Chapter 46. Equal Protection of the Laws

The American Constitution is meant to be a bulwark, protecting the people from injustice. The Constitution and the courts are crucial for young people in the case of climate change, in which the delayed response of climate inevitably pits one generation against another.

Founders of the American democracy established via the Constitution a tripartite government, with legislative, executive and judicial branches. Authorities of the three branches are defined by Articles I, II and III of the Constitution. These Articles describe a *Separation of Powers*, and the Constitution includes *Checks and Balances* among the three branches.

Representatives, the President, and Senators are elected for terms of only two, four and six years, which tends to make their branches of government short-sighted. They are also heavily lobbied and receive financial contributions from special interests. There is ample evidence that the legislative and executive branches have allowed the fossil fuel industry to "pull the strings" to obtain laws and governmental actions with consequences for today's young people. But the judiciary, populated with judges with life terms, should be less prone to such influence.

Now, the Preamble of the Constitution states that its purpose is to "…secure the Blessings of Liberty to ourselves and our Posterity…" Young people and future generations cannot vote. They must rely on the Judiciary to protect their rights to life, liberty and the pursuit of happiness.

The Judiciary cannot usurp functions of Congress or the President, but it can seek to prevent unconstitutional behavior. In *Brown v. Board of Education*, the U.S. Supreme Court ruled that segregated schools are inherently unequal and violate constitutional rights of racial minorities. The court required desegregation, but it could not tell the other branches how to achieve it.

Action to address climate similarly is possible in a democracy, but it requires our courts to engage. Their role, so far, has been small. The courts need a broad understanding of the situation if the judiciary is to protect the rights of all, including young people and posterity.

Automakers v. California[1] was my first glimpse of the courts, as an expert witness. Automakers opposed stricter vehicle efficiency standards imposed by California. The U.S. government intervened in the case, on the side of the automakers. Here, and in many other cases, the U.S. government sided with the polluters. As one result, U.S. per capita CO_2 emissions are more than double those in the European Union, despite similar standards of living.

Before the California case went to trial it was superseded by one that I abbreviate as *Automakers v. Vermont and New York*,[2] these being states that planned to follow California's lead and adopt its efficiency standards. A presentation[3] that I gave in April 2006 at the National Academy of Sciences served as my expert report for this case, with a written explanation of each chart.

Matt Pawa, the attorney leading the Vermont case against the automakers, astutely requested that I be allowed to present my entire talk without interruption; Chief Judge W.K. Sessions III of the U.S. District Court in Vermont agreed.[4] I would not have done well in a "debate" mode with a climate change denier or an automaker lawyer. The media likes that mode for entertainment – they claim it is for "balance." Deniers tend to cherry-pick data that appear to support a desired conclusion, while having little appetite or ability for a comprehensive analysis.

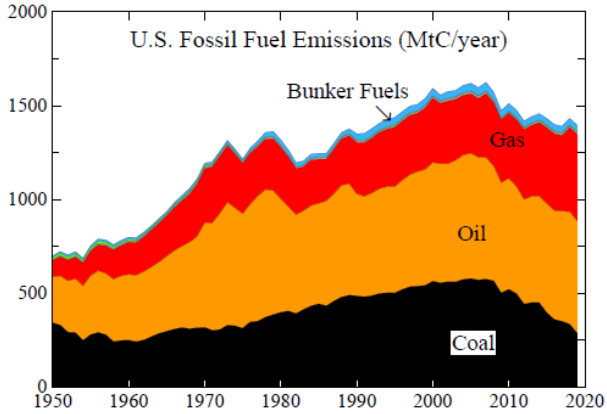

Figure 46.1. United States fossil fuel carbon emissions (Megatons of carbon per year).[5]

Automakers' witness John Christy challenged what he called "Hansen's Tipping Point Theory" – my conclusion that feedbacks make ice sheets susceptible to rapid disintegration. Christy focused on my inability to put a narrow uncertainty range on likely sea level rise. In his "Opinion and Order,"[6] Judge Sessions accepted my argument that (1) paleoclimate evidence, (2) modern observation of rapid change, and (3) climate modeling, together make a strong case for a real threat, despite the difficulty in assigning error bars on such a nonlinear process.

Vermont won that case[7] and perhaps helped move the needle a bit toward higher vehicle fuel efficiency. In a case with greater potential impact, Massachusetts v. EPA, the Supreme Court ruled in 2007 that CO_2 is a pollutant under the Clean Air Act and must be regulated by EPA if such emissions endanger people and the environment.

Yet total U.S. emissions continued on a path of business-almost-as-usual. U.S. fossil fuel CO_2 emissions in 2019 were about the same as in 1992 (Fig. 46.1), the year of the UN Framework Convention. Moreover, emissions are now partly outsourced to other nations. Many products used in the U.S. are made in other countries, especially China, with manufacturing emissions counted in China's total. This "carbon leakage" decreases U.S. domestic emissions of the order of 10 percent.[8] In addition, the decline of total CO_2 emissions in the past decade has come in part from a shift from coal to gas, which has increased U.S. emissions of methane.

