). *Global warming has accelerated significantly* [Preprint]. Brief Communication. https://doi.org/10.21203/rs.3.rs-6079807/v1

believe this is a reaction to Obama's election, which makes perfect sense in hindsight and with the election losses of Hilary and Kamali.

One would be remiss, however, to ignore the power of economics. Spurred by rapid advancement in automation, many began to see their jobs disappear. The administration at X school wanted us to portray to parents that we don't know what jobs there will be in the future. As a consultant, I was directed to ensure middle management that AI wouldn't replace jobs, it would make jobs easier. They very well could do that. Any technology can be utilized to help the worker. History has shown otherwise.

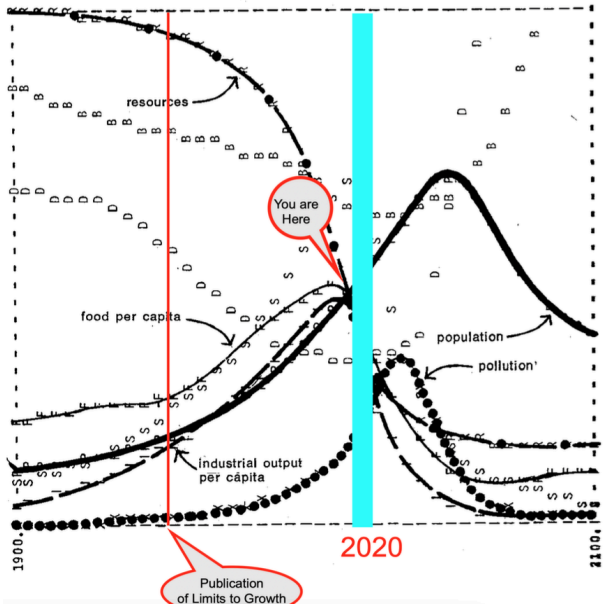
The turbulence within food systems, however, does not take in radicalized politics, run-a-away effects like the sea ice melt feedback loop, or release of permafrost CO2. Meaning, the decline in food production is not due to some scientific reason: such as loss of topsoil, depleted water tables, or a lack of nutrients, all of which are happening. Rather, it was caused by a socially constructed problem. An imagery game with deadly consequences, highlighting the importance of using system dynamics to ground policies within fact. The author believes this should be required by law for the interests of all humans. Lets, examine:

The 2000's updates to The Limits of Growth gives verifiable credit to system-dynamics. It made predictions fifty years ago, and was shockingly accurate. It was studied and improved on. A lot had changed in those fifty years.

This model was adapted and used for the first time in the 21st century, and with data from our new machines. See the output in Graph 2 BAU. Notice how the prediction lines match with actual history. See how the present looks. It should then be no hard task to forecast another 50 years into the future given the success of World3.

Devastastingly, the improved model pushed the expected drop in manufacturing, production, and population to begin in 2025. Otherwise, the model is performing exceptionally well! You can even visualize your own changes to variables in the World2 model[28].

[28] https://insightmaker.com/insight/4wpHY18l8OMhjRxk8VXat0/World2-Model-of-World-Dynamics



Graph 2 Update Model BAU output 2022

This output is scary. To not think that is to not accept these results. Notice how pollution is supposed to drop before the steep decline in population is lessened. There's another clear message in the data. There is clearly a before and after. The resources used drops, industrial output dramatically changes, and food per capita also drops.

The obvious reason is that we are living beyond our means. A period of decline is happening. Stability is found after industry and natural resource consumption are lessened by magnitudes. There is a clear trend in using less. How likely do you think that this will happen? Do you imagine humans will do it freely and without impetus?

Conclusion

Image 3: Biblis by William-Adolphe Bouguereau

System Collapse can be defined by many criteria. One of the most important being that there is no going back to the previous state. A tipping point is simply the start of new patterns based on the materials available. Before some sort of stasis may be reached, however, dramatic adjustments happen.

The most common cause of system collapse is over using resources. Plain and simple. For businesses implementing this methodology it may look like tariffs stopping production. Any system dependent on a few incoming raw goods will eventually collapse.

No matter how complex or spread apart a system may be, once input is disrupted, things fall apart. This is simple maths. Some nodes in a network, called hubs or superconnected nodes, establish dominance over behaviour. Take for example the Barabási–Albert formula for describing connects within a system:

$$\mathbf{P_i = k_i / \Sigma k⚜}$$

Where:

$\mathbf{P_i}$ is the probability that a new node connects to node *i*

$\mathbf{k_i}$ is the degree of node *i* (number of connections)

The sum $\mathbf{\Sigma k⚜}$ is taken over all existing nodes

More on maths later. In this chapter, we highlighted the roots of ecocide. Through introducing our evidence and reasoning, we came across the methodology of system-dynamics. We looked at how these models can be flawed, why they will never be perfect, and yet remain utterly indispensable for our society. The BAU model from World3 supports claims of a near-future holocene. As in 1972, we must ask what are our limits to growth, and why do we not live in this version of reality?

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Appendix One

Image sources: https://www.columbia.edu/~jeh1/mailings/2025/ForestTrees.06August2025.pdf , https://www.tandfonline.com/doi/full/10.1080/00139157.2025.2434494#inline_frontnotes

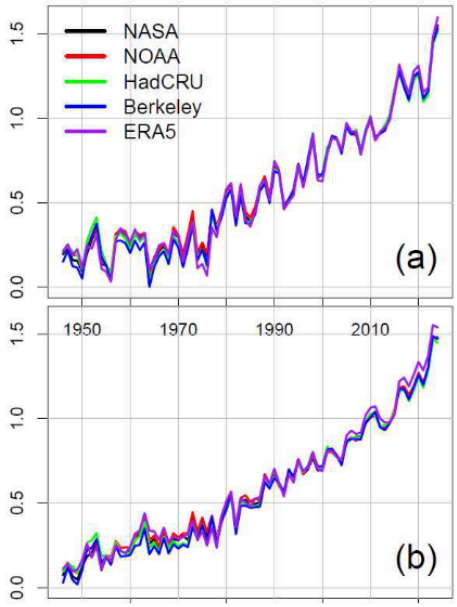


Figure 1. Annual averages of global mean surface temperature from five data sources, both raw data (a) and adjusted for exogenous factors (b).

