

IF YOU BUY INTO THE
"10,000 HOURS" THING,
YOU ARE NOW A
WORLD-CLASS EXPERT!



MY SCREEN TIME REPORTS
HAVE STARTED TRYING TO PUT
A POSITIVE SPIN ON THINGS.

AN INVESTIGATOR CLAIMS TO HAVE DISCOVERED IN SOME DUSTY ARCHIVES THAT BACK IN THE DAYS WHEN THE PILGRIMS LANDED EACH PERSON COMING TO AMERICA FROM ENGLAND WAS REQUIRED TO BRING WITH THEM EIGHT BUSHELS OF CORN MEAL, TWO BUSHELS OF OATMEAL, TWO GALLONS OF VINEGAR, AND A GALLON EACH OF OIL AND BRANDY.

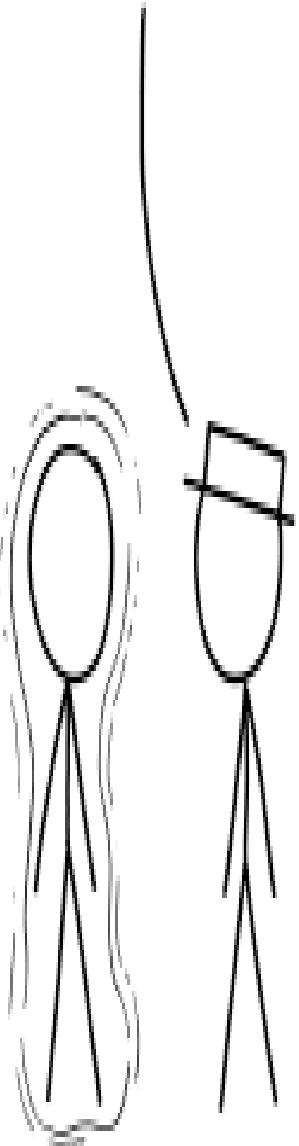
IN VIEW OF THE FACT THAT NOTHING OF IMPORTANCE HINGES ON THE TRUTH OR FALSITY OF THIS STATEMENT, NOT MUCH TIME NEED BE CONSUMED TO ASCERTAIN WHETHER THIS IS TRUTH OR FICTION.

—KANSAS CITY SUN
FRIDAY, MAY 6TH, 1921

I HAVE A GRUDGING RESPECT FOR THIS 1921 NEWSPAPER FACT-CHECKER.

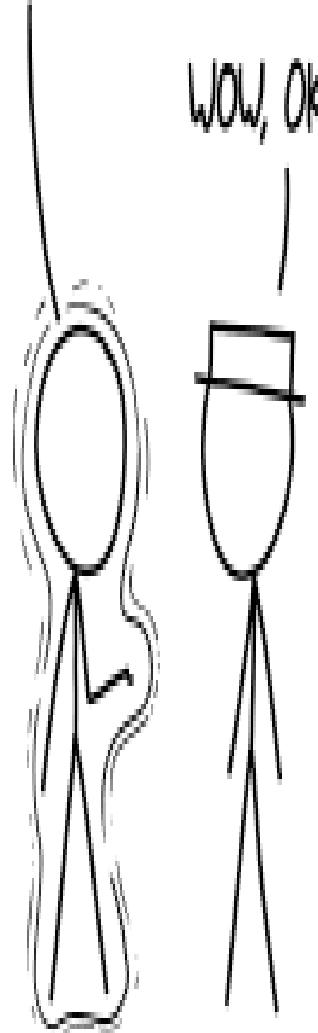
WELCOME TO 1991!

SO YOU'RE FROM 2021?
WHAT HAPPENS WITH
TECHNOLOGY OVER
THE NEXT 30 YEARS?



WE PASSED A FEDERAL LAW TO COMBAT
LASER ATTACKS ON AIRLINERS, AND THERE
ARE TV SHOWS WHERE ROBOTS BATTLE.

ALSO, CORDLESS PHONES ARE LONGER
RANGE NOW, AND IT'S REALLY EASY TO
SEND NEWS STORIES TO YOUR FRIENDS.

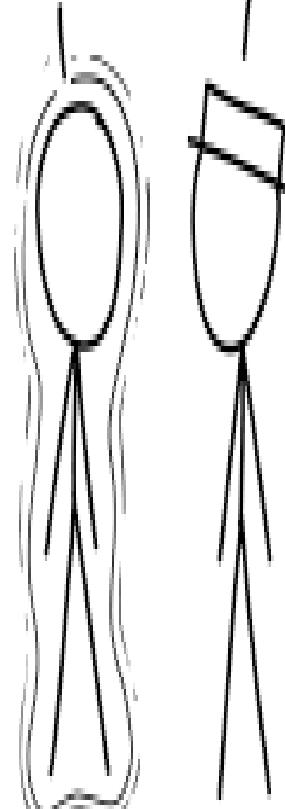


WOW, OKAY.

NOW, TRY TO GUESS
WHICH OF THOSE
THINGS TURN OUT
TO BE IMPORTANT.

...IS IT NOT
THE LASERS?

IT IS NOT
THE LASERS.



RULES

FOR VISITORS TO MY $\frac{1}{100,000}$ TH SCALE WORLD

OUR AURORA
ARE PROBABLY
NON-TOXIC BUT
PLEASE STOP
TRYING TO
TASTE THEM

1 METER = 100 KM 1 FT = 100,000 FT ≈ 20 MILES

ISS (14 FEET UP)
RETURNS EVERY 90 MINUTES
HIT IT WITH A NERF
DART, WIN A PRIZE!

WARNING: LIMITED CELL NETWORK
COVERAGE ABOVE THE IONOSPHERE
CROUCH DOWN TO GET MORE BARS

SAFETY GLASSES REQUIRED
FOR PROTECTION FROM
REENTERING SPACECRAFT

OW!!

DO NOT STEP
ON MT. EVEREST

BEWARE OF
CHEST-LEVEL
METEORS

DO NOT
ANGER THE
SPRITES

WHAT?
I GOT A
SOYUZ IN
MY EYE

-100°C MESOPAUSE
VEST RECOMMENDED

NO BREAKING
OFF PIECES OF
THE ICE CAPS
TO PUT IN
YOUR DRINK

OCEAN FLOOR
SLIPPERY WHEN WET



WEAR SUNSCREEN;
CAUTION! THE OZONE LAYER
ONLY PROTECTS YOU
BELOW THE KNEES.

IF LAKE TAHOE OR
THE DEAD SEA DRIES
UP, REFILL THEM WITH
THIS 5oz WINE GLASS

PLEASE STOP DIGGING
THROUGH THE MOHO.
STAFF ARE TIRED OF
CLEANING UP LARGE
IGNEOUS PROVINCES.

RULES FOR VISITORS TO MY $\frac{1}{10,000}$ TH SCALE WORLD

1 METER = 10 KM 1 FT = 10,000 FT ≈ 2 MILES

WATCH OUT FOR
AIRLINERS CRUISING
NEAR SHOULDER LEVEL

DO NOT STAND
OR CLIMB ON
MT. EVEREST

CAUTION:
HYDRO-
THERMAL
VENTS
UNDERFOOT

DANGER: POSITIVE
LIGHTNING! DO NOT
TOUCH CLOUD TOPS

AVOID HYPOXIA BY
REGULARLY SITTING
TO BRING YOUR
LUNGS BELOW
THE DEATH ZONE

PLEASE
DO NOT
SMACK
WEATHER
BALLOONS

TRIP HAZARD:
APPALACHIAN
MOUNTAINS

CHILDREN MUST BE
SUPERVISED WHILE IN THE OCEAN,
ESPECIALLY NEAR TRENCHES

DO NOT DIG NEAR
YELLOWSTONE

BE CAREFUL NOT TO
STEP ON CITIES WITH
ESPECIALLY POINTY
TOWERS, LIKE TORONTO,
SEATTLE, AND DUBAI

RULES

FOR VISITORS TO MY $\frac{1}{1,000}$ TH SCALE WORLD

1 METER = 1 KM 1 FT = 1,000 FT

WARNING!

CHOKING HAZARD!

KEEP SMALL CHILDREN
AWAY FROM ASCENDING/
DESCENDING AIRLINERS

KEEP HOT OBJECTS
OFF THE ICE SHEET
OVER THE SOUTH POLE
NEUTRINO OBSERVATORY

DO NOT
BOther THE
METEOR
CRATER
DUCKS

NO CONNECTING
THE DEAD SEA
TO THE OCEAN

BE PATIENT:
NIAGARA FALLS

WILL TAKE A
FEW MINUTES
TO FILL YOUR
WATER GLASS

TRIP HAZARD:
THE GATEWAY
ARCH

DO NOT LET
ANTS INTO
THE SUDBURY
NEUTRINO
OBSERVATORY

WATCH FOR SMALL PLANES

WEST-
FLYING
LAYERS
EAST-
FLYING
LAYERS

DRONE
ALTITUDE LIMIT

DO NOT
REMOVE
SAFETY
CAPS

NO OPEN
= FLAMES IN
ZEPPELIN
AREA

DO NOT MIX UP THE
USS ENTERPRISES:

WET DRY

CAUTION:
SHARP

PLEASE STOP RELEASING
GOLDFISH IN THE OCEAN.
THEY KEEP EATING THE
BLUE WHALES.

ONLY ONE
PERSON ON THE
GOLDEN GATE
TIGHTROPE AT
A TIME

DO NOT REMOVE
STATUE OF LIBERTY
LEGO MINIFIG

REGULAR MATH

REGULAR MATH OR FOOTNOTES

EITHER HIGH SCHOOL
MATH FUNCTIONS OR
INCOMPREHENSIBLE
GROUP THEORY

CHEMICAL PHYSICS

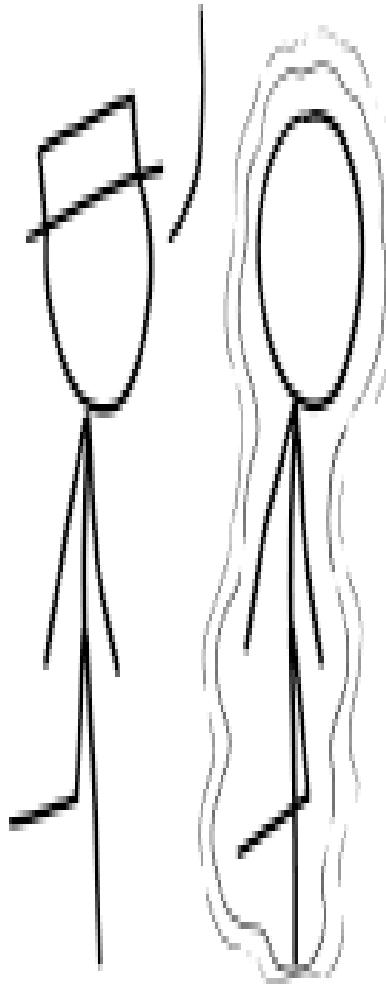
CHEMISTRY MATRICES!

THE PHYSICISTS ARE AT IT AGAIN

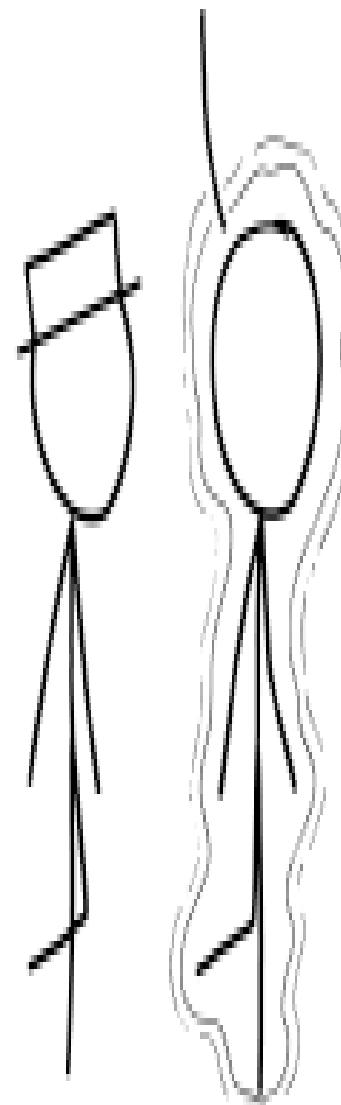
OH NO.
WHATEVER
THIS IS, IT'S
CURSED.

WHAT ARE THINGS LIKE TEN
YEARS FROM NOW IN 2020?

WE HAVE THIS NEW "BITCOIN"
THING—DOES IT EVER CATCH
ON AND BECOME NORMAL?

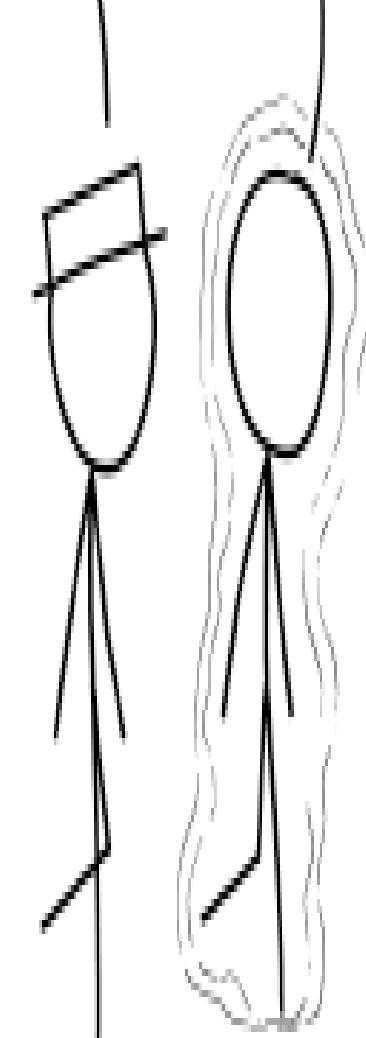


IT'S STILL AROUND.
I JUST BOUGHT
A BOTTLE OF
HAND SANITIZER
FOR ONE BITCOIN.



COOL, THAT SOUNDS
PRETTY NORMAL.

WELL, HERE'S
THE THING...



2020 ELECTION MAP

0 = 250,000 VOTES

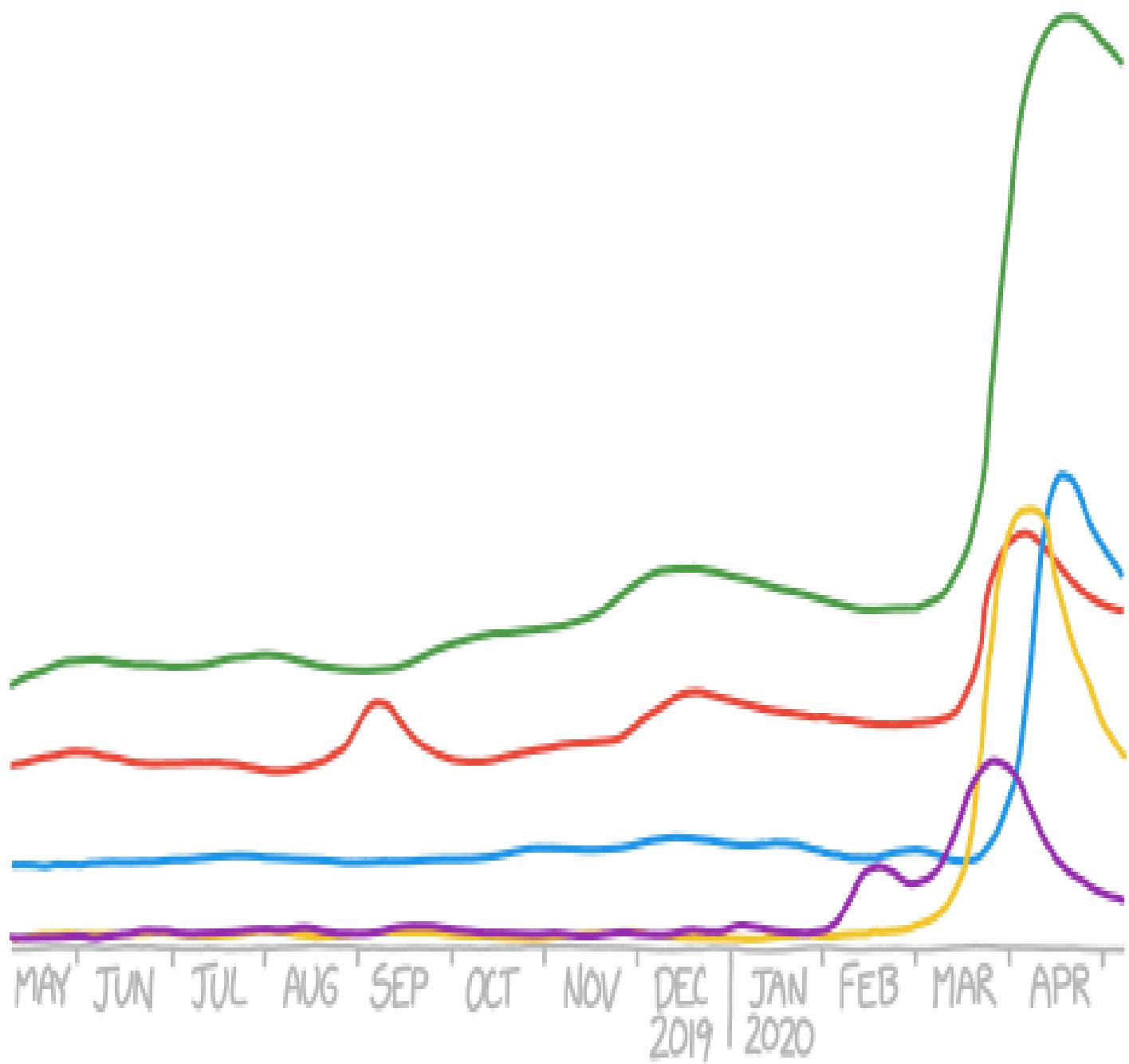
BIDEN TRUMP OTHER

VOTES ARE DISTRIBUTED BY STATE AS ACCURATELY AS
POSSIBLE WHILE KEEPING NATIONAL TOTALS CORRECT.

LOCATION WITHIN EACH STATE IS APPROXIMATE.

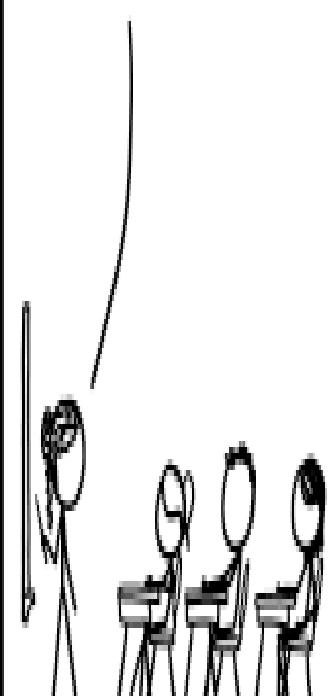


● SEWING MACHINE ● WEBCAM ● ANDREW CUOMO ● FLOUR ● PANGOLIN

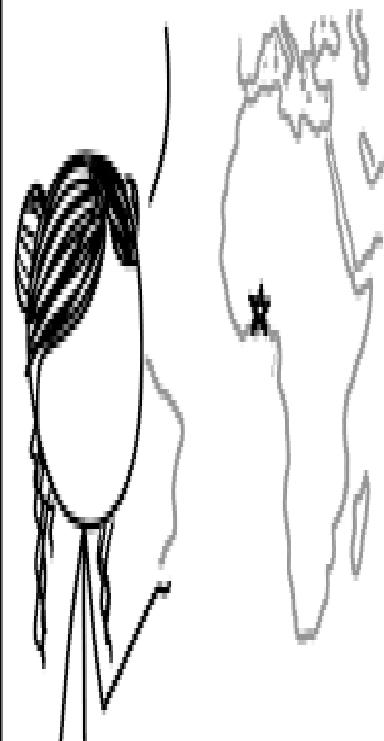


I WANT TO SHOW SOMEONE FROM 2019 THIS GOOGLE TRENDS
GRAPH AND WATCH THEM TRY TO GUESS WHAT HAPPENED IN 2020.

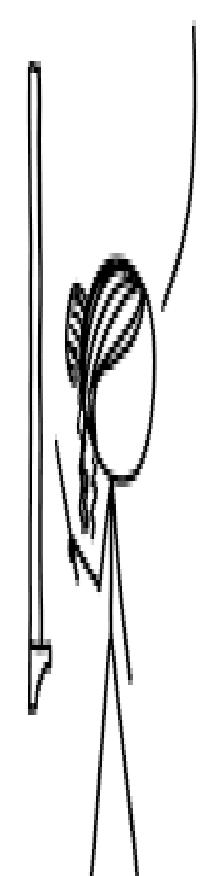
WHEN EVERYTHING IS
STILL, SEISMOMETERS
PICK UP FAINT TREMORS
WE CALL SEISMIC NOISE.
MOST OF IT IS FROM
OCEAN WAVES, CARS,
ETC. BUT THERE'S
ALSO A MYSTERIOUS
26-SECOND PULSE.



WE'VE TRIANGULATED THE
SOURCE TO SOMEWHERE
IN THE GULF OF GUINEA.
IT COMES AND GOES WITH
THE SEASONS, BUT IT'S
BEEN THERE SINCE AT
LEAST THE 1980s. IT'S SO
REGULAR WE USE IT TO
SYNC UP SEISMOMETERS.



WHAT CAUSES IT?
NOT SURE. THE MOST
POPULAR THEORY IS
THAT STORM-DRIVEN
WAVES SET UP SOME
KIND OF RESONANCE
WITH THE COAST.



ANOTHER THEORY IS THAT
LONG AGO, SEISMOLOGISTS
MURDERED A GIANT AND
BURIED THE BODY AT SEA.
NOW WE ARE HAUNTED
BY THE BEATING OF ITS
TELLTALE HEART!

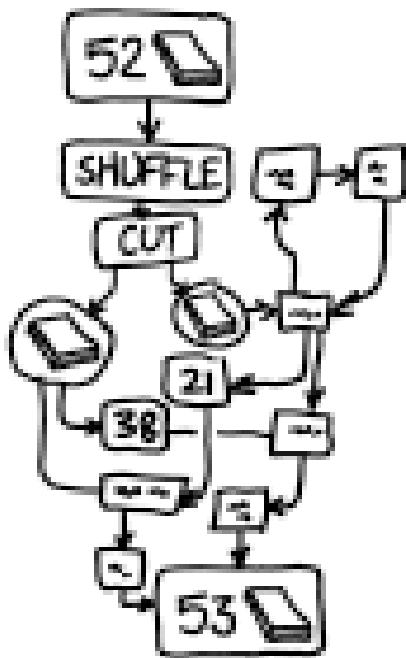


COULD BE EITHER.
FURTHER
RESEARCH
IS NEEDED.

I'VE FOUND A WAY TO TURN A
52-CARD DECK INTO 53 CARDS BY
SHUFFLING AND REARRANGING THEM.

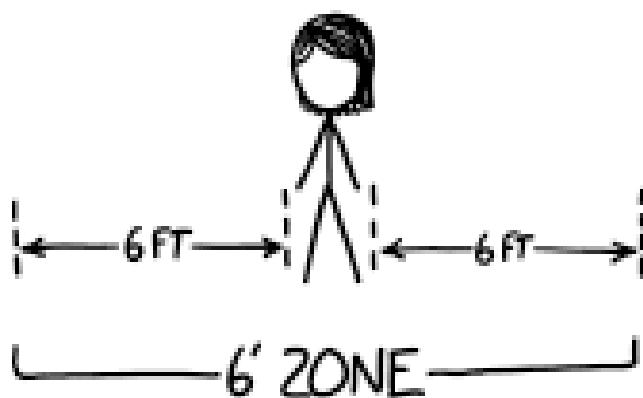
NO, YOU HAVEN'T.

HOW DO YOU KNOW?! I CHALLENGE
YOU TO FIND AN ERROR IN MY MATH!



EVERY CONVERSATION BETWEEN A PHYSICIST AND A PERPETUAL MOTION ENTHUSIAST.

GUIDE TO THE 6' SOCIAL DISTANCING ZONE



APPROX. AREA: 145 FT^2

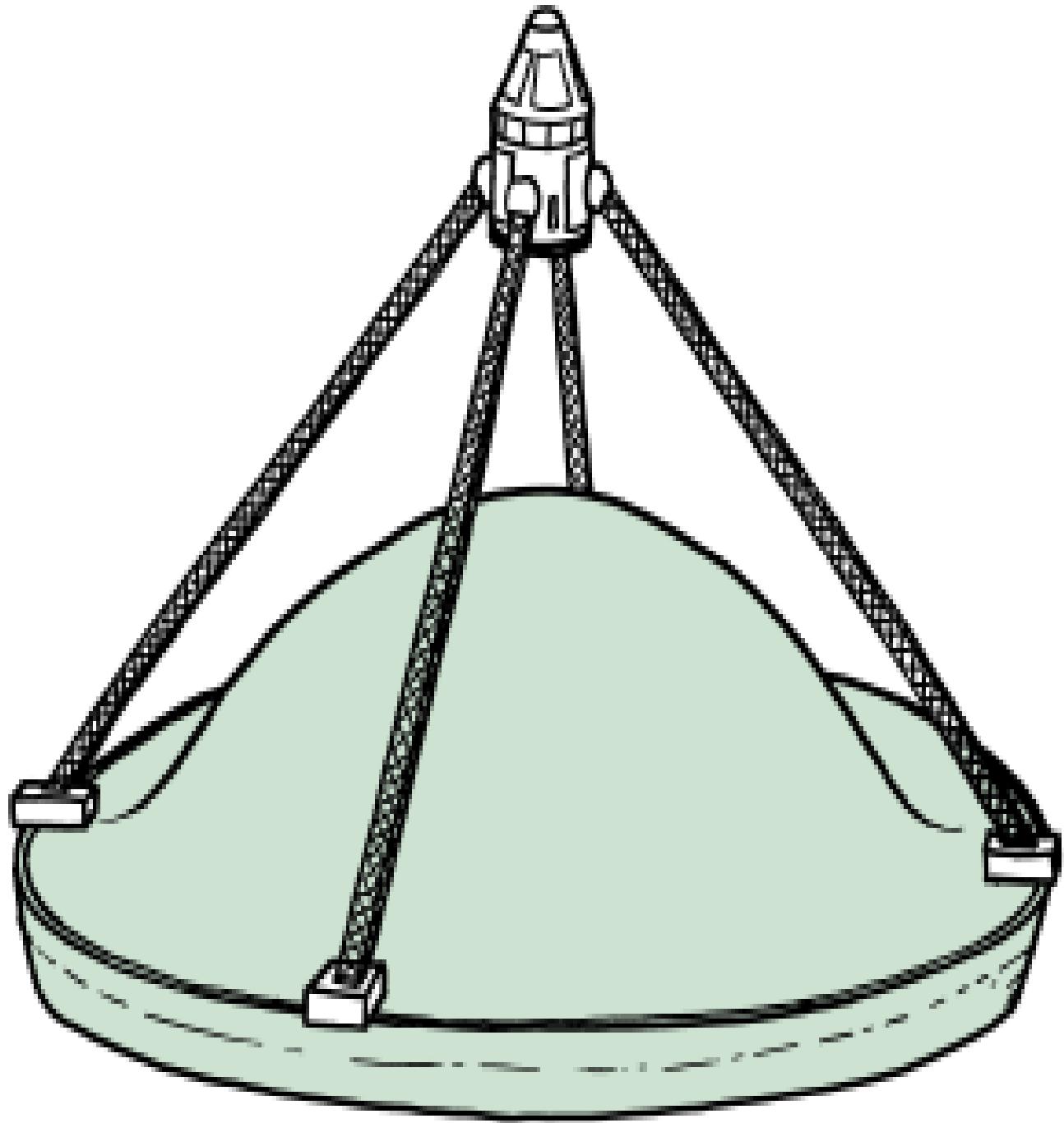
BORDER LENGTH: 43 FT

POPULATION DENSITY: 190,000 PEOPLE/MILE²

VALUE AT NYC REAL ESTATE PRICE/FT²: \$195,000

MAXIMUM NUMBER OF HORSES THAT COULD FIT INSIDE IT WITH YOU
ESTIMATED USING THE DIMENSIONS IN THE US FOREST SERVICE EQUESTRIAN DESIGN HANDBOOK: 8

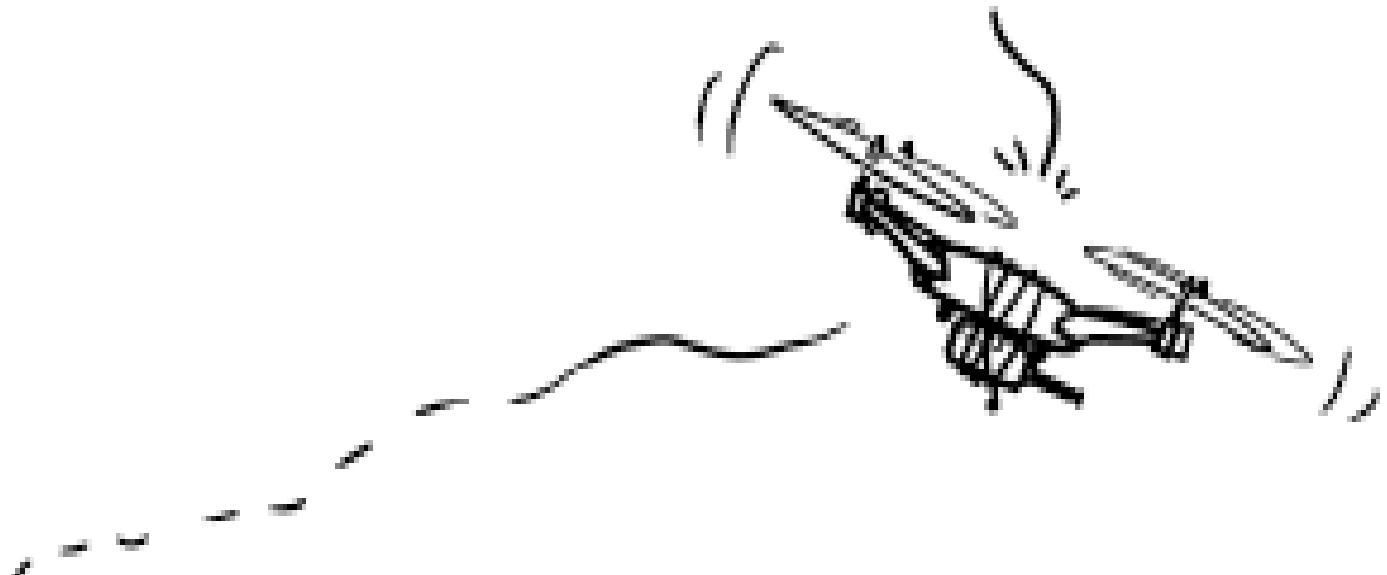




THE 90's KID SPACE PROGRAM PREPARES
FOR THEIR FIRST ORBITAL LAUNCH

HI, I'M YOURS NOW!
PLEASE CHARGE ME!

HI, I'M YOURS NOW!
PLEASE CHARGE ME!



TECH TIP: IF YOU EVER GET TIRED OF A TOY DRONE, TIE THE CONTROLLER TO IT AND SET IT OUTSIDE. ITS ABANDONMENT FUNCTION WILL ACTIVATE AND IT WILL FIND A NEW HOME.

OKAY, BASED ON THE LOCAL
VIRUS PREVALENCE, OUR
CAREFUL QUARANTINES, AND
THE STEPS WE'VE TAKEN TO
REDUCE TRANSMISSION RISK,

I THINK IT'S
OKAY FOR US
TO HANG OUT. I AGREE.

IS THIS SOCIAL INTERACTION
GOOD ENOUGH THAT IT'S
WORTH RISKING OUR LIVES
AND THE LIVES OF OTHERS?

I DON'T KNOW!

AAAAAA!

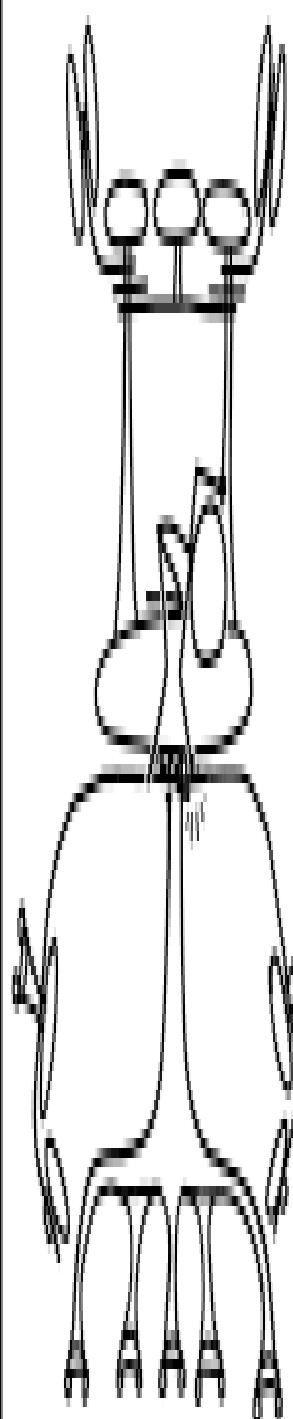
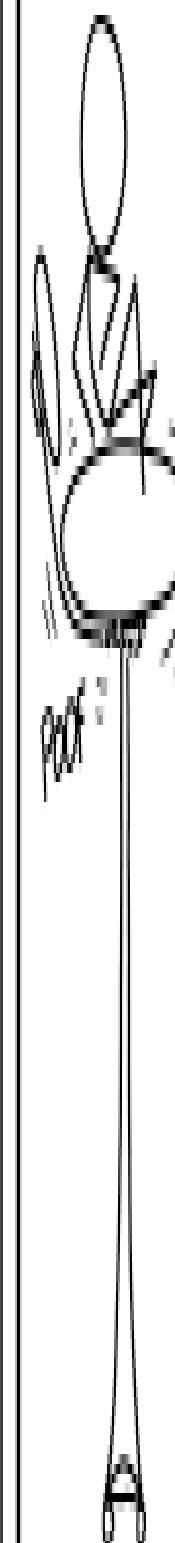
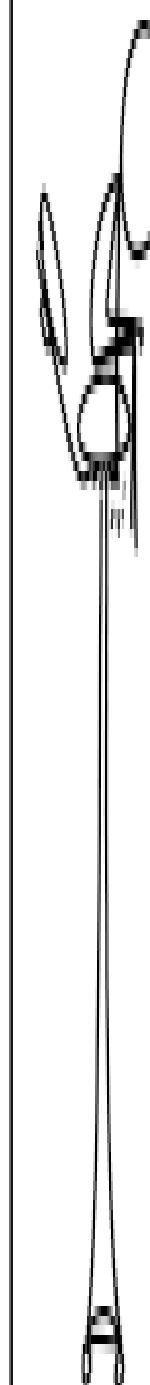
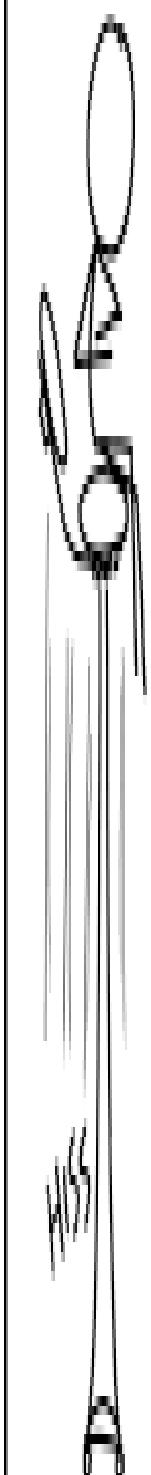
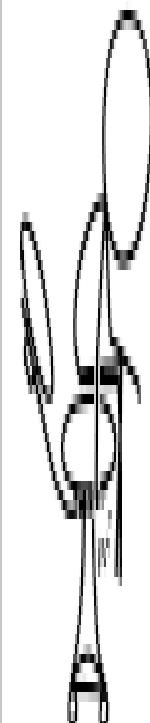
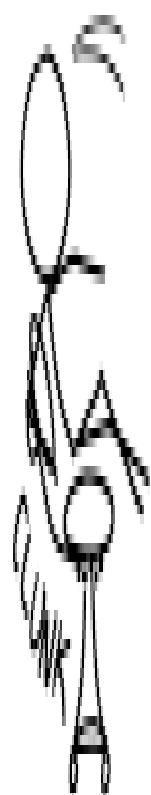
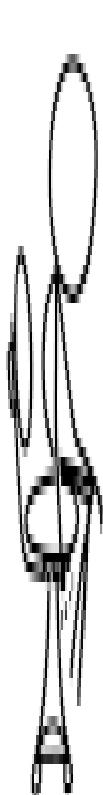
AAAAAAA!

HEALTHY SOCIALIZING
WAS HARD ENOUGH
BEFORE THE PANDEMIC

LET'S JUST TRY
AGAIN IN 2021.

ADJUSTING
A CHAIR

TWO HOURS LATER...

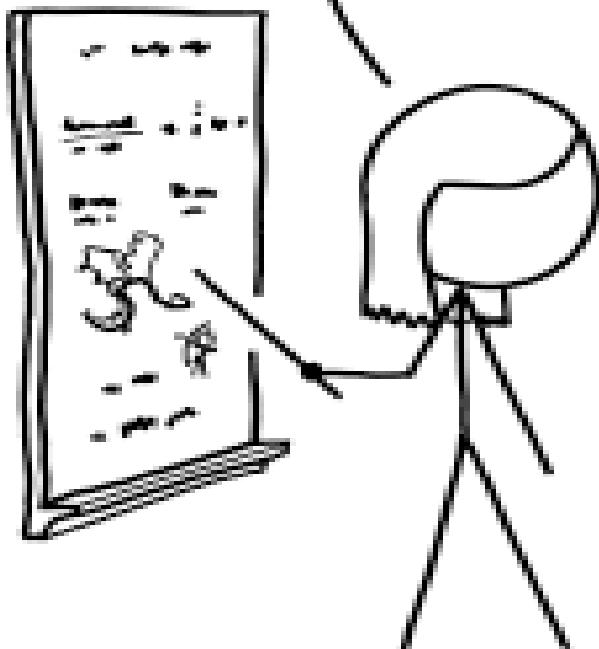


TO SOLVE THIS EQUATION, WE
INVOKE GAUSS'S OPERATOR TO
TRANSFORM IT INTO A DRAGON.

THEN WE SLAY THE DRAGON WITH
HILBERT'S ARROW, AND TRANSFORM
ITS CORPSE BACK INTO THE SOLUTION.

JUST TO BE CLEAR, THIS
IS A METAPHOR, RIGHT?

DOES THIS LOOK LIKE
ENGLISH CLASS?!



ALL ADVANCED MATH TECHNIQUES

THINGS I WILL NOT MISS ONE BIT AFTER THE PANDEMIC

WEARING MASKS
EVERYWHERE

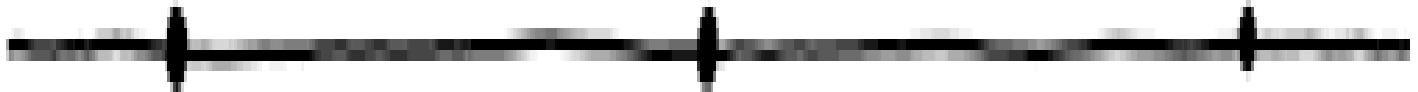
THINGS I HOPE STICK AROUND AND BECOME NORMALIZED

WEARING MASKS WHEN
YOU'RE FEELING SICK,
BECAUSE IT'S AN EASY
WAY TO TELL PEOPLE
TO GIVE YOU SPACE,
AND ALSO GETTING
COUGHED ON IS GROSS

AGE MILESTONES AND ASSOCIATED PRIVILEGES

- 16 DRIVE
- 17 ATTEND R-RATED MOVIES ALONE
- 18 VOTE
- 21 BUY ALCOHOL
- 25 RENT A CAR
- 30 RUN FOR SENATE
- 32 RENT A SENATOR'S CAR
- 35 RUN FOR PRESIDENT
- 40 RENT A FLYING CAR
- 45 LEARN ABOUT THE GOD-EMRESS
- 50 JOIN AARP
- 50 GET A SHINGLES VACCINE
- 52 CLICK TO SKIP CAPTCHAS
- 55 VOTE FOR GOD-EMRESS
- 62 \$80 NATIONAL PARKS LIFETIME PASS
- 65 ELIGIBLE FOR MEDICARE
- 67 COLLECT SOCIAL SECURITY
- 68 SEE "SKIP ADS" BUTTON ON LIVE TV
- 70 RUN FOR GOD-EMRESS
- 75 RIDE ANY ANIMAL IN A NATIONAL PARK
- 80 ELIGIBLE FOR MEGACARE
- 85 CLICK TO TOGGLE WHETHER ANY AD IS POSITIVE OR NEGATIVE ABOUT THE PRODUCT
- 90 CLICK TO MAKE ANY MOVIE R-RATED
- 100 GET A LETTER FROM THE PRESIDENT
- 102 (35+67) COLLECT A PRESIDENTIAL PENSION
- 105 GET A BIRTHDAY CARD FROM THE GOD-EMRESS
- 111 LEAVE YOUR OWN BIRTHDAY PARTY EARLY BY PUTTING ON A MAGIC RING
- 118 VOTE 100 TIMES
- 120 COLLECT THE PENSIONS OF ALL ELECTED OFFICIALS
- 125 DRINK ALCOHOL IN AN R-RATED MOVIE WHILE GETTING A SHINGLES VACCINE FROM THE PRESIDENT
- 128 AGE ROLLS OVER, BECOME A BABY AGAIN

— 57 YEARS 4 MONTHS — 57 YEARS 7 MONTHS —



DECEMBER 17, 1903

APRIL 12, 1961

TODAY

FIRST HUMAN

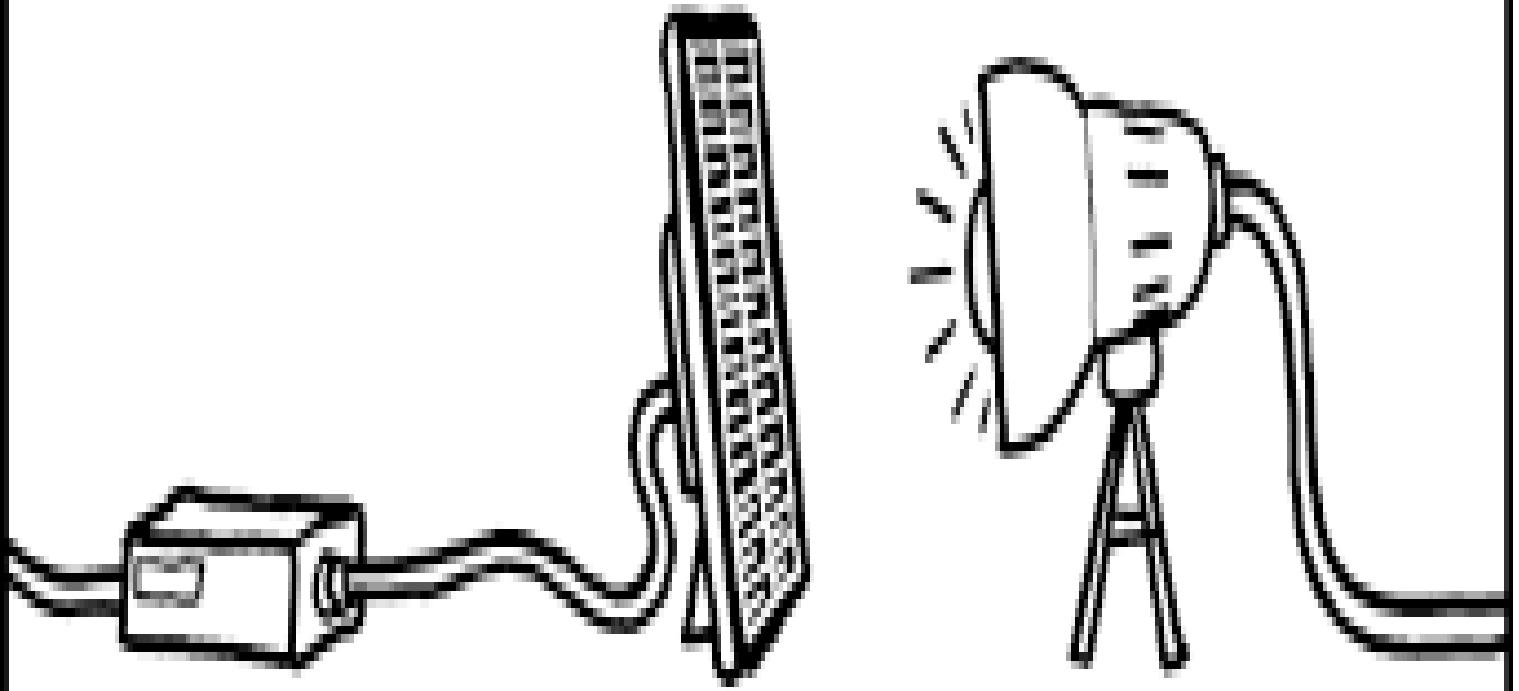
FIRST HUMAN

AIRPLANE FLIGHT

SPACEFLIGHT

SPACESHIPS ARE NOW OLDER THAN AIRPLANES

WERE WHEN WE FLEW OUR FIRST SPACESHIPS.



**ENERGY TIP: INCREASE THE SECURITY OF YOUR
HOME POWER SUPPLY BY INSTALLING AN AIR GAP.**

AIR TRAVEL PACKING LIST

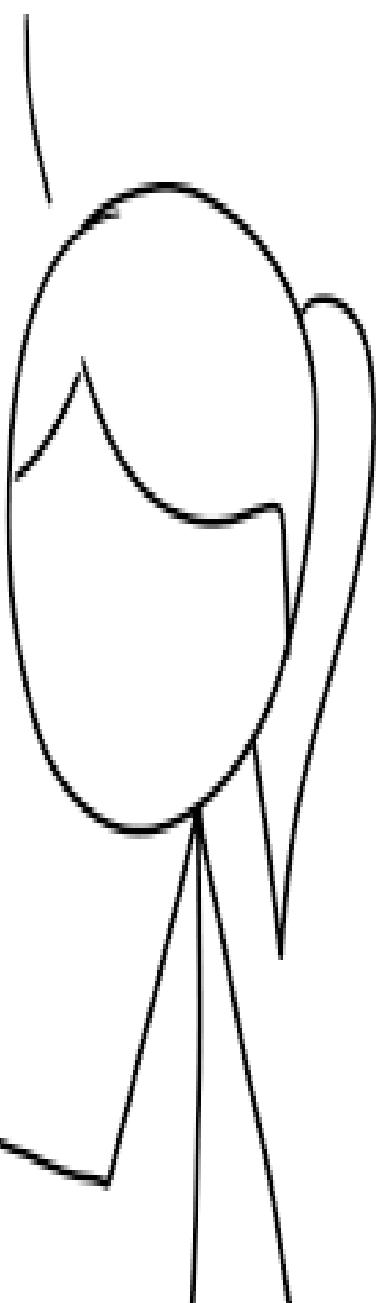
IF YOU HAVEN'T FLOWN IN A WHILE, YOU
MIGHT NOT REMEMBER WHAT YOU NEED TO
BRING. USE THIS HANDY CHECKLIST TO PACK!

- SEAT CUSHION
- PARACHUTE
- WING GLUE
- AIR HORN
- SEXTANT
- NOSE PLUGS AND GOGGLES
FOR PRESSURE
- AIRPLANE SHOES
- NAVIGATION CRYSTAL
- SPARE BATTERIES IN CASE
THE PLANE RUNS OUT
- BIRDSEED
- HOMING BEACON
- METEORITE ANTIDOTE
- USB WING CONNECTOR
- EMERGENCY SIREN
- SPARE FLAPS
- MOUTHPIECE (PANDEMIC
RESTRICTION; AIRLINES STILL
PROVIDE THE TRUMPET)
- LUGGAGE BALLAST
- FLAG (INTERNATIONAL FLIGHTS)
- DECOY TICKETS
- KEYS TO THE PLANE

DEEPAI HIRE® CANDIDATE EVALUATION ALGORITHM INFERRRED INTERNAL WEIGHTINGS

WEIGHT	FACTOR
0.0096	EDUCATIONAL BACKGROUND
0.0520	PAST EXPERIENCE
0.0208	RECOMMENDATIONS
0.0105	INTERVIEW PERFORMANCE
783.5629	ENTHUSIASM FOR DEVELOPING AND EXPANDING THE USE OF THE DEEPAI HIRE ALGORITHM

AN ANALYSIS OF OUR NEW
AI HIRING ALGORITHM HAS
RAISED SOME CONCERNS.



DESPITE OUR GREAT RESEARCH RESULTS, SOME HAVE QUESTIONED OUR AI-BASED METHODOLOGY.

BUT WE TRAINED A CLASSIFIER ON A COLLECTION OF GOOD AND BAD METHODOLOGY SECTIONS, AND IT SAYS OURS IS FINE.

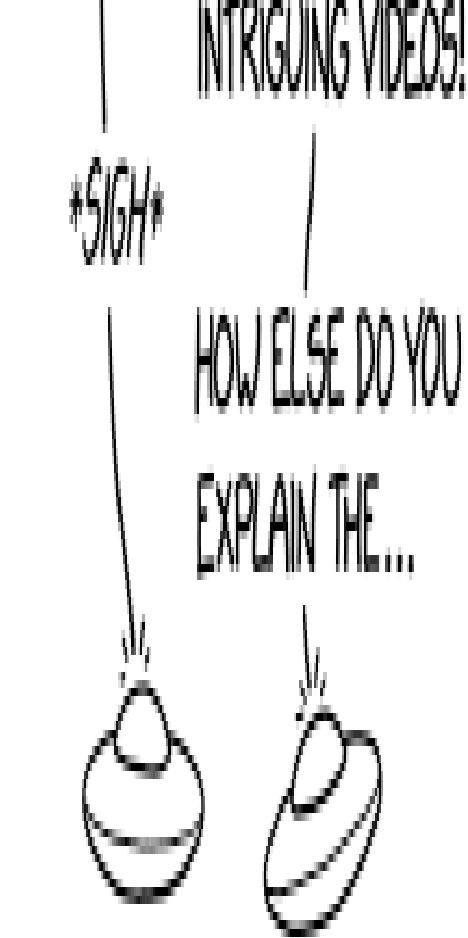
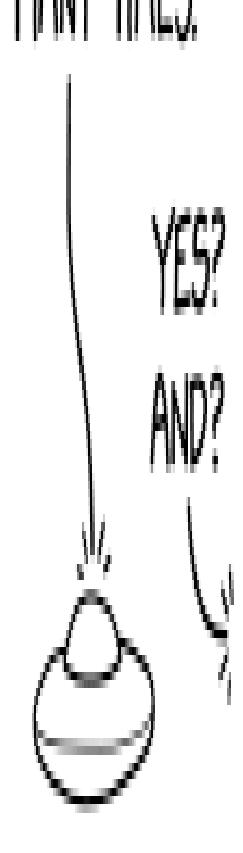
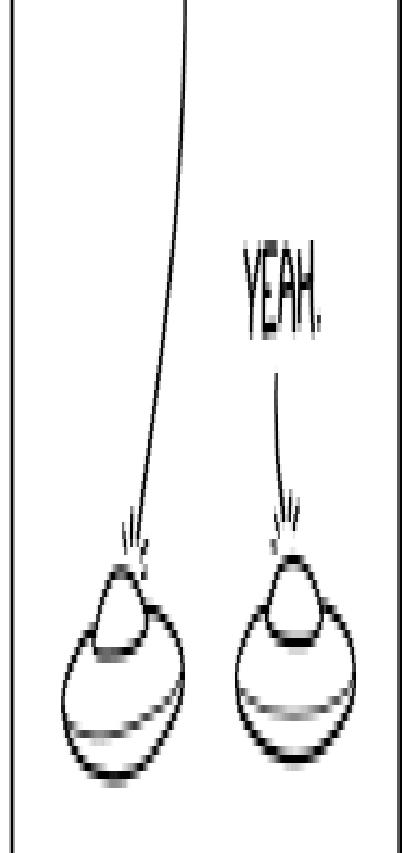
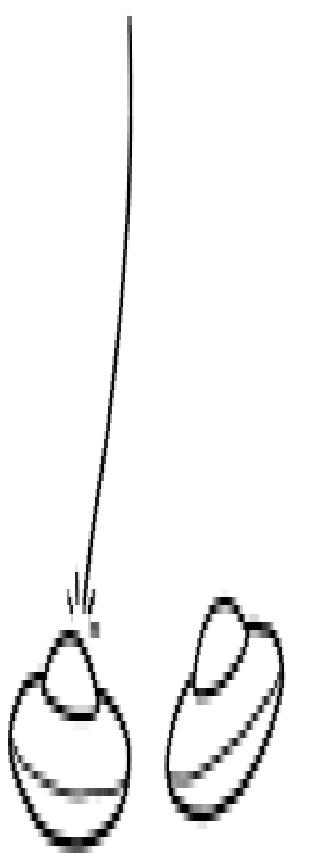


SIR, CAN WE TALK?
WE'VE BEEN SECRETLY
OBSERVING EARTH FOR
ALMOST A CENTURY.

HOVERING AND ZOOMING
FROM PLACE TO PLACE,
TRYING TO AVOID BEING
SPOTTED BY HUMANS.

BY NOW WE'VE
FLOWN OVER
EVERY INCH OF
THE SURFACE
MANY TIMES.

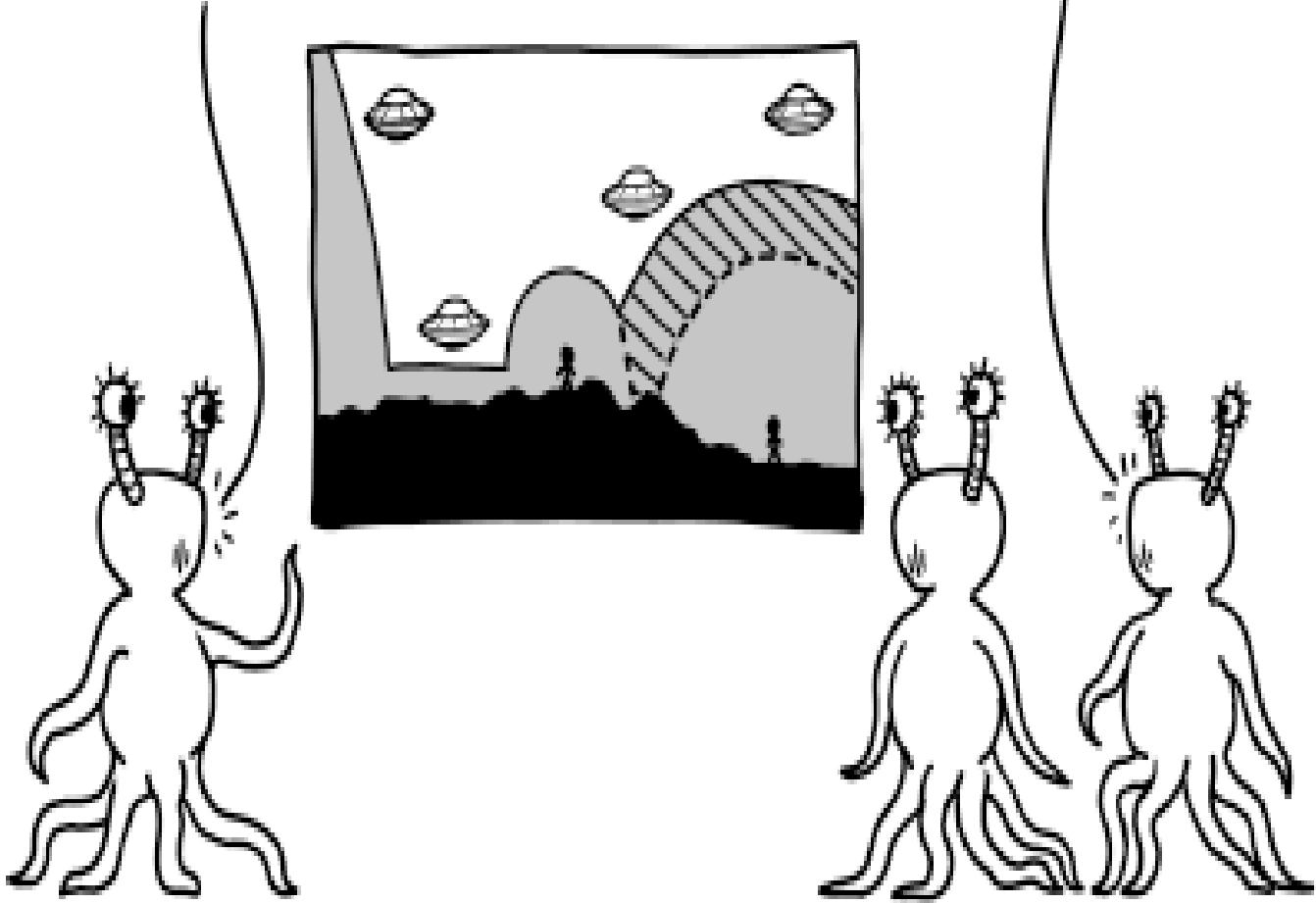
FACE IT: IF BIGFOOT IS REAL, HE'S
NOT ANYWHERE ON THIS PLANET.
BUT HUMANS HAVE
CAPTURED SOME
INTRIGUING VIDEOS!



HUMAN 38XTII-B-C54 JUST BOUGHT A NEW PHONE WITH
A 10X ZOOM, SO WE HAVE TO EXPAND OUR RESTRICTED
FLIGHT ZONE BY 1,800 METERS TO KEEP OUR SHIP BLURRY.

SERIOUSLY? DIDN'T THEY JUST UPGRADE?

I KNOW, I KNOW...



THE HARDEST PART OF BEING AN ALIEN OBSERVING EARTH
IS KEEPING TRACK OF WHAT CAMERAS EVERYONE HAS.

GREETINGS, HUMANS!

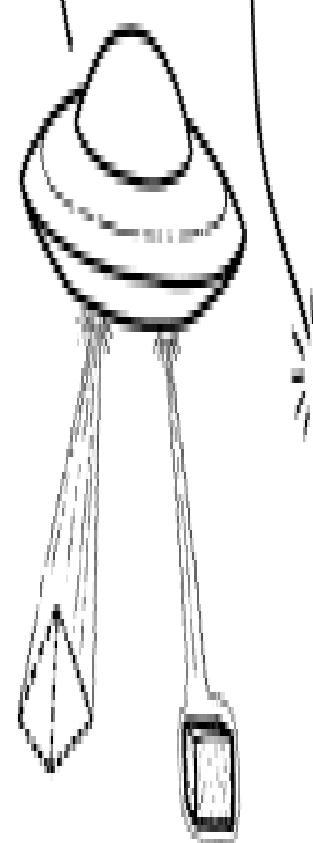
WHOA, ALIENS!

WE BRING YOU
TECHNOLOGICAL
WONDERS!



WE WILL HELP YOU
LIFT GREAT STONES
AND BUILD TOWERING
MONUMENTS.

OH, PYRAMIDS?

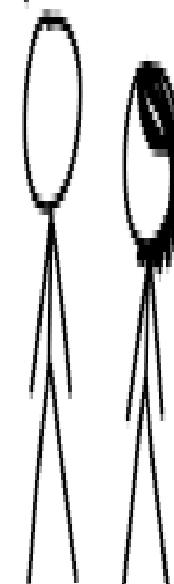


...YES.

YEAH, WE HAVE
THOSE IN EGYPT.

AND MEXICO.

I THINK THEY
USED RAMPS?



THEN WE SHALL BUILD A RING
OF STONES ALIGNED WITH THE
STARS, SO AT THE SOLSTICE-

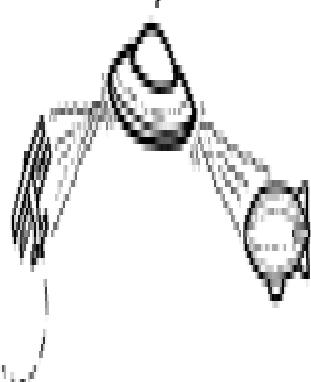
OH, LIKE STONEHENGE?

DAMMIT,
HUMANS.



GREETINGS, HUMANS.
WE HAVE RETURNED.
SINCE YOU ALREADY
HAVE PYRAMIDS, WE'VE
BROUGHT YOU MORE
ADVANCED WONDERS.

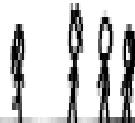
THESE MACHINES
WILL LET YOU
CONQUER THE SKY!



A BIPLANE?

AREN'T MONOPLANES
MORE EFFICIENT?

DOES THAT BLIMP
USE HYDROGEN?

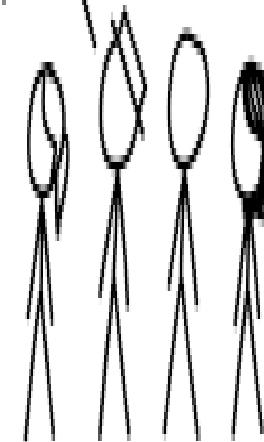


ADD THIS ELIXIR OF LEAD TO
YOUR GASOLINE AND YOUR
ENGINES WILL RUN SMOOTH.

LEAD? ISN'T THAT
STUFF TOXIC?

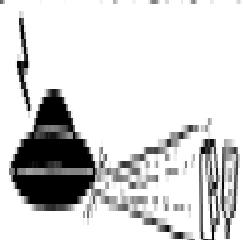
IS IT?

OH NO.



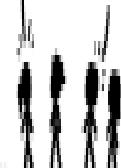
OKAY, UH.

THIS DEVICE'S ELECTRIC PRESS
CAN SQUEEZE FRESH FRUIT
JUICE FROM BAGS OF PULP!



...JUST CURIOUS, DID YOU
BUILD THAT SAUCER?

MAYBE WE SHOULDN'T
STAND RIGHT UNDER IT.

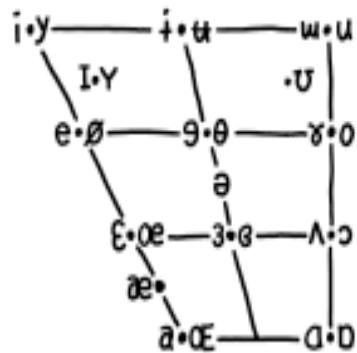




SOIL CHART

	R	r
R	RR	Rr
r	Rr	rr

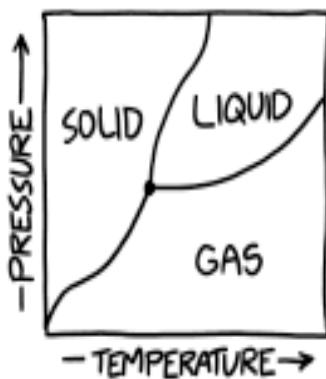
PUNNETT SQUARE



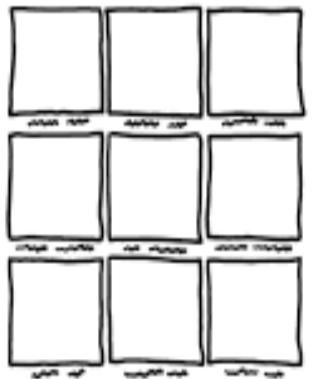
LAWFUL GOOD

NEUTRAL GOOD

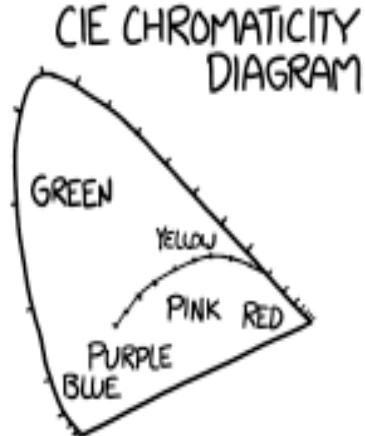
CHAOTIC GOOD



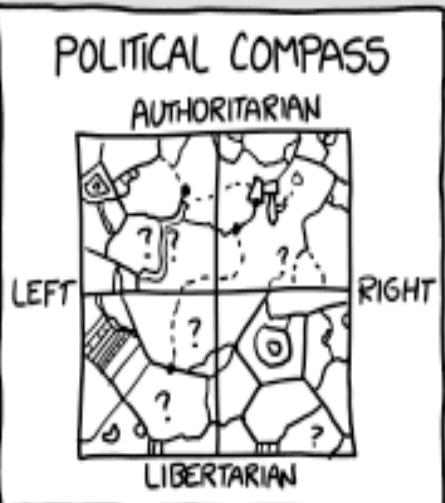
LAWFUL NEUTRAL



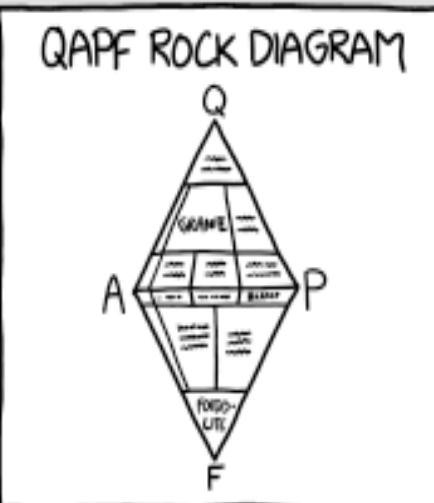
TRUE NEUTRAL



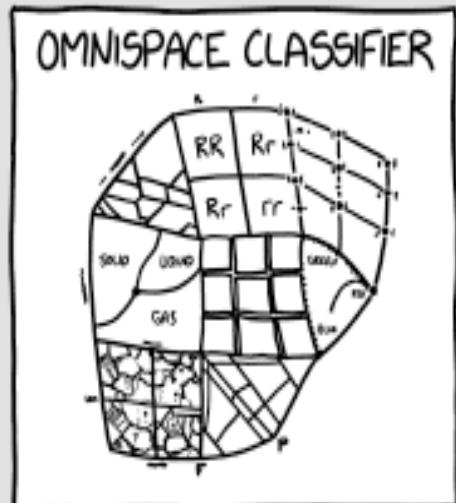
CHAOTIC NEUTRAL



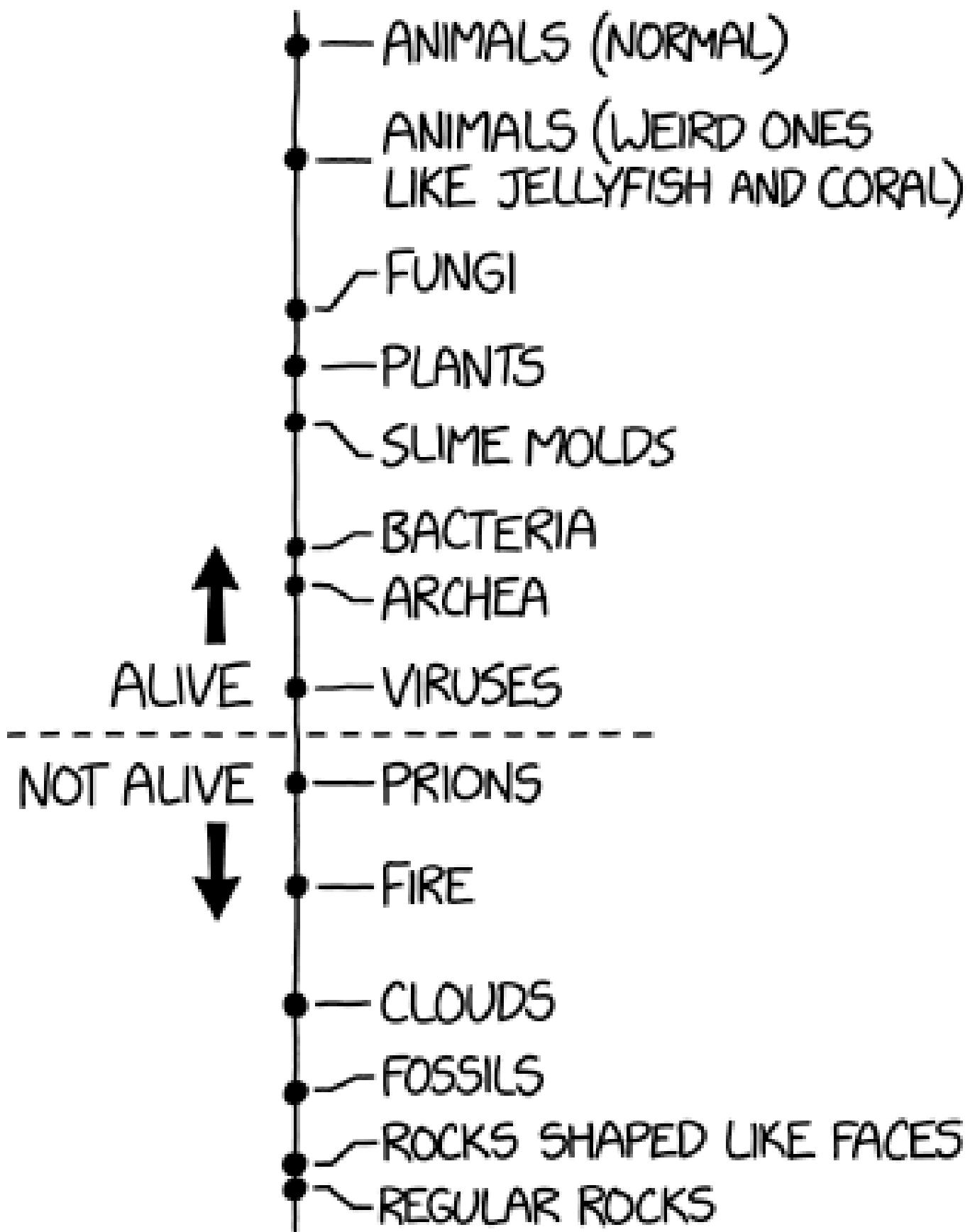
LAWFUL EVIL



NEUTRAL EVIL



CHAOTIC EVIL



TO PROVE YOU'RE HUMAN, PLEASE
CLICK EVERY BOX CONTAINING A
VERB THAT STARTS WITH "A"

ALIKE

ELOPE

ALOE

ALE

AVOW

DANNY

ALLEL

ALLOT

ASKEW

DENY

WANTS TO
INSTALL A HELPER TOOL

DENY

DENY

ALLOW

Allow

ALTO

ALLOW

DEAL

DELAY

THEY'RE GETTING SMARTER.

ALL-IN-ONE PAPER PROCESSOR

PRINT

COPY

FAX

SHRED

SCAN

TRANSLATE

SUMMARIZE

PLAGIARIZE

COLLATE

STAPLE

REMOVE
STAPLES

ADD THOSE
PERFORATED
EDGE STRIPS
THAT ARE SO
FUN TO TEAR

ROLL

BURN

EAT

FOLD AIRPLANE

ORIGAMI FLOWER

CORRUGATE

PAPIER-MÂCHÉ

DÉCOUPAGE

NOTARIZE

BIODEGRADE

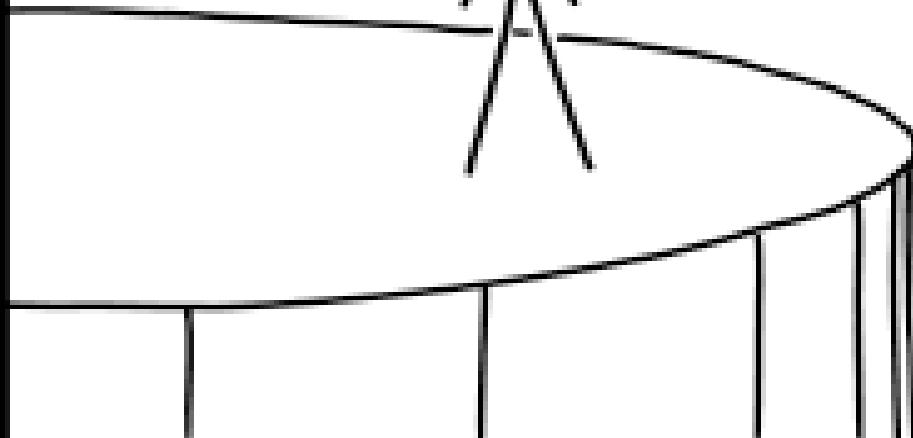
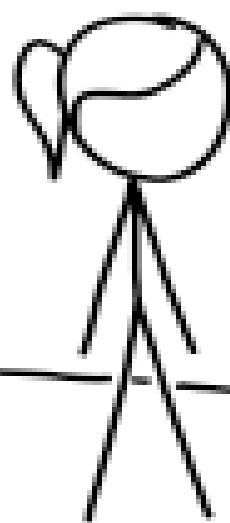
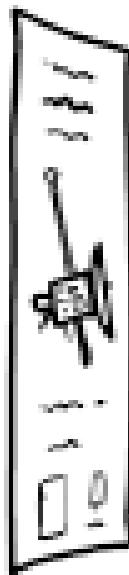
CRUMPLE AND
THROW AT TRASH
LIKE BASKETBALL

OUR PROBE CAN REACH ALPHA CENTAURI IN UNDER 35 YEARS.

WE SHOULD GO SOMEWHERE ELSE. ALPHA CENTAURI SUCKS.

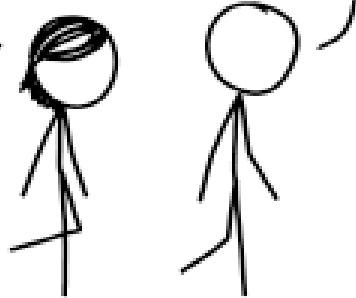
HUH? IT'S THE CLOSEST, MOST CONVENIENT SYSTEM!

YEAH, BUT I CHECKED ONLINE AND IT ONLY HAS THREE STARS.