Don't despair! A democracy can work but it's a lot of work. We got an inside look at workings in the UK. It was impressive. Anniek and I love London. It's not just the city, it's the citizenry – Anniek thinks they're so civilized compared with frontier-like Americans. Their parliamentary system is an interesting contrast to the U.S., which has moved toward a strong unitary executive approach. And the UK has an engaging, mostly ceremonial, monarchy.[9]

George Polk, who organized "Date with a Planet" in London in March 2007, organized a dinner on 4 July 2007 when I was in London for another meeting. The people at dinner were upper-crust. I couldn't have been more out of place, but no matter. They wanted to usefully address the climate issue. I suggested that they pressure the government to phase out coal rapidly. Britain, where the industrial revolution and coal use began, could set an example. When electricity is carbon-free and abundant, the climate problem is more than half solved.

George Polk had already started an exciting climate campaign. Matt Phillips, a young lawyer, was his campaign manager, arranging meetings with politicians and environmentalists, often arriving on a bicycle. But I had to get back to work at NASA.

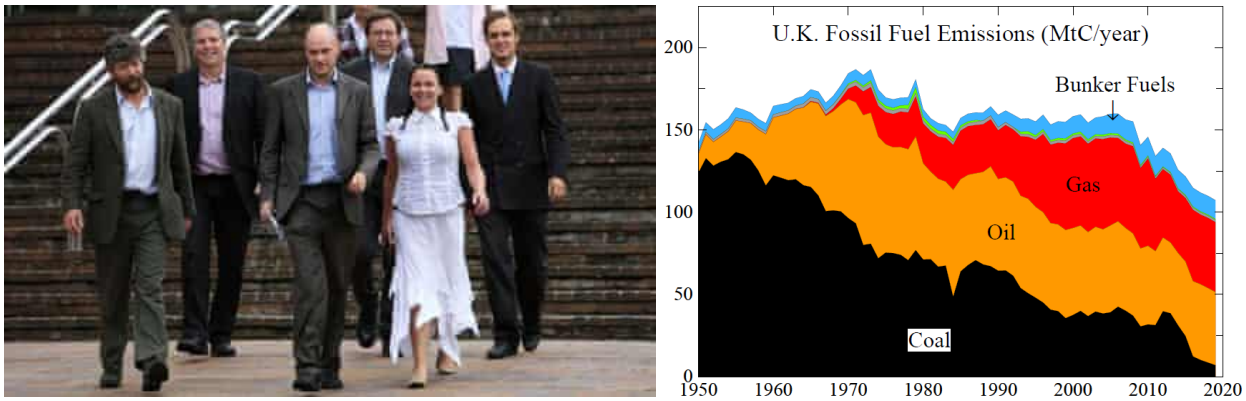

Figure 46.2. Kingsnorth Six after acquittal in Maidstone Court. Photo: Jiri Rezac/Greenpeace

On 18 November 2007 I got an email from George Polk with subject line: Help :-). Their coal campaign was in full swing, he said, and for good reason. A 1.6 GW coal-fired powerplant was planned for Kingsnorth in Kent, near London, the first of a new phase of planned coal plants totaling 10.6 GW (1 GW = 1 Gigawatt is 1 billion watts). These powerplants would lock-in high coal emissions from the UK for 30-50 years, crowding out carbon-free sources. Such a path would eliminate any chance for the UK to provide leadership in international climate actions.

I wrote a letter[10] to UK Prime Minister Gordon Brown explaining carbon facts, implications for young people, and the responsibility of the UK, U.S. and Germany, as the largest CO_2 sources on a per capita basis. Brown never responded – an underling wrote back that my letter had been directed to an appropriate environmental office – but Brown perhaps noted the media coverage.

Greenpeace, ever media-savvy, had entered the fray a month earlier when several of their members clandestinely entered Kingsnorth, lowered themselves on ropes, and began painting "Gordon Bin It" on the smokestacks, urging the Prime Minister to scrap plans for coal-fired power plants. The "Kingsnorth Six" faced possible prison terms and a fine of about $60,000.

Mike Schwarz, attorney for the Kingsnorth Six, in May 2008, asked me to prepare expert testimony for their defense. The defendants admitted that they caused property damage, but argued that they did so to prevent CO_2 emissions and thus protect not only property but also human life at grave risk from the effects of climate change – the so-called "necessity defense."

Schwarz was masterful in a powdered white wig at the trial, which had the pomp of a classical English court. He read sentences from my written report,[11] then asked me to explain them, as I stood in the witness box. A motley jury of Kent citizens, including tattooed youth, housewives, and elderly people of the stiff-upper-lip sort, were attentive – you could hear a pin drop.

Focus was on irreversible effects: sea level rise and species extinction. Kent is near sea level, thus vulnerable to inundation. Using the IPCC estimate that a quarter to half of the world's species could be committed to extinction by the end of the century, I calculated the fraction that could be blamed on Kingsnorth, if it operated 50 years. The result: a few hundred extinctions.