Fig. 1. Earth's albedo (reflectivity, in percent), seasonality removed[14,15]

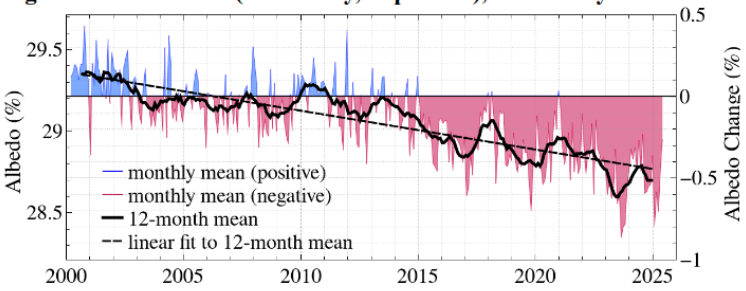
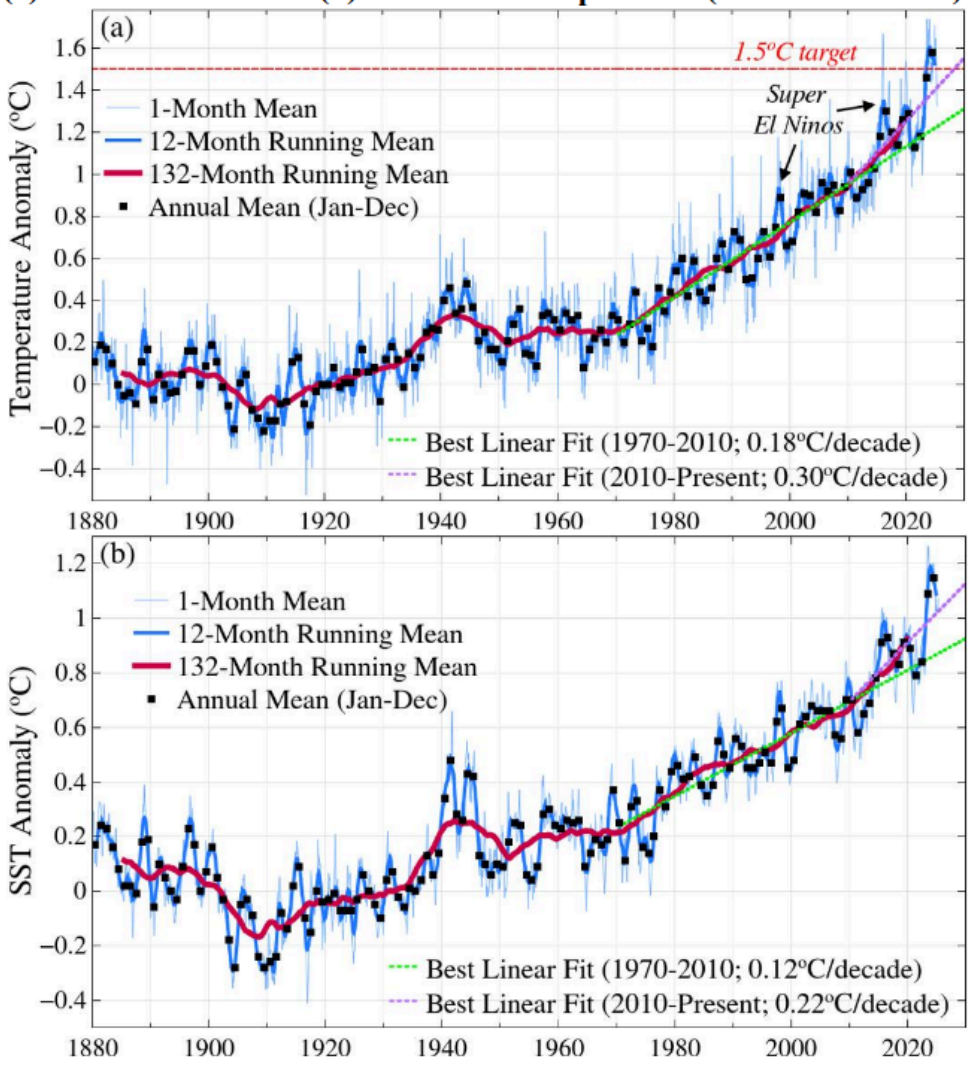
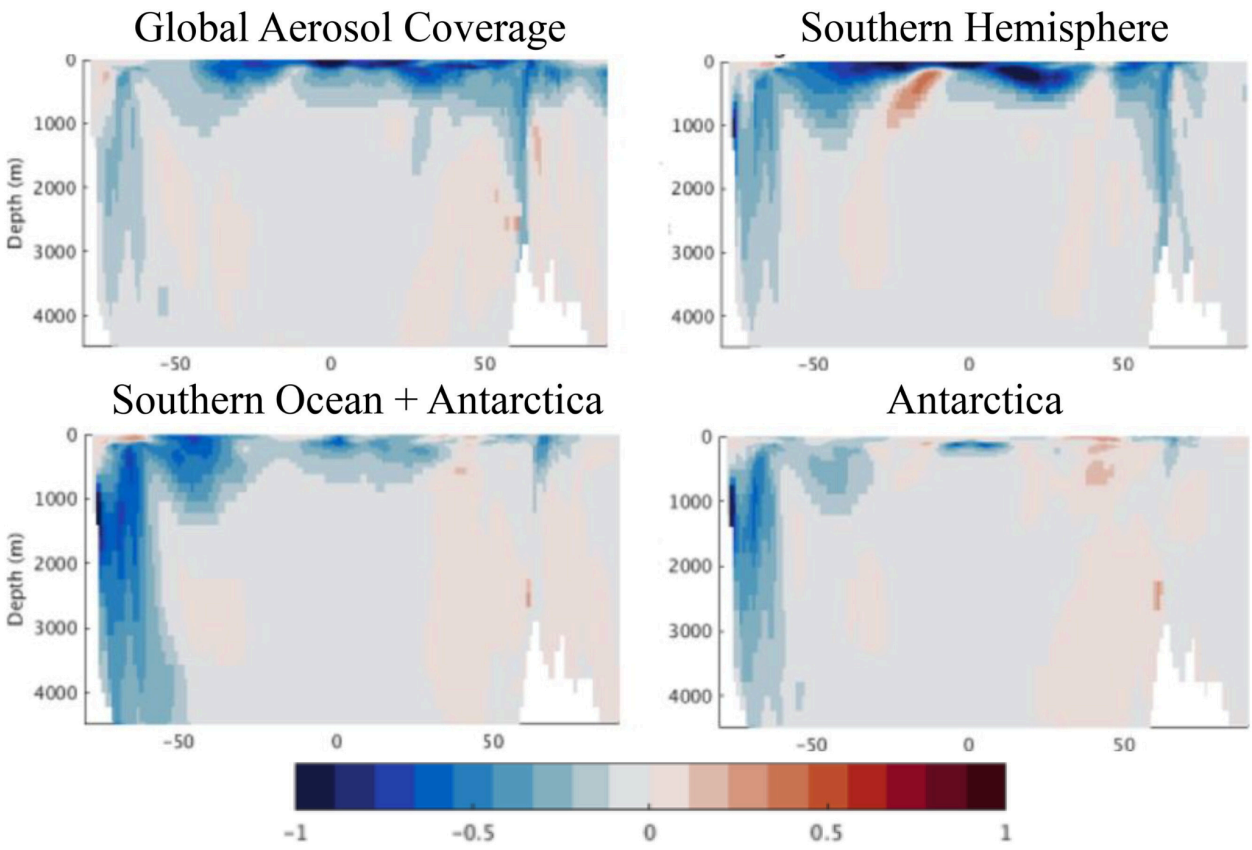


