

Galileo and the Fireflies

7 January 2013

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I was lucky to grow up in the era of rapidly rising expectations and opportunities. I was born on a small farm, the son of an itinerant tenant farmer. None of the farms that my five sisters and I lived on had electricity. Daylight was extended by kerosene lamps. I barely remember¹ the use of kerosene lamps, because, when I was four years old, we moved a small house to the outskirts of town and by the time my brother was born, when I was 5 years old, we had electricity.

My four older sisters remember the kerosene lamps well; in the evening they did their coloring, reading and homework by them. Our parents had a certain dread of the lamps. Tipping one over could cause serious burns, if not the demise of the house.

Did you know 1.5 billion people are still without electricity, most depending on kerosene lamps to extend their day? There are about 15,000 serious burn injuries per day. And about 800 million women and children inhale the smoke, equivalent to up to two cigarette packs per day.

It has been found that replacing kerosene lamps with off-grid solar lighting increases school grades as well as income generating capacity. Burn risk is eliminated and birth rates go down.

I must digress before getting to the point. I recently went to the Netherlands to help launch legal action against the Dutch government for their failure to take meaningful action to protect the rights of young people to enjoy the benefits of a stable climate and avoid having dumped on their heads the enormous costs that will ensue from future climate change out of their control.

I went in puzzlement. First, I had been surprised the previous year when my Dutch in-laws warned me that, for my own good, I should not talk about global warming in the Netherlands. Second, the legal demand, rather than asking the courts to require the government to do what was needed on the basis of science, instead seemed to concede that 2°C global warming was acceptable -- they asked only for what was deemed politically conceivable, even though more was possible if the people's well-being was given priority over that of the fossil fuel industry. Third, before arriving, I received a letter from the Dutch government inviting me to participate in a blog-based public discussion about the range of views on climate change and climate sensitivity, among a few scientists including contrarians, with no attempt to reach a consensus - the purpose being to expose the public to the "range of opinions" in what they described as "an exciting new way to move the climate debate forward." This approach - pretending that the

¹ I do remember that we still had an "out-house" for quite a while, because our house was not on a sewer and a septic system was expensive. Here's the interesting question: if we leave our children with (1) huge national debts due to our overspending, (2) a climate out of their control with growing costly impacts every year including a continually shifting shoreline, (3) a requirement to begin sucking CO₂ out of the air at likely astronomical cost -- will our children begin a slide down the other side of the expectations/opportunities hill? The contrarians argue: don't worry about the mess we are leaving for young people, they will be so wealthy, they will be able to clean it up in a wink. Uh, maybe. I don't think my children will have to use outhouses. Indeed, I would actually feel very comfortable about my children's future, if we would just begin to put an honest rising price on carbon emissions -- that would spur the economy, encourage conservation, efficiency and clean-energy innovations. There is still a chance that our children can live in an improving situation, unless we let the fossil fuel industry continue to dominate our governments.

science is like a talk-show debate, giving equal weight to all opinions and "beliefs", encouraging the public to misinterpret the skepticism that is inherent in good science, allowing even informed scientists to exhibit their proclivity to extensively cover their fannies with waffling and caveats -- is designed by well-oiled coal-fired people who wish to demean science and redefine the matter as a public debate.

I might not have been puzzled by the fact that Dutch politicians had begun to resemble Oklahoma oil-patch politicians (after all, I had found similar situations in a dozen countries, as I described in "Storms of My Grandchildren"), if I had not previously lived in the Netherlands. In 1969 I had the good fortune to do post-doctoral study at the Sterrewacht of Leiden University, attracted there by the presence of the world's leading scientist in light scattering, Prof. Henk van de Hulst. The Sterrewacht, with Prof. Jan Hendrik Oort, the prolific Dutch astronomer for whom the Oort Cloud of cometary material is named, still an active researcher, was a remarkable scientific and intellectual environment. My colleagues there, when the first human landed and walked on the moon, were effusive in congratulatory praise of that Yankee technological triumph. Yet, even though they did not wear it on their lapel, I could also discern that the Dutch had a deep, justified, pride in their scientific and intellectual heritage, and in their common sense.

Sadly, no more, it seems. Putting climate science in a public stock for pillorying is not much different than the treatment that the Church gave to Galileo in disrespecting his science. While Galileo could cross his fingers² and meekly accept his punishment, that is not an option available to us -- continued ignorance is exactly what the greedy fossil kingpins crave of the public. If we allow the public to be hoodwinked, we sacrifice the future of our children and grandchildren.

Remarkably, right when I was starting to think what-the-devil-am-I-doing-here, damn-I-shoulda-stayed-home-and-finished-one-of-my-long-overdue-papers, and get-me-outa-here, I met a Dutchman, Maurits Groen, who restored all my prior admiration of the Dutch. Groen (Dutch for Green) is no spring chicken, has been around the block a few times, but is working his butt off on a remarkable little project -- I should say a potentially big project based on a little device.

He calls it WakaWaka, which I believe is "bright lights" in some language. I prefer the Indonesian translation: "fireflies". In its simplest form it is a rugged little solar lamp. One side is a black solar panel, which will fully charge in less than a day in the sun, even on a cloudy day, providing 8 hours of bright light, or 16 hours of good reading light. A single button switches between 4 brightness levels and "off". As a replacement for kerosene lamps, it produces all the merits mentioned above.

Groen hopes to replace ~billion kerosene lamps, a significant step for climate stabilization - and a sensible step in the developing world toward a more sustainable path than that followed in the developed world. At the recent first meeting of the Leadership Council of the "Sustainable Development Solutions Network", an initiative for the United Nations, I gave my WakaWaka to Ted Turner -- who may encourage the SDSN to find a way to make things happen. Once mass-produced, a solar lamp can be paid for with the cost of two months kerosene for a kerosene lamp.

² In case your long-term memory has faded, children cross their fingers when they tell a lie, so that it does not count as a lie -- at least that's the way it worked when I was young.

There is a chance to jump start this process. In Haiti there are 370,000 people who live in darkness and use kerosene lamps -- some of them still displaced by the devastating earthquake, others by the recent Hurricane Sandy. Groen, and his Dutch WakaWaka co-founder Camille van Gestel, who is managing manufacturing in California, are focusing on getting WakaWaka power to these people in Haiti via a crowd-funding "kick-start" approach. Go to the following web site:

<http://www.kickstarter.com/projects/wakawakalight/wakawaka-power-the-best-compact-solar-power-statio?ref=live>

click on the 2-minute discussion by van Gestel and consider buying one of the WakaWakas, which will result in a matching donation of a WakaWaka to a family in Haiti.

Note that they are about to come out with a new version that will charge cell phones (or iPads) as well as provide the lamp. This will be particularly useful in the developing world, where cell phone use is exploding. If you choose the \$69 option (the one I am choosing) they will donate WakaWakas to two Haitian families, and you will get a WakaWaka in May that includes cell phone charging.

I can vouch for the honesty, sincerity and hard-working dedication of Maurits, who I have met, talked, and corresponded with. I am confident that his colleague in the U.S. has similar qualities.

370,000 is a small compared to the 1.5 billion without electricity. I don't think we can count on our governments to do the job, even for Haiti. But if we can get it to work on that scale, it can be scaled up, as it will become self-supporting for the reason mentioned above (savings via free solar energy, instead of costly kerosene).