

# The History of the Future of Solarpunk Ham Radio Club

## Fiction: The Superstorms and the Solarpunks

In 2016, a group of three coastal superstorms powered by the El Niño Southern Oscillation flooded most of the West Coast. The first hit southern Los Angeles. Landslides buried the hilly areas, and standing water filled low lying areas as stormwater channels clogged with debris. Only one day after the state of emergency was declared, a second storm dropped onto the Bay Area, and then Monterrey. High winds brought down power lines throughout the area, and the storm surge pushed saltwater over levees, back into California Aqueduct and the Mendota Canal, reclaiming these controlled waterways with debris-powered erosion. Flooding extended inland as far as Stockton and Sacramento, and the water infrastructure of the Central Valley ground to a halt, with no estimated timeline for the repairs. One week later, with extreme water conservation measures now in place for the entirety of the state, the third storm swept up from Mexico and into San Diego, shutting down the last Panamax port south of Eureka, and creating a “Fukushima effect” at San Onofre nuclear power plant as storm surge breached the sea wall. The status of the reactor was unknown, with communications still down throughout the state, and the government keeping a tight lid on the situation to prevent panic.

But panic is exactly what resulted. Many residents of California with means to do so left the state, figuring that they would shelter elsewhere with friends or family until the disaster was averted, or at least until potable water was coming out of the tap again. Those with a car but nowhere to go crowded onto the intact roadways, to flood Phoenix, Las Vegas, Salt Lake City, Reno, Portland, and Seattle, where storm refugee receiving centers were set up as quickly as possible.

But there were many who did not leave. Relief efforts focused on the short term, while work crews from across the country and the world attempted to begin repairing the infrastructure that would allow the response to move from short term to medium term. In and amongst these efforts, were millions of people. Unsure of what to do, jobs and homes often in ruins, they tried to organize themselves as best they could, volunteering or cleaning up themselves, even if they were only clearing a single lane for traffic down a eight lane highway choked with dead trees and beached boats. They attempted to carve out small, recognizable communities, from within the sprawling morass of emergency. A main street, between rows of tents. A community check-in center, within a former strip mall on a slight hill. An apartment building, like a castle keep, with all withdrawn inside the walls at night.

But there was a group who did more. From these small islands of community a previously unknown group calling themselves “Solarpunks” strung new infrastructure, to fill the communication gap. Recruiting youth and young adults from the disaster, they began teaching anyone who would listen about the basics of radio, and sending them to teach others.

The Solarpunks had never been heard of before the disaster. Many other groups had tried to preach the gospel of radio for emergencies before, but they were not present, post-disaster, like the Solarpunks. The Boy Scouts, the American Radio Relay League (ARRL), the Amateur Radio Emergency Service (ARES), the Salvation Army Team Emergency Radio Network (SATERN), and many other local groups. But when the superstorms hit, most packed up with the others that could, taking their radios and survival gear in their fancy pickup trucks, headed to higher ground. Or they huddled around the dwindling power structures, the police, the National Guard, and the NGOs, desperate to be part of the incident command, and mostly keeping away from the people in the streets.

It wasn't so much that the Solarpunks were the only one's left, so much as what was left, was the oat flake to their slime mold.

One was likely to meet the Solarpunks around one of their solar charger stations, wheeled into a cleared area on the back of a bicycle. The kids came out, drawn by DJs mixing live on the generator-fueled speakers--a rare bit of amplified noise in cities gone quiet without power grids. They stayed to charge their phones, maybe for the first time in days. When they found out the Solarpunks not only had stereos and USB chargers, but WiFi too, they were hooked.

The Solarpunks were a decentralized group of experimenters who were used to working with garbage. They didn't shop out of catalogs, so much as out of the dumpsters of society. Making anything from greywater re-use systems to solar ovens out of old construction materials and junked appliances, the Solarpunks had always been interested in fashioning the comforts of home out of the detritus of the apocalypse. With the superstorms, what had been once been a slow-tech permaculture hobby had become a shopping spree at the Mall of Post-America. Pieces of communications infrastructure were everywhere, they only had to be dried out, re-soldered, and operated. What the Solarpunks really needed was not equipment, but knowledgeable volunteers. So they stopped hacking tech, and began hacking communities. The growing Solarpunk network descended upon the rubble to pull out bits of aluminum for antennas, drying out coaxial cable, and rescuing batteries and stereo speakers from stranded vehicles. They connected the community centers with directional antennas and repeaters, attached to unlicensed walkie-talkies on the FRS, GMRS, MURS, and CB bands. They wove new neighborhoods from phone lines, strung out of windows and thrown over dead utility poles. They recontextualized the loose strands of streets cleared through the debris with low-power FM and mesh networks. Solarpunk enclaves found each other with scanners, and tracked each other with APRS. They connected back to the wider internet via Echolink, satellite, and HF. Word spread as easily as the basics their knowledge, and radio was transformed from a complex infrastructure to something anyone could make.