Fig. 2. (a) Global surface and (b) sea surface temperature (base = 1880-1920)[22,23,24,25]




Global Aerosol Coverage
Southern Hemisphere
Southern Ocean + Antarctica
Antarctica
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-50
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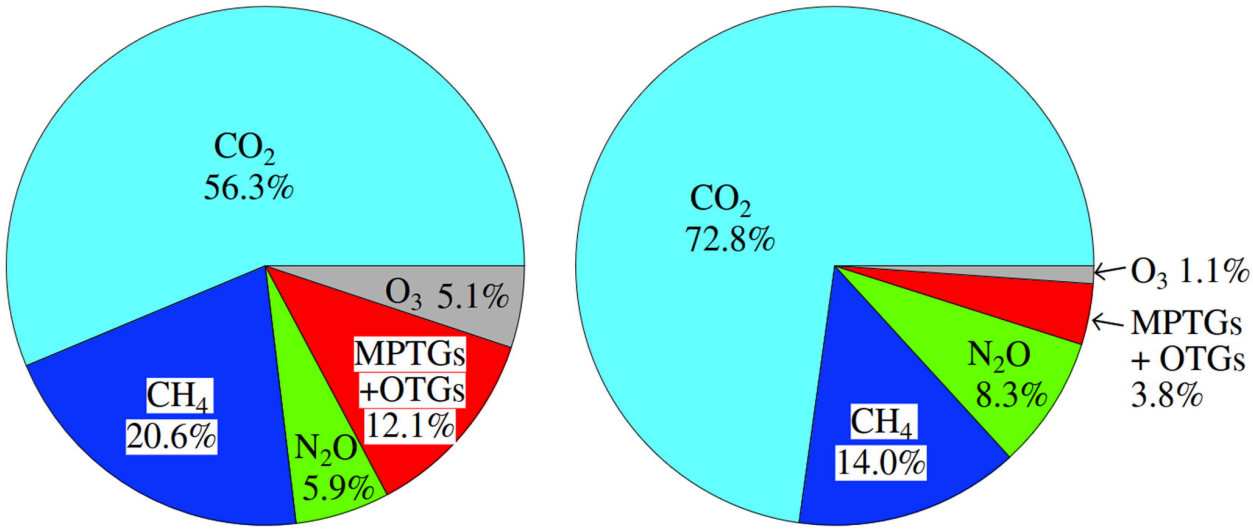
1


