Hackers and Disasters:
How To Reboot Society With Style On A Budget



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So You Survived The Apocalypse

Good For You

Now What?

Inspiration

- Visited Oslo for Hackcon 2008
- First time in a country that had been occupied
- Visited the resistance museum in Oslo
- Zack pointed out his phone compared to home build radios in the display
- One photo in particular stood out:


April 9, 1940

February 7, 2008



Inspiration

- Norwegian Resistance in WW2
- Hackers to the bone
- Survived long periods off grid, hiding from a lethal, roaming enemy
- Built their own equipment, radios, weapons
- Highly effective
- Modern urban dwellers
- Utterly fail to understand most devices they own
- Turn into piles of goo during Blackberry outages
- No one repairs things anymore

Inspiration

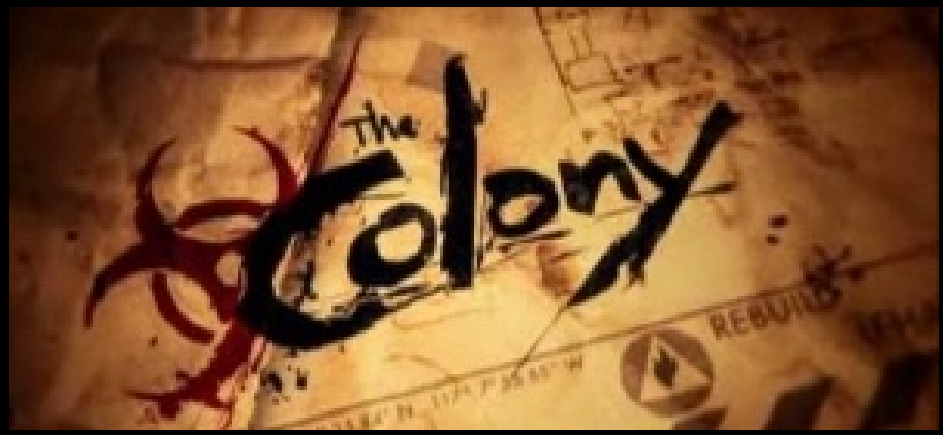
- What would I do in case of invasion?
- Answer wasn't confidence boosting
- Looking at others wasn't helping either
- Idea mulled around for a while till watching 'Dawn of the Dead' while drunk
- I'd be useless in the zombie apocalypse
- How can I make myself more useful?
- How can I help short cut rebuilding?
- Can I do it without getting weird?

Inspiration

- Treat it as a hacker problem
- Disaster planning and recovery on a planetary level – Business continuity on a global scale
- Hackerspaces a natural learning/teaching ground
- What if? Is not a bad thing to ask about anything
- Motivated after losing massive amounts of data
- Urban-survivalists not much help

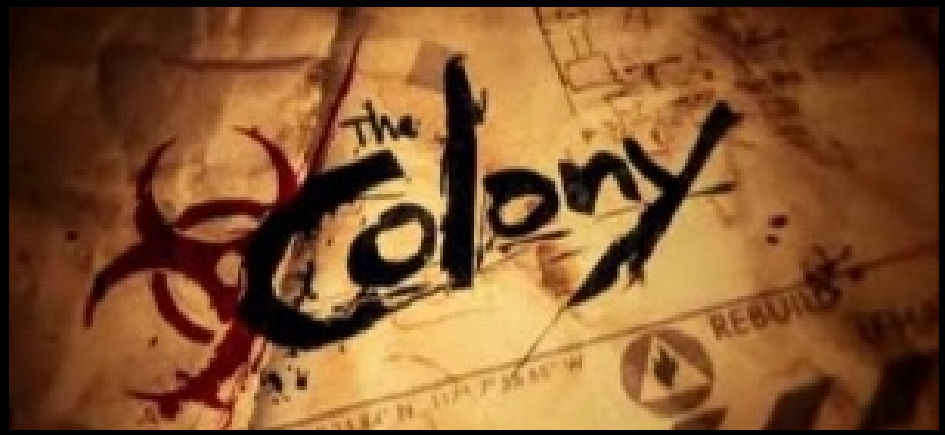
Side Note: The Colony

- New show on Discovery
- Talk started long before production
- Good to see the topic getting attention
- Seems very controlled and contrived



Side Note: The Colony

- Can't accurately represent end-of-the-world
- Can't kill marauders
- It's a TV show, there's only so much they can do/show
- There's a camera guy standing there!



Disasters

- Large or small, they suck. Big ones suck harder
- Are we ready to rebuild from scratch?
- Research has been personally illuminating
- A way to better ones self with a purpose
- An excuse to watch 200 hours of movies and TV shows
- A large thought experiment, your thoughts welcome afterward

Need To Plan! But for What?

- A lot written about short term survival
- What about long term?
- Surviving disasters of months? Years? Decades?
- How do you reboot society after a crash?



