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A FOREST TRENDS INITIATIVE

Opinion:
Where Does Healthy Critique End and Cynical Denial Begin?

S T E V E   Z W I C K

The science-denial movement delayed action on climate change for decades, and now the same tropes are creeping into coverage of emerging climate solutions. Here's one way of differentiating between honest inquiry and something more nefarious.

The author has been covering climate issues for more than 30 years and currently produces the [Bionic Planet](#) podcast. He submitted this series to Ecosystem Marketplace late last year and has since accepted a position with standard-setting body Verra. The views expressed here are his and his alone, and they do not necessarily represent those of Ecosystem Marketplace, Verra, or any other organizations he is affiliated with.

11 February 2022 | A friend of mine, after losing a jiujitsu tournament, praised her opponent.

I felt the same [grappling with science deniers](#) back in the day – not because they're nimble (they're not), but because the best of them dabble in half-truths and innuendo instead of outright lies.

You can't fact-check a half-truth until its context is clear, and by then you may have followed 20 of them in a row, each taking you a half step from reality. By the time you snap out of it, you're on a Flat Earth ruled by lizard people, and it feels like home.

I learned the hard way that whack-a-mole doesn't work against science denial. Exposure does.

[Mark](#) and [Chris](#) Hoofnagle started exposing their tactics in the mid-2000s. Scientists from several disciplines started kicking their ideas around, and [wide agreement emerged](#) on the following telltale tropes of science denial:

1. Setting impossible expectations for what science can achieve,
2. Deploying logical fallacies,
3. Relying on fake experts (and denigrating real ones),
4. Cherry-picking evidence, and
5. Believing in conspiracy theories.

John Cook of the [Center for Climate Change Communication](#) created the acronym FLICC, for "Fake experts, Logical fallacies, Impossible expectations, Cherry picking." He also created an [extensive taxonomy](#) that's illustrated here:
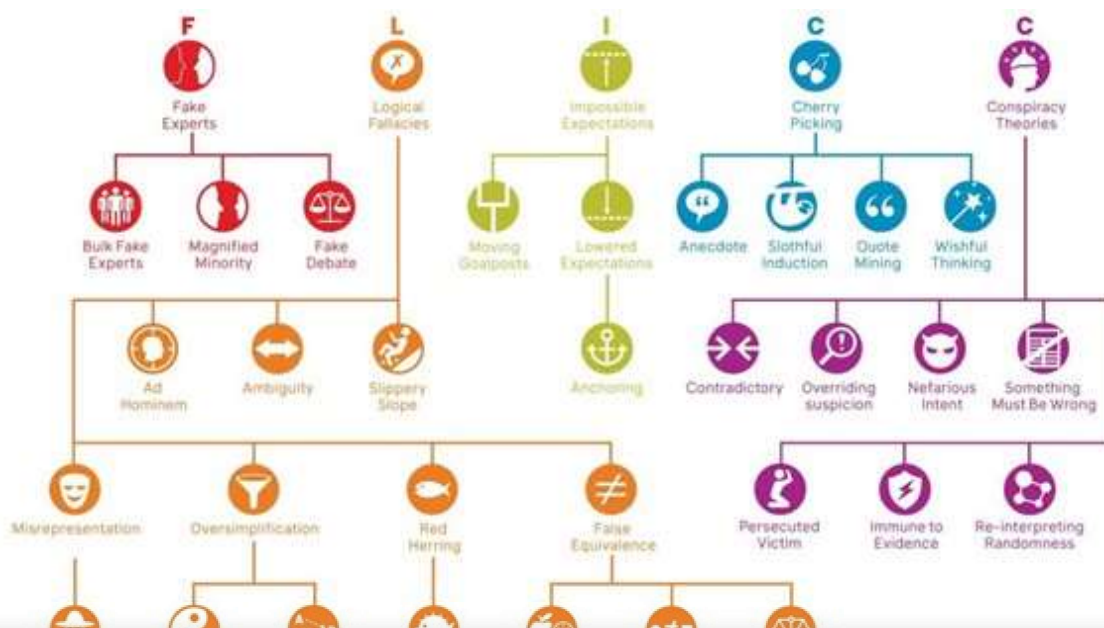
None of these tropes are new, and Cook concedes they're all logical fallacies. As such, they bleed into each other and are also subject to debate. Nonetheless, I've found this taxonomy helpful because it emphasizes those fallacies most common to science denial and provides a framework for recognizing it — assuming you have the context to use it.