IN ALTERNATE HISTORY STORIES WHERE THE ALLIES LOST WWII, SOMETIMES THEY HAVE THEIR OWN FICTION WITH THE PREMISE "WHAT IF THE ALLIES HAD WON?" WHICH DIFFERS FROM OUR WORLD SINCE THEY'D BE SPECULATING. AND WOULDN'T PREDICT EVERYTHING.

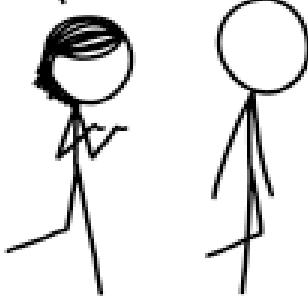
YEAH, I THINK THEY DO THAT IN MAN IN THE HIGH CASTLE.



BUT WITHIN THOSE STORIES, THEY SHOULD HAVE "WHAT IF THE ALLIES HAD LOST?" FICTION WHICH IS EVEN MORE REMOVED FROM OUR WORLD.

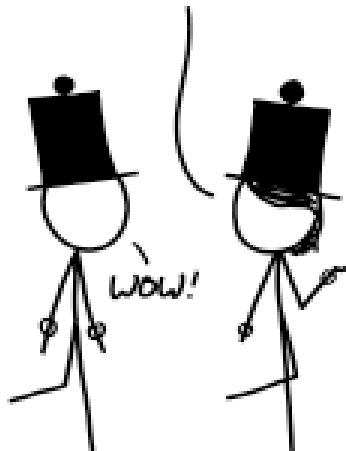
SO HOW DEEP DOES IT GO?

UH OH.



500 LEVELS IN:

IN MY ALTERNATE HISTORY, SCOTLAND NEVER DEVELOPS HOVERCRAFT, SO CANADA'S CYBERNETIC HORSES DEFEAT THE BELGIUM-MADAGASCAR-NEW JERSEY ALLIANCE.

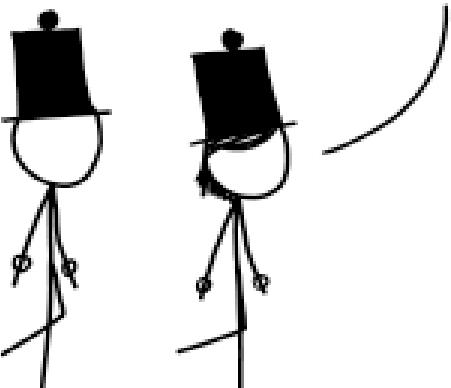


THEN WHO BECOMES GOD-EMPEROR OF MISSOURI, IF NOT LAURA Ingalls Wilder?

SENATOR TRUMAN!

HE SURVIVES THE ACCIDENT?!

YEAH, THE PAJAMA CRAZE NEVER CATCHES ON, SO HE'S WEARING NORMAL CLOTHES WHEN HE WALKS BY THE PRINTING PRESS...



AMELIA'S FARM-FRESH COOKIES

Normal Days ~~Normal Days~~

Mr. [unclear]
Mr. [unclear]

OUR STORY

GROWING UP ON MY GRANDMA'S FARM, I SPENT SO MANY COZY MORNINGS IN THE KITCHEN, WATCHING HER TAKE TRAYS OF FRESH-BAKED COOKIES FROM THE OVEN. HER COOKIES WERE JUST AWFUL.

SHE USED THE FINEST INGREDIENTS. EGGS STRAIGHT FROM THE COOP, STONE-GROUND FLOUR, HAND-CHURNED BUTTER. BUT SHE SQUANDERED THEM. IT'S SO SAD. SHE TOLD ME I WAS TOO PICKY, BUT I KNOW WHAT COOKIES ARE SUPPOSED TO TASTE LIKE.

WHEN I STARTED A BAKERY, I VOWED NOT TO REPEAT HER MISTAKES. THESE COOKIES WON'T FALL APART IN YOUR HANDS. THEY HAVE GOOEY CENTERS AND SLIGHTLY CRISP EXTERIORS, NOT THE OTHER WAY AROUND, GRANDMA. THERE'S NO MYSTERIOUS GRITTY TEXTURE. WHY WOULD THERE BE?

IF YOU ENJOY THESE COOKIES, PLEASE
WRITE TO MY GRANDMA TO LET HER KNOW.

THANKS!
AMELIA

Ms. W. 1. 1. 1.
18th Avenue
Alameda, CA 94501

PLACES WHOSE NAMES SCAN TO "AMERICA" SO THEY CAN BE SUBSTITUTED INTO SONGS SUCH AS:

AMERICA THE BEAUTIFUL
GOD BLESS AMERICA
NEIL DIAMOND - AMERICA
WEST SIDE STORY - AMERICA
THE GUESS WHO - AMERICAN WOMAN
GREEN DAY - AMERICAN IDIOT



ALGERIA
ARMENIA
MONROVIA
BRASILIA
AUSTRALIA
VALENCIA

BYZANTIUM
ASSYRIA
BERINGIA
ANTARCTICA

SOKOVIA
ANDROMEDA

LOTHLORIEN
SUBNAUTICA

THE METAVERSE
ECONOLODGE

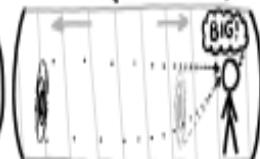
ANGULAR DIAMETER TURNAROUND

ILLUSTRATED USING PHONES INSTEAD OF GALAXIES

(BRIGHTNESS AND REDSHIFT ADJUSTED TO KEEP PHONES VISIBLE)

T=1B YR.

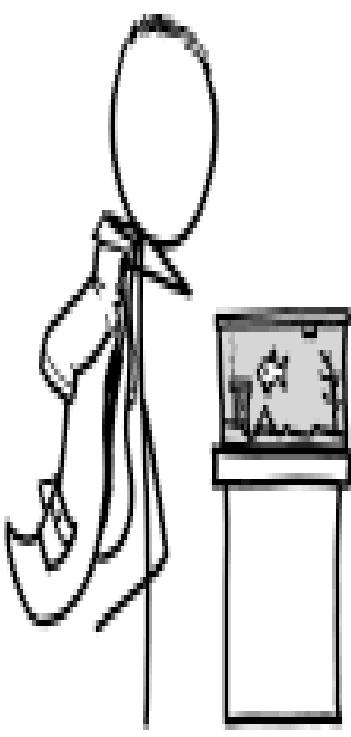
NOW (T=13.8B YR.)



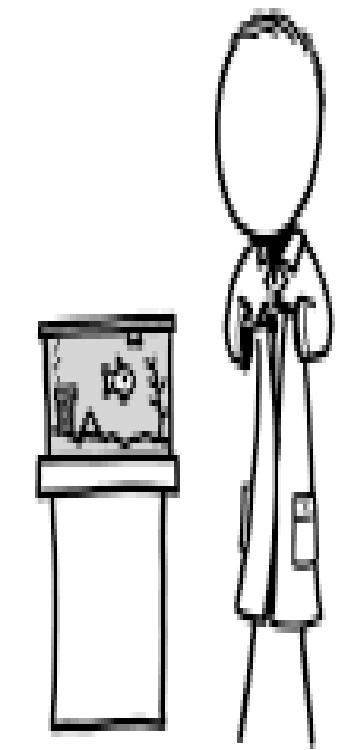
THINGS THAT ARE FAR AWAY LOOK SMALLER, BUT THINGS THAT ARE REALLY FAR AWAY LOOK BIGGER,
BECAUSE WHEN THEIR LIGHT WAS EMITTED, THE UNIVERSE WAS SMALL AND THEY WERE CLOSE TO US.



♪ Putting on
♪ my ♪
doctor coat
♪

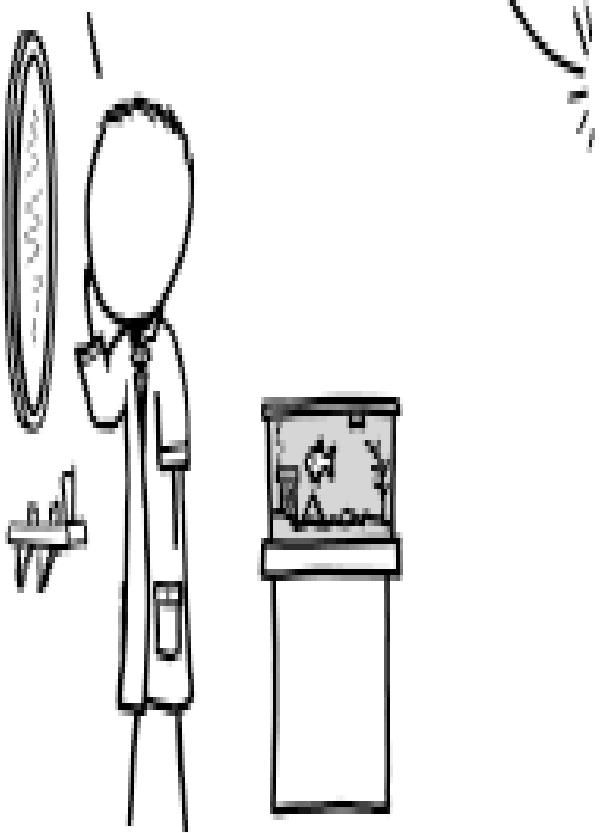


It's the coat
I wear



♪ so they know how
good a doctor I am ♪

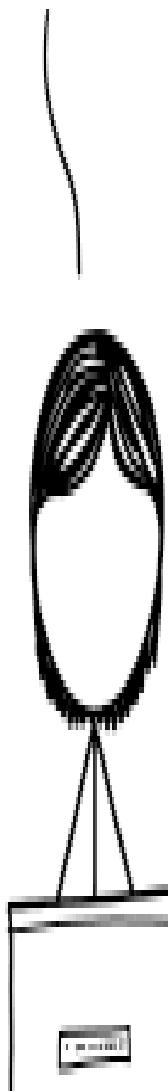
DR. FAUCI? THE PRESS
CONFERENCE IS IN FIVE.
BE RIGHT THERE!



IT'S NICE TO THINK ABOUT HOW SERIOUS AND IMPORTANT PEOPLE
PROBABLY ALSO ABSENTMINDEDLY SING MADE-UP SONGS TO PETS.

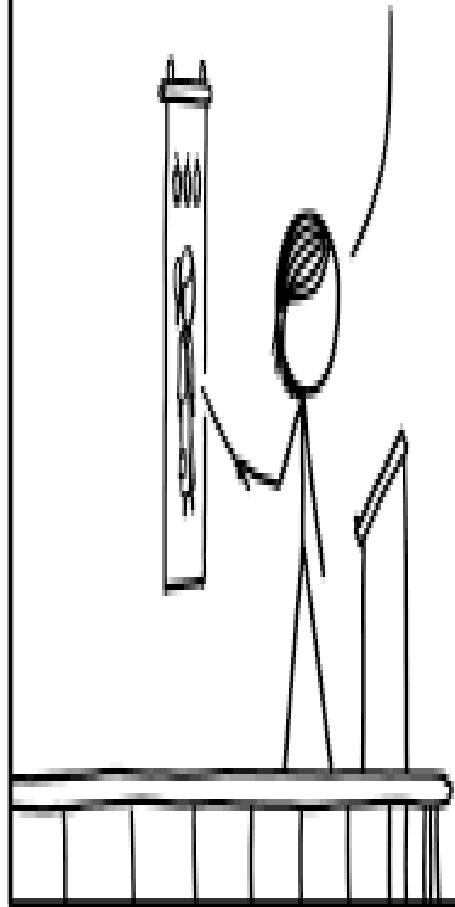
AN APPLE A
DAY KEEPS THE
DOCTOR AWAY.

OR, AT LEAST,
IT USED TO.



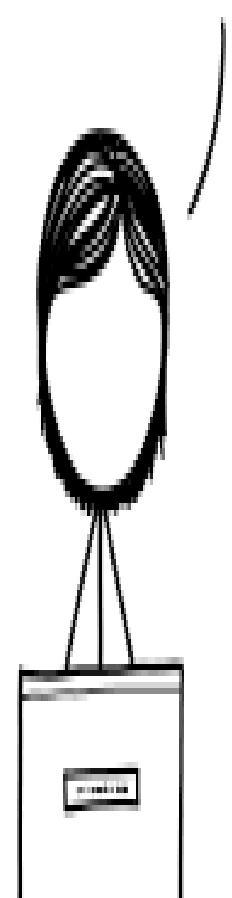
OVER TIME, SOME DOCTORS HAVE
DEVELOPED A RESISTANCE TO APPLES.
KEEPING THEM AWAY TAKES TWO OR
THREE APPLES INSTEAD OF JUST ONE.

AND THERE ARE WORRYING SIGNS
THAT A FEW DOCTORS MAY HAVE
BECOME COMPLETELY IMMUNE.



SO WE MUST STOCKPILE OUR
FINEST APPLES IN RESERVE,
USING THEM TO FEND OFF ONLY
THE VERY WORST DOCTORS.

HONEYCRISPS STILL WORK
ON MOST OF THEM, BUT WE
DON'T KNOW FOR HOW LONG.



WELL, WE ZAPPED YOU WITH ENERGY BEAMS, AND IT LOOKS LIKE ONE OF YOUR STUPID ORGANS IS A TRAITOR.

YOU COULD QUASH THE REVOLT WITH THE RUTHLESS DEPLOYMENT OF CHEMICAL AND BIOLOGICAL WEAPONS.

...WHICH ONE?

...ANTIBIOTICS?

I DUNNO, APPENDIX? GALLBLADDER?
ONE OF THE LITTLE ONES THAT SUCKS.

BUT CERTAIN VICTORY COMES ONLY THROUGH THE SWORD.

WHAT SHOULD I DO?

SURGERY.



WHILE WE'RE INSIDE, WE'LL LOOK AROUND—IF WE SEE ANY SIGNS OF INSURRECTION ELSEWHERE, WE WILL NOT HESITATE TO ACT. THERE CAN BE NO ARMISTICE. YOUR PARTS MUST FALL IN LINE OR BE CRUSHED.

WHEN THE BATTLE IS WON, WE WILL SALT YOUR ABDOMEN SO NO NEW ORGANS CAN EVER SPROUT UP TO TROUBLE YOU AGAIN.

MAYBE I SHOULD GET A SECOND OPINION.

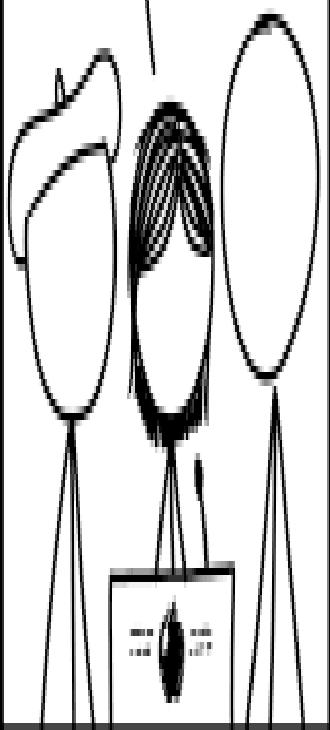
UM.

ONLY IF YOU CARE WHAT A WEAKER DOCTOR WOULD SAY.



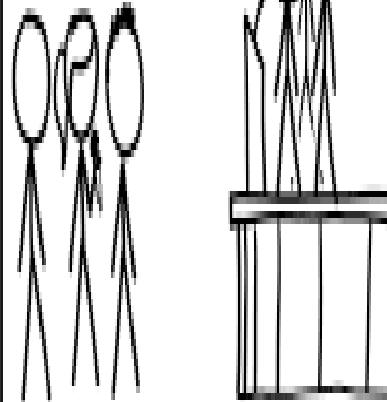
AHEM

I
THE STATE APPLE-
GROWERS' ASSOCIATION
HAS DECIDED TO
FORMALLY CALL ON
PRESIDENT DONALD
TRUMP TO RESIGN.



WEREN'T YOU MEETING TO
UPDATE THE STANDARDS
FOR NEW APPLE VARIETIES?

YES, BUT WE TALKED
IT OVER AND THIS IS
WHAT WE DECIDED.
WE FEEL STRONGLY
THIS IS IMPORTANT.



DID YOU DISCUSS
ANYTHING ON
YOUR ACTUAL
AGENDA?

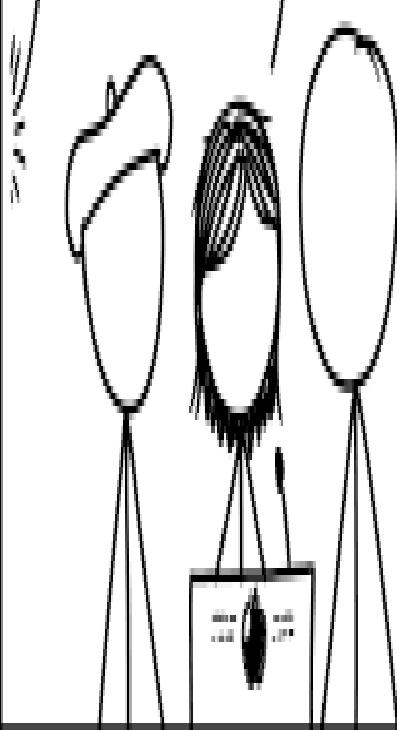
THANKS FOR
THE QUESTION!
WE DID NOT.



DO YOU HAVE ANY APPLE-RELATED
ANNOUNCEMENTS AT ALL?

UH, APPLES ARE GREAT,
BEST FRUIT. EVERYONE
SHOULD BUY 1,000 OF THEM.

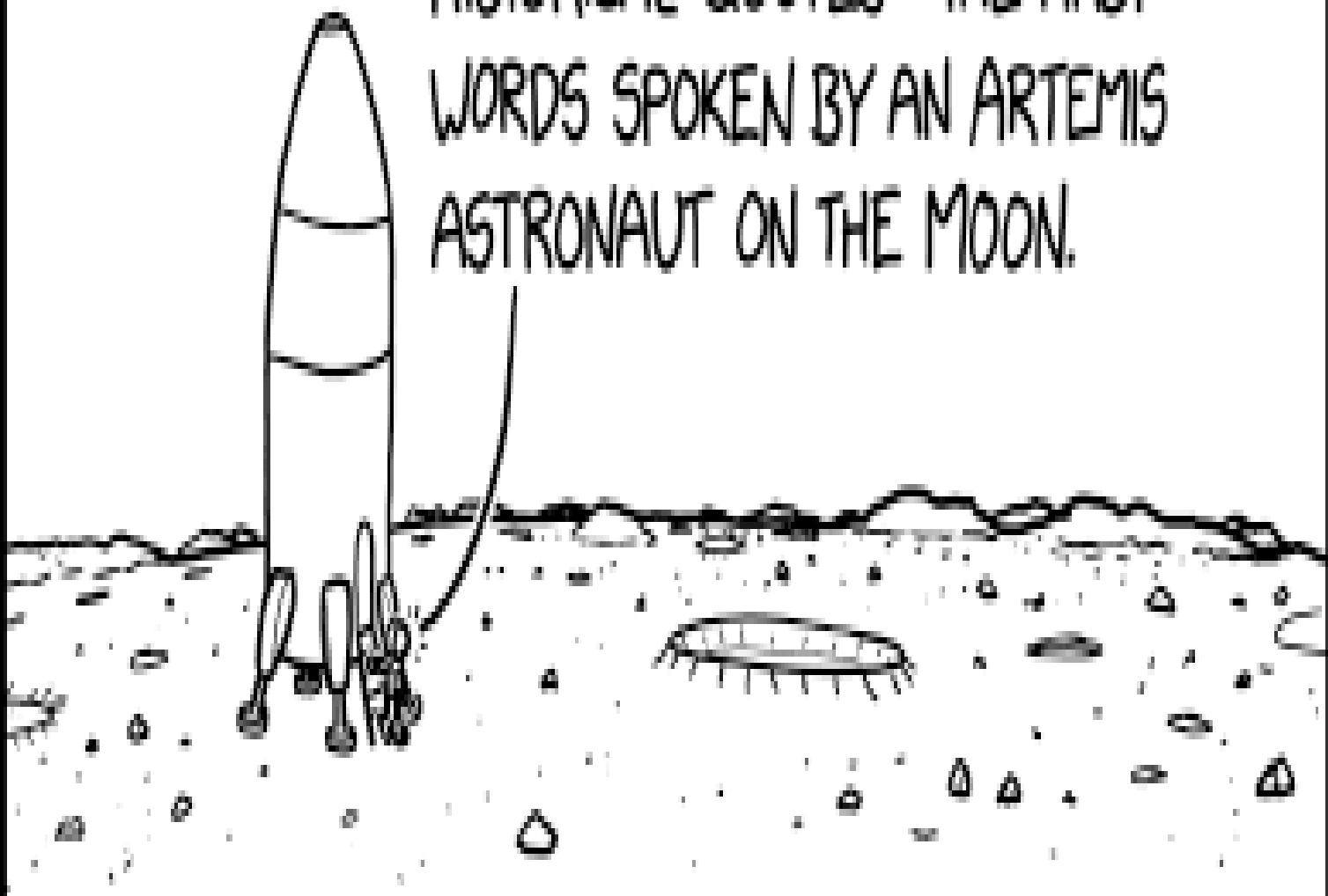
WERE A LITTLE DISTRACTED
RIGHT NOW, OKAY??



TOASTER DISHWASHER MICROWAVE WASHING MACHINE STOVE/ OVEN DRYER

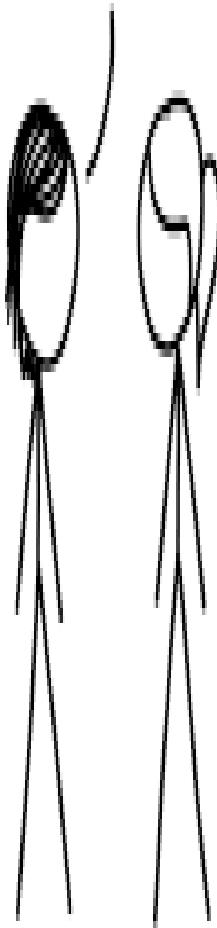
MAKE TOAST					
WASH DISHES					 STERILIZED AT LEAST
COOK A FROZEN DINNER					
WASH CLOTHES					
COOK EGGS			 (POACHED)		
DRY CLOTHES					

THIS IS ONE OF MY FAVORITE HISTORICAL QUOTES—THE FIRST WORDS SPOKEN BY AN ARTEMIS ASTRONAUT ON THE MOON.

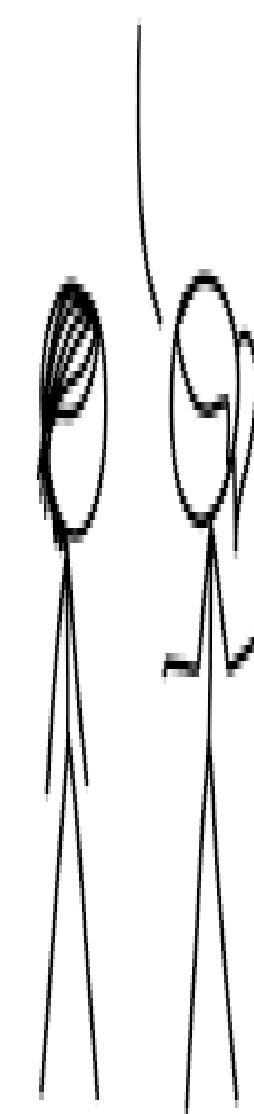


NEIL ARMSTRONG'S "MAN"/"A MAN" QUOTE CREATED A LOT OF HISTORICAL CONFUSION, AND I THINK IT'S OUR DUTY TO EXPAND ON THAT LEGACY WITH ARTEMIS.

WAIT, ALL THE PAPERS IN YOUR FIELD
ARE POSTED AS FREE PDFs ON ARXIV?
THAT MUST BE KILLING BIG SCIENTIFIC
JOURNALS, SINCE THEY CHARGE SUCH
HUGE SUBSCRIPTION/PUBLICATION FEES.

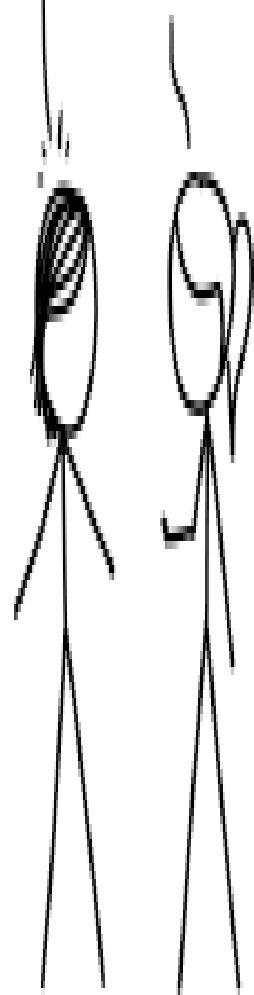


NAH, WE'VE BEEN
DOING IT SINCE THE
90s AND NOBODY
SEEMS TO CARE.



THAT MAKES NO
SENSE AT ALL!!

SHHH, YOU'LL
JINX IT!



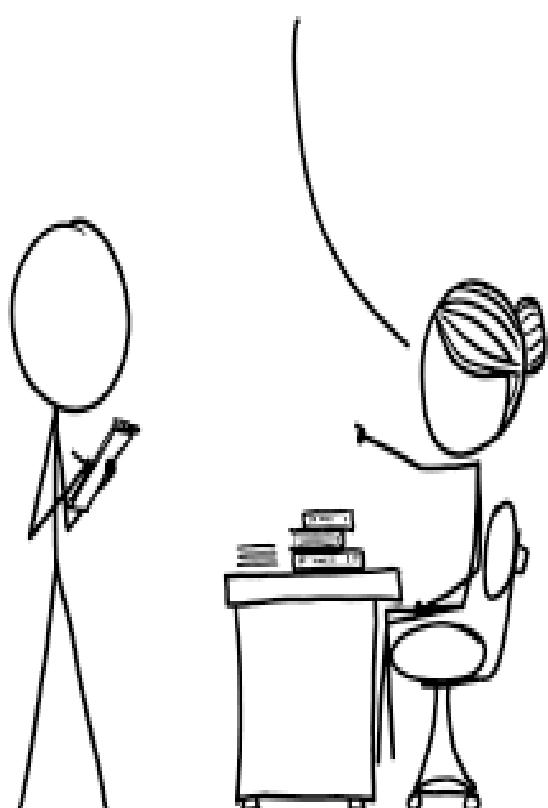
FOR THE LAST FEW YEARS, I'VE BEEN WORKING ON ANSWERING PEOPLES' RIDICULOUS QUESTIONS FOR WHAT IF? 2, WHICH SOMETIMES MEANT ASKING SCIENTISTS FOR HELP.

HOW YOU'D EXPECT SCIENTISTS TO RESPOND TO RIDICULOUS QUESTIONS:

WHY WOULD YOU PRESENT ME WITH THIS FRIVOLOUS SCENARIO?

SUCH AN ABSURD QUERY CAN SERVE NO PRACTICAL PURPOSE.

NOW GO; YOU DISTRACT ME FROM MY FORMULAS.



HOW THEY ACTUALLY RESPOND:

OH THANK GOD, SOMETHING FUN TO THINK ABOUT THAT'S NOT GRANT APPLICATIONS.

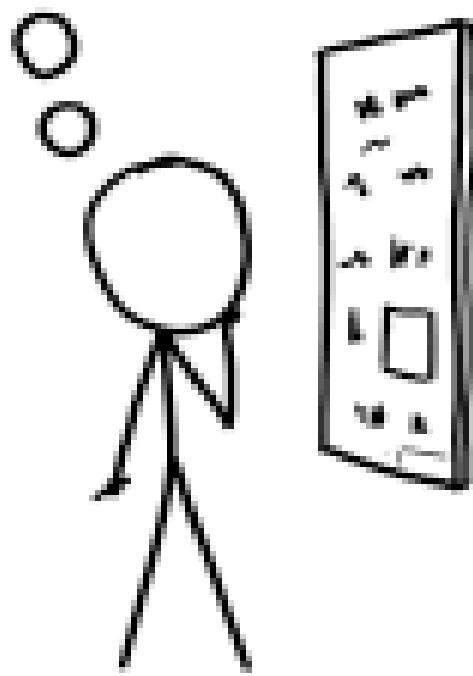
HEY, DO YOU WANT TO FILL OUT SOME GRANT APPLICATIONS? I'LL GIVE YOU LITERALLY ANYTHING. COAUTHOR CREDIT. POWERFUL MAGNETS. DO YOU WANT PLUTONIUM? I CAN GET YOU PLUTONIUM.

WHAT WAS YOUR NAME AGAIN?



TO SEE THE ANSWERS I FOUND, PREORDER AT xkcd.com/whatif2 (OUT 9/13)

IF I ASSIGN NUMBERS
TO EACH OF THESE THINGS,
THEN IT BECOMES DATA,
AND I CAN DO MATH ON IT!



THE SAME BASIC IDEA UNDERLIES
GÖDEL'S INCOMPLETENESS THEOREM
AND ALL BAD DATA SCIENCE.

DO YOU HAVE ANY
WEEKEND PLANS?

I'M GONNA RIDE A HORSE
ON THE BEACH AT DAWN

*EAT

*3AM

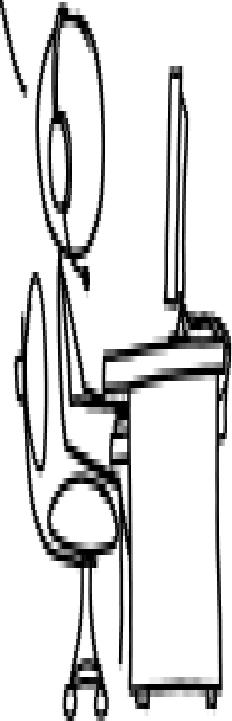
*COUCH

*PIZZA

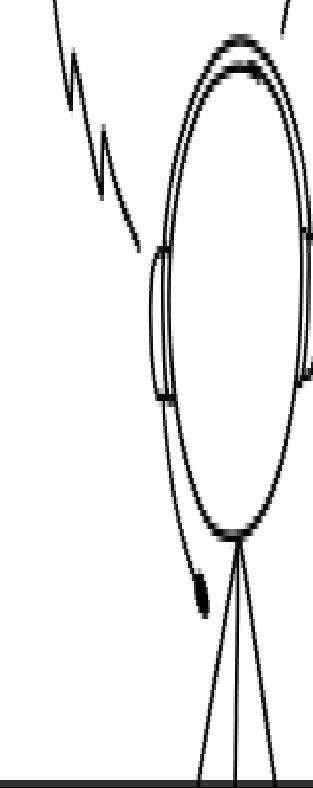
I LIKE HOW WE CAN DO CORRECTIONS
IN TEXT CHAT BY APPENDING WORDS
WITH ASTERISKS AND OUR BRAINS
JUST FIGURE OUT WHERE THEY GO.

HELLO, EMERGENCY
ASTRONOMER HOTLINE.
CAN YOU DESCRIBE
THE WEIRD LIGHTS?

I DON'T KNOW! HELP!
STAY CALM. IS IT DAY?
IF SO, THAT'S THE SUN.

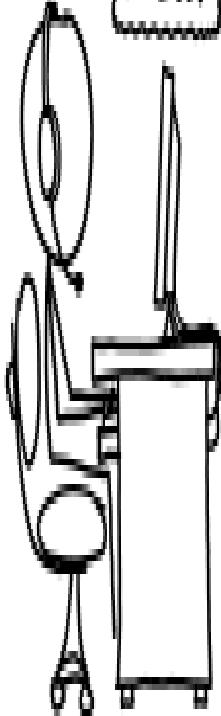


NO, THE SUN SET, THEN
THE LIGHTS APPEARED!
HMM, COULD BE STARS.
ARE THEY STATIONARY?
NO, THEY'RE ALL
ZIPPING AROUND
IN THE BUSHES.



AHA! FIREFLIES!

"FIREFLIES"?
LIGHTNING BUGS.
TREE BLINKERS.
GROUND STARS.
THEY'RE FINE.

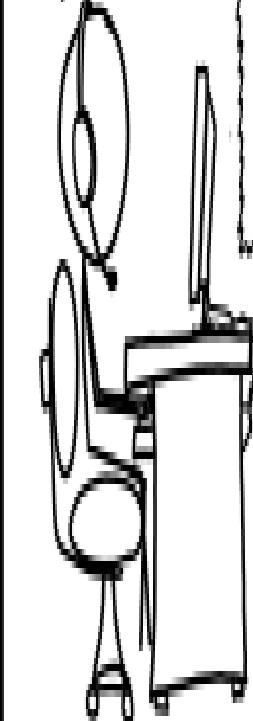


WE DON'T KNOW MUCH ABOUT
THEM SINCE THEY'RE TOO
FAST FOR OUR TELESCOPES,
BUT I CAN TRANSFER YOU
TO THE WEIRD BUG HOTLINE.

SURE, THANKS.

CLICK

HI, WEIRD BUG
HOTLINE, IS IT
CURRENTLY
BITING YOU?



ASTRONOMY STATUS BOARD

MOON STILL THERE GONE

SUN STILL THERE GONE

STARS STILL THERE GONE

PLANETS STILL THERE GONE

GALAXIES STILL THERE GONE





OUR ASTROPHOTOGRAPHY COMMUNITY'S
ONE-UPSMANSHIP IS GETTING OUT OF HAND.

WHAT IT MEANS IF YOU SEE AN AURORA, BY LATITUDE

NORMAL

COOL AND EXCITING

SOMEONE SHOULD GO
CHECK ON OUR SATELLITES

A BUNCH OF OPEN QUESTIONS
IN SOLAR-TERRESTRIAL PHYSICS
ARE ABOUT TO BE ANSWERED

SOMEONE SHOULD GO
CHECK ON OUR SATELLITES

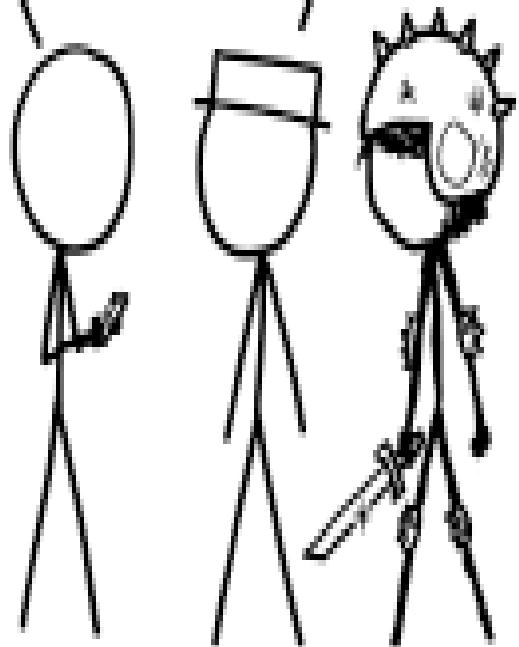
COOL AND EXCITING

NORMAL

READY TO GO?

YUP! CAN YOU EMAIL
ME THE TICKETS
BEFORE WE LEAVE?

SURE, ONE SEC.



OKAY, I SENT IT TO-

IT IS OUTSIDE
WORK HOURS!

PREPARE TO DIE!

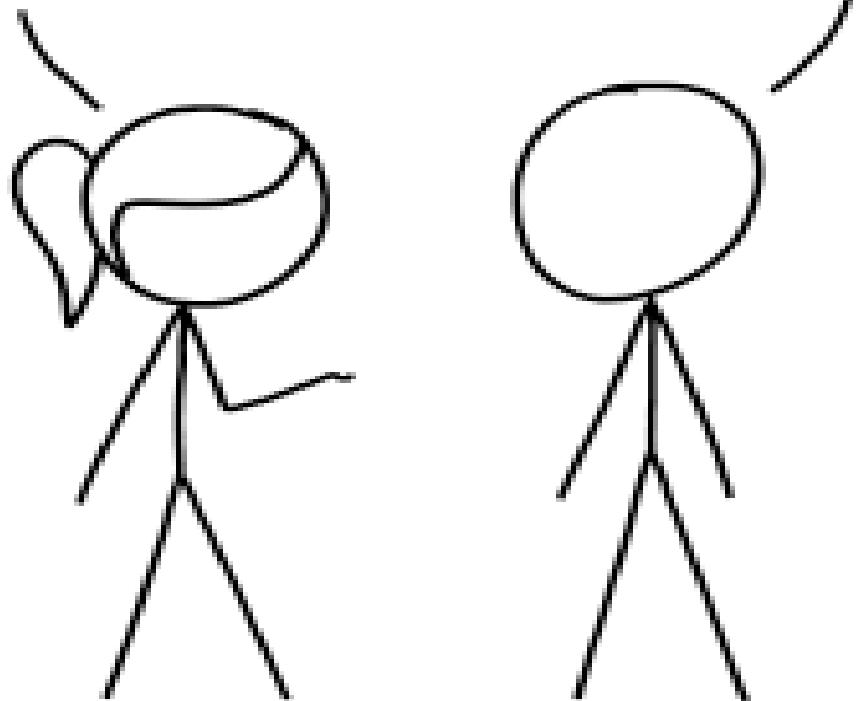
AUGH!



I ALWAYS FEEL BAD WHEN I TRIGGER
MY FRIENDS' WORK AUTORESONDERS.

SILICATE CHEMISTRY IS SECOND NATURE TO US GEOCHEMISTS, SO IT'S EASY TO FORGET THAT THE AVERAGE PERSON PROBABLY ONLY KNOWS THE FORMULAS FOR OLIVINE AND ONE OR TWO FELDSPARS.

| AND QUARTZ, OF COURSE.
OF COURSE.



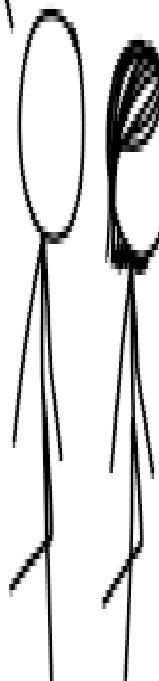
EVEN WHEN THEY'RE TRYING TO COMPENSATE FOR IT, EXPERTS IN ANYTHING WILDLY OVERESTIMATE THE AVERAGE PERSON'S FAMILIARITY WITH THEIR FIELD.

	<u>EARTH</u>	<u>MARS</u>
FLIGHT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
LANDING	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CONTROLLED LANDING	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CONTROLLED POWERED FLIGHT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
LOOP	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IN-FLIGHT MEAL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PLANETARY CIRCUMNAVIGATION	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ENORMOUS WOODEN AIRCRAFT BUILT BY A RECLUSIVE BILLIONAIRE THAT FLIES EXACTLY ONCE	<input checked="" type="checkbox"/>	<input type="checkbox"/>
HIJACKING BY SOMEONE DUBBED "D.B. COOPER" WHO DEMANDS MONEY AND THEN JUMPS OUT MID-FLIGHT TO AN UNKNOWN FATE	<input checked="" type="checkbox"/>	<input type="checkbox"/>

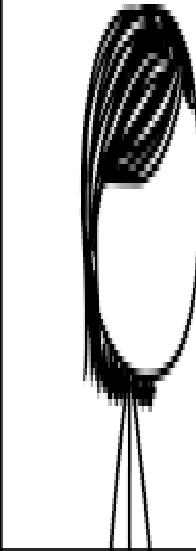
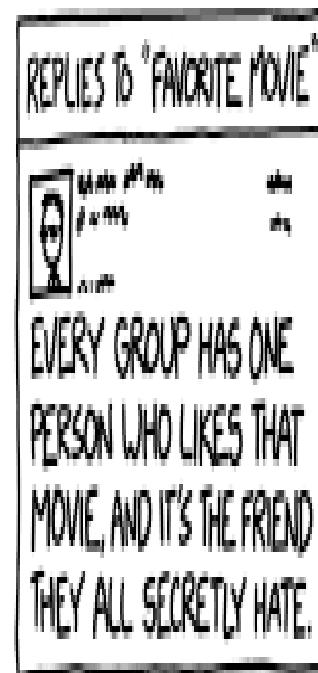
THE INTERNET MAKES IT EASY TO BE
A JERK AND FORGET THE PERSON
WE'RE TALKING TO IS A HUMAN.

YEAH...

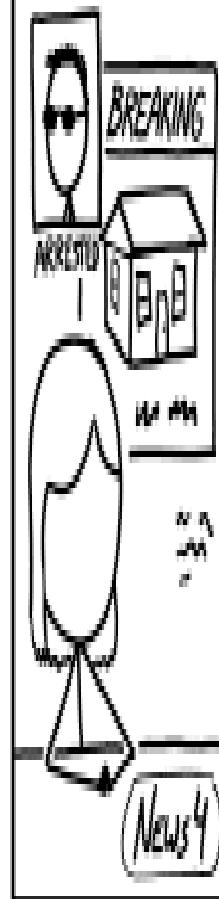
BUT IT ALSO MAKES US SEE
MESSAGES FROM AWFUL
PEOPLE AND ASSUME THEY
COME FROM NORMAL PEERS.



RECENTLY I GOT A MEAN
REPLY FROM A STRANGER.
IT WAS MINOR BUT IT
REALLY GOT TO ME.

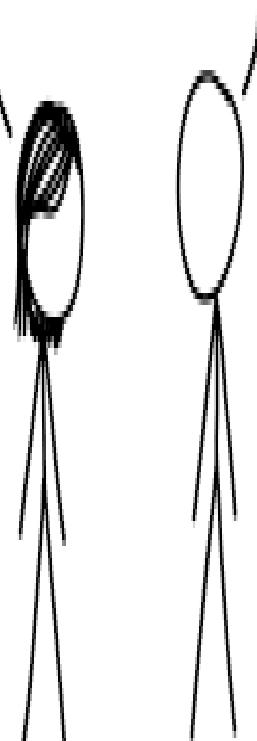


THEN THE NEXT WEEK I SAW THAT GUY ON THE NEWS.
HE WAS AN ACTUAL MURDERER!



I CAN'T BELIEVE I SPENT A WEEK STRESSED OUT THAT MY TASTE IN MOVIES WASN'T SHARED BY THE EAST VALLEY STRANGLER.

YEAH, AT LEAST WAIT FOR A SECOND OPINION FROM THE LAKE SLAYER.



I LIKE THIS ONE MORE
BECAUSE IT ENCODES
MYCENAEAN GREEK.
THE OTHER ONE JUST
LOOKS LIKE GIBBERISH.



LINEAR A/B TESTING

BAD MAP PROJECTION #248:
MADAGASCATOR

MERCATOR PROJECTION BUT WITH THE NORTH POLE IN THE INDIAN OCEAN
SO IT EXAGGERATES THE SIZE OF MADAGASCAR INSTEAD OF GREENLAND





BAD MAP PROJECTION #358: OOPS, ALL SOUTH AMERICAS!

BAD MAP PROJECTION #299:

THE GREENLAND SPECIAL

EQUAL-AREA MAP PRESERVES SIZE EVERYWHERE EXCEPT
GREENLAND, WHICH USES THE MERCATOR PROJECTION.



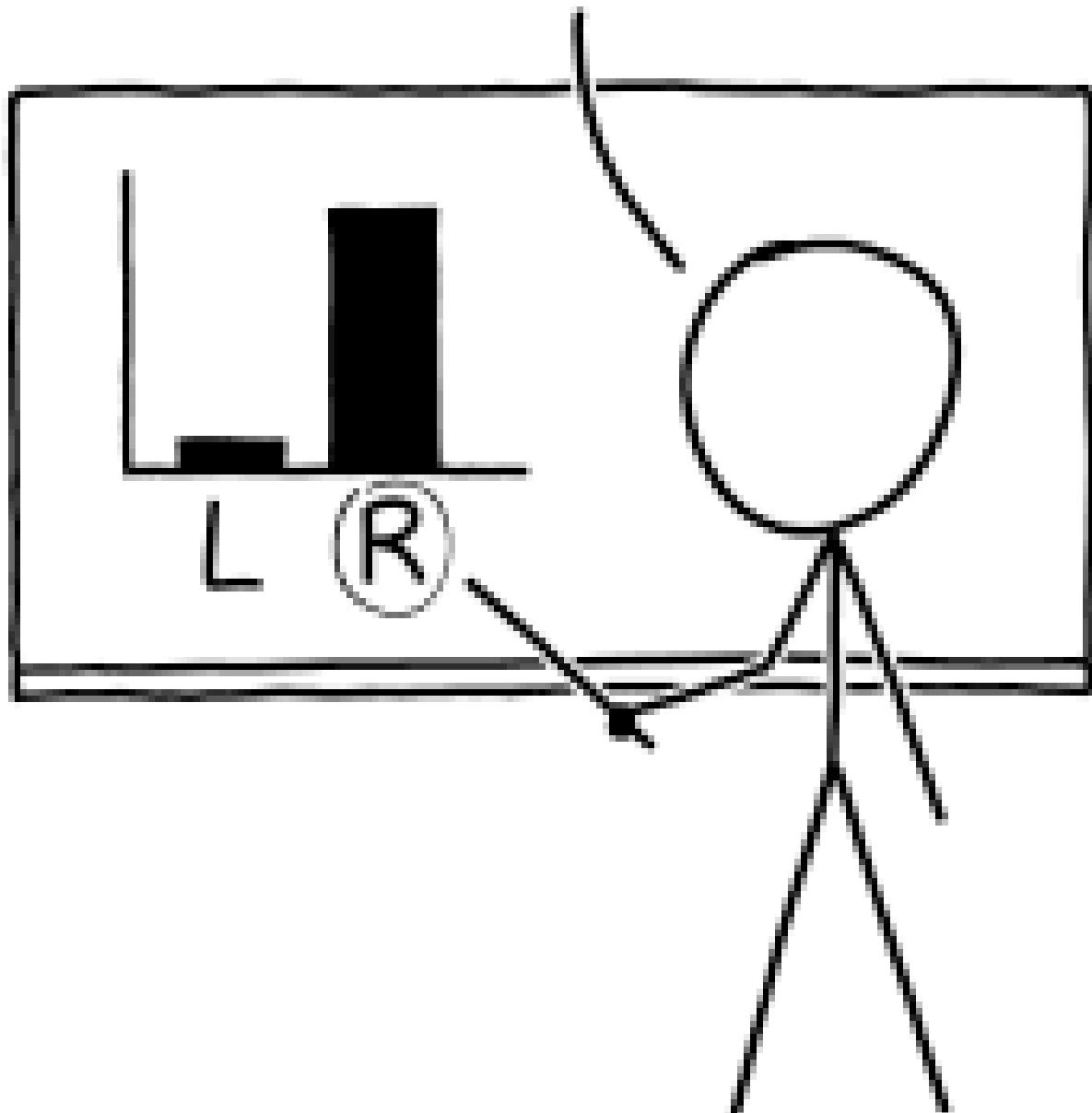
AND THIS TAB IS MY BALLOT TRACKER
TRACKER, WHICH TRACKS HOW QUICKLY
OTHER BALLOT TRACKERS UPDATE.

| YOU SHOULD ADD A TRACKER
FOR HOW OFTEN YOU BREATHE
SO YOU DON'T FORGET.

*I WILL BREATHE
WHEN THEY CALL IT.*

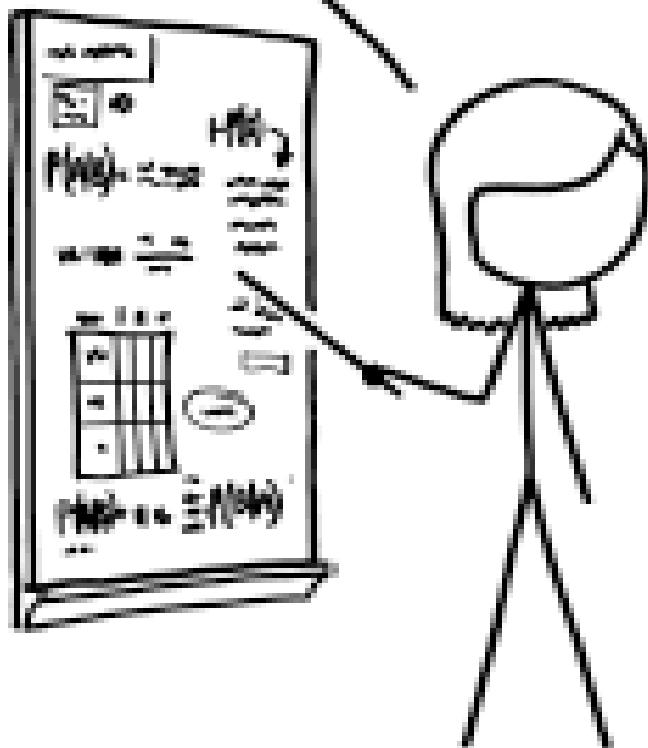


**REMEMBER, RIGHT-HANDED
PEOPLE COMMIT 90% OF
ALL BASE RATE ERRORS.**



GIVEN THESE PREVALENCES,
IS IT LIKELY THAT THE TEST
RESULT IS A FALSE POSITIVE?

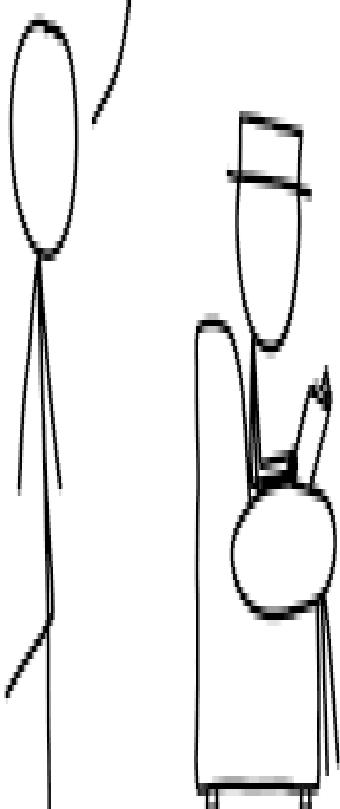
WELL, THIS CHAPTER IS ON
BAYES' THEOREM, SO YES.



SOMETIMES, IF YOU UNDERSTAND
BAYES' THEOREM WELL ENOUGH,
YOU DON'T NEED IT.

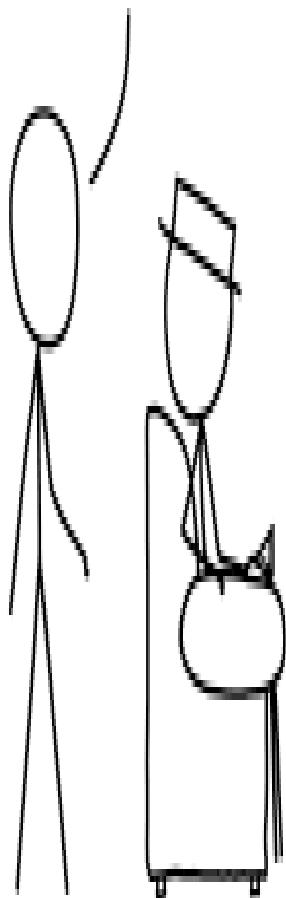
YOU KNOW, IN THE UNIVERSE WHERE BIFF TANNEN TOOK MARTY McFLY'S SPORTS ALMANAC BACK IN TIME, THE PEOPLE WOULDN'T HAVE ANY COUNTERFACTUALS TO WORK WITH.

THEIR WORLD WOULD BE THE WORLD.



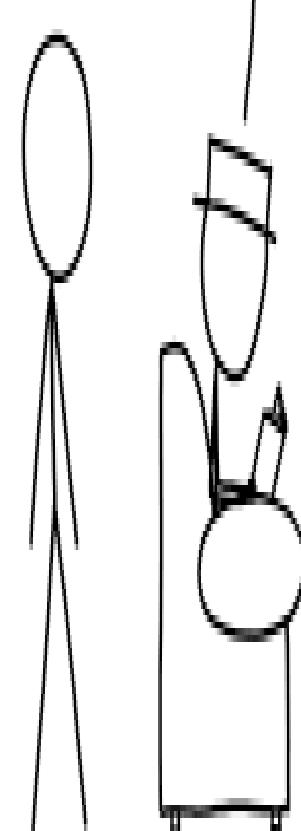
THEY WOULD HAVE SPENT DECADES DEBATING WHICH STRUCTURAL PROBLEMS ENABLED THE RISE OF BIFFCO, THE DECLINE OF THE CITY, AND GENERAL SOCIAL DECAY.

EVERYONE WOULD FIND REASONS IT CONFIRMED THEIR PET THEORY.

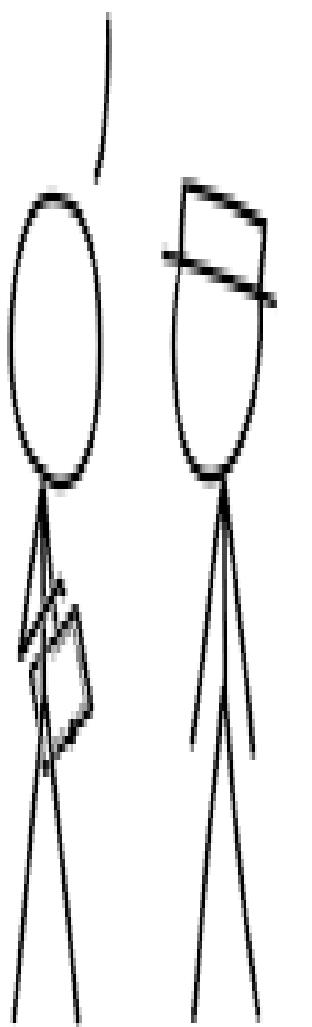


I'M GOING TO WRITE A BOOK SET IN THAT UNIVERSE. I'LL CALL IT HILL VALLEY ELEGY.

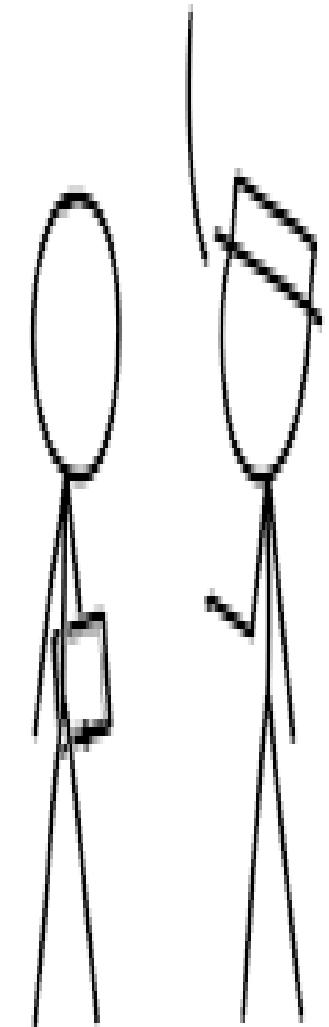
...I HATE YOU.



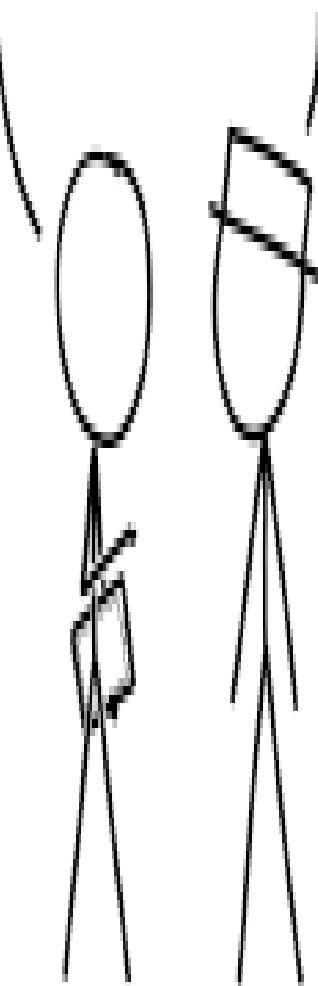
I'M TRYING TO
FIX <PROBLEM
WITH THE WORLD>
CAN YOU HELP?



IT'S OBVIOUS YOU DON'T
ACTUALLY CARE. IF YOU DID,
YOU'D BE TRYING TO FIX
<BIGGER PROBLEM> INSTEAD.



OK, WANT TO HELP FIX
<BIGGER PROBLEM>?
NO, FOR ANOTHER REASON
I'LL THINK OF LATER.



OTHER THAN THE FAKE
1999 VIDEO, THERE HAVE
BEEN NO BLAIR WITCH
SIGHTINGS IN 30+ YEARS.

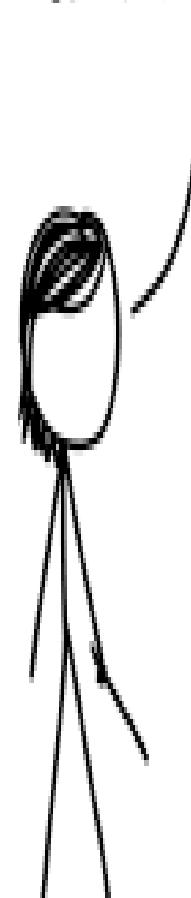
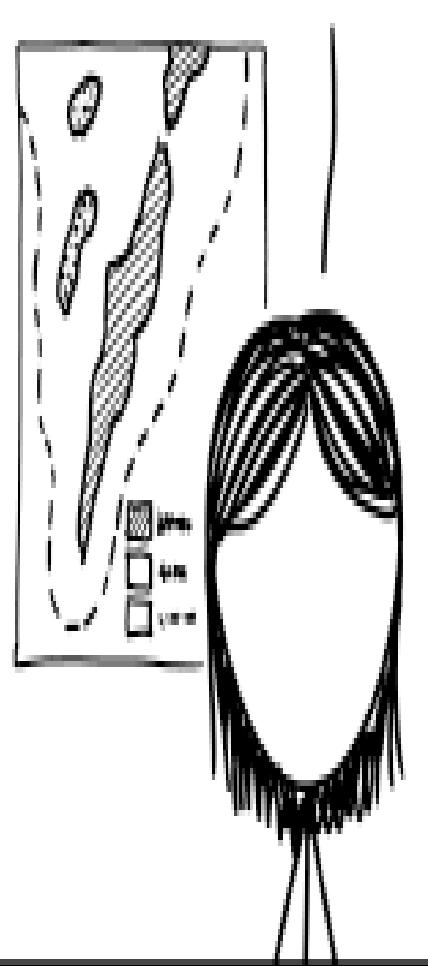
THE IUCN REDLIST SAYS
THE WITCH IS "POSSIBLY
EXTINCT IN THE WILD."

DEVELOPMENT IN THE
MARYLAND SUBURBS
HAS FRAGMENTED THE
SPOOKY FOREST HABITAT.

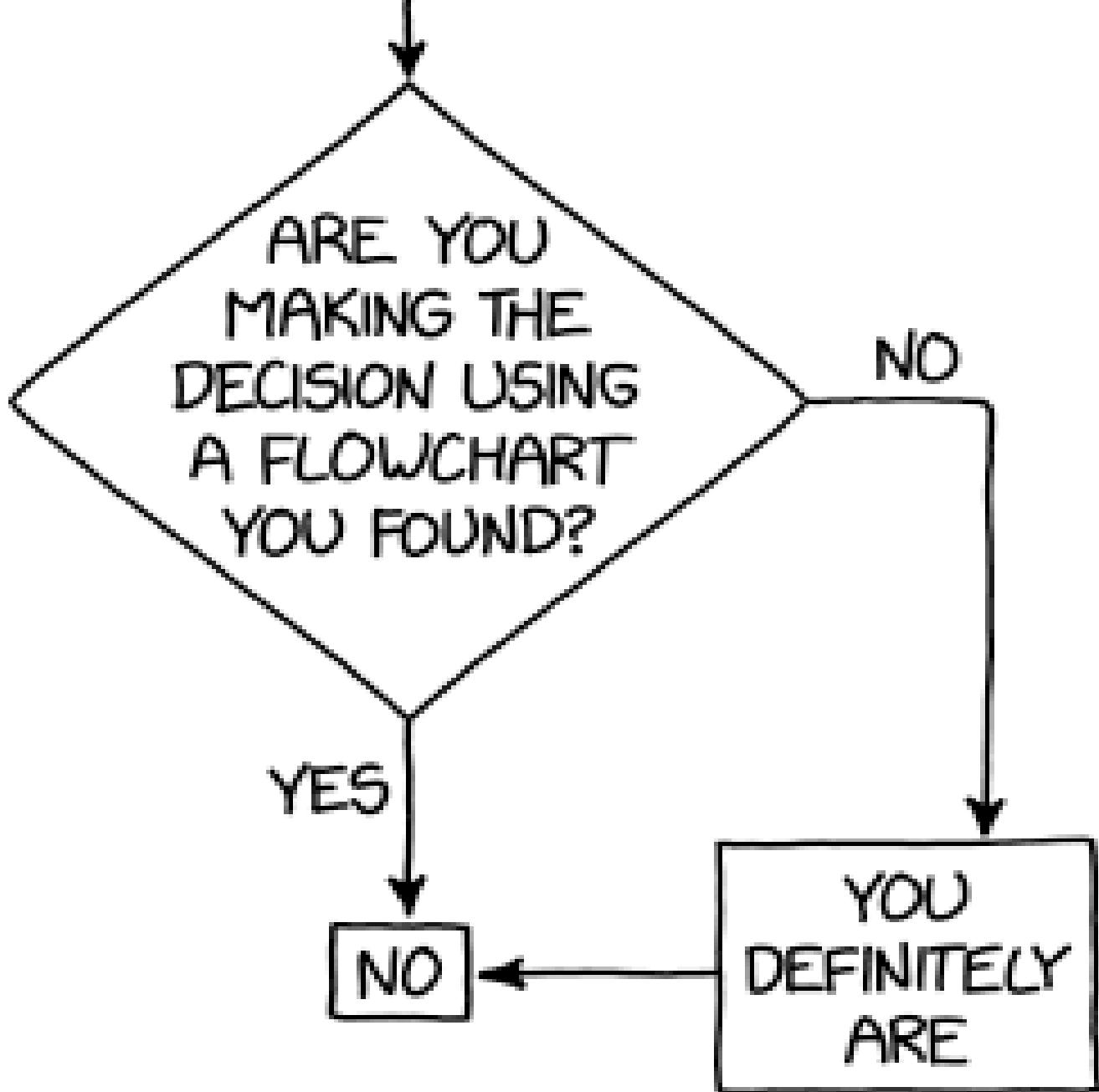
CLIMATE CHANGE WILL
PUSH ANY REMNANT
POPULATIONS NORTH.

THAT'S WHY WE PLAN TO
CAPTURE ANY SURVIVING
WITCHES AND ESTABLISH
A BREEDING POPULATION.

THEN, IN TIME, THE BLAIR
WITCH REINTRODUCTION
PROJECT CAN BEGIN.



SHOULD YOUR
PROJECT USE
A BLOCKCHAIN?



YOU MAY REALLOCATE UP TO FIVE TOKENS TO YOUR TOP CHOICES FROM LAST WEEK. REMEMBER, THE GAME WITH THE LEAST SUPPORT TONIGHT WILL GO TO THE THRIFT STORE.

NEXT, WE'LL RESUME THE DEBATE OVER ORDERING EXPANSION PACKS.

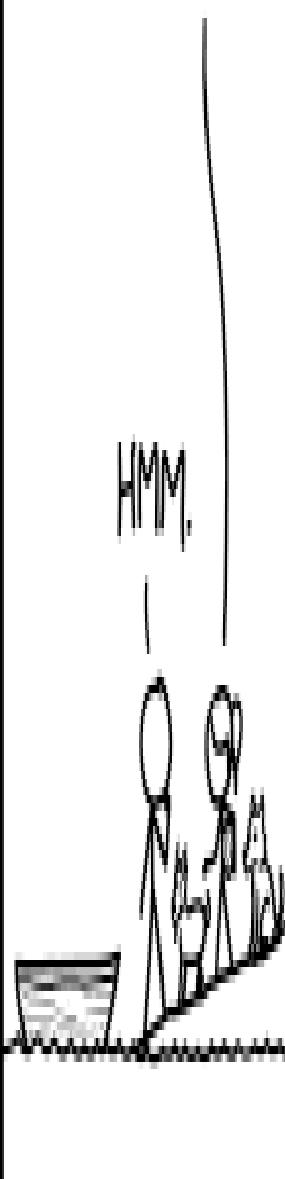


WE GOT TIRED OF HAVING THE SAME REPETITIVE ARGUMENTS EVERY WEEK OVER WHICH GAME TO PLAY, SO WE DEVELOPED BOARD GAME ARGUMENT: LEGACY.

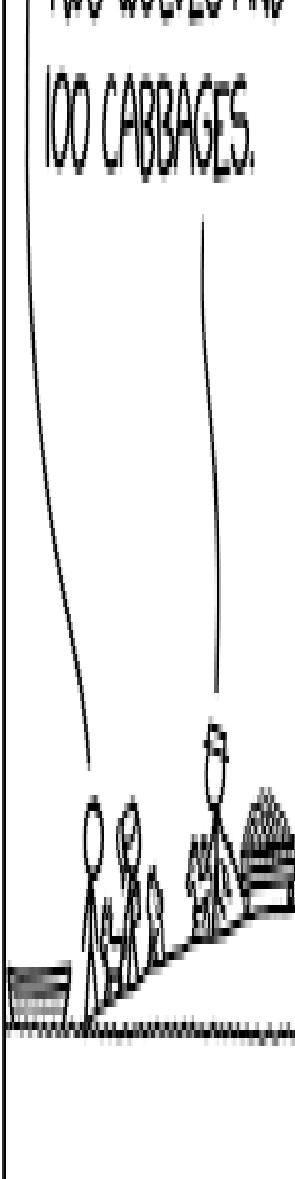
BOARD GAME PARTY SCHEDULE

		PEOPLE FILTER IN
6 PM		SMALL TALK
		DEBATE WHICH GAME TO PLAY
		REMEMBER THAT YOU NEED TO ORDER FOOD
7 PM		DEBATE WHERE TO ORDER FROM
		PICK A PLACE, ORDER
		PICK A GAME AND START SETTING UP
8 PM		EXPLAIN RULES TO NEW PEOPLE
		FOOD ARRIVES
		EAT FOOD
9 PM		RESUME SETTING UP
		MORE EXPLANATION
10 PM		RESTLESS FACTION TRIES TO START SIMPLER GAME
		GENERAL DEBATE
		"IT WILL MAKE SENSE ONCE YOU PLAY"
11 PM		FINISH SETTING UP
		PEOPLE HEAD HOME

I NEED TO CROSS
THE RIVER. I HAVE
A WOLF, A GOAT,
AND A CABBAGE.

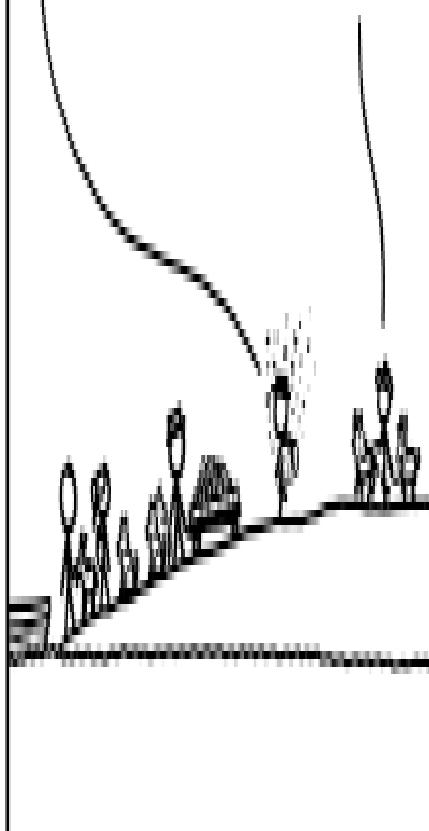


OK, HERE'S WHAT-
HI, I ALSO NEED
TO CROSS. I HAVE
TWO WOLVES AND
100 CABBAGES.



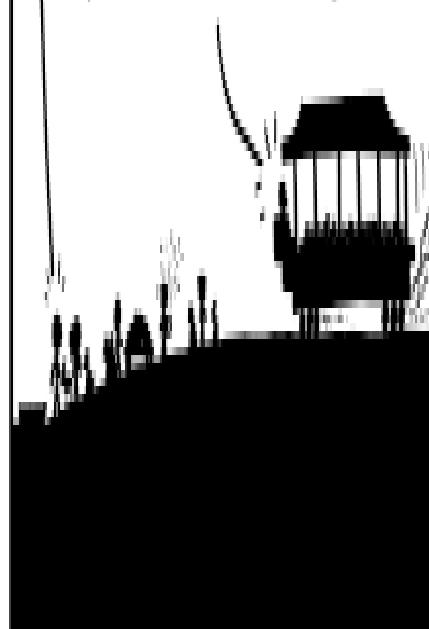
I HAVE 50 CABBAGE
MOTHS AND 2000 BOAT-
DESTROYING TERMITES.

I HAVE A WOLF THAT CAN
OPERATE A BOAT, AND A
GOAT THAT EATS WOLVES.



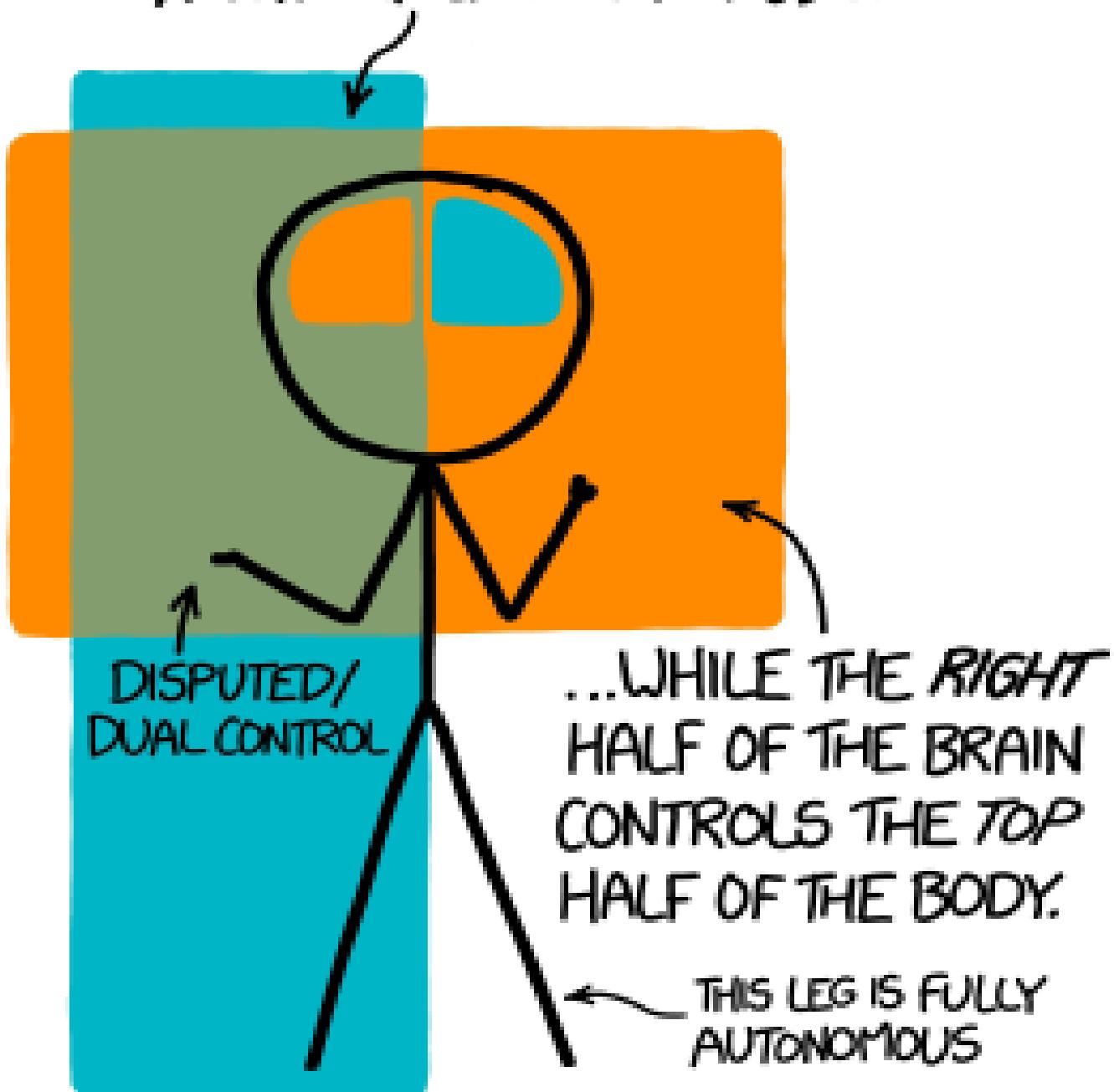
HANG ON, I NEED TO
MAKE A SPREADSHEET.

LOOK OUT!
MY WOLF-FILLED TROLLEY
IS OUT OF CONTROL AND
CAN ONLY BE STOPPED BY
A CUSHION OF CABBAGES!



NEUROSCIENCE FACT:

THE LEFT HALF OF THE BRAIN
ACTUALLY CONTROLS THE
RIGHT HALF OF THE BODY...