CO2
56.3%
O3 5.1%
MPTGs
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CH4
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N2O
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1750-2023 (4.17 W/m2)
CO2
72.8%
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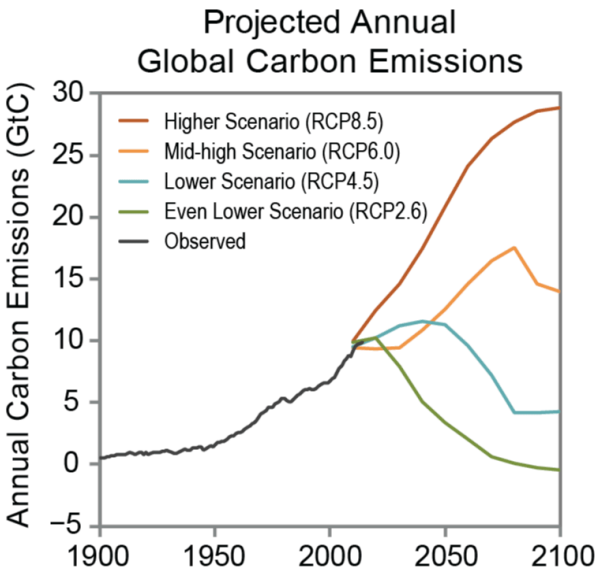
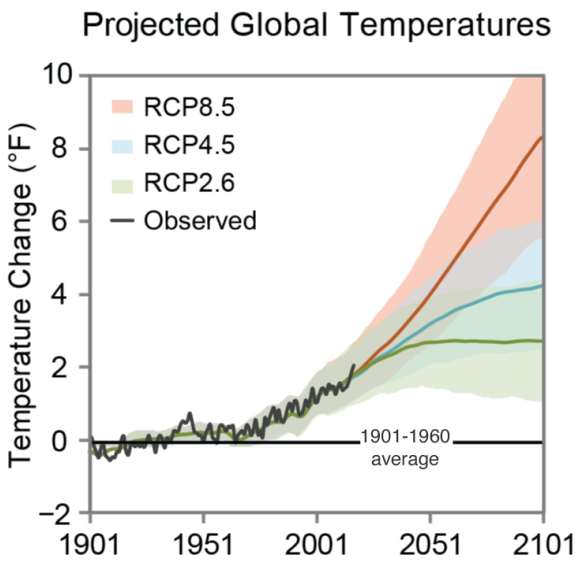
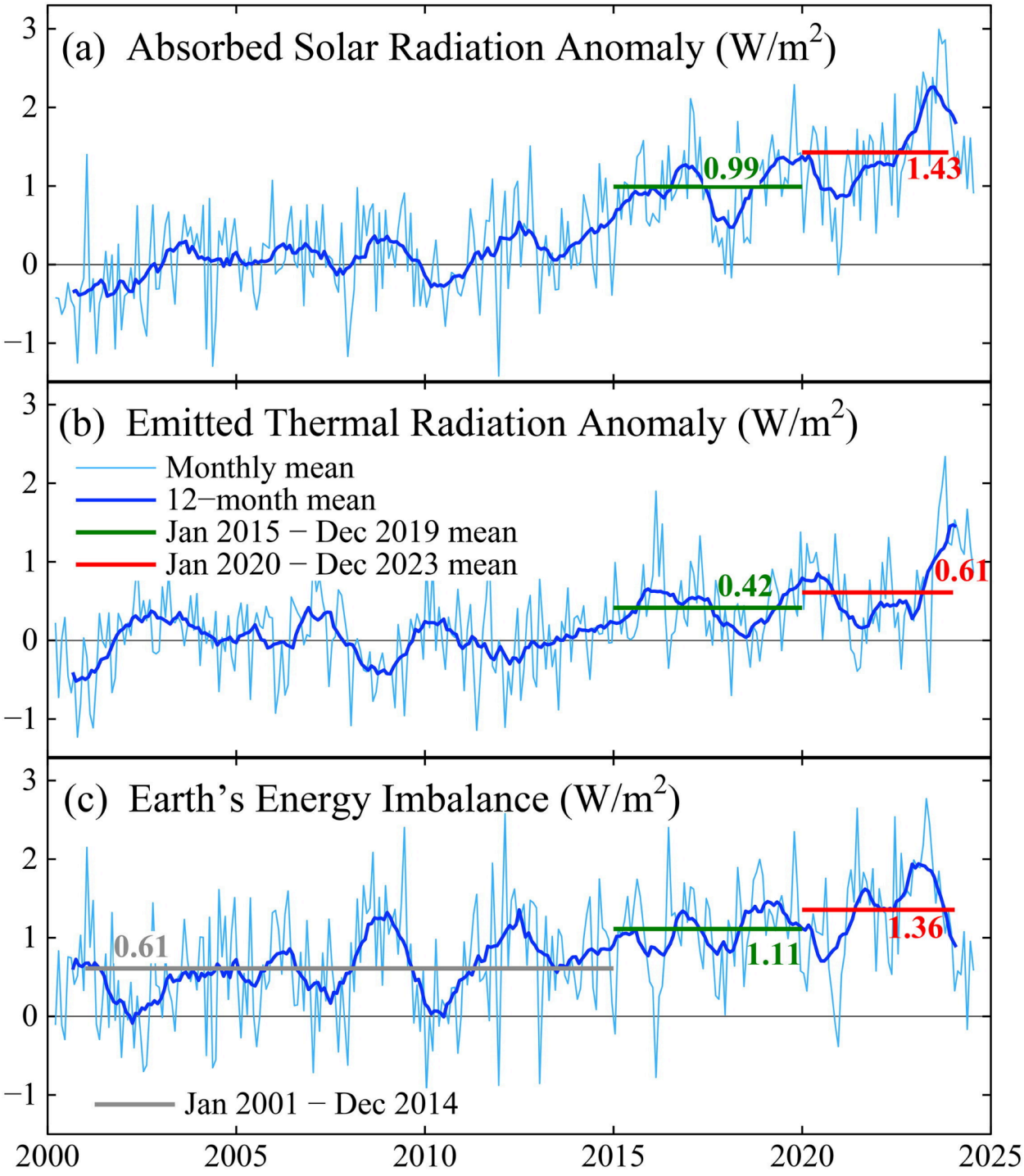




2017 Climate Science Special Report, Figure ES-3


(a) Absorbed Solar Radiation Anomaly (W/m2)
0.99
1.43
(b) Emitted Thermal Radiation Anomaly (W/m2)
Monthly mean
12−month mean
Jan 2015 − Dec 2019 mean
Jan 2020 − Dec 2023 mean
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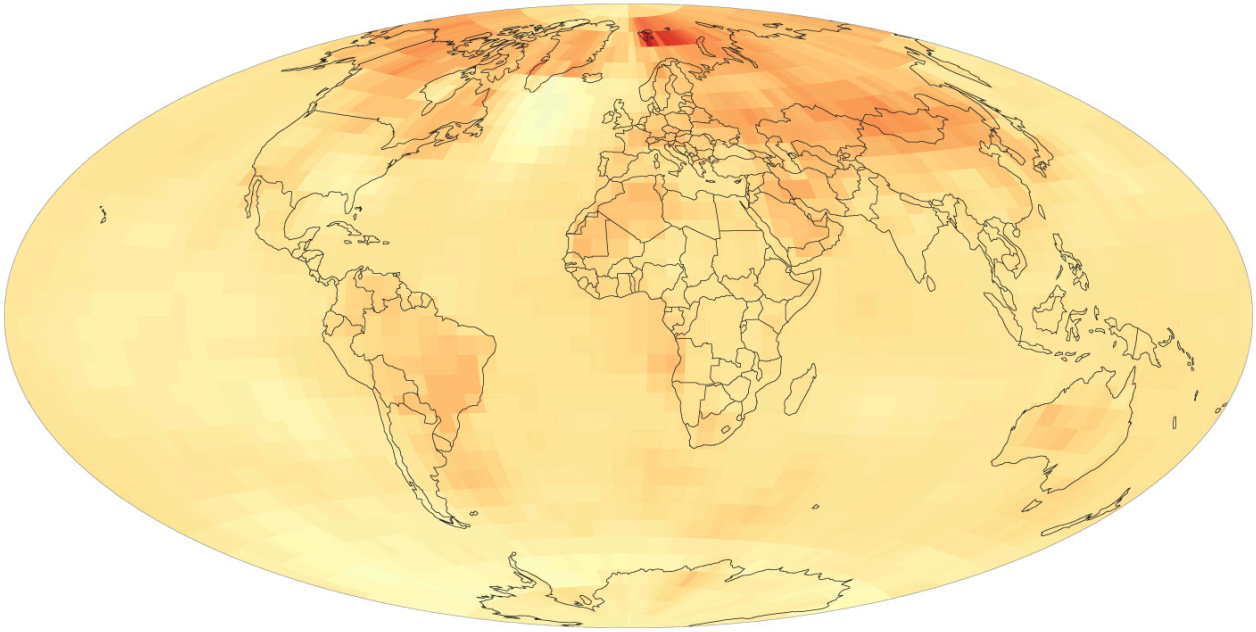
0.61
(c) Earth's Energy Imbalance (W/m2)
0.61
1.11
1.36
Jan 2001 − Dec 2014
3
2
1
0
−1
2000
2005
2010
2015
2020
2025