Disaster Scales

- Theprez98 covered short term, small impact
- I'm thinking big, huge, mega disasters
- Not Life ending but damn close
- Preparation beyond Hurricane/Blizzard/Flood/Earthquake kits
- Also thinking about low intensity, high impact disasters

Pop Culture

- No good resources found, so I turned to pop-culture
- Dozens of Zombie and disaster movies
- 'Zombie Survival Guide' & 'World War Z' – By Max Brooks
- Science Fiction has thought more about this than most, a good starting point
- Good research for identifying problems, fun too!
- Not many good ideas for the 'now what' part, usually stops at 'we've survived' part

Disaster Type 1: Aw, Crap Disasters

- Solar Flare
- Grid Fail
- Ice Storm
- Enough to overwhelm and disable rescue infrastructure
- Can be sorted out in time
- Low intensity but far reaching



Solar Flare

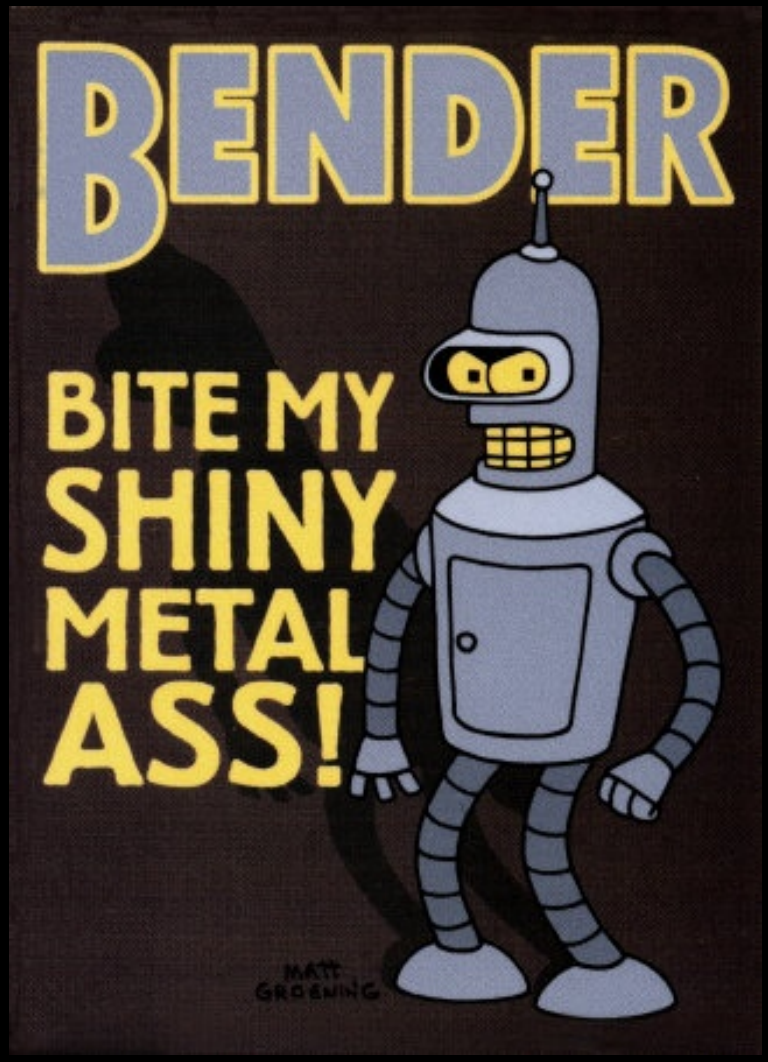
- Ground Voltage goes to about 5000V
- Happened in Quebec in 1989
- Whats happens when it hits all of North America?
- Asia can't build enough replacements soon enough
- A tough period of being on your own
- Add weather (winter) and problem expands

Grid Fail

- National power grid a tangled mess
- Northeast blackout of 1965
  - Maintenance issue cascades into the N.E. US
  - Very little crime or looting
- New York blackout 1977
  - Massive crime, looting, arson
  - Hot summer heatwave, depressed economy
- Northeast blackout of 2003
  - Almost no crime, a strange and calm event
  - Will the next one be calm?

Disaster Type 2: We're Boned

- 'Small' Meteorite
- 'Strategic' Earthquake
- Etc
- Don't care who or where you are, this is gonna suck
- Recovery takes years
- Higher intensity, small-medium impact



“Small” Meteorite

- Something that makes a state go away suddenly
- http://simulator.down2earth.eu – Google map mashup of crater size
- No really good defense
- Effects felt throughout the world
- Not life ending, just a big pothole on life's highway

“Strategic” Earthquake

- Strategic - meaning naturally occurring with an additional “screw you” attached
- Isla De le Palma - Cumbre Vieja
  - Volcanic Isle in the Canary Islands
  - Splitting right down the middle
  - 500sq/Km ridge aimed straight at US East Coast
  - 30-60m high tsunami, going about 25km inland
- Figure out the net effect of that!
- Mother Nature is a bitch sometimes

Disaster Type 3: I Wish I Weren't Undead

- Dead have risen (No, Not Jesus)
- Walking Plague of Zombies (Don't care if they are fast or slow!)
- No rescue, no outside support
- You are on your own
- Disaster constant and ongoing, containment unlikely