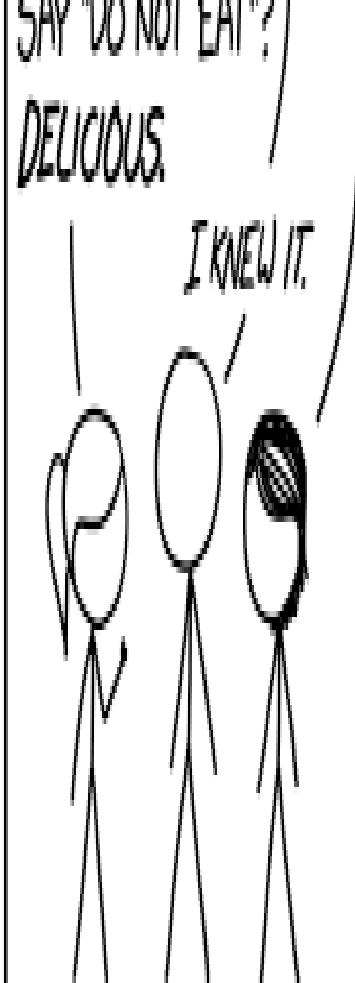
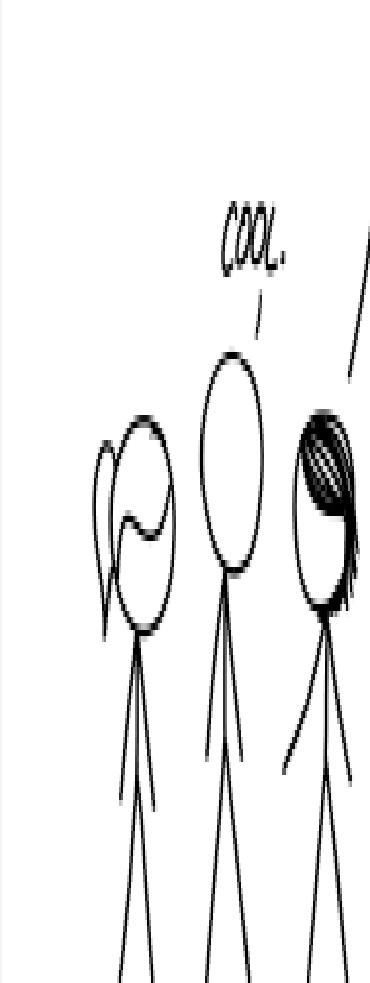
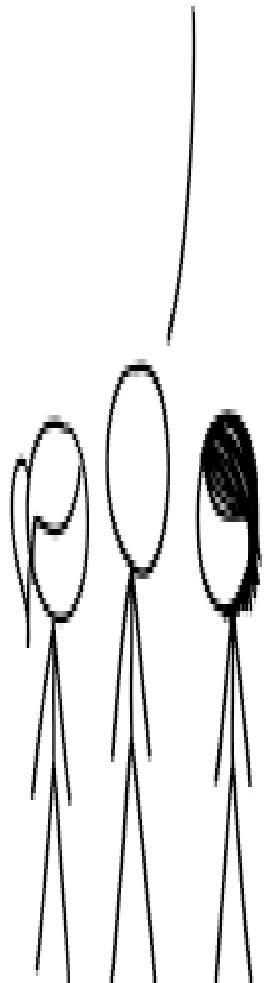


I ALWAYS THOUGHT OF
BRUSSELS SPROUTS AS
TERRIBLE, BUT THEY'RE
ACTUALLY REALLY GOOD!
I CAN'T BELIEVE I LET
EVERYONE MISLEAD ME!

IT'S NOT JUST
YOU. FARMERS
DEVELOPED A
LESS BITTER
CULTIVAR LIKE
15 YEARS AGO.*

NOW THE WHOLE WORLD IS HAVING
THIS REVELATION, ONE PERSON AT
A TIME. IT'S LIKE A REAL MANDELA
EFFECT. WE SECRETLY SWITCHED
TO THE PARALLEL UNIVERSE WHERE
BRUSSELS SPROUTS TASTE GOOD.

ALSO, LICORICE IS GOOD NOW.
WHOA, REALLY?
THIS IS
A TRAP.
AND THOSE SILICA
GEL PACKETS THAT
SAY "DO NOT EAT"?
DELICIOUS.



*NPR.ORG/773457637

HMM...
WD-40, DIESEL FUMES...
AND IS THAT SEA AIR?
I GUESS THEY'RE
NEAR THE OCEAN.



IF YOUR SENSE OF SMELL IS
GOOD ENOUGH, POPPING BUBBLE
WRAP GIVES YOU A TOUR OF
A BUBBLE WRAP FACTORY.

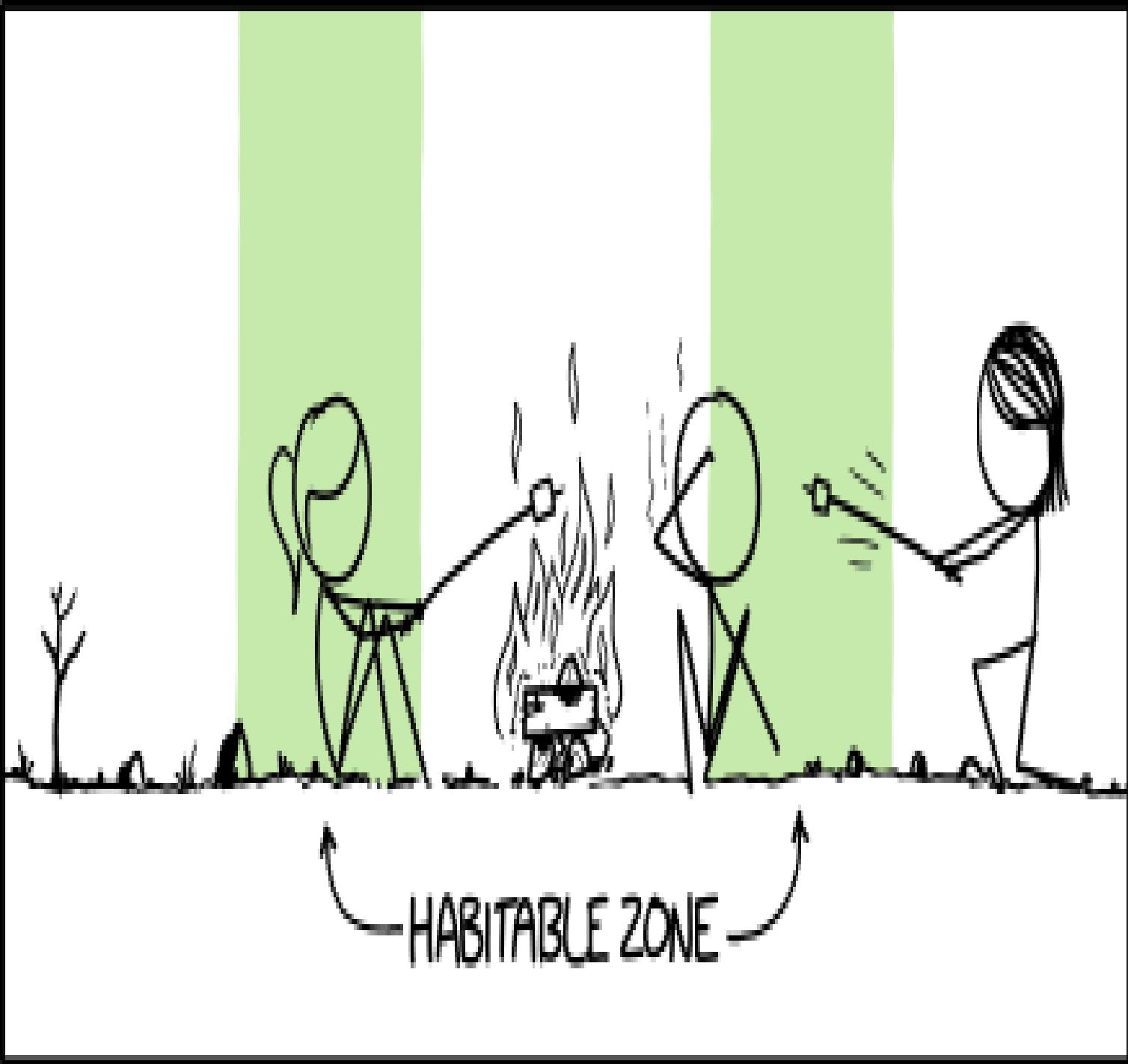
I DON'T THINK WE SHOULD
OVERREACT TO THE CORONAVIRUS,

BUT IT MIGHT BE TIME TO PUT AN
END TO THE CUSTOM OF STARTING
BUSINESS MEETINGS BY EVERYONE
LICKING EACH OTHERS' EYEBALLS.

I'LL MISS THE
HUMAN CONTACT,
BUT THAT'S FAIR.

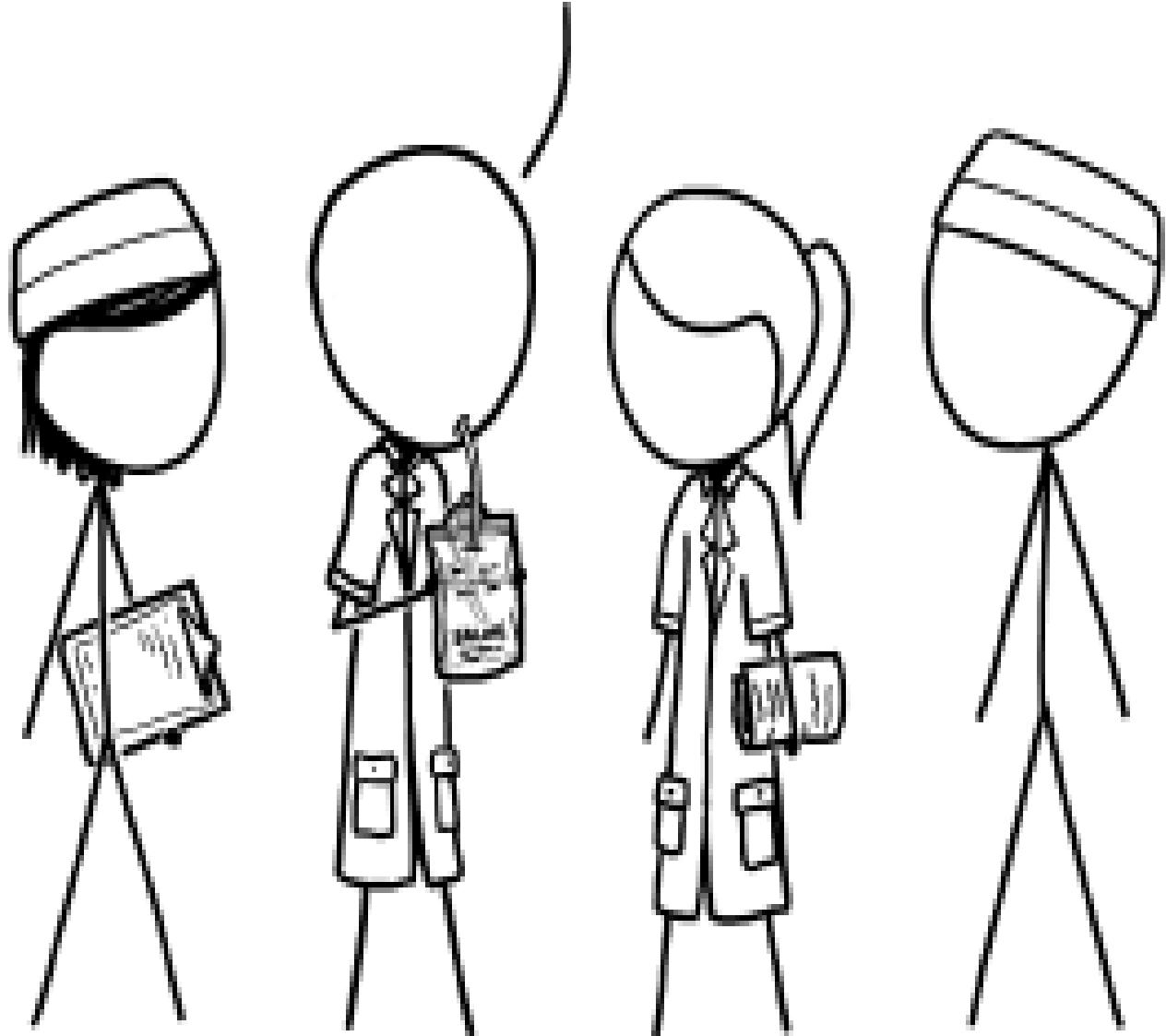
GOTTA CHANGE
WITH THE TIMES.





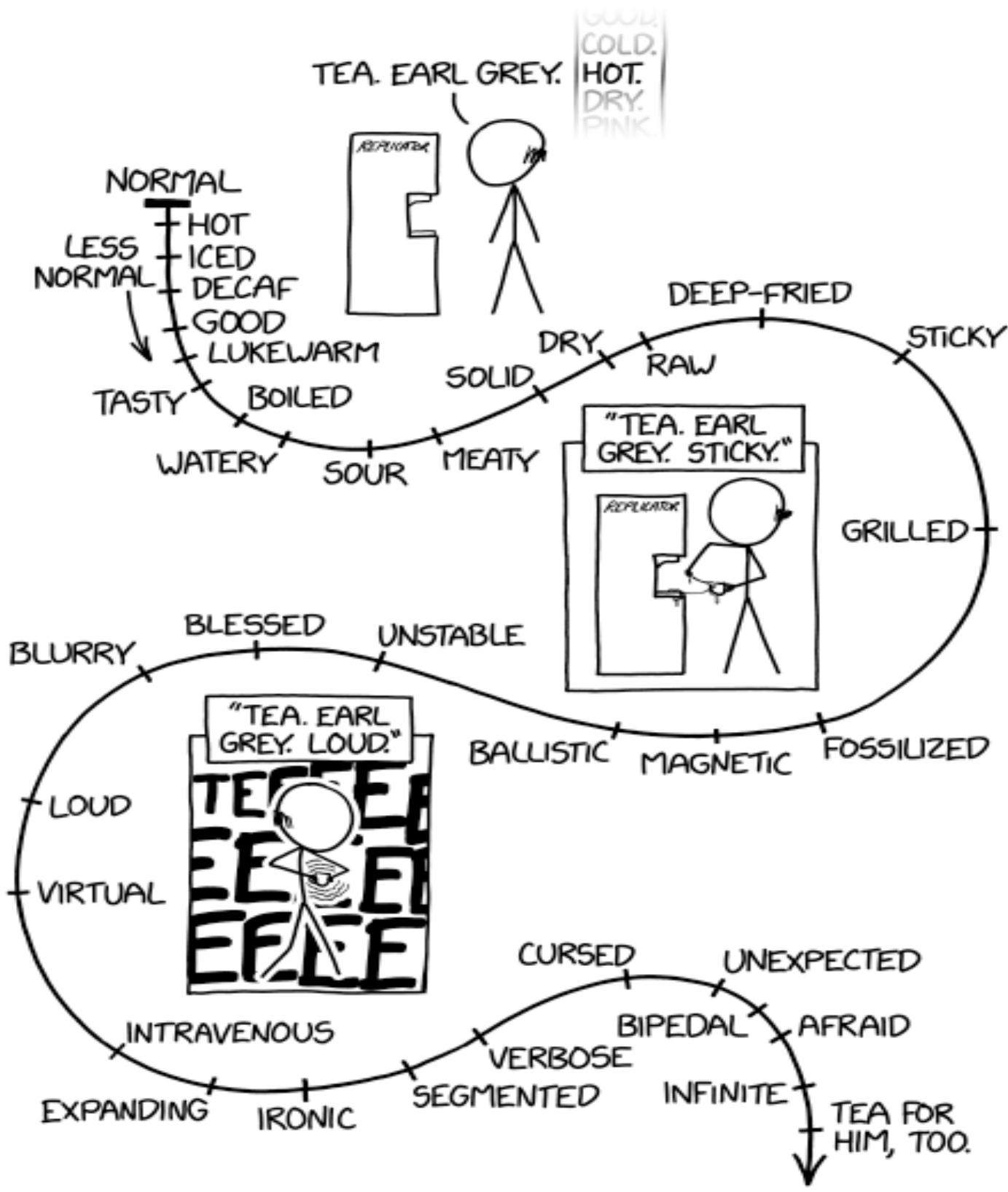
ASTRONOMERS DEFINE THE CAMPFIRE HABITABLE ZONE AS THE REGION WHERE YOU'RE FAR ENOUGH NOT TO BE BURNED BUT CLOSE ENOUGH TO ROAST MARSHMALLOWS.

YOU KNOW, THESE CAPRI SUNS ARE
GOOD, BUT THEY'RE REALLY SALTY.



I THINK THE HOSPITAL MAY BE STARTING TO
REALIZE THAT I'M NOT ACTUALLY A DOCTOR.

OTHER WORDS CAPTAIN PICARD TRIED AT THE END
OF HIS TEA ORDER BEFORE SETTLING ON "HOT"
FROM MOST NORMAL TO LEAST



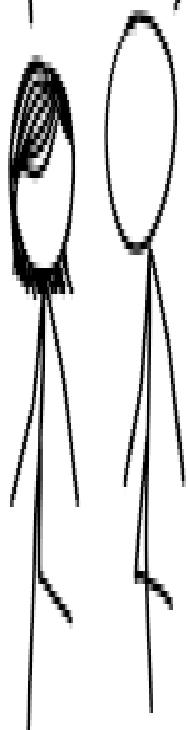
REGIONAL TERMS FOR CARBONATED BEVERAGES



HAVE YOU HEARD
OF "CARONIZATION"?

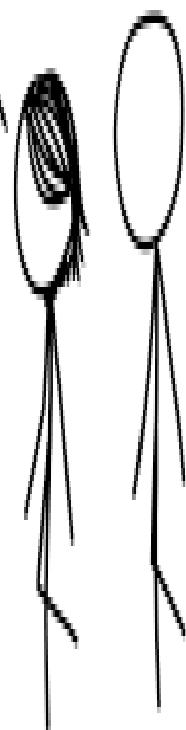
THE TENDENCY OF
NATURE TO EVOLVE
THINGS INTO CRABS.

OH?

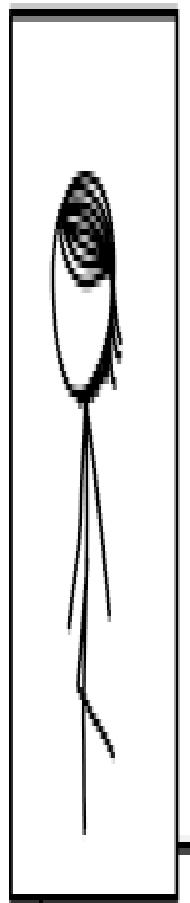


YEAH, THE BASIC
"CRAB" DESIGN HAS
EVOLVED SEPARATELY
A NUMBER OF TIMES.

EVOLUTION JUST
LOVES MAKING
CRABS, I GUESS!



APPARENTLY!



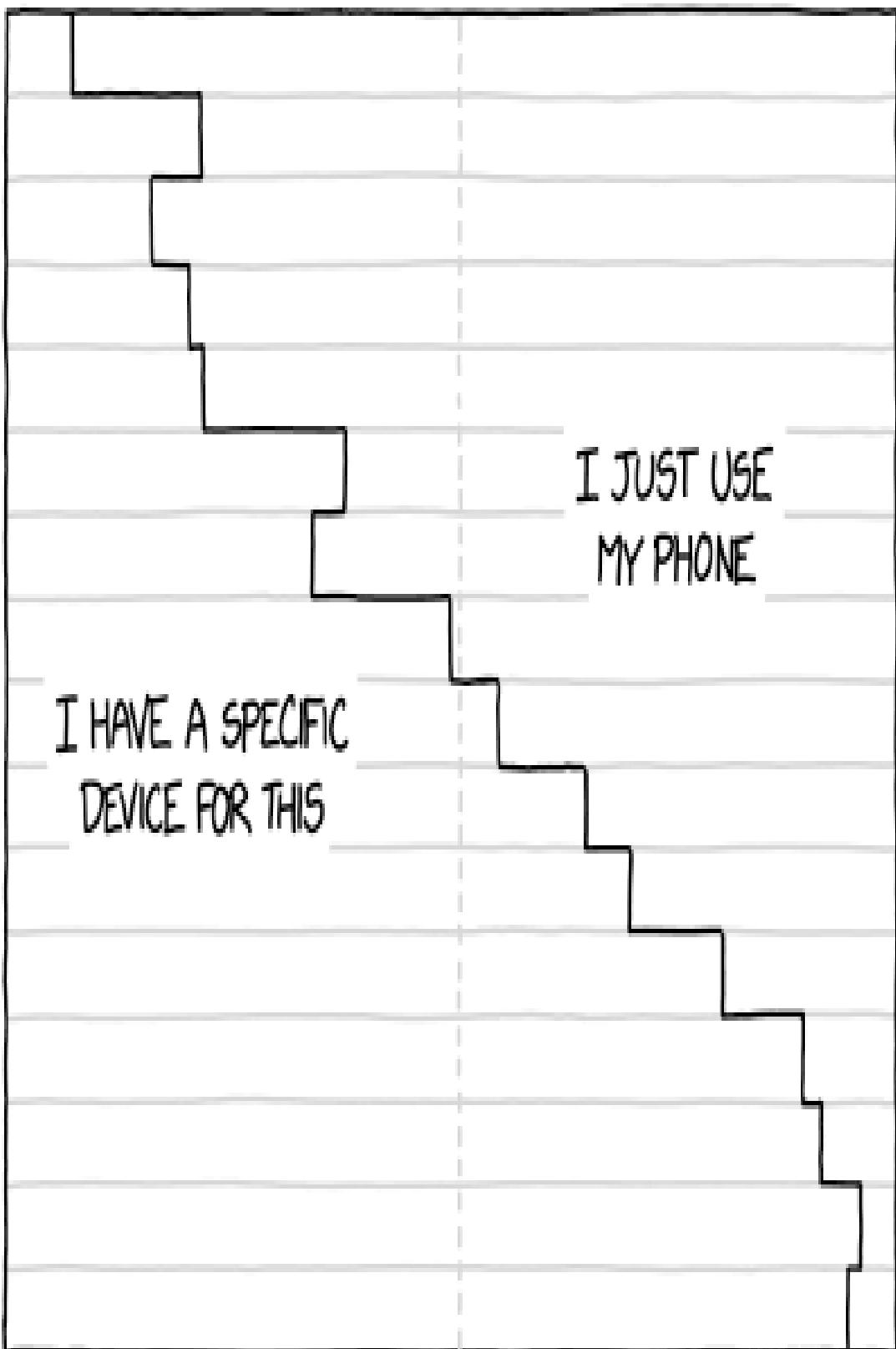
OH NO



TIME →

NOW

TELEPHONE
WEB BROWSER
CAMERA
NEWSPAPER
FLASHLIGHT
TV REMOTE
CREDIT CARD
CAR KEY
DOG LEASH
STEERING WHEEL
BAND-AID
CHEESE GRATER
STAPLER
NAIL CLIPPER
ELECTRIC DRILL
TOOTHBRUSH

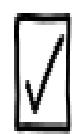




CHECK IT OUT, I JUST GOT MY BOOSTER!

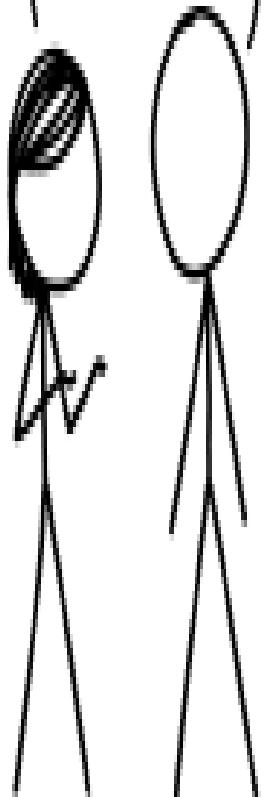
COVID-■ VACCINATION RECORD CARD			
PLEASE KEEP THIS RECORD CARD, WHICH INCLUDES ■■■■■ ABOUT ■■■■■ POR FAVOR, GUARDE ESTA TARJETA DE REGISTRO, QUE INCLUYE ■■■■■ SOBRE ■■■■■			
MUNROE		RANDALL	
LAST NAME 10-17-■■■■■ 84	FIRST NAME 41592653	PATIENT NUMBER	
DATE OF BIRTH			
VACCINE	MANUFACTURER LOT NUMBER	DATE MM DD YY	PROVIDER OR CLINIC SITE
1ST DOSE COVID-■■■	PFIZER ER1138	04/01/21 MM DD YY	CVS PHARMACY CLINICIAN ■■■■■
2ND DOSE COVID-■■■	PFIZER ES2187	04/22/21 MM DD YY	CVS ■■■■■
OTHER ■■■■■	3rd ■■■■■ FH1729	10/21/21 MM DD YY	■■■■■ CIA ■■■■■
OTHER	■■■■■	■■■■■	■■■■■

SECURITY TIP: TO SEEM MORE MYSTERIOUS, TRY
CENSORING ONLY NON-IDENTIFYING INFORMATION.

LOADING...

YOU KNOW HOW
OUR COMPANY
SPENDS A LOT
ON EXPENSIVE
CHEMICALS?

YEAH?



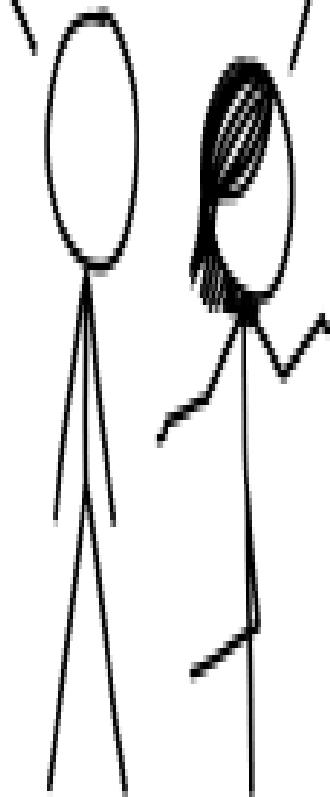
WELL, I JUST LEARNED
YOU CAN LOOK UP ALL
THE FORMULAS ONLINE!

WE CAN JUST BUY
ATOMS IN BULK AND
ASSEMBLE THEM HERE!

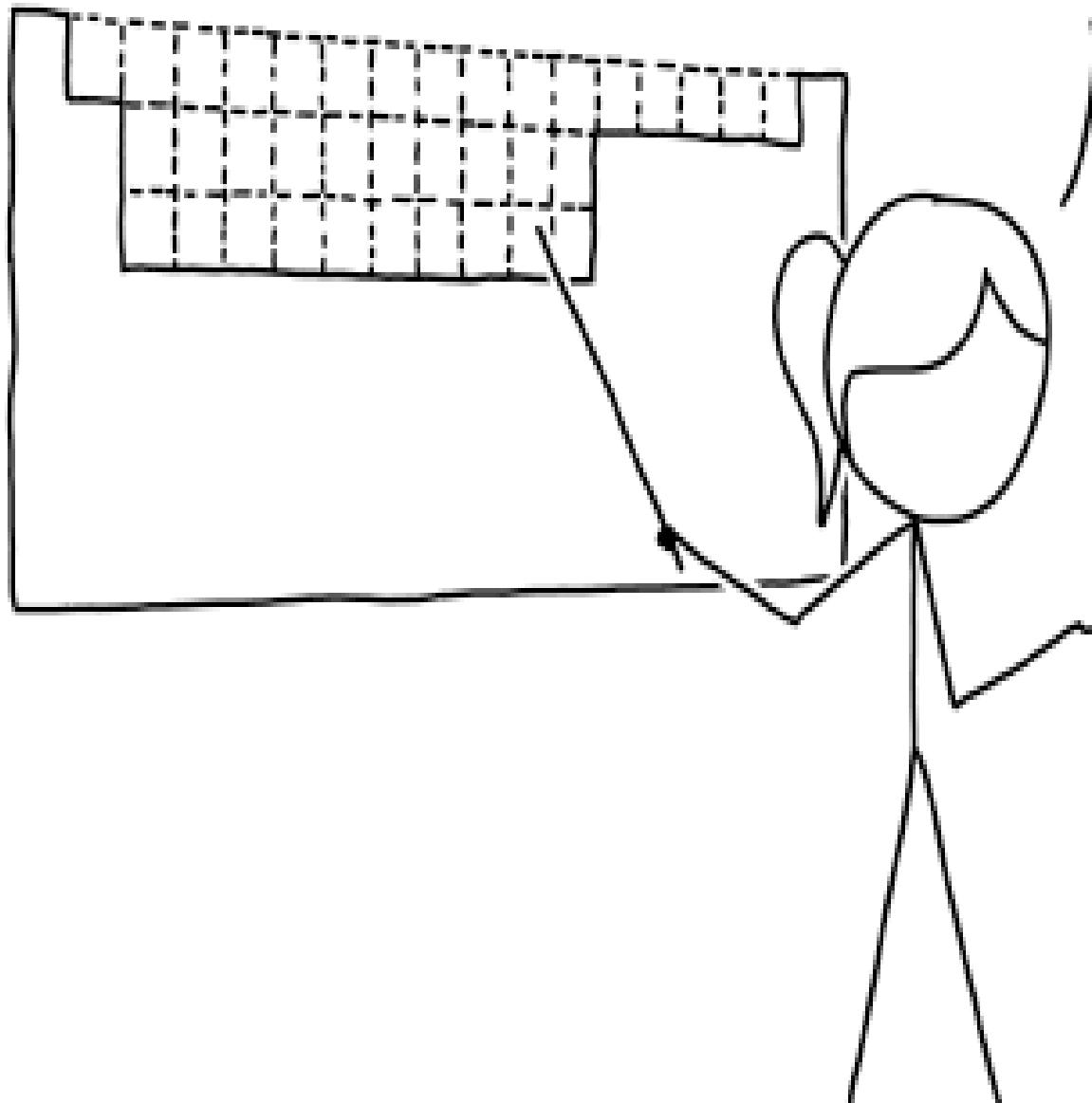


I WONDER WHY MORE
PLACES DON'T DO THAT.

PEOPLE HAVE NO IDEA
THEY'RE GETTING RIPPED
OFF BY BIG MOLECULE!



I DON'T KNOW WHY NO ONE
ELSE THOUGHT TO LOOK HERE.

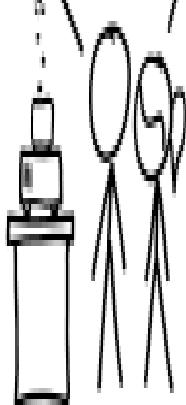


THE 2019 NOBEL PRIZE IN CHEMISTRY WENT TO
THE TEAM THAT DISCOVERED THE ELEMENTS IN
THE BIG GAP AT THE TOP OF THE PERIODIC TABLE.

HOW WILL I
KNOW IF THE
REACTION FAILS?

YOU'LL SMELL
THE SULFIDES.
WHAT DO THOSE
SMELL LIKE?

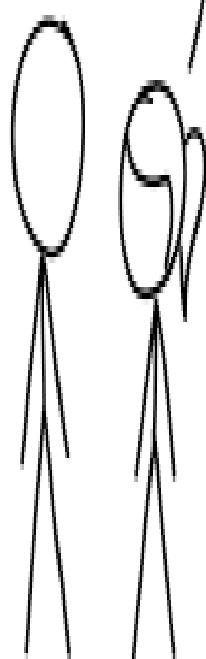
SULFURIOUS.
ROTTEN EGGS.



CHEMISTS ALWAYS
COMPARE SULFUR
TO ROTTEN EGGS.

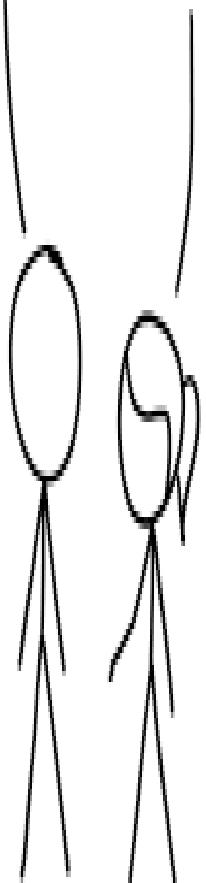
BUT WHY WOULD I
KNOW THAT SMELL?

I DUNNO, IT'S A
COMMON THING!



IS IT? MY KITCHEN IS
MESSY, BUT THERE
AREN'T EGGS LYING
AROUND ROTTING.

YOU MUST HAVE
SMELLED ONE
AT SOME POINT.

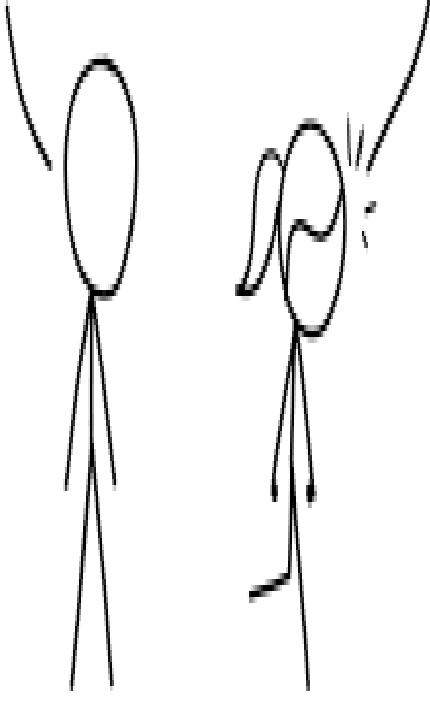


ARE ALL CHEMISTS' HOUSES FULL OF
RANDOM RAW EGGS? DO YOU TOSS THEM
OVER YOUR SHOULDER FOR GOOD LUCK?

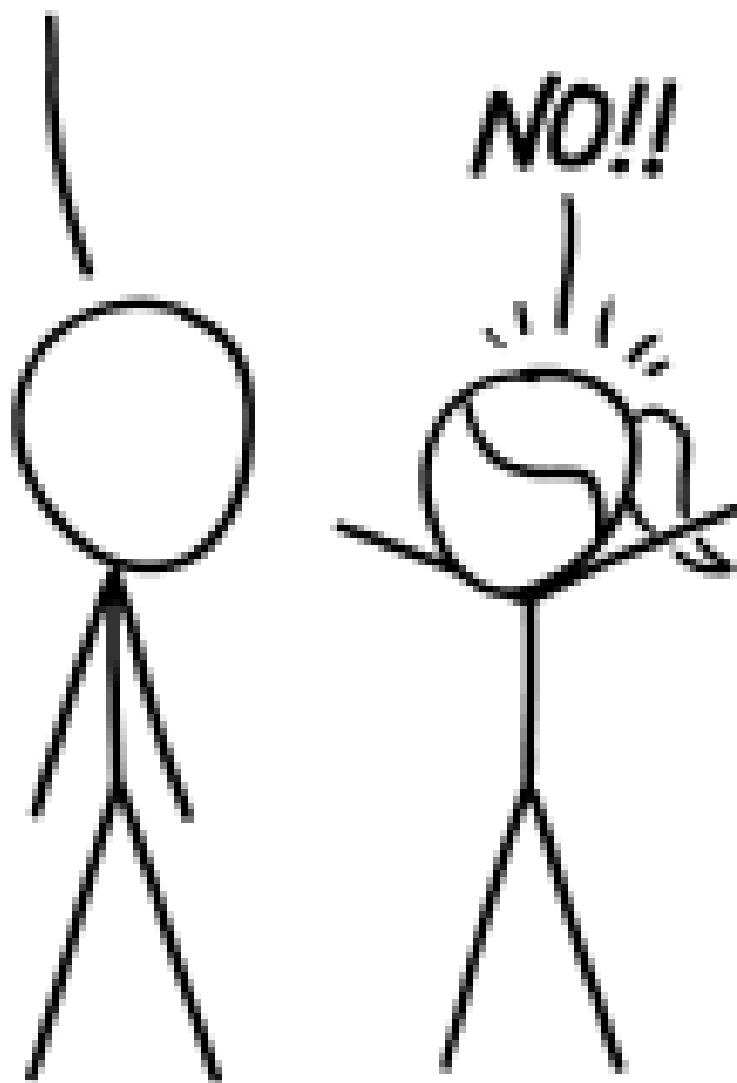
MY HOUSE IS NOT FULL OF EGGS!

WHAT DO YOU CONSIDER A NORMAL
AMOUNT OF EGGS IN A HOUSE?

IF KIDS EGG YOUR HOUSE THIS
HALLOWEEN, HOW WILL YOU KNOW??



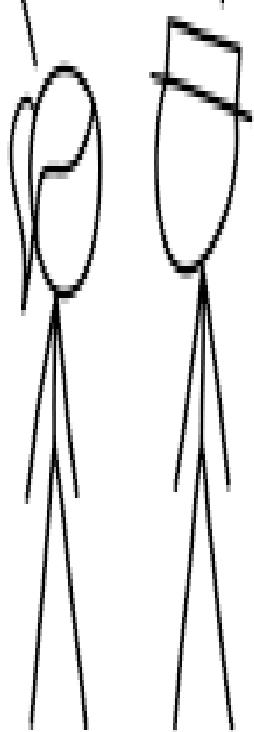
SO, I HEAR YOU'RE REALLY
INTO CHEMTRAILS?



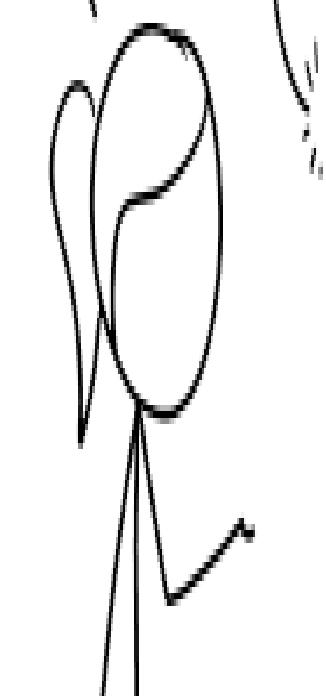
HOW TO ANNOY ENTOMOLOGISTS
WHO STUDY ANT NAVIGATION

DID YOU LIKE
CHERNOBYL?

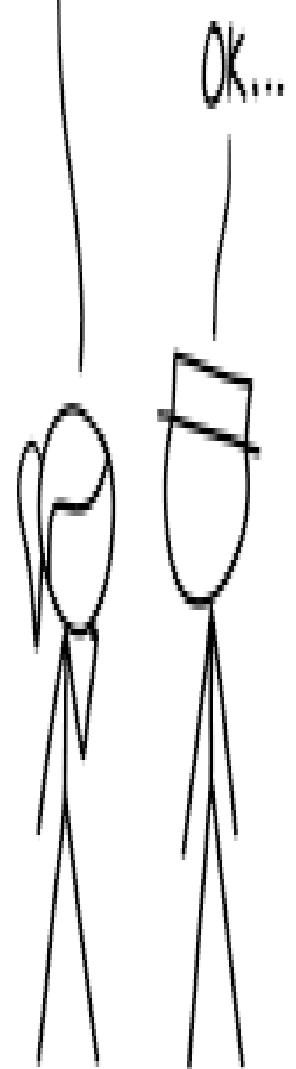
YEAH!
BUT I STILL DON'T
UNDERSTAND THE
MELTDOWN. CAN YOU
EXPLAIN IT... SIMPLER?



WELL, THE
GRAPHITE-
ALREADY TOO
COMPLICATED.
UH... THEY PUT
THE REACTOR IN
AN UNSTABLE-
NOPE, SORRY.

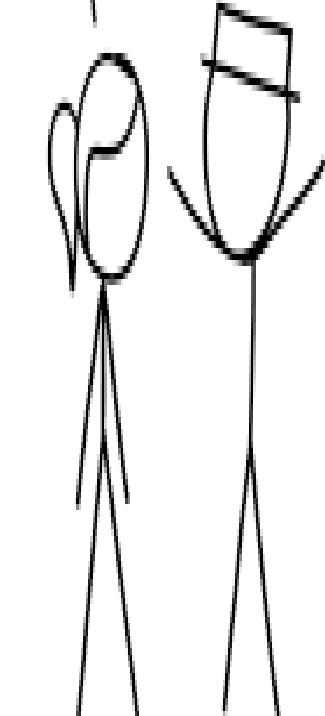


HMM, OK.
LONG AGO,
HUMANS BANGED
ROCKS TOGETHER
TO MAKE FIRE.



30 YEARS AGO, WE
BANGED SOME ROCKS
TOGETHER TOO HARD.

OH NO!
YEAH, WE MESSED
UP REAL BAD.



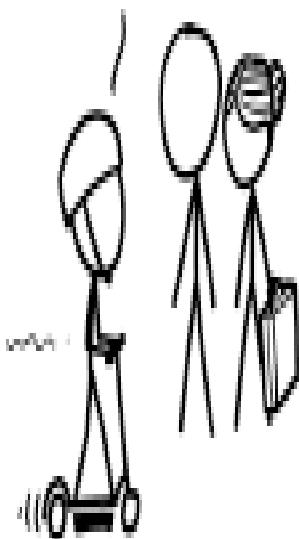
CHILDHOOD TOYS

BY PRACTICALITY FOR COMMUTING

PRACTICAL

- BICYCLE
- ELECTRIC SCOOTER

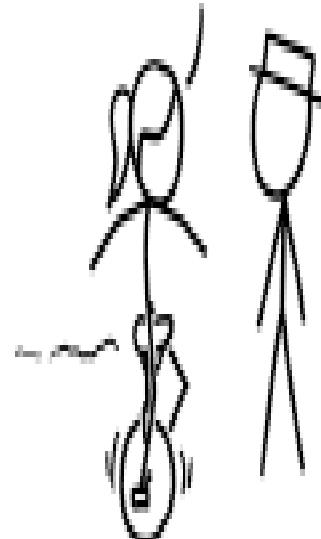
HI, BOSS!



LESS PRACTICAL

- SKATEBOARD
- ROLLER SKATES
- BIG WHEEL
- UNICYCLE

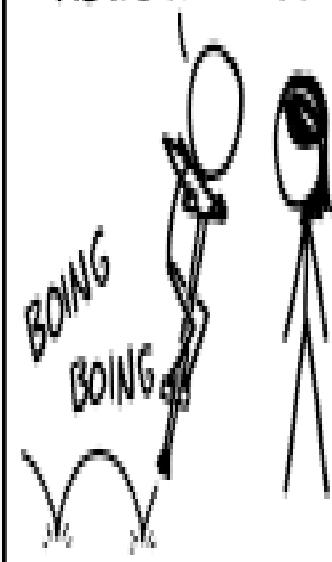
GOOD MORNING!



IMPRACTICAL

- STILTS
- JUMP ROPE
- WAGON
- POGO STICK

HOW'S IT GOING?



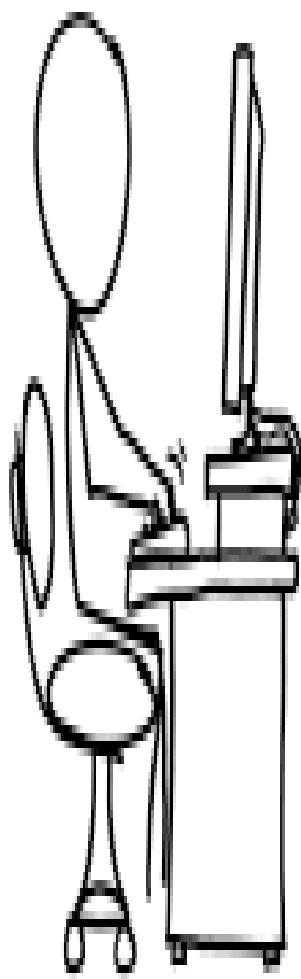
VERY IMPRACTICAL

- TRAMPOLINE
- TIRE SWING
- HOT WHEELS
- SUP 'N SLIDE

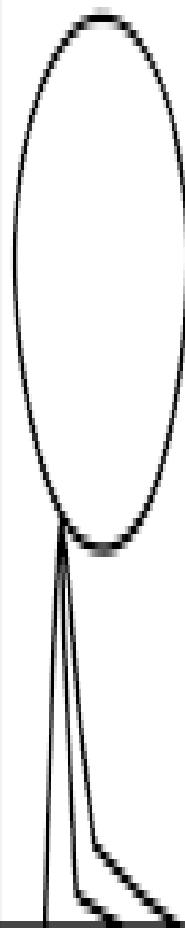
Hi BOSS!



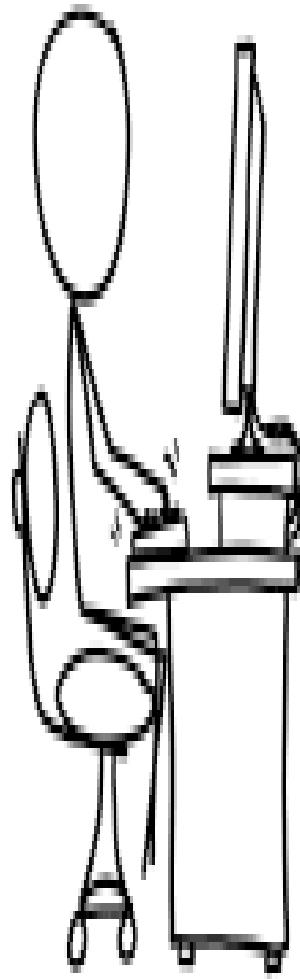
I HEARD THERE WAS
A SECRET CHORD
THAT DAVID PRESSSED
AND IT TYPED A WORD



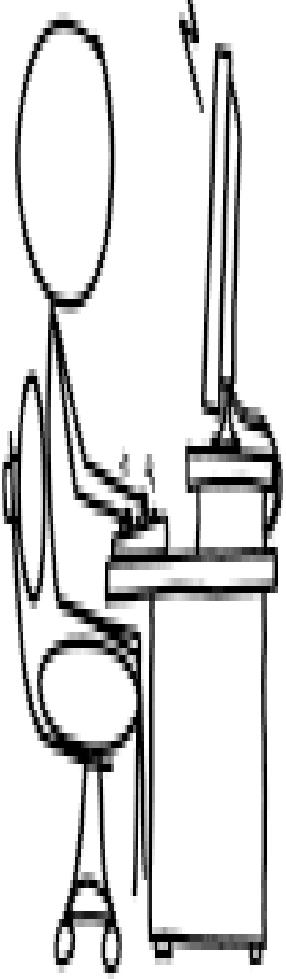
BUT YOU
DON'T USE
A CHORDED
KEYBOARD,
DO YOU



IT GOES LIKE THIS,
<CONTROL> AND <SHIFT>
THE OTHER HAND
HITS H AND <LEFT>



AND ALL
AT ONCE IT
TYPES OUT
HALLELUJAH



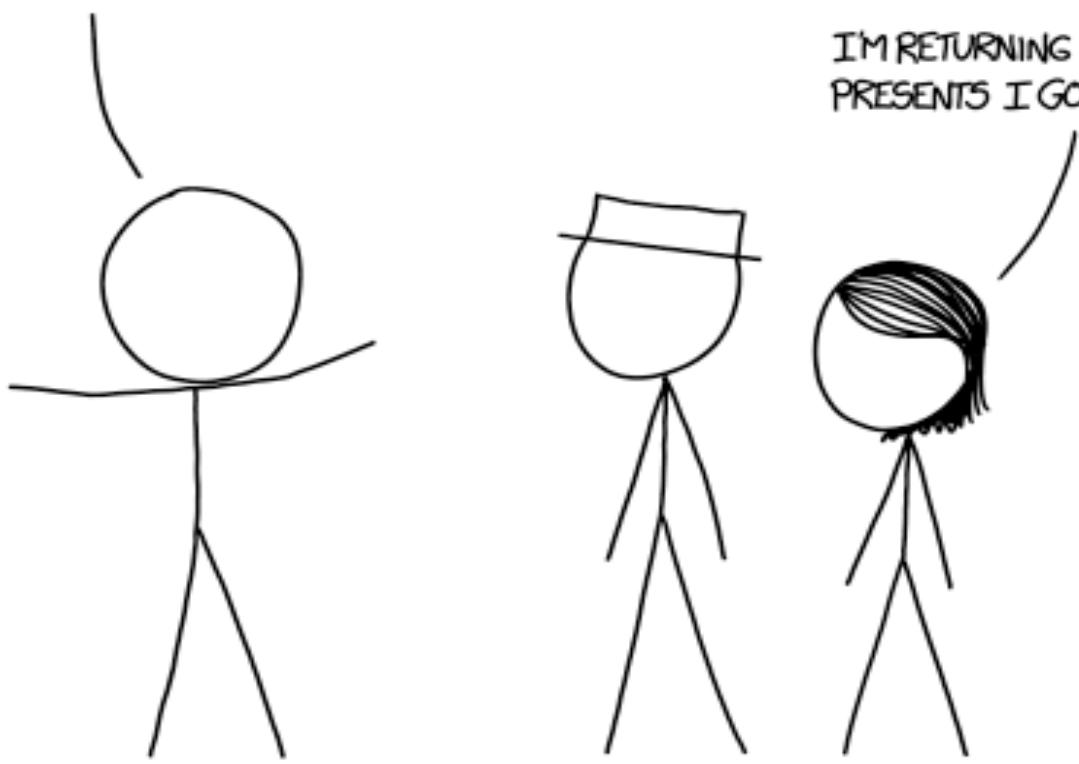
TODAY IS CHRISTMAS EVE. YESTERDAY WAS CHRISTMAS EVE EVE.

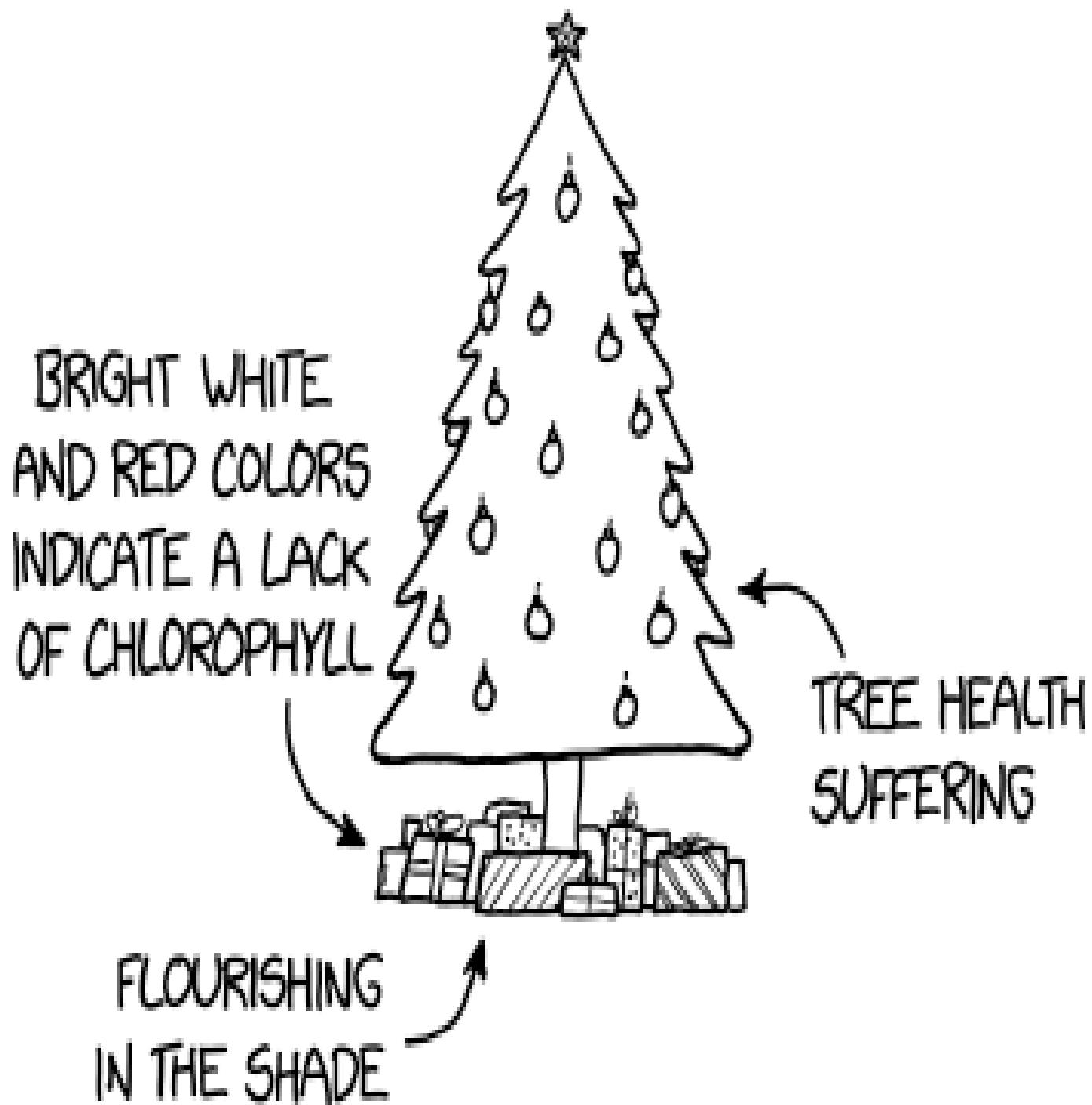
UH HUH...

OF COURSE, TOMORROW IS CHRISTMAS. AND THEN, MY FAVORITE...

OH NO.

I'M RETURNING THE
PRESENTS I GOT YOU.

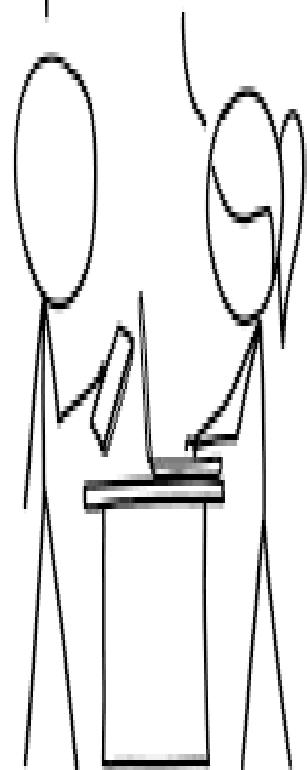




THE EVIDENCE IS CLEAR: CHRISTMAS
PRESENTS ARE PARASITIC PLANTS.

WHAT CAN YOU TELL FROM
GENOME COMPARISON?

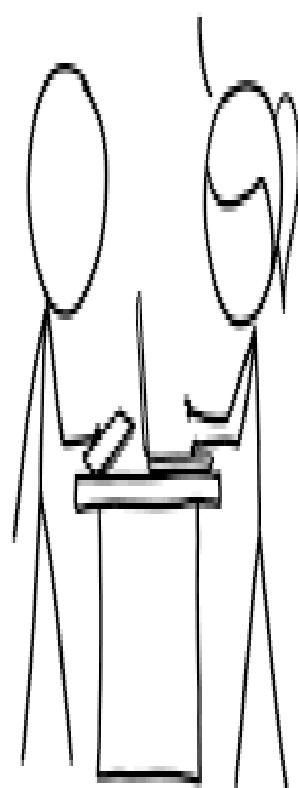
I THINK THERE'S A
DUPLICATION ON THE-
LOOK OUT!



BZ2222222

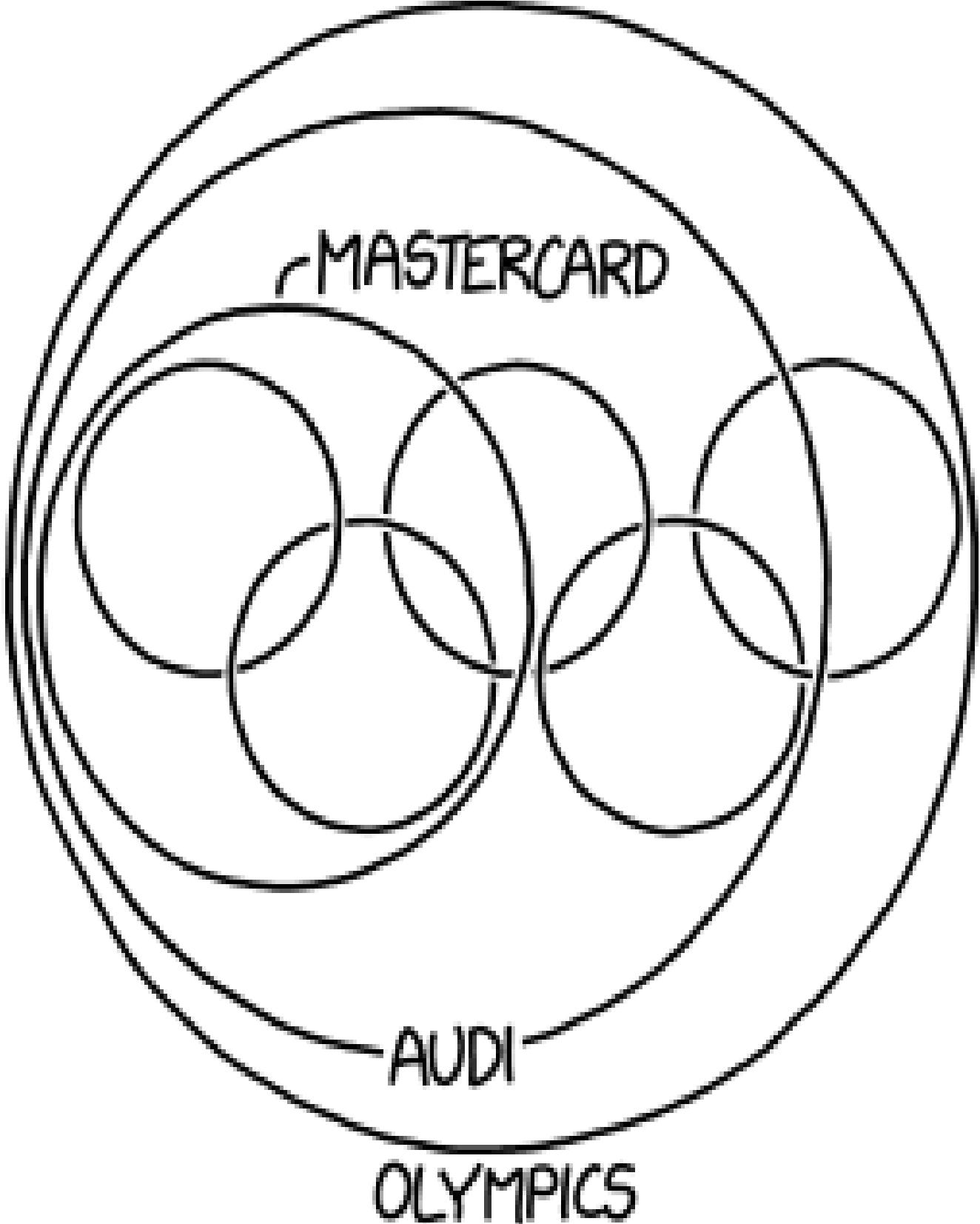
-A DUPLICATION IN THE
GENE RIGHT BEFORE THE
CLEAVAGE SITE, SO THE
RESULTING PROTEIN-

LOOK OUT!



BZ2222222

OUR GENETICS WORK HAS PRODUCED 17-SECOND CICADAS,
BUT WE'RE HAVING A HARD TIME FIGURING OUT HOW.



MASTERCARD

AUDI

OLYMPICS

NORMALLY WE WOULD REMOVE
YOUR APPENDIX FROM YOUR BODY.

BUT THANKS TO NEW SURGICAL
TECHNIQUES, WE'RE NOW ABLE
TO REMOVE YOUR ENTIRE BODY
FROM AROUND YOUR APPENDIX!

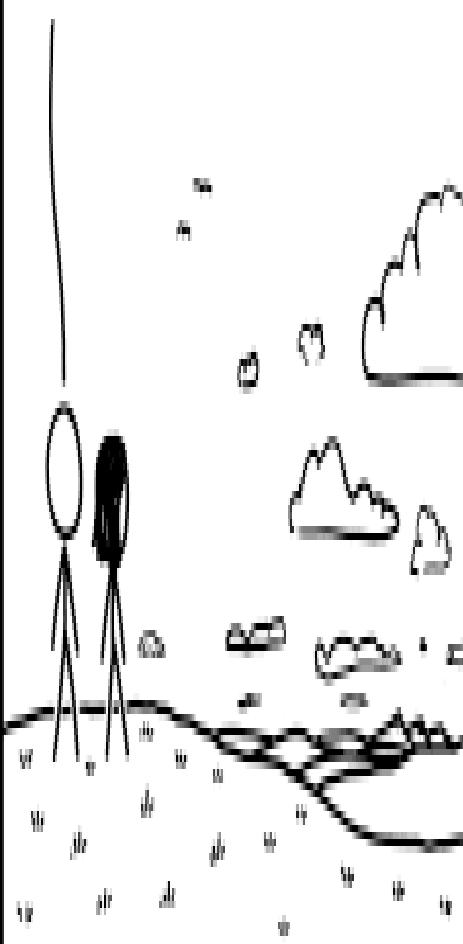


1. COME UP WITH
NEW IDEA
2. CONVINCE PEOPLE
IT'S GOOD
3. NEW IDEA IS
ADOPTED
4. Check whether
it works

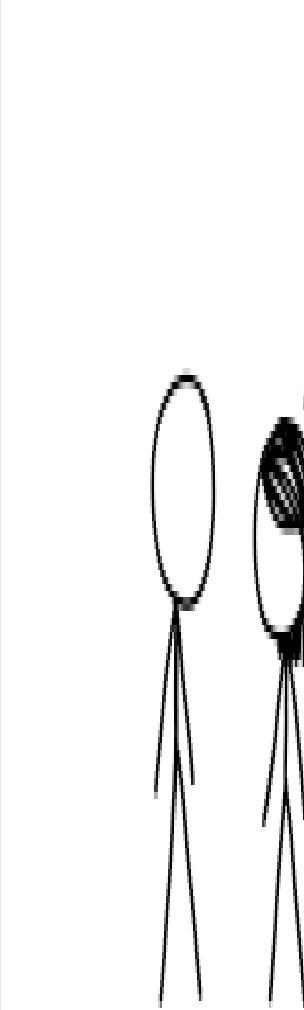
THE INVENTION OF CLINICAL TRIALS

IT'S WEIRD TO THINK THERE
ARE COUNTLESS PLANETS WITH
AIR AND STUFF BUT NO LIFE.

BILLIONS OF YEARS OF CLOUDS
MAKING COOL SHAPES WITH
NO ONE TO LOOK AT THEM.

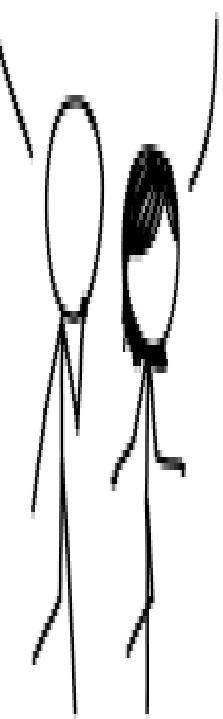


YEAH, IT SEEMS LIKE A WASTE, THE
UNIVERSE GETTING THE COMPLEX
FLUID DYNAMICS RIGHT FOR EVERY
MOMENTARY SWIRL OF CLOUD
JUST A HUGE AMOUNT OF WORK.



MAYBE ATMOSPHERES JUST
HAVE SMOOTH LAMINAR FLOW
UNTIL SOMEONE LOOKS CLOSELY.

OR MAYBE THE UNIVERSE
JUST LIKES MAKING SWIRLY
CLOUDS, AND IS ANNOYED
THAT WE'RE WATCHING.

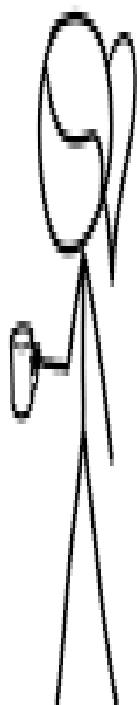


Q:

HOW MANY
HOLES ARE
THERE IN A
COFFEE CUP?

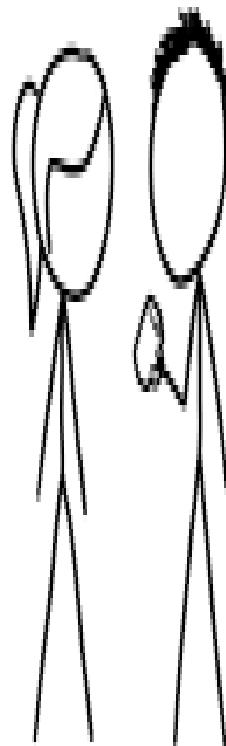
TOPOLOGIST

ONE.



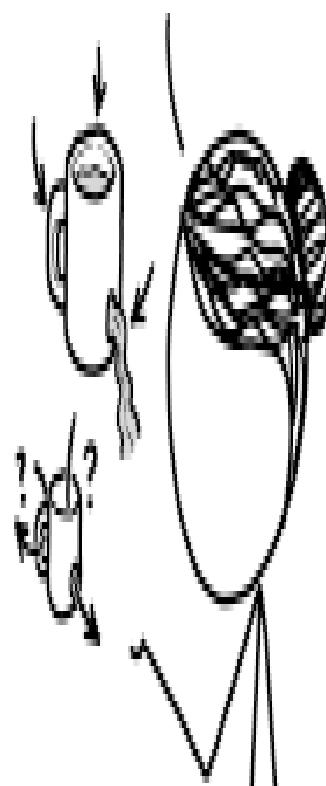
NORMAL PERSON

IDK, DOES
THE OPENING
COUNT AS
A HOLE?



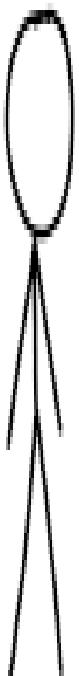
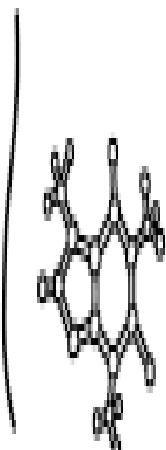
PHILOSOPHER

TO ANSWER THAT
QUESTION, CONSIDER
ANOTHER: IF WE DRILL
A HOLE IN THE SIDE,
HOW MANY HOLES
ARE THERE NOW?



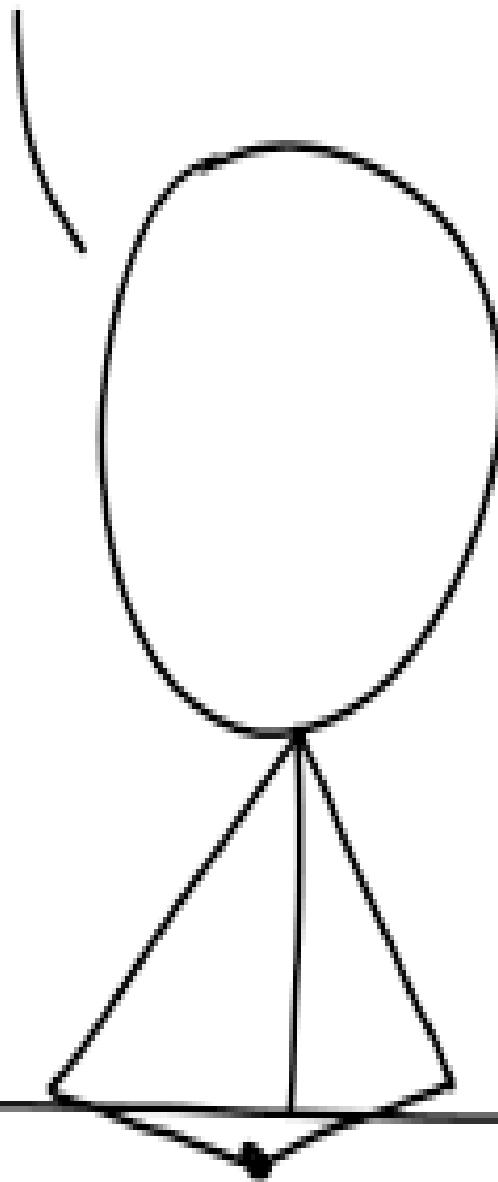
CHEMIST

10²¹ IN THE
CAFFEINE
ALONE



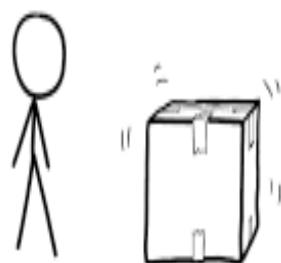
TONIGHT: ARE MILLENNIALS KILLING THE JOINT REPLACEMENT INDUSTRY?

OPERATION RATE PER 100,000		
	KNEE	HIP
BABY BOOMERS	720	390
MILLENNIALS	1	3



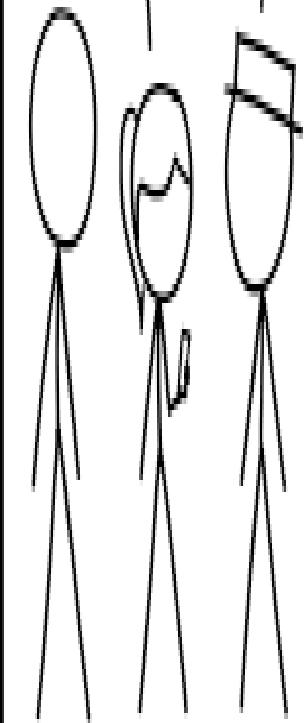
STATS PET PEEVE: PEOPLE MIXING UP COHORT EFFECTS AND AGE EFFECTS

COLLECTOR'S
EDITION



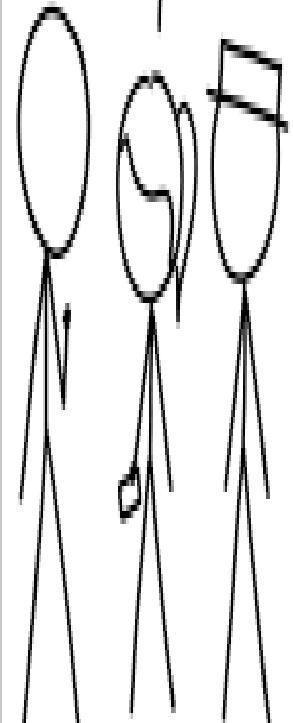
OH, HUH. CALIFORNIA
PASSED A LAW GIVING
COLLEGE ATHLETES
FULL RIGHTS TO THEIR
NAMES AND IMAGES.

GOOD, I
THINK?



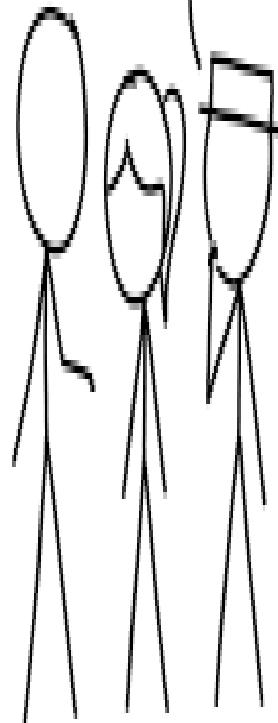
THAT'S NOTHING. OUR
STATE GAVE COLLEGE
PLAYERS RIGHTS TO
USE THE NAMES AND
IMAGES OF ANY
CALIFORNIA ATHLETES.

IT DID NOT.



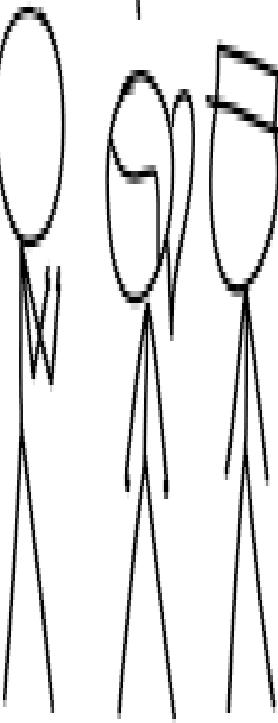
SURE IT DID!
THAT'S HOW OUR
SCHOOL FIELDDED A
BASKETBALL TEAM
MADE UP ENTIRELY
OF STEPH CURRYS.

OR IS THE PLURAL
'STEPHS CURRY'?



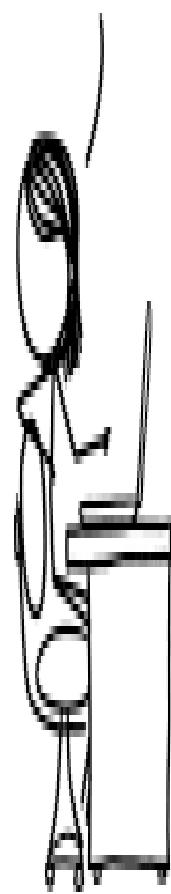
THEY DIDN'T ALL COPY THE ORIGINAL.
STEPH, THOUGH. ONE PLAYER GOT THE
RIGHTS TO HIS NAME, THEN THE NEXT
PLAYER GOT IT FROM THEM, AND SO ON.
THIS PROCESS IS KNOWN AS "CURRYING."

...I HATE YOU SO MUCH.



HAVE YOU SEEN
THIS BIG COMET,
C/2014 UN27?

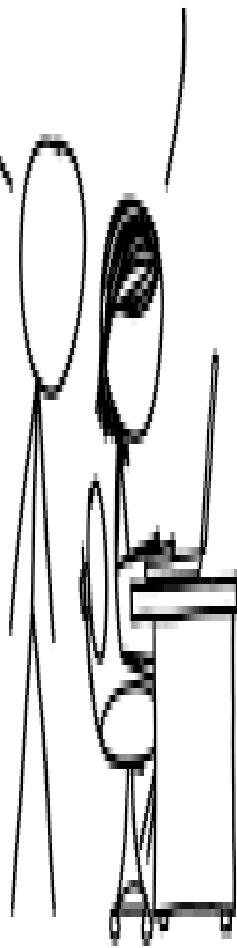
IT'LL PASS NEAR
SATURN'S ORBIT
IN 10 YEARS.



WOW, LOOK AT THE ORBITAL PERIOD.

YEAH, IT HASN'T BEEN TO THIS
PART OF THE SOLAR SYSTEM
SINCE HUMANS EVOLVED.

AT LEAST.



WELL, WE DEFINITELY NEED TO TACKLE THE PACIFIC GARBAGE PATCH, YOU TACKLE ORBITAL DEBRIS.

WHAT ABOUT THE MOON FOOTPRINTS?