WARMING OVER PAST 30 YEARS IS MUCH FASTER THAN LONG-TERM TREND

1901-2023



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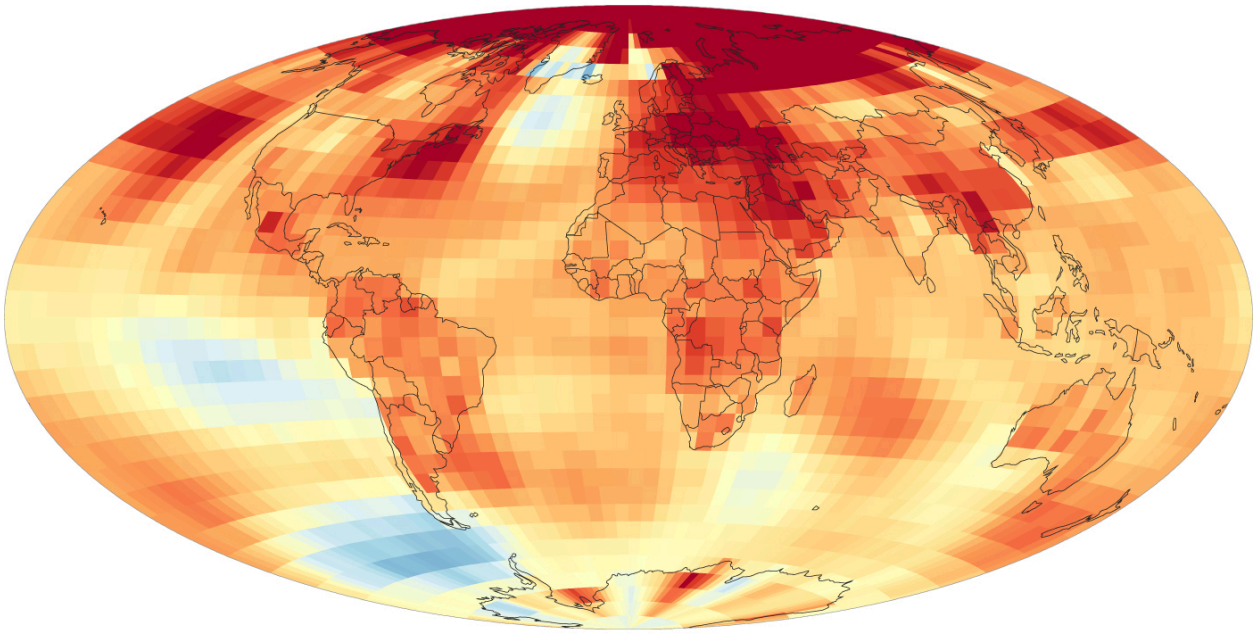


Change in temperature (°F/decade)

-1 0 1

NOAA Climate.gov
Data: NCEI

Ethereal Realities

Joseph Tomanek: Dance of the Hour

Introduction

The idea of a reality that is ethereal should be taken with extreme seriousness. Your entire concept of self and reality are just that. We see the connections between each others' ideas as more real than our connections to Earth, Air, and Water.

We made race, class, religion. None of these are natural. Their only basis of existing is in the enforcement of the masses. These properties are the hallmarks of co-evolution. Evidence of something below our understanding.

Machines demand stratification. Through labeling parts, one dissects whole processes. A piston isn't an engine, and an engine doesn't need a piston to be. Yet, a piston has little use outside of an engine. Save for education–but not for practice. Sound familiar?

Class division is the most extreme form of ethereal reality. Our society simply does not work without the creation of lines. One side the poor and dehumanized. The other, exploiters who are guilty of atrocities against humankind.

This chapter will demonstrate where our imagination of normal comes from, how our reality is carefully crafted, and the data powering such unparalleled success in manipulation is its own feedback loop.

Everyday I walk by an older street near the water. The trees are tall, strong, yet incredibly spry. They bend and wave with the wind. A strategy tried and true. After all, they have been here for centuries on this block. They saw everything from the battle of Brooklyn to the digitization of humankind. They were here before electricity, gas, and fiber-optics. Holding each other's roots. Passing information and nutrients.

Across the street, there is one of my most favorite buildings in the neighborhood. The trees saw the transformation of a lovely brick school house, surrounded by generations of stewardship, turn into five private lofts for the wealthy. What could they do besides fall on the lofts? Then we'd have neither trees nor public schools.

Several **for-profit** schools had sprouted in the absence of this publicly funded loft. These schools specialize in French, Euro-Spanish, and other Western curricula. All the while, on the same block, unhoused bilingual immigrants sit suffering with their children in the 100 degree heat, and 90 percent humidity.

Their Southern Spanish restricted their only means of survival–begging. Society refuses them any other entry into America besides the absolute bottom.

The early 2020's has seen an acceleration of the bottom coming to us. As American stability crumbles, feats of engineering meet feats of cruelty, and for why? How can a land developer profit off the past generations' caretaking? Simple, sell the dream.

The dream is a brick school house surrounded by ancient trees accepting fleeing refugees. Not only into the education system, but into the dream. This has never been a pure dream, but it is one worth fighting for and shaping nonetheless. The real point here is that those in the school lofts don't belong there, but don't believe anything is wrong.

They drive electric cars, vote blue, and publicly declare support for immigrants while occupying their future. On the same block we see the cracks in our ethereal realities, and yet they would seem to go unnoticed by those they affect the most.

Heavily stratified, and even more so naive, I committed to do something. My ancestors didn't get arrested and sent here so I could be under the yoke of capitalism.The cops

were nearly called on me–save for the kindness of an old man. I did deserve it too. Make no mistake, you would have called the police too. At the time, I could not hold this school building loft in my heart.

Naturally, I would empty my dogs' poop bags onto the stoop of the school house. For weeks, every single day, I got to watch with delight as the occupiers were sent into a poop fury.

This act of rebellion was not well thought out, albeit hilarious. In a microcosm of our greater society, a truth was reflected. Only the working class suffered in this situation, and it was by my hand.

I ended up buying the Super coffee and pastries as I spouted a profuse apology. My goal had missed its mark by a mile. This poor super had to clean up the mess I was making. He did not find it funny, but allowed me to learn and admit my wrong doing. Thank you.

I explained how I was recently laid off shortly after pushing for a balanced pedagogy of the genocide in Gaza-fact based. The school I worked at was voted the best private school in America, and I was promptly dealt with. A pattern repeated for any true form of resistance.

