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Disrupting the Climate, Denying the Future

Climate Change is in the news a lot. Not nearly enough, but a lot. I want to discuss the denial and consensus around this existential threat to the global ecosystem, but before I do I want to make an important point about how to refer to it.

What we call things does make a difference. So I'm trying to train myself to stop using the phrase "climate change" when talking about this stuff, because I believe that the name we give to this phenomenon should make it clear that the climate is not simply *changing*, but is *being changed.* By humans, in fact. The academic term for this is "Anthropogenic Climate Change." That sounds kind of nerdy to me. I prefer to call it Global Climate Disruption. I think that says it better, and is easier to understand. The climate is being disrupted on a global scale, and the only species capable of doing such a thing is *Homo Sapiens.* That's where the discussion should start.

But the discussion often doesn't start there. Many people start by denying that there even *is* such a thing as "climate change," let alone climate *disruption*. So I'll start there.

I won't spend a lot of time refuting the specific arguments that people use to justify their denial of the scope and scale—or even the existence—of Global Climate Disruption. But I will list a few of the more common arguments here:

#1: It's the sun.
#2: Carbon dioxide levels are tiny. They can't make a difference.
#3: Scientists disagree on the cause of climate change.
#4: The climate has always changed. It's natural.
#5: It's cold out. What happened to global warming?
#6: In the 1970s scientists warned about a coming ice age. They were wrong. So why should we believe them now?
#7: The temperature record is rigged or unreliable.
#8: Climate models are not accurate.
#9: Grand Solar Minimum is coming. It will counteract global warming. [I had never even heard of this one!]
#10: Scientists claim climate change will destroy the planet by 2030.

That list comes from a really interesting 2020 article on the website of CBS News, headlined "10 Common Myths About Climate Change — and What Science Really Says," by Jeff Berardelli. https://www.cbsnews.com/news/climate-change-s-what-science-really-says/

I personally think that most of the arguments listed above are so ridiculous they are not interesting. BUT... The fact is that somewhere around one in five USAmericans believe that the climate is not changing, OR if it is, humans are not responsible. Now, THAT is interesting.

The Conservative White Male Effect

In this regard, a thought-provoking article was published last Summer in the European Sociological Review. It was titled "Socioeconomic Roots of Climate Change Denial and Uncertainty among the European Population," and one of my favorite sections was headed "Ideological Explanations of Climate Change Disbelief." And here we read,

"Ideological (also called cultural) explanations often refer to conservative values that make people unwilling to accept climate change mitigation changes. Climate change denial might thus be motivated by the wish to maintain or regain traditional social structures. This explanation has been called the 'conservative white male effect.'"

Speaking of nerdy phrases, how about that "wish to regain traditional social structures?" We'll never see "I Wish to Regain Traditional Social Structures" on any signs at future protests at our nation's Capitol. ➜➜➜

Greetings,

On February 24th Russia invaded Ukraine. We all know about that. As the heart-rending images of war dominated the daily news, few people even noticed when, a mere four days later (on February 28th), the Intergovernmental Panel on Climate Change released their latest report, the Sixth Assessment Report (AR6). The virtual pre-empting of this report is tragic, given the fact that this 3,600-page report, approved by the governments of 195 countries—virtually the entire planet—makes crystal clear the seriousness of the threat of climate change. Or, as I prefer to call it, Global Climate Disruption. I don't have enough room to talk about the report in this issue of Nygaard Notes (it's 3,600 pages long, for cryin' out loud!), but I'll have much more to say about this major report in coming editions of the Notes. Maybe the next one. We'll see.

It's been a long time since the last issue of Nygaard Notes. My apologies! Two events explain the gap. The first has to do with my day job, which is the making of political buttons at the amazing RLM Arts Studio. Almost exactly two years ago, on March 27th 2020, we closed the Studio due to the pandemic. It's still closed to walk-in customers, although we have continued to do business online (check it out: https://www.rlmartstudio.com/) and people have continued to buy the posters, note cards, puzzles, tee-shirts, and other items built on the art of Ricardo Levins Morales. But, for a variety of reasons, the button business mostly went dormant... until about six weeks ago, just as I was about to put out this issue of the Notes, when the button business suddenly EXPLODED! And I've been struggling to keep up ever since. Just getting my head above water in the last week or so.