The Kingsnorth Six were found innocent in September 2008. I love the photo of them marching out toward a coal-free future (Fig. 46.2). Greenpeace, Polk, Phillips and countless others helped drive down UK emissions by more than a third in the following decade (Fig. 46.2).

It was an optimistic time as we approached the November 2008 Presidential election in the U.S. A few weeks before the election I gave a talk[12] on intergenerational equity and justice at Virginia Tech. I described policies that were needed: a rising carbon fee and investment in clean energy R&D. Students extolled Barack Obama and excitedly campaigned for him. He owed his primary win in Iowa – and probably his eventual election – to young people's enthusiasm.

There was one sobering note from students who gave me a ride to the airport: a story about Larry Gibson, a brave little mountain man who refused to sell his property to the coal company. He prevented them from bulldozing the mountaintop into a valley to expose a coal seam.

Would I meet Gibson, they asked? That would be hard; it would require another trip, and at least a couple of days. It's difficult to get there and expensive, except by driving. But didn't it make more sense to focus on big things like a carbon fee and promoting clean technology? Then the economics would soon terminate mountaintop removal mining. So, I was noncommittal.

Three months after Obama was elected, my optimism began to fade a bit. There was no sign that Obama cared about the two big fish – fee-and-dividend and R&D on modern nuclear power – that Anniek and I described in our letter to him. If the big fish were not caught, then we shouldn't ignore small fish, like mountaintop removal. Because Obama's science adviser was proscribed from talking with me, I wrote a communication – Tell President Obama About Coal River Mountain – and sent it to my email distribution. Maybe someone important would read it.

By the summer it was clear that Obama wasn't going after the two big fish or even the little fish – mountaintop removal. It was frustrating. So, when Vernon Haltom, the co-head of Coal River Mountain Watch invited me to attend a protest against mountaintop removal, I had to go. He warned me that we may get arrested, so Anniek came along with bail money.

It was a 10-hour drive to West Virginia, where we met Haltom and Larry Gibson. Larry gave us a ride up a deeply rutted road to his cabin, which had bullet holes shot by miners who were disgruntled that Larry blocked expansion of the mining. That night we stayed at an inexpensive motel, after eating at the Dairy Queen. My remarks[13] at the rally the next day were drowned out by miners revving their motorcycles. Judy Bonds, co-director of Coal River Mountain Watch, was knocked to the ground by a miner's burly wife as we marched to the coal company office. There I was reading a demand that the coal company build a new elementary school – because they had built a huge coal sludge pond dangerously above the existing school – when we were arrested. We were given a summons and released. Larry and I decided not to pay the fine, which meant that we should go on trial, with the threat of one year in prison. Somehow, a few years later, the charges were dropped. Probably West Virginia did not want a show trial.

The big picture was clear. The coal company got miners to fight on their side, a side that was destroying the environment, polluting the air and water, and shortening the lives of Appalachian people by several years on average. Fee-and-dividend was a way to fix this. It would create many more jobs than it ended and provide Appalachian families a helpful monthly check.

Mary Christina Wood is an extraordinary legal scholar and humanitarian. Mary developed the public trust doctrine for climate, the idea that we have an obligation to preserve Earth for future generations, a common law concept that dates to Roman law and English law. Many of her papers written over two decades are encapsulated in her book *Nature's Trust*.[14]

Before I met Mary, I was schooled in public trust by Jim Wine, an American living in Sweden, whom I met at the Tallberg Forum. Jim pointed out letters that James Madison and Thomas Jefferson exchanged while debating the Constitution and Bill of Rights, Jefferson writing[15] "I set out on this ground, which I suppose to be self-evident, that the Earth belongs in usufruct to the living." We can enjoy fruits of the land, but we should leave Earth in good condition for following generations. Jefferson, a farmer, was thinking especially of soil fertility.

Mary and I flirted by email for a few years. One of her students sent a note in 2007 suggesting that I meet with Mary. Mary sent a friendly message saying that she had forwarded my 59-page Iowa coal case document to the legal community world-wide. So, all that work – which was rejected by an Iowa mayor because people don't have two heads and three legs – wasn't wasted.

I had no time to work with Mary. Karina von Schuckmann, a German post-doc working in a French oceanographic lab, had written a paper on ocean temperature that was exactly what I had been waiting for. Karina analyzed data from "Argo" floats that several nations have distributed around the world's ocean. The floats dive to a depth of two kilometers every 10 days, then rise slowly to the surface, making measurements that are radioed to a satellite. The temperature data is good enough to infer how the heat content of the ocean was changing. This would allow our first reliable evaluation of Earth's energy imbalance. It was exciting, because it seemed that her data was implying an energy imbalance of only about one-half of a watt per square meter, averaged over Earth's entire surface. Climate models suggested an imbalance of about 1 W/m^2. Excessive energy imbalance in the models implied that the models mixed heat too readily into the ocean. That excessive mixing, in turn, allowed us to understand why the climate models were insensitive to addition of fresh water to the upper ocean by an increasing flux of icebergs.