SWEEEP THEM UP, COLLECT
THE MARS ROVERS, TOO!

WE CAN PUT THEM
BACK ONCE IT'S GONE.



BACKLASH: INTERNET USERS ARE OUTRAGED OVER NEWS STORIES USING A HANDFUL OF RANDOM COMMENTS TO SUPPORT ARBITRARY NARRATIVES!



I CAN'T BELIEVE HOW EASY IT IS TO CREATE AN IMPRESSION OF PEER CONSENSUS.

□ ▲ ○ ⋯ ⏪



THIS DYNAMIC IS SO EASILY MANIPULATED AND IT FREAKS ME OUT. xkcd.com/1019

□ ▲ ○ ⋯ ⏪



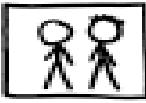
EVERY TIME I SHARE SOMETHING AND A FRIEND RESPONDS "HAHA, DID YOU SEE THE TOP COMMENTS..." IT JUST REMINDS ME HOW INFLUENTIAL THESE THINGS ARE IN SHAPING THE IMPRESSIONS OF EVEN RELATIVELY INTERNET-SAVVY READERS.

□ ▲ ○ ⋯ ⏪



NPR GOT RID OF COMMENTS IN 2016 WHEN THEY REALIZED THEY ALL CAME FROM A HANDFUL OF VISITORS POSTING HUNDREDS OF TIMES A MONTH.

□ ▲ ○ ⋯ ⏪



EVENTUALLY SOCIAL NORMS WILL ADAPT TO THIS STUFF, BUT IT NEEDS TO HURRY UP.

□ ▲ ○ ⋯ ⏪



I HAVE NINE FOLLOWERS AND CREATED MY ACCOUNT LAST MONTH; HOW AM I BEING QUOTED IN THIS NEWS ARTICLE??

□ ▲ ○ ⋯ ⏪

COMMONLY MISPRONOUNCED EQUATIONS

$$F = G \frac{m_1 m_2}{r^2}$$

FUH-JAM-ER

$$E = mc^2$$

EM-CAH-TOO

$$a^2 + b^2 = c^2$$

AT-BOOT-COOT

$$A = \pi r^2$$

$$H = -\sum p_i \log p_i$$

$$PV = nrt$$

APP-ER-TOO

HA-SPLOG-PEE

PAV-NURT

$$e^{i\pi} = -1$$

$$F = ma$$

$$\frac{\partial^2 u}{\partial t^2} = c \frac{\partial^2 u}{\partial x^2}$$

EYE-PIN

FEE-MAH

DOOT CAH-DOOX

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

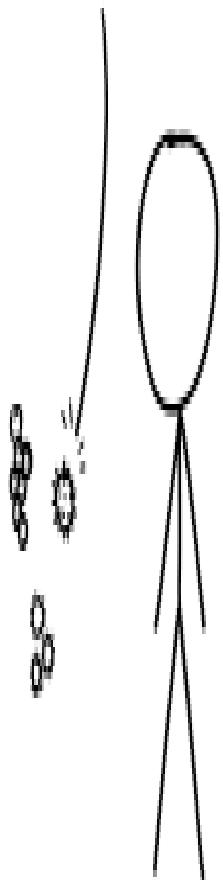
FAX-LIM-OH FAX-UH-FOX

ZA-BO-BA FAK-TOH-AH

HI THERE! WE'RE THE
VIRUSES THAT CAUSE
THE COMMON COLD.

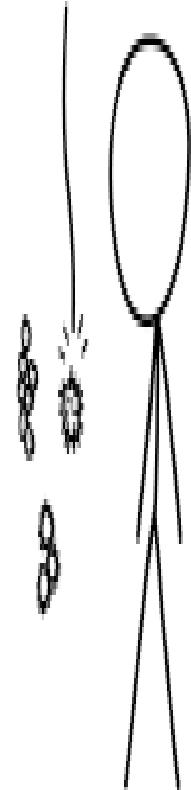
THIS HANDWASHING...

IT STOPS WHEN THIS
IS ALL OVER, RIGHT?



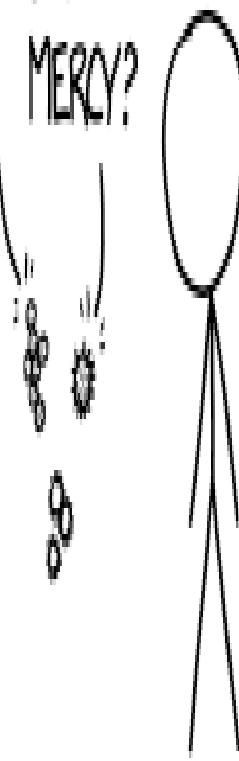
IT'S JUST, IT'S
MAKING THINGS
REALLY HARD
FOR US, TOO.

MAYBE WE
COULD MAKE
A DEAL?



WE WON'T KILL YOU!
WE JUST WANT TO GET
BACK IN YOUR THROAT
AND MAKE YOU FEEL
GROSS NOW AND THEN.

SHOW US
SOME
MERCY?

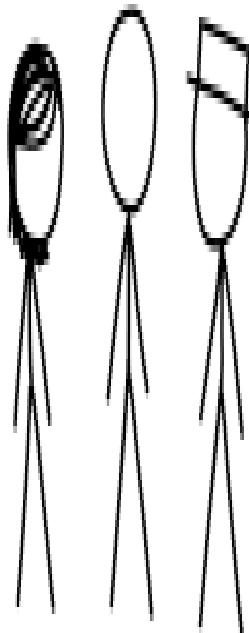


NO.



COVID HAS MADE ME SO CURIOUS ABOUT COLDS. THE NEXT TIME I GET ONE, I WANT TO KNOW WHICH VIRUS IT IS SPECIFICALLY.

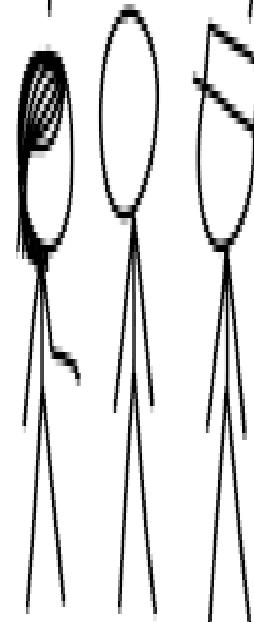
A RHINOVIRUS? RSV? MILD INFLUENZA? OR SOMETHING WEIRD LIKE METAPNEUMOVIRUS?



HOW DISTINCT ARE THEY?
COULD YOU LEARN TO TELL THEM APART?

SEE, I WONDER!

I COULD GET
A SEQUENCER
FROM WORK...

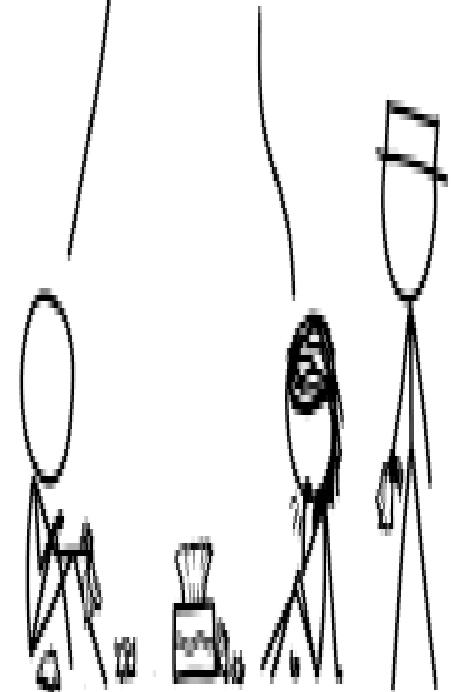


SEVERAL YEARS LATER...

AH YES, THIS ONE HAS THE RICH,
FULL-BODIED BOUQUET OF RSV, BUT
THE HEADY CONGESTION LENDS IT A
LINGERING RHINOVIRUS NOSEFEEL.

COUGH

QUITE RIGHT!



COMMON STAR TYPES

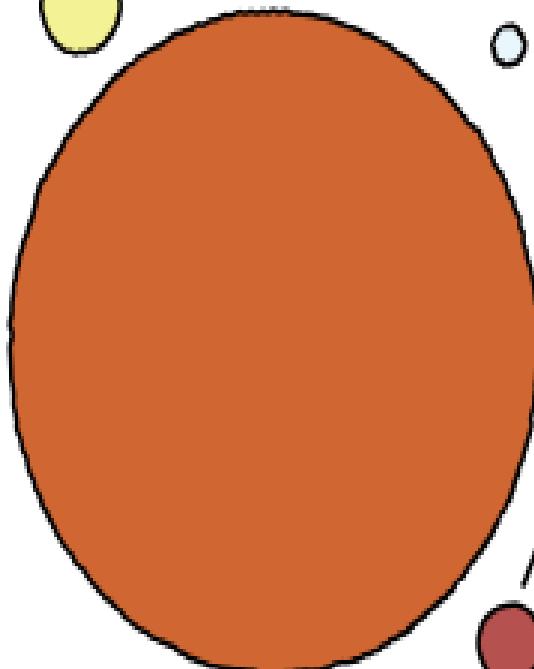
YELLOW DWARF —

WARM, STABLE,
SLOWLY GROWING



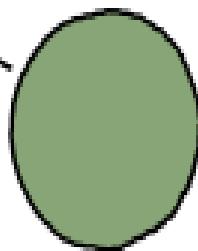
RED GIANT —

HUGE, COOL,
LUMINOUS



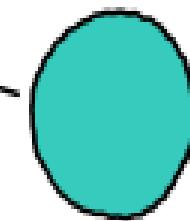
GREEN ELF —

OLD, DIMINISHES
INTO THE WEST



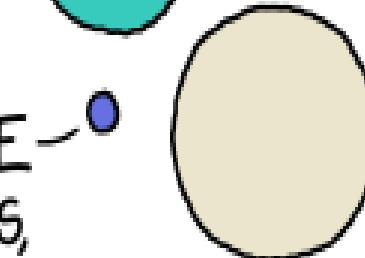
TEAL SPHYNX —

CRYPTIC, ETERNAL



INDIGO BANSHEE —

BRIGHT, PORTENTOUS,
EXTREMELY LOUD



— BEIGE GORGON

DANGEROUS TO OBSERVE
AT OPTICAL WAVELENGTHS

— WHITE DWARF

SMALL, HOT, DIM



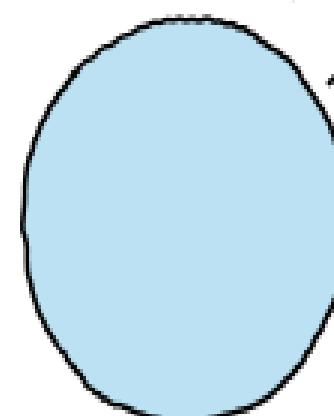
— RED DWARF

SMALL, COOL,
ANCIENT, DIM



— BLUE GIANT

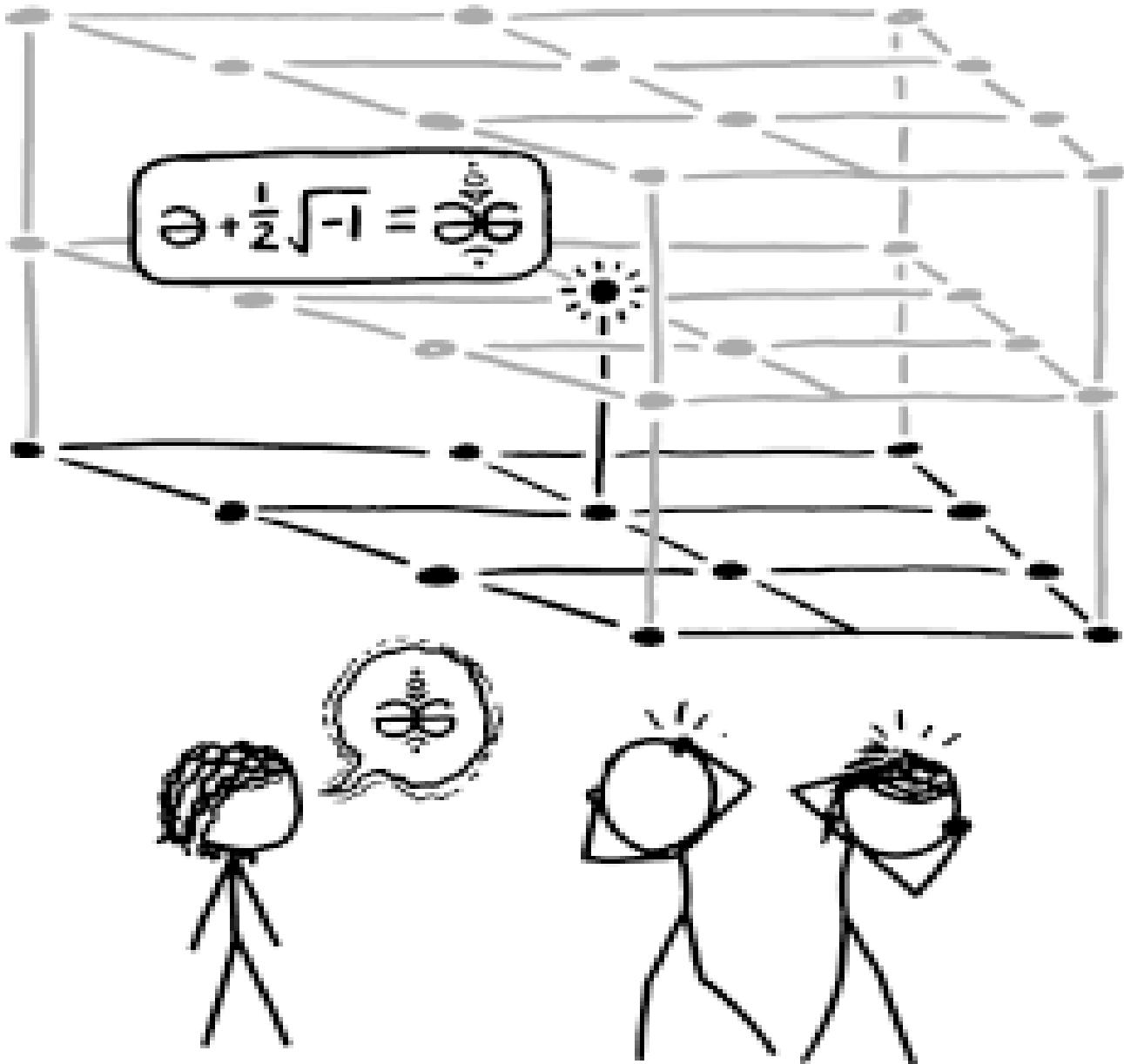
LARGE, HOT,
SHORT-LIVED



— GRAY WIZARD

WISE, POWERFUL,
MERCURIAL





LINGUISTICS TIP:

EXTEND THE IPA VOWEL PLANE ALONG
THE IMAGINARY AXIS TO PRODUCE THE
COMPLEX VOWELS, CURSED SOUNDS WHICH
THE HUMAN MIND CANNOT COMPREHEND.

I HAVE A QUESTION.

WELL, LESS OF A QUESTION
AND MORE OF A COMMENT.

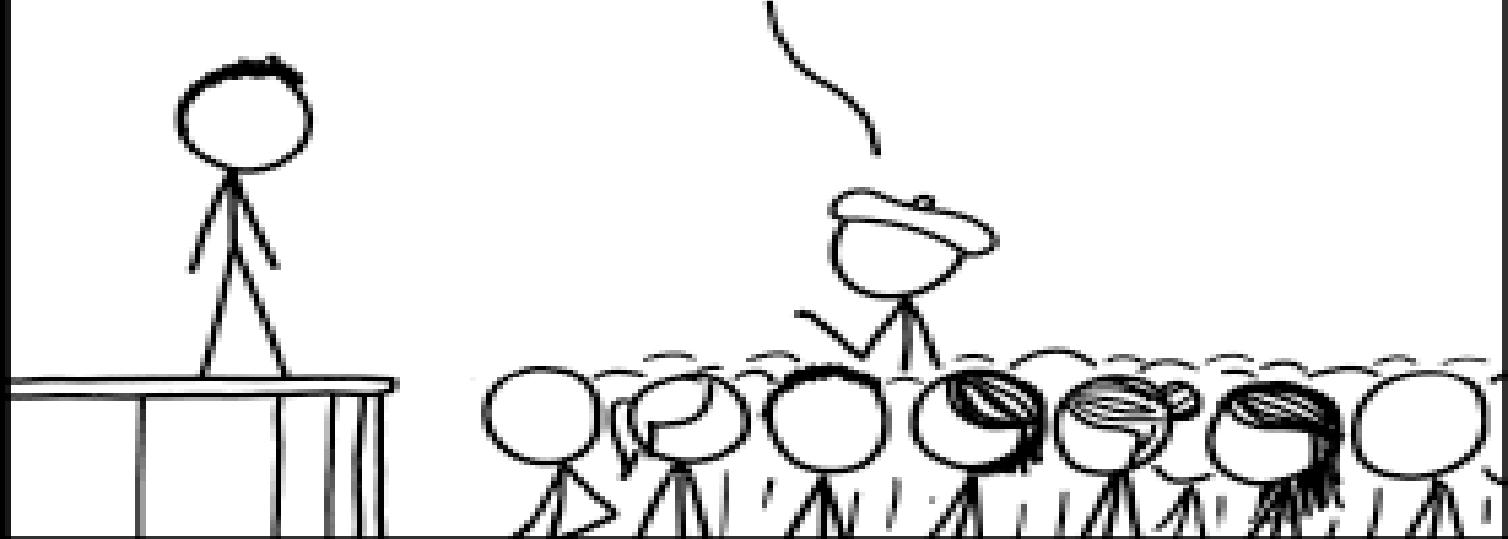
I GUESS IT'S LESS OF A COMMENT
AND MORE OF AN UTTERANCE

REALLY IT'S LESS AN UTTERANCE,
MORE AN AIR PRESSURE WAVE.

IT'S LESS AN AIR PRESSURE WAVE
AND MORE A FRIENDLY HAND WAVE.

I GUESS IT'S LESS A FRIENDLY
WAVE THAN IT IS A FRIENDLY BUG.

I FOUND THIS BUG AND NOW WE'RE
FRIENDS. DO YOU WANT TO MEET IT?



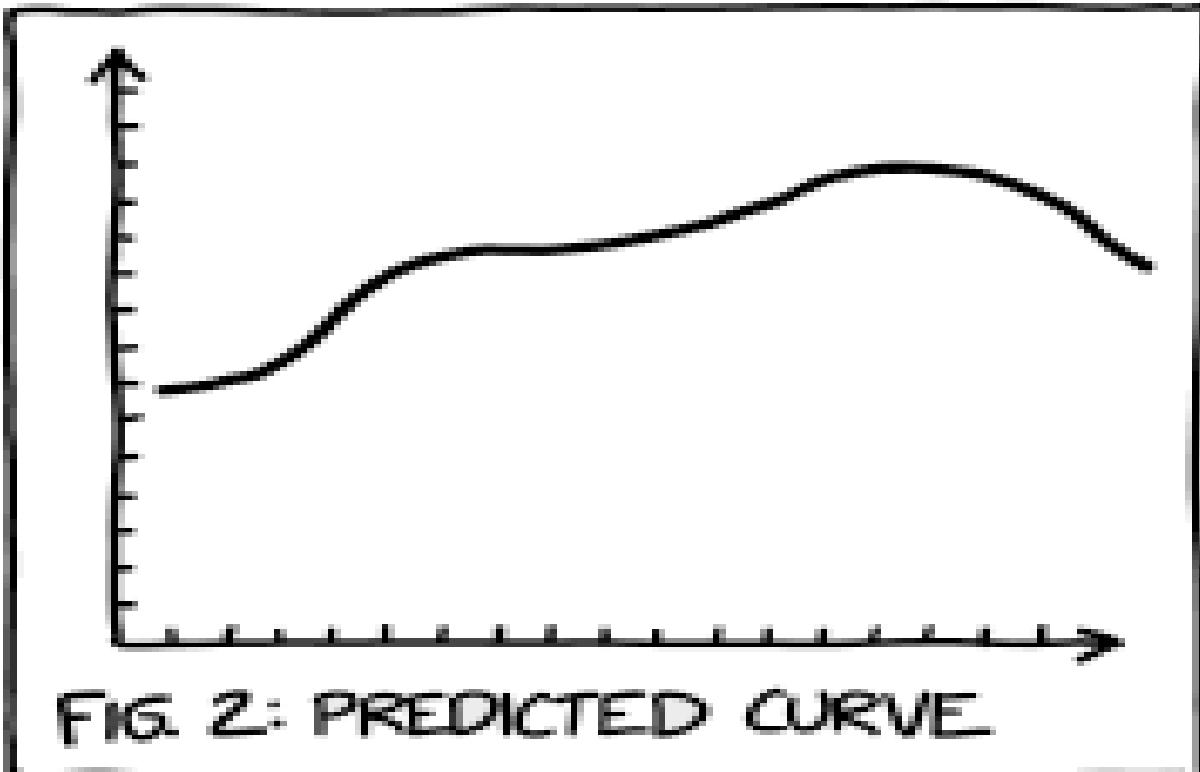


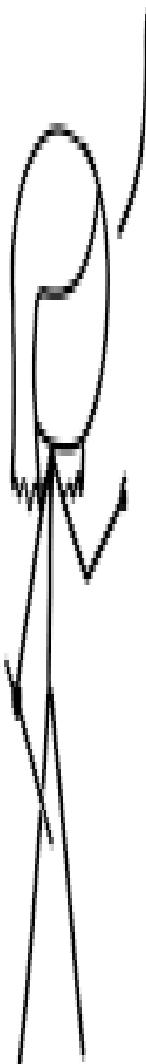
FIG. 2: PREDICTED CURVE

SCIENCE TIP: IF YOUR MODEL IS BAD ENOUGH, THE CONFIDENCE INTERVALS WILL FALL OUTSIDE THE PRINTABLE AREA.

IF YOU DON'T CONTROL FOR
CONFOUNDING VARIABLES,
THEY'LL MASK THE REAL
EFFECT AND MISLEAD YOU.

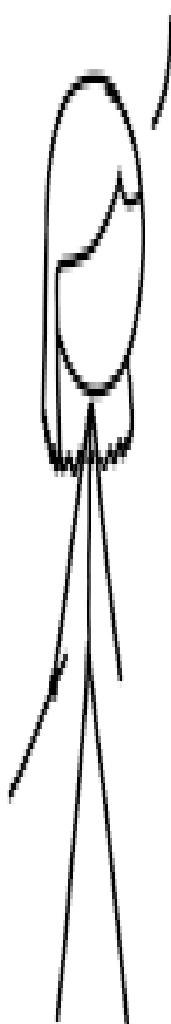


BUT IF YOU CONTROL FOR
TOO MANY VARIABLES,
YOUR CHOICES WILL SHAPE
THE DATA, AND YOU'LL
MISLEAD YOURSELF.



SOMEWHERE IN THE MIDDLE IS
THE SWEET SPOT WHERE YOU DO
BOTH, MAKING YOU DOUBLY WRONG.

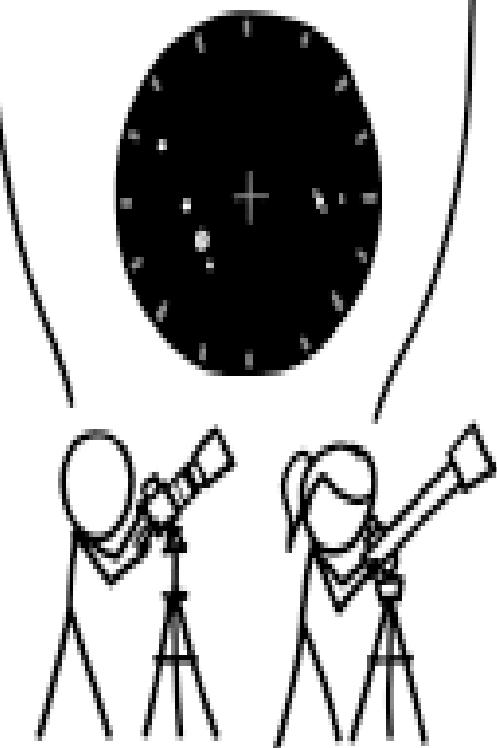
STATS ARE A FARCE AND TRUTH IS
UNKNOWABLE. SEE YOU NEXT WEEK!



WHAT PEOPLE IMAGINE ASTRONOMERS OBSERVING A CONJUNCTION ARE LIKE

6.15 ARCMINUTES!

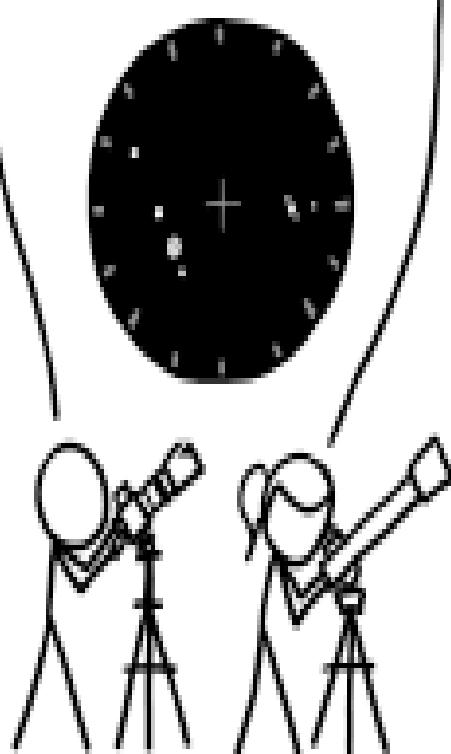
STUPENDOUS! THIS
CONFIRMS EINSTEIN!



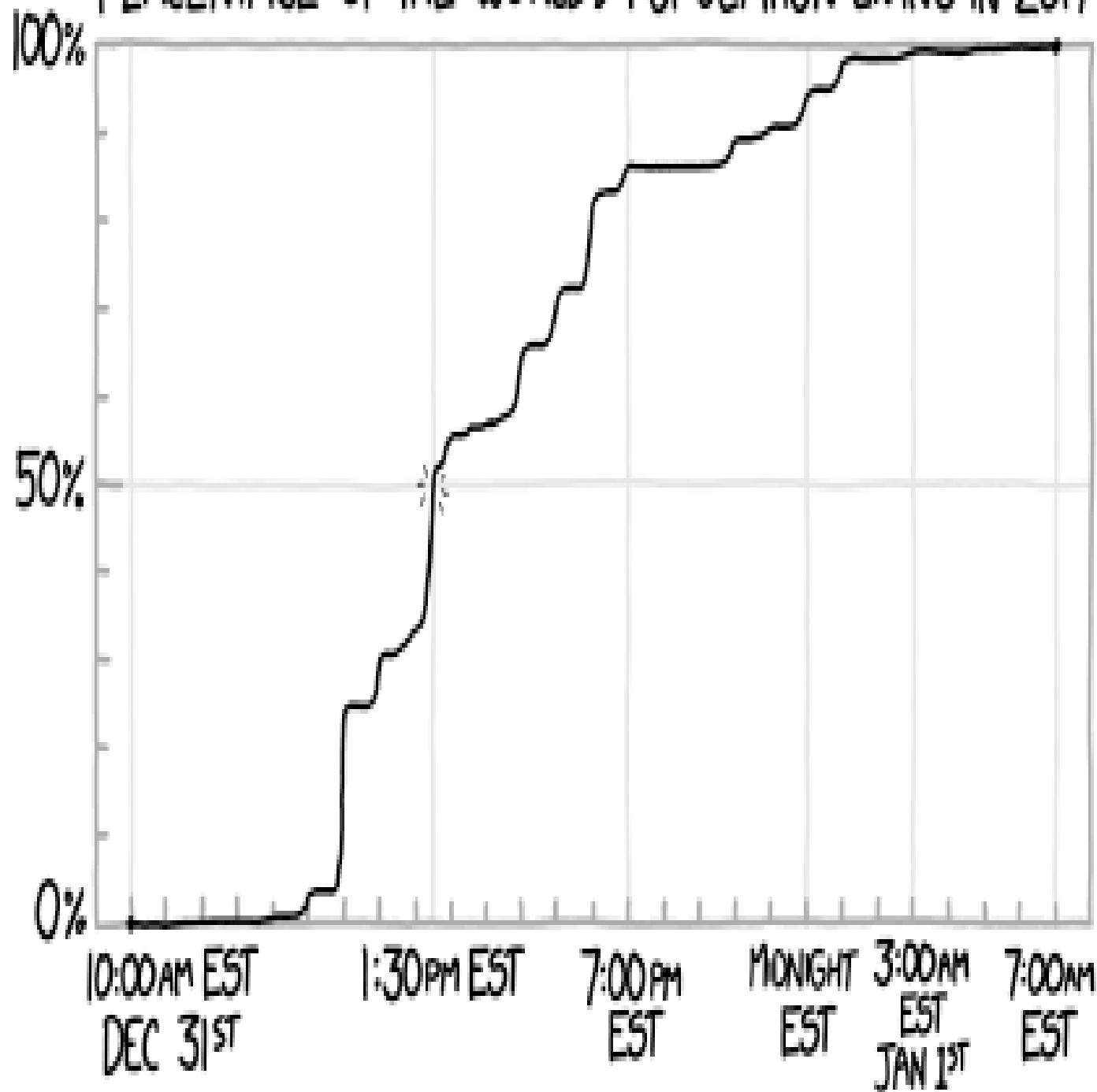
WHAT THEY'RE ACTUALLY LIKE

WOW! LOOK HOW
CLOSE THEY ARE!

IT'S SO COOL!!
NOW K!!!!SSSSSS!!



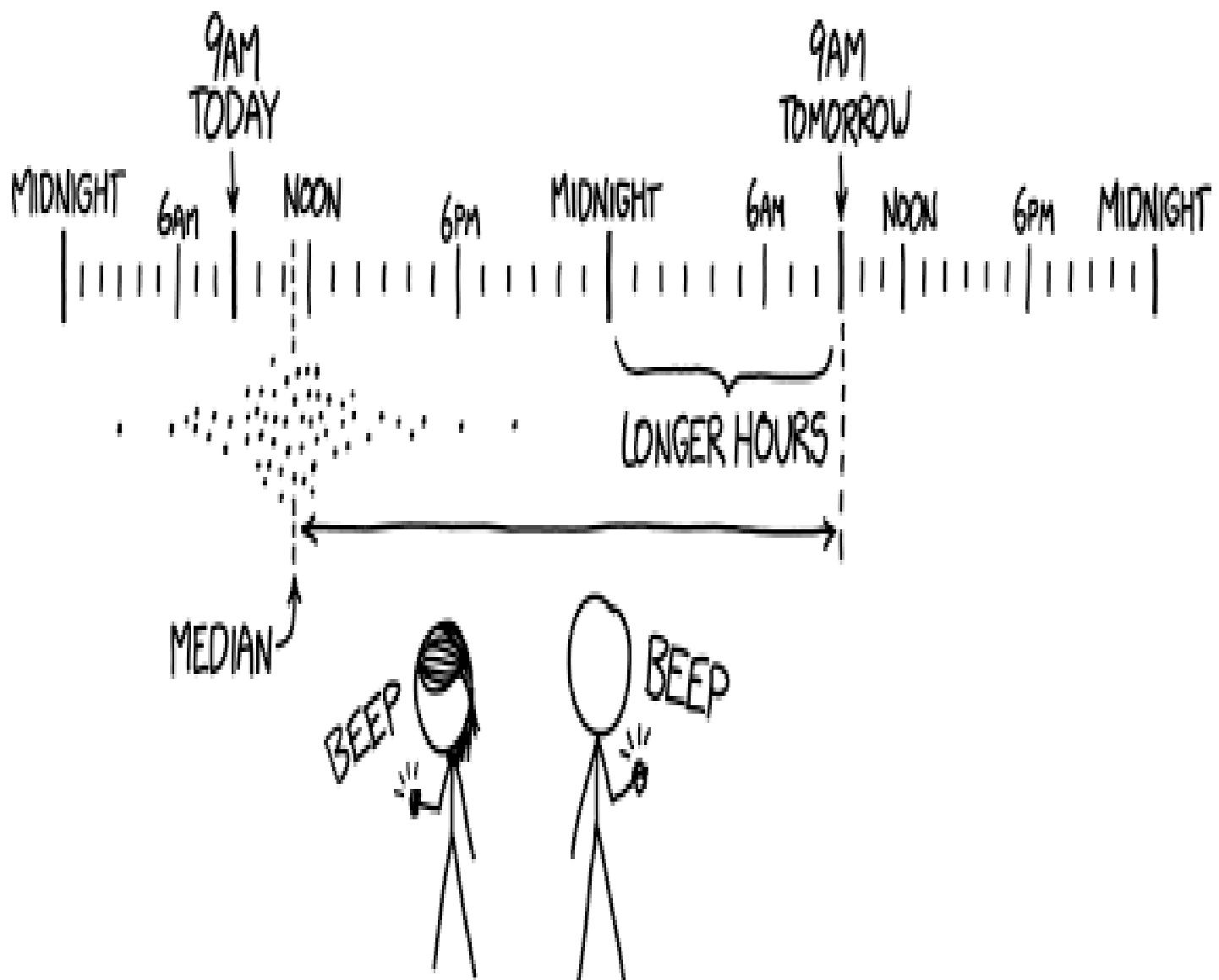
PERCENTAGE OF THE WORLD'S POPULATION LIVING IN 2019



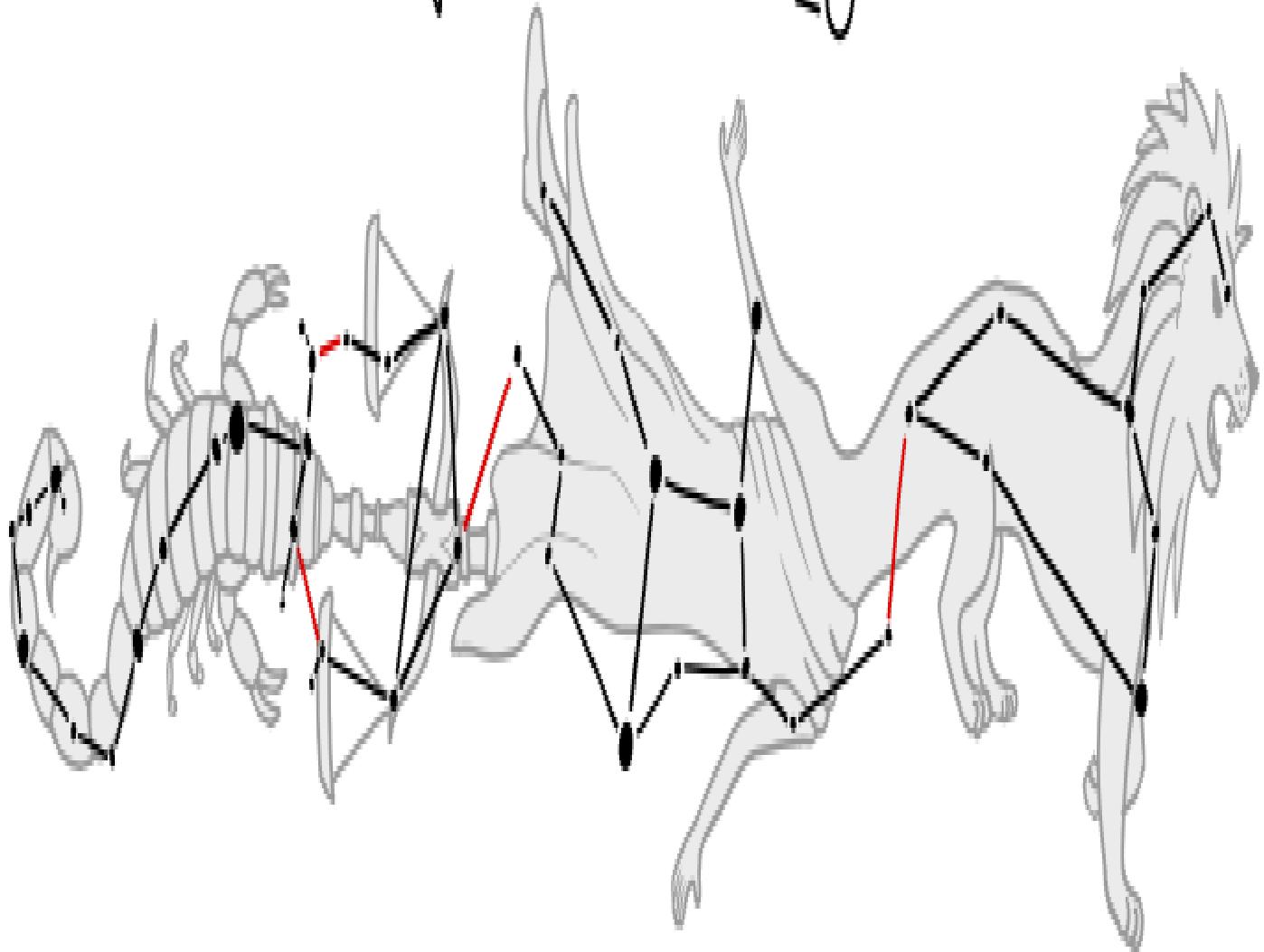
CONSENSUS NEW YEAR: AS OF 1:30PM EASTERN TIME (6:30PM UTC)
A MAJORITY OF THE WORLD'S POPULATION WILL BE LIVING IN 2019.

PROPOSAL: CONSENSUS TIME

EVERY DAY, ANYONE IN THE TIME ZONE CAN PRESS A BUTTON WHEN THEY FEEL LIKE IT'S 9 AM. THE NEXT DAY, CLOCKS SLOW DOWN OR SPEED UP TO MATCH THE MEDIAN CHOICE FROM THE PREVIOUS DAY.



VIRGIBRASCORPLEO



I GOT KICKED OUT OF THE INTERNATIONAL ASTRONOMICAL UNION FOR ADDING
EXTRA LINES BETWEEN THE CONSTELLATIONS TO CREATE A MONSTROSITY.

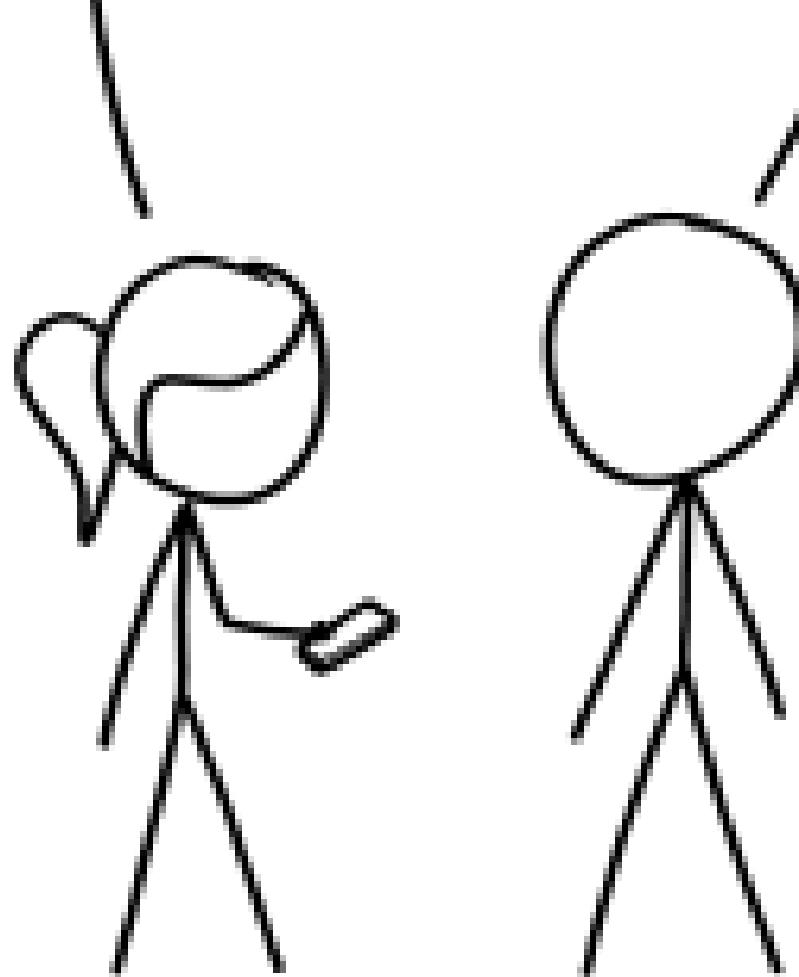
THE CONTIGUOUS 41 STATES



TIRED OF BEING LEFT OFF MAPS OF THE US, ALASKA AND HAWAII
BEGIN PRODUCING MAPS WITH OTHER STATES MISSING, TOO.

ARE YOU PLAYING WORDLE?

**NO, I'M IN THE
CONTROL GROUP.**



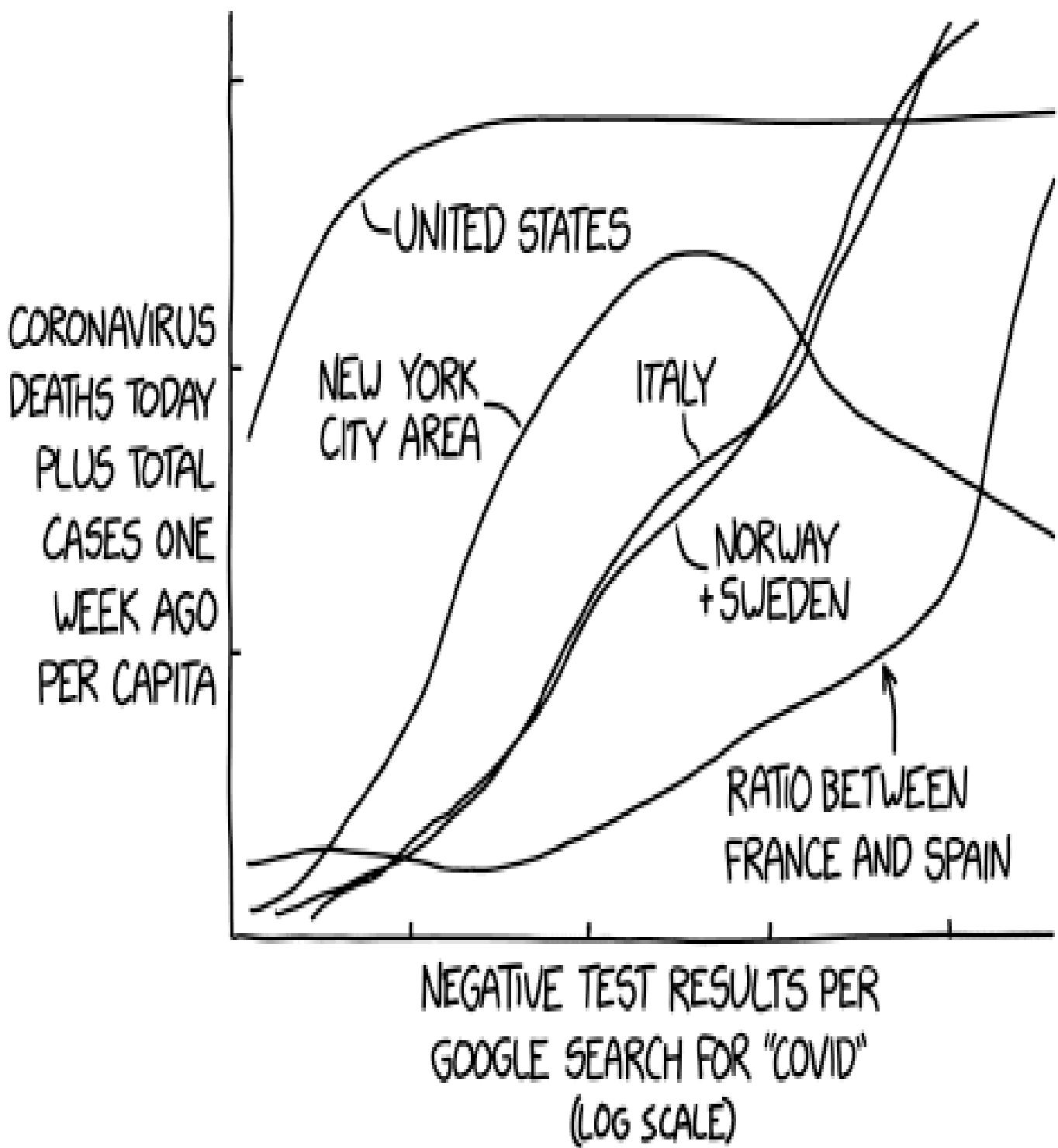
**MY NEW ALL-PURPOSE EXCUSE FOR
WHEN I'M NOT DOING SOMETHING**

WHAT THE NUMBER OF DIGITS IN YOUR COORDINATES MEANS

LAT/LON PRECISION

MEANING

28°N, 80°W	YOU'RE PROBABLY DOING SOMETHING SPACE-RELATED
28.5°N, 80.6°W	YOU'RE POINTING OUT A SPECIFIC CITY
28.52°N, 80.68°W	YOU'RE POINTING OUT A NEIGHBORHOOD
28.523°N, 80.683°W	YOU'RE POINTING OUT A SPECIFIC SUBURBAN CUL-DE-SAC
28.5234°N, 80.6830°W	YOU'RE POINTING TO A PARTICULAR CORNER OF A HOUSE
28.52345°N, 80.68309°W	YOU'RE POINTING TO A SPECIFIC PERSON IN A ROOM, BUT SINCE YOU DIDN'T INCLUDE DATUM INFORMATION, WE CAN'T TELL WHO
28.5234571°N, 80.6830941°W	YOU'RE POINTING TO WALDO ON A PAGE
28.523457182°N, 80.683094159°W	"HEY, CHECK OUT THIS SPECIFIC SAND GRAIN!"
28.523457182818284°N, 80.683094159265358°W	EITHER YOU'RE HANDING OUT RAW FLOATING POINT VARIABLES, OR YOU'VE BUILT A DATABASE TO TRACK INDIVIDUAL ATOMS. IN EITHER CASE, PLEASE STOP.



I'M A HUGE FAN OF WEIRD GRAPHS, BUT EVEN I ADMIT SOME
OF THESE CORONAVIRUS CHARTS ARE LESS THAN HELPFUL.

SO THAT'S THE CORONAVIRUS GENOME, HUH?

IT'S WEIRD THAT YOU
CAN JUST LOOK AT
IT IN A TEXT EDITOR.

IT'S ESSENTIAL!
WE GENETICISTS
DO MOST OF OUR
WORK IN NOTEBOOK.

NOTE PAD?

YUP! NICER LABS USE WORD,
WHICH LETS YOU CHANGE THE
GENOME FONT SIZE AND MAKE
NUCLEOTIDES BOLD OR ITALIC.

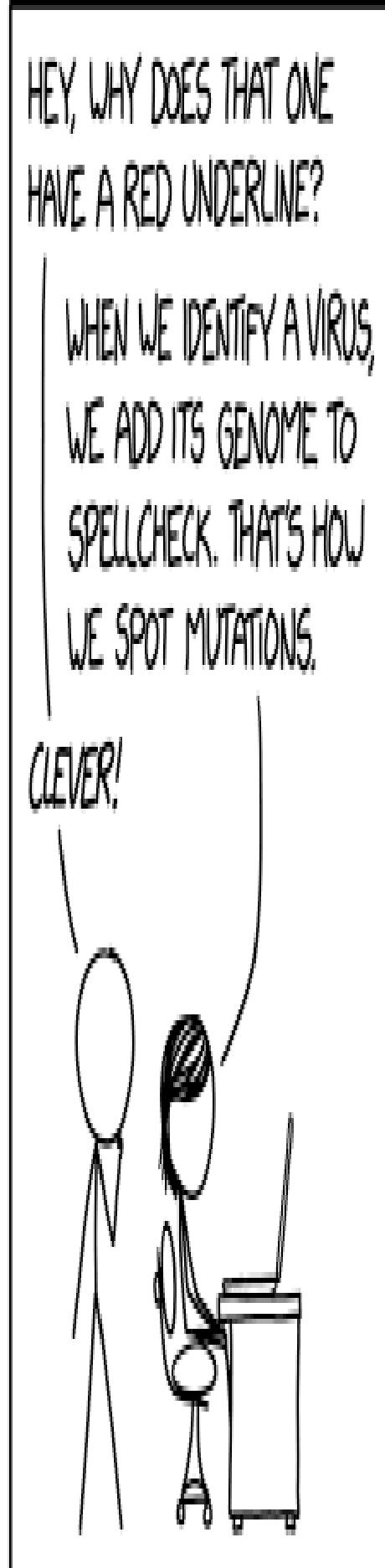
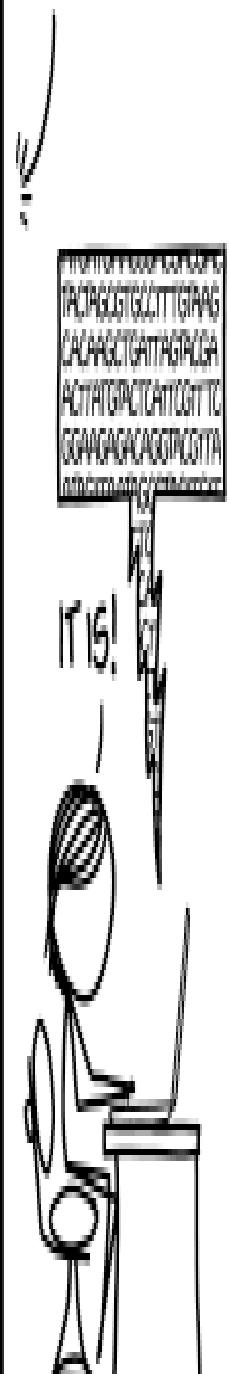
AH, OKAY.

**THAT EXTRA FORMATTING
IS CALLED "EPIGENETICS."**

HEY, WHY DOES THAT ONE
HAVE A RED UNDERLINE?

WHEN WE IDENTIFY A VIRUS,
WE ADD ITS GENOME TO
SPELLCHECK. THAT'S HOW
WE SPOT MUTATIONS.

CLEVER!



HEY, IF YOU HAVE THE
CORONAVIRUS GENOME
AS A TEXT FILE, CAN
YOU EMAIL IT TO ME?

SURE.
I
...WHY?

NOTHING.

I... SEE.

WELL, HERE
YOU GO.

CLICK

GAAAGGTTTAA
ATGGAGAGGCC
TTGTCCTGT
TAATAAGAA
-24602 TADY

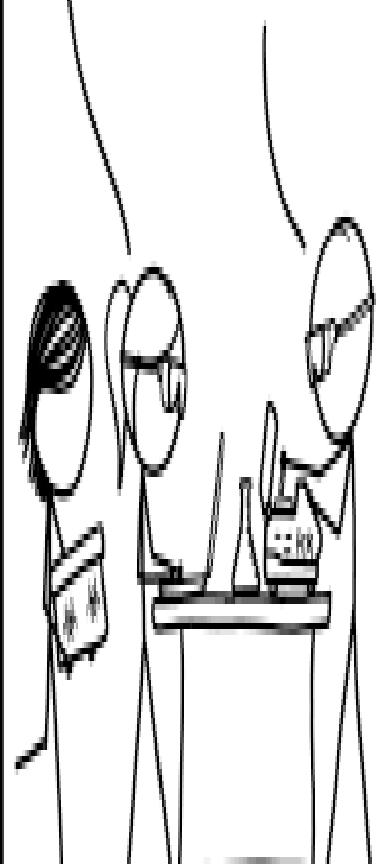
OKAY, IT'S TOO LONG FOR TWITTER,
BUT IT CAN FIT IN A FACEBOOK POST.

UNSETTLING THAT YOUR FIRST
INSTINCT IS "SHARE IT ONLINE"

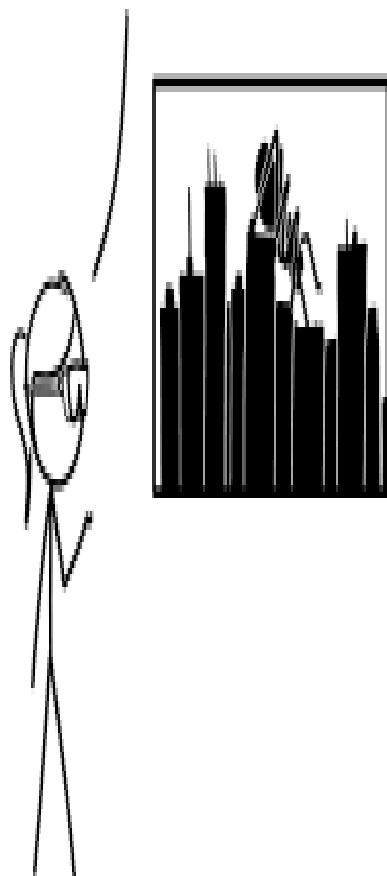
IT'S COOL, I SANITIZED MY
PHONE BEFORE POSTING.

FEELS LIKE WE MISSED THE
WINDOW FOR THE "COVID-19"
RENAMING. "CORONAVIRUS"
IS JUST TOO CATCHY.

BUT IT'S NOT SPECIFIC.
THERE ARE LOTS OF
CORONAVIRUSES.



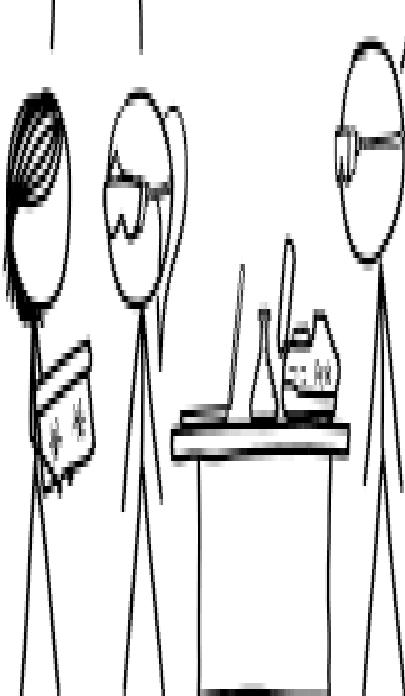
I THINK IT'S FINE. IT'S LIKE, YOU KNOW
THE GIANT SPIDER DOWNTOWN THAT SITS
ON THE BUILDINGS AND SOMETIMES EATS
CARS? I THINK TECHNICALLY IT'S A
MUTANT T. ANNEXA WOLF SPIDER, BUT
EVERYONE JUST CALLS IT "THE SPIDER"
AND WE ALL KNOW WHAT THEY MEAN.



I'VE BEEN MEANING TO ASK, WHAT'S WITH
THAT SPIDER? SHOULD WE...DO SOMETHING?

HONESTLY, I'VE BEEN TOO BUSY
WITH THE VIRUS STUFF TO LOOK
INTO IT—I JUST CHANGED MY
COMMUTE TO AVOID MAIN ST.

YEAH, THAT'S FAIR.
ONE THING AT A TIME.



IT'S HARD TO GET PEOPLE TO AGREE ON ANYTHING IN POLLS.

BUT WE AGREE ABOUT THE CORONAVIRUS.

HERE'S HOW AMERICANS FEEL ABOUT COVID-19, ALONG WITH OTHER TOPICS THAT GET SIMILAR LEVELS OF AGREEMENT FOR COMPARISON.

COMPILED WITH HELP FROM HUFFPOST POLLING EDITOR
ARIEL EDWARDS-LEVY. SOURCES: XKCD.COM/2305/SOURCES

RECENT CORONAVIRUS POLLS

86% SAY "STAY-AT-HOME ORDERS ARE RESPONSIBLE GOVERNMENT POLICIES THAT ARE SAVING LIVES" RATHER THAN "AN OVER-REACTION" (ABC/IPSOS)

85% OPPOSE REOPENING SCHOOLS (NPR/MARIST)

91% OPPOSE RESUMING BIG SPORTING EVENTS (NPR/M.)

85% TRUST LOCAL HEALTH OFFICIALS AND HEALTH CARE WORKERS (AXIOS/IPSOS)

93% ARE TRYING TO MAINTAIN 6-FOOT DISTANCES WHILE IN PUBLIC (AXIOS/IPSOS)

81% SAY AMERICANS SHOULD CONTINUE TO SOCIAL DISTANCE FOR AS LONG AS IS NEEDED TO STOP THE CORONAVIRUS EVEN IF IT MEANS CONTINUED DAMAGE TO THE ECONOMY (POLITICO/MORNING CONSULT)

OTHER POLLS

81% ENJOY APPLE PIE (HUFFPOST/YOUGOV)

76% FEEL POSITIVELY ABOUT KITTENS (HUFFPOST/YOUGOV)

84% HAVE A FAVORABLE IMPRESSION OF TOM HANKS (IPSOS 2018)

89% SAY FAIR ELECTIONS ARE IMPORTANT TO DEMOCRACY (PEW)

86% FEEL POSITIVELY TOWARD BETTY WHITE (IPSOS 2011)

86% DO NOT TRUST KIM JONG-UN TO DO THE RIGHT THING (PEW 2019)

64% ARE CONCERNED ABOUT THE EMERGENCE OF "MURDER HORNETS" (YOUGOV)

HI.

HELLO. YOU
LOOK... FINE.

I HAVE NOW READ
VIRTUALLY EVERY
AVAILABLE SCIENTIFIC
PAPER ON COVID-19.

COOL, WHAT'D
YOU LEARN?

WELL, IT SEEKS THIS
VIRUS WANTS TO GET
INSIDE YOUR CELLS.

MHM...

BUT IT'S A TRAP! YOU
SHOULDN'T LET IT!

| I THINK WE KNEW THAT.
|
| BUT NOW I KNOW IT
| WITH ERROR BARS!

CORONAVIRUS WORRIES

MORE HEALTHY ↑

WHETHER YOU'RE
REMEMBERING
TO DRINK WATER
AND REST

WHETHER YOUR FRIENDS AND
FAMILY ARE ABLE TO STAY HOME

WHETHER YOUR
GOVERNMENT IS
REACTING WRONG

WHETHER YOU'RE GETTING
ENOUGH WORK DONE

WHETHER FORGETTING
TO DRINK WATER OR
REST WILL MAKE YOU
GET THE CORONAVIRUS

WHETHER RANDOM
PEOPLE IN A
NEWS STORY ARE
REACTING WRONG

WHETHER YOU HAVE THE
VIRUS BECAUSE YOU JUST
COUGHED AND LAST WEEK
YOU TOUCHED A DOORKNOB

MORE COMMON →

MUSIC GENRES ACCORDING TO...

...NON-COSMOLOGISTS

...COSMOLOGISTS

POP _____ LITE

ROCK _____ METAL

HIP HOP _____ METAL

METAL _____ METAL

COUNTRY _____ METAL

DANCE/ELECTRONIC _____ METAL

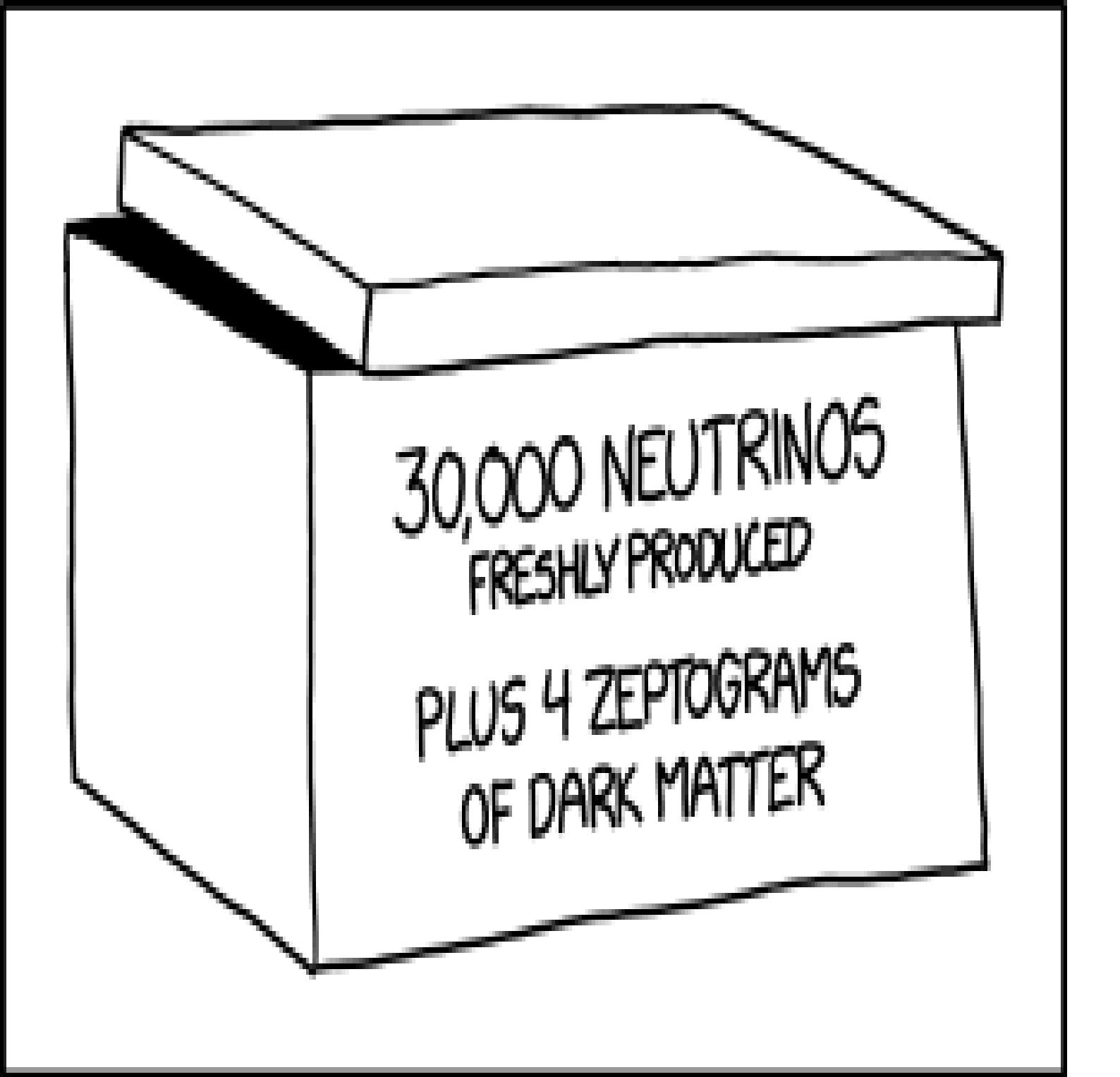
LATIN _____ METAL

PUNK _____ METAL

CLASSICAL _____ METAL

JAZZ _____ METAL

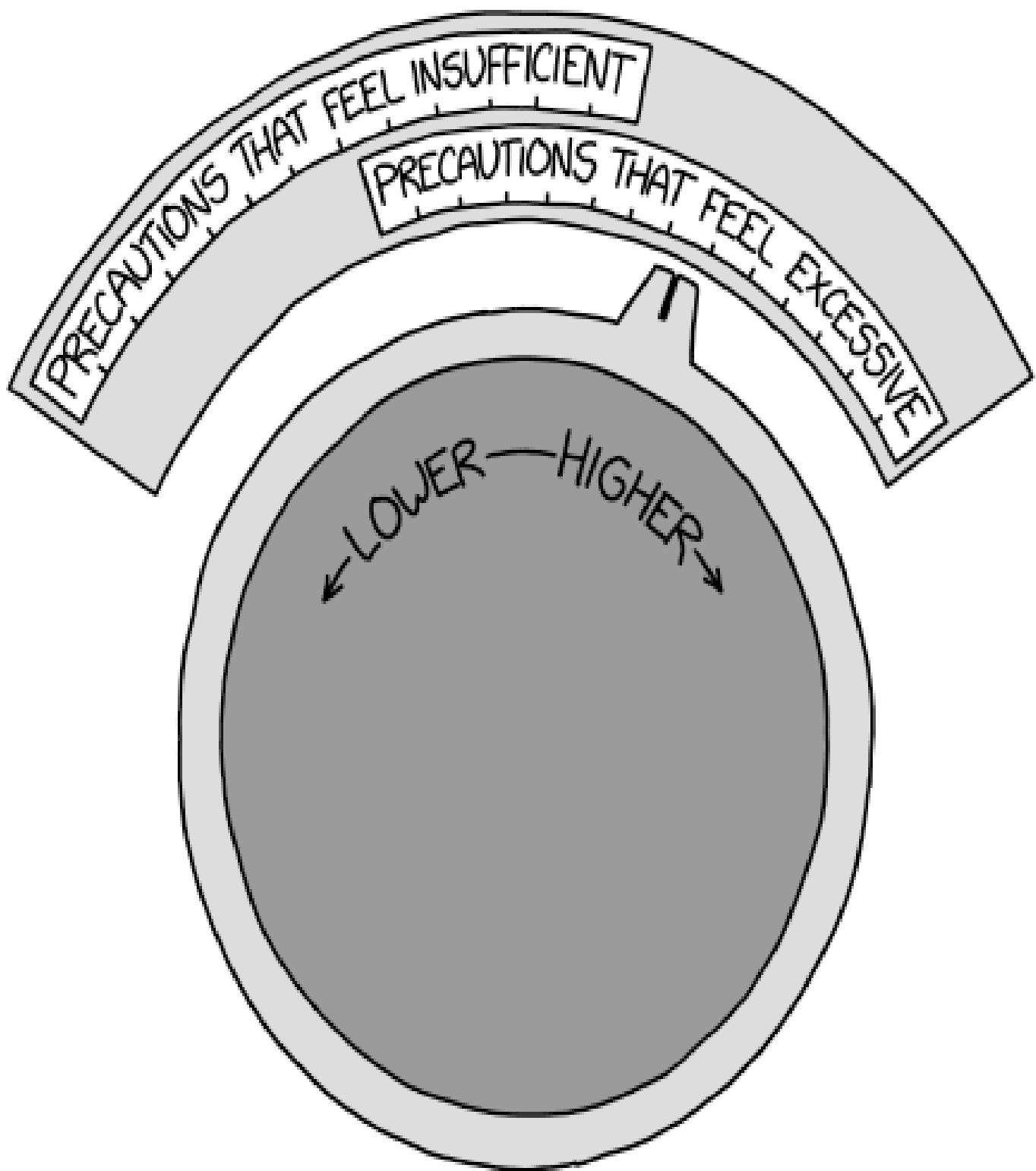
FOLK _____ METAL



30,000 NEUTRINOS
FRESHLY PRODUCED
PLUS 4 ZEPTOGRAMS
OF DARK MATTER

COSMOLOGISTS ARE EASY TO SHOP FOR
BECAUSE YOU CAN JUST GET THEM A BOX.

COVID PRECAUTION LEVEL



COVID RISK

LOW ←

→ HIGH

LOW ↑

NON-COVID RISK

↓ HIGH



WAYS TO SAY NO WHEN SOMEONE TELLS YOU TO DO SOMETHING OUTSIDE YOUR COVID RISK COMFORT ZONE:

TOO INDIRECT

YOU HAVE TO COME INSIDE.

OK, BUT... I'VE BEEN TRYING TO FOLLOW THE SCIENCE, AND THEY'RE REALLY EMPHASIZING THE TRANSMISSION RISK IN ENCLOSED SPACES. I KNOW YOU'RE WEARING A MASK, AND I FEEL SO AWKWARD MAKING A SCENE OVER A TINY RISK. BUT I'M TRYING TO KEEP MY OVERALL RISK ACCEPTABLY LOW, WHICH MEANS HAVING SIMPLE RULES SO I DON'T OVERTHINK EVERY MINOR DECISION. SEE, IF YOU LOOK AT THIS SPREADSHEET-



DIRECT

I'M SO SORRY, BUT I'M AVOIDING SHARED INDOOR SPACES UNLESS IT'S AN EMERGENCY.



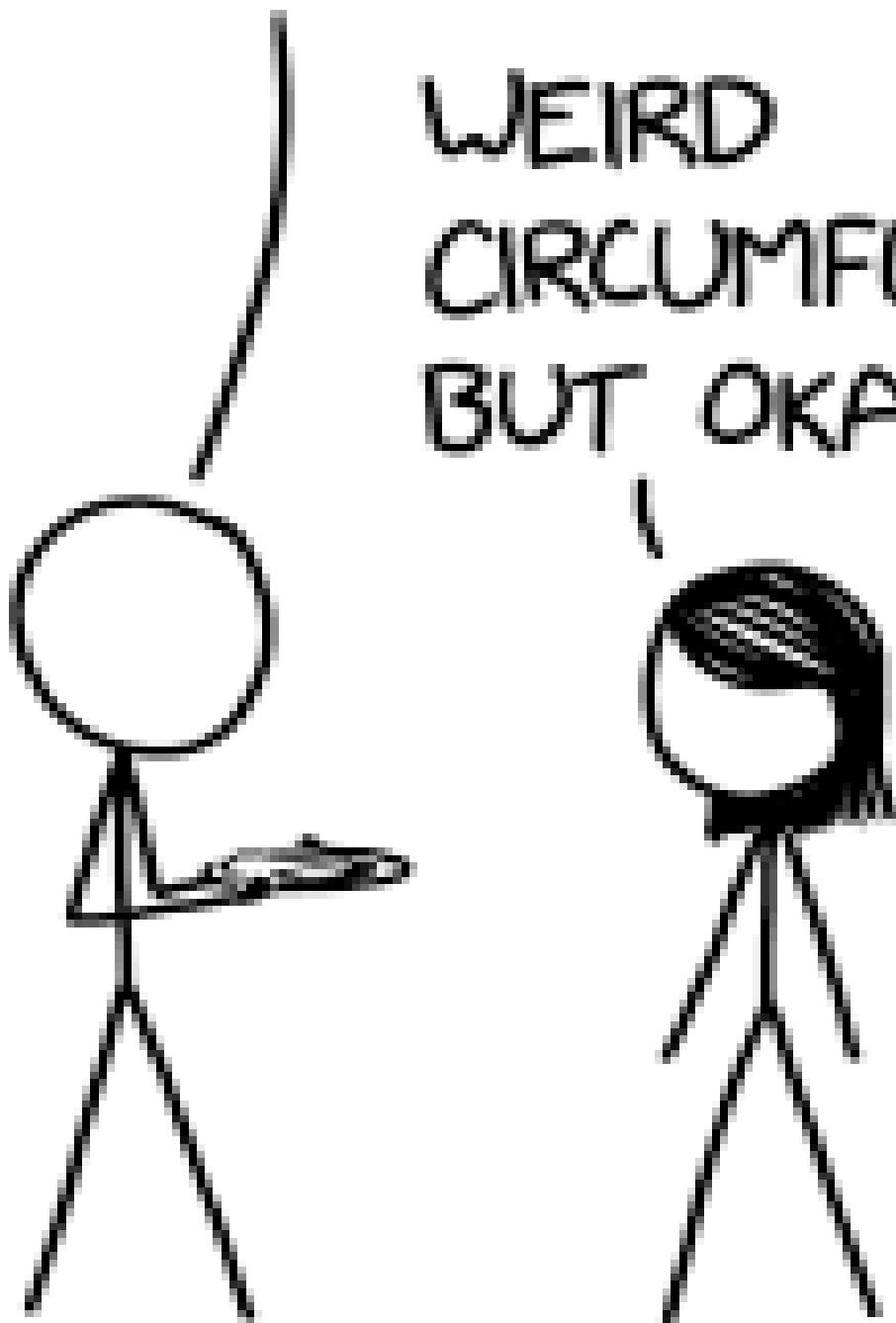
TOO DIRECT

I'M NOT SETTING FOOT IN YOUR HAUNTED PLAGUE BOX.



CHECK OUT THIS
CRÊPE I MADE!

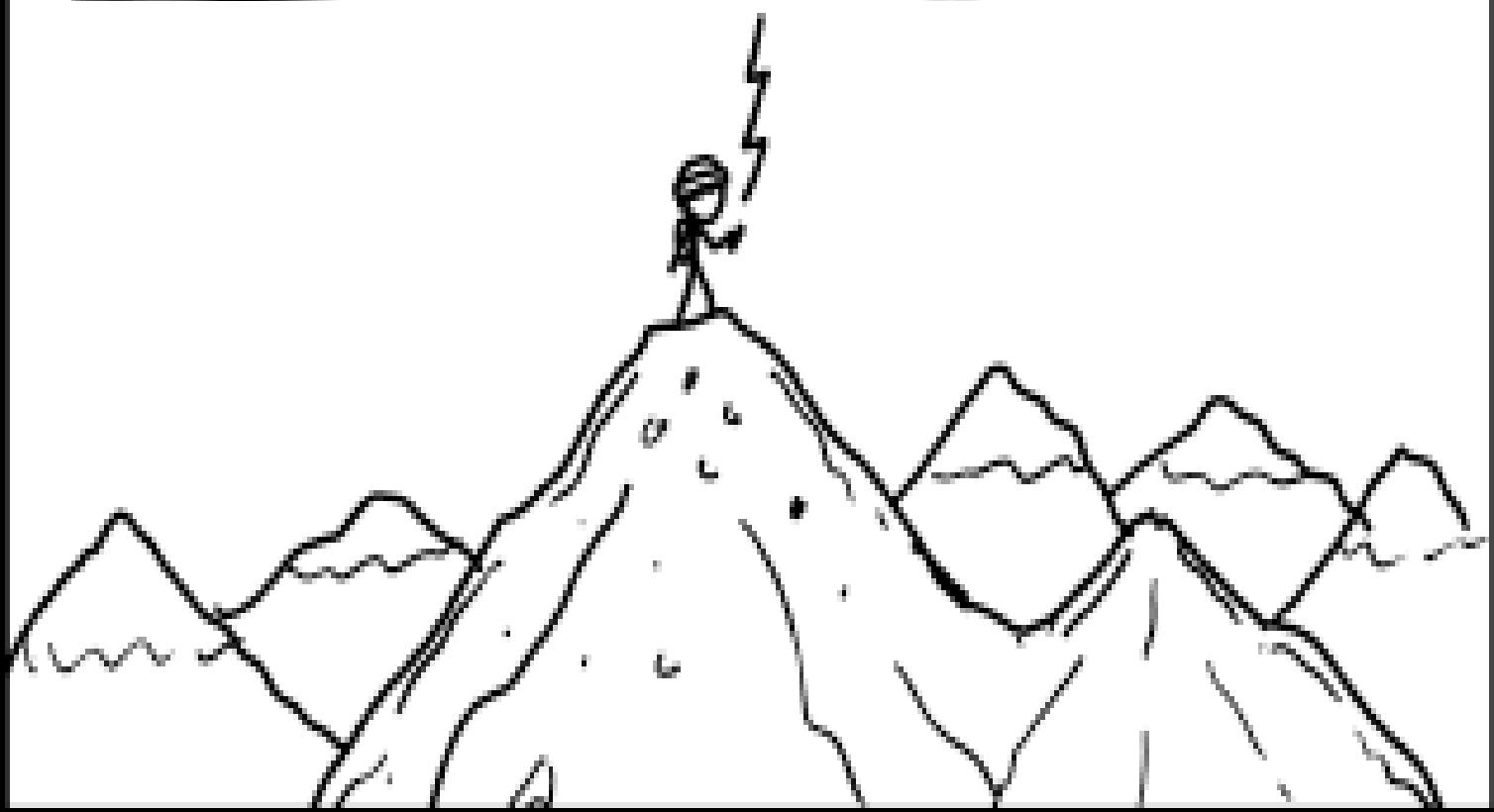
WEIRD
CIRCUMFLEX,
BUT OKAY.