I couldn't stomach what had happened to me or to the school building. I could not understand how anyone could. Yet, the answer is devastatingly simple. If you are close to the bottom, the realities of our society have no luxury escape. Just as if you are not, the fall is ever present.

Expecting the future to be different is a practice in ethereal realities. Our connections to each other now are confused with our connections to reality, to the land, and especially to ethics. Capitalism is a zero-sum game as most religions are too. To win, another must lose. Our barbaric system, however, is widely held as natural. Yet, we do not live in a capitalist system by any definition. Free trade is a lie, fair trade has never existed in this

system, and movement for the masses is downward. In return, we are provided ethereal realities. Our own location in the web of humanity. All while becoming its destroyer. From atomic bombs to microplastics, history will not see if there is no future.

Our examination of ethereal realities starts with the Atomic and Digital age. While the bedrock and predecessors for this ideology have their roots far back in history, this most extreme transformation is the limit of our scope. It is hard to convey how much the world changed as a result of these two technologies. I dare say it's impossible to overstate their importance. For scale, place these inventions with the advent of writing, farming, and fire.

These two fundamental leaps in technology shape our societies, minds, and more over our connections to each other, the earth, and the cosmos. Our eyes have become telescopic lenses, our minds neural networks, but what about our souls? This chapter exposes the ideologies behind our ethereal realities. By highlighting examples in the wild, dissecting them with system-dynamics methodology, and predicting their evolution in our model we gain distance.

Connections will be made evident not only from the data they produce by existing, but from the harvesting pattern sustaining them. The maths of this network will be

discussed to further prove evidence of ethereal realities existing within a scientific framework. Allowing for modeling, testing, and refinement.

This should not be surprising as our current reality came from a science laboratory. During a time when the U.S. government sought to strengthen intellectualism for the purpose of complete global dominance.

The Rand Corporation

Image 2.2

The Rand corporation is a wartime creation born of hyper-capitalism. Formed by the U.S. DoD and privately held companies, a simple question was answered. What to do

with all these nerds? Germany, in the throes of nationalism, lost its best. Many physicists, mathematicians, and computer pioneers and their families were lucky enough to wind up in the United States.

A great many more were not. How this happened is an entire book series of its own. Be not surprised, however, that not all scientists were fleeing persecution from the Nazis. Some were Nazis, but Nazis who were good at some exploitable skill lacking back at home.

WW2 was a war of science and technology. The success of the Blitzkrieg wasn't super soldiers or meth. It was simply that tanks started going faster, longer, over more and more difficult terrain. This lesson was carefully studied and incorporated by the Allies.

By late-stage war, the United States had been given atomic impetus from Einstein. Later, he would warn and even refuse to work on the Manhattan project. Recognizing the inherent risk in weaponizing atoms. Yet, he was the one who warned of what the Germans were studying and why. Giving credibility, and moving the U.S. into action. The choice was little much of that. Just like the AI race, the simple action of another pursuing the goal demands the other to do so. Certain technologies are game changers.

Nuclear weapons and A.I. are certainly not exceptions. There is a new line. Those who do and do not have. With this in mind, exceptions were not made but prioritized.

The academic shift from Europe to the United States is hard to appreciate. Both, powerful forces–State and Instution– lead in technology, just barely. The United States gained Einstein, Niels Bohr, and John Von Neumann to name a few. Operation Paperclip and Operation Overcast sought to expand on *national priority* technologies, bringing 1000 to 5000 nazi scientists over to help reach this goal.

Even the Rand Corporation employed former Nazis. Though they will claim they were only low-level or loosely affiliated, and there is no direct evidence. By pure coincidence, the Rand corporation's first task was to build an earth orbiting craft. A project the Nazis were heavily invested in.

Created in 1946 by the US Airforce, and a business partnership with Douglas aircraft, the Rand Corporation represents something old in a new way. It was born as a place where the civilian brian power that won WW2 through scientific slaughter could be formalized, optimized, and most importantly monetized. Government and Corporation hand-in-hand. Just like Jamestown.

Both, a mix of organizations. Both for reaching new places before competitors. Both, foundational for their era. We live not only in the shadow of Jamestown, but the trauma of WW2, and the shadow of eventuality. Bombs are made to go off. Without consistent maintenance and care, these machines pose serious threats let alone their intended use.

What happens when societies collapse as they always have? We have created our own Gods, and if they go ignored they will punish us. The entire future of the human race is dependent on the careful handling of the machines.

Image 2.2 from the Rand corporation is in the 1950s. It shows men diving into where to use nuclear weapons, what/who is acceptable to lose at home, and deciding which population should be protected over others. These men had no illusions of unlimited resources. They are war time men–geniuses saved only by their own wit. A callousness not meant for peacetime. To be clear, these *geniuses* are playing nuclear war games designed to test human policy.

The irony in this photo is large enough to choke on. A genius discussing how to use nuclear weapons is a logical contradiction save for repurposing, dismantlement, or a lesson in insanity.

To capture the moment in time when The Rand Corporation was created, we utilize a main character's journey. John Von Neumann created the architecture which all modern computers use to this day.

To say we are heavily influenced by Von Neumann is an understatement. Even if you never heard of Jon, you have. In the Simpsons, the wacky scientist character will randomly and compulsively scream out Von Neumann!

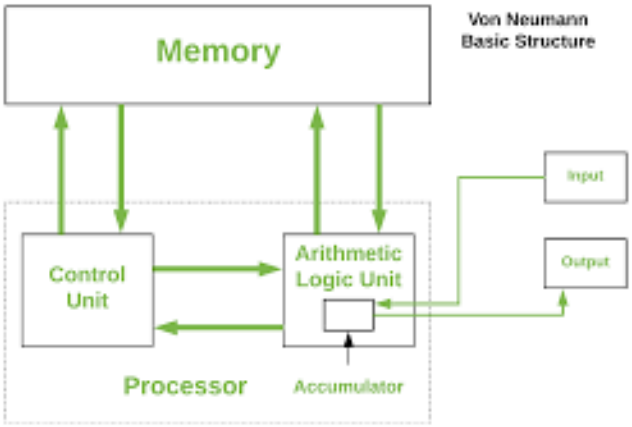


Diagram 2.1: Von Neumann Architecture

He is an inspiration for the mad scientist in Dr. Strange Love[29]. While Jewish, Von Neumann is displayed loving his uniquely German fascism. The irony is remarkable. The message is clear.