Using three levels of achievement coupled to financial commitment--\$0, \$10, and \$40--they began building a new culture out of the basic skills of radio and electronics.

\$0 - You are learning the basics of electronics and scavenging, working with people at the \$10 and \$40 level. You are building antennas, and using them on borrowed radios. You are learning how to solder.

\$10 - Your first piece of bought gear is a \$10 [SDR dongle](#). You are learning about bandwidth, band plans, modulation modes, and scanning. You are learning about computers and open-source software. You are listening, learning how radio traffic works. You are studying for your FCC license test with \$40 levelers, and teaching \$0 levelers, and helping them use their antennas with your SDR.

\$40 - You pass the FCC license test (\$15) and get a second piece of bought gear, a \$25 Baofeng VHF/UHF radio. Now you are on the air, taking part in nets, and accumulating more equipment. And, you are working with \$0 and \$10 levelers, teaching them, and also continuing to learn yourself.

At the \$0 level, there was no one that could not take part. By the time a person had learned enough about scavenging to get to the \$10 level, finding that amount of money to support the hobby wasn't so big of a deal. And when a person made it to the \$40 level, they weren't just doing it for the rank any more. They were working with their friends, building things. And more often than not, it was their friends who pooled money together to get them their license and their first handheld.

examples of minimum viability gear, the proof of 0\$ budget  
Street photos of speculative technology components  
antennas

- long wire
- yagi
- dish/grid

<https://openrepeater.com/>

Echolink

APRS

NOAA satellite photo download

Directional antenna for non-Part 97 radio communication

Other non-licensed bands FRS/GMRS/MURS/CB/ISM

Solar charging (as a point of contact for meeting new people)

Scanning

Mesh-network, internet access point repeaters (on MURS)

low-power FM

open-source PBEX  
LAN

## Non-Fiction: Amateurs, Bureaucrats, and Hackers

Reality check: we're framing fiction next to reality, and those are two different things. The fiction sounds lovely and utopian, because it was designed to be that way. It is solutionism, as much as it is escapism from reality. But the point of this is to get your attention, so that we can look back at reality, and then attempt to step outside that reality. We want to view reality as not deterministic, as not the way things have to be. So, first, let's talk about the reality of amateur radio technology.

who are hams? who is the gov't? who are programmers?

Hams: ARRL, the test procedure, the clubs, ARES, regular nets, other bureaucratic entities on the civilian side. Brief rundown of what all these are. And then, what is bad about them?

The government, i.e. the FCC:

what is the relationship between strict [Part 97](#) operation and other radio hacking?

- Prohibited Transmissions
- Citizenship and International relations.

MURS rules, other bureaucratic rules that act as institutional molds upon the culture.

following rules versus following conventions. The foxhunting FCC "cops." What makes a person want to turn band-planning into the Stanford Prison Experiment?

Hackers/Makers: how do they fit into the relationship between government and hams? How are they the same as hams, and how are they different? Why are we still interested in ham radio at all, rather than simply "disrupting" everything? How does the mystique of hacking and tech art work against the supposed "hacker ethic"?

Articulating the problem: why isn't the current situation good enough? Who *isn't* included? White male power structures dominate.

If you want to become an amateur radio leader you have to assume a corporate capitalized outlook, business plans, fundraising, lobbying.

Exclusivity keeps the curious away

Creativity is lacking.

Amateur radio toxic commodity culture examples:

The Ham Shack becomes trophy case.

- <http://www.hamstation.com/gallery/k9btu.jpg>
- <http://www.hamstation.com/gallery/stevesha.jpg>

Very high-end radios.

- [Yeasu DX 5000MP](#)

Burdensome shoptalk, overuse of barrier terms and shibboleths

Privileging of old-timers, hierarchies of knowledge, conservative values (not just politically and socially conservative, also radio-conservative)

Poor language use on nets, IRC, etc. Subject matter of discussions.