If I've done my job right, the first two installments of this series gave you enough context to recognize these tropes in coverage of carbon markets. Once you're done with this piece, I invite you to dig into the rebuttal to the Greenpeace/Guardian story that standard-setting body Verra wrote, the rebuttal I wrote to a ProPublica piece two years ago (and a follow-up I wrote to that one), and the correspondence with ProPublica that the California Air Resources Board (CARB) published after more questionable coverage this year, or one Permian Global Capital wrote after an especially shoddy piece in Nikkei in December. The American Carbon Registry also rebutted a dubious Bloomberg story, which I'll add if I can find it.

Trope 1: Setting Impossible Expectations for Science

Science isn't about absolutes. It's about a preponderance of the evidence, especially when you have social sciences layered on top of physical sciences, as is the case with forest-carbon methodologies.

If you look at the substance of these stories, you'll find the core claims are pretty innocuous. They all boil down to the fact that forest-carbon methodologies aren't magical or eternal but instead represent a consensus approach underpinned by a lively debate over how to improve the process. Like the right-wing merchants of doubt who turned the strengths of climate science upon itself throughout the 1990s and 2000s, carbon market opponents are bending over backward to portray lively debate as something dark and sinister while ignoring the complex nature of the challenge we face.

All of the questionable coverage, for example, takes issue with the use of counterfactual analysis to construct project baselines, often relying on the mere sound of the term to imply that something shady is happening in secret recesses of the climate community.

This is absurd.

the [impact analyses](#) that government agencies and NGOs around the world use to see what works and what doesn't. It includes process tracing, which means you're looking beyond correlation to a clear series of causes and effects.

Greenpeace is technically correct when it points out that "it's difficult to judge if the emissions reductions claimed by REDD+ projects are real," and I'm sure they're accurately quoting ecosystem scientist Alexandra Morel as saying, "It's impossible to prove a counterfactual."

Yes, but no one claims otherwise – at least, not since Karl Popper and the triumph of fallibilism. Even physicists don't "prove" anything. They provide actionable models that work well enough until something better comes along, at which point we change – but only after that better way passes the same tests that the earlier ones did. Living systems are more complex, and social systems more complex still. That's why we look at a preponderance of evidence and the majority views of experts rather than outlier events or isolated opinions.

The late, great statistician George Box used to tell his students that "all models are wrong, but some are useful," a statement he elaborated on in a 1976 essay called "[Science and Statistics](#)."

"Since all models are wrong, the scientist must be alert to what is importantly wrong," he wrote. "It is inappropriate to be concerned about mice when there are tigers abroad."

Trope 2: Logical Errors

Logical errors are difficult to correct because, unlike simple lies, they unfold across pages and paragraphs rather than sentences. The facts are often right, but the context is incomplete or the conclusions are, well, illogical.

The Greenpeace story, for example, opens with Britaldo Silveira Soares-Filho, a respected Brazilian cartographer who oversaw the creation of a well-known environmental modeling platform. In 2007, Greenpeace tells us, an unnamed Brazilian NGO invited Soares-Filho and "an array of other academics focused on the Amazon rainforest" on a three-day boat ride down the Rio Negro River to persuade him to "help rubber-stamp a carbon

2007, you may recall, was a pivotal year for REDD+, and NGOs were trying to get input from as many experts as possible. I'm guessing that boat trip was part of this effort, but we don't really know because Greenpeace doesn't tell us the name of the Brazilian NGO, the name of the project he was expected to "rubber stamp", how he had the power to rubber-stamp it, or who belonged to this "array of other academics" and what happened to them — did they drown? Were they eaten by piranhas?

All we know is that when Soares-Filho got back to his office, he "decided that he didn't want his world-leading software used for [REDD+]."

I e-mailed him to find out why and he responded immediately.

"Models are used to avert an undesirable future, not predict the future," he answered. "Models are not crystal balls. Models are a sign to help devise policy and evaluate policy choices."

That's not a controversial statement, and most of the people developing REDD+ projects would agree with it — even if they disagree with Soares-Filho's conclusions on REDD+. He's not revealing a deep, dark secret here but rather expressing his take on a very public philosophical disagreement that major outlets simply ignored for decades.

To its proponents, REDD+ is a de-facto policy tool. It fills gaps that current policies don't address and it financially supports policies that exist but haven't been funded, among other things. REDD+ is, again, a tool for implementing policy or for going beyond policy, but it's not a magical replacement for policy.