[29] https://lithub.com/the-real-life-and-times-of-the-scientist-who-inspired-dr-strangelove/

The Nazis were absorbed: not defeated. Perhaps, one of the reasons the movie is a classic for any cinema lover. It's more conceivable that a Jewish scientist fleeing the war would love Hitler, than the weaponizing of nuclear dead-man switches. By doing so, we have ensured our destruction until all bombs are dismantled.

The climate is changing once again. Things are not as they used to be. Can a government prioritizing the destruction of science wield the tools brought about by this beast. I think not. This is an anchor point for our ethereal realities. The misdirection of actual threats in lue of fabricated ones.

The demons change, but the emptiness does not. An ethereal enemy is perfect for chasing, motivating, and distracting.

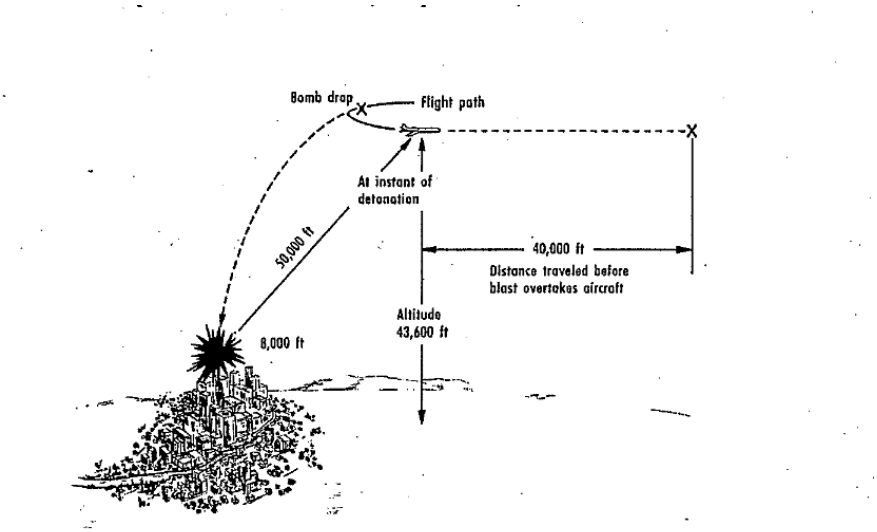


Fig. 4—Schematic of H-bomb delivery problem

If you're going to commit mass murder, you might as well do it in the most efficient manner possible. This is the ideology directly opposite of nuclear weapons. Their pure stupidity is measured in megatons of pure destructive forces. The first problem was how to get a plane fast enough to avoid getting blown up by the very bomb they dropped.

That's how powerful these weapons are, and that's how large of a jump in technology was made. Surely, this isn't the policy of men living in reality?

Policy produced by the RAND corporation is at best mitigated evil. We should not consider this an opinion. It's a sticky business justifying indiscriminate death. Take for example the prevailing policy for nuclear deterrent: be too scary. That's the executive summary at least.

The formal idea is to maintain such an advantage over atomic powers as to dissuade any ideas of aggression. To enact this policy, one simply needs a dead-man's switch. That is, even if you kill all of us, our machines will avenge our lost lives by taking the Earth with us. Effectively, kingdoms came from countries with atomic knowledge.

Believe it or not, but this was probably the most mild policy up for utilization. John Von Neumann was a famous proponent of the strike first policy. A devilish idea born out of game theory and suspicion of a cheating wife. Jon utilized his prized creation, Game Theory, to predict that the creation of nuclear weapons means they would be used. He was right, twice over.

The problem was, he also believed that nuclear attacks would be used again. Why wouldn't they be? He saw the USSR getting stronger and stronger. Being a refugee of the war, he knew full well the cost of accepting risk. So, with cold strewn logic, he suggested striking first.

Right now, he literally meant to attack and destroy the USSR ASAP before they gained their own dead man's switch. Many took this idea seriously. Many more still think it was the right call of action. The logic is solipsism: Man had no choice once the machine was built. The need to follow through is pathological.

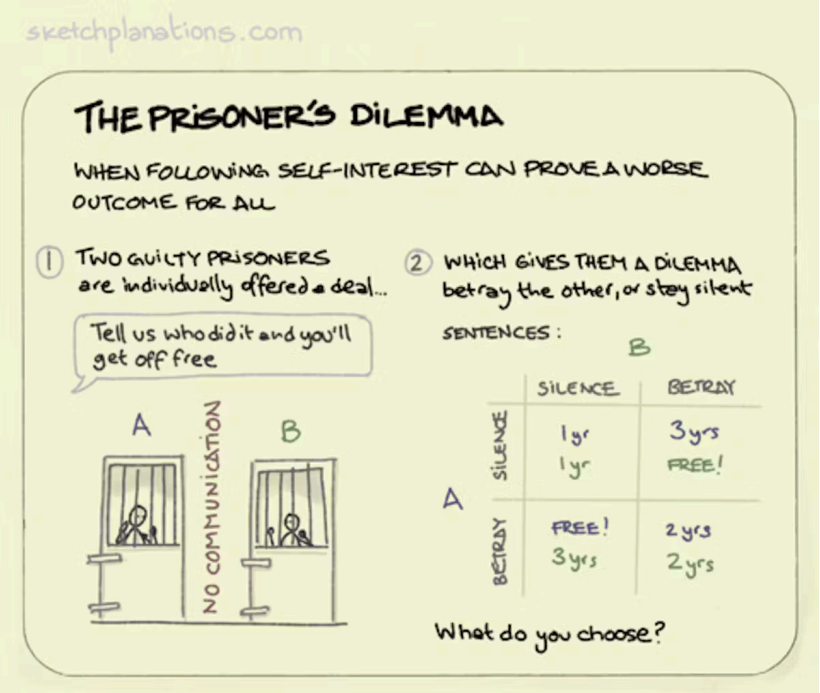
It would have been a tragedy incomparable to anything in history. The absolute hellscape produced by hydrogen weapons is ineffable. The acceptability of having a strike first policy was normalized. It became a part of reality. It did not need to be. In Game Theory, one of the most powerful moves a player can make in a zero-sum game is

of blind faith. Of not returning hostility. The second most successful strategy is a tit-for-tat scenario.

This is the reason for cities in the United States being planned further apart, the impetus for creation of the internet, and a complex network of highways. It's hard to destroy every path in a spider's web. This principle underpins the reason the DoD funded the creation of the internet.

Certain patterns reinforce certain realities. In the reality of nuclear weapons, having a society spread out and highly interconnected is defence. The more connections in a graph, the harder it is to take it down. How on earth to handle all these interactions saw many studies.