Result: lowers appeal of being a ham, makes it a harder to understand what being a ham even means, let alone becoming one

Were people in Katrina/Sandy using ham technology? Mesh networks, yes

The usual, and dubious, suspects

- Salvation Army [SATERN](#)
- Red Cross
- ARES

Result: duplication of government structures. Gatekeepers, treating knowledge as a security issue.

## **The Prescription: What would a solarpunk reality look like?**

There is reality grounding the speculative narrative, that would lead us in a different direction towards an alternate future. The motivation for the TED Talk voice, 'blue sky' design aspects of these punk/utopian aspirations, is the articulation of the failure of a particular structure, and a small, lingering idea of what might work better.

What we see is: need, and we see discarded technologies. We see people who struggle with connectivity issues on a daily basis. We see a world full of radio equipment, that most people look on as if it were alien artefacts. We see people more and more dependent upon complex networks of radio technologies, even though it is quite possible to break the effects of those networks down to smaller pieces. We see the means of access to these technologies becoming more complicated, more riddled with technical jargon and constrained by bureaucratic rule-making and organizational control. We see this trend reversing: if, there is motivation to start playing with those pieces. If there is a support network out in the community, willing to spread and foster that motivation. Maybe. But the only way to find out if this is the case is to try, to break down some of the toxic elements of the current culture of radio. To e-recycle certain elements of the tech approach.

These things are related not by a simple connection of problem and solution, but of the much slower process of progressive change.

Some of the toxic aspects of tech culture are obvious, at least to this audience. Privilege, gatekeeping, micro-aggressions, macro-aggressions. Those all ought to be combatted on a wider field than just within amateur radio. So what is specifically interesting about radio, in regards to designing a better cultural approach?

Aesthetic is important. Everything has aesthetic these days, whether we choose to realize it or not. The “look and feel” says what we don’t want to say about things. Is the look and feel of tech experimentation that of wealthy hobbyists and gearheads, or of seapunk’s weird authenticity? What does human survival look like? An architectural rendering, or a painted train tunnel? Punk ethics, versus FCC rules. What is the proper way to contextualize “moving fast and breaking things” for people who spend most of their lives dealing with half-broken tech? Is “radio pirate” a good model, for people who are the common denominator of greymarkets, rather than the swashbuckling, hacker type?

What does a Solarpunk look like? This term was originally a thought-experiment, but is becoming a genre in its own right, of bright green futurism as much as anything else (and there but for the grace of gods go we...). But still, there is an emphasis on solar, which is better, at least on a superficial level, than dieselpunk. But this is probably not the right name. The right name is not created yet, because you can’t create the right name. It has to appear. And when it does, it will be debated. The media will apply it, others will reject it, others will claim that it is co-opted. This is how these kinds of names work.

Here are aspects of the fictional solarpunk. What does this actually look like?

- ~~Solarpunks~~ stay. They don’t evacuate, because ultimately, they cannot evacuate.
- This need becomes radical inclusivity. It is not a prepper concept, of building a castle. It is saving people lost at sea.
- ~~Solarpunks~~ can’t duplicate permanent infrastructure.
- ~~Solarpunk~~ infrastructural foothold is based on jugaad rather than expensive gadgets.
- ~~Solarpunk~~ is not about simply attaining a smart phone, app-level satisfaction of all possible use-cases in a single, commodified device, rolling together a list of “features.” It is about separating out each individual use case, and figuring out how that use-case actually works.
- ~~Solarpunk~~ is about figuring out what infrastructure actually means to people, through experimenting with the infrastructural components themselves. Is it dangerous? Poisonous? Back-breaking? A ecological catastrophe?
- ~~Solarpunks~~ are willing to dive into bureaucratic rule systems to take what they need
- ~~Solarpunks~~ look at any electronic device as a potential radio component, even if it is not
- ~~Solarpunks~~ are constantly improving their technology, replacing bits as they find them.

- ~~Solarpunks~~ aren't lazy, but don't work just to spend the weekend in the garage. This is not an endurance sport, not an Ultimate Fighting championship, not a tractor pull.
- ~~Solarpunks~~ teach each other, which makes their network resilient in a way that money cannot.

It is not a great stretch of imagination to think of these as positive attributes. The tough part is coming up with how to get them to propagate. As cultures grow, how does the model change or stay the same? What keeps it scrappy and non-commodified? When does it stop being jugaad, and become steampunk?

<http://lifehacker.com/5964111/diy-wi-fi-antenna-cheaply-extends-your-wireless-network>