From a REDD+ proponent's perspective, REDD+ uses modeling the way Soares-Filho advocates: namely, to identify and avert undesirable futures. It does so, however, by using market mechanisms instead of relying purely on command-and-control approaches, and we know Greenpeace's views on market mechanisms.

There could have been some value in unpacking this decades-old debate and breaking it down for a mainstream audience, but that's not what Greenpeace did. Instead, they framed it as evidence of a deep, dark secret, instead of an issue where reasonable people can disagree.

a "finding" or a "revelation" discovered through an "investigation", while every program they want to slam becomes a "scheme". They describe verified results as "promises", ignoring the fact that funds are allocated for results, not promises.

This verbal sleight-of-hand leads a trusting reader to the next half-truth: an incomplete description of modeling and a dismissal of counterfactual analysis as "fantasy".

Greenpeace also repeatedly begs the question — another logical error — by citing "findings" that pop up out of nowhere, and they seem to enjoy appeals to ignorance: comparing the probabilistic nature of reference levels to some magical, unattainable certainty.

The fountainhead of all their fallacies is the false dichotomy of offsetting vs reducing internally — the framing of offsets as a "license to pollute." This is built on the premise that every offset purchased is a reduction not made. I'm sympathetic to this fear, but while plenty of companies certainly do believe they can buy offsets instead of reducing, that's not what's happened historically, and the answer isn't to pretend the offsets themselves don't work.

Ecosystem Marketplace conducted an analysis of buyers in 2016 and found companies that voluntarily purchased offsets tended to do so as part of a structured reduction strategy, and plenty of executives have told me that offsetting acted as a gateway strategy. Once they started offsetting, they had a price on carbon, and once they had a price on carbon, they started seeing places to cut emissions.

Bloomberg, meanwhile, has run several pieces on a theme spelled out most clearly in "*These Trees Are Not What They Seem,*" which takes conservation groups to task for financing their operations through the sale of carbon credits – ignoring the fact that carbon markets emerged in part to overcome the short-term, fickle nature of philanthropic funding. They'd have a point if money grew on trees, but it doesn't – at least not without the help of carbon markets. In that piece, they create multiple logical fallacies: misrepresentation of carbon finance, slothful induction, and oversimplification.

Trope 3: Relying on Fake Experts (and Denigrating Real Ones)

I don't like the term "fake experts," because it implies nefarious intent. That may have been the case with the original Merchants of Doubt, but I don't think that's always the case here. I instead prefer terms like "false experts" or "false authority."

So, what is a false expert? It can be someone whose credentials are dubious, but more often than not it's someone whose credentials are just not sufficient enough to warrant the status they're being accorded. That could be a credentialed person whose outlier views are framed as being superior to scientific consensus, which is why Cook's taxonomy places "magnifying the minority" under the "relying on fake experts" category. No matter where you categorize it, the meaning is the same: you magnify the minority when you give outlier ideas and untested findings the same status as ideas and findings that have passed the test of time. This is the fallacy the original Merchants of Doubt excelled at, and it's also a Greenpeace favorite.

I should emphasize that identifying a person or entity as a false expert doesn't mean they're bad people or all their research is flawed, just as even bona fide experts aren't omniscient. All research should be evaluated on its own merits.

Speaking of research, I'd like to propose a new category called "Relying on Flawed Findings" – that is, findings that aren't just minority views but are objectively, verifiably flawed – yet still garner inordinate amounts of media attention.

With that, I'll turn to three papers that have gotten tons of attention in the past year, despite the fact that only one has been peer-reviewed and of the other two, one hasn't even been published and probably never will. We'll start with that one.

It's called "UN REDD+ Project Study," and it comes from an outfit called McKenzie Intelligence Services (MIS), which Greenpeace and the Guardian hired to evaluate 10 carbon projects in the Amazon. MIS has no discernable expertise in forest carbon, yet they purported to show that deforestation rates in project areas were higher than rates in surrounding regions. Greenpeace and the Guardian have repeatedly referenced the paper to support their findings, but the paper itself is nowhere to be found.

I've seen the paper, and the answer is: it's pure bunk. Even the title is inaccurate. "UN REDD+" implies they're looking at REDD+ under the Paris Agreement, when in fact they're looking at voluntary REDD+ projects – or trying to. The entire analysis is based on how forested areas look from the sky, via low-resolution satellite images, and not on ground samples and models of socioeconomic forces. As if that weren't bad enough, their photo analysis confused rivers with highways and used forested areas in Bolivia to model deforestation in Guatemala. In the end, it was too embarrassing for even Greenpeace to release publicly, but they and the Guardian continue to cite the fake findings of this phantom analysis in their ongoing coverage.