Von Neumann's Game Theory is still at the heart of military and weapons design today. The most famous example being the *Prisoner's Dilemma*.



The prisoner's dilemma is well documented and analyzed. The lesson being that while it would behoove two people to work together, such as not talking to the police during interrogation, often these people will work against each other, such as both telling on the other.

We are all prisoners of nuclear powers. The complete lack of concern in the general public speaks magnitudes. There is literally no escape from the devastation mankind can rain down.

This is a first in history. Here, our tie to the past is severed. Progress has snatched our grounding. Now, in our ethereal reality, our attention is not outward, but inward.

Transistors

The microscopic transistors, besides supporting our entire modern world, had advances which coincided with the advancements of atomic powers. I'm certainly not saying one cause the other, but pointing out that they both come from the same litter. 100 years ago, both of these ideas were science-fiction.

A war happens, society and their machines change, progress is had by those who survive. Darwinism of ideals, humans, and machines. Computers and bombs are different quite obviously, but we must not forget that both developed rapidly hand-in-hand.

Leading the race for best invention of the 20th century are transistors. Easily one of the most important breakthroughs for all of humanity. Up there with fire and the wheel, transistors forever changed the landscape of machines by introducing human traits: memory, recall, logic. To do this, every problem is broken down into its most basic parts, and fed as bits to the machine.

A transistor is a machine that records this most basic unit of information: the bit. Very simply, you record an on or off state. A 1 or 0, and from that you can extrapolate an entire logic system. We call it binary, and it's the best we got right now. It is purely the language between machine and human.

The quantum simply adds a third option to the binary called superposition. It's a bit more complicated and infused with probabilities, but that's the gist of the quantum hype. The bit, however, remains the essence of all our technology.

Binary is our logic system because machines work this system with incredible ease, accuracy, and speed. Imagine a thousand children doing very basic maths. Maybe adding digits together between one and ten. Alone, not very powerful, almost useless. Together, an absolute beast.

Simply adjust your input to match the logic of how machines model, and our digital era is born. That is, as long as the data can be broken down into what a bit can represent, anything can be modeled.

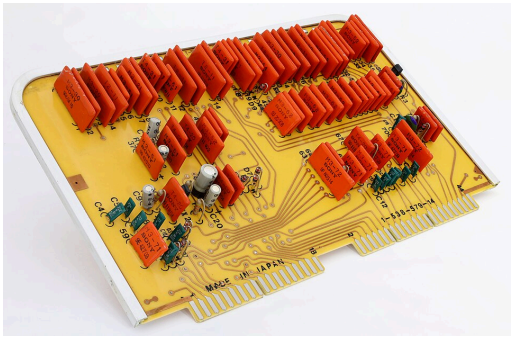
This is all well and good save for the fact we just talked about a different basis of information, i.e., the quantum. In a quantum computer the most basic unit of

information is a qubit. Which holds infinitely more data than binary! It is clear then, that something is missing in our machine logic and binary view of the world. This is a phenomenon that even our transistors today are pointing at, while laughing at Moore's Law.

At first, transistors were large vacuum tubes. Creating computers the size of whole rooms to help kill enemies. Projectiles can be predicted. It just takes a lot of variables and quick computations using geometry, calculus, and algebra. That basic American high school math curriculum.

Then came an advancement at the end of the 1940's. Golden point-of-contacts were developed by Bell laboratories, which significantly shrunk the machine size needed to record a bit. A germanium crystal and two contacts coated in gold controlled the flow of electrons.

With the move away from vacuum tubes, general purpose computers became a viable machine option. The 1970s only furthered this with the integrated circuit. An unparalleled jump in transistor technology.

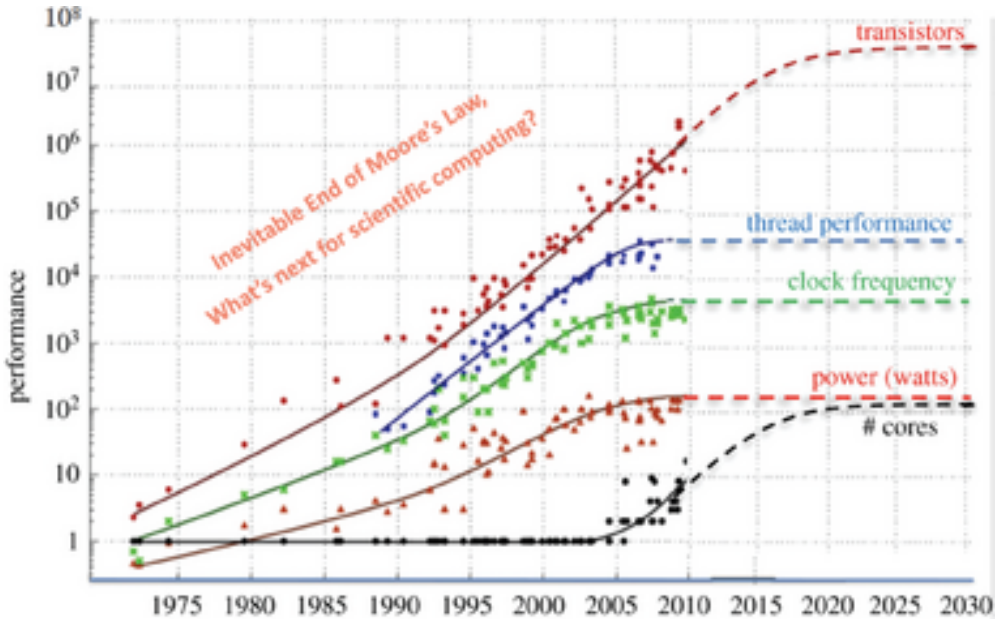


IC Circuit Sony 1970s[30]

[30] https://commons.wikimedia.org/wiki/File:Sony_SOBAX_ICC-400W-_PCB_1-538-579-14_Side_view.jpg

This allows mass production and mass grouping of not only transistors, but other components on the same board. Ford had paved the way. Computers came to follow suit. Mass production means experimentation, and improvement.

Through all these advances, Moore noticed a simple pattern. Every two years, the number of transistors we can fit on an integrated circuit will double. Moore's Law seemed like a near perfect discovery.



Moore's Law[31]

31

https://www.researchgate.net/figure/Moores-Law-timeline-including-Moores-Bend-with-transistors-CPU-inflected-with_fig6_381619286

Strike-first

Cycle: Human Machine

Appendix Two

Meow