Hacking Disasters



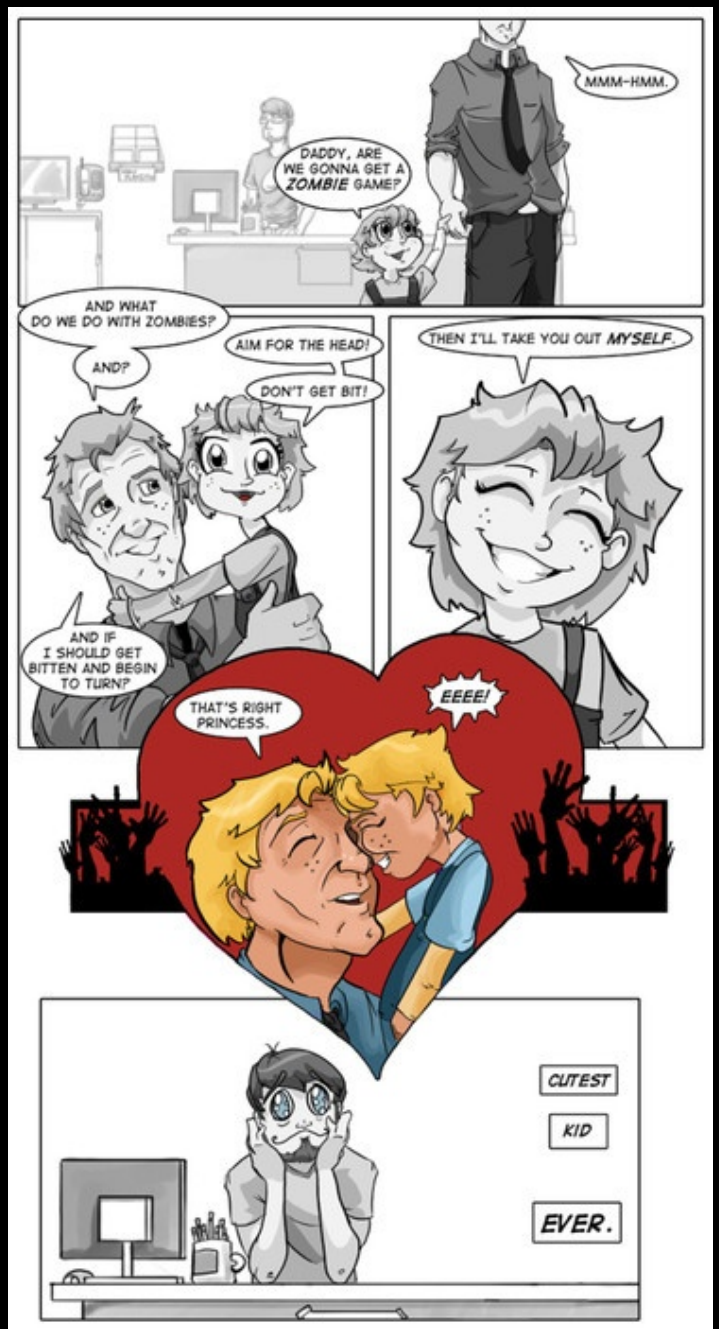
- Hackers are smart and creative
- If we can survive the short term how can we can make ourselves useful in the long term
- No knowledge is bad
- Hackers: Keepers of Lost Knowledge

Hacking Disasters: Preparation

- Planning and hoarding only go so far
- Personal education goes farther
- I am my own test subject
- I have or intend to try most everything I talk about



Vulnerability Assessment



- We are rapidly forgetting how we got here
- Even Makers can't Make everything
- We've forgotten more than we know
- This generation might be alright, but what about the next

Vulnerability Assessment

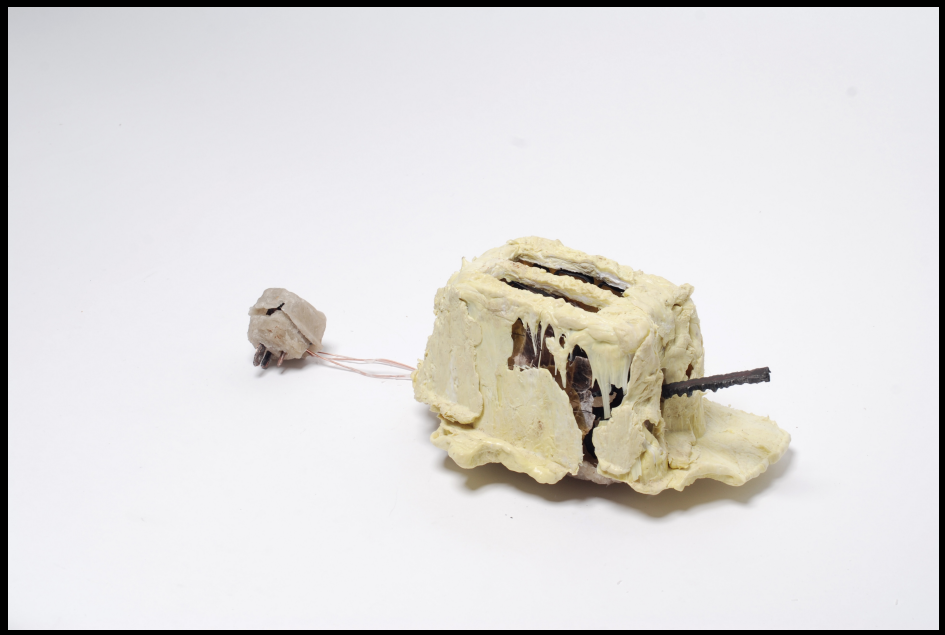
- Basic building blocks are not there anymore
- Classical scientists had to be polymath's
- Highly integrated to 'the grid'
- What happens when the grid goes away?
- Thousands of people involved in every product and tech. What happens when most go away?
- Lack of danger in our lives
- Consider a Pencil, Consider a Toaster

A Pencil



Leonard Read, I Pencil

A Toaster



- UK Artist Thomas Thwaites attempts to build a $5 toaster from the ground up
- FAIL!
- Proved that the average person cannot create even the most mundane thing on their own

Knowledge Is The Best Weapon

- Knowledge is the most underestimated survival tool
- 500 years of trial and error – forgotten
- Why waste time recreating knowledge
- Learn it ourselves and pass it on



Knowledge



Ever Since The World Ended – Yes that is Adam Savage

Heinlein said it well...

"A human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects."

— Robert Heinlein, Time Enough for Love

The Zombie Apocalypse Is Coming!

Metairie man says stranger chewed, swallowed after taking bite out of his arm

Posted by pdevlin April 07, 2009 09:51AM

A Metairie resident is recovering after a stranger bit a chunk of flesh out of his arm and swallowed it Saturday afternoon.

Joseph Lancellotti, 67, told authorities he did not know the suspect, later identified as Mario Vargas, 48, or why he was attacked in his front yard.