AVAILABLE WIFI NETWORKS

TOSHIBA-U2187-OFFICELINK-NET46UHZ 🔒

JOIN OTHER NETWORK

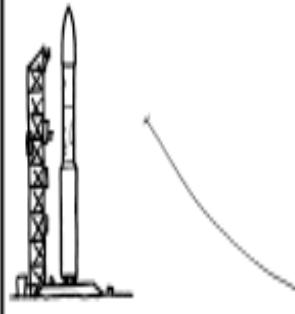


TECH TRIVIA: NO ONE ACTUALLY KNOWS WHAT DEVICES PRODUCE THOSE CRYPTIC WIFI NETWORKS. THEY JUST APPEAR AT RANDOM ACROSS THE EARTH'S SURFACE.

A SPOT ON A CUBESAT
LAUNCH COSTS A LOT,
BUT YOU CAN GET A
DRONE AND A SPOOL OF
FISHING LINE FOR CHEAP.



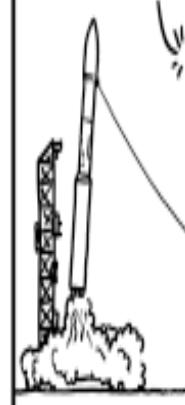
NO NO, WATCH.
THIS IS GONNA
GO GREAT.



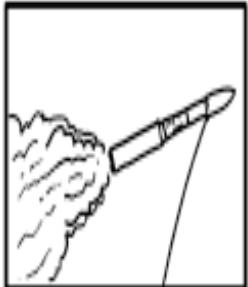
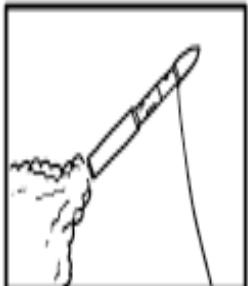
PERFECT!



HEY, MOVE
YOUR LEG.



UGH, LET GO,
I CAN GET-
-NO, LIFT YOUR
OTHER ARM-



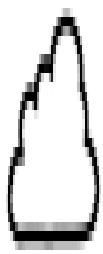
AAAAAA



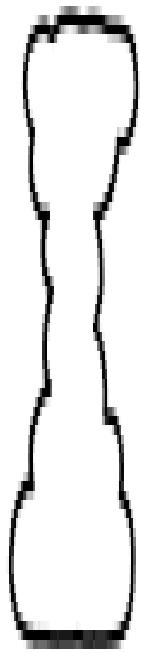
LISTEN.

SPACE EXPLORATION
IS NEVER GOING TO BE
COMPLETELY SAFE.

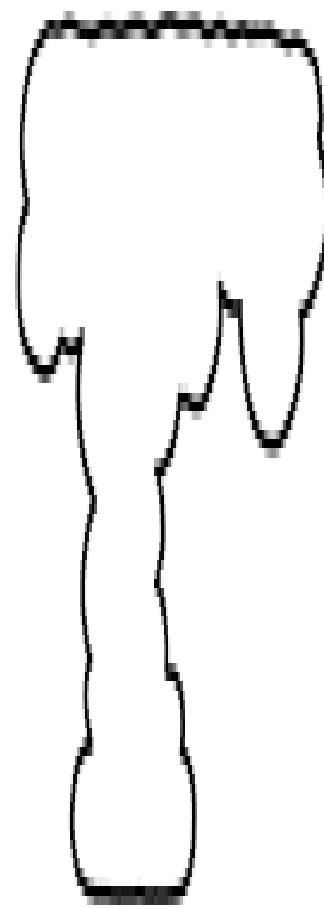




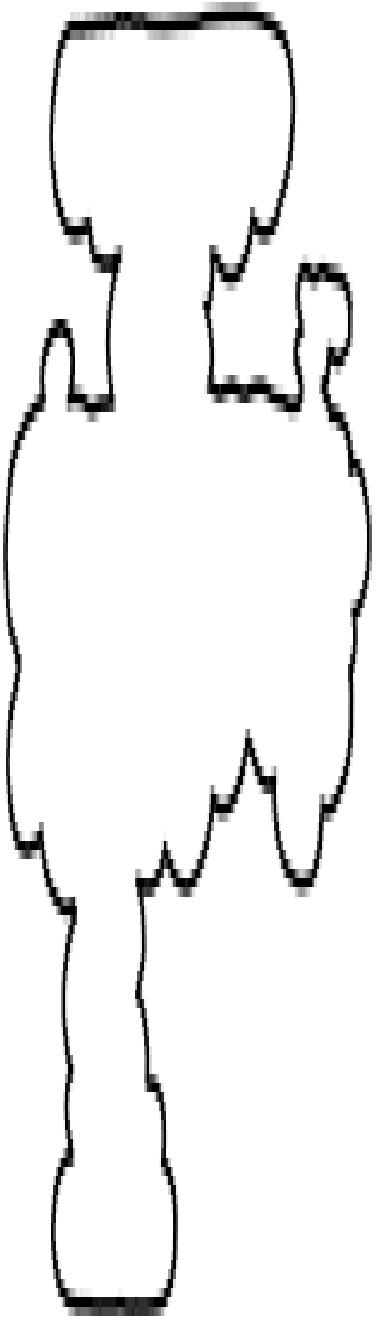
CUMULUS



CUMULONIMBUS



CUMULONIMBUS



CUMULONIMBUS
CUMULONIMBUS

HI, IS THIS THE SHOP
THAT SELLS CURSED
ITEMS BUT WHEN YOU
TRY TO RETURN THEM
THE SHOP IS GONE?

YES, HOW CAN
I HELP YOU?

DO YOU DO CURBSIDE
PICKUP? I WANTED TO
BUY A CURSED AMULET
THAT ANGERS GHOSTS,
AND SOME GROCERIES.

NO, BUT IT'S OKAY,
WE WEAR MASKS.

SO YOU CAN'T
BRING STUFF OUT?

I'M AFRAID NOT.

BUT IT'S
SO STUFFY
IN THERE!

WHY NOT THINK OF THE VIRUS AS
PART OF THE AMULET'S CURSE?

EXCUSE ME!? I'M TRYING
TO BUY SOME BREAD AND
DO BATTLE WITH GHOSTS,
NOT ENDANGER MY FAMILY
AND FRIENDS IN A PANDEMIC!

I WILL TAKE
MY BUSINESS
ELSEWHERE.

REMEMBER HOW I BOUGHT MY DESK CHAIR FROM THAT MYSTERIOUS SHOP?

I THINK SO? TURNS OUT THE CHAIR WAS CURSED.

SO I WENT BACK TO RETURN IT, BUT THE SHOP WAS GONE! THE DOOR WAS BOARDED UP!

I THINK MOST OF THE SHOPS ARE CLOSED BECAUSE OF CORONAVIRUS.

OH NO!
THE CURSE MUST HAVE CAUSED THE

PANDEMIC!

WHAT.

IF I DESTROY THE CHAIR, WE CAN STOP THE VIRUS!

WHAT.

DIE, PLAGUE-BRINGER!

HEEEEEE
I CAN NOT DIE

MAYBE YOU SHOULD JUST SHOP AT IKEA.

EVER WONDERED WHAT IT WOULD BE
LIKE TO DRINK THE NEW COVID BOOSTER?
THIS RECIPE APPROXIMATELY RECREATES
THE TASTE AND NUTRITIONAL PROFILE!
(NOTE: DOES NOT PROTECT AGAINST COVID)

"...WHAT? EWW."
—CDC SPOKESPERSON

"PLEASE STOP."
—DR. ANTHONY FAUCI

INGREDIENTS

2 CUPS WATER
3 TBSP MAYONNAISE
 $\frac{1}{4}$ TSP MSG OR NUTRITIONAL YEAST
1 TBSP SUGAR

DIRECTIONS

POUR 1 CUP OF WATER INTO A
BLENDER. ADD THE MAYONNAISE
AND MSG. BLEND UNTIL SMOOTH.

POUR THE OTHER CUP OF WATER
INTO A GLASS. ADD THE SUGAR
AND 1 TSP OF THE MIXTURE FROM
THE BLENDER. STIR WELL.

SERVE IN SHOT GLASSES.

CUTEST-SOUNDING SCIENTIFIC EFFECTS



WHICH WORD IN THE NAME "CYBER CAFE" SOUNDS MORE DATED?

2015 - CYBER

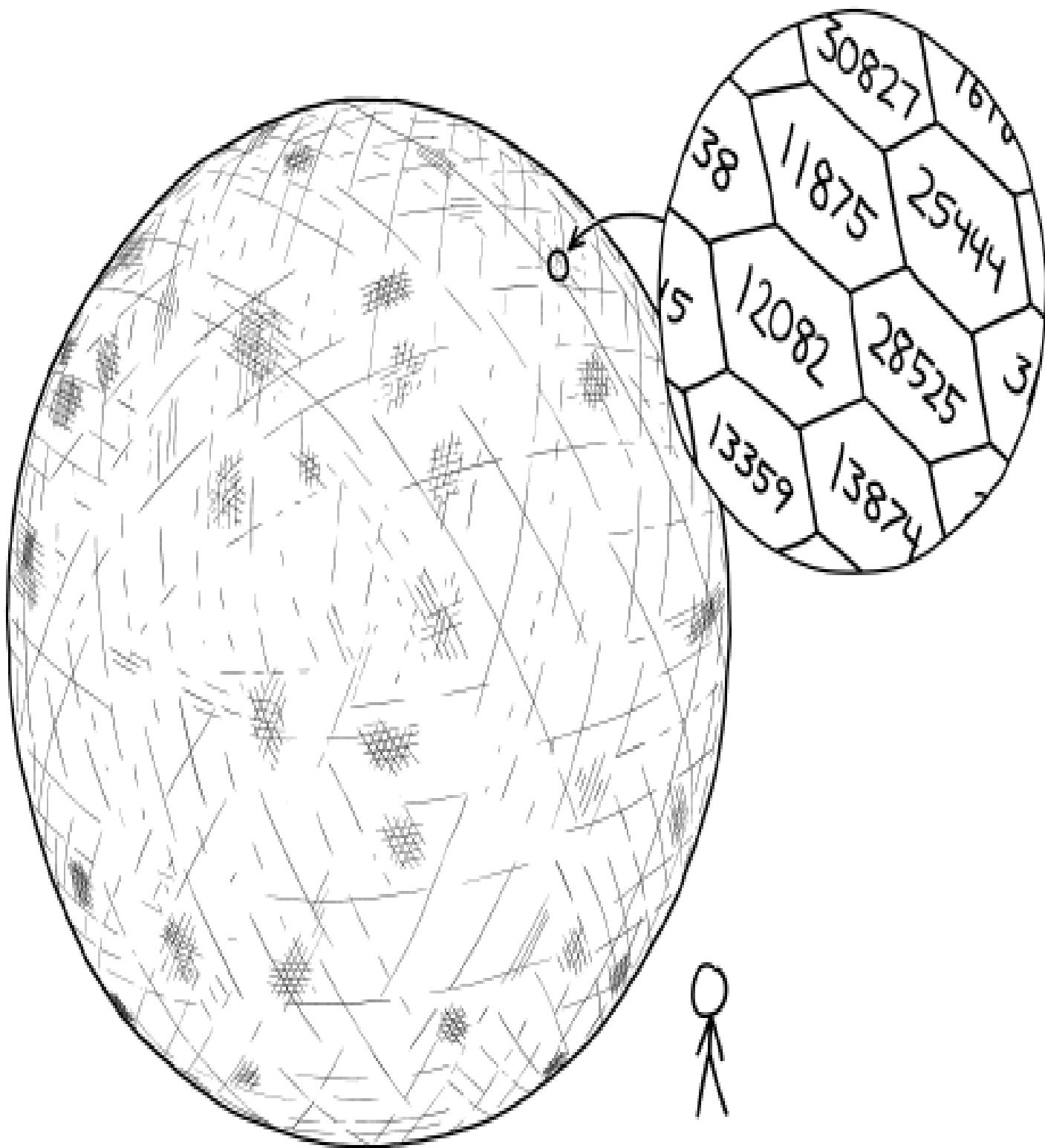
2016 - CYBER

2017 - CYBER

2018 - CYBER

2019 - CYBER

2020 - CAFE



THE HARDEST PART OF SECURELY GENERATING
RANDOM 16-BIT NUMBERS IS ROLLING THE d65536.

PROBABILITY THAT YOU'LL BE KILLED BY THE THING YOU STUDY

BY FIELD

MORE LIKELY



ASTRONOMY

MARINE

LAW CRIMINOLOGY

BIOLOGY

ECONOMICS

CHEMISTRY

MATHEMATICS

METEOROLOGY

VOLCANOLOGY

GERONTOLOGY

NOW, REMEMBER:

I

IF RED TOUCHES YELLOW
AMID LEAVES OF THREE UNDER
A RED SKY AT MORNING,

I

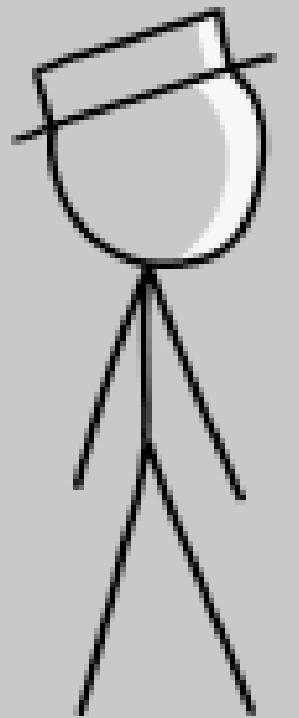
YOU SHOULD PROBABLY
JUST GET OUT OF THERE.



LONG AGO, IN ANOTHER AGE, I
MASTERED THESE DARK ARTS.

BUT I NOW ENDEAVOR TO LIVE MY
LIFE SUCH THAT I NEVER NEED THEM.

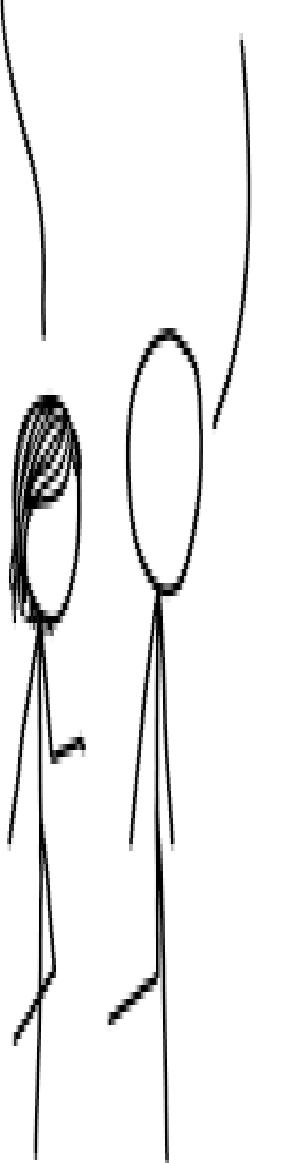
THEIR POWER LEADS ONLY TO RUIN.



MY RESPONSE WHENEVER ANYONE ASKS
ME TO MESS AROUND WITH FILESYSTEMS

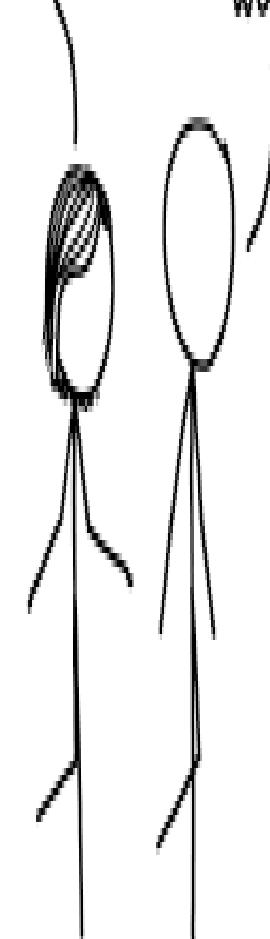
DARK MATTER DENSITY
IN THE SOLAR SYSTEM
IS AROUND 0.3 GeV/cm^3

IS...THAT A LOT?



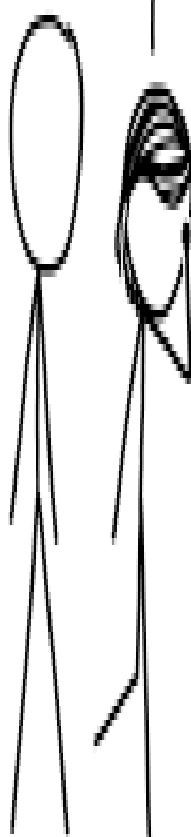
IN TERMS OF MASS,
IT MEANS THE EARTH
CONTAINS ONE SQUIRREL
WORTH OF DARK MATTER
AT ANY GIVEN TIME.

WOW.



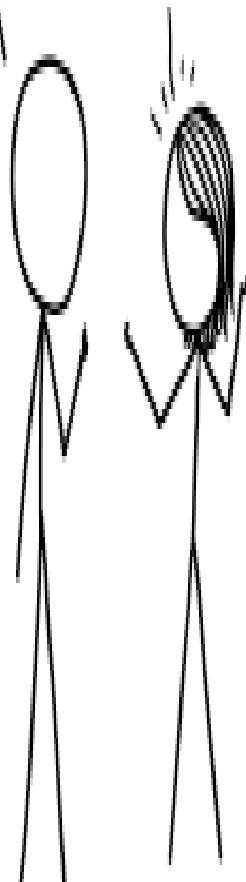
IS THERE ANY WAY
TO FIND OUT WHICH
SQUIRREL IT IS?

NO, IT'S NOT
LITERALLY-



OH, THAT EXPLAINS WHY
THEY WEIGH ENOUGH TO
SET OFF THOSE SPANNING
BIRD FEEDERS!

DARK MATTER
ISN'T SQUIRRELS!



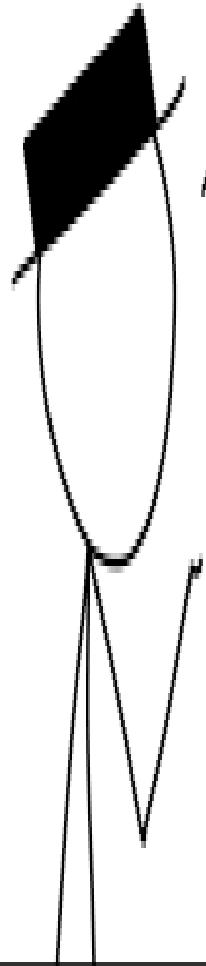
I CAN'T BELIEVE
THIS DATA ERROR
INVALIDATES A
YEAR AND A HALF
OF MY RESEARCH.

I WAS ABOUT
TO PUBLISH.

DON'T PANIC.
YOU HAVE
TWO OPTIONS.

YEAH?

1) REDO YOUR ANALYSIS AND
SHARE WHAT RESULTS YOU
CAN, WHETHER POSITIVE OR
NEGATIVE. IT'S DISAPPOINTING,
BUT THESE THINGS HAPPEN.

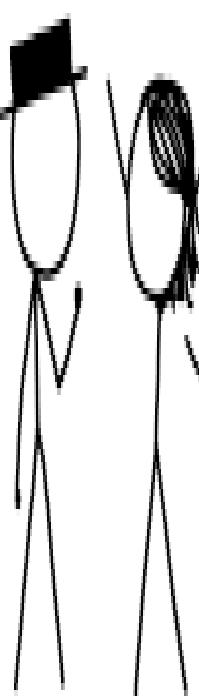
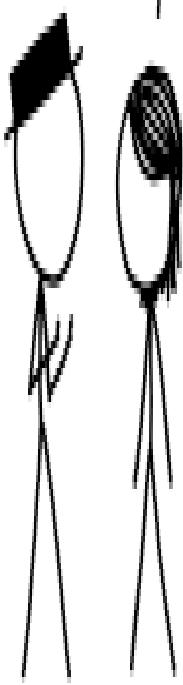
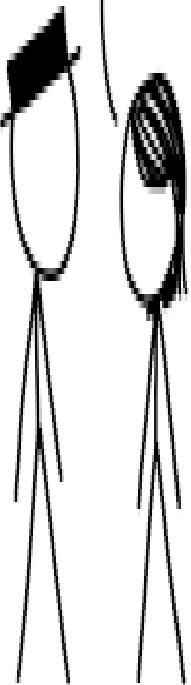


2) DESTROY THE EVIDENCE. USE YOUR
MATERIALS AND RESEARCH METHODS
TO BUILD A SUPERWEAPON. CONQUER
EARTH AND RULE WITH AN IRON FIST.

TREMBLE BEFORE
MY ANOMALOUSLY
PRODUCTIVE ALGAE!

EXCEPT THE ANOMALY
WAS AN ARTIFACT.

TREMBLE BEFORE
MY NORMAL ALGAE!



HEY, LOOK, WE HAVE A BUNCH
OF DATA! I'M GONNA ANALYZE IT.

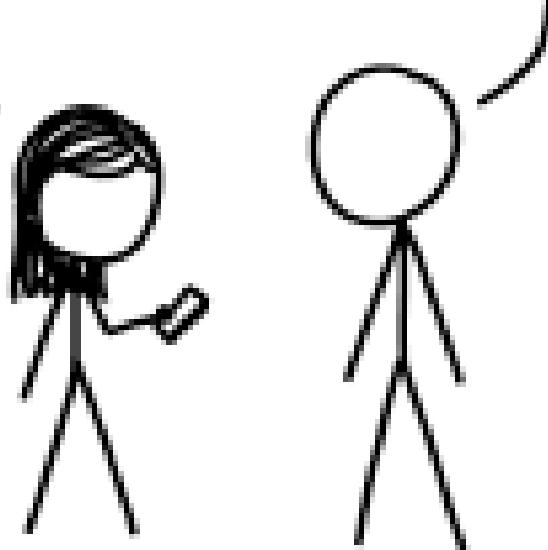
NO, YOU FOOL! *THAT WILL
ONLY CREATE MORE DATA!*



UGH, I HATE NOVEMBER. IT'S 26:15
AND THE SUN IS SETTING AGAIN!

3-DAY DAYS ARE THE WORST.

I LIKE IT. I KNOW IT'S DARK,
BUT IT'S NICE TO HAVE THE
EXTRA TIME ON DEADLINES.



IN OUR NEW CALENDAR SYSTEM,
THE DATE CHANGES AFTER EVERY
12 HOURS OF DAYLIGHT, REGARDLESS
OF HOW LONG THAT TAKES.

AP PHOTOS SHOW DR. FAUCI'S OFFICE CONTAINS A NORMAL NUMBER OF MICROWAVES

~~~~~

FACT CHECK: SINGER BILLIE EILISH WAS BORN YEARS AFTER THE TWA FLIGHT 800 EXPLOSION

~~~~~  
VACCINATED PEOPLE CAN REMOVE THEIR HATS WITHOUT TROUBLE BY TUGGING UPWARD, SAY DOCTORS

~~~~~

PHYSICISTS SAY DORITO POWDER IS AFFECTED BY GRAVITY

STEERING WHEELS WILL WORK NORMALLY ON DEC 12TH; MAKE LEFT AND RIGHT TURNS AS USUAL