Karina kindly sent me her data. So, I was eager to work on a paper on Earth's energy imbalance and assess ocean mixing in global climate models. If we could define ocean mixing better, we could then go back and repeat the climate model experiments that we made in 2006 to investigate the effect of increasing ice sheet melt on ocean circulation and global climate.

Still, Mary Wood persisted with her entreaties, and I finally agreed to a rendezvous with her – on Memorial Day, 31 May 2010 – by phone. Mary began by buttering me up, saying how moved she had been by my "Animals are on the run" paper.[16] Mary's proposition was that we work together to inform the judiciary about human-caused climate change and seek their help to force the other branches of government to do their duty and protect the future of young people.

Mary wanted to have a workshop in the fall at the University of Oregon on this public trust idea, with an eye toward lawsuits against governments. She asked me to give a talk on climate and, specifically, to define the rate at which fossil fuel emissions must decrease to achieve the "less than 350 ppm" CO_2 amount this century, as our 2008 paper[17] had concluded was necessary to maintain a hospitable climate. Given that atmospheric CO_2 was approaching 400 ppm, the plan would likely require storing a lot of carbon in the soil and biosphere via improved forestry and agricultural practices, in addition to emissions phasedown. It would be a lot of work to produce a prescription with the clarity and credibility needed for courts of law.

Mary was determined and persuasive. With the help of Pushker and Makiko, I thought we could work simultaneously on the paper on Earth's energy imbalance and the paper to support legal actions. I started to write the latter paper, hoping to have a draft by the time of the workshop. I had no inkling of the difficulties and roadblocks that the paper faced.

Fig. 46.3. Gibson and Hansen at "Appalachia Rising"

Sophie versus Obama and the U.S. Congress was the working title of the paper. Sophie was our oldest grandchild. Our daughter, Kiki, who majored in philosophy, chose Sophie's name from her favorite book, *Sophie's World* by philosopher Jostein Gaarder. We learned of that in June when we were preparing to go to Norway, where I would receive the 2010 Sophie prize. There Jostein's wife, Siri, arranged a beautiful performance by Norwegian children, culminating with a "flight" from the back of the room to the stage by a splendid butterfly, flapping fragile five-foot wings, in recognition of our love of the remarkable Monarch butterfly.

From Oslo, Anniek and I took a train across Norway over and through mountains to the beautiful coastal fishing town, Bergen, where I gave a talk at the university the next day. That evening we met the venerable Norwegian legal scholar, Pål Lorentzen. At dinner, atop a hill overlooking the town and the harbor, I was fortunate to be seated near Lorentzen, who I told about Mary's workshop plans. Lorentzen was leading a revision of the Norwegian Constitution and wanted it to clarify rights of young people and posterity, so he was interested in attending the workshop.

Weeks later, while I was working on *Sophie versus Obama*, Larry Gibson called. Would I take part in an "Appalachia Rising" protest march against mountaintop removal in Washington? I could give remarks on Freedom Plaza before we marched to the White House.

It was a chance to describe my perspective on the intergenerational injustice in climate change. Although I agree with the usufruct concept – that we hold Earth in trust for future generations – I prefer to focus on equal protection of the laws. Equal protection is clearly in our Constitution. It should apply to young people and perhaps even to posterity – the unborn.

But there was another point that I wanted to make: we are becoming "the land of the rich and the home of the bribe." Over the course of my life, I could see the opportunities for lower and middle-income people shrink. As a result, the nation faced decline.

Both political parties had become elitist. The big business party mouthed a big lie: climate change is a hoax. The other party claimed that it was addressing climate – but threw in with big banks, big green, and business-almost-as-usual legislation written by special interests.

The public understands that Washington is a swamp of special interests. The public wants equal opportunity for their kids – the same opportunity that rich kids have. Fundamentally, that's what the Constitution is about: equal rights, equal protection of the laws, equal opportunity.

Equal Protection of the Laws was my talk[18] on Freedom Plaza on September 27, 2010. The remarks, inspired by our *Declaration of Independence* as well as our *Constitution,* are relevant to the overall intergenerational injustice that young people face, which includes loss of equal opportunity related to increased wealth disparity.

Equal protection of the laws is prescribed in the Fourteenth Amendment to the Constitution. The Fourteenth Amendment refers to State responsibilities, but the Supreme Court has ruled that the Fifth Amendment – establishing that citizens cannot be deprived of life, liberty or property without *Due Process* – implies as well a federal responsibility to safeguard equal protection.

Equal protection and the public trust doctrine are complementary. Linked together, they make a powerful case for young people. Why not stop there? Why did I bring up fee-and-dividend? Why mention the Washington swamp? Isn't that tilting at windmills, a hopeless task?

No, it is necessary. Courts cannot fix the climate problem. They can help, but they must throw the problem back to the political process. Therefore, we must understand what is needed.