Lancellotti was gardening at his home in the 4400 block of Kawanee Avenue about 2 p.m. when he noticed a man walking toward his house, shouting angrily, the report said. Lancellotti said he couldn't understand the man because he was yelling in Spanish. But when the man got within two feet, he slugged Lancellotti in the head, the report said.

Lancellotti said he tried to defend himself with a garden rake. As the men struggled over the rake, the stranger bent over and bit Lancellotti on his right forearm, the report said. Lancellotti's flesh ripped away as he fell to the ground. The man then got on top of Lancellotti and began choking him, the report said.

It was then that neighbor Chantal Lorio, a podiatrist and director of the Wound Center at East Jefferson General Hospital, came out to check on Lancellotti. Lorio said Monday that she first thought Lancellotti was having a heart attack and the other man was trying to help him.

The stranger was still gripping Lancellotti as Lorio noticed her neighbor was lying in a pool of blood. She didn't learn what happened until she began dressing the wound -- with the stranger still clutching her neighbor's shirt.

"He said, 'He bit my arm, chewed the flesh and swallowed it in front of me, ' " Lorio recalled. She said the bite measured almost 3 by 1 1/2 inches, and was less than 1/4-inch deep.

The pair tried to calm the stranger, who never made any attempt to run away. He eventually let go of Lancellotti and walked two blocks to a parking lot, where he hovered near an empty police car, the report said. The suspect was still standing

twitter

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INJURED OFFICER: Officer from district 4 transported to Beth Israel Hospital, human bite to arm, suspect in custody.

8:28 PM May 19th from TwitterBerry

Boston_Police
Boston Police

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twitter

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@Boston_Police if that was a zombie bite, would you tell us?

9:29 AM May 20th from mobile web

willcady

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twitter

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@willcady Yes, absolutely

11:28 AM May 20th from Twitterrific in reply to willcady

Boston_Police
Boston Police

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The Signs Are Everywhere!



The Zombiepocalypse



Zombiepocalypse: Communication



- You've survived, now what?
- Is anyone else alive?
- Zombies ate your cellphone, don't really want it back
- What information do others have?
- What resources do others have?

Zombiepocalypse: Communication

- HAM operators invaluable in disaster scenarios
- How do you pick up HAM broadcasts?
- Minimal parts, can be found and improvised
- ARRL handbook
- Take a class, volunteer

Zombiepocalypse: Communication

On the advice of the EFF, I can't use the clip from Terminator: Salvation

It's fair use but they will fight harder since it's in theaters still

I Hope the Zombies get them first

Zombiepocalypse: Communication



Apologies for the poor quality – I'm sure you know why

Zombiepocalypse: Communication

- Fox Hole radio
- Used in WW2
- Simple receiver
- Built out of scrap parts at hand



Zombiepocalypse: Communication



Apologies to Bre- Hey, you made it creative Commons

Zombiepocalypse: Communication

- Transmission is most important
- Share knowledge with other survivors
- 'Radio Free Earth' – WWZ
- Take the time to train others
- Major positive psychological effects

Zombiepocalypse: Agriculture

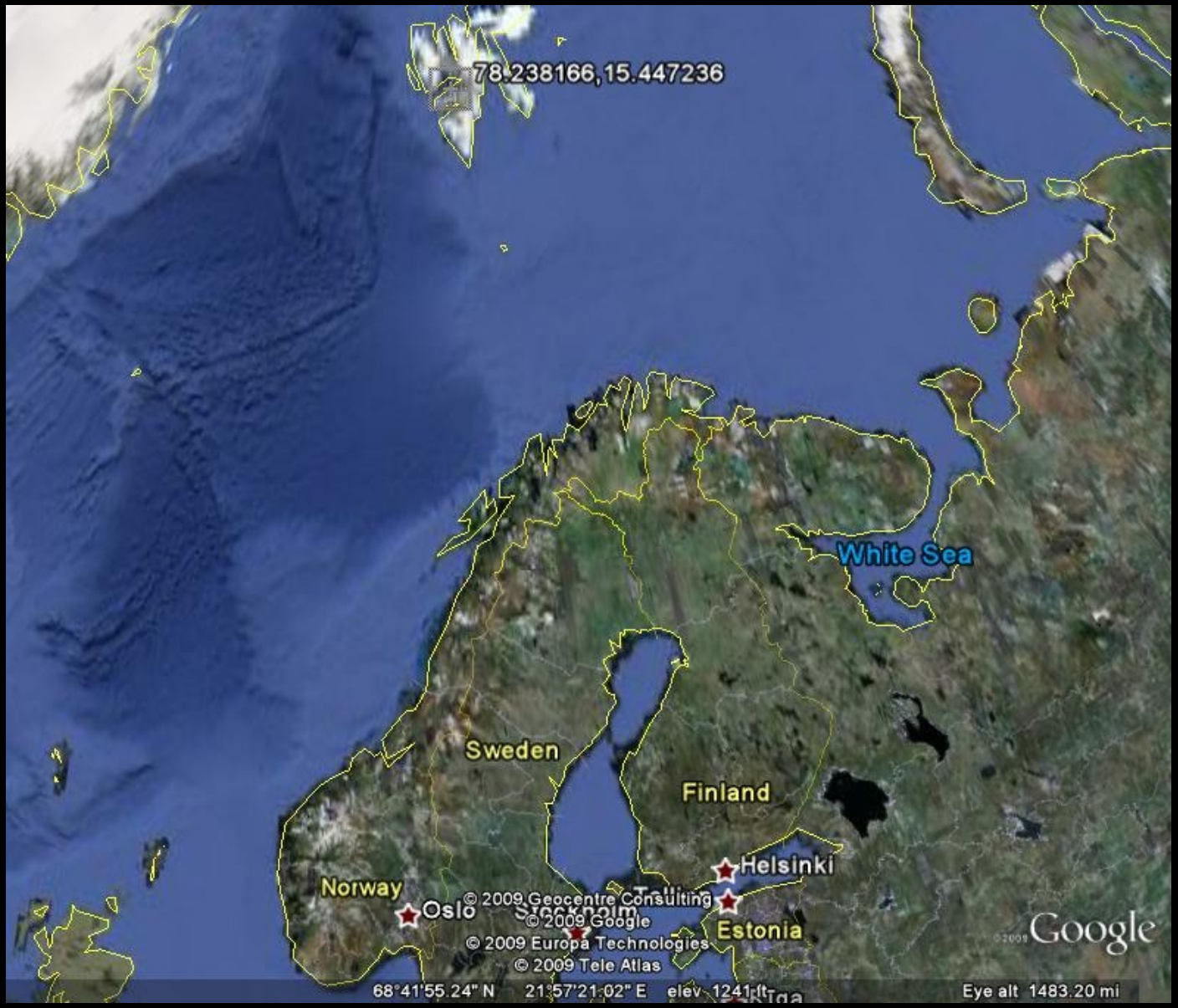
- Food supplies are heavy
- Long term survival requires sustainability of food
- Small seed banks in 'go-bags', knowledge of how to use them
- Knowledge of local botany, useful plants
- Keep in mind local environment
- Modeled after Svalbard Global Seed Vault