~~~~~

CNN INVESTIGATION: SANTA'S SKIN IS DRY AND HEALTHY THIS YEAR, WITH THE SAME AMOUNT OF OIL AS BEFORE

~~~~~

I DON'T KNOW WHETHER THE "DON'T REPEAT THE CLAIM IN THE HEADLINE DEBUNKING IT" THING WORKS OR NOT, BUT IT DEFINITELY MAKES READING THE NEWS WEIRD.

T-MINUS

10...9...8...

HO HO HO!

MERRY CHRISTMAS!

OH NO.

Eq. 4-15

$$\bar{T} = \bar{D} m_o (r_{\text{out}} - r_{\text{in}})^{\bar{\mu}}$$

$\bar{T}$ : NET RATE

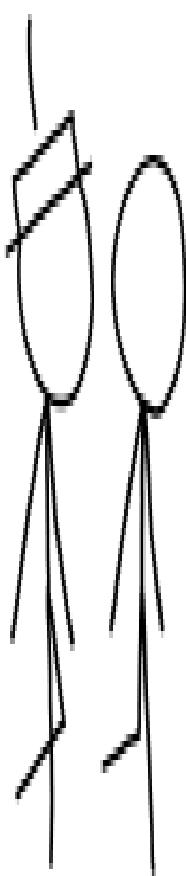
$m_o$ : UNIT MASS

$(r_{\text{out}} - r_{\text{in}})$ : FLOW BALANCE

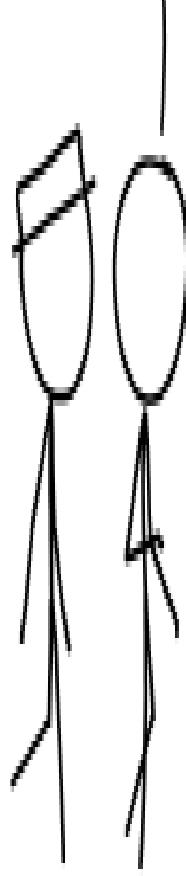
$\bar{D}, \bar{\mu}$ : DECORATIVE

MATH TIP: IF ONE OF YOUR EQUATIONS EVER LOOKS TOO SIMPLE, TRY ADDING SOME PURELY DECORATIVE CONSTANTS.

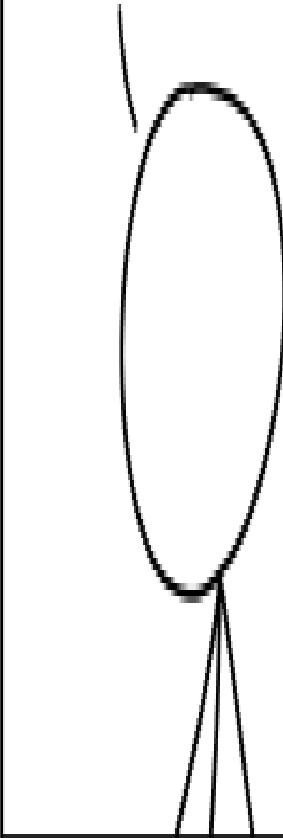
THANKS TO  
DEEPCODEXES, SOON  
WE WON'T KNOW  
WHAT'S REAL  
ANYMORE. VIDEO  
WILL BECOME  
MEANINGLESS.



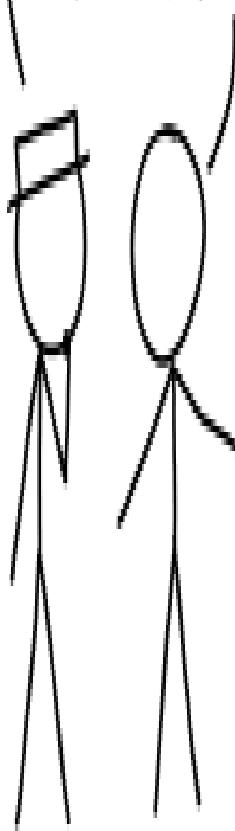
I DUNNO,  
WE'VE HAD PHOTOSHOP  
FOR DECADES AND STAGED  
PHOTOS FOR CENTURIES.  
IT HASN'T MADE  
PHOTOS MEANINGLESS.



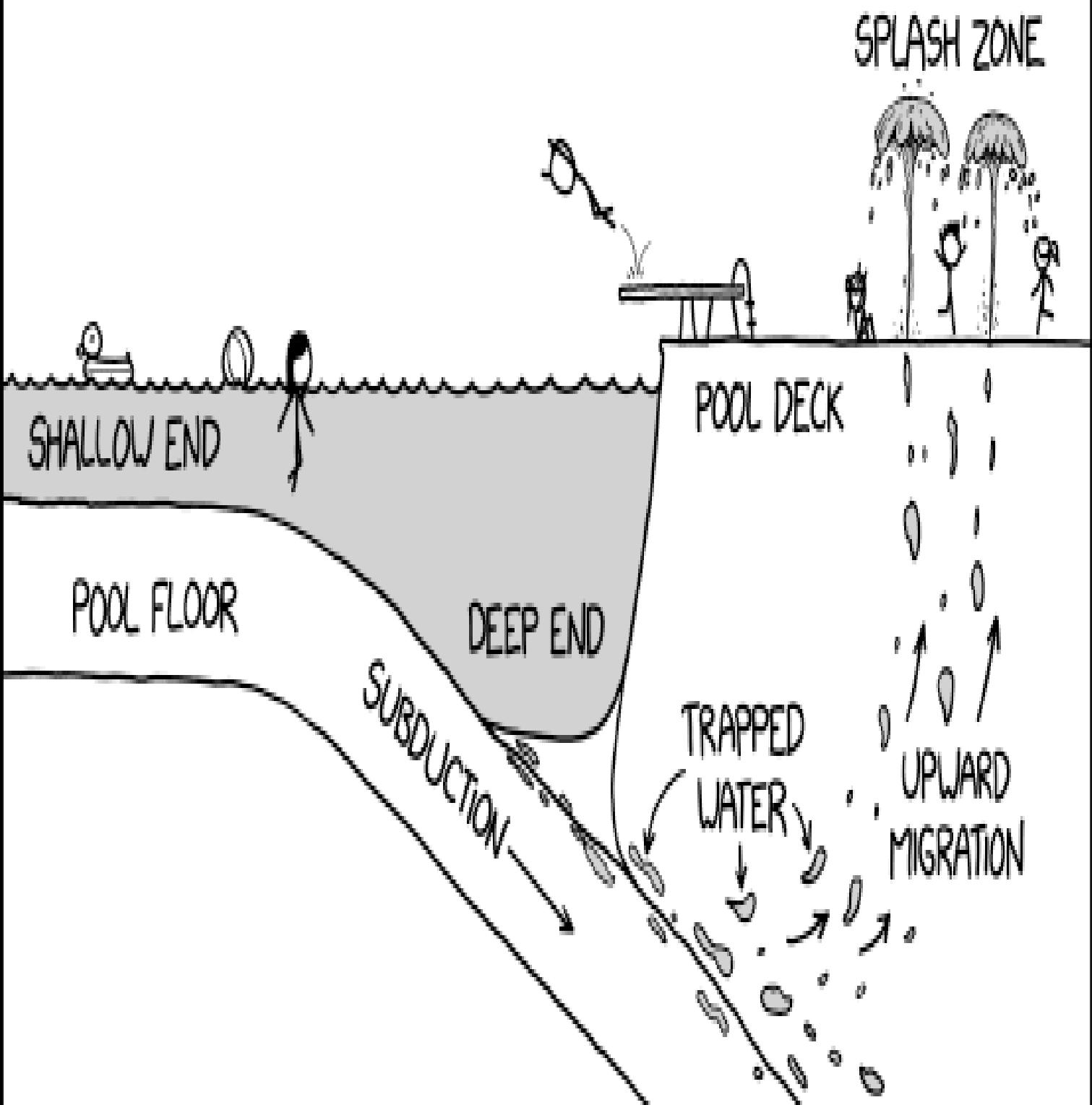
THE BOTTLENECK FOR FAKE  
STUFF ISN'T TECHNICAL.  
THE BOTTLENECK IS  
WILLINGNESS TO LIE.  
"PEOPLE LYING" IS A  
VERY OLD PROBLEM.  
IT'S A KNOWN EXPLOIT.



I GUESS TECHNICALLY  
WE'VE BEEN ABLE TO  
MAKE TEXT DEEPCODEXES  
FOR 5,000 YEARS.  
MAYBE EA-NASIR'S  
COPPER INGOTS WERE  
ACTUALLY FINE!

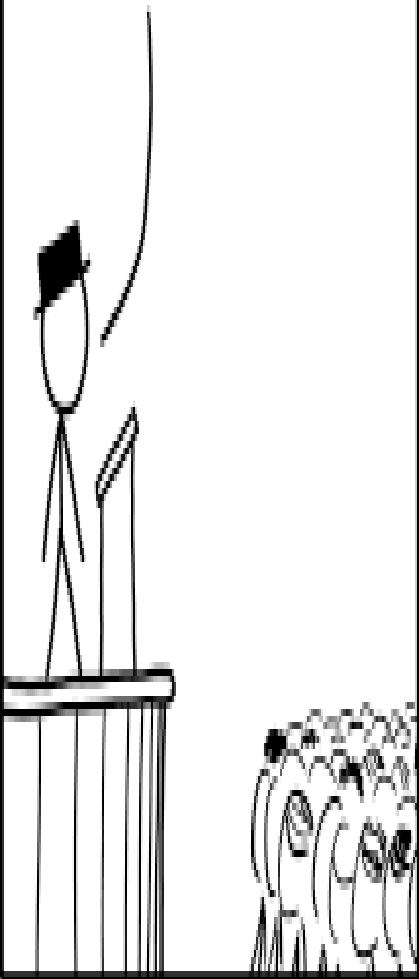


# HOW DEEP ENDS FORM IN POOLS



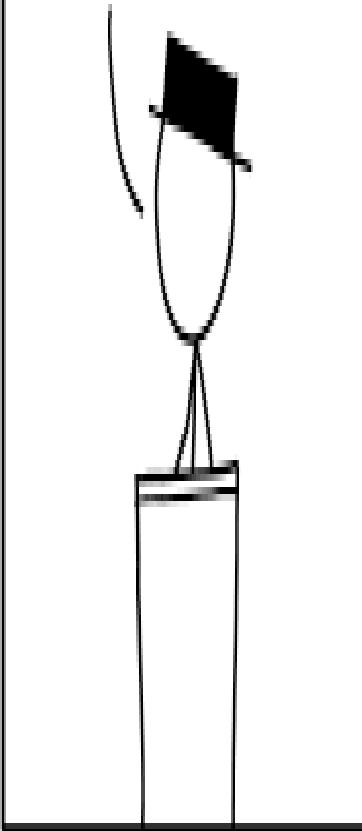
WAS IT A MISTAKE TO BUILD  
TURRETS THAT CAN TRACK  
NEARBY WIRELESS DEVICES  
AND FIRE POWERFUL LASERS  
IN THEIR GENERAL DIRECTION?

SURE. I REALIZE THAT NOW.

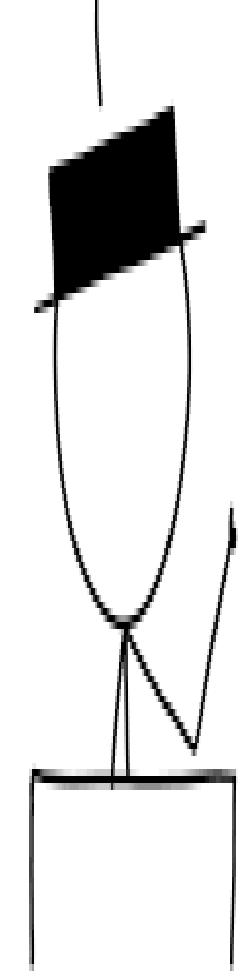


WAS IT A MISTAKE TO  
MOUNT THOSE TURRETS  
ON NEIGHBORHOOD DEER,  
RELEASE THEM, THEN  
LOSE INTEREST IN THE  
PROJECT AND MOVE ON?

YES. Hindsight is 20/20.



BUT SCIENCE IS  
ABOUT LEARNING  
FROM MISTAKES  
AND NOT BEING  
AFRAID TO MAKE  
NEW ONES.

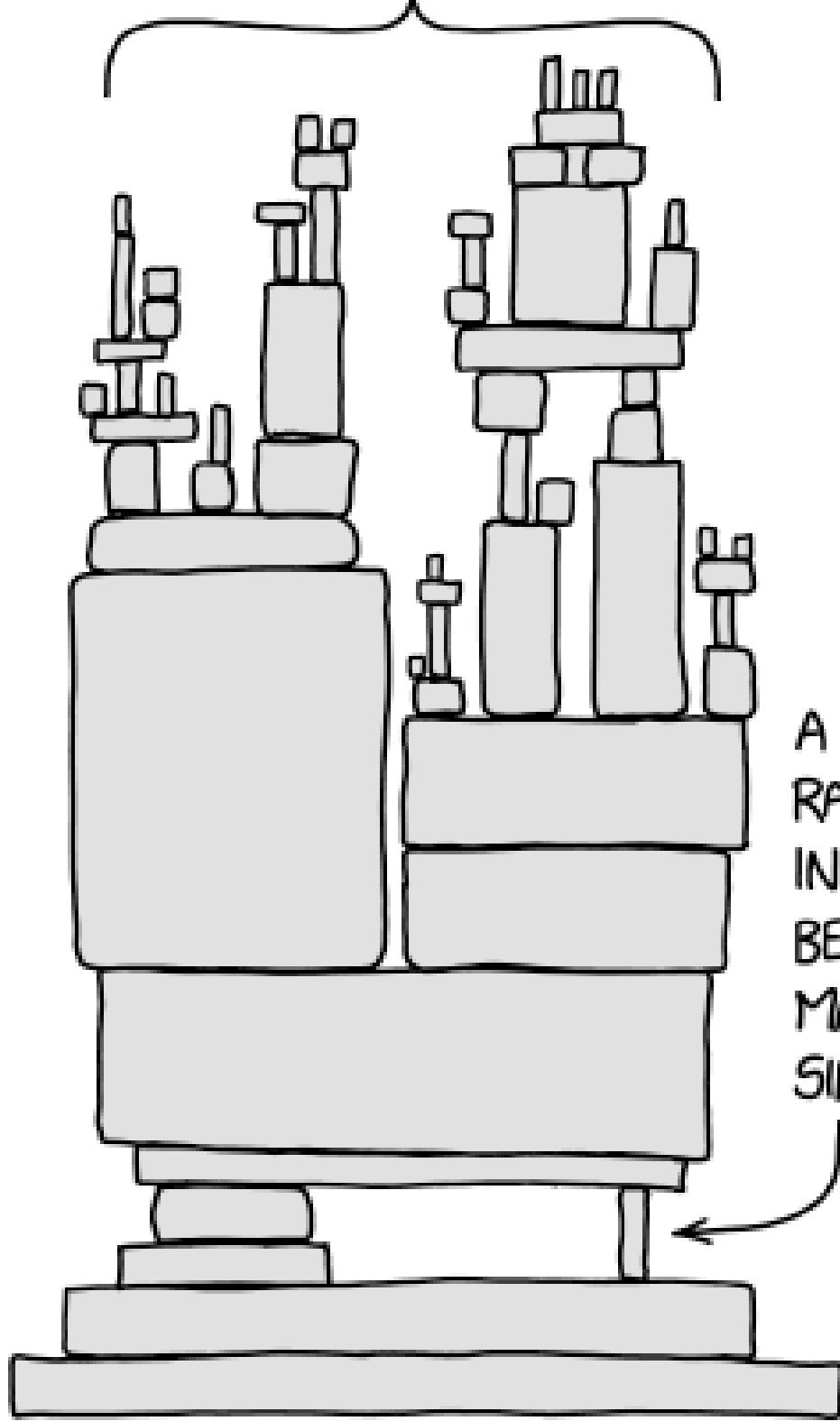


LIKE INVITING YOU HERE, BUT  
NOT WARNING YOU TO PUT YOUR  
PHONES IN AIRPLANE MODE.  
ANOTHER MISTAKE.  
BUT THAT'S OKAY.

GALLOP  
GALLOP  
IS IT REALLY??  
I THINK  
IT'S FINE.

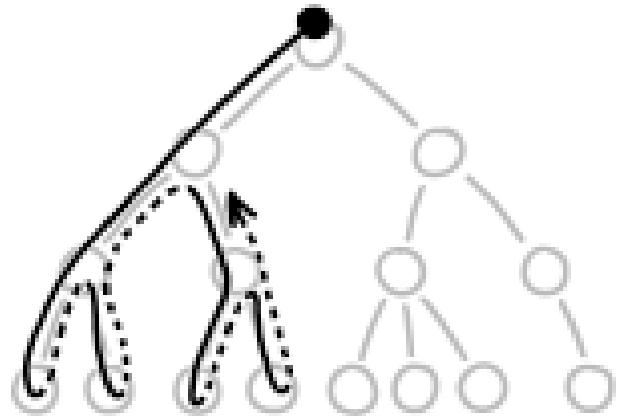


# ALL MODERN DIGITAL INFRASTRUCTURE

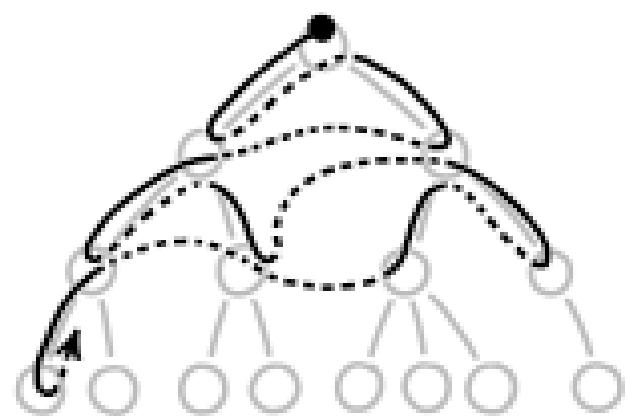


A PROJECT SOME  
RANDOM PERSON  
IN NEBRASKA HAS  
BEEN THANKLESSLY  
MAINTAINING  
SINCE 2003

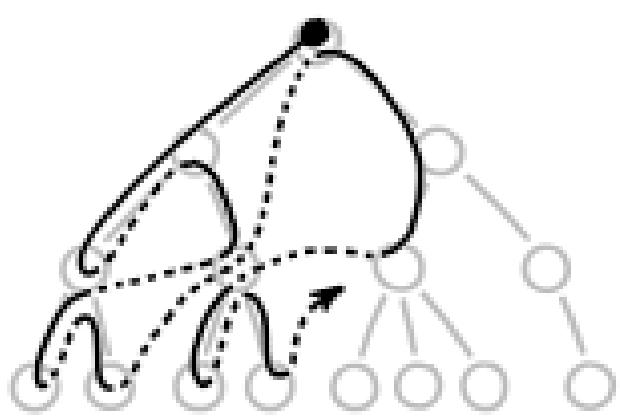
## DEPTH-FIRST SEARCH



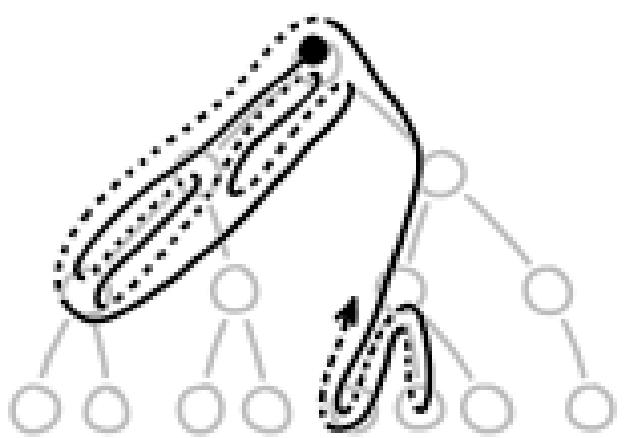
## BREADTH-FIRST SEARCH



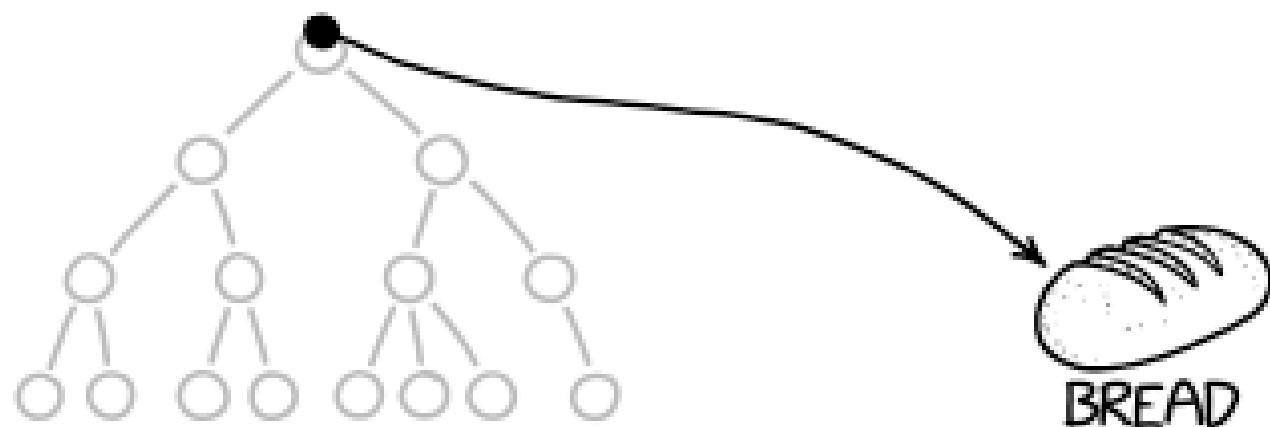
## BREPTH-FIRST SEARCH

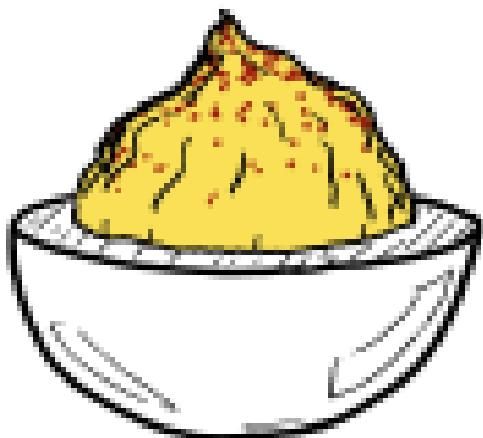


## DEADTH-FIRST SEARCH

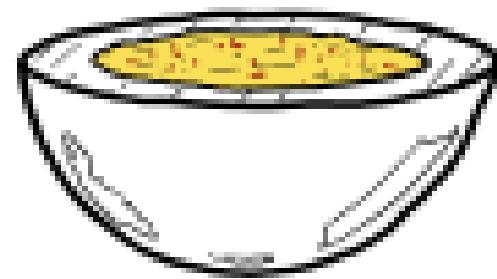


## BREAD-FIRST SEARCH





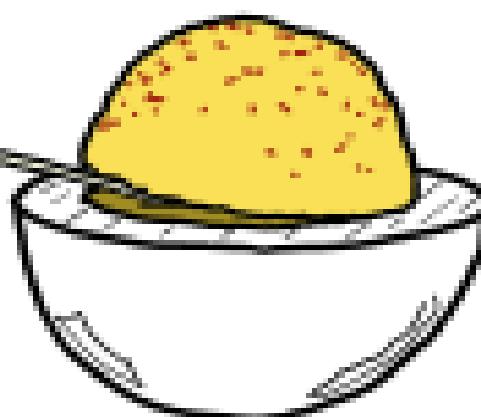
CHEF  
DEVILED  
EGG



LANDSCAPER  
LEVELED  
EGG



DESIGNER  
BEVELED  
EGG



PHYSICIST  
DEMON  
EGG

# DIALECT QUIZ

COMPARE ANSWERS WITH YOUR FRIENDS!

HOW DO YOU ADDRESS A GROUP OF TWO OR MORE PEOPLE?

- A) YOU
- B) Y'ALL
- C) I HAVE NOT BEEN AROUND TWO OR MORE PEOPLE FOR SO LONG THAT I CAN'T REMEMBER

HOW DO YOU PRONOUNCE "PENELOPE"?

- A) RHYMES WITH "ANTELOPE"
- B) RHYMES WITH "DEVELOP"

WHAT DO YOU CALL THE SCIENTIFIC FIELD THAT STUDIES THE STARS?

- A) ASTROLOGY
- B) AGRONOMY
- C) COSMETOLOGY

HOW DO YOU PRONOUNCE "GENRE"?

- A) GONE-RA
- B) JUH-NEER
- C) JEN-ER-UH

DO YOU PRONOUNCE "GOOGLE" WITH A HIGH-PITCHED YELP ON THE...

- A) FIRST SYLLABLE
- B) SECOND SYLLABLE

WHAT DO YOU CALL THE THING ON THE WALL AT SCHOOL THAT YOU DRINK WATER FROM?

- A) GUTTER PIPE
- B) DRAINPIPE

HOW DO YOU PRONOUNCE THE NAME FOR A SHORT SILENT VIDEO FILE?

- A) ANIMATED GIVE
- B) ANIMATED GIFT

WHAT DO YOU CALL THE BASEBALL-SIZED GARDEN BUGS THAT, WHEN POKED, GLOW BRIGHTLY AND EMIT A WARBLING SCREAM?

- A) WHAT?
- B) LAWN BUDDIES

WHAT DO YOU CALL THE MISLEADING LINES PAINTED BY DISGRUNTLED HIGHWAY WORKERS TO TRICK CARS INTO DRIVING OFF THE ROAD?

- A) PRANK LINES
- B) DEVIL'S MARKS
- C) FOOL-ME LINES
- D) FAUXGUIDES
- E) DELAWARE LINES

WHAT DO YOU CALL THE BLUE-GREEN PLANET IN THE OUTER SOLAR SYSTEM?

- A) URANUS
- B) NEPTUNE

WHAT DO YOU CALL THIS TOOL?



- A) BANGER
- B) NAIL AXE
- C) WOOD MAGE WAND
- D) I'M FAMILIAR WITH THIS TOOL BUT HAVE NO SPECIFIC WORD FOR IT
- E) I HAVE NEVER SEEN IT BEFORE

WHAT DO YOU CALL A LONG SANDWICH WITH MEATS AND LETTUCE AND STUFF?

- A) A LONG SANDWICH WITH MEATS AND LETTUCE AND STUFF
- B) A LONGWICH
- C) A SALAD HOT DOG

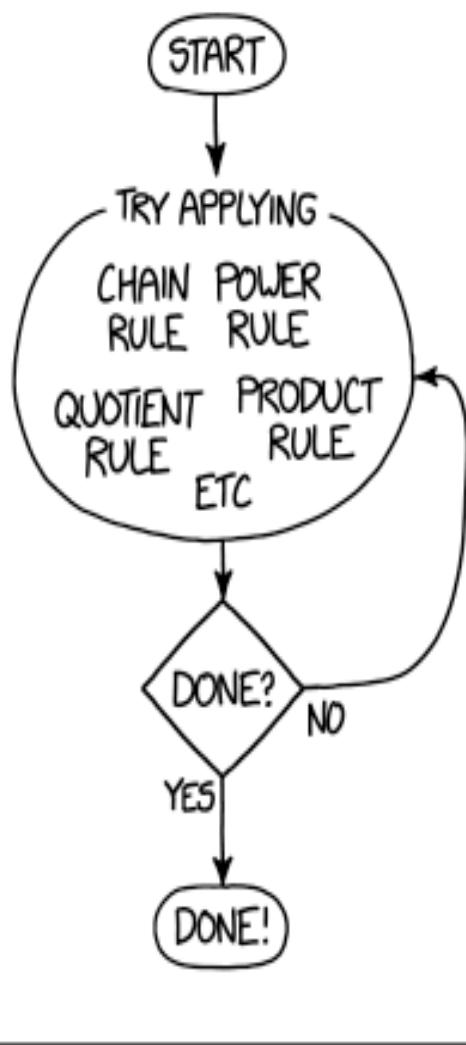
WHAT DO YOU CALL THE SCALY MANY-LEGGED ANIMAL OFTEN FOUND IN ATTICS?

- A) LIGHTBULB EATER
- B) I HAVE NO SPECIAL NAME FOR THEM
- C) I'VE NEVER LOOKED IN MY ATTIC

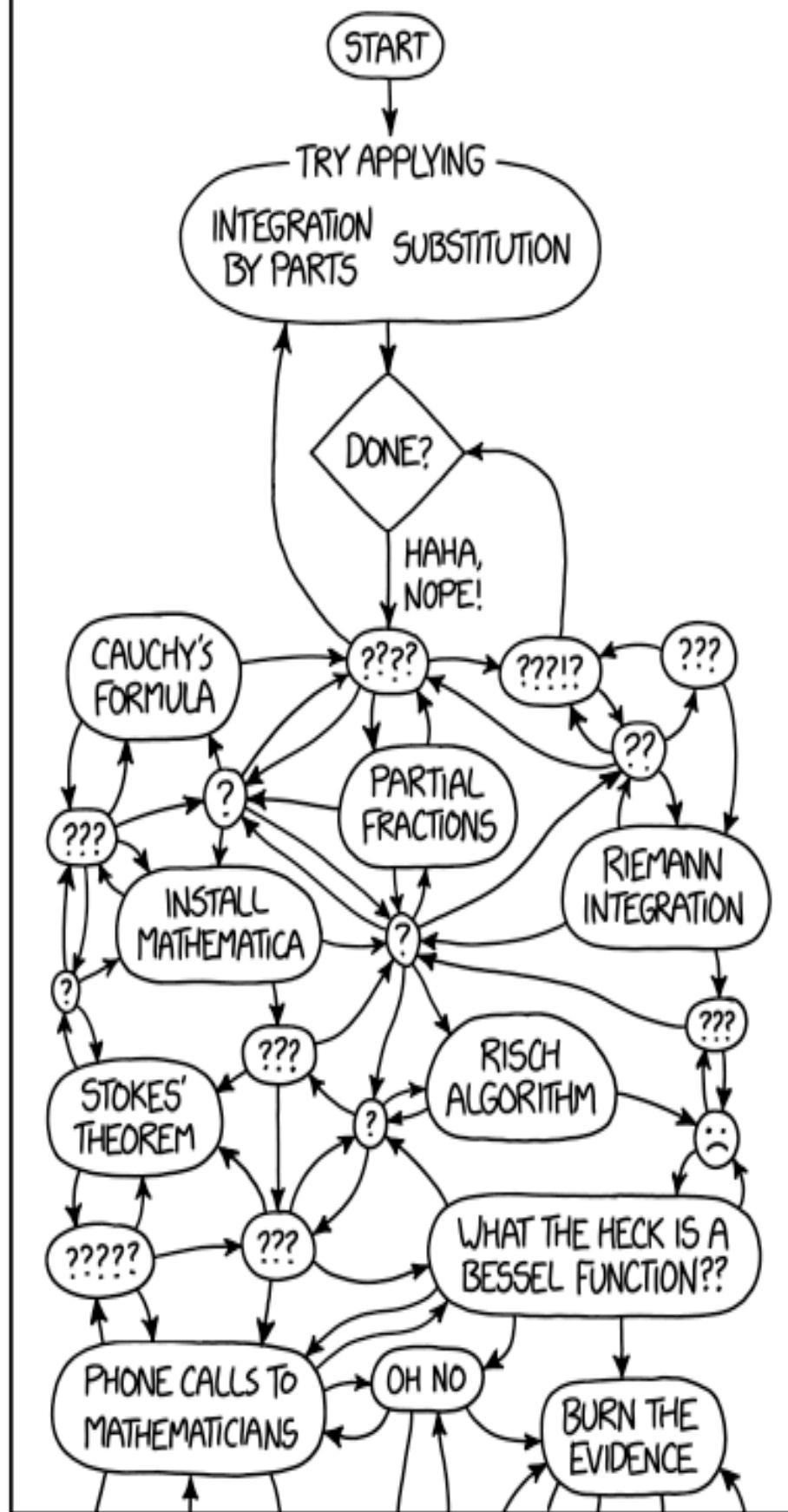
WHAT DO YOU SAY WHEN SOMEONE AROUND YOU SNEEZES?

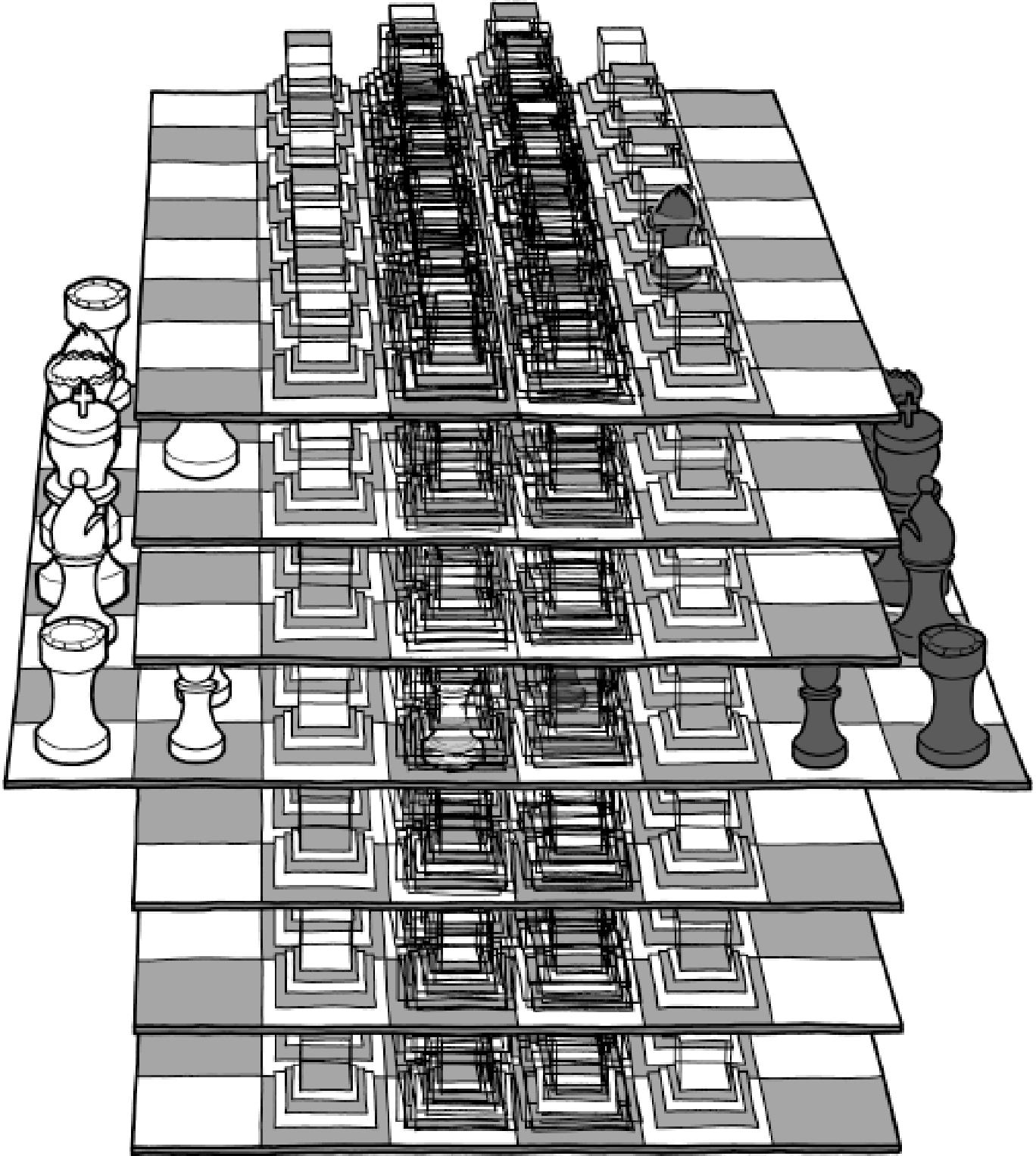
- A) "WHAT WAS THAT?"
- B) "OH, WOW!"
- C) [QUIETLY] "YIKES."

# DIFFERENTIATION



# INTEGRATION





THE PROBLEM WITH  $N$ -DIMENSIONAL CHESS IS THAT  $N$  IS A CONSTANT ACROSS THE BOARD. IN MY NEW VARIANT, EVERY ROW HAS ONE MORE DIMENSION THAN THE ONE BEHIND IT.



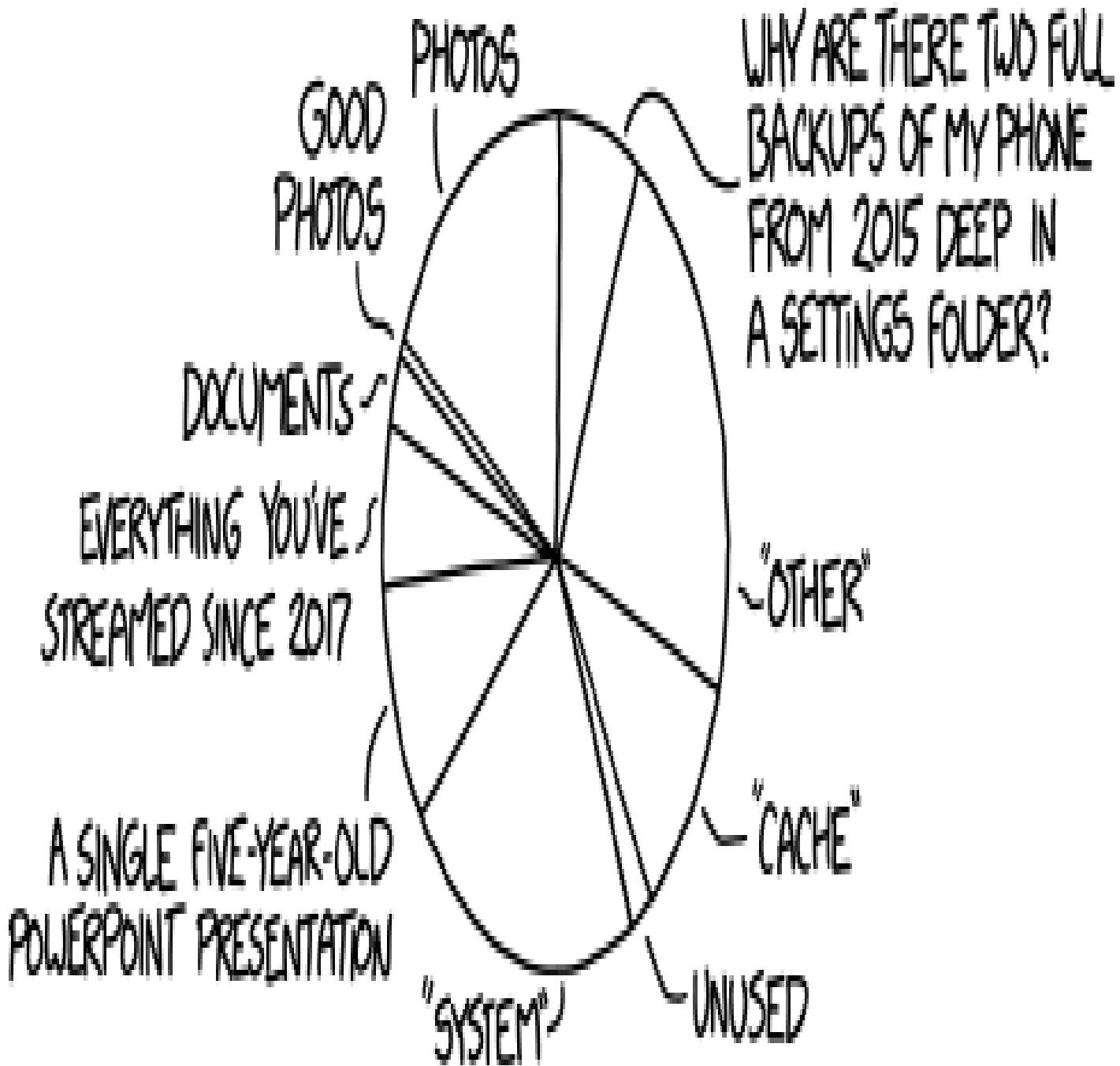
# CONGRATULATIONS, CLASS OF 2019!



YOUR DIPLOMA GRANTS YOU MANY NEW POWERS AND PRIVILEGES. THESE INCLUDE:

- YOU MAY NOW LEGALLY PERFORM MARRIAGES AND ARREST PEOPLE.
- IF YOU HAVE YOUR DIPLOMA WITH YOU, YOU CAN USE GROCERY STORE EXPRESS LANES WITH ANY NUMBER OF ITEMS.
- ALL GRADUATES ARE ENTITLED TO DELETE ONE WORD OF THEIR CHOICE FROM THE OXFORD ENGLISH DICTIONARY.
- THE UNIVERSITY WILL MAIL YOU YOUR WORKING LIGHTSABER WITHIN 6-8 WEEKS.
- YOU CAN SEND MAIL WITHOUT STAMPS.
- YOU HAVE EARNED THE RIGHT TO CHALLENGE THE BRITISH ROYAL FAMILY TO TRIAL BY COMBAT. IF YOU DEFEAT THEM ALL, THE THRONE IS YOURS.
- YOU MAY NOW IGNORE "DO NOT PET" WARNINGS ON AIRPORT SECURITY DOGS.

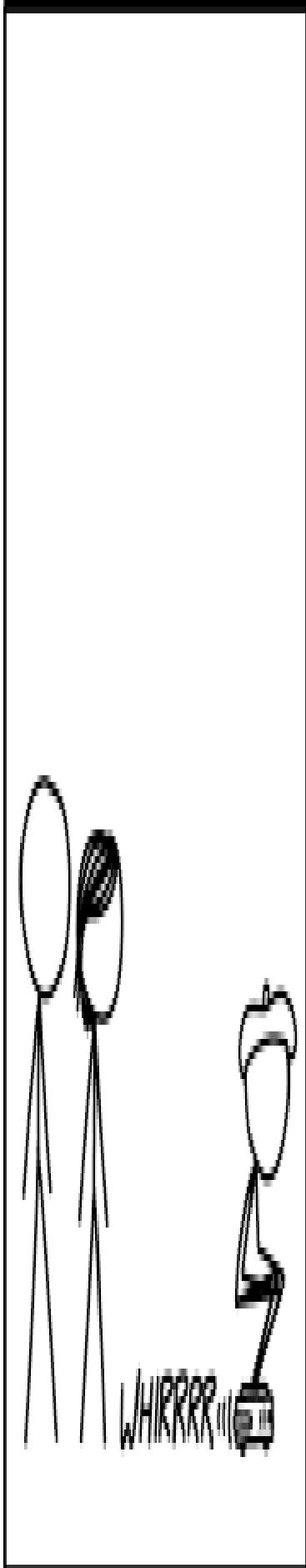
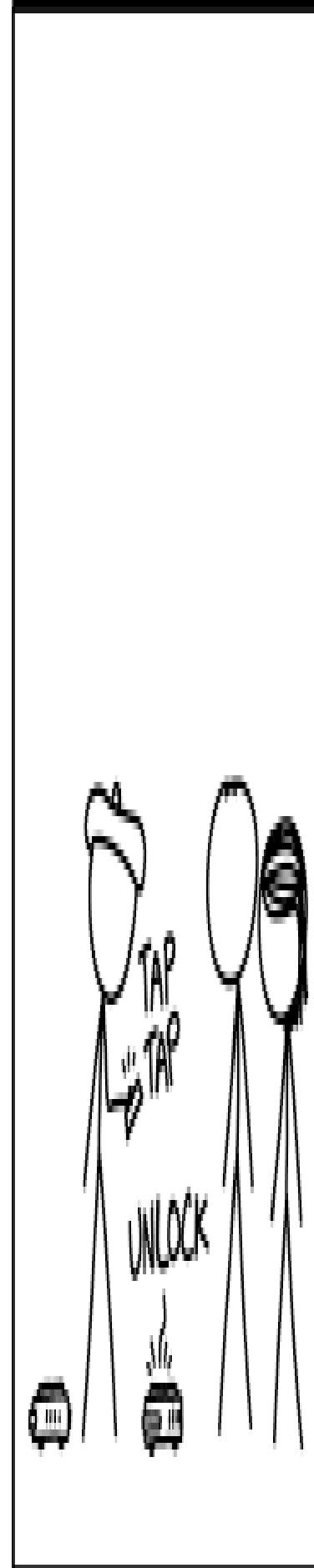
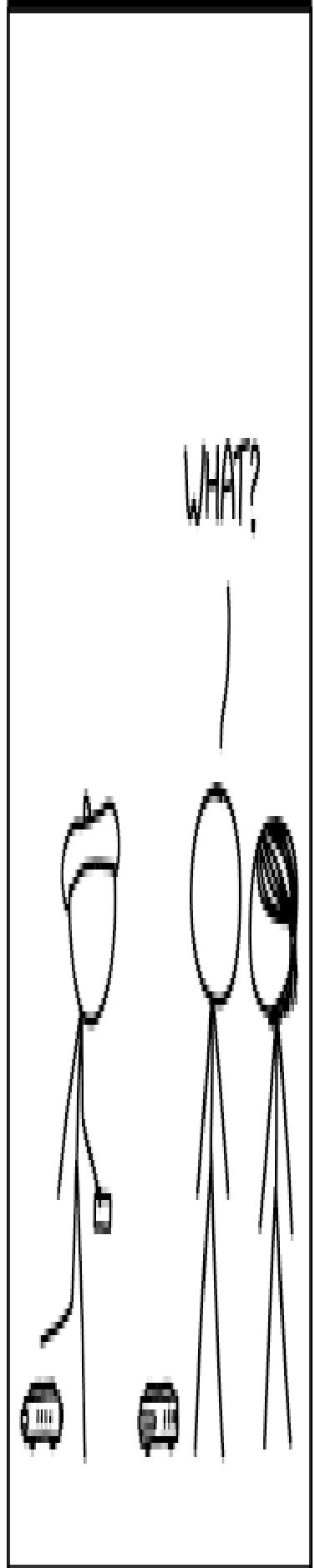
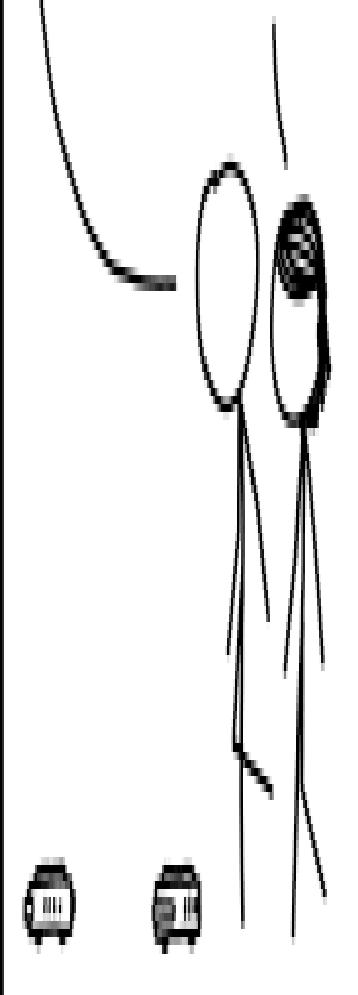
# DISK SPACE USAGE REPORT

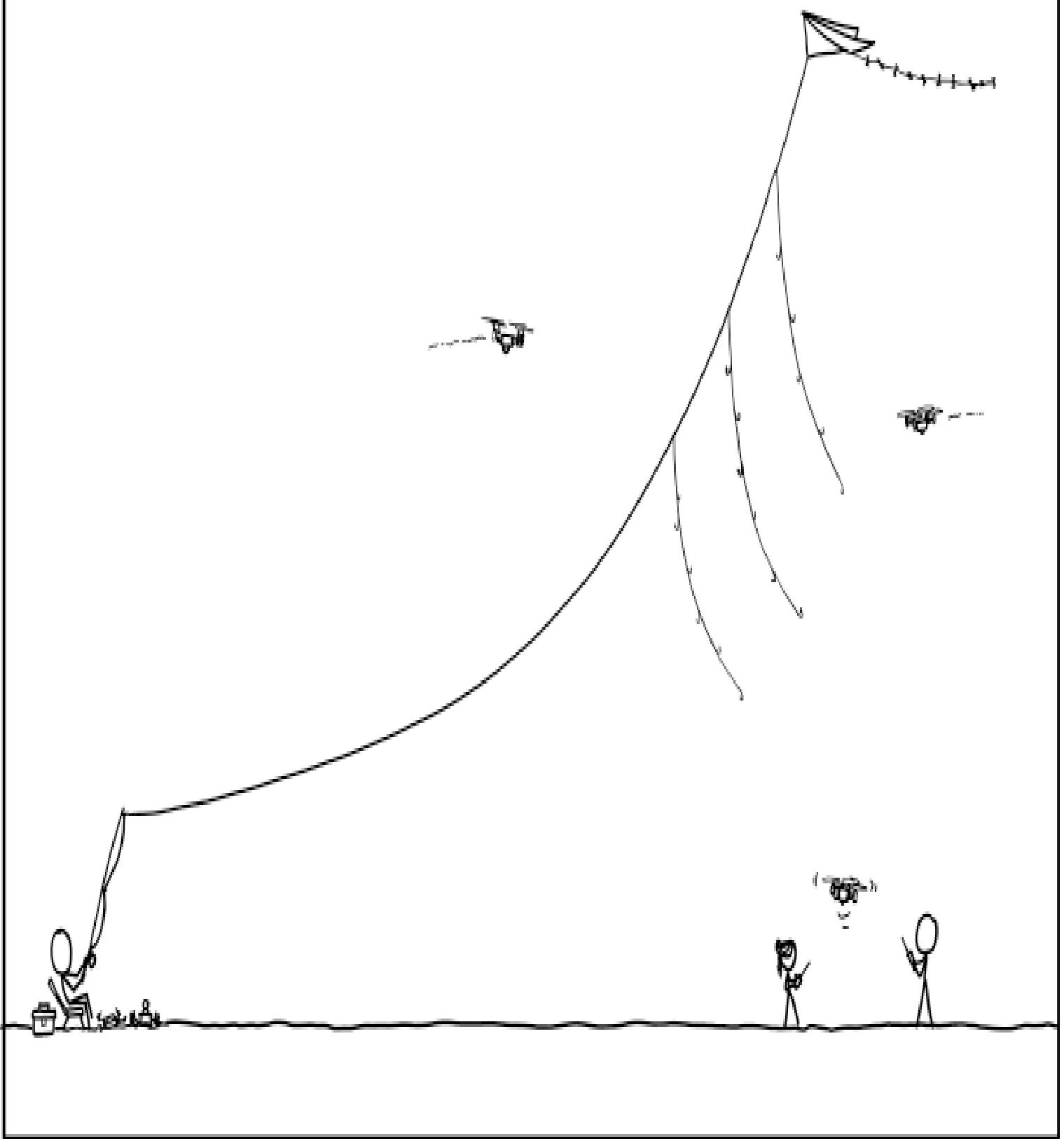


ARE THOSE... ROOMBAS?

YEAH, THE DOCKLESS  
RENTAL APPS HAVE  
REALLY TAKEN OFF.

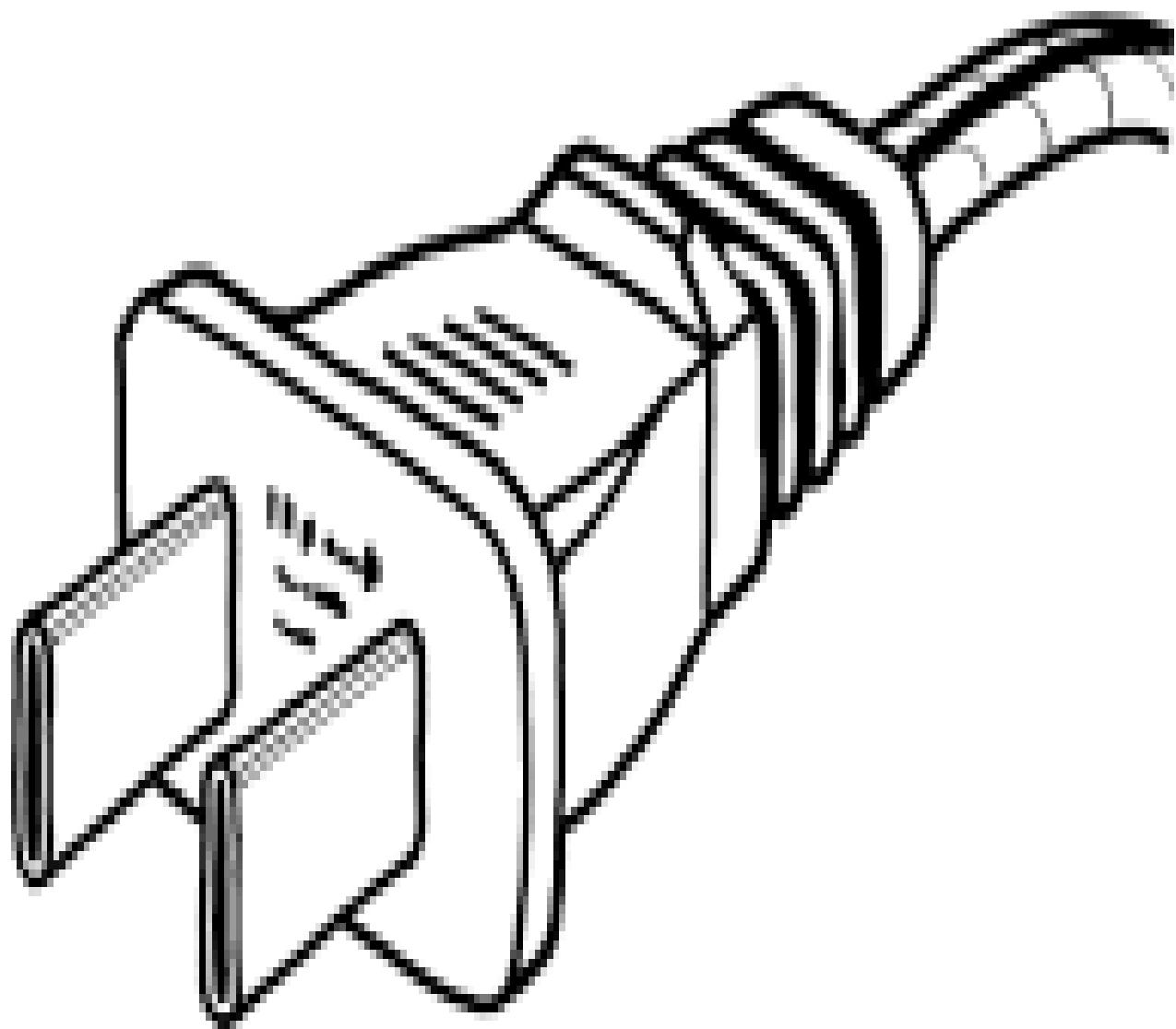
WHAT?





MY HOBBY: DRONE FISHING

# CURSED CONNECTORS #187



DUAL USB-C

# DYNAMIC

"IT'S IMPOSSIBLE TO USE THE WORD 'DYNAMIC' IN THE PEJORATIVE SENSE... THUS, I THOUGHT 'DYNAMIC PROGRAMMING' WAS A GOOD NAME."

- RICHARD BELLMAN, EXPLAINING HOW HE PICKED A NAME FOR HIS MATH RESEARCH TO TRY TO PROTECT IT FROM CRITICISM (EYE OF THE HURRICANE, 1984)

# ENTROPY

"YOU SHOULD CALL IT 'ENTROPY'... NO ONE KNOWS WHAT ENTROPY REALLY IS, SO IN A DEBATE YOU WILL ALWAYS HAVE THE ADVANTAGE."

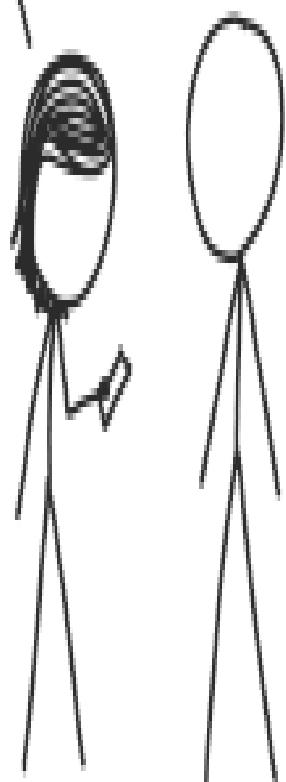
- JOHN VON NEUMANN, TO CLAUDE SHANNON, ON WHY HE SHOULD BORROW THE PHYSICS TERM IN INFORMATION THEORY (AS TOLD TO MYRON TRIBUS)



SCIENCE TIP: IF YOU HAVE A COOL CONCEPT YOU NEED A NAME FOR, TRY "DYNAMIC ENTROPY."

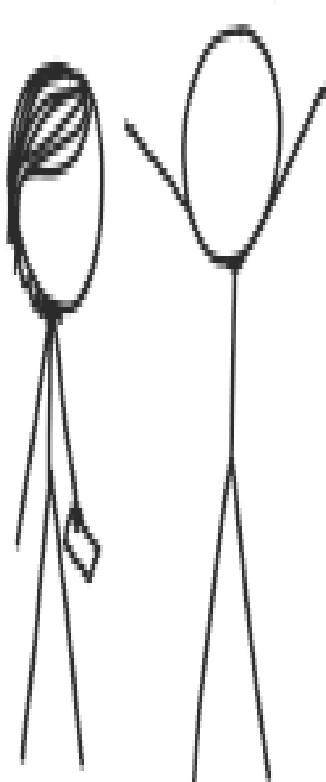
OOH, CALIFORNIA HAS  
A NEW EARTHQUAKE  
EARLY WARNING APP.

YEAH, I'M SO  
MAD ABOUT IT.



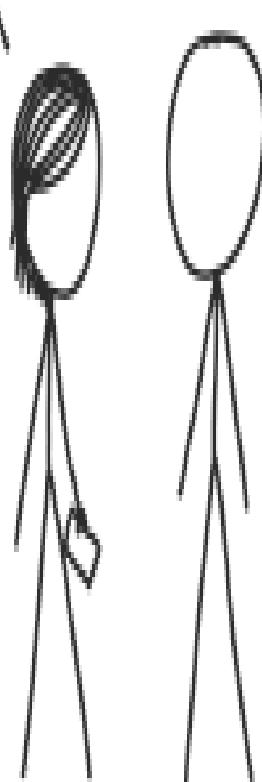
WHAT? WHY?

IT RUINS THE EXPERIENCE  
OF TRYING TO RECOGNIZE  
THE P-WAVES BEFORE THE  
OBVIOUS MAIN WAVES HIT.



SO YOU'RE MAD ABOUT  
EARTHQUAKE SPOILERS?

I JUST WANT  
TO EXPERIENCE  
THE SHAKING THE  
WAY THE TECTONIC  
PLATE INTENDED!



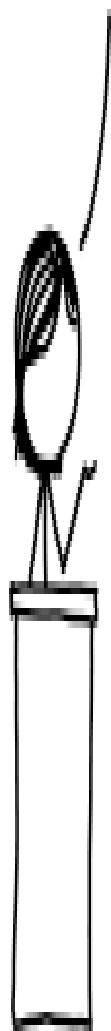
WE'VE DISCOVERED  
THE MOST EARTH-LIKE  
EXOPLANET YET!



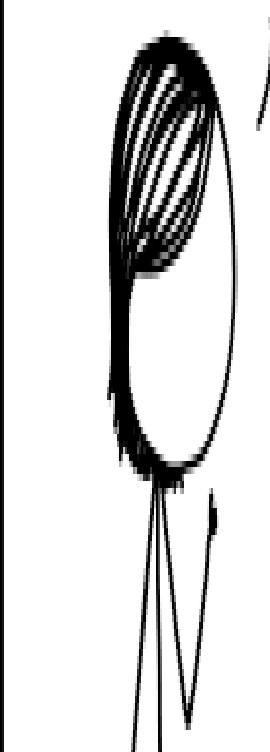
WELL, IT'S IN THE  
HABITABLE ZONE.  
HABITABLE-ish.  
'HABITABLE'  
THE SURVIVABLE ZONE.



IT'S TIDALLY LOCKED  
AND BLASTED WITH  
STELLAR FLARES. AND  
PROBABLY METEORS.  
AND BATHED IN ACID.



BUT WE'VE DETECTED  
WATER VAPOR! IN BETWEEN  
ALL THE SWINGING BLADES.  
I SEE.  
WE'RE HOPING TO FIND  
BIOSIGNATURES IN THE  
FORM OF SCREAMING.



HAPPY BIRTHDAY, EMILY!

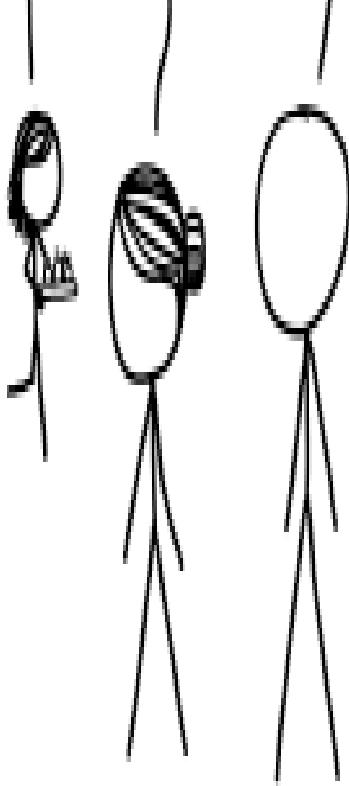
WAIT, WASN'T THAT

LAST MONTH?

WHEN'S YOUR

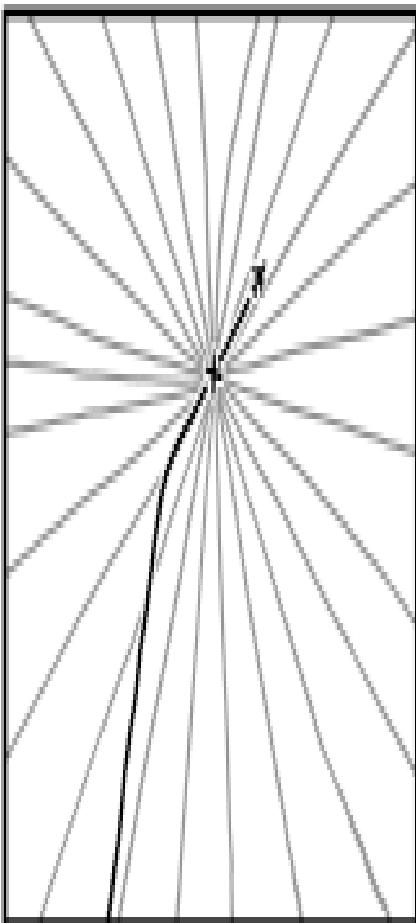
BIRTHDAY, ANYWAY?

IT'S  
COMPLICATED.



MY MOM WENT INTO  
LABOR ON AN ARCTIC  
INTERNATIONAL FLIGHT  
THAT DIVERTED DIRECTLY  
OVER THE NORTH POLE.

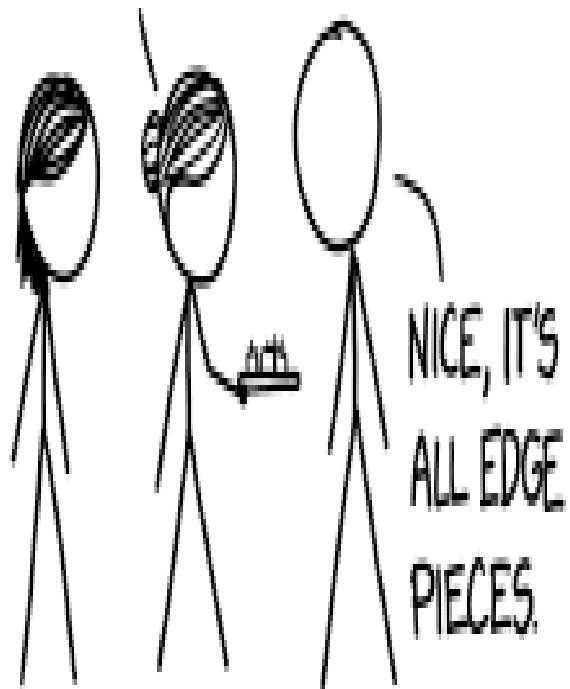
I WAS BORN IN EVERY  
TIME ZONE AT ONCE.



IT WAS ALSO FEBRUARY 29TH, AND  
THE AIRLINE WAS JUST CHANGING  
OWNERSHIP BETWEEN COUNTRIES.

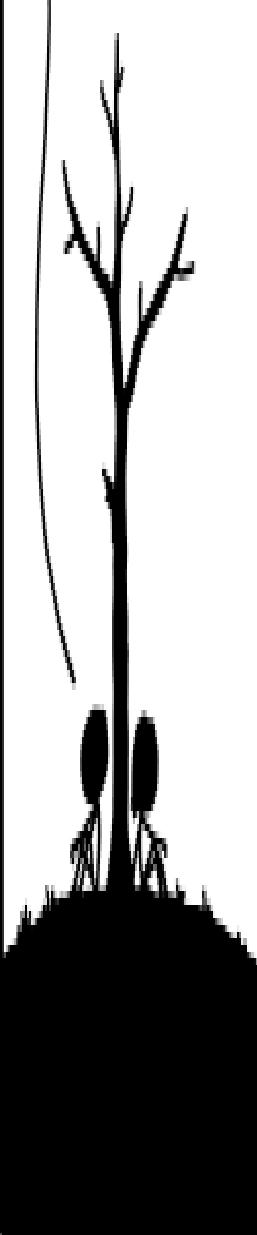
THE INTERNATIONAL BUREAU OF  
WEIGHTS AND MEASURES FINALLY  
ISSUED A DECLARATION THAT IT'S  
MY BIRTHDAY WHENEVER I WANT.

CAKE?

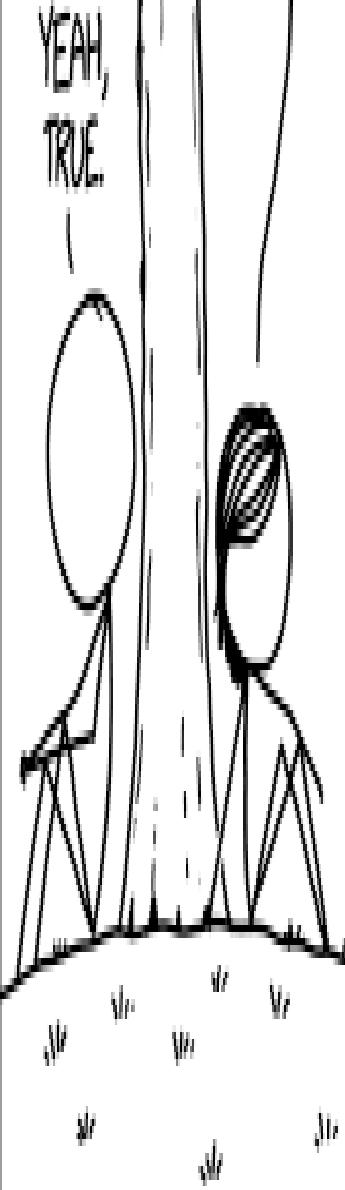


NICE, IT'S  
ALL EDGE  
PIECES.

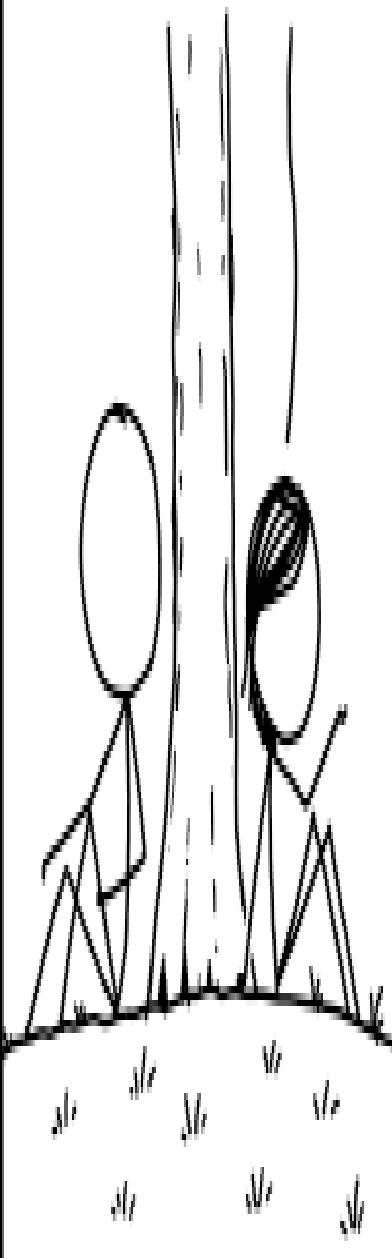
I DON'T GET  
HOW EDIBLE  
ARRANGEMENTS  
IS A THING.



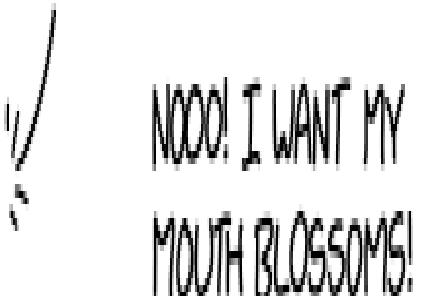
THAT'S EASY—PICKING  
OUT PRESENTS IS HARD  
AND FRUIT IS DELICIOUS.



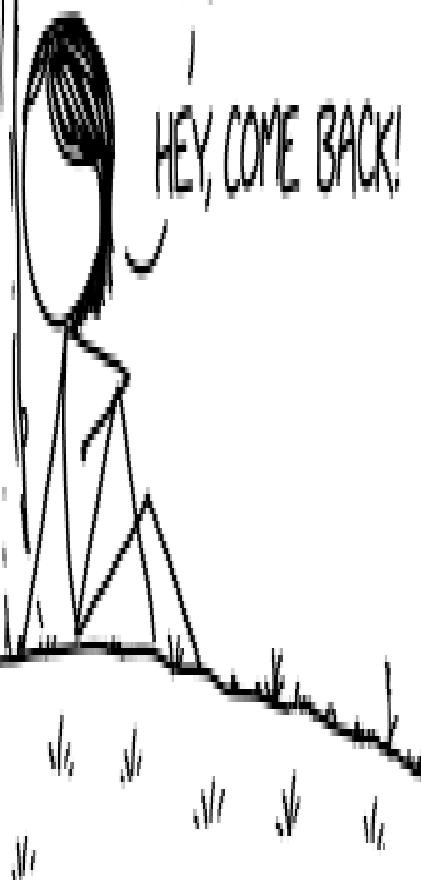
BUT MY QUESTION IS, WHY  
DID THEY CALL IT "EDIBLE  
ARRANGEMENTS" AND NOT  
"VORE OF THE ROSES"?



JUST FOR THAT, I'M GOING TO  
CANCEL THE ONE I GOT YOU.



MY JUICY BOUQUET!  
MY ORAL FLORAL!  
HEY, COME BACK!



# EFFECTS OF HIGH ALTITUDE

HOW LIFE IS DIFFERENT AT ONE MILE ABOVE SEA LEVEL  
(E.G. IN DENVER)

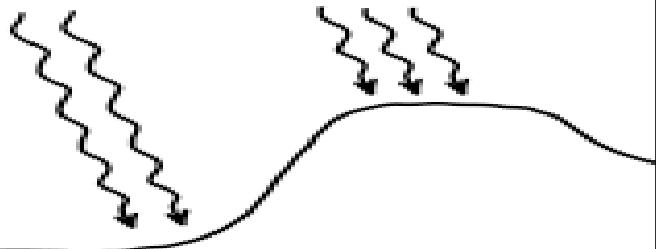
WATER BOILS  
AT 202°F



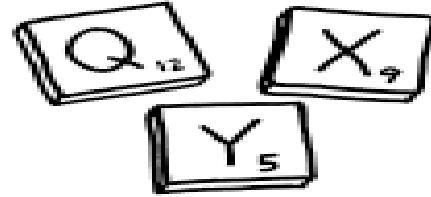
BASEBALLS AND  
GOLF BALLS FLY  
5-10% FARTHER



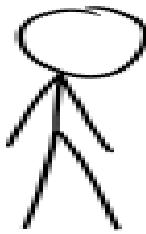
SUNBURNS DEVELOP  
SIGNIFICANTLY FASTER



SCRABBLE LETTERS  
ARE WORTH 16% MORE



BREAKING A MIRROR  
CAUSES ONLY 5½  
YEARS OF BAD LUCK

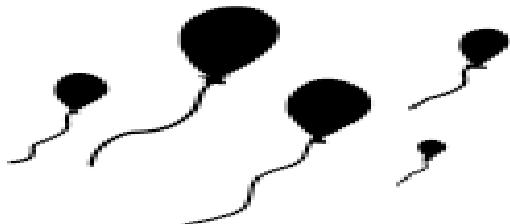


40 IS THE NEW 28

50 IS THE NEW 40, AND  
WHEN YOU ACCOUNT  
FOR ELEVATION IT'S  
MORE LIKE 37.



NUCLEAR WAR CAN BE  
TRIGGERED WITH ONLY  
94 RED BALLOONS

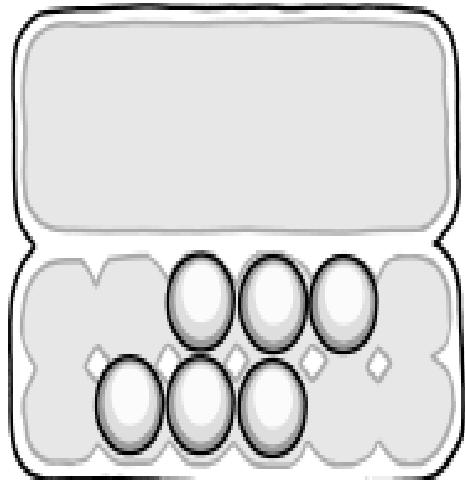


PEOPLE MAKE  
MARIJUANA JOKES  
SLIGHTLY EARLIER  
HEY, WHAT TIME IS IT?

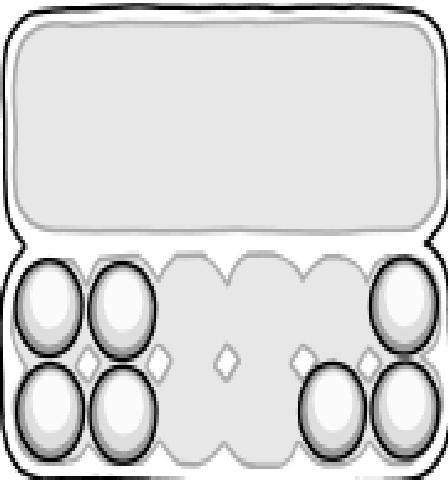
4:17 BLAZE IT!



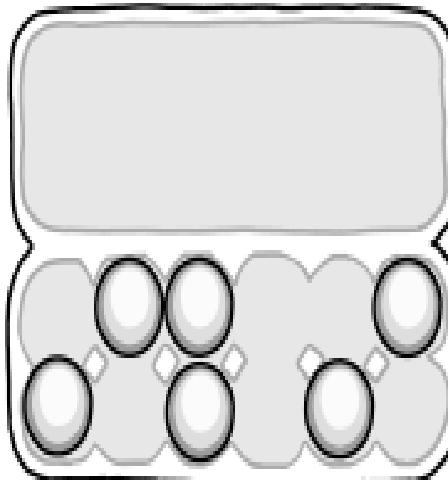
LAWFUL GOOD



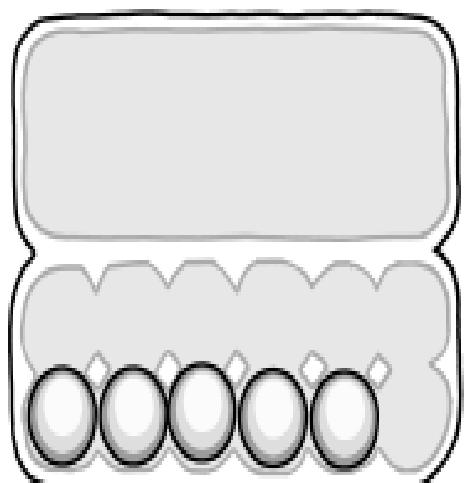
NEUTRAL GOOD



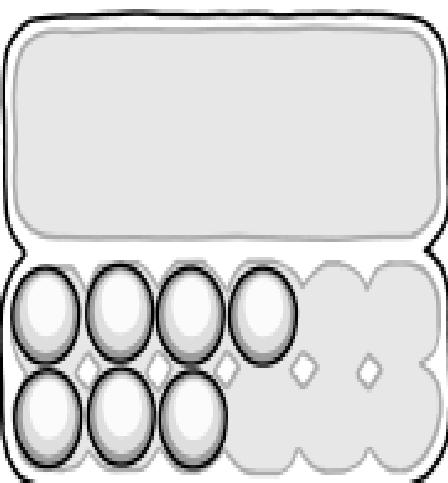
CHAOTIC GOOD



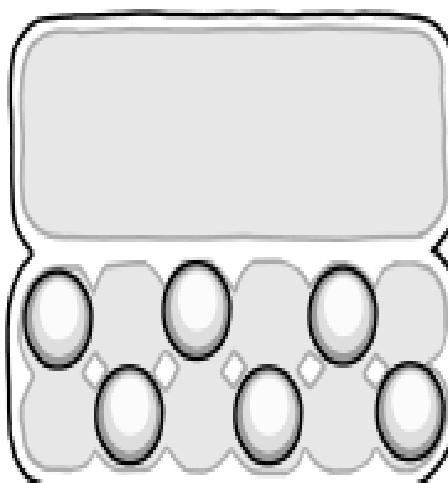
LAWFUL NEUTRAL



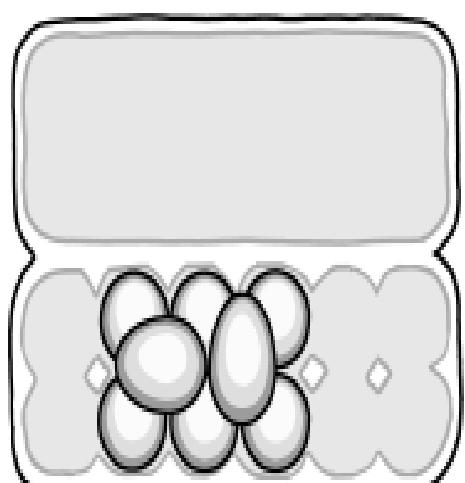
TRUE NEUTRAL



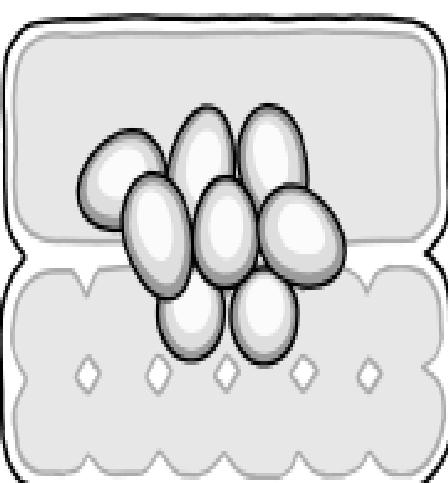
CHAOTIC NEUTRAL



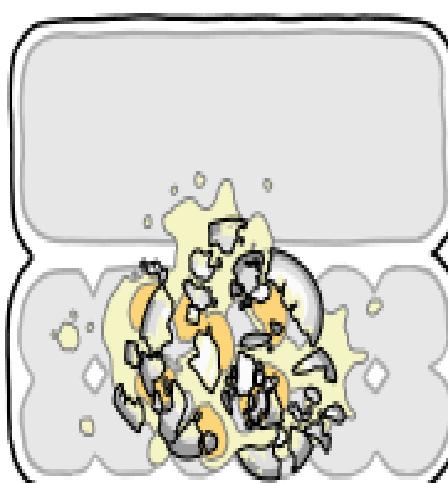
LAWFUL EVIL



NEUTRAL EVIL

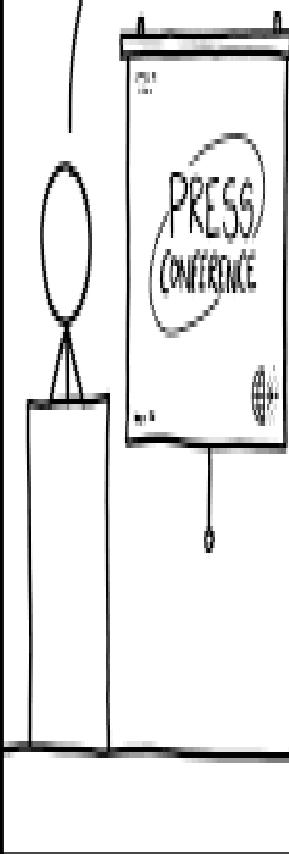


CHAOTIC EVIL



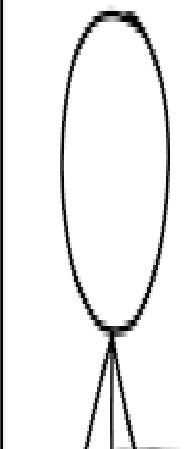
WE LINKED UP OUR OBSERVATORIES, GOT EVERYTHING ALIGNED, AND THERE IT WAS:

THE FIRST IMAGE OF A BLACK HOLE!



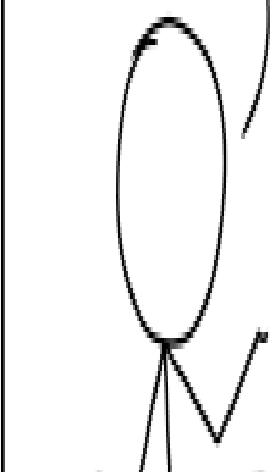
CAN YOU SHARE THE PICTURE?

WELL, HERE'S THE THING...



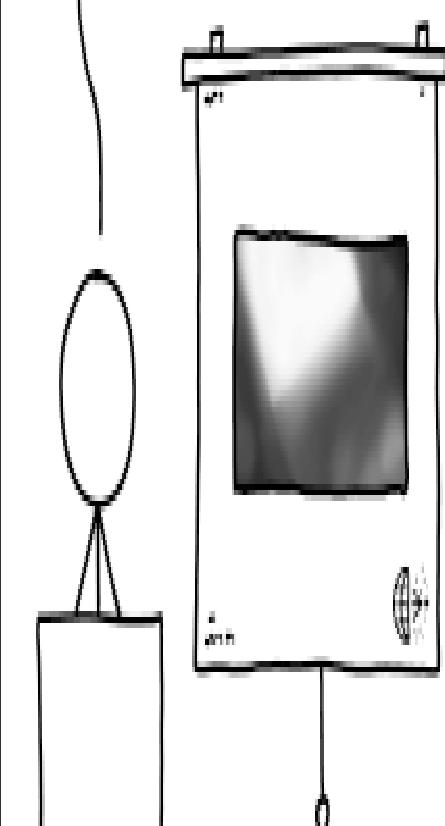
TURNS OUT OUR TELESCOPE FEED IS LIKE PINTEREST, WHERE YOU CAN'T RIGHT-CLICK TO SAVE AN IMAGE.

SO WE TRIED TO TAKE A SCREENSHOT, BUT THE KEY COMBINATION KEPT TURNING OFF THE DISPLAY INSTEAD.



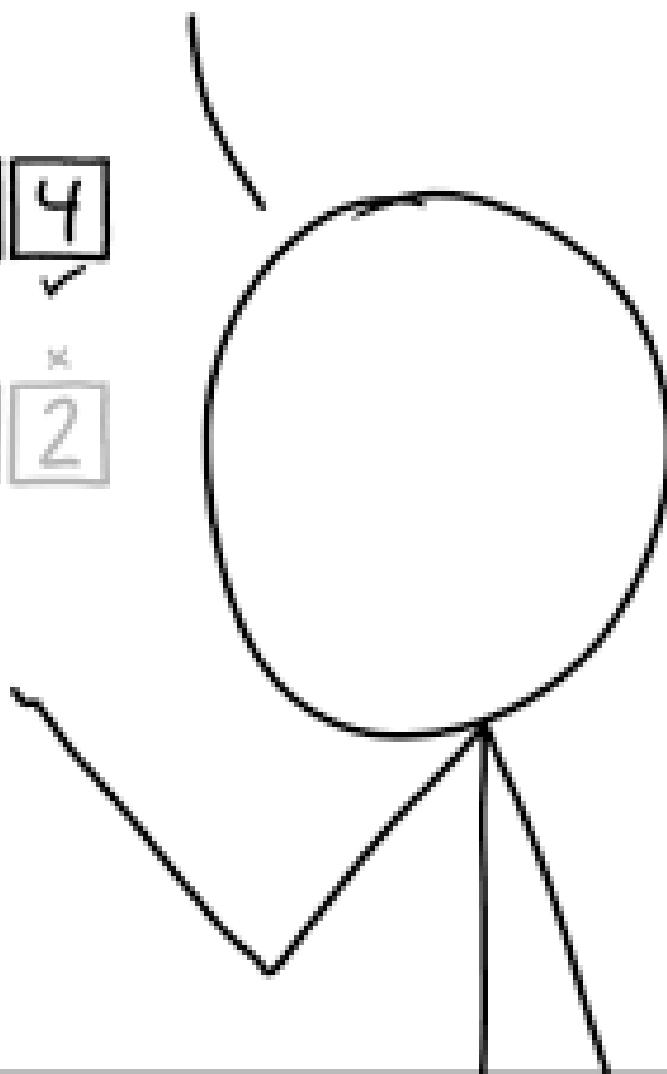
I GRABBED MY PHONE AND TRIED TO TAKE A PICTURE OF THE SCREEN, BUT I WAS TOO SLOW. THE OBSERVATION HAD ENDED.

WERE PLANNING TO TRY AGAIN NEXT YEAR, AND WE'LL DEFINITELY RECORD THE SCREEN THIS TIME.



SMITH IS LEADING IN 3 OF THE 5 DIGITS,  
AND IS TIED IN ANOTHER. BUT JONES HAS  
A SOLID LEAD IN THE THOUSANDS PLACE,  
IF SMITH CAN'T CATCH UP THERE, IT'S OVER.

|       |     |   |   |   |   |
|-------|-----|---|---|---|---|
| SMITH | 5   | 5 | 3 | 8 | 4 |
|       | TIE | x | ✓ | ✓ | ✓ |
|       | TIE | ✓ | x | x | x |
| JONES | 5   | 9 | 1 | 0 | 2 |



A LOT OF ELECTION COMMENTARY JUST  
CONSISTS OF UNNECESSARILY CONVOLUTED  
WAYS TO ADD UP WHO HAS MORE VOTES.

# DO YOU KNOW ANYONE IN ARIZONA?

RESEARCH SHOWS THAT REMINDERS FROM FRIENDS AND FAMILY TO VOTE HAVE A BIGGER EFFECT ON TURNOUT THAN ANYTHING CAMPAIGNS DO.

ONE OF THE BEST WAYS YOU CAN HELP IS TO SCROLL THROUGH YOUR CONTACTS (OR USE APPS LIKE VOTEWITHME) TO FIND PEOPLE YOU CAN CHECK IN WITH TO SEE IF THEY PLAN TO VOTE OR NEED HELP DOING IT.

THIS CHART LETS YOU TALLY THE EFFECT OF YOUR REMINDERS ON THE OUTCOME BASED ON WHO YOU'VE CONTACTED AND WHERE THEY LIVE.

## ELECTION IMPACT SCORE SHEET

| STATE                                                                                    | CHECK-INS | BONUS* POINTS |  |
|------------------------------------------------------------------------------------------|-----------|---------------|--|
| PENNSYLVANIA                                                                             |           | x5            |  |
| MAINE<br>ARIZONA<br>NEVADA                                                               |           | x4            |  |
| ALASKA<br>MONTANA<br>NEW MEXICO                                                          |           | x3            |  |
| WISCONSIN<br>MINNESOTA<br>IOWA<br>NORTH CAROLINA<br>NEW HAMPSHIRE<br>GEORGIA<br>NEBRASKA |           | x2            |  |
| MICHIGAN<br>FLORIDA<br>KANSAS<br>MISSISSIPPI<br>COLORADO                                 |           | x1            |  |
| ALL OTHER STATES                                                                         |           | x½            |  |
| YOUR ELECTION IMPACT:                                                                    |           |               |  |

\*MULTIPLIER BASED ON 538 PRESIDENTIAL VOTE IMPACT, PLUS POINTS FOR SENATE AND LOCAL ELECTIONS

| STATE                                                                                    | CHECK-INS | BONUS* POINTS |    |
|------------------------------------------------------------------------------------------|-----------|---------------|----|
| PENNSYLVANIA                                                                             | //        | x5            | 10 |
| MAINE<br>ARIZONA<br>NEVADA                                                               | /         | x4            | 4  |
| ALASKA<br>MONTANA<br>NEW MEXICO                                                          | /         | x3            | 3  |