However, a protest march by a few hundred people could not get much attention for the bigger problem in Washington – the swamp of special interests that has replaced true democracy. So, let's complete the mountaintop protest story and come back later to discuss the political solution.

From the Freedom Plaza we walked to the White House in light rain. I told Anniek I wouldn't get arrested, but when a bunch of young people joined Gibson in sitting down on the sidewalk in front of the White House, I sat down, too, and was hauled off by the police (Fig. 46.3). The police procedure is to apply tight handcuffs behind our back and let us sit uncomfortably in a hot paddy wagon for a few hours before booking us, hoping to discourage future protests.

The publicity helped generate philanthropic support for a new elementary school to replace the one located dangerously below a massive coal sludge pond. But mountaintop removal continues today with blasting and toxic dust clouds that travel for miles. A new coal company seeks a permit to expand areas of destruction on Coal River Mountain. Our heroes, Judy Bonds and Larry Gibson, are dead, lives too short, like many of those who live in these Appalachian hills. Public attention has shifted elsewhere, to pipelines opposed by courageous Native Americans, but the problems in the mountains continue. The permanent solution to all of these problems is a rising carbon fee-and-dividend. A bill to place a moratorium on new or expanded mountaintop removal permits until a federal health study concludes that the process is safe for neighboring communities has languished in Congress since 2012. The Trump administration cancelled a National Academy of Sciences study on this topic.

Mary Wood's workshop was held in Eugene, Oregon, in October 2010. Mary gave an overview of atmospheric trust litigation. Andrea Rodgers-Harris, who has represented Native American tribes in efforts to protect natural and cultural resources, described a draft Atmospheric Trust Litigation Manual, which would assist attorneys in atmospheric trust litigations.

Tony Oposa of the Philippines described a case based on the concept that governments are trustees of natural resources, which he fought and won before the Philippine Supreme Court. That case helped establish as legal doctrine the ethical principle of intergenerational equity, which is now considered legal doctrine in many jurisdictions around the world.

My talk was on climate science, but I also stressed the merit of focusing on equal protection of the laws. Mary encouraged me to continue to advocate that perspective. However, their plan for litigation would focus on the atmospheric trust concept. We would discuss specific plans the next morning at breakfast with Julia Olson.

Julia and Mary make a powerful combination. Mary is a legal scholar and professor who has spent years developing the atmospheric trust concept. Julia is a determined, indomitable attorney who would launch and prosecute a legal campaign on behalf of young people against the government and the fossil fuel industry. She would need strength and self-confidence to handle the blowback she was sure to get from the industry and people they inspire.

Julia was eager to get started on a federal case. She formed a nonprofit organization – Our Children's Trust – for the purpose of filing cases against both federal and state governments on behalf of young people. We had identified a lead plaintiff for the federal case.

Alec Loorz was 12 when he watched Al Gore's *An Inconvenient Truth*. Alec was diagnosed with Attention Deficit/Hyperactivity Disorder, but he became skilled and passionate on the climate topic. He was 14 when he and his mom visited GISS. I suggested that Alec would be a compelling spokesman for the lawsuit. Julia and Mary agreed, and Mary chose the workshop date to be the day after Alec and I gave talks at a Bioneers Conference in San Francisco.

Julia could hardly sit still at breakfast. She was eager to get started, and she had a suggestion: I should assemble a "dream team" of co-authors for the paper aimed at defining required fossil fuel emission reductions. It was a great idea. Rather than the more personal "Sophie versus Obama" paper, I would make the paper general and ask world experts to join as co-authors.

All scientists I contacted, despite busy schedules, agreed to help write a paper needed for the lawsuit. One of them, Paul Epstein – a world leader on the effect of environment on human health and professor at the Harvard Medical School – was battling late stages of non-Hodgkins lymphoma. He contributed iterations on the paper up until a few days before he died. Lise Van Susteren assumed Epstein's role as our health expert. Her specialty in psychology was appropriate. She has intimate knowledge of the stress that young people feel today. I will not describe each of the experts – the paper has 18 authors – you can "google" them. Their names are on the final published paper[19] Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature.

The saga to publish that paper provides useful insights. We submitted the paper to the *Proceedings of the National Academy of Sciences (PNAS)* in January 2012. National Academy of Sciences publication rules at that time allowed an Academy member to publish a paper if it was accompanied by a review and endorsement by another Academy member.

Rationale for that publication procedure, without review by anonymous referees, was that Academy members had earned a certain respect. Academy members are scientists who have been judged most capable of producing scientific advances, including major alterations that are almost invariably resisted, initially, by many in the scientific community. I wrote about this in my "scientific reticence" paper. Barber[20] described it as scientists' "resistance to discovery."

Our submission to *PNAS* included a review by an Academy member, who gave the paper the highest rating. Given the importance of economics in the climate issue, I asked an economist, who was expert in carbon pricing research, not an Academy member, and had never co-authored a paper with us, to also review the paper. That reviewer also gave the paper the highest rating.

