

Eight Missing Projects of the Maker Generation

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I did not realize it until now, but ever since I began buying how-to electronics magazines like Radio Electronics and Popular Electronics as an eager teenager back in the late 1970's, I have been waiting for a project that really blows my socks off, so to speak, in a social way. By social I mean a project that acknowledges the larger issues of the world, and uses technology to bring those issues into the field of view of the DIY "Maker".

My desire for an electronics project that offered an experience beyond technology itself was not satisfied by, for example, building a *Stereo TV Decoder* (Radio-Electronics, March 1986) or an *Easy to Build Burglar Alarm for Apartment Use* (Popular Electronics, July 1976). Let's face it, those are boring, and at that age I was not allowed to muck with the TV or rent my own apartment. Even then it struck me that something was missing. Only a dictator in a country full of drone-like consumers would want their citizens to be working on these kinds of things.

Unsatisfied with the hobbyist magazines of the time, and in search of the elusive socially-engaged electronics practice, I promptly got a ham-radio license. In the days before the Internet, Amateur Radio held out the prospect of unfettered communication around the world. A decade or so later, Ursula Franklin would call amateur radio one of the true holistic technology practices in her 1990 treatise on how we approach and use technology, *The Real World of Technology*, recognizing it as a non-prescriptive, holistic way to employ technology between diverse and disparate societies.

I could see it now: it was going to be one giant party of "rag-chewing", with a multitude of free-ranging international chit-chats from my suburban teenager QTH (or location to the uninitiated). In the course of studying for my license, the bubble burst when I discovered that the advice of both the Canadian and American Amateur Radio governing bodies was more or less the following (I paraphrase here from memory taking, so to speak, great liberties):

"Don't be a schmuck. A good operator always avoids talking about anything controversial at all times. And by that we mean politics,

sexuality, nationality, race, health, economic status, environmental issues, or anything else that extends beyond “hello, *how is my signal strength?*” and “*I have a medium to large sized antenna*”.

So there, you have it: A unique communications practice reduced to a 1950's Missouri sidewalk hello.

Undeterred, I entered the world of Art (the capital A signifying the contemporary variety that is taken seriously in universities) and finally found the outlet I was looking for. In Art, every topic is fair game, no matter how controversial or distasteful it might be. In Art, and more specifically in Art that uses technology, we have the holy grail of technology that is allowed to encompass serious issues in a reflective way. Take, for example, Natalie Jeremijenko's Feral Robotic Dogs, a pack of radiation-sniffing toy dogs, or the Graffiti Research Lab's Laser Writer, a laser pointer driven public speech spectacle. In Art, despite the obvious downsides of a limited audience and an often similarly limited impact, there is at least the freedom to embrace whatever it is one wants to reflect on or say about the world we live in, without the censorship of political, moral and commercial concerns. And, as one of my professors told me early on “Art is the only business where you're allowed to make people feel bad and they will keep coming back.”

And so, after the above somewhat long-winded introduction to my point of departure, I am pleased to present a few project outlines to correct the longstanding lack of controversial topics in the paper-based and digital products that constitute the technology hobbyist magazine. Some of what I write below is serious, some in jest. I leave it to the critical reader and “Maker” to find the dividing line between them.

The Maker Consumption Meter

If you are like most Makers, your imagination for the possibilities of technology and the fun it entails means you have a hard time keeping up with the costs of your Maker practice. The Maker Consumption Meter solves this in a Jiffy! It keeps an ongoing record of the materials, energy, and cash expended on Maker projects, and sends an hourly, daily or weekly tally of your consumption to your choice of Twitter, Facebook or a plain old HTML web page.

Materials and Skills Required

- some programming knowledge
- secure connection via https proxy to your credit card account
- Knowledge of introductory texts on consumer capitalism is recommended
- approximately \$173 in Arduino “shields”, an extensible expansion format for Arduino
- Full tool chest including SMT soldering kit and 4-trace New-style phosphor oscilloscope

Lifetime Health Care Costs Tally Meter

Concerned about how much your health care is costing you in the long run? Build the LHCCTM to keep track and save money at the same time! The LHCCTM is a pocket-based digital recorder that links wirelessly to your HMO health care provider. Giving you a daily, monthly and lifetime tally for your ongoing healthcare costs. Visits to the hospital can be expensive, but the LHCCTM allows you to keep on top of these costs with its clear .7" LED readout.