Svalbard Global Seed Vault

- Last ditch storehouse for food producing crop seeds
- Genetic backup copies
- Many know it
- Do you know where it is?



Svalbard Global Seed Vault



Coordinates:78.238166°N 15.447236°E

Zombiepocalypse: Agriculture: Hemp

- Don't try this at home, just read about it, You can't smoke it anyways
- Incredibly useful plant; rope, paper, foodstuffs, cloth, fuel, etc
- Low maintenance, low pesticide requirements
- Most parts of the plant can be used
- Best use of resources, multiple crops/year
- Be aware of local flora & fauna

Zombiepocalypse: Tools

- Gordon Freeman
- Crowbar, useful - Halligan Bar, better
- Built for firefighting, rescue, zombie killin'
- Not cheap, but definitely worth it
- Multiple tools in one = less to carry
- Rescue, demolition, construction ready



Zombiepocalypse: Weapons

- I don't care for guns, but I'm not stupid. Again, no knowledge is bad
- Take steps to obtain knowledge and licenses 'just in case'
- Ammo is heavy, limited, Think beyond the short term
- Sniper training for civilians?



Zombiepocalypse: Weapons

- Swords/Machete's
- Don't need reloading
- Useful for other things
- Need to know how to use it – Fencing lessons
- How to make more?
- Zombietools.net



Zombiepocalypse: Weapons



Zombiepocalypse: Fashion/Function

- Just because the world has ended doesn't mean style doesn't matter
- Prepare your own survival tac gear ahead of time
- tacticalcorsets.com
- Fashion + Function
- Milspec gear doesn't fit me, so I'm learning to sew my own

Zombiepocalypse: Blacksmithing

- Make your own weapons, tools, parts
- Easy to start, hard to master
- Relatively simple to setup
- Fun for non-disasters too!
- Easy to take a class
- Metalworking in general becoming a lost art
- Combine with basic geology/metallurgy knowledge for mining, scavenging
- Cities may not be safe for scavenging

Cities May Not Be Safe



28 Days Later

Zombiepocalypse: Brewing / Distillation

- Turn waste biomass into alcohol
- Brew beers, distill spirits, ferment wine
- Fuel - Ethanol
- Weapon – Molotov's
- Disinfectant / Antiseptic
- After a hard days zombie killin', I'd need a drink

Zombiepocalypse: Engines

- Repairing modern engines = Not easy
- Old engines = Easier
- V8 interceptor not practical
- 2 and 4 stroke engine repair much more useful
- Small = Fuel Efficient
- Small = Easy to maintain





Zombiepocalypse: Engines



Evil Dead 2

Zombiepocalypse: Steam

- Steam Power, not steam punk
- Blacksmith = Parts, Distillation = Fuel
- Simple source of power for generators, pumps, heaters, refrigeration, etc
- Most anything can be steam powered
- Worked for 100 years, why not again?
- Simple principal forgotten by most
- Self perpetuation of technology
- Useful for locomotion and defense

Zombiepocalypse: Steam



Army of Darkness

Zombiepocalypse: Redux

- Looking to technology of the past, we can prepare for the future
- Examine, refine 'outdated' technologies
- Prepare a kit with the essentials for reference
- You may not need it but others might
- What good is having knowledge in your brain if your brain is in a zombie?
- Thought experiment ended up answering one of the biggest philosophy questions of the modern age....

The Gilligan Factor



Or



The Correct Answer: The Professor



- The Professor naturally
- Built innumerable things to make life easier
- Kept castaways sane
- We need to be like the professor!

The Gilligan Factor



- In a pinch, we could use Mary-ann
- Kansas farm girl
- Knew which end of a nail was sharp
- Vastly under-rated character on the show

The Gilligan Factor

- The human factor of a disaster will suck most of all
- People don't handle adversity well
- We need to provide some small comforts or else zombies won't be the only ones eating us
- Psychology, game theory
- Don't need to lead, but be essential
- Machiavelli – The Prince

Books Are Your Friend

- “Rocks don't need backing up”
- Data today is on high capacity, highly sensitive media
- Rock beats paper but paper beats flimsy plastic disc
- Can't hurt to know anyways
- Stash books useful in a crisis
- Make our own specific to this type of scenario

Books: Henley's 20th Century Formulas

- Available on archive.org
- The housemaids guide to making anything
- Can't wait to order from the general store, make it yourself
- Adhesives, Alloys, Antiseptics, Condiments, Inks, Waterproofers, Paint, Chemical processes, etc
- You name it, it's in there, over 800 pages
- Warning: Do not accept health or food advice without common sense!!!!