In March I received a letter from Inder Verma, the Editor-in-Chief of *PNAS*. Verma said that he had given the paper to a member of the Editorial Board, who found the paper to be "blending sound scientific analysis with quite strong normative statements" and "makes a number of strong claims like the 'fallacy' of the 2°C logic employed at international climate negotiations." He concluded "I strongly suggest to ask for at least one more review by an eminent scholar," and he suggested three reviewers. My heart sank as I read the names of establishment scientists – who I knew would allow no strong statement about policy implications. One had stated publicly that it is inappropriate for scientists to say more than IPCC reports or venture into policy implications. The Editor thus had given an anonymous Board member the power of an inquisitor. Outcome was as certain as that for *Lady Chatterley's Lover* presented to the postal inspector and obscenity guardian Anthony Comstock.

I began to do a slow burn. What right did these "experts" have to impose their priggish sense of scientific purity and righteousness on all scientists? They were not superior scientists to the co-authors of our paper, and we had worked assiduously on the paper for almost a year and a half.

Our best chance was to expose what Verma was doing to the President of the National Academy of Sciences, Ralph Cicerone. Cicerone had relevant expertise in chemistry and the global atmosphere. I wrote a "Dear Inder and Ralph" letter, explaining why it was inappropriate to send our paper out for community endorsement: "The paper is, at least implicitly, critical of IPCC conclusions and the overall community with regard to the dangerous level of human interference with climate. To force the paper to be watered down to some community agreement would be the procedure followed by IPCC, but it is not one that we should be forced to follow."

I noted that an objective of *PNAS* was to allow Academy members to publish papers that may not be a community position. The science must be sound and reviewed, but that was so with this paper. I ended with: "Ralph, is it possible that you might be willing to look at this paper and offer your assessment – you are as well qualified in this area as anyone in the world. I know it is a lot to ask. But the subject is of great importance. I have worked on the paper for more than a year. The co-authors have been sticklers, so it has been a long hard process. To require that it now receive endorsement from some broader community is, I believe, inappropriate."

Cicerone offered to serve as reviewer of the paper, in an e-mail to Verma and me and in a phone call to me. However, Verma did not accept the offer and Ralph felt that he should not interfere with the Editor-in-Chief's publication process. Cicerone wrote a review anyhow, which was positive, for example: "For some time, I have believed that too little scientific research has been done to try to define 'dangerous' in the context of the UNFCCC, so I am happy to see the MS [manuscript] and several of your other pieces." And further "I see very high value in the MS because I know how much forefront research has gone into the paleo data, the radiative forcing calculations, and the entire argument that you make."

However, I was dismayed by Cicerone's final statement, which read: "There is a passage in the MS: 'The most basic matter is not one of economics, however, it is a matter of morality – a

matter of intergenerational justice. As with the earlier great moral issue of slavery, an injustice done by one race of humans to another, so the injustice of one generation to others must stir the public's conscience to the point of action. Until there is a sustained and growing public involvement, it is unlikely that the needed fundamental change of direction can be achieved.' This passage may be right, and it might follow from your analysis but it is very unusual in science. I don't know how to react to it in *PNAS*."

Ralph's final statement neatly illustrates the major "normative" issue. Are scientists allowed to draw conclusions about the relevance of their research to society, or not? I was determined not to eliminate the morality statement, which is the ultimate point that we wanted the court and the public to understand. We sensed, correctly, that there would be a long battle before the paper could be published, and the trial of *Alec L v. U.S. Government* was scheduled for May 2012. So, on 23 March 2012 we made the paper publicly available on *arXiv*.

arXiv is an open-access, electronic, referenceable repository of scientific preprints approved for posting after moderate examination, but not full peer-review. We used the *arXiv* version of our paper as our expert report for the *Alec L* case. Physicists established *arXiv* to deal with problems in the peer review system. *arXiv* is used by physicists mainly to establish precedence prior to peer-review. An *arXiv* paper is permanently stored and available for public scrutiny, which has a self-policing effect – no scientist wants to have on record a wrong or sloppy paper. *arXiv* helped us ameliorate the effect of an overly cautious editor and his anonymous inquisitor. It was not as good as a published paper, but we hoped the judge would rely on the reputations of the authors.

The United States DC District Court, in May 2012, heard the Alec L case. The verdict was swift, delivered in the 31 May 2012 Opinion and Order[21] of Robert L. Wilkins, United States District Court Judge. He dismissed our case.

In his brief Opinion and Order, Judge Wilkens noted: "Plaintiff's one-count complaint does not allege that the defendants violated any specific federal law or constitutional provision, but instead alleges violations of the federal public trust doctrine." Judge Wilkens determined that the public trust doctrine is a matter of state and not federal common law. In addition, he found that "even if Plaintiffs allege a public trust claim that could be construed as sounding in federal common law, the Court finds that that cause of action is displaced by the Clean Air Act."