Materials and Skills Required

- permission of HMO provider to access billing information online
- Arduino-compatible processor
- Red LED displays
- Lithium-Ion battery pack
- some programming skills
- Adequate eyesight and health to complete assembly

Combination New York City Traffic Stop Recorder / Bill of Rights Handy Reference

The NYCTSR/BRHR gives you a quick way to deal with the “card checks” so frequently conducted by the New York City Police. This project contains two segments: the NYCTSR records your stop/ confrontation/ interaction with the police in HD video and 44.1Khz CD-quality audio, while the optional Bill of Rights Handy Reference allows you to call up polite and argumentatively convincing citations and references to the bill of rights. This three-evening project is guaranteed to increase your sense of wellness and security when travelling in the NYC area!

Materials and Skills Required

- Graphical LCD
- Arduino-compatible processor
- Downloadable Bill of Rights file
- EEPROM storage for BOR
- HD video camera
- Knowledge of NYC police uniform styles

Streaming Genocide Alert

The Streaming Genocide Alert (or “SGA” for short) alerts you to genocides and atrocities on the fly, as they happen world-wide. Based on a pocket Arduino and Wi-fi connection, the SGA allows you to donate to relief agencies and UN-sanctioned intervention efforts. If you've over-donated already, the SGA included a mute/ignore button that silences the piercing 120 decibel alert, instantly placing the device in standby mode for the next alert.

Materials and Skills Required

- Arduino
- Wifi Shield
- introductory knowledge of the philosophy of moral motivation (cf. Mackie, Singer, Plato)
- Arduino-compatible \$1000 MacBook for programming

Supreme Court Decision Predictor

Who needs CNN, FOX or the New York Times? The Supreme Court Decision Predictor, or “SCDP” for short, is a handheld decision predictor for upcoming Supreme Court decisions, based on advanced fuzzy logic, published SCOTUS decisions and, of course, an Arduino. Amaze your friends or capital hill staffers with this handy device: simply answer a series of yes-no questions and the SCDP does the rest!

Materials and Skills Required

- Cheap HD4470-based LCD from eBay,
- Ethical and practical disposition to use eBay and Paypal,
- Cheap Arduino clone from same,
- 9V battery,
- Open-Source fervour,
- Limited knowledge of recent Supreme Court decisions,
- Standard 7805 regulator circuit,
- Capacitors,
- Understanding of how the moral compass of a nation is traditionally politically determined by incumbent presidents.

Boolean Politics Logic Gate Learning Game

The Boolean Politics Logic Gate Learning Game (or “BPLGLG” for short) is a great introductory project for school-age children. Parents who want to instill a lasting knowledge of how contemporary politics equates to the basics of Boolean Logic as developed by George Boole in 1854 can build this exciting project with their child. Using a series of switched, LED lights and a hand-cut faceplate that reflects incumbent politicians, the BPLGLG brings together math and politics, in an exciting game that is sure to bring your child the awareness they need to survive in the mid to late 209th century.

Materials and Skills Required

- Pushbutton switches
- Arduino-compatible processor
- Knowledge of logic gates
- Knowledge of local political systems and systems of governance

The Environmental Damage LED Globe

The EDLG is a handy four-evening project that allows you to calculate and keep track of the environmental damage wrought by your backyard and garage Maker projects. Using the EIPRO (environmental impact of Products) conceptual framework developed by the *European Science and Technology Observatory*, the EDLG gives responsible makers a way to monitor and scale their activities so as to minimize their impact on mother earth. Based on a dynamic data link to the Maker's Paypal, Credit Card, USPS, Fedex, USP, Digikey and Mouser accounts, when consumption is running too high, the 12”/25cm illuminated globe begins to flash red and emits a piercing smoke detector-like sound from its 2”/ 5cm piezo sounder. In the interests of training and beneficial environmental change, the device operates 24/7 and cannot be disabled. This is an advanced project that should only be attempted by accomplished Makers. A special note: this project teaches lead-free soldering skills!

Materials and Skills Required

- 12”/25cm glass globe
- RGB 5W LED lights
- Recycled lamp cord
- Express desire to reduce consumption, or appearance of such
- Recycled power supply from old computer
- Access to purchasing accounts via HTTPS proxy or VPN
- 802.11 Wifi connection and Arduino Shield
- Arduino-compatible processor
- RoHS lead-free soldering set-up
- Sand or lead weight for bottom of globe