Books: Pocket Ref

- Pocket Reference
- Full of useful formula's, specifications, random useful bits of knowledge
- Incredibly useful in a crisis
- My copy's first aid section signed by Adam Savage



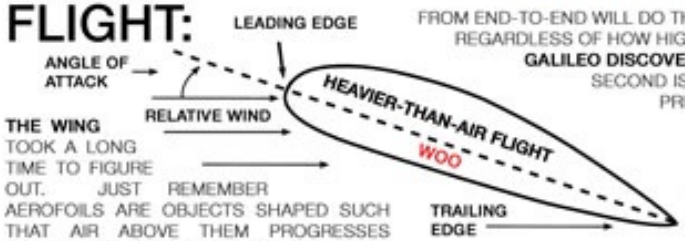
Proposal: Crowd sourced knowledge bank

- User editable content -wiki?
- Distill a concept, technology, process, etc, down to a twitter post
- Don't need to know where and when or how, just need the how-to-do
- End goal: High density knowledge book
- Refrigeration – “A liquified gas in a sealed, cyclical pipe is allowed to expand, drawing heat from it's surroundings. An in-line compressor re-compresses the gas to repeat the process“

LET'S SAY YOU'VE GONE BACK IN TIME.

NICE ONE. OKAY, WE'RE GOING TO ASSUME THAT YOU'RE ON EARTH AND YOU CAN READ ENGLISH. SO FAR, SO GOOD. BUT HOW CAN YOU BUILD ALL THE AMENITIES OF TOMORROW WHEN YOU'RE STUCK IN THE PAST? **DON'T WORRY.** YOUR POSTER HAS THIS ONE C O V E R E D.

FLIGHT:



THE WING TOOK A LONG TIME TO FIGURE OUT. JUST REMEMBER AEROFOILS ARE OBJECTS SHAPED SUCH THAT AIR ABOVE THEM PROGRESSES FASTER THAN AIR MOVING BENEATH THEM. **SLOWER MOVING AIR HAS MORE PRESSURE**, SO THERE IS A NET UPWARDS FORCE. ATTACH AN AEROFOIL OF SUFFICIENT SIZE TO A MACHINE CAPABLE OF MOVING ITSELF FORWARD FAST ENOUGH AND **IT WILL FLY**. YOU CAN MAKE A PLANE BY ATTACHING TWO AEROFOILS TO A CENTRAL BODY. ADD FLAPS AT THE TRAILING EDGE AND YOU CAN CONTROL WHERE IT GOES!

FIRST, WE NEED SOME UNITS, BUT NO BIGGIE. THE EXACT SPEED OF LIGHT IN A VACUUM IS **299,792,458** METERS PER SECOND. GOOD TO KNOW. A METER IS DEFINED IN TERMS OF LIGHT, BUT IF YOU CAN'T MEASURE IT ACCURATELY, THE LENGTH OF A PENDULUM THAT TAKES ONE SECOND TO SWING FROM END-TO-END WILL DO THE TRICK. **PENDULUMS TEND TO TAKE THE SAME AMOUNT OF TIME TO SWING** REGARDLESS OF HOW HIGH YOU START THEM OFF, SO DON'T WORRY ABOUT THAT. PRETTY NEAT, RIGHT? **GALILEO DISCOVERED THAT**, BUT WHATEVER. **TAKE THE CREDIT.** IF YOU DON'T HAVE A WATCH, A SECOND IS ABOUT HOW LONG IT TAKES YOU TO SAY "ONE MISSISSIPPI". AND A GRAM IS PRETTY MUCH THE WEIGHT OF ONE CENTIMETER CUBED OF WATER.

HEALTH:

GERMS SPREAD DISEASE, AND THEY CAN LIVE BASICALLY ANYWHERE. **FIGHT THEM WITH HYGIENE AND ANTIBIOTICS**. WASH TO KEEP YOURSELF AND THOSE AROUND YOU CLEAN. MEDICAL INSTRUMENTS SHOULD BE CLEANED IN BOILING WATER. STEAM WORKS ON THINGS THAT CAN'T BE WASHED. **THE BEST ANTIBIOTIC IS PENICILLIN**: THE MOLD *PENICILLIUM NOTATUM*, FOUND ON FOOD. IT'S INCREDIBLY EFFECTIVE AT STOPPING INFECTION, AND WORKS BY PREVENTING OTHER BACTERIA FROM MAKING NEW CELL WALLS AND REPRODUCING. IT'LL USHER IN A NEW AGE OF ANTIBIOTICS. **TAKE THE CREDIT.** IF THE PENICILLIUM MOLD IS UNKNOWN, LOOK FOR MOLDS ON FOODS THAT, WHEN VIEWED UNDER A MICROSCOPE, LOOK LIKE CRAZY HANDS ON LONG STALKS. THERE'S YOUR PENICILLIUM!