Judge Wilkens was referring to the case American Electric Power v. Connecticut (2011) in which the Supreme Court ruled that EPA had been assigned exclusive federal responsibility to regulate power plant CO_2 emissions pursuant to the Clean Air Act. The problem is that neither EPA nor Congress is taking any action commensurate with what is needed to solve the climate problem. Judge Wilkens summarized the predicament in a one-paragraph conclusion:

"Ultimately, this case is about the fundamental nature of our government and our constitutional system, just as much – if not more so – than it is about emissions, the atmosphere or the climate. Throughout history, the federal courts have served a role both essential and consequential in our form of government by resolving disputes that individual citizens and their elected representatives could not resolve without intervention. And in so doing, federal courts have occasionally been called upon to craft remedies that were seen by some as drastic to redress those seemingly insoluble disputes. But that reality does not mean that every dispute is one for the federal courts to resolve, nor does it mean that a sweeping court-imposed remedy is the

appropriate medicine for every intractable problem. While the issues presented in this case are not ones that this Court can resolve by way of this lawsuit, that circumstance does not mean that the parties involved in this litigation – the Plaintiffs, the Defendant federal agencies and the Defendant-Intervenors – have to stop talking to each other once this Order hits the docket. All of the parties seem to agree that protecting and preserving the environment is a more than laudable goal, and the Court urges everyone involved to seek (and perhaps even seize) as much common ground as courage, goodwill and wisdom might allow to be discovered."

Round 1 was won by the government, or, more accurately, by the fossil fuel industry. The lawsuit, officially, was against the government, but the Intervenors – the American Petroleum Institute, the American Fuel and Petrochemical Manufacturers, and the National Association of Manufacturers – provided high-priced high-skilled lawyers for the defense and the government and the fossil fuel industry worked as a team.

Judge Wilkens summarized the situation well in his final paragraph, but the hope he expressed at the end is, quite simply, entirely unrealistic. He failed to note the enormous disparity in the power of the different parties. Young people versus the fossil fuel industry is David v. Goliath.

The only weapon of the young people, the judicial light saber that they hold, is the Constitution.

Wilkens' words "…federal courts have occasionally been called upon to craft remedies that were seen by some as drastic to redress these seemingly insoluble disputes" were relevant. Perhaps we had not given the courts an adequate Constitutional basis to find for the young people.

Time was running out. My attorney Daniel M. Galpern, on my behalf and that of several co-authors[22] of the *arXiv* paper, filed an amicus brief with the D.C. Court of Appeals, noting "…the time for mere talk has passed, and the window of opportunity for effective action is closing fast." We urged the appeals court to "evaluate the question whether the lower court at least should have required the United States to report to it as to the long-term adequacy of its climate action plan."

I felt guilty for being so slow. If our paper had been published, including its final very strong paragraph – that is, the offending "normative" statement – would the Judge perhaps have seen things differently? No, the case was not that close. Subsequently, in a brief opinion, the D.C. Court of Appeals in 2014 summarily rejected Plaintiffs' appeal of the D.C. District Court 2012 decision and then the Supreme Court rejected the Plaintiff's appeal to it, by way of a Petition for writ of certiorari, without any opinion.[23]

Fig. 46.4. Sophie's Planet will try to make the case for young people.

The Constitution may be the judicial light saber for youth, but its mastery is difficult. In the case of civil rights, the Supreme Court did not act until sufficient attention was focused on the immorality of segregation. Analogy to civil rights was the drive that caused us to doggedly insist that the "morality paragraph" be retained in our paper.

I decided to retire from the government. I wanted to start again on a lawsuit, this time more along the lines that I was describing in "Sophie versus Obama," with the focus on equal protection of the laws, analogous to the case of civil rights. But I would also write a book *Sophie's Planet* to help the public – including judges – understand climate change and the actions needed to stabilize climate within a range that remains hospitable to people and other life. Sophie (Fig. 46.4) was old enough to help me make the story understandable, and she could be a plaintiff in a new lawsuit. Retirement from the government was needed for other reasons. It was the only way that I could find the block of time needed to write the "Ice Melt" paper that had languished since our initial climate model experiments in 2006.

Freedom from the government had another big benefit. I did not need permission to accept an invitation from Robert Daly – Director of the Kissinger Institute on China and the United States – to join him and Ambassador Stapleton Roy at a symposium on U.S.-China Relations in Beijing in February 2014.[24] The symposium – titled "New Type of Great Power Relationship" – would focus on two policy areas in which U.S.-China cooperation is essential: climate change and public health. I was asked to lead the discussion on climate for the American side and Tom Frieden, Director of the Centers for Disease Control, was invited to lead on public health issues. The Chinese experts would be convened by the think tank of China's State Council. This was a promising meeting. Chinese leadership seemed to respect and listen to scientists.