This issue would have come out last week, in fact, but for Event #2: Last week I was one of the victims of an organized theft operation at the University of Minnesota gym where I work out. A couple of guys (there were witnesses) came into the locker room with a duffel bag concealing the bolt-cutter that was inside. Snip! Snip! went the padlocks, and the lockers were cleared out. For several days my time was entirely taken up with addressing the various losses: keys, debit card, phone, license, etc etc. So no Nygaard Notes last week!

That's probably more than you wanted to know, but that's my pair of excuses for the long gap between the publication of Nygaard Notes #684 and the issue you are reading now. I have lots of stuff to discuss—the mind keeps working even when the body is otherwise occupied!— so hopefully the next few issues will get to you in a more timely manner.

Thanks for your patience! And let me know what you think of this issue of the Notes. I read and respond to every piece of mail I get, so let me know what you're thinking.

Busily yours,

Nygaard

Disrupting *from page 1*

Protesters will, I'm sure, stick with the shorter and catchier, "Make America Great Again."

It shouldn't be necessary, but since efforts to deny or minimize the human role in what is called "climate change" still exist, I'll here offer some evidence that the science really is overwhelming.

We could start anywhere, but I'll go with an organization that most USAmericans have heard of: NASA.

Science Says...

The National Aeronautics and Space Administration, or NASA, has a special "Global Climate Change" website, where one can click on a button called "Facts,"↗↗↗

➔➔ then on a button called "Scientific Consensus." https://climate.nasa.gov/scientific-consensus/ Here's a bit of what you will find there:

"A consensus on climate change and its human cause exists. Multiple studies published in peer-reviewed scientific journals show that human activities are the primary cause of the observed climate-warming trend over the past century."

"Multiple studies published in peer-reviewed scientific journals show that 97 percent or more of actively publishing climate scientists agree: Climate-warming trends over the past century are extremely likely due to human activities. In addition, most of the leading scientific organizations worldwide have issued public statements endorsing this position."

NASA then offers a sample of statements from places like The American Association for the Advancement of Science, The American Chemical Society, The American Geophysical Union, The American Medical Association, The American Meteorological Society, The American Physical Society, The Geological Society of America, The National Academies of Science, The National Research Council, The Intergovernmental Panel on Climate Change, and The U.S. Global Change Research Program.

Then they go on to list nearly 200 worldwide scientific organizations that hold the position that climate change has been caused by human action. I won't even attempt to list them here, but the list goes from Albania to Zimbabwe.

Myth #5 in the list above reads "It's cold out. What happened to global warming?" The confusion here starts with a lack of understanding of the difference between climate and weather. But it goes much deeper than that. Let's have a look. ◆

"How Have We Loaded the Dice?"

Heat waves, droughts, wildfires, hurricanes, tornadoes and floods are all examples of extreme weather. Increasingly, when an extreme weather event shows up in the news, people want to know if "climate change" caused it.

But, as Stephanie Herring, climate scientist at the National Centers for Environmental Information in Boulder, Colorado points out, "There's no way to answer that question." Any weather event could happen by chance, she reminds us, or it could simply be part of the natural variation in weather.

For many people, the discussion ends there, and the belief persists that there are some things beyond the reach of science, that some things "just happen," for reasons that are inexplicable. But the discussion should not end there, and the existence of a new field of study known as ATTRIBUTION SCIENCE is the reason why. Here's a very brief summary of the nature of this new science, with many of the facts taken from the website of a remarkable group called Science News for Students (or SNS, highlighted elsewhere in this issue of the Notes)..
First of all, to state what many people know, "climate" and "weather" are not the same thing. Weather refers to specific events, such as hot days or thunderstorms. Climate describes patterns of weather in an area over long stretches of time.

Attribution Science attempts to determine how, or if, climate change affects individual weather events. SNS tells us that "For decades, scientists have predicted that climate change would *worsen extreme weather events and make them more frequent*. And signs have emerged that this has already begun."

Kevin Trenberth is a climate scientist at the National Center for Atmospheric Research in Boulder, Colorado, and he says that "The climate is clearly changing. The atmosphere is changed. Carbon dioxide has increased, and it's not slowing down."