| WISCONSIN<br>MINNESOTA<br>IOWA<br>NORTH CAROLINA<br>NEW HAMPSHIRE<br>GEORGIA<br>NEBRASKA | ///       | x2            | 6  |
| MICHIGAN<br>FLORIDA<br>KANSAS<br>MISSISSIPPI<br>COLORADO                                 |           | x1            |    |
| ALL OTHER STATES                                                                         | ###       | x½            | 3  |
| YOUR ELECTION IMPACT:                                                                    |           |               | 26 |

BASED ON TURNOUT EXPERIMENTS, 10 POINTS ON THIS SCALE HAS ROUGHLY AS MUCH EFFECT ON THE OUTCOME AS ONE AVERAGE VOTE.

FOR EVERY 10 POINTS YOU TALLY, IT'S AS IF YOU VOTED AGAIN!

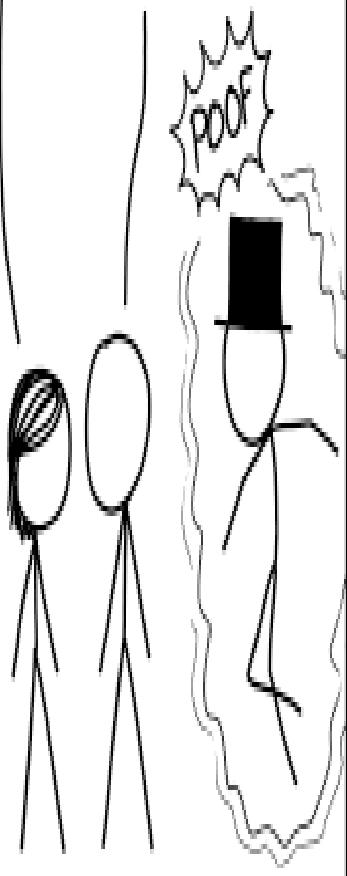


[CLICK FOR PRINTABLE VERSION]

SHARE A PIC OF YOUR SCORE SHEET WITH #HASHTAG, AND BE SURE TO SEND A COPY TO NATE SILVER TO LET HIM KNOW TO INCLUDE THOSE EXTRA VOTES IN HIS MODEL!

UGH, I'M JUST GOING TO HIDE OUT FOR ELECTION NIGHT. WELL KNOW THE RESULTS THE NEXT DAY ANYWAY. THE DRAMA IS SO UNNECESSARY.

YEAH, THE INTERNET AND 24-HOUR NEWS HAVE TURNED ELECTIONS INTO A CONTINUOUS, INESCAPABLE MEDIA ONSLAUGHT.



HI! I'M A TIME TRAVELER FROM 1896. LET ME TELL YOU ABOUT OUR ELECTION NIGHT COVERAGE.

\*AHEM\*  
FROM THE CHICAGO TRIBUNE:

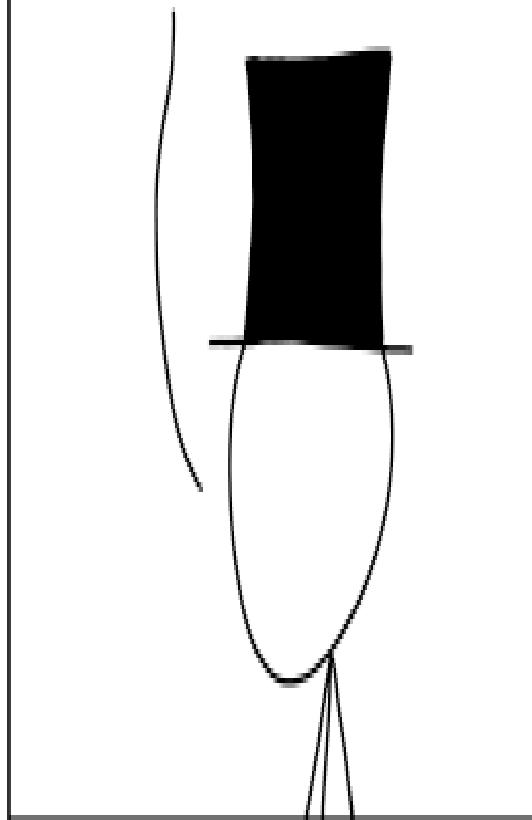


"ONCE EVERY HOUR FROM THE ROOF OF THE GREAT NORTHERN HOTEL A SERIES OF BOMBS, WHICH WILL ASCEND FOR SEVERAL THOUSAND FEET, WILL BE FIRED. TWO COLORS WILL BE USED, BLUE AND RED."

"BLUE TO INDICATE MCKINLEY'S ELECTION, RED TO INDICATE BRYAN'S ELECTION."

"THE BOMBARDMENT OF THE SKIES WILL COMMENCE AT 7 O'CLOCK AND WILL BE REPEATED HOURLY."

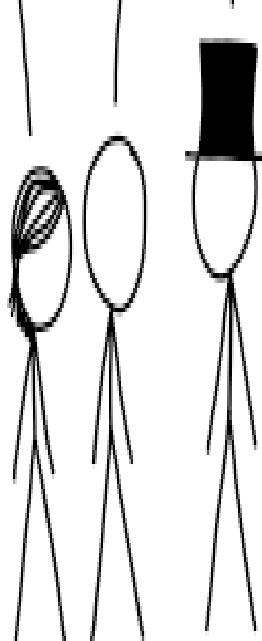
- CHICAGO TRIBUNE, OCT 30<sup>TH</sup> & NOV 1<sup>ST</sup>, 1896



YEAH, WELL, WE HAVE A NEEDLE, THOUGH.

A NEEDLE.  
IT JIGGLES!

SOUNDS AWFUL.  
LISTEN, YOU HAD TO BE THERE.



# — SCREEN TIME REPORT —

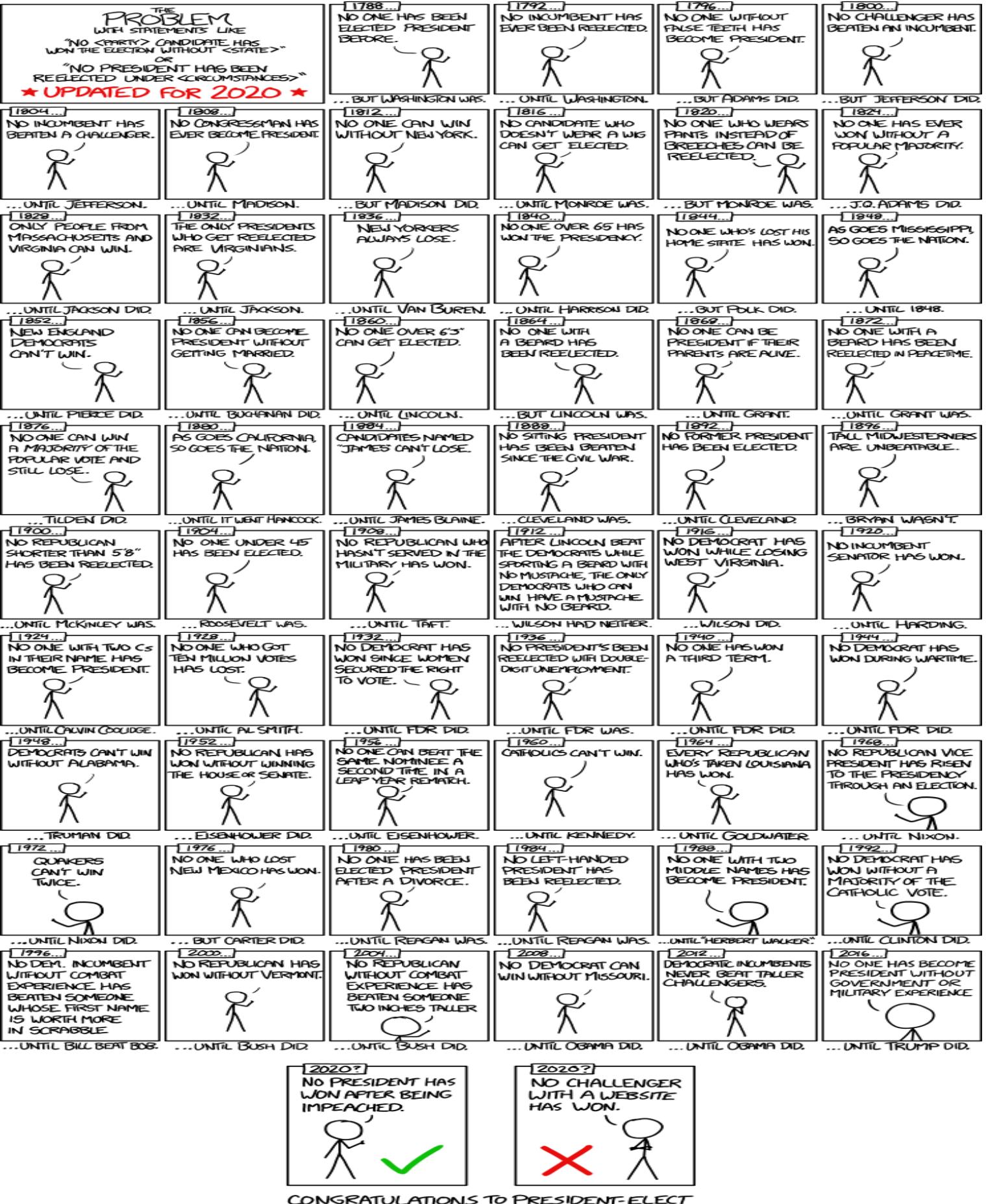
STAYING INFORMED ABOUT POLITICS  
LIKE A GOOD CIVIC-MINDED PERSON

| 26M

READING ELECTION UPDATES THAT  
WON'T AFFECT YOUR ACTIONS IN  
ANY WAY BUT SLIGHTLY IMPROVE  
YOUR KNOWLEDGE ABOUT WHAT'S  
GOING TO HAPPEN IN A FEW WEEKS

| 9h14m





CONGRATULATIONS TO PRESIDENT-ELECT JOE BIDEN FOR BREAKING THE WEBSITE CURSE!

# EMAIL SETTINGS

## DEFAULT REPLY BEHAVIOR

- REPLY
- REPLY ALL
- FORWARD TO ADDRESS BOOK

## VACATION AUTORESPONDER

- WHILE ON VACATION
- ALWAYS

REPLY TO ALL NEWSLETTERS WITH "THANK YOU FOR THE NEWSLETTER!"

## ATTACHMENT LIMIT

- 300 KB
- 1.4 MB
- 5 MB (BETA)

## DEFAULT EMAIL FORMAT

- PLAIN TEXT
- HTML
- CSS

REPLY TO HTML EMAILS WITH "WHOA, BUDDY, WHAT'S ALL THIS CODE?"

## CHARACTER SET

- ASCII (UNICODE 0-127 ONLY)
- NON-ASCII (UNICODE 128+ ONLY)

## SMART AUTOCOMPLETE

- DO NOT SUGGEST REPLIES
- SUGGEST REPLIES

AUTOMATICALLY RESPOND TO ALL EMAILS WITH SUGGESTED REPLY

## IMPORTANT EMAILS

- SHOW
- HIDE

## SHOW UNREAD EMAIL COUNT...

- NOW

ON MY PROJECTED DAY OF DEATH

## SIGNATURE

"THAT'S MY EMAIL. HOPE YOU LIKED IT!"   
NONE



LOADING... PLEASE  
INSERT DISK INTO DRIVE A:

↳ \*CLICK\* THERE YOU GO.

THANK YOU. WOW, THIS  
DISK IS INCREDIBLY FAST!

↳ YEAH, UH, IT'S THE NEW  
MODEL FROM MEMOREX.

AMAZING. AND HOW IS  
PRESIDENT REAGAN?

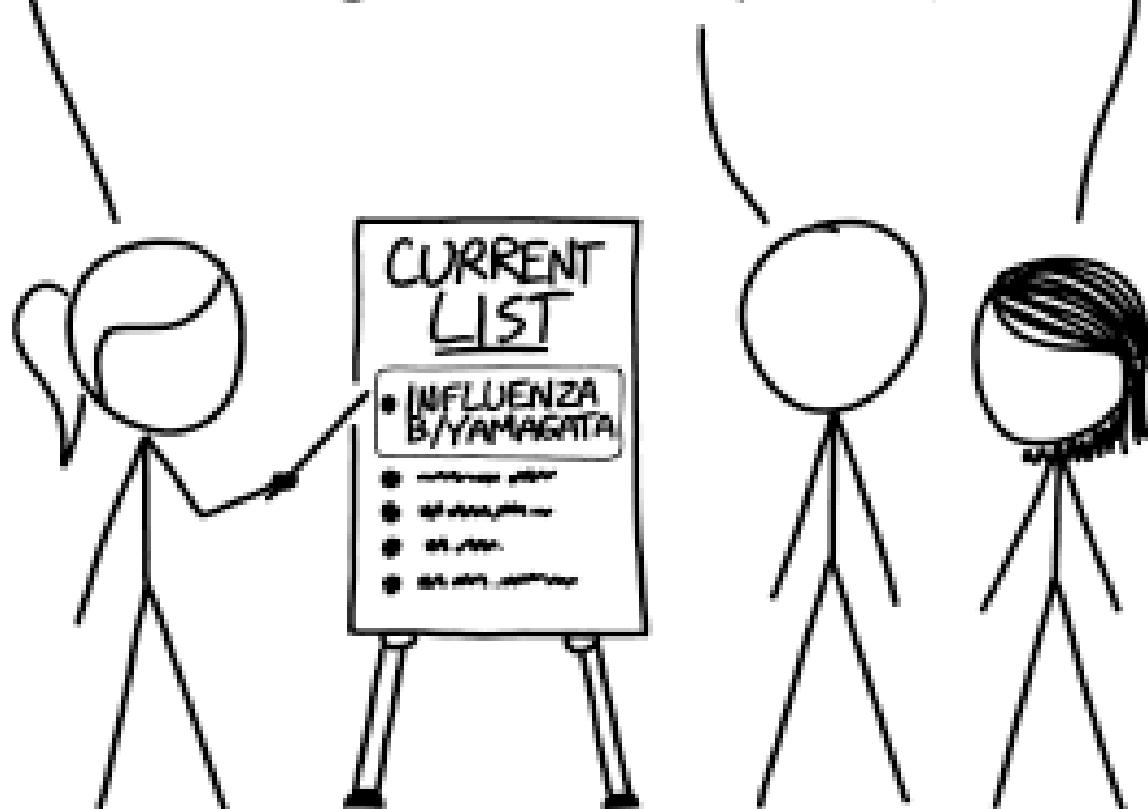
↳ HE'S...HE'S FINE.



I FEEL WEIRD USING OLD  
SOFTWARE THAT DOESN'T  
KNOW IT'S BEING EMULATED.

INFLUENZA'S GENETIC DIVERSITY HAS DECLINED  
DURING THE PANDEMIC, AND THE B/YAMAGATA  
LINEAGE IS AT RISK OF EXTINCTION.  
WHICH WOULD BE SUCH A SHAME.

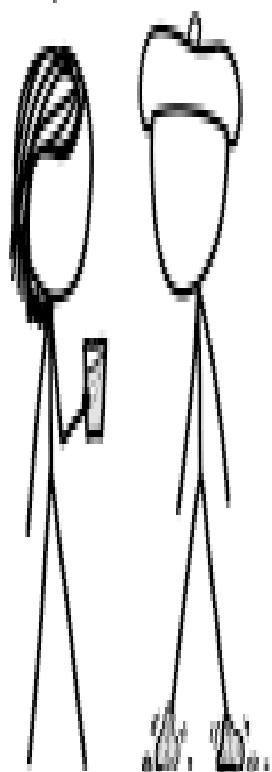
YEAH, I'M SOOOOOO WORRIED ABOUT IT.  
WE'D BE JUST HEARTBROKEN!



WHEN A PATHOGEN THAT SCIENTISTS REALLY DON'T  
LIKE IS CLOSE TO DISAPPEARING, IT GETS ADDED  
TO THE SARCASTIC ENDANGERED SPECIES LIST.

WHY ARE YOUR  
FEET WET?

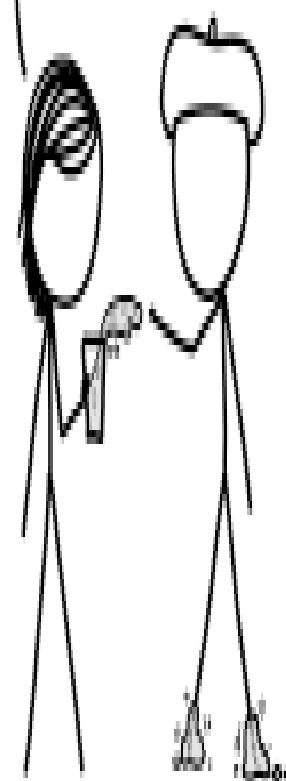
I'M AN  
ENDORHEIC  
BASIN!



HUH?

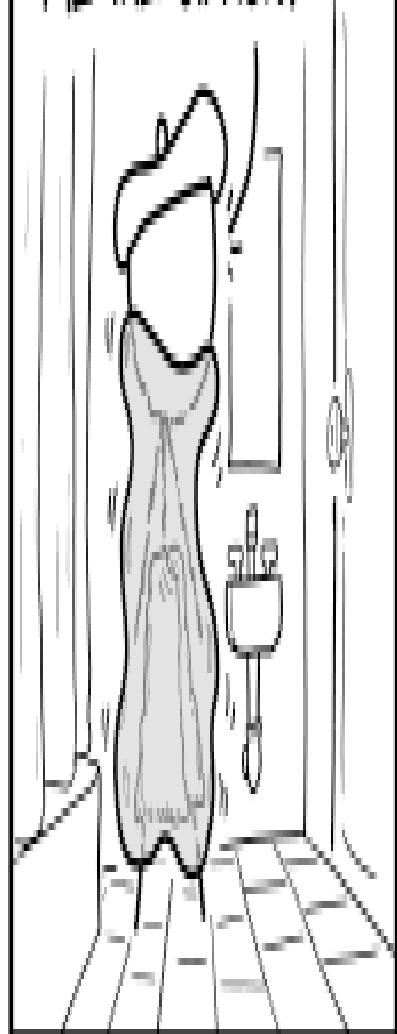
NEARBY WATER  
FLOWS TOWARD ME,  
NOT THE OCEAN.  
I  
SEE?

OH, COOL.



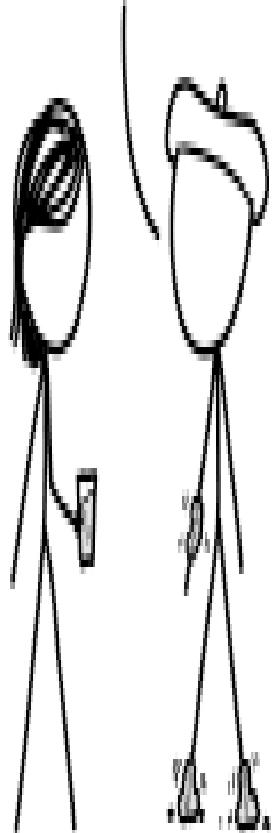
THE MOST ANNOYING  
PART IS DRYING OFF  
AFTER A SHOWER.

CAN SOMEONE BRING  
ME THE SIPHON?



BUT I HAVE TO GET  
RID OF IT OR I'LL  
DEVELOP SALT FLATS.

ANYWAY, LET ME  
KNOW IF YOU NEED  
ANY MINERALS!

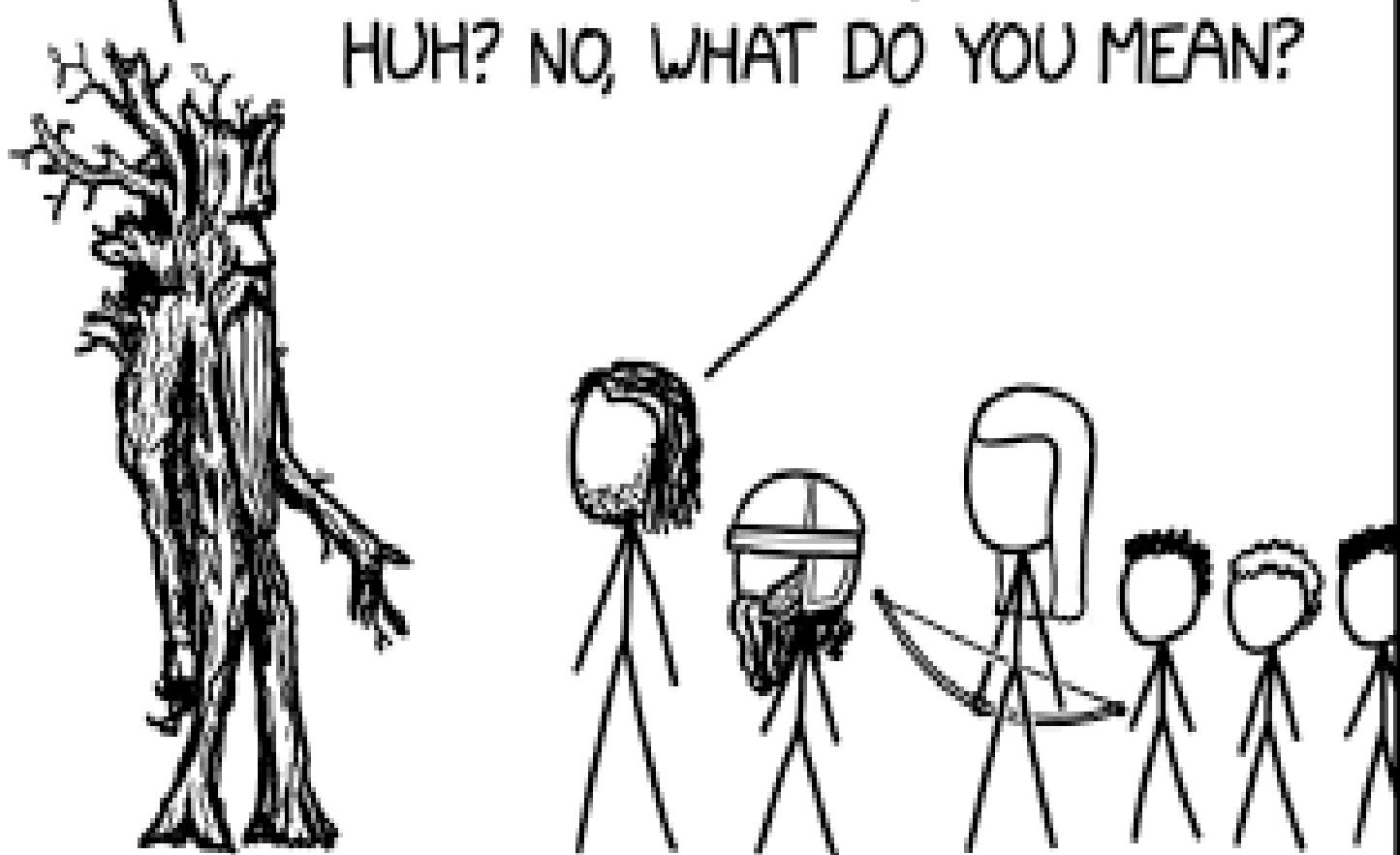


ALAS, THERE ARE NO ENT WOMEN.  
THE ENTWIVES ALL VANISHED IN THE  
SECOND AGE, DURING SAURON'S WAR.

I'M SO SORRY.

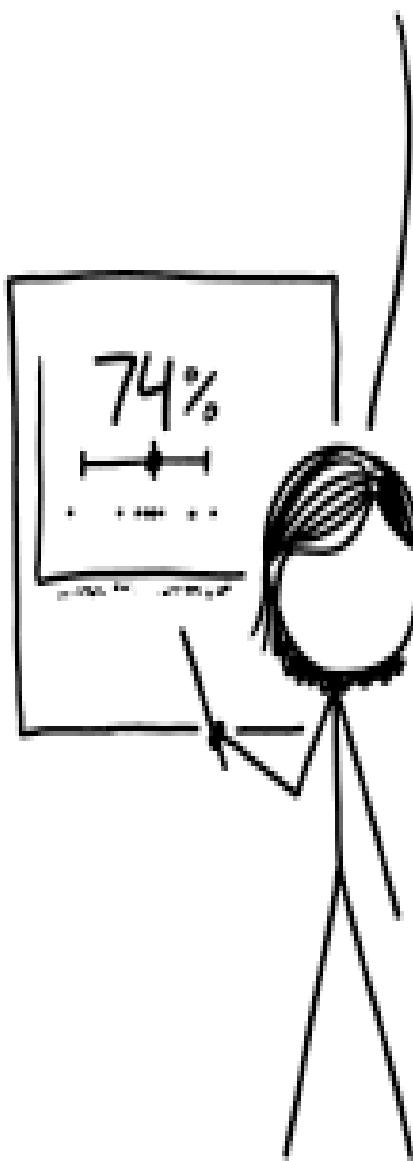
AND WHAT ABOUT YOU ALL?  
SAME STORY, I ASSUME?

HUH? NO, WHAT DO YOU MEAN?



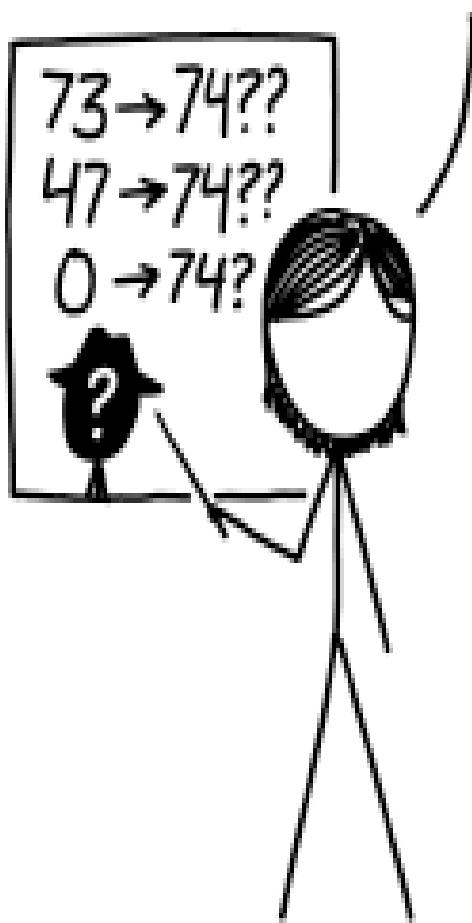
## REGULAR UNCERTAINTY

OUR STUDY FOUND THE DRUG WAS 74% EFFECTIVE, WITH A CONFIDENCE INTERVAL FROM 63% TO 81%.

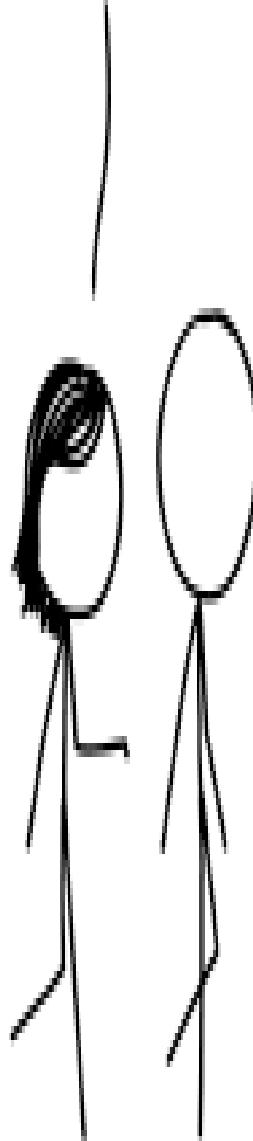


## EPISTEMIC UNCERTAINTY

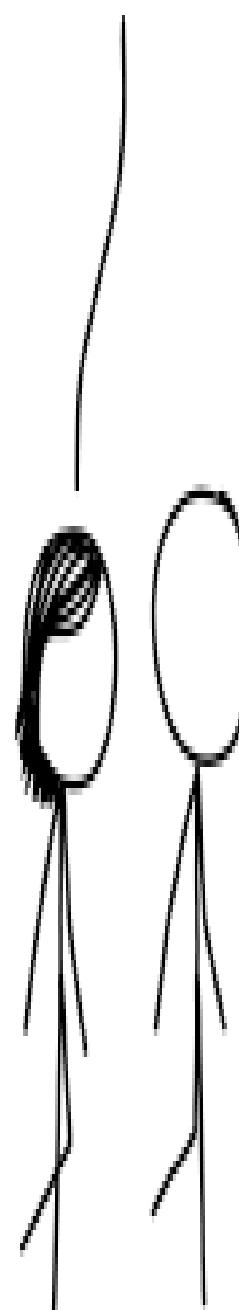
OUR STUDY FOUND THE DRUG TO BE 74% EFFECTIVE. HOWEVER, THERE IS A 1 IN 4 CHANCE THAT OUR STUDY WAS MODIFIED BY GEORGE THE DATA TAMPERER, WHOSE WHIMS ARE UNPREDICTABLE.



EVEN IF THE THREAT  
EVENTUALLY FADES,  
THANKS TO VACCINES  
AND STUFF,

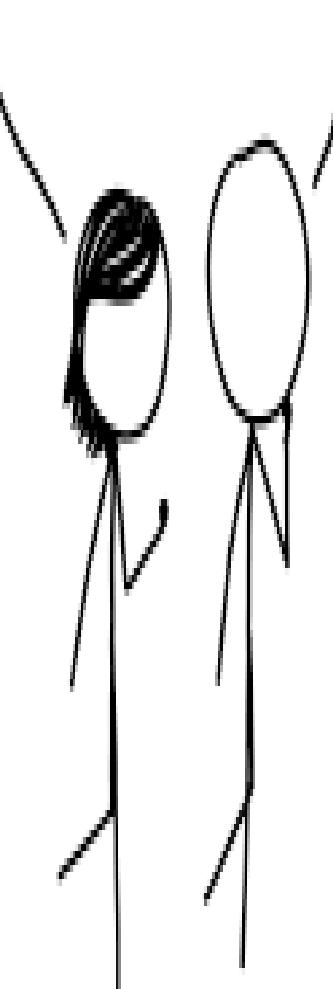


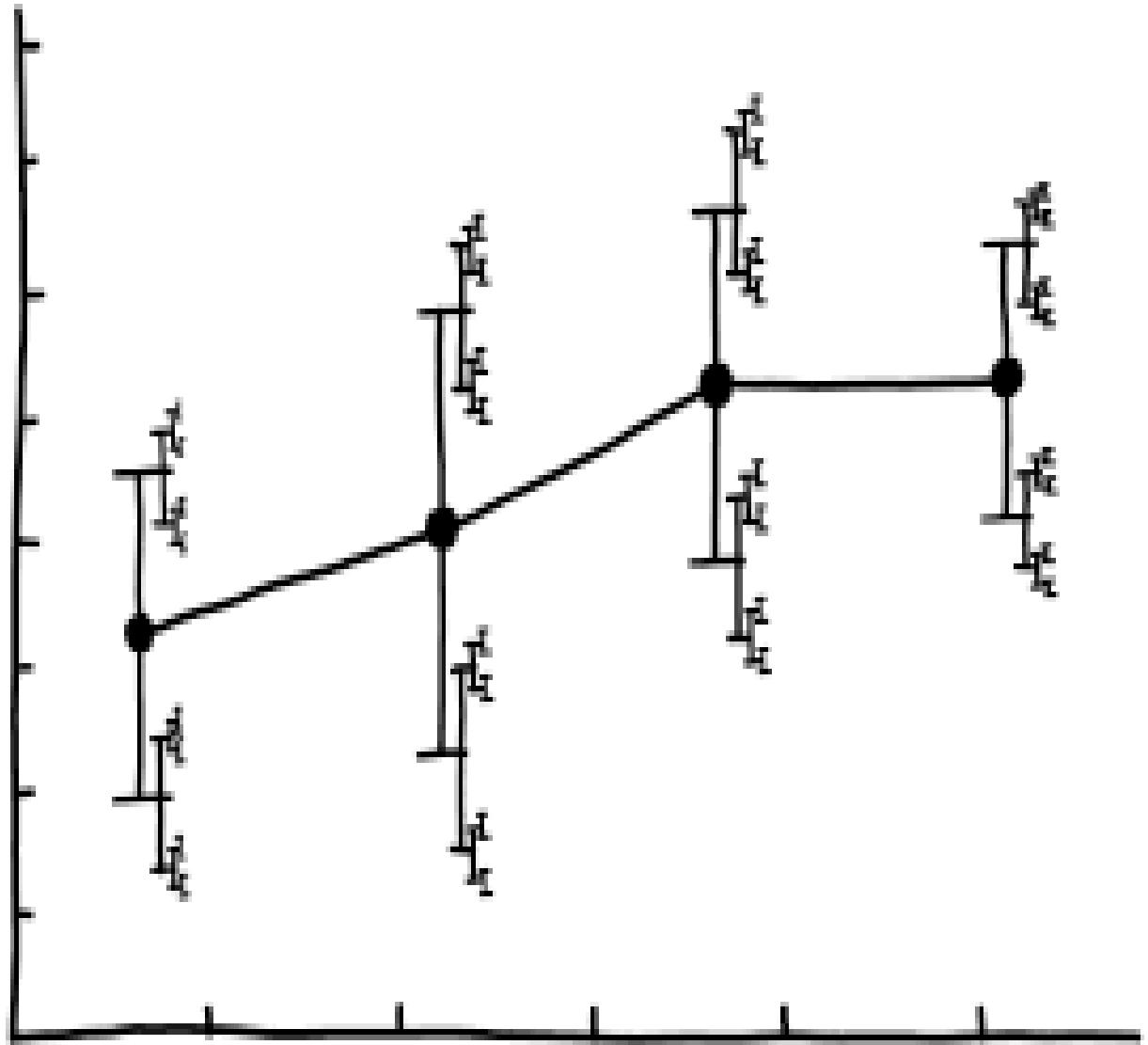
AND IT BECOMES JUST  
ANOTHER CIRCULATING  
COMMON COLD VIRUS,



I THINK WE SHOULD PURSUE  
GLOBAL ERADICATION OF  
SARS-COV-2 OUT OF SPITE.

REVENGE-BASED PUBLIC  
HEALTH POLICY. I LIKE IT.





I DON'T KNOW HOW TO PROPAGATE  
ERROR CORRECTLY, SO I JUST PUT  
ERROR BARS ON ALL MY ERROR BARS.

TYPE I ERROR: FALSE POSITIVE

TYPE II ERROR: FALSE NEGATIVE

TYPE III ERROR: TRUE POSITIVE FOR  
INCORRECT REASONS

TYPE IV ERROR: TRUE NEGATIVE FOR  
INCORRECT REASONS

TYPE V ERROR: INCORRECT RESULT WHICH  
LEADS YOU TO A CORRECT  
CONCLUSION DUE TO  
UNRELATED ERRORS

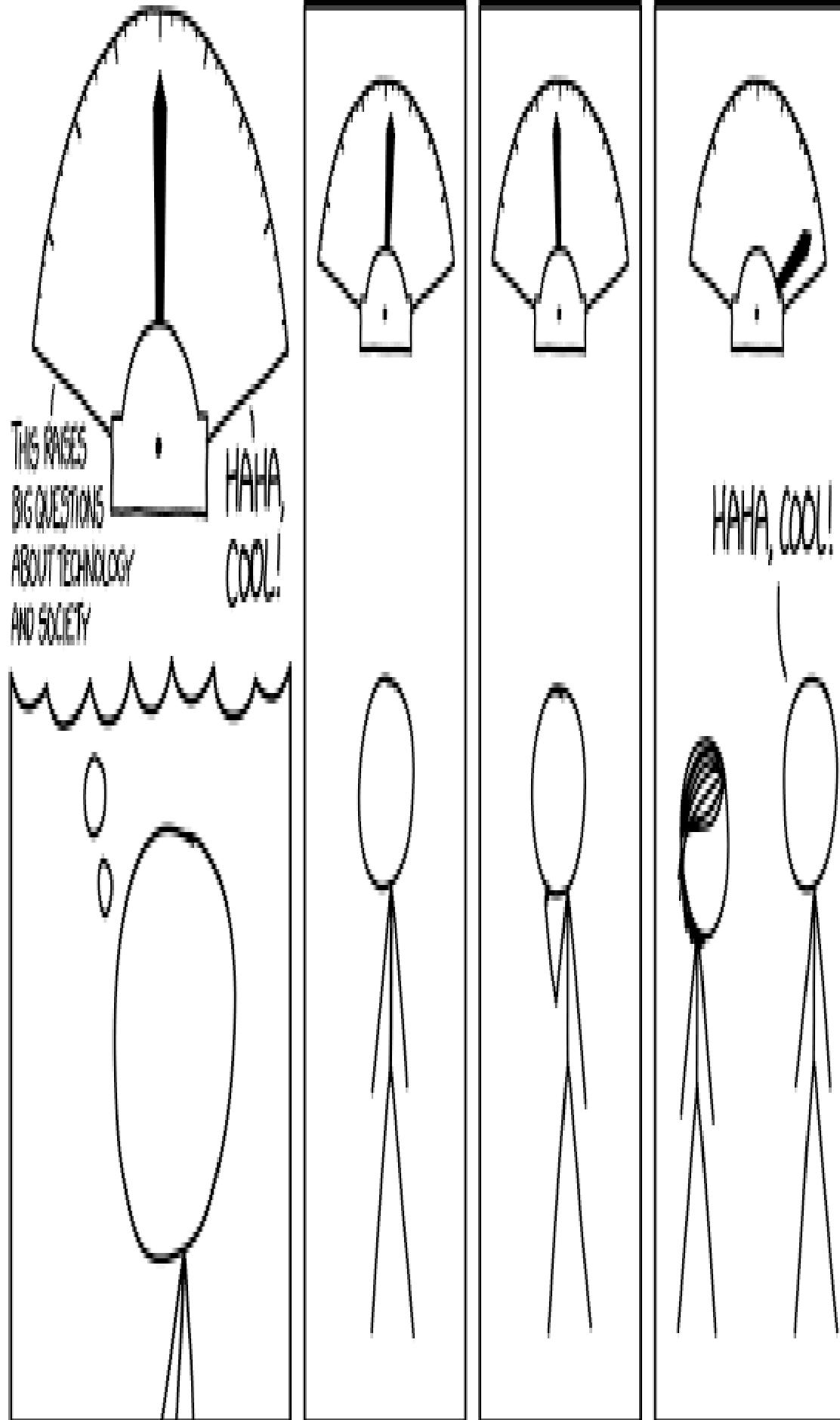
TYPE VI ERROR: CORRECT RESULT WHICH  
YOU INTERPRET WRONG

TYPE VII ERROR: INCORRECT RESULT WHICH  
PRODUCES A COOL GRAPH

TYPE VIII ERROR: INCORRECT RESULT WHICH  
SPARKS FURTHER RESEARCH  
AND THE DEVELOPMENT OF  
NEW TOOLS WHICH REVEAL  
THE FLAW IN THE ORIGINAL  
RESULT WHILE PRODUCING  
NOVEL CORRECT RESULTS

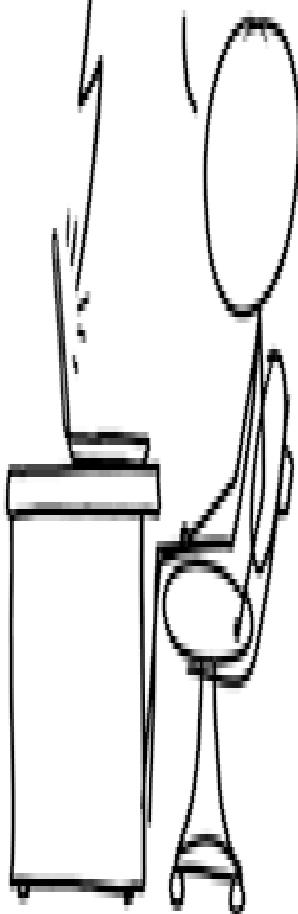
TYPE IX ERROR: THE RISE OF SKYWALKER

SOONER OR LATER, SOMEONE  
IS GOING TO FLY A DRONE  
INTO A TORNADO AND POST  
THE FOOTAGE TO YOUTUBE.



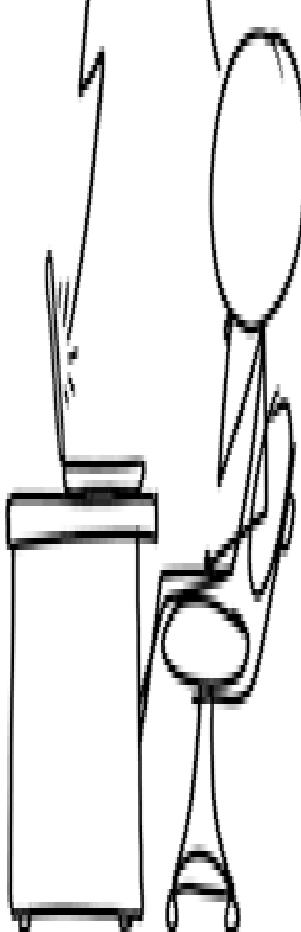
I KNOW IT'S HARD TO  
FOCUS RIGHT NOW, BUT  
WE SHOULD TRY TO  
FINISH TESTING THE DB.

UGHHHH.  
OKAY.



THE SYSTEM NEEDS TO  
GUARANTEE EVENTUAL  
CONSISTENCY.

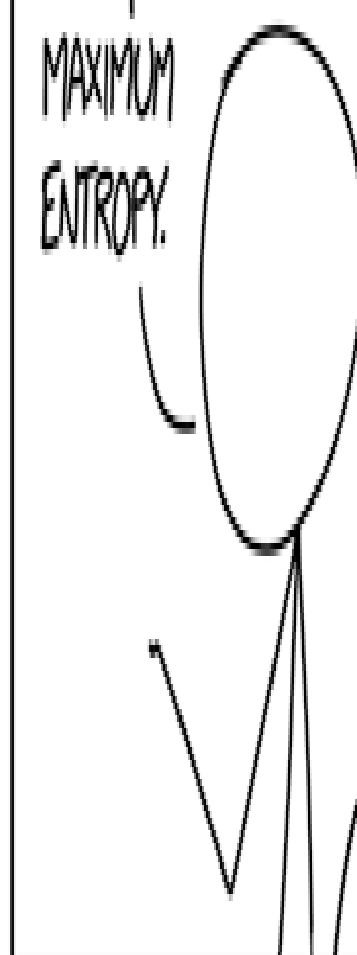
I MEAN,  
IT DOES.



EVENTUAL CONSISTENCY IS  
GUARANTEED BY THE 2ND  
LAW OF THERMODYNAMICS.

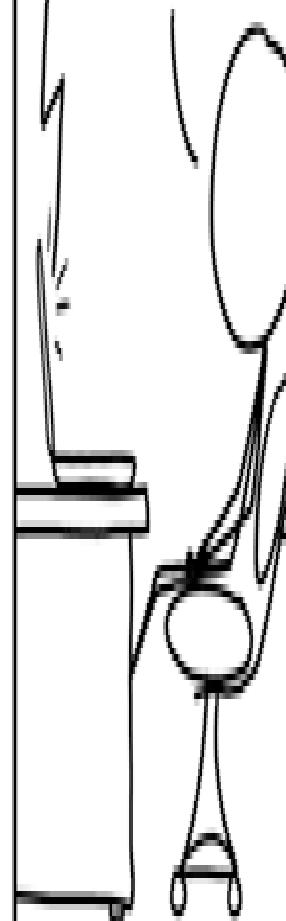
SOONER OR LATER  
THIS WILL ALL BE A  
UNIFORM HEAT BATH.

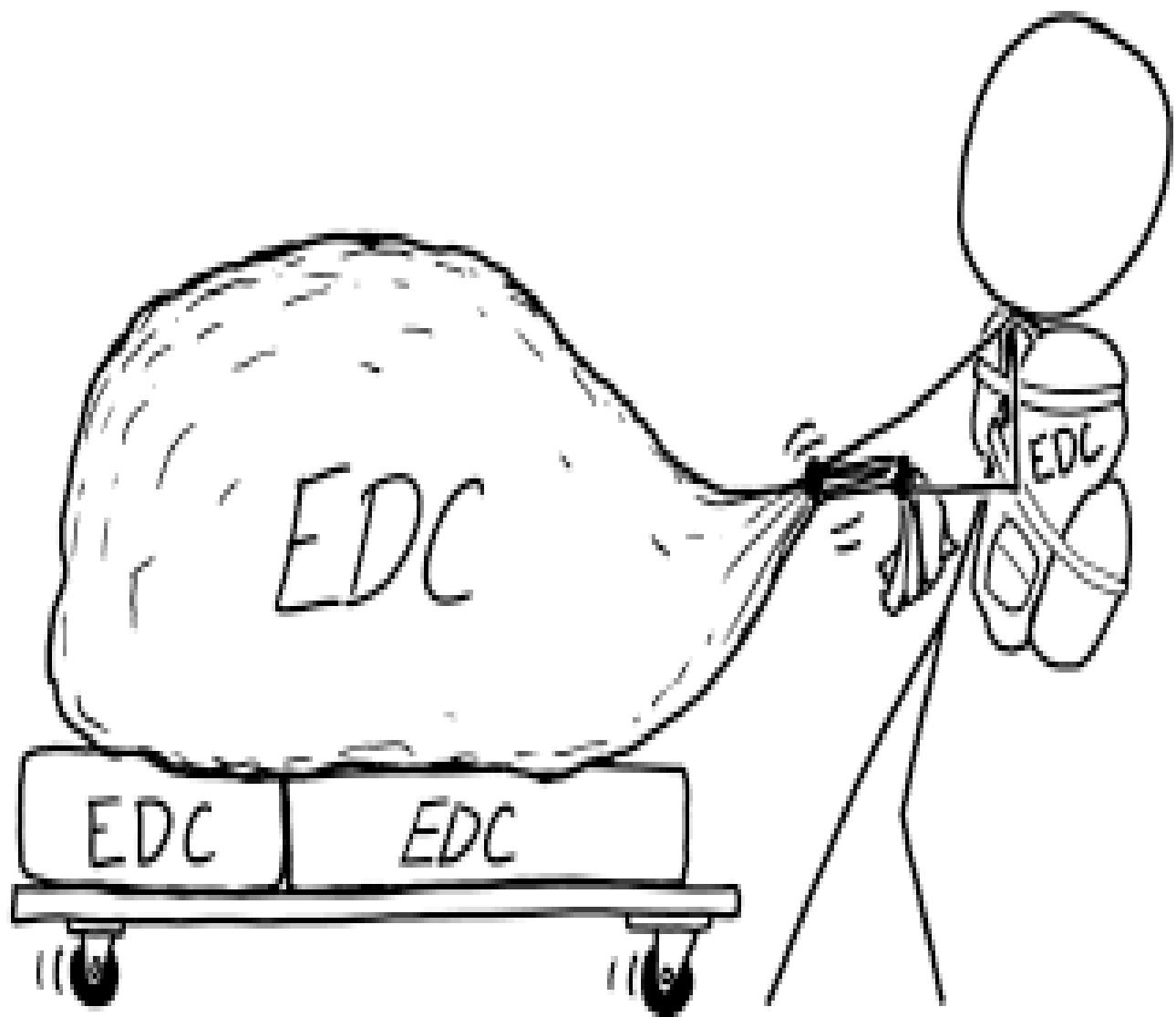
MAXIMUM  
ENTROPY.



MAXIMUM ENTROPY  
MEANS NO USEFUL  
WORK CAN BE DONE!

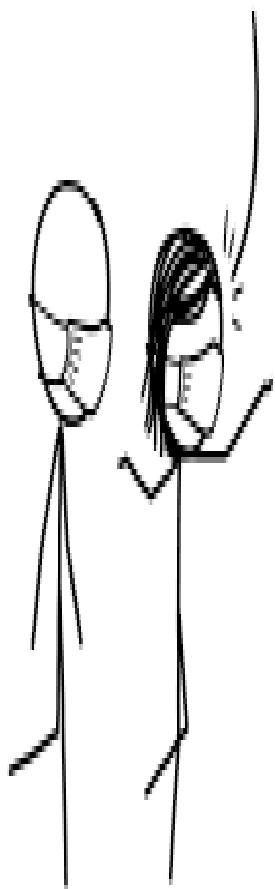
I'M GETTING A HEAD  
START BY DOING NO  
USEFUL WORK NOW



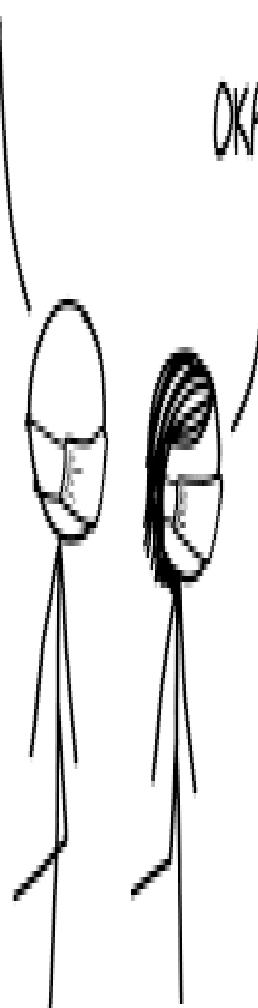


IT WAS HARD WORK COLLECTING ALL THE  
EVERYDAY CARRY PRODUCTS ON THE INTERNET,  
BUT NOW I'M FINALLY READY FOR ANYTHING.

UGH, EVERYONE'S  
AN EPIDEMIOLOGIST.  
  
IT'S LIKE WHEN THERE'S A  
MOUNTAINEERING DISASTER  
IN THE NEWS, AND SUDDENLY  
EVERYONE IS AN EXPERT ON  
MOUNTAIN CLIMBING SAFETY.



I MEAN, IT'S NOT EXACTLY LIKE THAT.  
  
IF THE ENTIRE WORLD'S POPULATION WERE  
SUDDENLY STRANDED ON MOUNTAINTOPS  
TOGETHER, A LOT OF PEOPLE WOULD  
UNDERSTANDABLY BE TRYING TO BECOME  
MOUNTAINEERING EXPERTS REALLY FAST.



OKAY, THAT'S FAIR.

BUT I DO WISH THEY WOULDN'T  
KEEP GOING ON TV AND SAYING  
"ACCORDING TO MY RESEARCH ON  
GRAVITY, IF EVERYONE CURLS  
INTO A BALL AND ROLLS, WE'LL  
GET TO THE BOTTOM QUICKLY!"



YES, THAT'S  
DEFINITELY  
NOT HELPING.

|           |               |
|-----------|---------------|
| 2017..... | W W W W W W W |
| 2018..... | W W W W W W W |
| 2019..... | W W W W W W W |
| 2020*     | W W W W W W W |
| 2021†     | W W W W W W W |
| 2022..... | W W W W W W W |
| 2023..... | W W W W W W W |
| 2024..... | W W W W W W W |

EVERY DATA TABLE FROM NOW ON

REACTION

NOT CAUTIOUS  
ENOUGH

APPROPRIATELY  
CAUTIOUS

TOO  
CAUTIOUS

WEAK  
EVIDENCE  
OF ALIEN  
LIFE

THIS ASTEROID  
IS PROBABLY AN  
ALIEN PROBE!



THIS ASTEROID IS  
WEIRD AND WE  
SHOULD TAKE A  
CLOSER LOOK.  
IT'S NOT ALIENS.



THIS ASTEROID  
APPEARS TO BE FAR  
AWAY, BUT IT COULD  
ALSO BE NEARBY AND  
JUST VERY SMALL.



PROMISING  
EVIDENCE

THEY FOUND LIFE  
ON VENUS!



THESE MOLECULES  
MIGHT BE PRODUCED  
BY LIFE, OR BY WEIRD  
HIGH-HEAT CHEMISTRY.

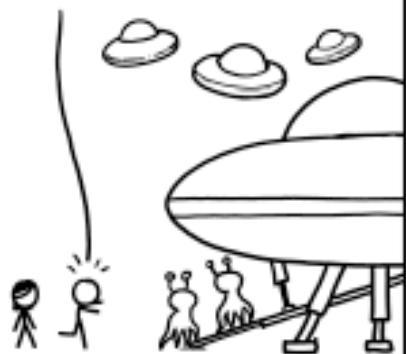


THERE IS GROWING  
EVIDENCE THAT THE  
ATMOSPHERE OF  
VENUS CONTAINS  
MOLECULES.

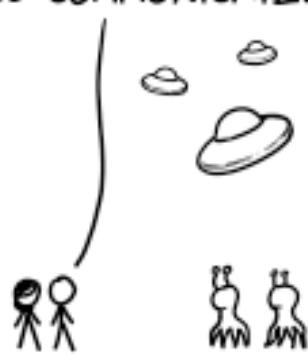


DEFINITIVE  
EVIDENCE

I'M GOING TO  
GO GIVE THOSE  
ALIENS A HUG!



OH WOW, ALIENS!  
SHOULD WE TRY  
TO COMMUNICATE?



THE ENERGY BEAMS  
VAPORIZING THE UNITED  
NATIONS COULD BE A  
POSSIBLE BIOSIGNATURE.



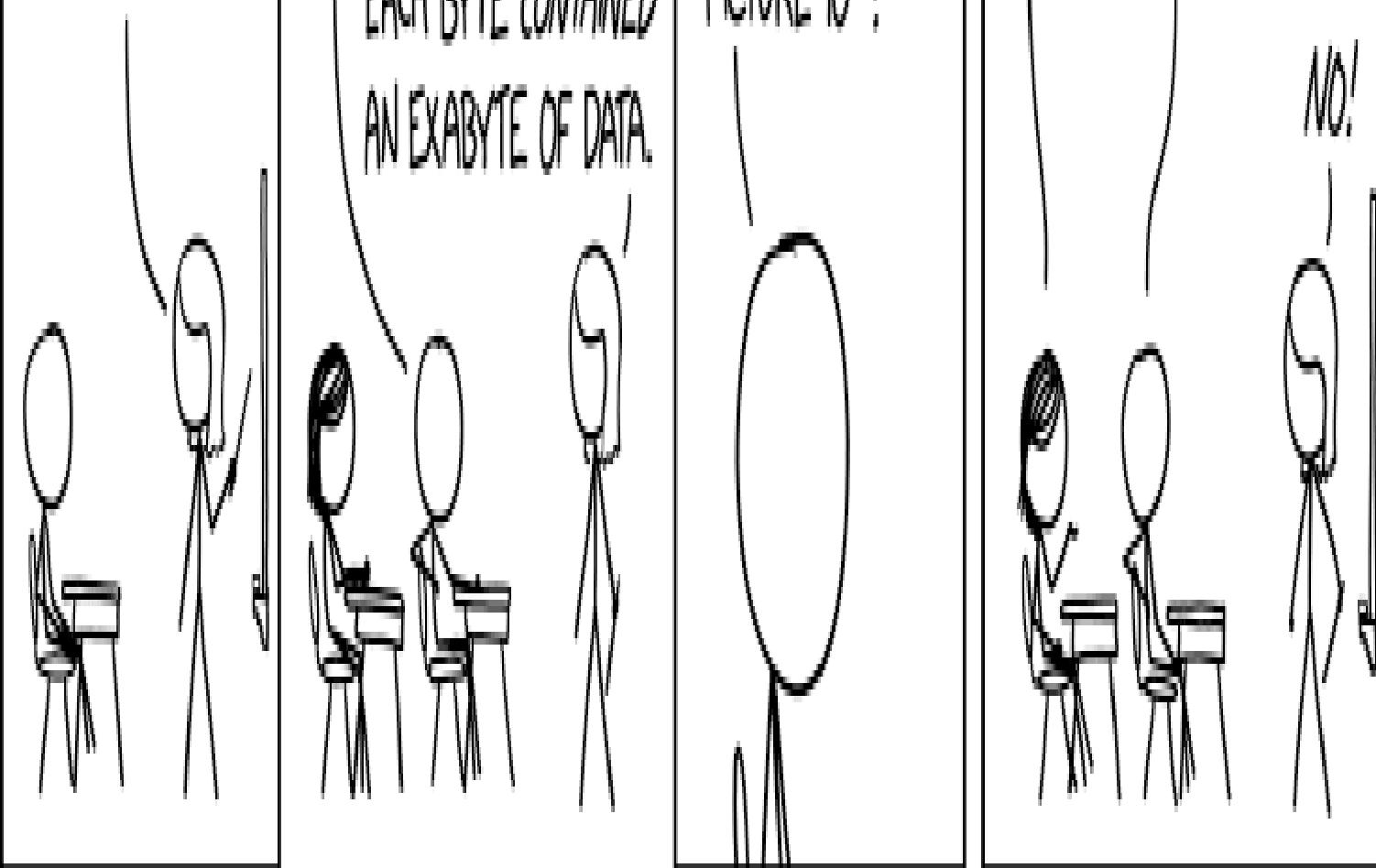
BIOLOGY IS HARD  
BECAUSE THERE'S  
SO MUCH OF IT.  
EARTH HOSTS ABOUT  
10 EXA-EXABYTES  
WORTH OF DNA.

WHAT'S AN EXA-EXABYTE?  
IT'S  $10^{36}$  BYTES.  
HOW DO I PICTURE THAT?  
IMAGINE YOU HAD AN  
EXABYTE OF DATA, BUT  
EACH BYTE CONTAINED  
AN EXABYTE OF DATA.

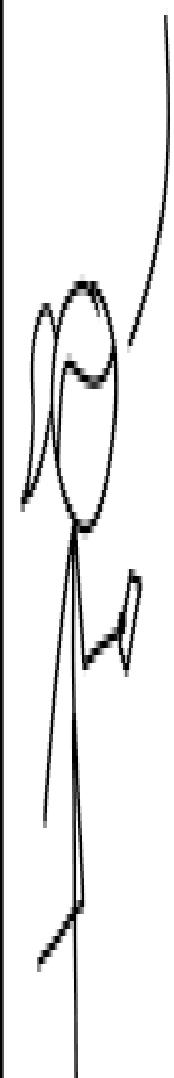
I CAN'T EVEN  
PICTURE WHAT  
AN EXABYTE IS.  
IT'S  $10^{18}$  BYTES.  
BUT HOW DO I  
PICTURE  $10^{18}$ ?

IMAGINE YOU HAD 10 APPLES.  
NOW IMAGINE 18 SMALLER  
APPLES, FLOATING NEXT TO  
THEM AND A LITTLE ABOVE.  
COOL, GOT IT.

NO!

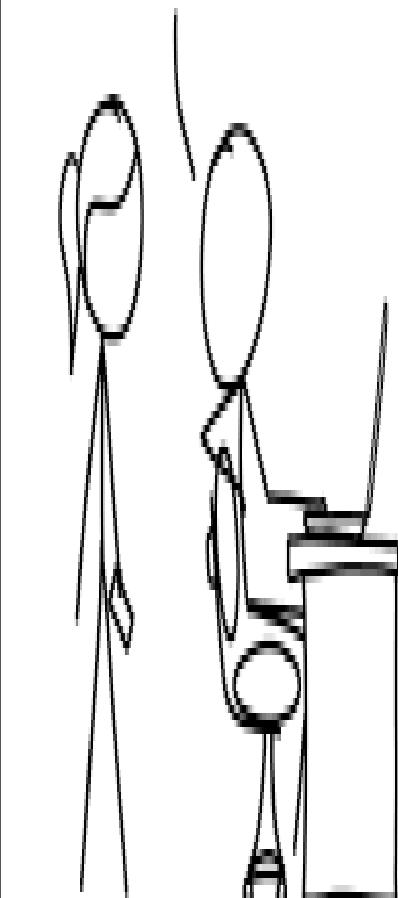


OH COOL, EXCEL IS ADDING A LAMBDA FUNCTION, SO YOU CAN RECURSIVELY DEFINE FUNCTIONS.



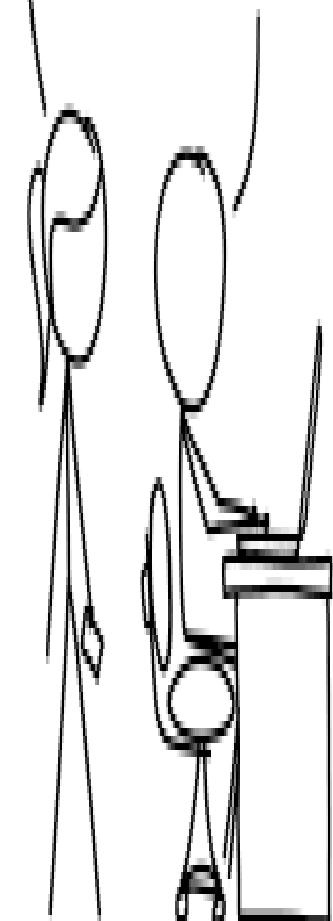
SEEMS UNNECESSARY.

WHEN I NEED TO DO ARBITRARY COMPUTATION, I JUST ADD A GIANT BLOCK OF COLUMNS TO THE SIDE OF MY SHEET AND HAVE A TURING MACHINE TRAVERSE DOWN IT.



I THINK YOU'RE DOING COMPUTING WRONG.

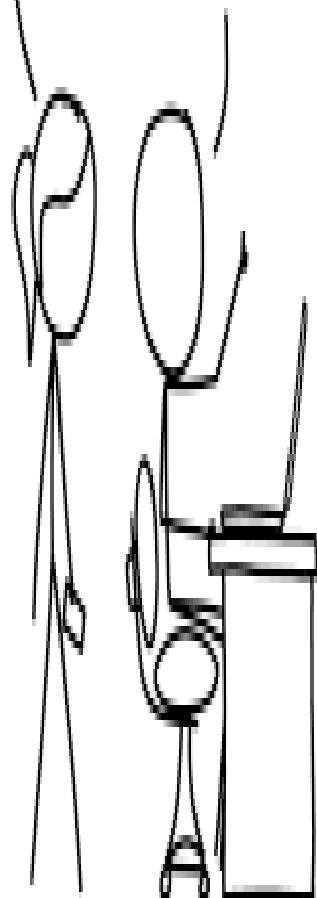
THE CHURCH-TURING THESIS SAYS THAT ALL WAYS OF COMPUTING ARE EQUIVALLY WRONG.

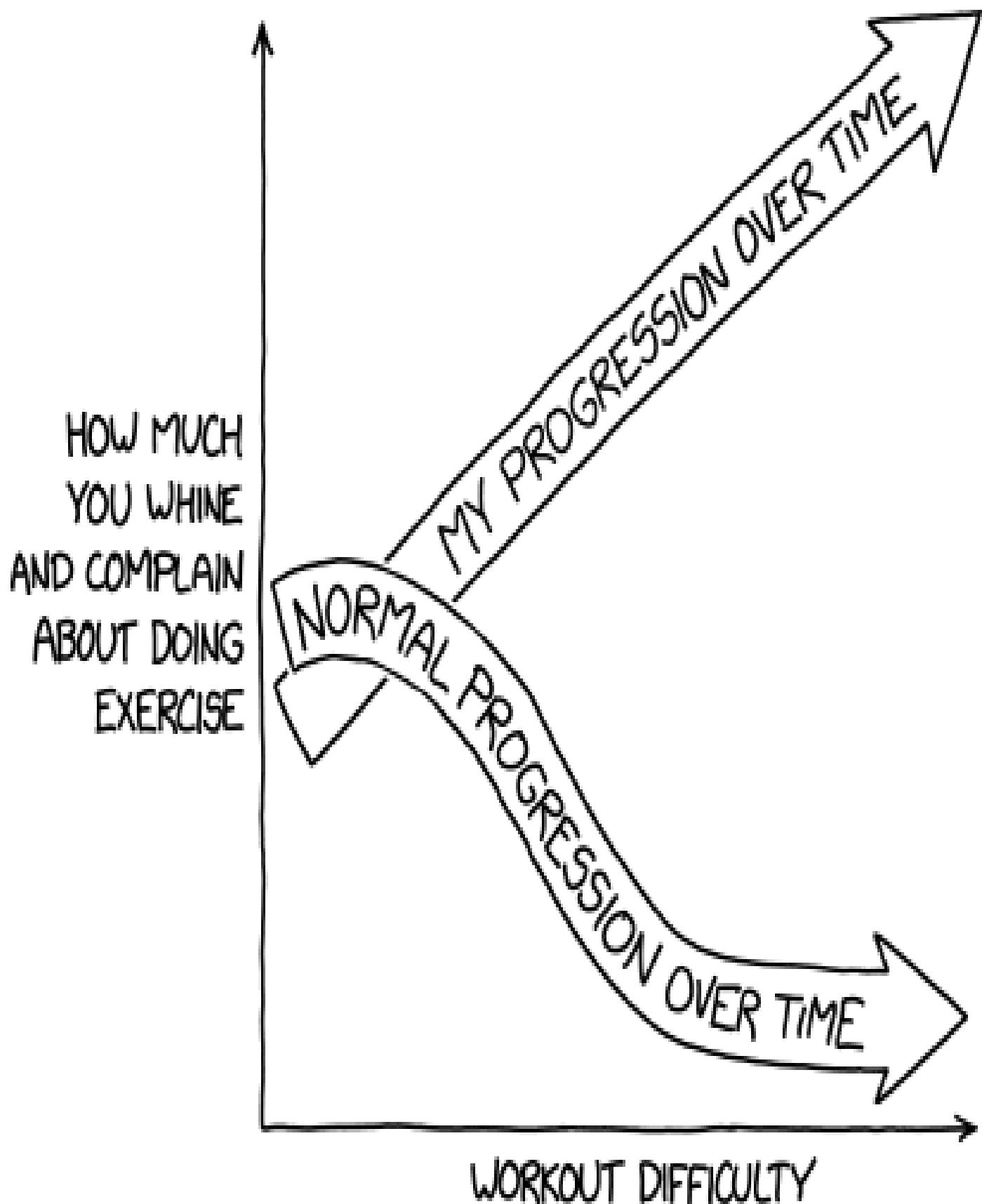


I THINK IF TURING SAW YOUR SPREADSHEETS,

HE'D CHANGE HIS MIND.

HE CAN ASK ME TO STOP MAKING THEM, BUT NOT PROVE WHETHER I WILL!





WHAT'S THE MOST EXPIRED ITEM  
YOU'VE FOUND IN YOUR HOUSE?

CALCULATE YOUR

## EXPIRATION DATE HIGH SCORE

(MUST BE SOMETHING YOU PURCHASED)

$$\text{SCORE} = \frac{(\text{YEAR YOU FOUND ITEM}) - (\text{YEAR ITEM EXPIRED})}{(\text{YOUR AGE WHEN YOU FOUND IT})} \times 100$$

THESE BEANS EXPIRED IN 2010! THAT'S...  
LET'S SEE... 24.3! NEW PERSONAL BEST.

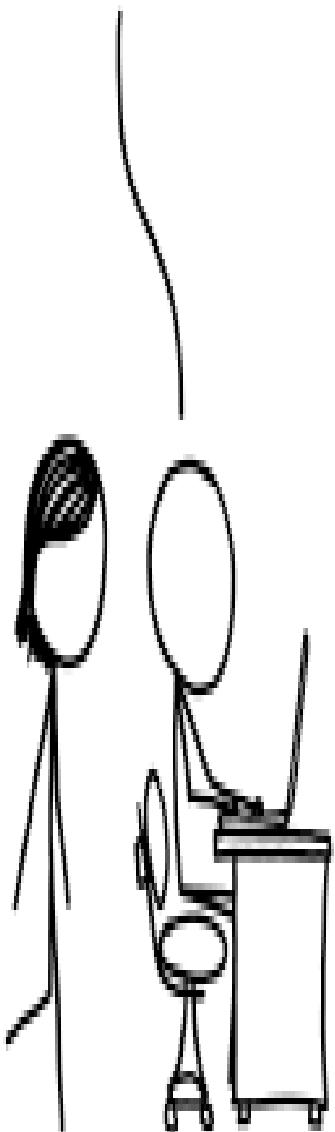
| YOU'RE NEVER GOING TO BEAT YOUR  
MOM'S JAR OF PICKLES FROM 1978.

MAYBE THERE ARE MORE CANS IN THERE.  
REMIND ME NOT TO LOOK UNTIL 2030.

THIS IS THE WORST COMPETITION.

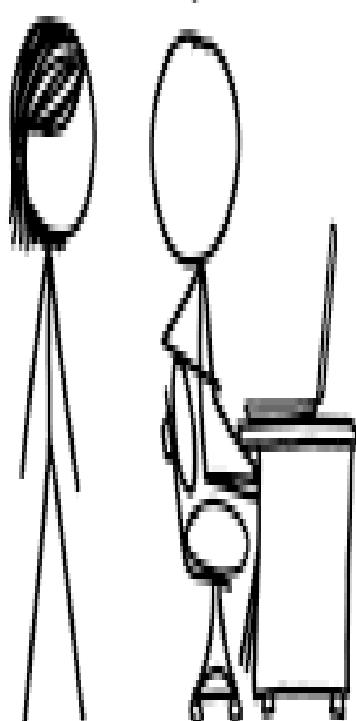


I BUILT ANOTHER  
COVID EXPOSURE  
MODEL TO HELP  
ME LIMIT MY RISK.



ANY NEW INSIGHTS?

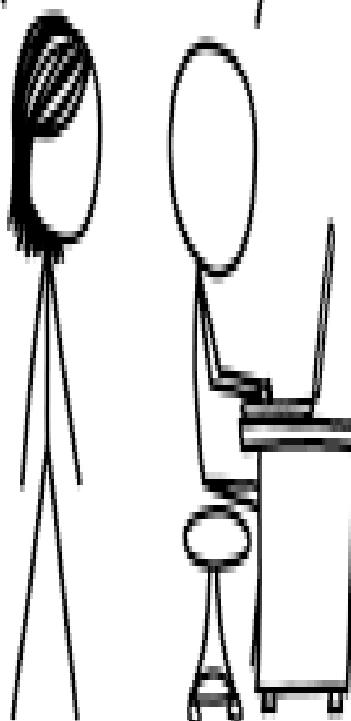
YEAH: "IF YOU SPEND  
ALL DAY DEBUGGING  
MODELS, YOU DON'T  
HAVE CLOSE CONTACT  
WITH A LOT OF PEOPLE."



WELL, I GUESS IT WORKED.

ACCORDING TO MY META-  
MODEL, THE END OF THE  
PANDEMIC IS ONLY FOUR  
MORE MODELS AWAY.

SO CLOSE!



ALERT

1:43 PM

GOOD NEWS: YOU RECENTLY HAD CLOSE CONTACT WITH SOMEONE WHO HAS NOT TESTED POSITIVE FOR COVID.

ALERT

1:38 PM

GOOD NEWS: YOU RECENTLY HAD CLOSE CONTACT WITH SOMEONE WHO HAS NOT TESTED POSITIVE FOR COVID.

ALERT

1:36 PM

GOOD NEWS: YOU RECENTLY HAD CLOSE CONTACT WITH SOMEONE WHO HAS NOT TESTED POSITIVE FOR COVID.

ALERT

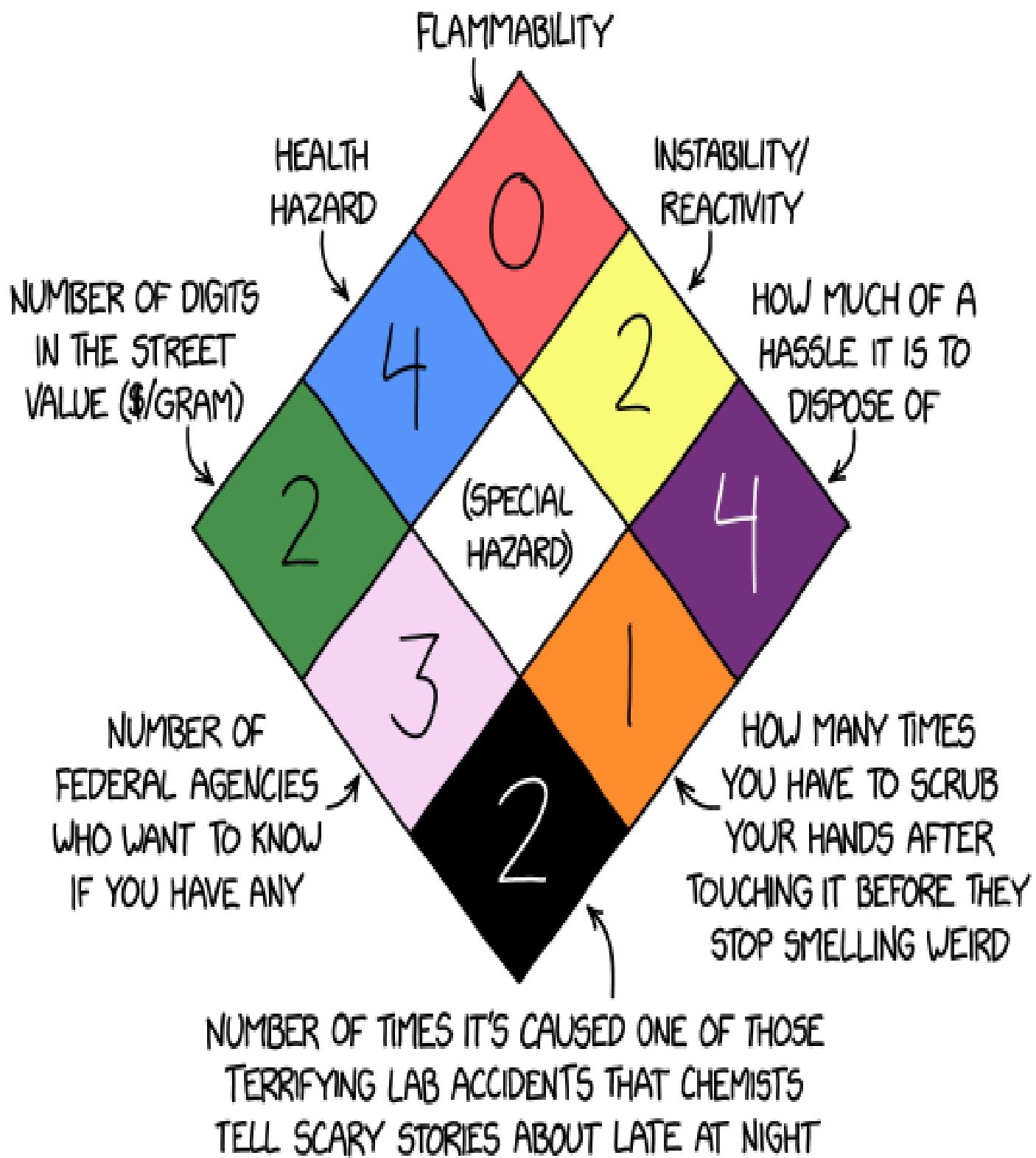
1:31 PM

GOOD NEWS: YOU RECENTLY HAD CLOSE CONTACT WITH SOMEONE WHO HAS NOT TESTED POSITIVE FOR COVID.

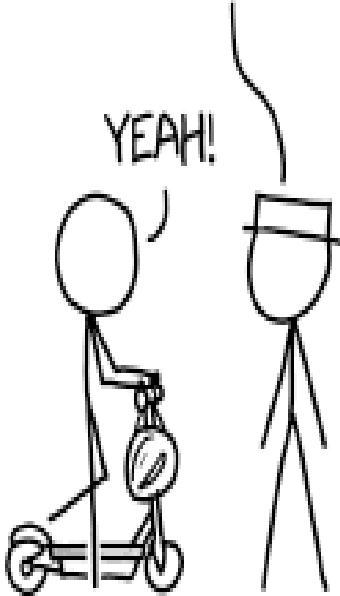


NO ONE LIKES MY NEW COVID EXPOSURE NOTIFICATION APP

# KNOW YOUR EXTENDED NFPA HAZARD DIAMOND:



HEY, YOU GOT ONE OF THOSE E-SCOOTERS!

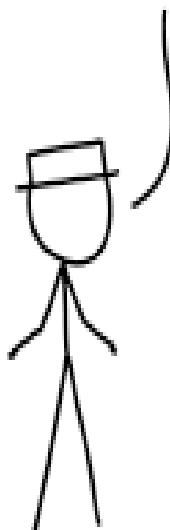


YEAH!

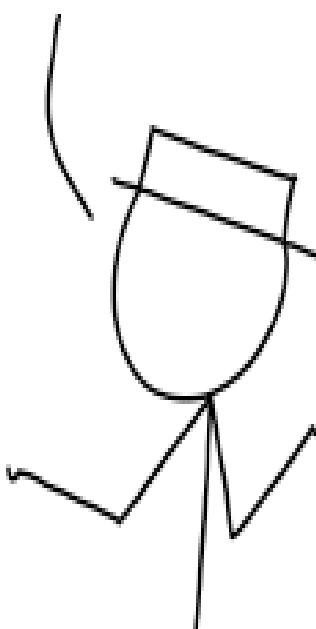
SO WHAT DO YOU THINK? I HEAR SO MUCH ABOUT THESE THINGS.



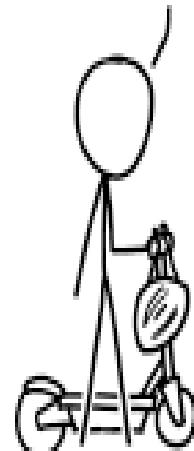
ARE THEY IMPRACTICAL AND UNSAFE TOYS? OR A LAST-MILE TRANSIT REVOLUTION?



A LOW-CARBON CAR REPLACEMENT? OR SILICON VALLEY SIDEWALK CLUTTER?



WELL, HAVING GIVEN IT LOTS OF THOUGHT, HERE IS MY OPINION ON SCOOTERS:



Z0000000M!  
NEEEEEE0000RMM  
VRRRM VRRMVVRMM  
WHEEEEE!

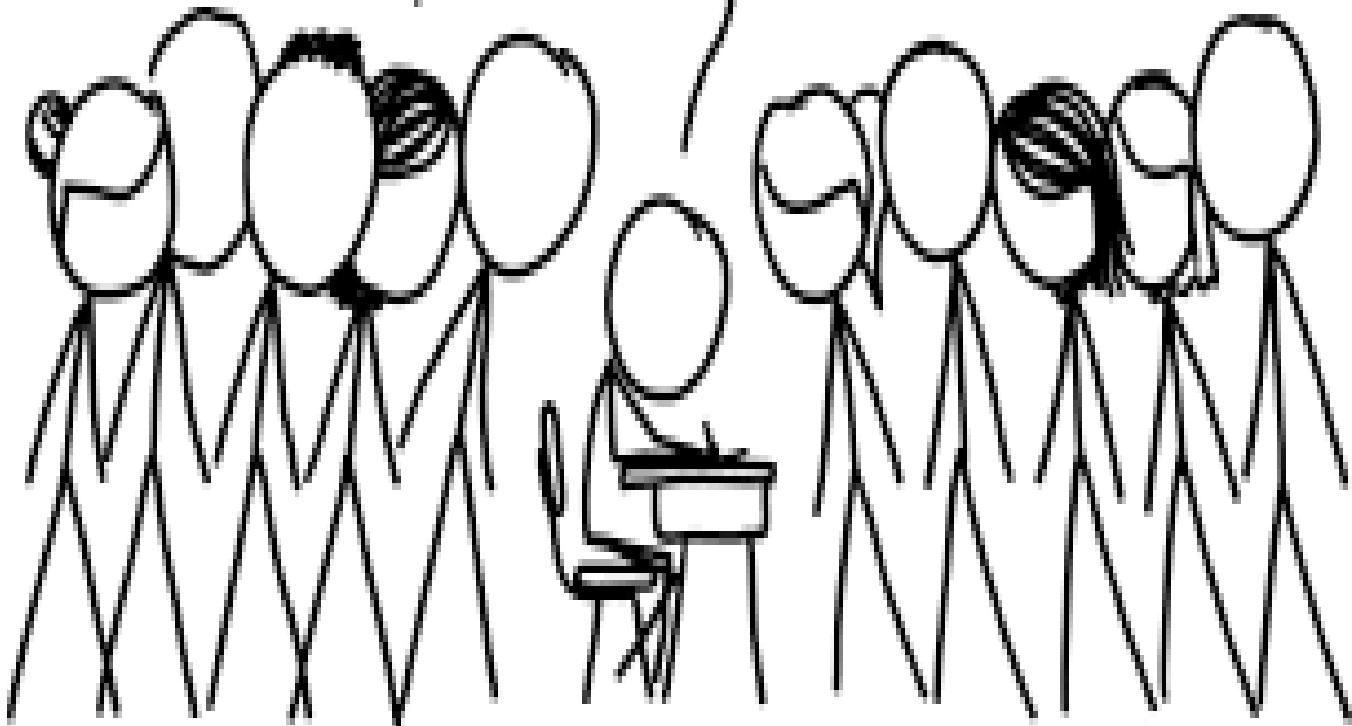


PEW PEW PEW!  
Bzzzt KABOOM!  
WAIT, WHY ARE THERE LASERS?



HOW'S THE WORK GOING?

CAN YOU ALL AT LEAST  
STAND BACK A LITTLE?



MY SCHOOL TRIED TO GAME THE RATINGS  
BY HAVING A 30:1 FACULTY:STUDENT RATIO

IT'S 8PM.  
EXACTLY SIX  
DAYS UNTIL  
THE POLLS  
CLOSE HERE.

SIX DAYS AND  
ONE HOUR.

OH RIGHT,  
FALL BACK.

UGH.

PERSONALLY, I  
THINK IT'S GREAT.

DON'T YOU WANT  
THIS MOMENT TO  
LAST AS LONG  
AS POSSIBLE?

MY PANDEMIC ANXIETY  
AND ELECTION ANXIETY

HAVE FINALLY FUSED.

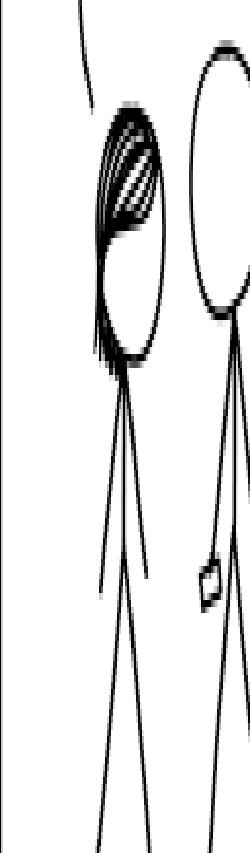
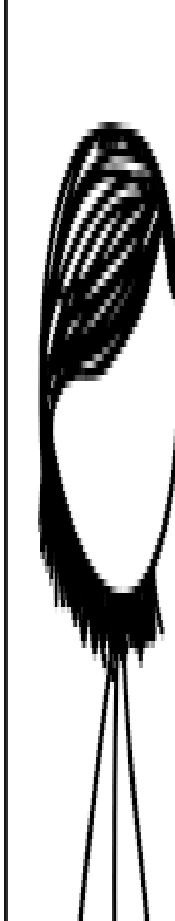
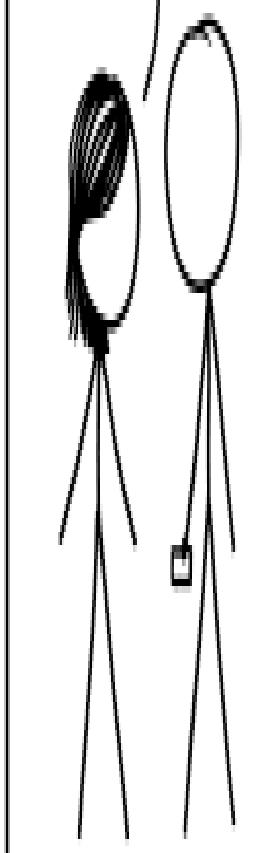
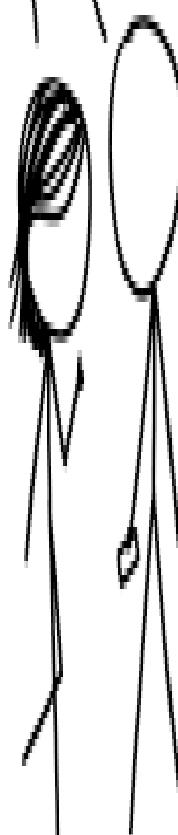
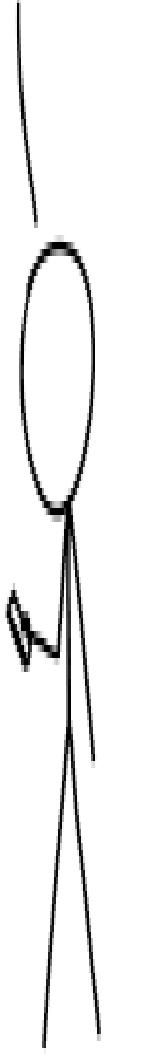
I HAVE ASCENDED.

I GET BREAKING NEWS  
ALERTS IN MY DREAMS.

I DON'T THINK THE ENDLESS  
24 HOUR NEWS CYCLE HAS  
BEEN GOOD FOR EITHER OF US.

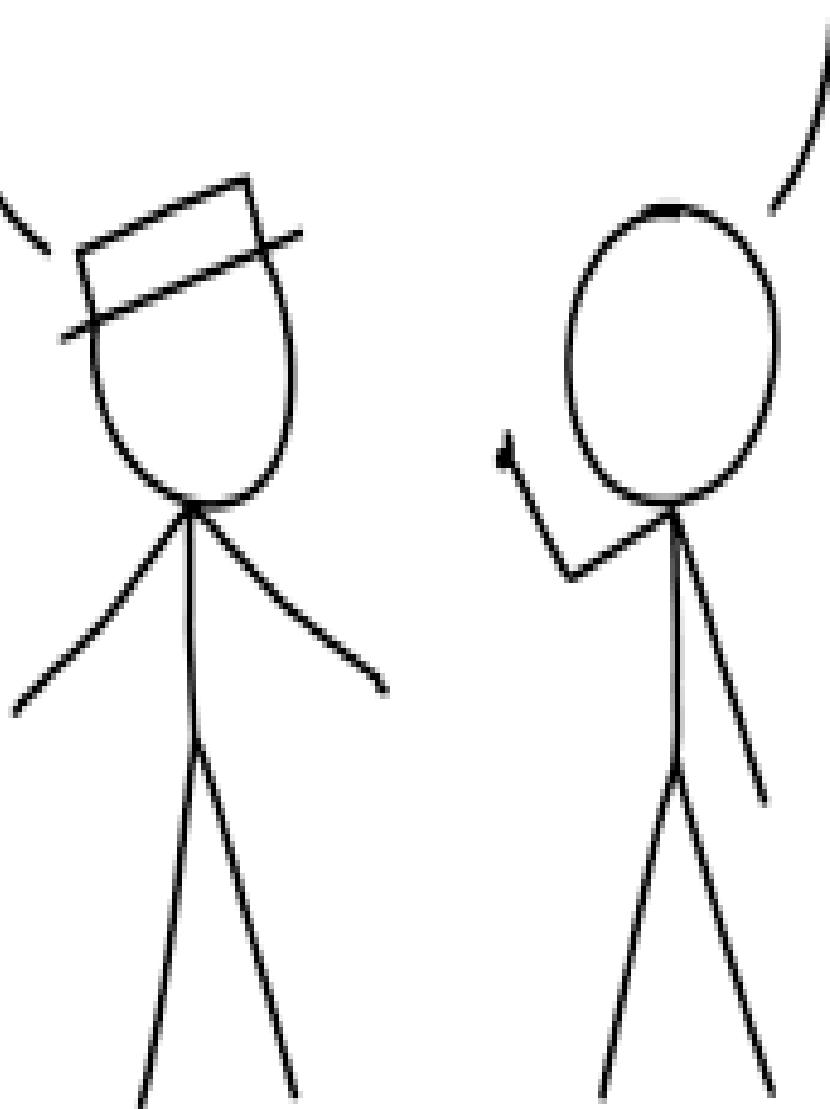
WELL, THEN I  
HAVE GOOD NEWS  
ABOUT SUNDAY!

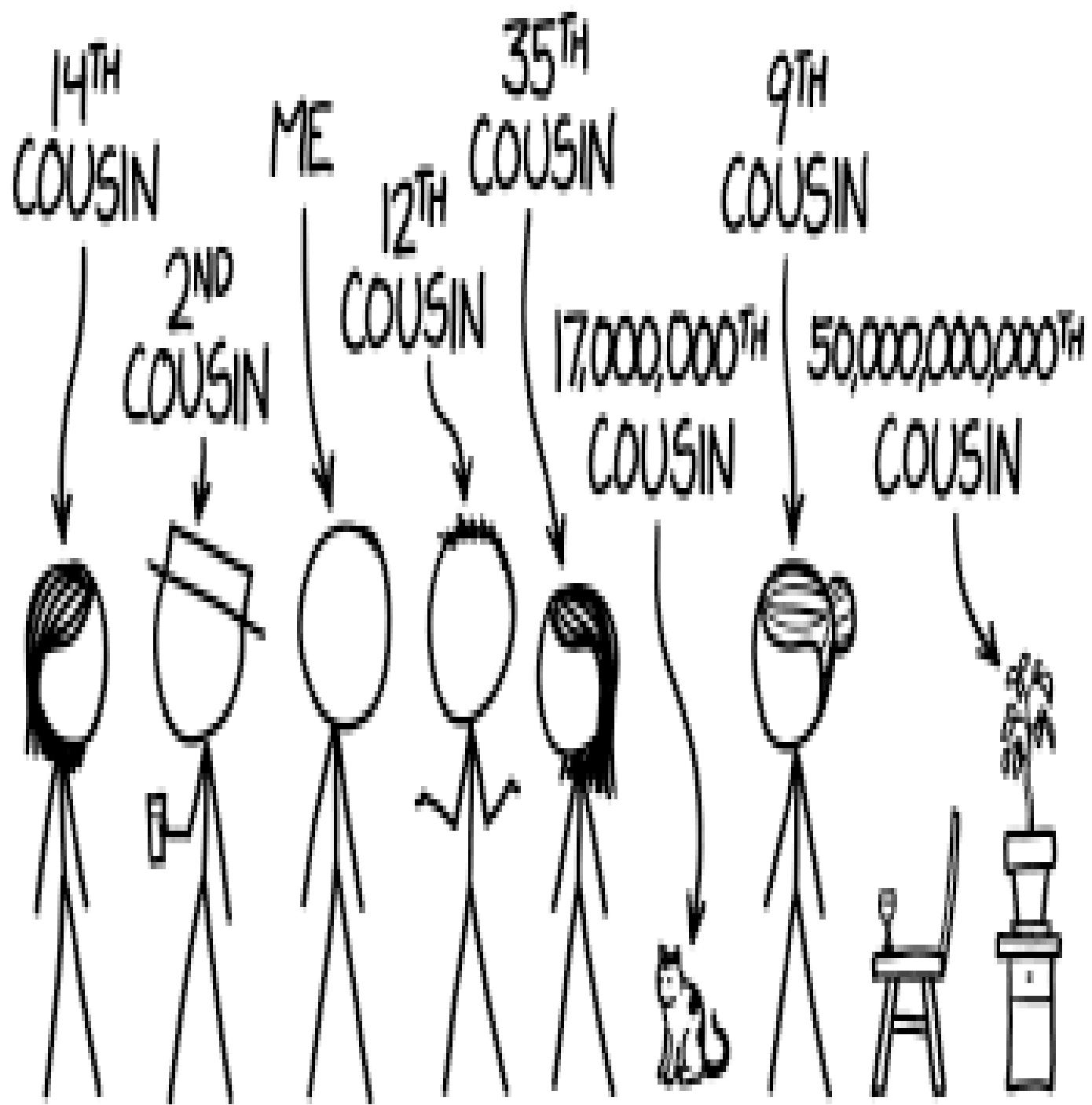
UGHHH.



THAT'S A FALSE DICHOTOMY!

YES, BUT WE HAVE TO EMBRACE  
FALSE DICHOTOMIES, BECAUSE THE  
ONLY ALTERNATIVE IS CANNIBALISM.



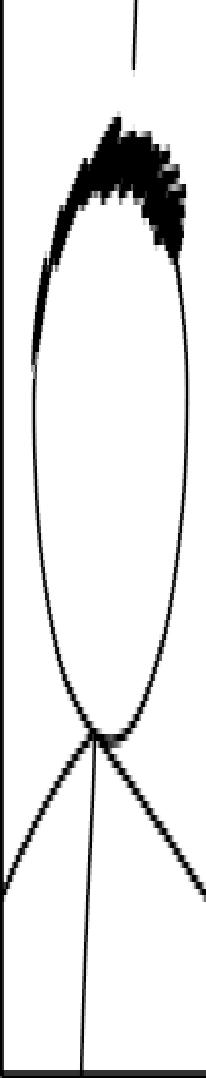


REALLY, EVERY GATHERING IS A FAMILY REUNION.

HEY THERE  
SUPERFANS,  
WELCOME TO  
THE LIVECAST!

GOT A REAL TREAT FOR  
YOU TODAY: A TOUR OF  
THE WORLD'S LARGEST  
FARADAY CAGE!

'CMON, LET'S CHECK IT-



-WAS SO COOL! WOAH!  
THANKS FOR COMING  
ALONG, AND DON'T  
FORGET TO SMASH  
THAT LIKE BUTTON!

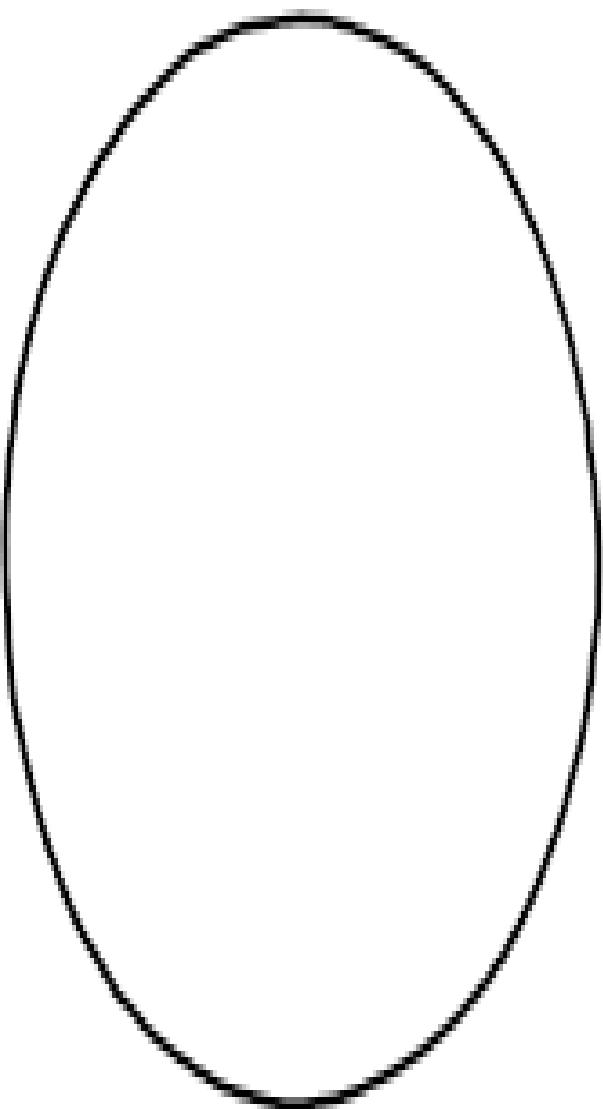
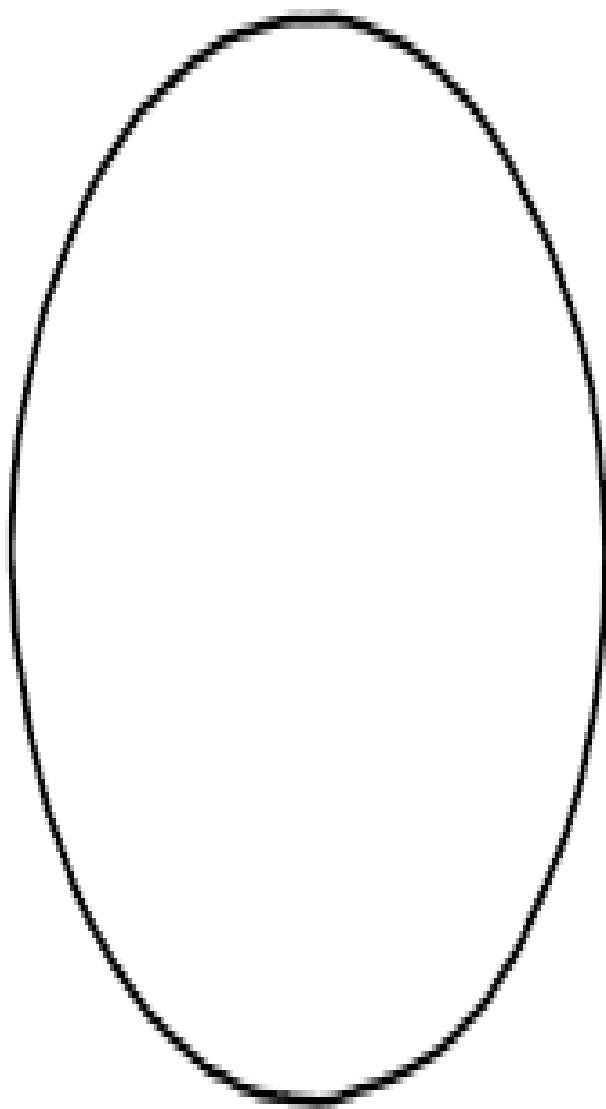
DATE

Dec ~~that~~ 12, 2018