A few notches up from MIS is a little outfit called CarbonPlan, which has produced a simple numerical rating system for grading the quality of carbon projects. That could be a valuable service, but its ratings are based not on any preponderance of the evidence or the majority views of experts but on their own opinions regarding permanence and other hotly-debated criteria.

They do know marketing, and they've convinced a handful of reporters and technology groups that they're the supreme arbiters of quality in carbon projects, despite the fact that their leadership is ideologically opposed to NCS and infatuated with nascent technologies. Their rating system reflects that by emphasizing their own arbitrary criteria for permanence and additionally. This gives unproven technologies high marks and NCS low marks because they don't believe living ecosystems will deliver permanence, despite reams of evidence to the contrary and the fact that urgency is more important than permanence. As a result, unverified, unvalidated offsets from tech darlings like Charm Industrial get the CarbonPlan stamp of approval while offsets generated using transparent methodologies developed through extensive expert review and public consultation get a thumbs-down.

That's not to say Charm Industrial isn't on to something. They may be or they may not be; but if they really trust their approach they should write up a methodology and submit it to one of the carbon standards so that it can go through the wringer of peer review and public consultation. Instead, they've adopted the "move fast and break things" approach that tech companies love.

I understand that the process of developing a credible carbon methodology can be tedious, and it also means putting your processes out there to be critiqued by experts and opportunists alike. But these review processes exist for a reason, and CarbonPlan has a history of circumventing them. They did that with the third paper I'll be looking at down in the "cherry-picking" section, but for now I'll turn to the second one.

Unlike the other two, this paper does appear to be the product of honest inquiry. It [came out in 2020](#) and proposed the use of a popular social impact tool to evaluate project baselines. The problem is it got more attention for its provocative title than for its contents, which is more of a media failure than a fault of the authors.

Entitled "Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon," the paper looks at deforestation rates in several forested areas and creates "synthetic" deforestation rates to serve as proxies for what would have happened if the projects hadn't come into existence. It's a process called the "synthetic control method," which researchers have used to evaluate everything from the impact of decriminalized prostitution on public health to liberalized gun laws on violent crime. The synthetic control method is designed to isolate the effects of an "event or intervention of interest [on an] aggregate unit, such as a state or school district," [according to](#) MIT professor Alberto Abadie, who pioneered its use.

It works not by comparing the impacted city or state to a similar unit but to a synthetic city or state modeled from multiple states, school districts, or other population centers. Similar approaches have been used to construct baselines under some methodologies, but the paper has a gaping flaw that the authors readily admit.

"The construction of our synthetic controls may not have included all relevant structural determinants of deforestation," they wrote.

Specifically, in constructing their synthetic controls, they [excluded everything unique](#) to the human impact on individual projects from the criteria they used to identify their synthetic forests. This is equivalent to modeling the effectiveness of Jakarta's adaptation to sea-level rise by creating synthetic controls from Chicago and Detroit.

paper's content doesn't really support the attention-grabbing headline (unless you buy the premise that this approach is automatically superior to existing methodologies, which even the authors don't claim).

It seems to be an honest attempt to try and quantify impacts using limited resources, and many of its recommendations are, in fact, in line with changes being contemplated in the move from stand-alone projects to jurisdictional programs. But too many reporters latched onto that headline while ignoring the more thought-provoking parts of the paper That's unforgivable, but it's how the hype cycle works.

Having built market-based Natural Climate Solutions up into something it could never be, some reporters are now tearing them down instead of digging into them and trying to explain them in all their glorious complexity. To keep the narrative clean and simple, they ignore papers that support the efficacy of carbon markets, and there are plenty.

Take, for example, a 2020 paper by Rohan Best et al. They looked at 142 countries over a period of two decades and found CO_2 emissions grew at slower rates in countries with carbon pricing than in countries without it. Or take previous research by Erik Haites et al. They found reductions were deeper in countries with cap-and-trade markets compared to those with carbon taxes, even though the market prices tended to be lower than the taxes – contradicting a foundational CarbonPlan dogma that high prices are what matter in carbon markets.

Haites et al also showed that cap-and-trade programs become more effective as methodologies are updated, which highlights the importance of constructive criticism and the destructive power of turning the process of discovery upon itself. Patrick Bayer and Michael Aklin found similar results in the European Union Emissions Trading Scheme (EU ETS), where emissions were reduced through cap-and-trade even before prices started rising – largely because low prices followed on the heels of reduced emissions, enabling the ratcheting down of caps even further.