VIRUSES SPREAD DISEASE, BUT UNLIKE GERMS, CAN'T REPRODUCE ON THEIR OWN. THEY RELY ON HOST CELLS TO REPRODUCE. **FIGHT THEM WITH VACCINATION**, WHICH ALLOWS THE BODY TO PRODUCE ANTIBODIES THAT FIGHT A GIVEN VIRUS BEFORE IT EVEN SHOWS UP. MAKE A VACCINE BY GROWING A CULTURE AND THEN HEATING IT: THE HEAT WILL KILL THE VIRUS, AND THEIR DEAD SHELLS ARE ENOUGH TO TEACH THE BODY TO FIGHT. WEAKER STRAINS ALSO VACCINATE. YOU'RE PROBABLY GOOD FOR MOST DISEASES, BUT **OUR GENERATION WAS THE FIRST TO GROW UP WITHOUT SMALLPOX**. COWPOX ARE SPOTS FOUND ON COW UDDERS, AND IT'S CLOSE ENOUGH TO VACCINATE YOU WHILE BEING WEAK ENOUGH NOT TO KILL YOU. **SPEAKING OF NOT BEING KILLED**, DIABETES IS CHARACTERIZED BY FREQUENT URINATION, EXTREME THIRST OR HUNGER, AND/OR EXTREME WEIGHT LOSS. WITHOUT TREATMENT IT'S FATAL, BUT **INSULIN CAN BE EXTRACTED FROM THE PANCREAS OF DOGS AND PIGS** BY TYING A STRING AROUND THE PANCREATIC DUCT. INJECT THIS EXTRACT AND IT WILL ACT AS A MIRACULOUS TREATMENT. FORGET BANTING AND BEST. **TAKE THE CREDIT.**

TECHNOLOGY:

HEAT MILK TO JUST BELOW ITS BOILING POINT: IT WON'T CURDLE, AND 99.999% OF THE BUGS IN IT WILL BE KILLED. CONGRATULATIONS! **YOU JUST INVENTED PASTEURIZATION**. A MOVING ELECTRIC FIELD PRODUCES MAGNETISM, AND VICE VERSA. WRAP COPPER WIRE AROUND AN IRON CORE AND RUN ELECTRICITY THROUGH IT, AND **YOU'VE GOT AN ELECTROMAGNET**. DON'T HAVE ANY ELECTRICITY? PUT A MAGNET ON A WATER WHEEL, AND PUT YOUR COPPER-WRAPPED IRON BESIDE THE WHEEL, AND HEY PRESTO, YOU'RE CONVERTING MECHANICAL ENERGY INTO ELECTRICITY. DON'T HAVE ANY MAGNETS? HEAT IRON TO GET A VERY WEAK ONE, LOOK FOR BLACK GRAINS IN BEACH SANDS THAT STICK TOGETHER, OR EXAMINE THE SITES OF LIGHTNING STRIKES FOR MAGNETIC LODESTONES. **RUN ELECTRICITY THROUGH TUNGSTEN TO GET THE LIGHTBULB**. RUN ELECTRICITY BACK AND FORTH ALONG A WIRE WITH ENOUGH POWER AND **YOU'VE INVENTED RADIO.** WHEN A RADIO WAVE INTERACTS WITH A RECEIVING ANTENNA, THE EXACT SAME ELECTRICAL CHARGE CAN BE RECOVERED. INFORMATION CAN BE ENCODED IN TWO WAYS: IN THE CHARGE OF THE ELECTRICITY (HIGHER CURRENT PRODUCES A HIGHER AMPLITUDE WAVE) OR IN THE FREQUENCY OF THE ELECTRICAL REVERSALS. FM IS MORE RESISTANT TO AMPLITUDE DECAY IN TRANSIT. SEND OUT HIGH-FREQUENCY WAVES AND MEASURE HOW AND WHEN THEY BOUNCE BACK, AND **YOU'VE INVENTED RADAR**. DO THE SAME WITH SOUND, AND **OH MAN: SONAR**. MOUNT A MAGNET SO IT CAN MOVE FREELY, AND **YOU'VE INVENTED THE COMPASS. ARE YOU TAKING THE CREDIT?** POLARIS IS JUST ABOUT THE BRIGHTEST STAR IN THE SKY (48TH PLACE!) AND IT'S NEAR THE BIG DIPPER. MEASURE HOW HIGH UP IT APPEARS TO BE, AND THAT ANGLE IS YOUR **LATITUDE**. QUARTZ CRYSTALS ARE GREAT: RUN SOME CURRENT THROUGH THEM AND THEY'LL CHANGE SHAPE! STOP THE CURRENT AND THEY'LL RESUME THEIR SHAPE, **AND** THEY'LL GENERATE ELECTRICITY WITH A VERY PRECISE FREQUENCY AS THEY DO SO. YOU CAN USE THIS TO BUILD **PRECISION CLOCKS**. **NICE**. WITH THESE CLOCKS, YOU CAN DETERMINE **LONGITUDE**: JUST SET YOUR CLOCK TO LONDON TIME, TAKE THE DIFFERENCE BETWEEN LONDON NOON AND LOCAL NOON, AND THAT'S HOW FAR AWAY FROM THE PRIME MERIDIAN YOU ARE. HEY! **THAT'S LONGITUDE RIGHT THERE**. THAT WAS EASY. IF YOU'RE IN 1714, THE BRITISH HAVE A £20,000 PRIZE UP FOR A SIMPLE WAY TO CALCULATE LONGITUDE. **I'D SAY YOU'VE EARNED IT.**



CHEMISTRY:

DON'T FORGET THE BASIC BUILDING BLOCKS OF MATTER: ATOMS. ATOMS CONSIST OF A NUCLEUS AT THE CORE MADE OUT OF NEUTRALLY-CHARGED NEUTRONS AND POSITIVELY-CHARGED PROTONS, SURROUNDED BY NEGATIVELY-CHARGED ELECTRONS. AN ATOM WITH THE SAME NUMBER OF ELECTRONS AND PROTONS IS ELECTRICALLY NEUTRAL, OTHERWISE IT WILL HAVE A POSITIVE OR NEGATIVE CHARGE. **THE NUMBER OF PROTONS IN AN ATOM DETERMINE WHICH ELEMENT IT IS**. FOR OUR PURPOSES THE MOST USEFUL ONES ARE HYDROGEN (**H**) WITH 1 PROTON, CARBON (**C**) WITH 6, NITROGEN (**N**) WITH 7, AND OXYGEN (**O**) WITH 8. WATER IS MADE OF HYDROGEN AND OXYGEN: H_2O. KRAZY GLUE IS $C_5H_5NO_2$.