I like how the Environmental Change Institute at Oxford University explained it in a 2014 paper. They use the term Probabalistic Event Attribution instead of Attribution Science, but you'll get their meaning:

"An increase in average temperatures will lead to *an increase in the frequency or magnitude* of some extreme events. However, the chaotic nature of weather means

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Dice *from page 3*

that it is generally impossible to say, for any specific event, that it would not have occurred in the absence of human influence on climate. In a simple analogy, a dice may be loaded to come up six, but a six could have come up anyway without the loading. Many people therefore think that it is impossible to attribute extreme weather events to past greenhouse gas emissions, even in principle. The emerging science of Probabilistic Event Attribution (PEA), however, increasingly allows a quantitative assessment of the extent to which human-induced climate change is affecting local weather events. This assessment focuses on 'attributable risk': quantifying whether and how much past emissions have contributed to the probability of an extreme event occurring: how have we loaded the weather dice?"

The Union of Concerned Scientists, in June of 2018, published a short paper called "The Science Connecting Extreme Weather to Climate Change." It covers some of the same ground as the sources I cited above, but I think their language is a bit easier to understand. Notice the bits in italics in the following excerpt:

"Over the past several years, scientists have been able to discern *the influence of climate change* on individual extreme weather events, ...

"When scientists investigate climate change's effects on extreme events, *they are not asking whether climate change caused an event*. Instead, they attempt to determine whether and by how much climate change *has affected the likelihood or intensity of an event*. They often rely on real world observations incorporated into climate models, which make calculations to simulate what would likely happen if individual conditions—such as global average temperatures—were different.

"Extreme events are by definition rare—if they occurred regularly, we would likely not consider them extreme. By running climate models that recreate real-world conditions at the time of an event, scientists can determine just how rare—that is, how likely or unlikely—an event that actually occurred really was. Researchers then determine the likelihood of the same event under a different set of conditions by repeating the process using a climate model that simulates a hypothetical world in which humans have no influence on the climate. By comparing the likelihoods under these two scenarios, researchers can determine the extent to which human-caused climate change affected an event."

All of the italics in the citations above are mine. Climate change may *worsen extreme weather events and make them more frequent*. A warmer planet will lead to *an increase in the frequency or magnitude* of extreme events. They speak of *the influence of climate change* on individual extreme weather events, and their quest to determine how much climate change *has affected the likelihood or intensity of an event*. Note that the Union of Concerned Scientists expressly states that "When scientists investigate climate change's effects on extreme events, *they are not asking whether climate change caused an event.*"

So the question "Did Climate Change cause last week's blizzard? or flood? or hurricane?" is the wrong question, which is why climate scientists don't ask it. To understand what is the *right* question, and what it is that makes it right, we need to understand an idea that I first discussed in these pages in 2014. And that is the idea of a Thought System. ◆

Attribution Science and Systems Thinking

Part of what makes a culture a culture is that its members generally share a certain way of understanding the world. One way that this sharing occurs is that there is a common Thought System at work in the culture. A Thought System is not some sort of brainwashing conspiracy. Rather, it is a self-perpetuating system that functions to maintain the dominance of certain ideas and ways of perceiving the world by working at a deep level to normalize not only certain ideas, but also certain *ways of thinking,* or "thought styles," that support those ideas.

A Thought System, then, is the sum of: 1. Certain ideas; 2. Certain ways of thinking, and; 3. The interaction between them. When I refer to the interaction between them, I am simply suggesting that any broadly-accepted idea can only make sense if we think in certain ways. And, conversely, when we think in certain ways we are inevitably steered toward certain ideas. ↗↗↗

➔➔ Thought Systems, like many systems, are not consciously *created*, really, as they would be in some sort of conspiracy. Rather they are the result of cultural processes that evolve within a society over time. They tend to reflect the interests of the more powerful sectors of society, broadly speaking. And, again, this is not the result of a conspiracy, but rather is the result of those powerful sectors using their power to enforce a Thought System that makes, and keeps, them powerful. Really, what else would one expect?

I'm thinking about Thought Systems these days because I've noticed how difficult it is for many people to understand, or accept, the idea of Attribution Science. And that's because those people operate using the Dominant Thought System, which is simplistic, narrowly-focused, and individualistic. Attribution Science is much easier to understand, and thus accept, for those people whose thinking emerges from what I call a Systems Orientation, which is multifaceted, broad-based, and social.

(In recent years I have called this a *Systalectics* Orientation, for reasons I spelled out in Nygaard Notes #560. But I always thought that the word Systalectics was kind of awkward, so now I simply refer to a Systems Orientation. I give thanks here to faithful reader Martha for encouraging me in this process of de-awkwardization!)