All of these studies – and many more – paint a much healthier picture of carbon markets, but you don't see market proponents running out and spiking the ball every time one of them comes out. Opponents like Greenpeace and CarbonPlan, on the other hand, are constantly spiking their balls, real and imagined.

Trope 4: Cherry-Picking Evidence

A related tactic, and another favorite of Greenpeace et al, is cherry-picking, or the practice of selecting only those findings that support your bias.

For this one, I'll stick with CarbonPlan and the research they submitted to ProPublica and the MIT Technology Review, which summarized their work in a piece that ran under this headline:

The Climate Solution Actually Adding Millions of Tons of CO2 Into the Atmosphere

The underlying CarbonPlan paper appeared in a journal called bioRxiv, which wisely covers its pages in warnings that its papers "have not been formally peer-reviewed and should not guide health-related behavior or be reported in the press as conclusive."

That hasn't stopped ProPublica and others from doing just that with CarbonPlan's paper, which purports to have uncovered a massive conspiracy to game the California carbon markets.

The paper focuses on the California Air Resources Board's (ARB's) methodology for Improved Forest Management (IFM), which lets project developers create baselines based on "business as usual" practices, meaning landowners can generate credits by doing more than what's considered common practice without doing the kind of modeling I described in the second installment of this series.

The methodology arose to prevent aggressive harvesting on thousands of small family forests, hundreds of which change hands every year, and it's designed to lock those forests up under sustainable harvesting regimes for a century. I won't weigh in on the actual methodology other than to say it evolved for reasons that critics ignore, and its contentious history is laid out in a court decision that many of the CarbonPlan team lost in challenging it.

In its paper, CarbonPlan zeroes in on the way projects estimate the amount of excess carbon that projects keep in trees. Specifically, CARB lets developers use the US Forest Service's Forest Inventory and Analysis

generate the degree of certainty required for carbon inventories, so CARB created "supersections" of forest that contain enough plot points to reach this.

The problem is that some of the supersections cover areas where one type of tree gives way to another type of tree, meaning that some parts will have higher carbon stocks than others, and some projects will end up getting credit for more carbon than they actually sequester. This shouldn't happen, and there's value in calling attention to it, but the authors ignore a remedy CARB applied (and which I don't know enough to comment on) while implying this anomaly exists across the entire program, which it doesn't.

This is the cherry-picking part. They zoomed in only on those areas where they knew the anomaly would show up and found that some of the projects probably did get too much credit. They also, however, found that others got too little, and then they declared the entire program a failure.

The paper has lots of other problems as well. The authors back up their claims, for example, by pointing out that an inordinate number of projects end up barely achieving the objectives needed to turn a profit, which to them means the game is rigged. This is silly, because the program is designed to achieve exactly those results.

On top of all this, they mention in passing that they were using the most recently available FIA data to critique old baselines, ignoring the fact that ARB will be updating its program to incorporate that data soon.

Critically, they not only circumvented peer review but pitched their findings to compliant reporters rather than subject them to the slings and arrows of a population with the expertise to filter out the bunk. Going back to the viral metaphor from my first installment, they bypassed a high-immunity population (reviewers at scientific journals) to infect a population with low immunity (the general public) via a vector (ProPublica) that helped it mutate into a simpler, more contagious variant.

That's not how the process works, and it's not how methodologies improve. It's how they get blown up.

Trope 5: Believing in Conspiracy Theories

At the root of all the critiques is a belief that hundreds of biologists, foresters, economists, anthropologists, indigenous leaders, and entrepreneurs have spent 40 years conspiring to create a rigged system that exists to give Big Oil a license to pollute.

It's the very essence of a conspiracy theory, because there's no evidence this is the case – and plenty of evidence it isn't.

None of this means these markets are perfect or that Big Oil is going to transition into clean energy without pressure from above and below. It means there are advantages and disadvantages to every approach, but they all fit together like the pieces of a giant jigsaw puzzle.

One advantage of well-run markets is that imperfections are pushed into the open, but that can easily become a liability if we let people exploit it to muddle public discourse instead of raising it to the level it must be if we're to meet the climate challenge.

We can debate the role of markets all we want, in part by paying attention to the very transparent public consultations that accompany these processes, but we can't let people who lost the debate run around with baseless claims that "the debate was rigged," "the markets don't work," or "Nordhaus is a fascist."

Above all, we can't let a too-compliant media amplify that message. We've seen this script before, and it doesn't end well.

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