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[1] Central Valley Chrysler v. Catherine E. Witherspoon, Case No. 1:04-CV-06663 REC LJO, U.S. District Court, Eastern District of California – Fresno.
[2] Green Mountain Chrysler & Automobile Manufacturers v. Vermont Agency of Natural Resources, Case Nos. 2:05-CV-302 and 304, U.S. District Court for the District of Vermont.
[3] Hansen, J., Global warming: have we passed a 'tipping point'?, National Academy of Science, 23 April.
[4] Hansen, J.E. Declaration to U.S. District Court: Vermont, Burlington, Vermont, 03 May 2007.

[5] Bunker fuels are those used by ships and aircraft. The barely visible green and grey areas are the CO_2 emissions from flaring at oil wells and from cement manufacture, respectively.
[6] Sessions, W.K. III Green Mountain Chrysler et al v. States of Vermont, New York, Sierra Club et al..12 September 2007.
[7] For an indication of how arcane these lawsuits can become see Leske, K.O., A closer look at Green Mountain Chrysler v. Crombie, Vermont Law Rev. 32, 438-475, 2008, which has 306 footnotes. It reminds me of a poignant comment made by Senator Sam Ervin during the Watergate hearings describing his poor barefoot father going to town to the court house, where he saw, Ervin said, as close as I can remember "some lawyers were objectin, some were acceptin, and the costs, they were arisen."
[8] Kander, A., M.Jiborn, D.D. Moran and T.O. Wiedmann, National greenhouse -gas accounting for effective climate policy on international trade, Nature Clim. Change, 9 March 2015.
[9] Anniek and I even had lunch with Prince Philip in St. James Palace, while getting a World Wildlife Fund award. Unfortunately, it came with a Rolex watch, which I put on a shelf. I would never wear such a thing. I prefer a light $10 Timex. Rightwing kooks, who tracked my every move, somehow guessed that I had not thought to pay taxes on the watch. I decided to sell it on Ebay and donate the money to charity, but I still haven't had the time.
[10] Hansen, J.E. Dear Prime Minister letter to Gordon Brown, 19 December 2007, www.columbia.edu/~jeh1
[11] Hansen, J.E.: Expert testimonial http://www.columbia.edu/~jeh1/mailings/2008/20080910_Kingsnorth.pdf, 2008.
[12] Hansen, J., Climate threat to the planet: Implications for intergenerational equity and justice, http://www.columbia.edu/~jeh1/presentations.shtml
[13] Hansen, J. Coal River Mountain: Declaration and statements regarding civil disobedience in West Virginia, 25 June 2009, http://www.columbia.edu/~jeh1/mailings/2009/20090625_CoalRiverMountain.pdf
[14] Wood, M.C., *Nature's Trust: Environmental Law for a New Ecological Age*, Cambridge University Press, 2014.
[15] Jefferson, T., Thomas Jefferson to James Madison, V. 15: 27 March 1789 to 30 November 1789, Princeton Univ. Press, pp. 392-398, 1958. Jeffersonpapers.princeton.edu/selected-documents/Thomas-jefferson-james-madison
[16] Hansen, J., 2006. The threat to the planet. *New York Rev. Books*, **53**, no. 12 (July 13, 2006), 12-16, 2006.
[17] Hansen, J., M. Sato, P. Kharecha, D. Beerling, R. Berner, V. Masson-Delmotte, M. Pagani, M. Raymo, D.L. Royer, and J.Zachos: Target atmospheric CO_2: Where should humanity aim? *Open Atmos. Sci. J.*, **2**, 217-231, 2008.
[18] Hansen, J. Equal Protection of the Laws, Remarks on Freedom Plaza, 27 Sept. 2010, www.columbia.edu/~jeh1
[19] Hansen, J., P. Kharecha, M. Sato, V. Masson-Delmotte, F. Ackerman, D.J. Beerling, P. Hearty, O. Hoegh-Guldberg, S.-L. Hsu, C. Parmesan, J. Rockstrom, E.J. Rohling, J. Sachs, P. Smith, K. Steffen, L. Van Susteren, K. von Schuckmann, J.C. Zachos, 2013: Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature. *PLOS ONE*, **8**, e81468.
[20] Barber, B. Resistance by scientists to scientific discovery, *Science* **134**, 596-602, 1961.
[21] U.S. District Court for the District of Columbia, Civil Action No. 1:11-cv-02235 (RLW)
[22] James E. Hansen, David Beerling, Paul J. Hearty, Ove Hoegh-Guldberg, Pushker Kharecha, Valerie Masson-Delmotte, Camille Parmesan, Eelco Rohling, Makiko Sato, Pete Smith and Lise Van Susteren.
[23] Alec L. v. McCarthy, 561 F. App'x 7, 7 (D.C. Cir. 2014) and Alec L. v. McCarthy, 574 U.S. 1047, 135 S. Ct. 774 (2014).
[24] The Kissinger Institute on China and the United States is part of the Woodrow Wilson Center, a think tank in Washington that was established by Congress to commemorate the ideas and concerns of Woodrow Wilson by providing a link between the world of ideas and the world of policy. The Kissinger Institute aims to improve understanding of critical issues in the bilateral relationship to promote mutual security and prosperity.