Thought Systems are big, unwieldy, hard-to-define things—even my three-word labels above are misleading. But we can understand the difference by looking at a couple of examples.

Example Number One: Details vs Big Picture

The Dominant Thought System (DTS) tells us that we understand things by getting up close and examining the details. A Systems Orientation (SO) tells us that understanding is only possible by viewing the whole.

When it comes to Climate Disruption, the point here is obvious: Weather is the "details," while Climate is "the whole." And one characteristic of the EuroAmerican DTS is that our information/media systems are increasingly graphic rather than text-based. And a graphic system seeks out arresting images, often referred to as "good video," which means that our media give us lots of details, but have a hard time illuminating the background and context which give those details meaning. [I discussed this at some length in an essay entitled "The Spectacular Universe: Thinking and Video," back in NN #615 in October 2017:

Example Number Two: Simple Causation

DTS believes in one-way Causation. That is: A makes B happen. And if you can find a single example where B happened without A happening first, then we can't say that A makes B happen. SO says it's not that simple. Rather than looking for a specific CAUSE of an observed event, SO looks for PATTERNS that tend to produce OUTCOMES.

SO says that systems produce outcomes for a variety of complex reasons. There is no single, simple "cause" of the things we see; instead we talk about "triggers" or "catalysts," which can look like they are "causing" things to change, but really are just those things that add to existing, ready-to-change mixes of things and tip them over into transformation.

Once again, consider Attribution Science. This discipline doesn't even try to connect Global Climate Disruption to specific weather events. It simply says that a climate pattern makes such an event more or less likely to occur. Patterns. Outcomes. Loading the dice.

Attribution Science is all about systems. So for those whose thought style conforms with the Dominant Thought System, I imagine Attribution Science is hard to understand. For those with a Systems Orientation, on the other hand, it makes all the sense in the world.

In the previous essay I suggested that the question "Did Climate Change cause today's weather?" is the wrong question to ask. If we're thinking Systems, it's easy to see that the *right* question to ask is "What kind of weather can we expect if we keep doing what we're doing?" It's increasingly clear that we know the answer. If only we dare to ask the right question.

[Note: I've discussed Thought Systems in these pages on a number of occasions. If you're interested, aim your search engine at the Nygaard Notes essay called "The Creation of a Thought System" that I wrote in 2014 www.nygaardnotes.org/archive/issues /nn0560.html Or you could look at "George Floyd and the Dominant Thought System" from the year 2020. www.nygaardnotes.org/issues/the-big-crisis-series-concl udes/] ◆

Editor's Note: No "Quote" of the week this week. Instead we have a Website of the Week!

Website of the Week: *Science News for Students*

I'm a firm believer that most ideas that mean anything can be explained to almost anyone who is willing to pay attention. All the explainer needs is to avoid is the use of big words and to have some faith in the recipient of the explanation. My belief is reinforced by my recent discovery of a remarkable web resource called *Science News for Students*.

The Society for Science, a 100-year-old nonprofit "dedicated to public engagement in scientific research and education," founded Science News for Students in 2003. SNS is, they tell us, "a free, award-winning online publication dedicated to providing age-appropriate science news to learners, parents and educators. The publication, as well as Science News magazine, are published by the Society for Science, a nonprofit 501(c)(3) membership organization.

I'm highlighting this resource for a couple of reasons. First of all, they have these short articles they call "Explainers" that seem to me to put into practice the idea I mentioned above, the one about briefly explaining seemingly-complex things in plain language for regular people like me.

The second reason I'm telling you about this website is that what we call "science" has recently been under attack from some people, who apparently think that science is a left-wing propaganda project. Or something.

But just check out these "Explainers"! They come with intriguing titles like "How Loud is Too Loud?" and "Gravity and microgravity." "What is a Metal?" and "What is an Invasive Species?" The Explainer called "What is RNA" includes a section headed "RNA viruses and vaccines," particularly timely in the age of COVID 19.

Every Explainer includes a list of what SNS calls "Power Words," which are "accessible definitions for terms we assume that not all students in this age range will know off of the top of their heads. Science News for Students keeps a growing glossary of more than 4,500 STEM-related words, and new words are being added almost daily as we expand our content," they say. (STEM is short for Science, Technology, Engineering, and Mathematics.)

A lot of people think that they just don't understand science. Visit the website of Science News for Students, and you'll see that it's not as complicated as you might think!
https://www.sciencenewsforstudents.org/article/explainer-what-attribution-science

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