IF YOU'RE A WOMAN AND YOU SWALLOW PROGESTERONE, YOU WON'T OVULATE: $C_{20}H_{26}O_2$ IS A GOOD SYNTHETIC SUBSTITUTE. **ALUMINUM USED TO BE MORE VALUABLE THAN GOLD**. DEPENDING ON WHEN YOU ARE, IT STILL IS. EXTRACT IT FROM ROCKS BY DISSOLVING THEM IN MOLTEN CRYOLITE AND RUNNING CURRENT THROUGH IT. YOU'LL FIND CRYOLITE IN GREENLAND, LATITUDE **61.2** LONGITUDE **-48.16**. LOOK FOR GLASSY WHITE CRYSTALS. **ATOMS** CAN BE SPLIT, WHICH RELEASES A TREMENDOUS AMOUNT OF ENERGY AND RADIATION. ENERGY CANNOT BE CREATED OR DESTROYED, JUST CONVERTED. REMEMBER **EINSTEIN**: ENERGY IS MASS TIMES THE SPEED OF LIGHT SQUARED. **TAKE THE CREDIT.**

OTHER FUN INVENTIONS: GEARS, CATAPULTS, GLASSES, KITES, THERMOMETERS, SCISSORS, CIRCULAR SAWS, BUTTONS, FORKS, PAINT ROLLERS, WRITTEN AND SPOKEN LANGUAGE, THE WHEEL, RUDDERS, CPR, UMBRELLAS, SCREWS, CONDOMS, DELICIOUS CARBONATED WATER

ANY WAY.

HANG THIS UP IN YOUR TIME MACHINE

AVAILABLE AS A PRINT AND SHIRT AT TOPATOCO.COM

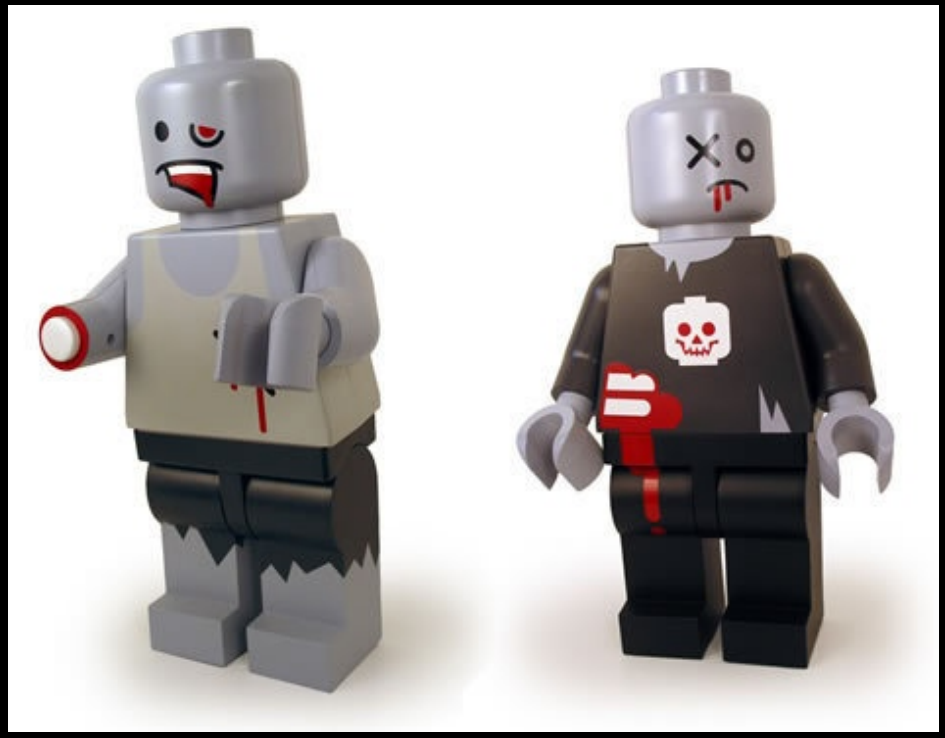
Knowledge Banks

- Disasters are unpredictable
- You can't know everything, but you can store it
- Wikipedia Effect
- Larger version of 'go-bag'
- Libraries/Cities may not be safe for long periods
- Combine with geo-caching for added knowledge safety
- Peer to peer storage

Knowledge Banks

- Small kit of knowledge useful for rebuilding
- Don't need to know it all, just that you have it
- Not necessary to flee with, but good to come back for
- Some basic parts for immediate use, knowledge and tools to build the rest
- Use Ammo cans – cheap, EMP resistant, air and water tight

Conclusion



- The more ideas the better
- Want to hear ideas, comments, etc for preserving knowledge/rebooting society
- Hopefully some of you will be inspired
- render@renderlab.net

Thanks

- Grey Frequency
- Dragorn
- Mouse
- L0st
- Sintax Error
- Joe @ The Movie Studio
- Theprez98
- Deviant Ollam
- NMRC folks
- EFF
- TacticalCorsets.com
- Everyone who listened to me rant about this stuff for a year