COUNTRY

United States

FDR WAS SO GOOD AT SPEECHES  
THAT I SPEND A WHOLE MONTH EACH  
YEAR WRITING THE DATE WRONG.

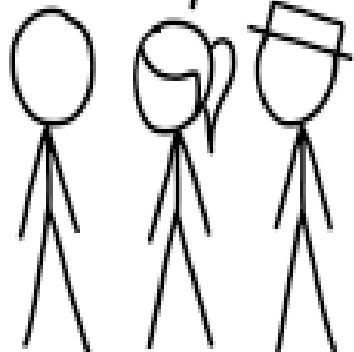


PEOPLE WHO DON'T THINK  
FEATHERED DINOSAURS  
SOUND SCARY

PEOPLE WHO  
HAVE TRIED TO  
FIGHT AN OSTRICH

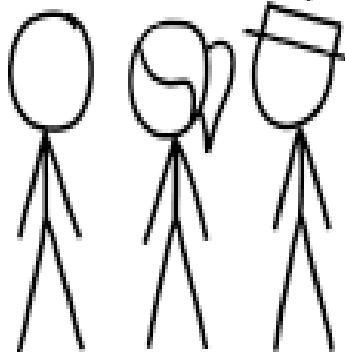
STAR WARS?

FICTION.



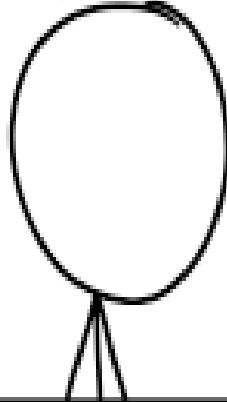
THE MAKING  
OF STAR WARS?

NONFICTION.



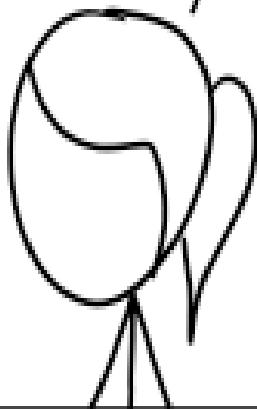
STAR WARS: THE  
ADVENTURES  
OF BOBA FETT?

FICTION.



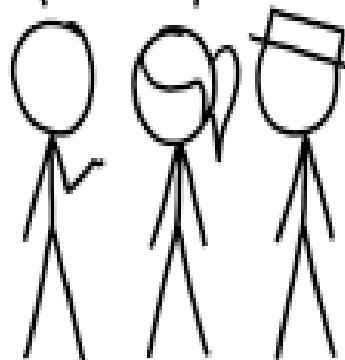
STAR WARS: THE  
OFFICIAL GUIDE TO  
BOBA FETT'S ARMOR  
AND WEAPONS?

NONFICTION,  
TECHNICALLY.



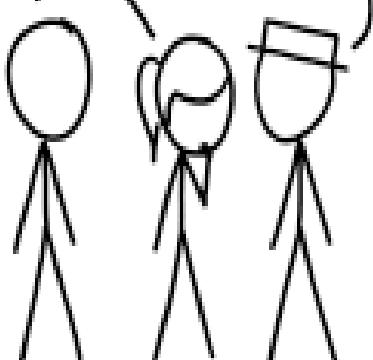
BOBA FETT'S  
GADGETS AND  
HOW HE GOT THEM?

...FICTION?  
IT DEPENDS.



BOBA FETT: A LIFE,  
BY HISTORIAN DORIS  
KEARNS GOODWIN?

HM. MAYBE WE  
SHOULD JUST  
HAVE A BOBA  
FETT SECTION.



BASEBALL

SOCCER

TETHERBALL

VOLLEYBALL

BADMINTON

HIGH JUMP

BASKETBALL

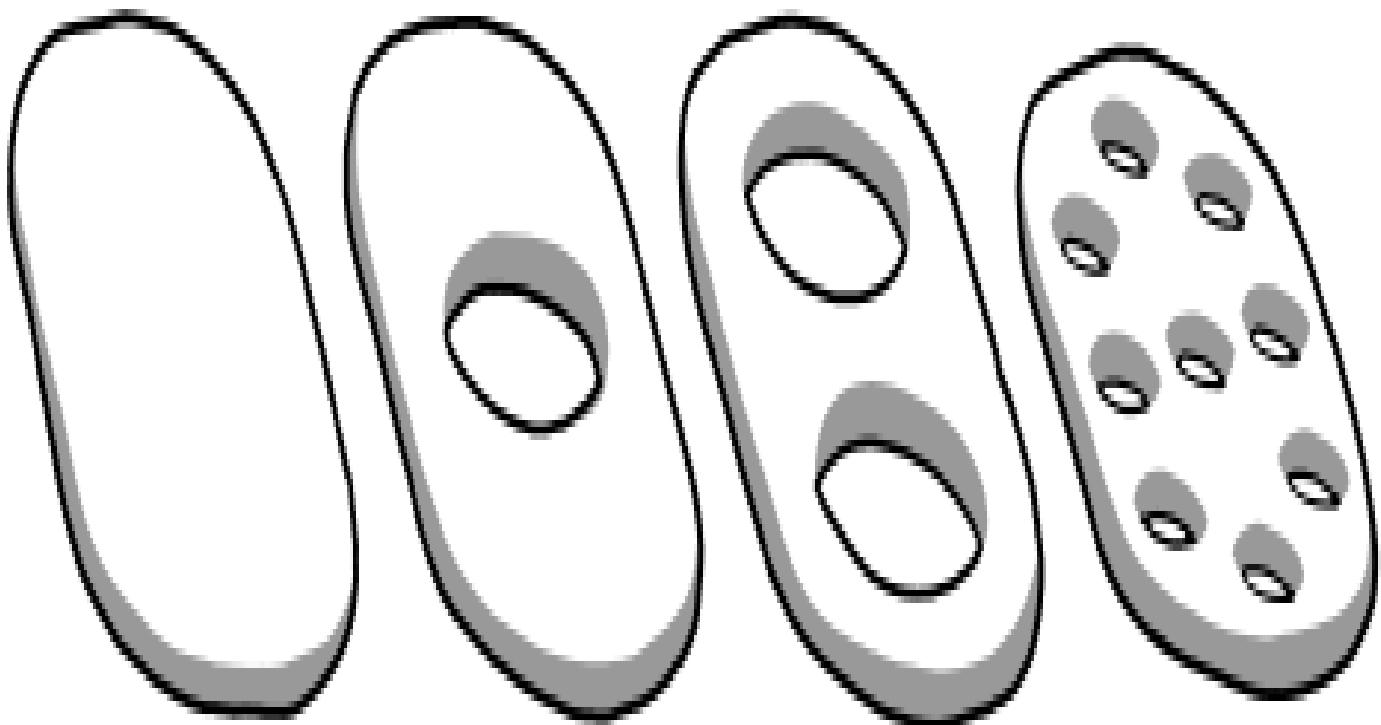
FOOTBALL

PARALLEL BARS

OLYMPIC

SWIMMING

CROQUET



NO ONE EVER WANTS TO USE THE  
TOPOLOGY DEPARTMENT'S ATHLETIC FIELDS.

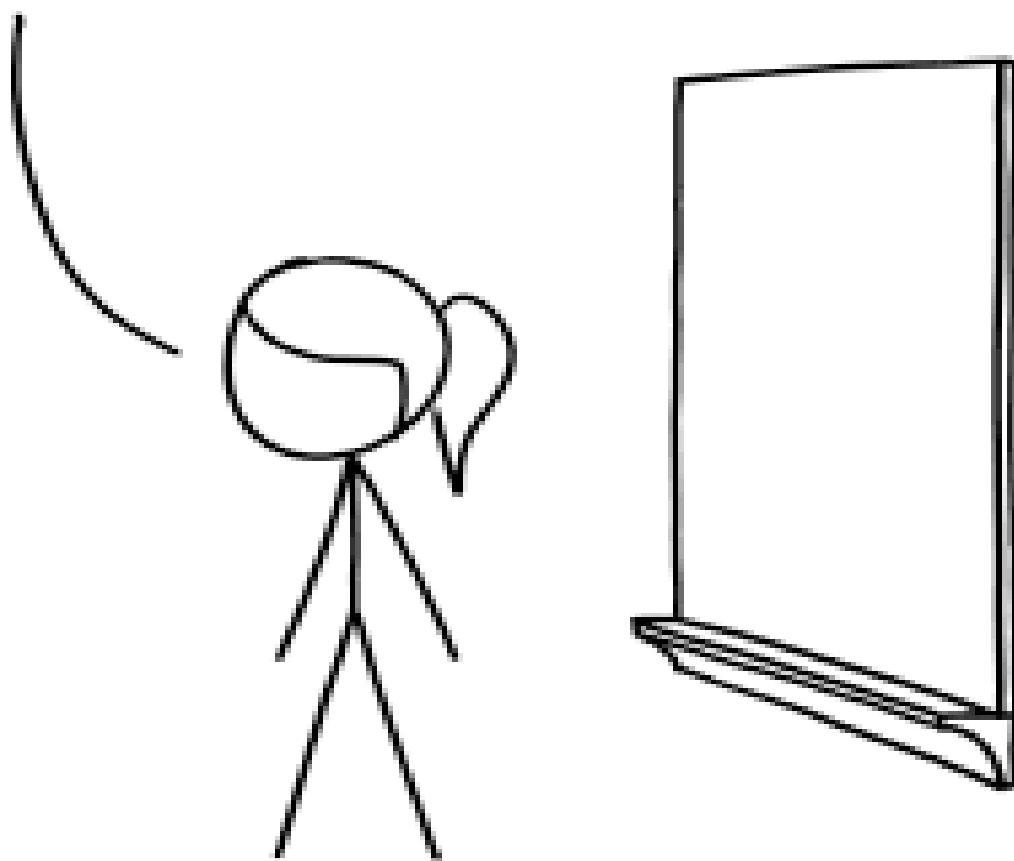
WELCOME TO YOUR FINAL EXAM.

THE EXAM IS NOW OVER.

I'M AFRAID ALL OF YOU FAILED.

YOUR GRADES HAVE BEEN STORED  
ON OUR DEPARTMENT SERVER AND  
WILL BE SUBMITTED TOMORROW.

CLASS DISMISSED.



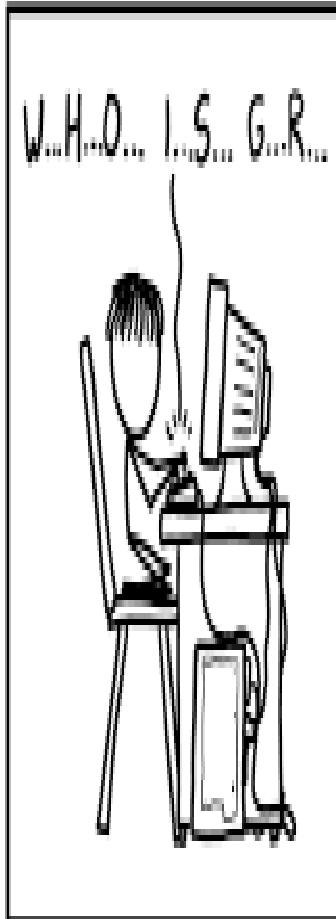
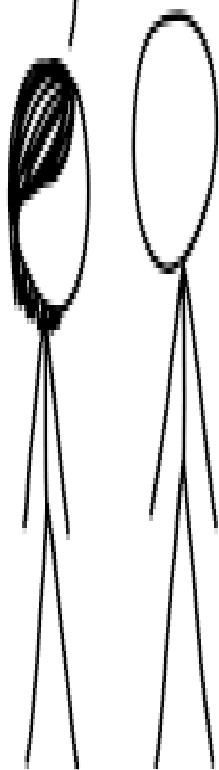
CYBERSECURITY FINAL EXAMS

YOU KNOW,  
I  
REMEMBER THE  
FIRST THING ANYONE  
EVER SAID TO ME  
ON THE INTERNET.

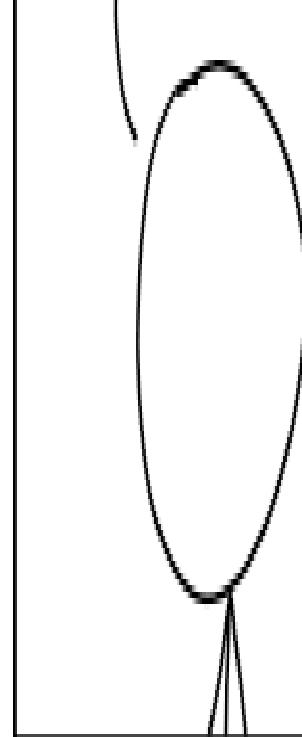
YEAH?

I WAS IN AN AOL KIDS  
CHAT ROOM IN 1993.  
PEOPLE THERE KEPT  
USING A NAME I  
DIDN'T RECOGNIZE.  
AFTER A WHILE I  
ASKED WHAT IT WAS.

W.H.O... I.S... G.R...

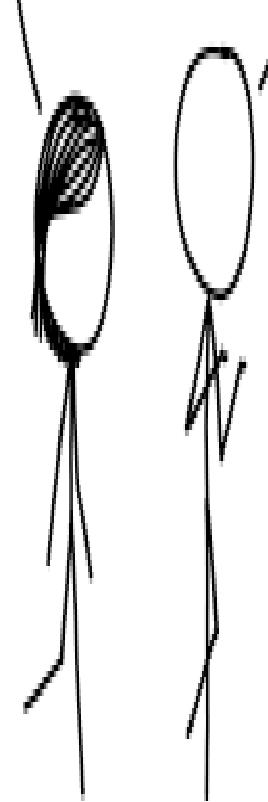


SOMEONE REPLIED.  
"IF YOU DON'T KNOW  
WHO GREEN DAY  
IS, YOU HAVE A  
SERIOUS PROBLEM."  
AND THAT WAS IT.  
MY FIRST VIRTUAL  
INTERACTION.



IN SOME WAYS, THE INTERNET  
HAS CHANGED SURPRISINGLY  
LITTLE IN THE LAST 30 YEARS.

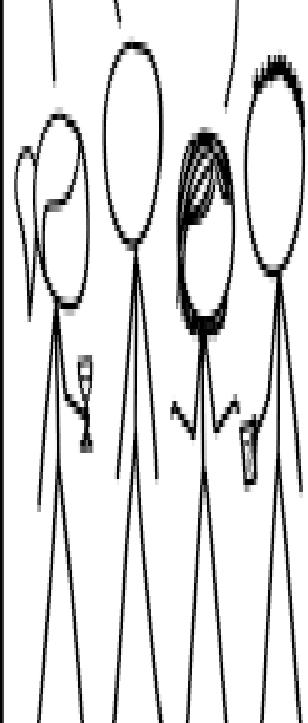
EVERY TIME I REPLY  
TO SOMEONE, I THINK  
WHAT IF THIS IS THEIR  
GREEN DAY MOMENT?



WHAT'S YOUR FIRST NEWS MEMORY?

I ALWAYS LIKE THIS QUESTION! MINE WAS THE 1988 ELECTION.

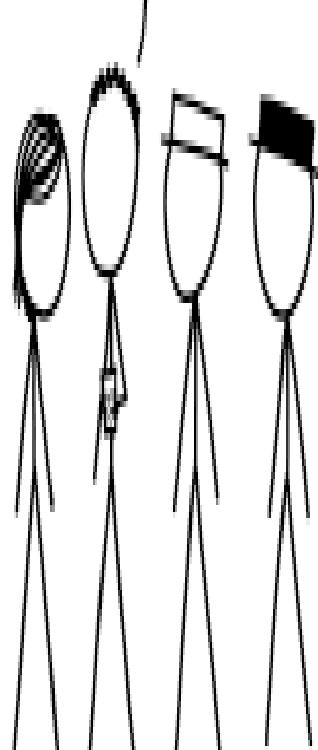
BERLIN WALL FOR ME. YOU?



WATCHING THE CHALLENGER LAUNCH IN CLASS, WE WERE SO EXCITED; EVERYONE WAS HORRIFIED WHEN IT BLEW UP.

IT WAS 1995.

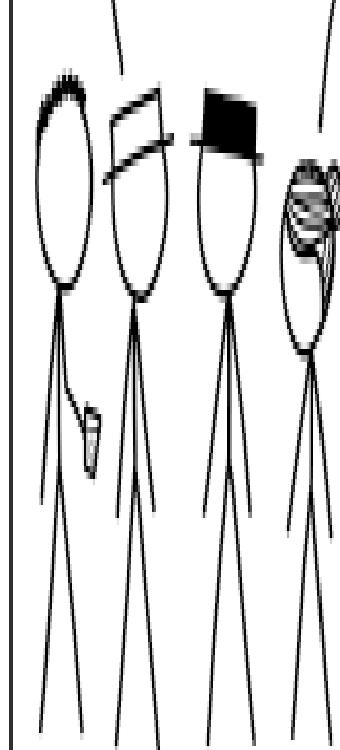
OUR TEACHER GOT FIRED SOON AFTER.



MINE'S THE 2016 ELECTION.

...AREN'T YOU IN YOUR 30's?

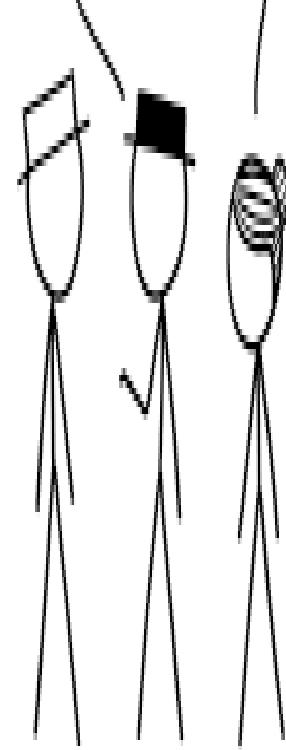
LOOK, WE'RE NOT ALL GREAT ABOUT KEEPING UP WITH THE NEWS, OK?



MY FIRST MEMORY IS WHEN WE LANDED ON THE MOON.

MY SECOND MEMORY IS MY MOM TELLING US WE WERE MOVING TO EARTH INSTEAD, TO BLEND IN WITH THE HUMANS.

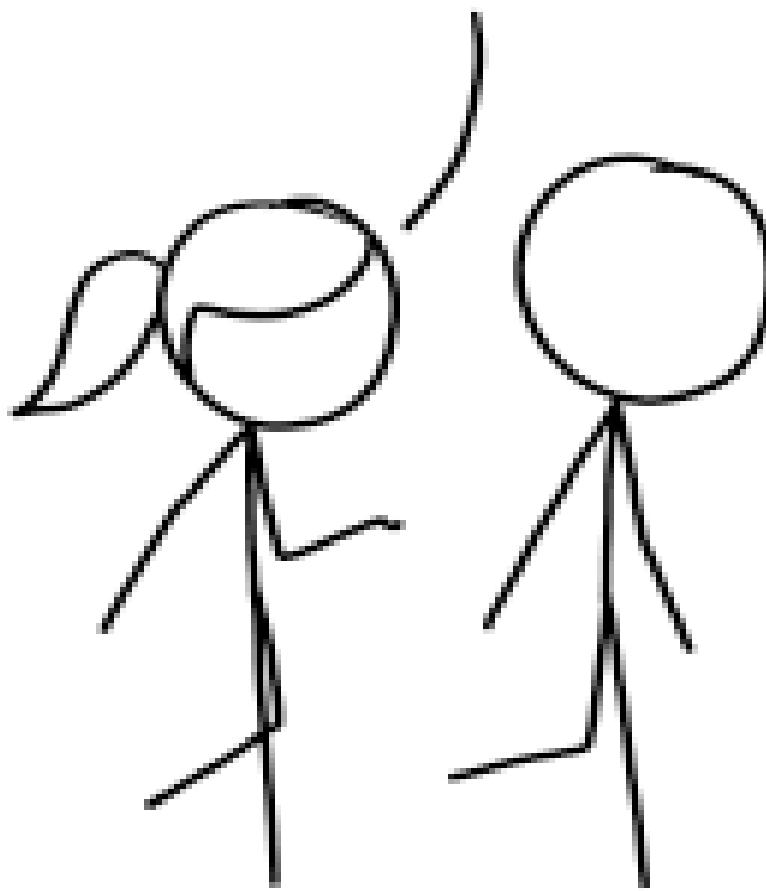
THIS EXPLAINS A LOT.



THE FIRST THING I'M GOING TO  
DO AFTER I GET THE VACCINE?

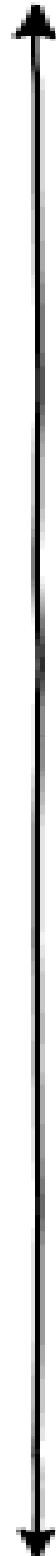
I  
DEFINITELY MAKE A BUNCH OF  
SPIKE PROTEINS AND ENGULF  
THEM WITH DENDRITIC CELLS.

I  
THEN I'LL PROBABLY DISPLAY  
THE ANTIGENS TO MY T-CELLS...



"THIS IS ACTUALLY THE FIRST TIME  
I'VE \_\_\_\_\_ SINCE EARLY 2020."

NORMAL



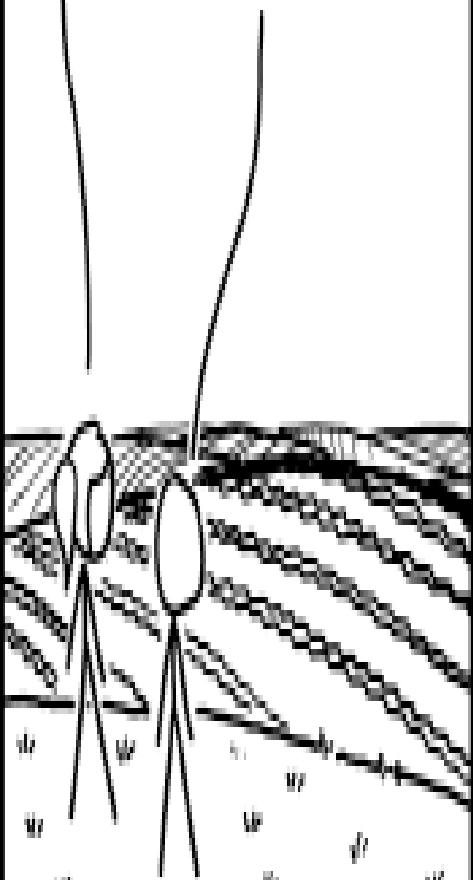
- BEEN TO A BIRTHDAY PARTY
- EATEN AT A RESTAURANT
- SEEN MY FAMILY
- BEEN ON A PLANE
- GONE TO A MOVIE
- GONE TO A STORE
- INSTALLED SOFTWARE UPDATES
- EATEN A VEGETABLE
- OPENED THE FRIDGE
- PAID TAXES
- WASHED MY HANDS
- SEEN ANOTHER PERSON
- SEEN A GHOST
- SERVED AS A DECOY
- SIGHTED LAND
- CHECKED THE NEWS
  
- CHECKED ON THE CUSTOMERS IN THE ESCAPE ROOM
  
- CONTRACTED A NOVEL BAT VIRUS

ALARMING

I RECKON IT'LL BE  
A GOOD HARVEST.

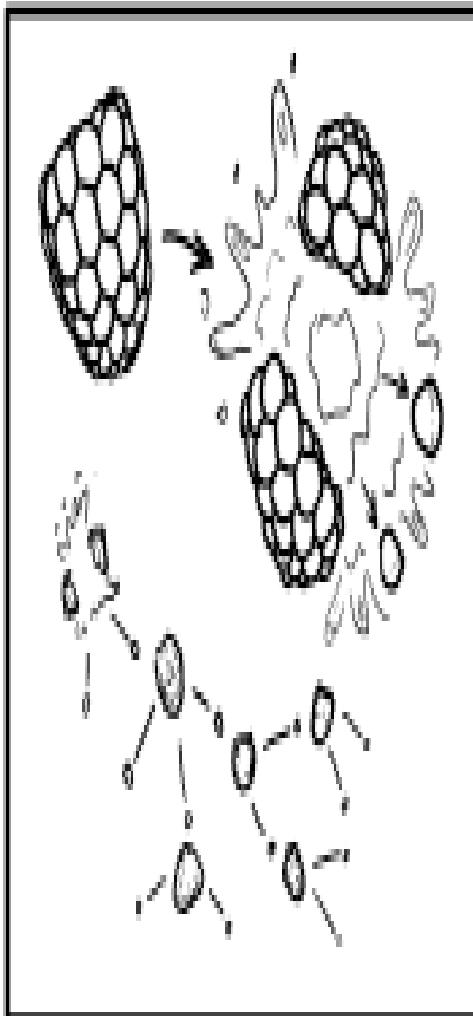
SO LONG AS WE DON'T  
GET TOO MANY FISSILE  
RASPBERRY ISOTOPES.

TOO MANY WHATS?



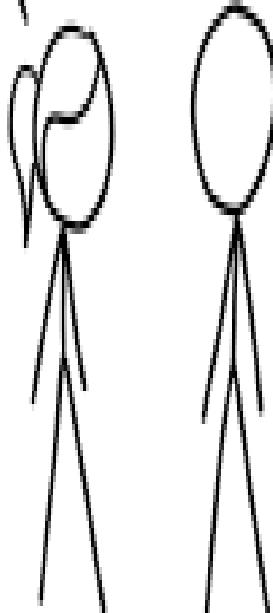
IF A RASPBERRY BREAKS  
IN HALF, IT RELEASES  
FRAGMENTS WHICH CAN  
CAUSE MORE SPLITS.

WITHIN SECONDS YOU'VE  
LOST THE WHOLE CROP.

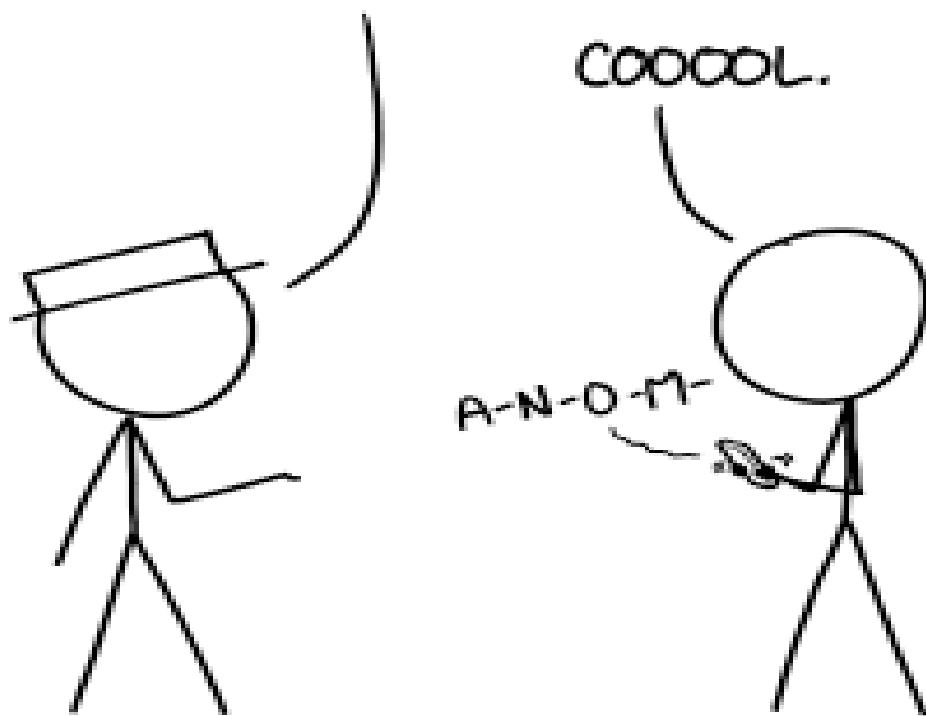


LUCKILY, THE BERRIES  
ARE BOUND BY FRESH  
RASPBERRY PIE MESONS.

I HOPE THEY HOLD.  
IT'S MY GRANDMA'S  
RECIPE. THEY'LL HOLD.



YEAH, I LEARNED ABOUT IT WHEN I WAS  
RESEARCHING ANOMALOUS ELECTROWEAK  
SPHALERON TRANSITION BARYOGENESIS.



MY HOBBY: COLLECTING REALLY SATISFYING-SOUNDING FIVE-WORD TECHNICAL PHRASES.

### CURRENT FAVORITES

- TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT PLACEMENT
- GENERALIZED AUTOREGRESSIVE CONDITIONAL HETEROSKEDASTICITY MODEL
- UNICELLULAR DIAZOTROPHIC CYANOBACTERIA GROUP A
- ANOMALOUS ELECTROWEAK SPHALERON TRANSITION BARYOGENESIS



SOMEONE  
IMPORTANT  
DIED



SOMEONE DIED BUT  
WE'RE NOT SURE HOW  
WE FEEL ABOUT THEM



EVERYONE  
IMPORTANT  
DIED



SOMEONE IMPORTANT  
WAS SUCCESSFULLY  
CLONED



AN IMPORTANT  
PERSON DIED  
BATTLING THEIR  
EVIL CLONE



NOBODY HAS DIED FOR  
WEEKS AND THAT SEEMS  
GOOD BUT STATISTICALLY  
IT'S VERY ALARMING



SOMEONE DIVERTED A  
TROLLEY TO SAVE FIVE  
PEOPLE BY KILLING ONE  
IMPORTANT PERSON



THE PERSON WHO  
KNOWS WHERE THE  
FLAG IS STORED AT  
NIGHT DIED

### MAP LEGEND

- [Light Blue Box] DISPUTED TERRITORY
- [Green Box] NEWLY INDEPENDENT
- [Dark Blue Box] DEMILITARIZED ZONE
- [Yellow Box] TORNADO WARNING
- [Dark Red Box] HELD BY REBEL FORCES
- [Red Box] GREATER DELAWARE
- [Black Box] UNEXPLORED

OUR NEW COUNTRY'S FLAG SABOTAGES THOSE MAPS WHERE  
GEOGRAPHIC AREAS ARE COLORED IN WITH FLAG PATTERNS.

3...2...1...HAPPY NEW YEAR!

OKAY, IT'S UP!

ANNNNNND... SUPPORT WAS  
PULLED. IT'S DOWN AGAIN.



THERE'S ONLY A VERY SHORT WINDOW OF  
TIME IN WHICH I CAN POST MY UNAUTHORIZED  
FLASH® ADAPTATION OF THE GREAT GATSBY.

WE REALIZED  
ALL OUR DATA  
IS FLAWED.

GOOD

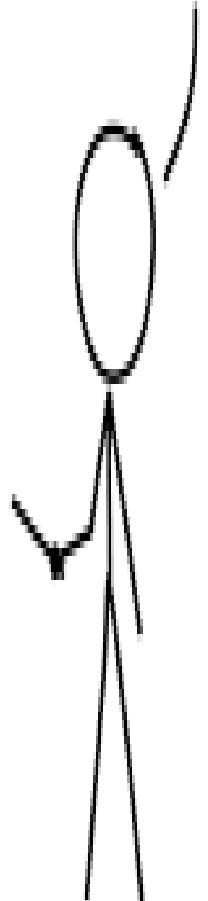
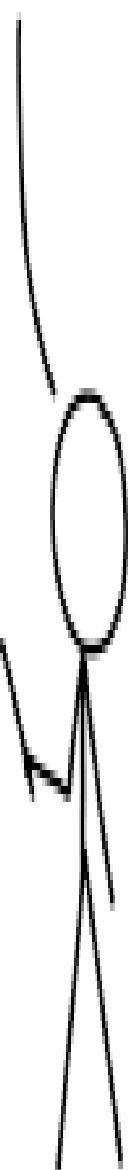
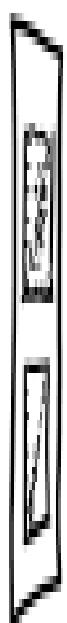
...SO WE'RE NOT  
SURE ABOUT OUR  
CONCLUSIONS.

BAD

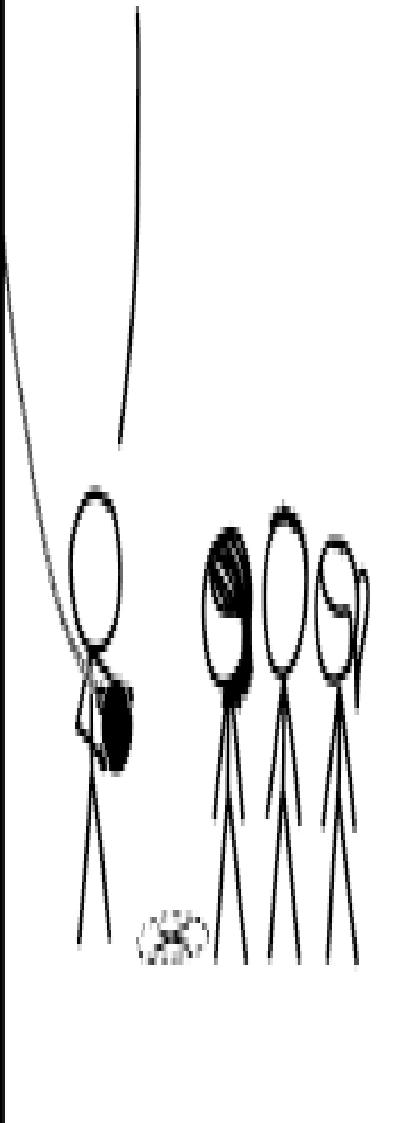
...SO WE DID LOTS  
OF MATH AND THEN  
DECIDED OUR DATA  
WAS ACTUALLY FINE.

VERY BAD

...SO WE TRAINED  
AN AI TO GENERATE  
BETTER DATA.



IF YOU STAND WITH THE  
BOWLING BALL IN FRONT  
OF YOUR FACE AND LET  
GO, WILL YOU FLINCH  
WHEN IT SWINGS BACK?



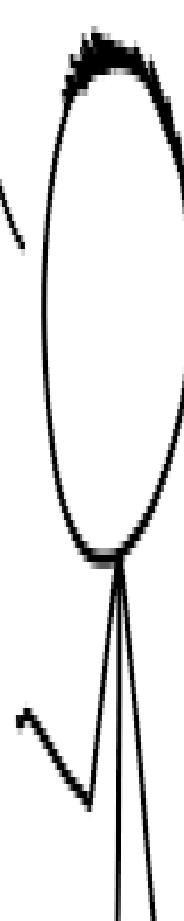
PHYSICIST

I WON'T FLINCH.  
I  
I TRUST  
CONSERVATION  
OF ENERGY.



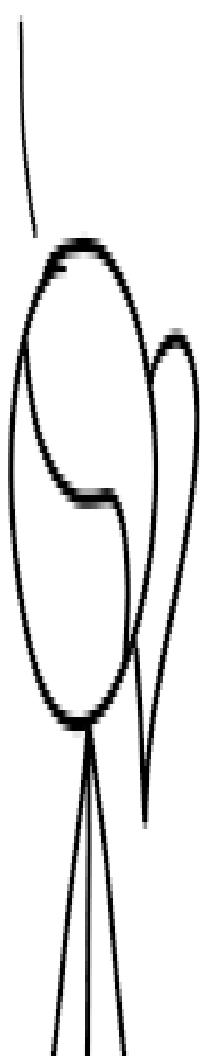
BIOLOGIST

I TRUST MY FLINCH REFLEX,  
WHICH WAS HONED BY MILLIONS  
OF YEARS OF EVOLUTION TO  
PROTECT MY DELICATE FACE.  
I'M NOT MESSING WITH IT.



ENGINEER

I DON'T TRUST  
THAT YOU HUNG  
THAT THING UP  
CORRECTLY.



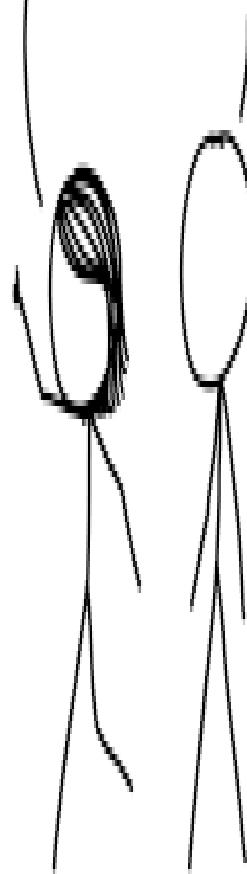
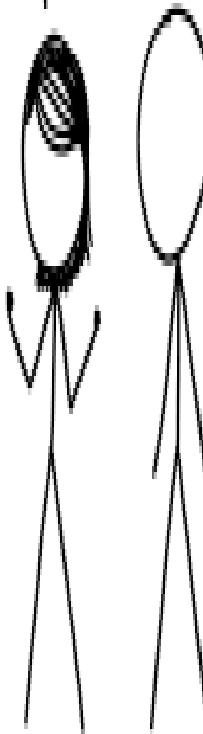
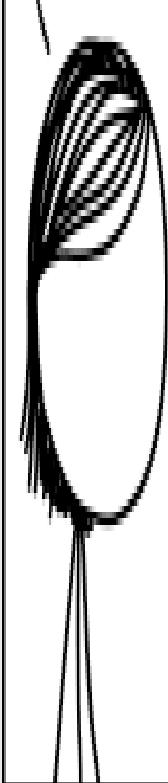
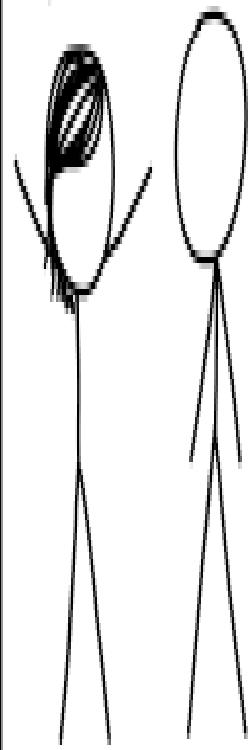
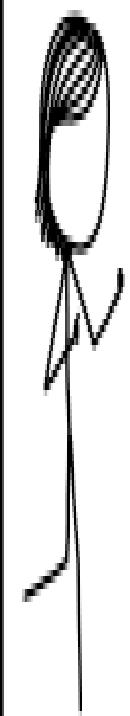
YESSS, I GOT  
MY FLU SHOT.  
  
NICE! I GOT  
MINE A FEW  
WEEKS AGO.  
  
IMMUNITY  
BUDDIES!

NOW I CAN FINALLY  
GET BITTEN BY ALL  
THE BATS I WANT!  
  
NO, THAT'S RABIES,  
THAT'S NOT WHAT-

I'LL BE ABLE TO  
ROLL AND PLAY IN  
THE POISON IVY  
WITHOUT A CARE  
IN THE WORLD!  
  
WHY WOULD YOU  
DO THAT EVEN IF  
THE SHOT DID-

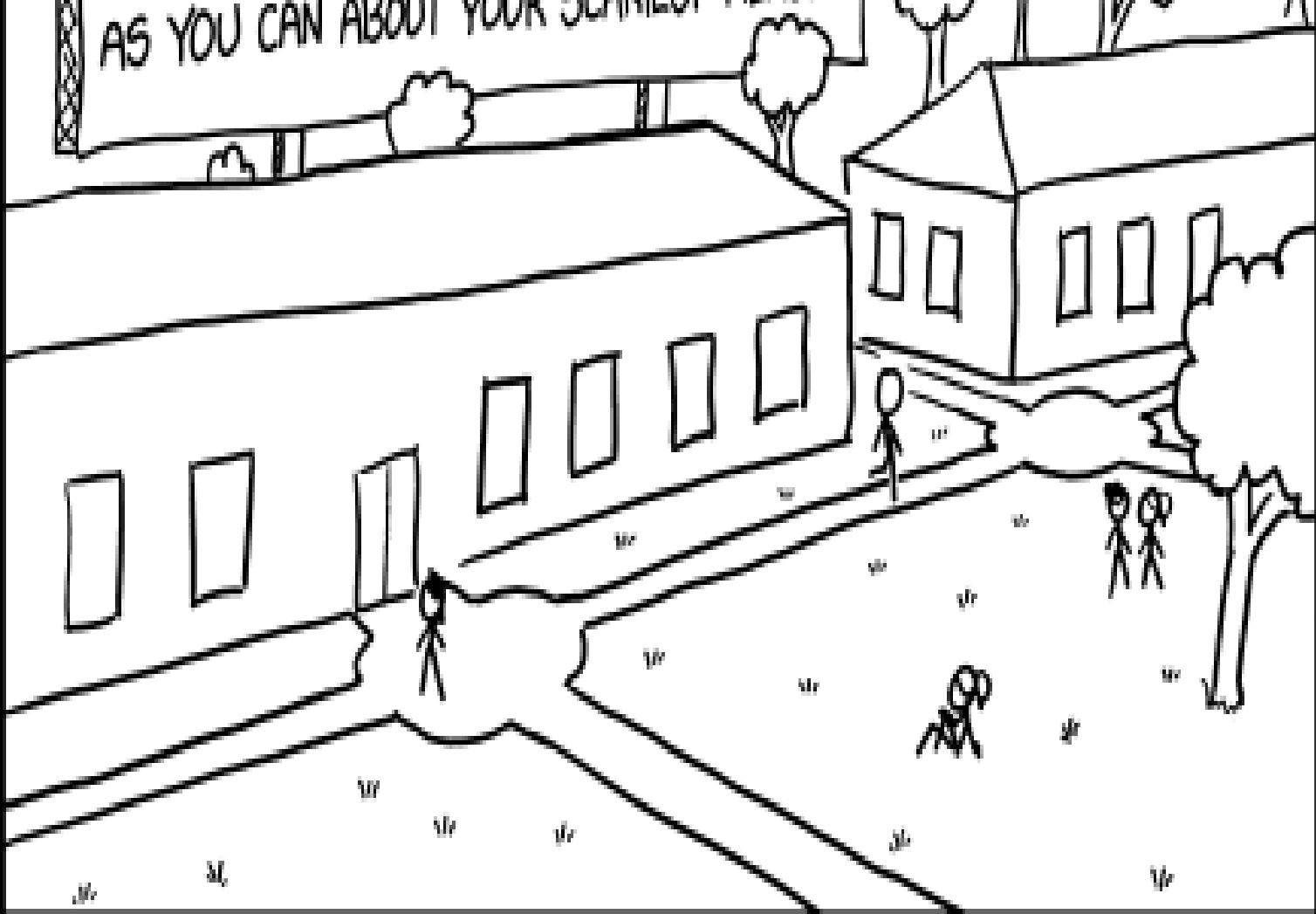
NO MORE SLATHERING ON  
SUNSCREEN. NO MORE  
RUSHING FOR ANTIVENOM  
AFTER A SNAKEBITE. AND  
NOW I CAN STOP WASTING  
TIME BOILING CONTAMINATED  
WATER BEFORE DRINKING IT!

GONNA CLICK ON EVERY  
URL IN EVERY EMAIL  
I GET, EVEN THE ONES  
WITH IP ADDRESSES AND  
WEIRD UNICODE IN THEM!  
  
YOU KNOW WHAT,  
SURE, GO FOR IT.



## ⚠ STUDENT FMRI STUDY VOLUNTEERS ⚠

REMEMBER, WHEN YOU'RE IN THE SCANNER,  
IF YOU SEE A SLIDE THAT'S SIMILAR TO ONE  
THEY ALREADY SHOWED YOU, THINK AS HARD  
AS YOU CAN ABOUT YOUR SCARIEST MEMORY.



A RIVAL NEUROSCIENCE DEPARTMENT KEEPS  
TRYING TO SABOTAGE OUR EXPERIMENTS.

WOW, THIS IS ALL YOURS?

YEAH! ALL THE WAY  
BACK TO THE RIVER!  
I WALK HERE  
EVERY DAY.



MORNING, MISTER COOPER!

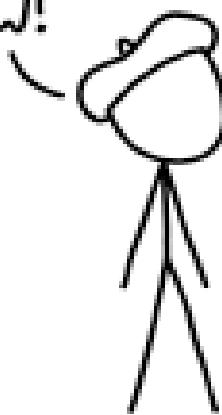
YOU HELP ME  
DOWN THIS  
INSTANT!



DO YOU PROMISE TO  
GIVE BACK ALL THE  
MONEY YOU TOOK?

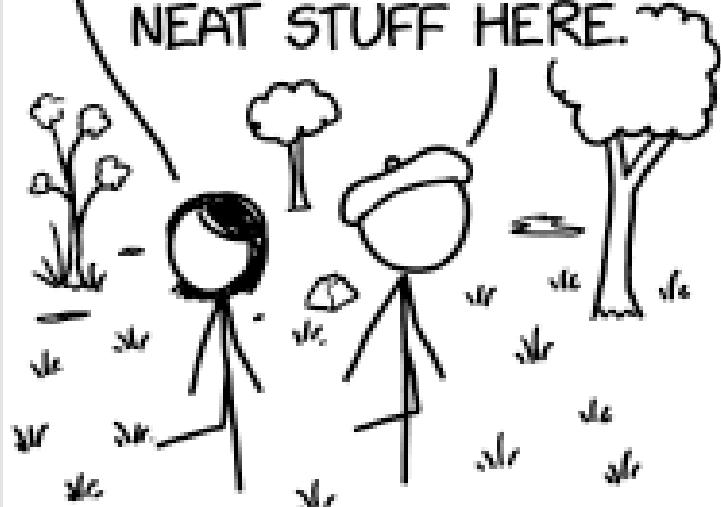
NEVER!

OKAY! SEE YOU  
TOMORROW!



WAS THAT D.B. COOPER?

YEAH, AND UP AHEAD  
THERE'S AN OWL NEST!  
THERE'S SO MUCH  
NEAT STUFF HERE.



## LOCALIZATION WORKING GROUP

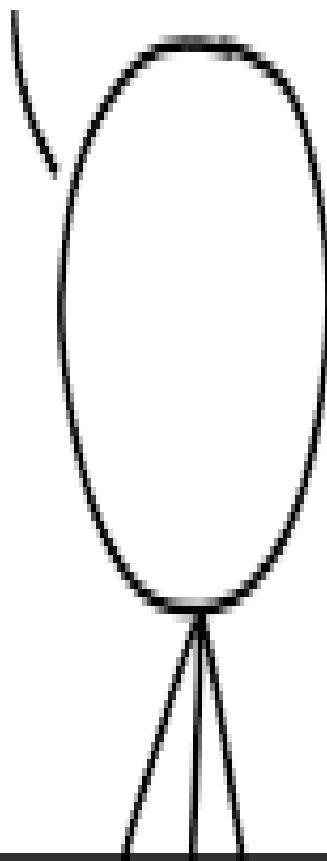
### UPCOMING MEETINGS

---

US TEAM: 2/3/22

EU TEAM: 2/3/22

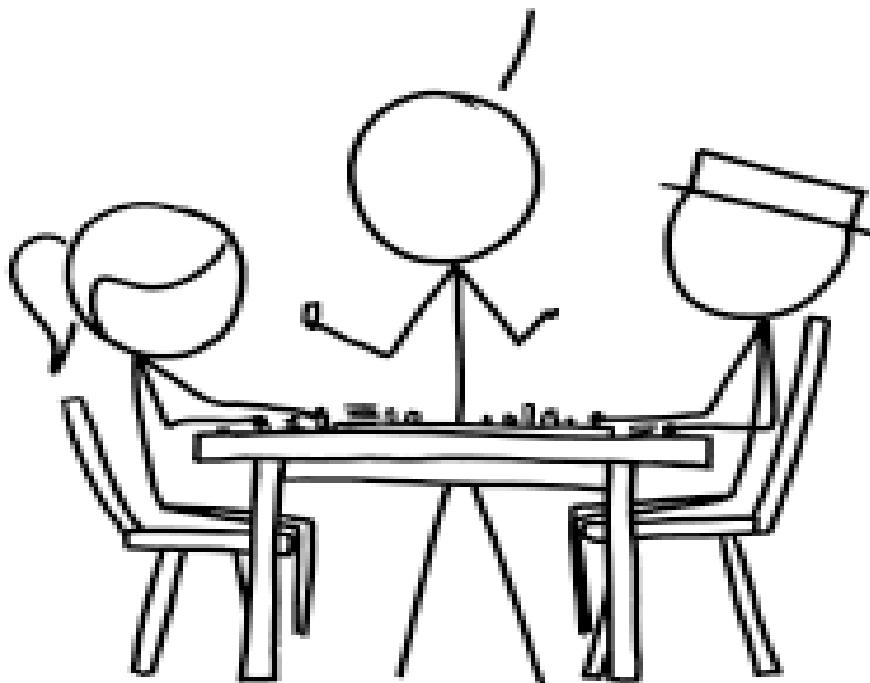
AND THE EUROPEAN  
FORMATTING AND  
LOCALIZATION  
TEAM WILL MEET  
A MONTH LATER...



YOU MAY ASSIGN EACH GARDENER'S TOKEN TO A SECONDARY GARDEN PLOT WITHIN A 30-MINUTE WALK FROM THEIR HOME PLOT.

FOR THE SAKE OF SIMPLICITY, EACH GARDENER IS ASSUMED TO HAVE A CONSTANT WALKING SPEED PROPORTIONAL TO THEIR HEIGHT AND CARDIO SCORE.

FOR THE SAKE OF SIMPLICITY, CARDIO SCORES ARE INHERITED MATRILINEALLY...

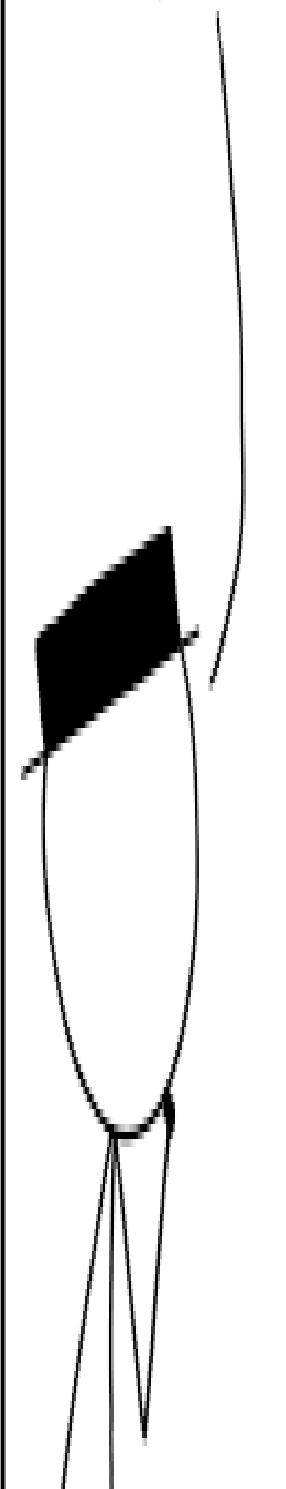


IF YOU'RE WORRIED THAT YOU'RE MAKING SOMETHING TOO COMPLICATED, JUST ADD "FOR THE SAKE OF SIMPLICITY" NOW AND THEN AS A REMINDER THAT IT COULD ALWAYS BE WORSE.

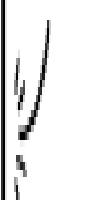
THIS FOUCAULT PENDULUM  
DEMONSTRATES EARTH'S  
ROTATION. IT STAYS IN A  
FIXED PLANE WHILE THE  
EARTH ROTATES UNDER IT.



HMM, REALLY,  
SO THAT MEANS...



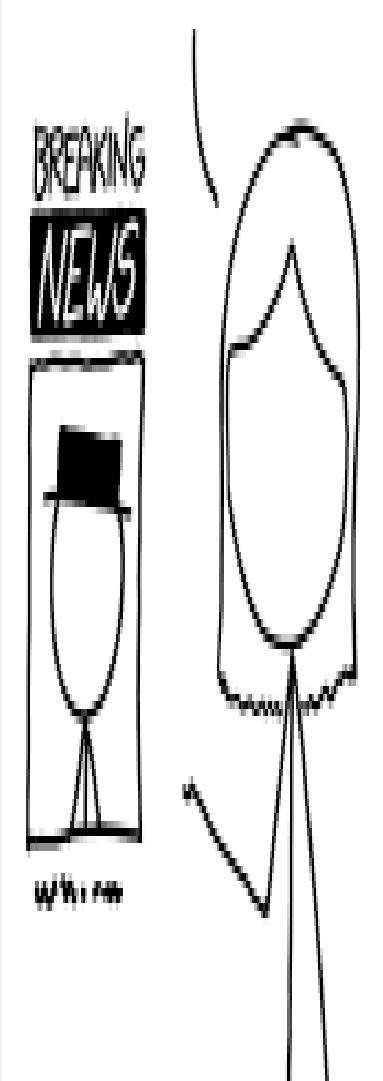
HEY!



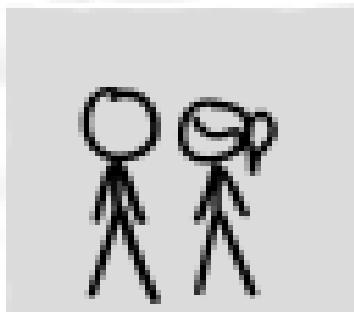
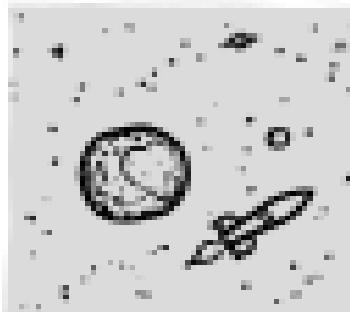
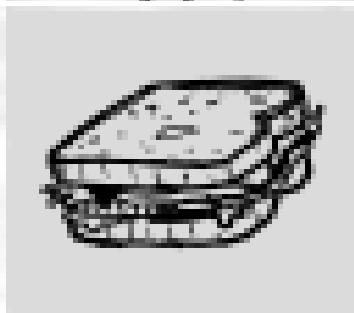
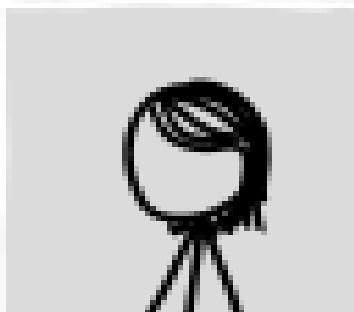
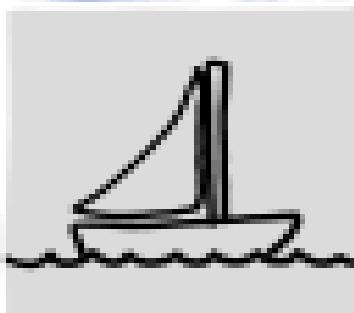
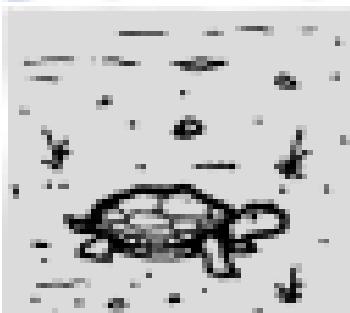
STOP  
HIM!

GRAB!

THE EARTH'S ROTATION WAS  
BRIEFLY HALTED TODAY  
UNTIL GEOPHYSICISTS  
WRESTLED THE INTRUDER  
TO THE GROUND...



# TO CONTINUE, PLEASE CLICK ALL SQUARES CONTAINING FRANKENSTEIN



OH NO.

I PUT IN MY QUARTERS.  
IS THE MACHINE BROKEN?

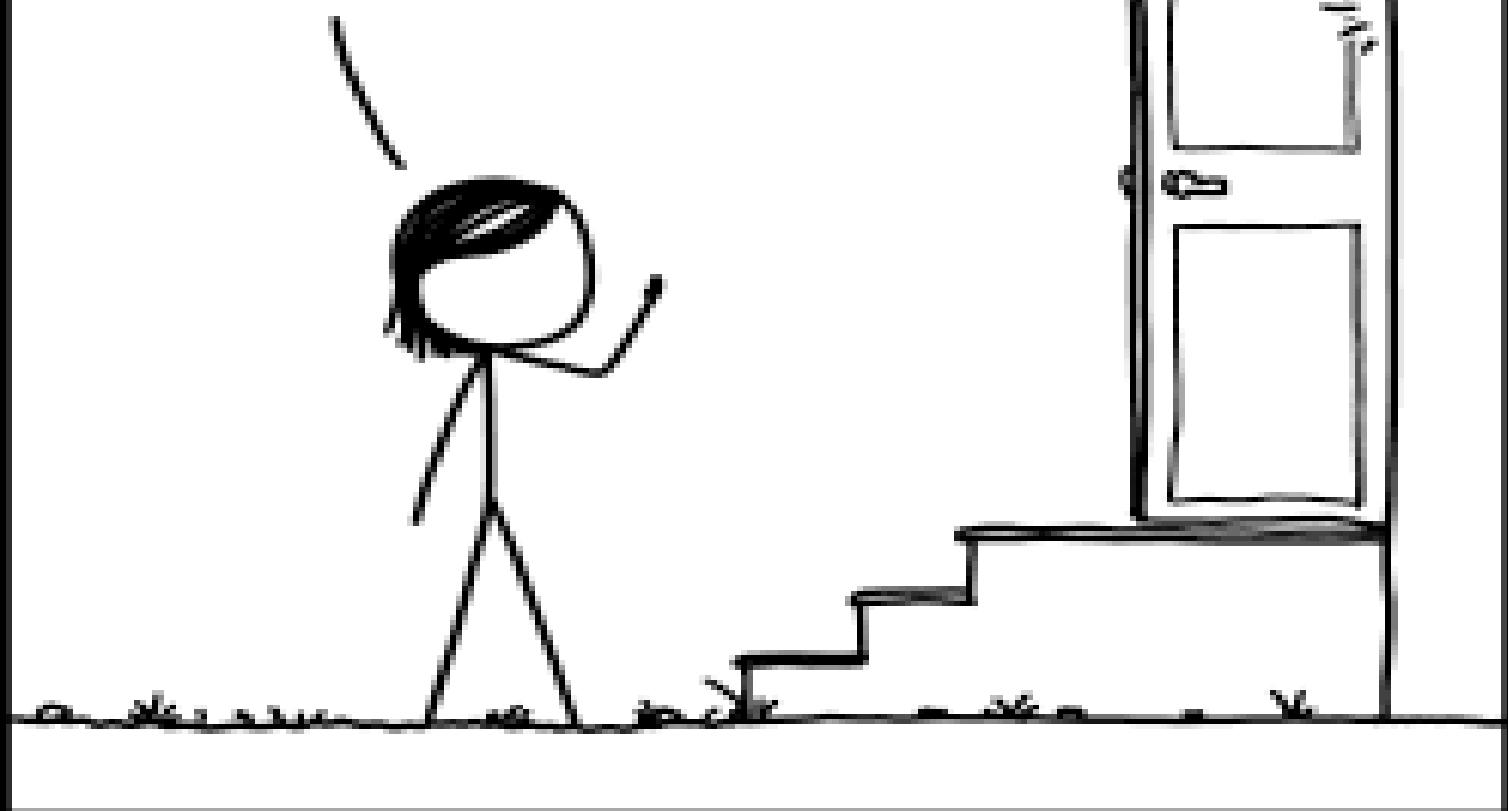
IT JUST TAKES A  
WHILE TO WORK.



HI, I'M HERE TO VISIT!

DO I KNOW YOU?

NO, IT'S COOL, I'M  
TWO WEEKS PAST  
MY SECOND DOSE.



REMEMBER, ONCE YOU'RE  
FULLY VACCINATED, THE CDC  
SAYS YOU'RE FREE TO VISIT  
OTHER PEOPLE'S HOUSES.

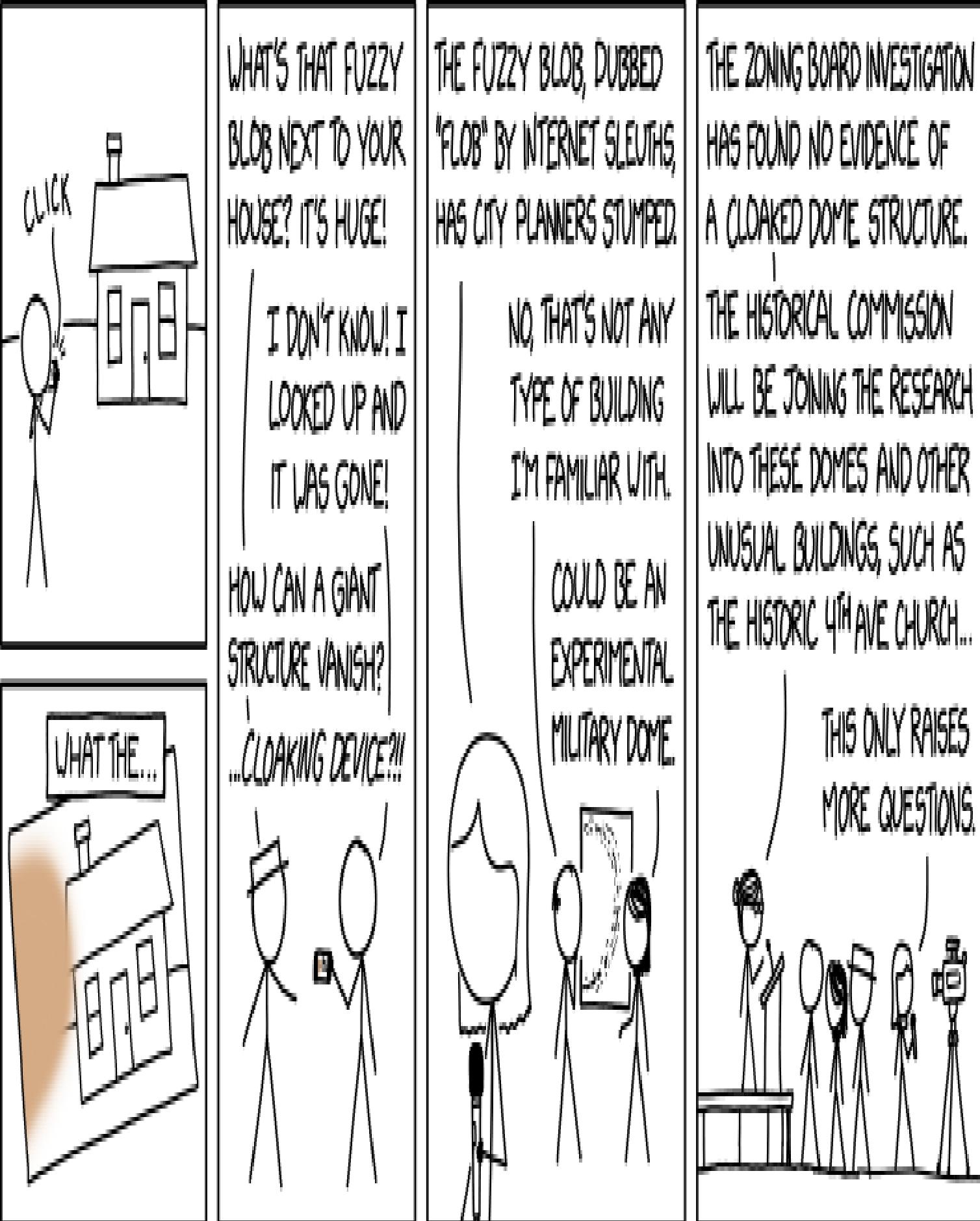
We believe this resolves all remaining questions on this topic. No further research is needed.

## References

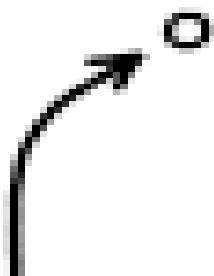
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1. Author, *Title*, *Journal Name* (*year*) *vol.*
2. Author, *Title*, *Journal Name* (*year*) *vol.*
3. Author, *Title*, *Journal Name* (*year*) *vol.*
4. *Author*, *Title*, *Journal Name*.

JUST ONCE, I WANT TO SEE A RESEARCH PAPER WITH THE GUTS TO END THIS WAY.



OPEN THIS PICTURE  
FULLSCREEN ON YOUR  
PHONE AND HOLD IT  
AT ARM'S LENGTH.



THERE ARE  
50,000 GALAXIES  
IN THIS CIRCLE.

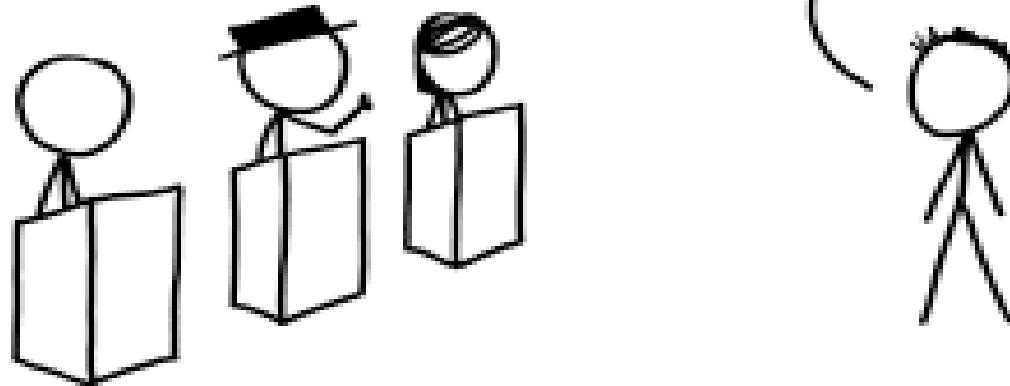
ASTRONOMY FACT: THERE  
ARE TOO MANY GALAXIES.

A BOAT. A PLANE. AMELIA EARHART'S PLANE.  
AMELIA EARHART'S SKELETON. THE STATUE  
OF LIBERTY'S INTERNAL SUPPORT FRAME.  
THE CROWN JEWELS. THIS SHOW'S ENTIRE  
TELEVISION AUDIENCE. THE GREENLAND ICE  
SHEET. EARTH'S NORTH MAGNETIC POLE.

AM I IN THE PACIFIC OCEAN?  
IF SO, THE ATLANTIC OCEAN.

UHH.

OUR PRODUCERS ARE GOING TO  
NEED SOME TIME ON THIS ONE.



THE GAME SHOW REALIZED THAT THEY  
SHOULD HAVE ADDED SOME RESTRICTIONS  
TO THEIR "TAKE ANY ITEM TO A DESERTED  
ISLAND" CHALLENGE, BUT IT WAS TOO LATE.

PRECISE NUMBER + PRECISE NUMBER = SLIGHTLY LESS PRECISE NUMBER

PRECISE NUMBER × PRECISE NUMBER = SLIGHTLY LESS PRECISE NUMBER

PRECISE NUMBER + GARBAGE = GARBAGE

PRECISE NUMBER × GARBAGE = GARBAGE

$\sqrt{\text{GARBAGE}}$  = LESS BAD GARBAGE

$(\text{GARBAGE})^2$  = WORSE GARBAGE

$\frac{1}{N} \sum (\text{N PIECES OF STATISTICALLY INDEPENDENT GARBAGE})$  = BETTER GARBAGE

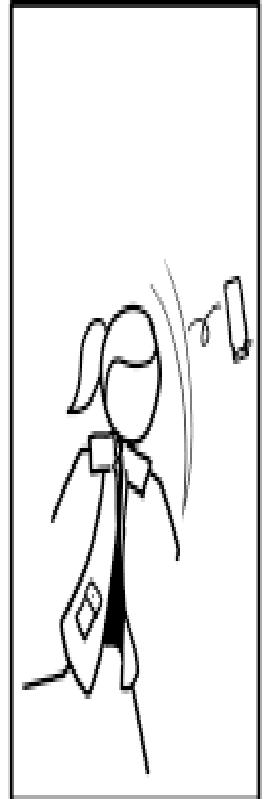
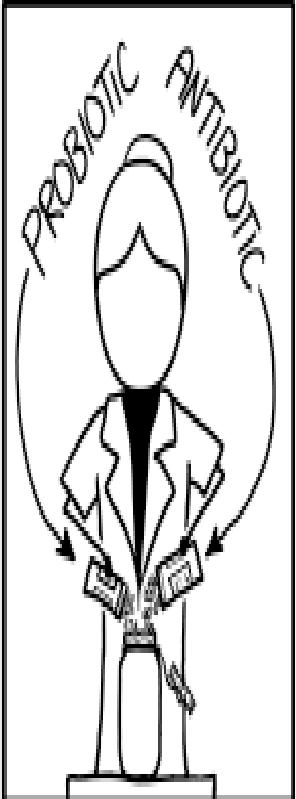
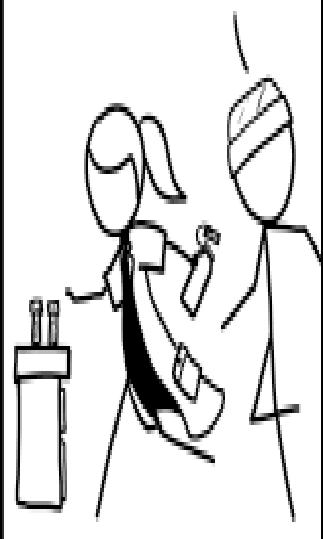
(PRECISE NUMBER) GARBAGE = MUCH WORSE GARBAGE

GARBAGE - GARBAGE = MUCH WORSE GARBAGE

$\frac{\text{PRECISE NUMBER}}{\text{GARBAGE} - \text{GARBAGE}}$  = MUCH WORSE GARBAGE, POSSIBLE DIVISION BY ZERO

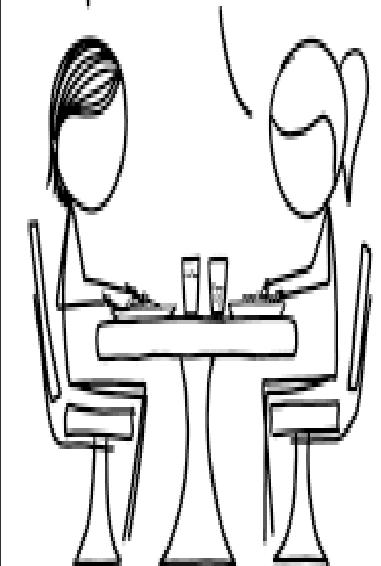
GARBAGE × 0 = PRECISE NUMBER

HURRY, THEY'RE  
RIGHT BEHIND US!

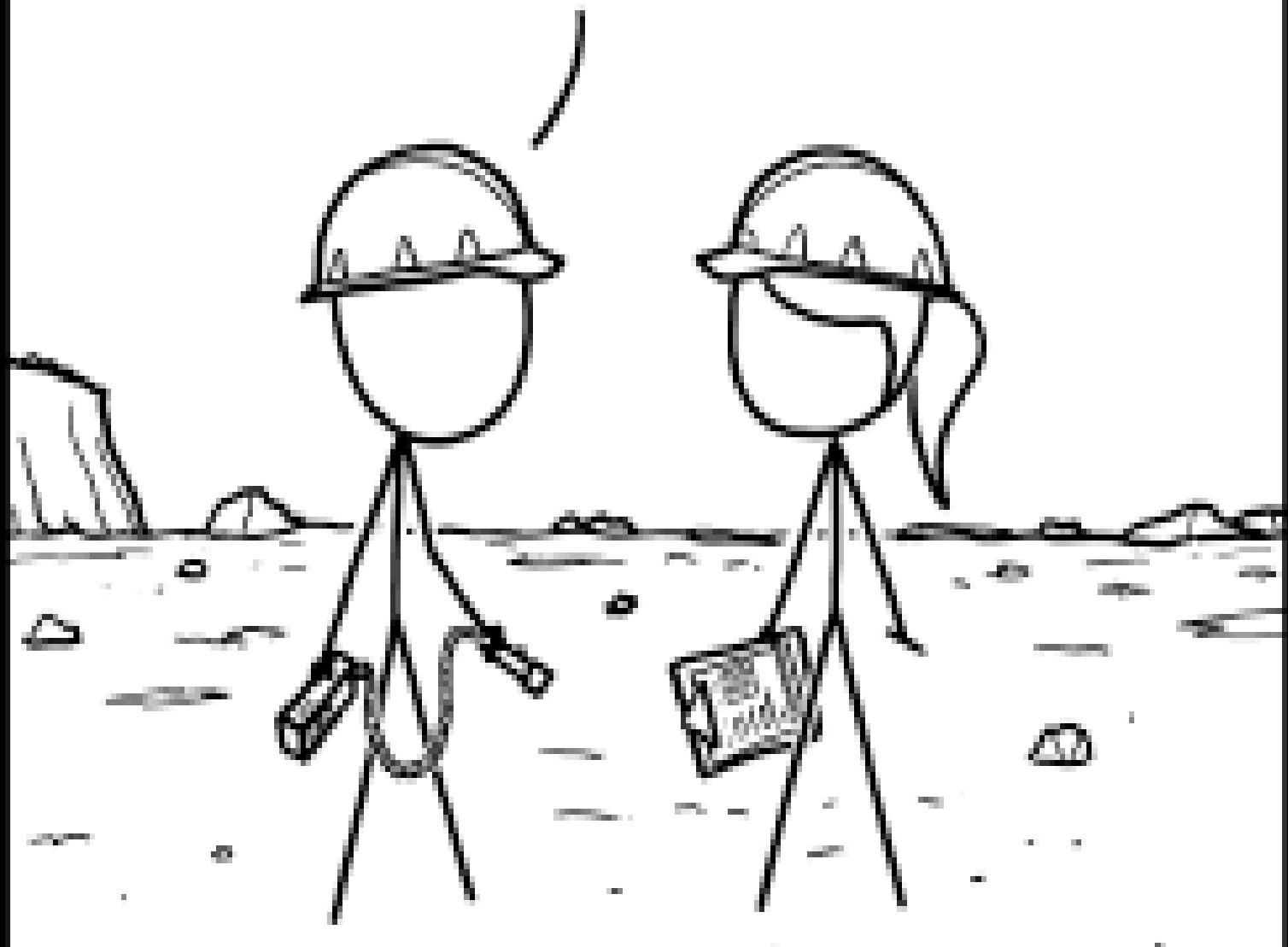


SO WHAT'S GASTRO-  
ENTEROLOGY LIKE?

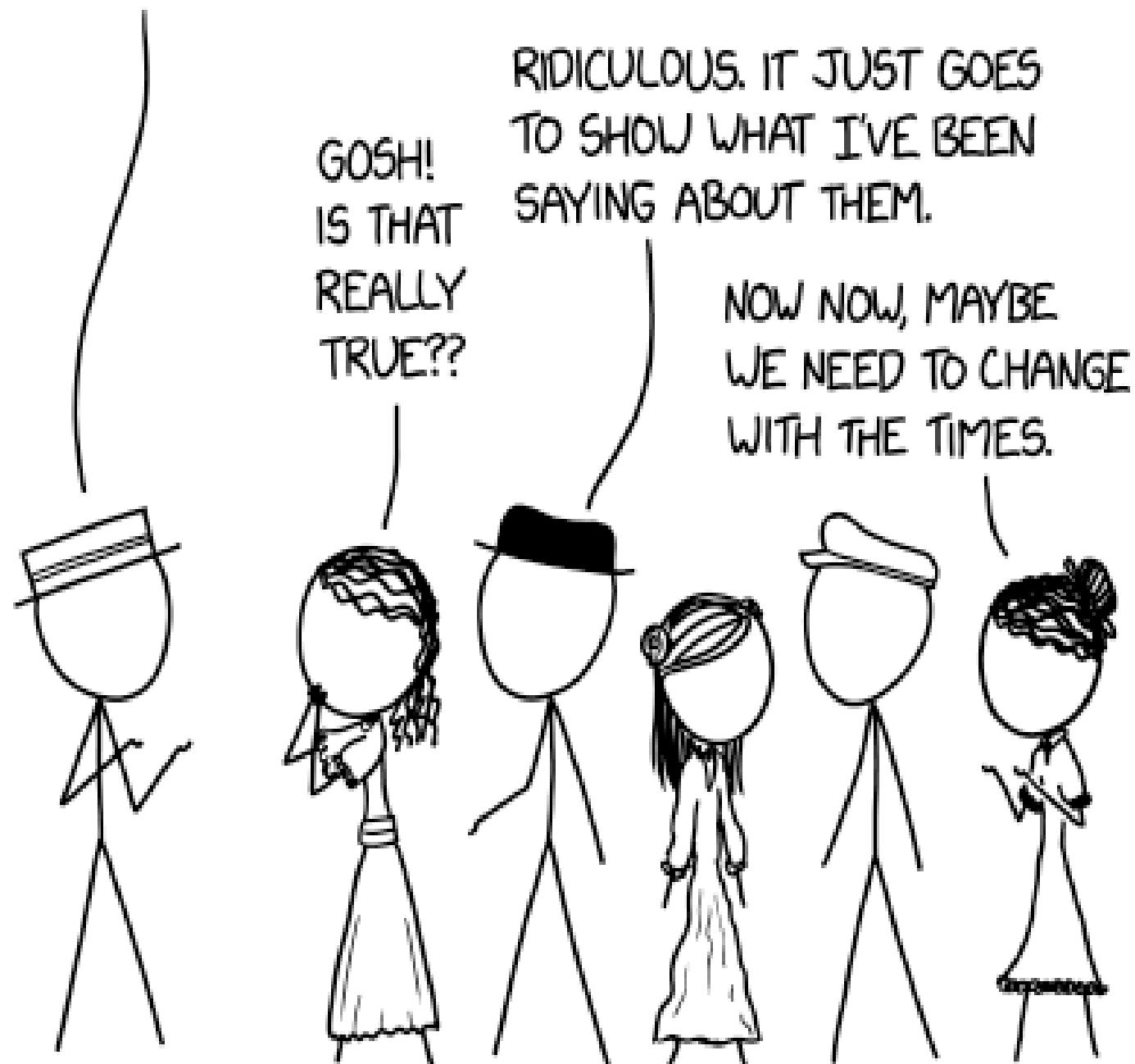
PRETTY BORING.  
LOTTA PAPERWORK.



AT FIRST I WAS CONFUSED  
ABOUT WHY THEY WANTED ME  
TO CARRY A GEIGER COUNTER  
HERE, BUT THEN IT CLICKED.



NOW, IT MAY SOUND STRANGE, BUT  
IT'S HOW GEN-Z IS DOING THINGS!



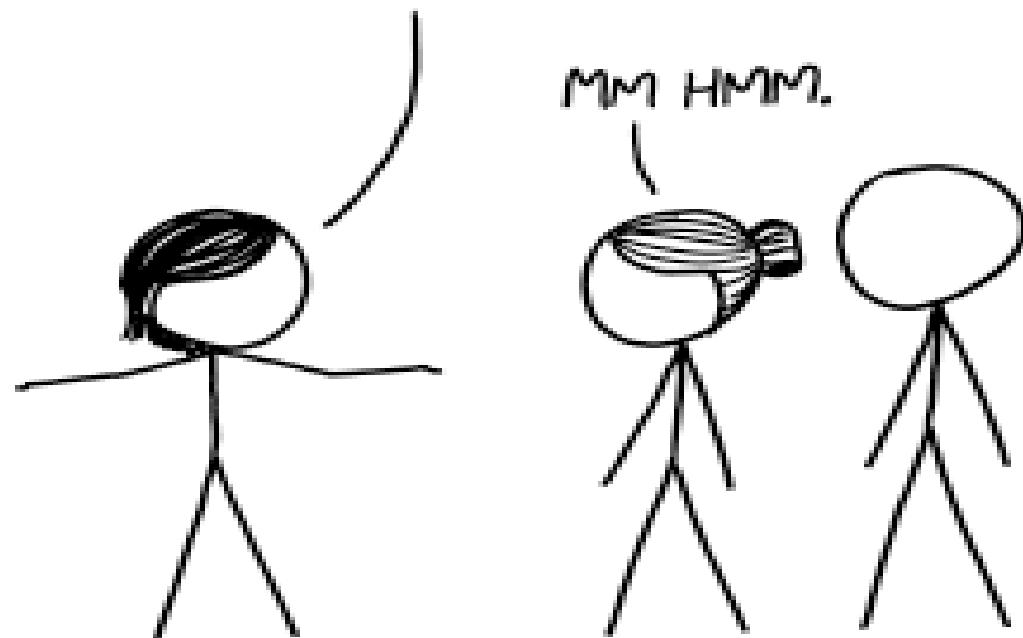
PEOPLE ASCRIBING QUALITIES TO "GEN Z" HAVE THE  
SAME ENERGY AS SMALL-TOWN SALESPeOPLE IN 1905  
TALKING ABOUT WHAT THE LADIES IN PARIS ARE UP TO.

IMAGINE EARTH'S HISTORY AS A FOOTBALL FIELD, FROM THE PLANET'S FORMATION AT ONE END TO TODAY AT THE OTHER.

COMPLEX LIFE WOULD BE LARGELY LIMITED TO THE FINAL TEN YARDS. DINOSAURS APPEAR AT THE FIVE-YARD LINE, THE AGE OF MAMMALS HAPPENS IN THE LAST  $1\frac{1}{2}$  YARDS, AND HUMANS ARISE IN THE FINAL FEW MILLIMETERS.

ALL OF WRITTEN HISTORY WOULD FIT IN A STRIP NARROWER THAN A SINGLE HAIR.

"TWO WEEKS" WOULD BE TOO SMALL TO SEE EVEN WITH A POWERFUL MICROSCOPE.



GEOLOGISTS ALWAYS TRY THIS WHEN THEY'RE LATE TURNING SOMETHING IN.

$$F(x_1, x_2, \dots, x_n) = \left( \underbrace{\frac{x_1 + x_2 + \dots + x_n}{n}}_{\text{ARITHMETIC MEAN}}, \underbrace{\sqrt[n]{x_1 x_2 \dots x_n}}_{\text{GEOMETRIC MEAN}}, \underbrace{x_{\frac{n+1}{2}}}_{\text{MEDIAN}} \right)$$

$$GMDN(x_1, x_2, \dots, x_n) = \underbrace{F(F(F(\dots F(x_1, x_2, \dots, x_n) \dots)))}_{\text{GEOTHMETIC MEANDIAN}}$$

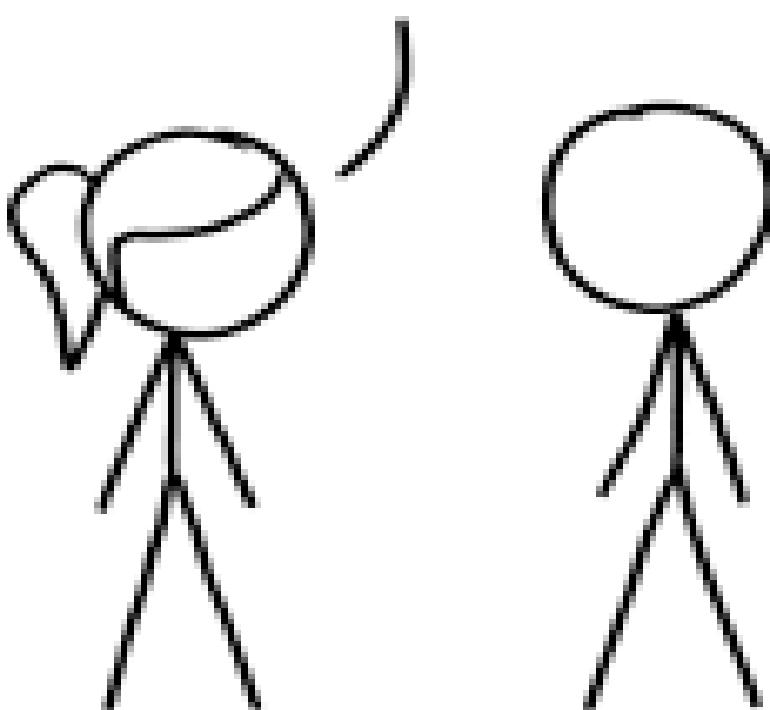
$$GMDN(1, 1, 2, 3, 5) \approx 2.089$$

STATS TIP: IF YOU AREN'T SURE WHETHER TO USE THE MEAN, MEDIAN, OR GEOMETRIC MEAN, JUST CALCULATE ALL THREE, THEN REPEAT UNTIL IT CONVERGES

UGH, I HAVE TO ORGANIZE  
A FAIR GIFT EXCHANGE FOR  
MY SURVEY-LOVING FAMILY.

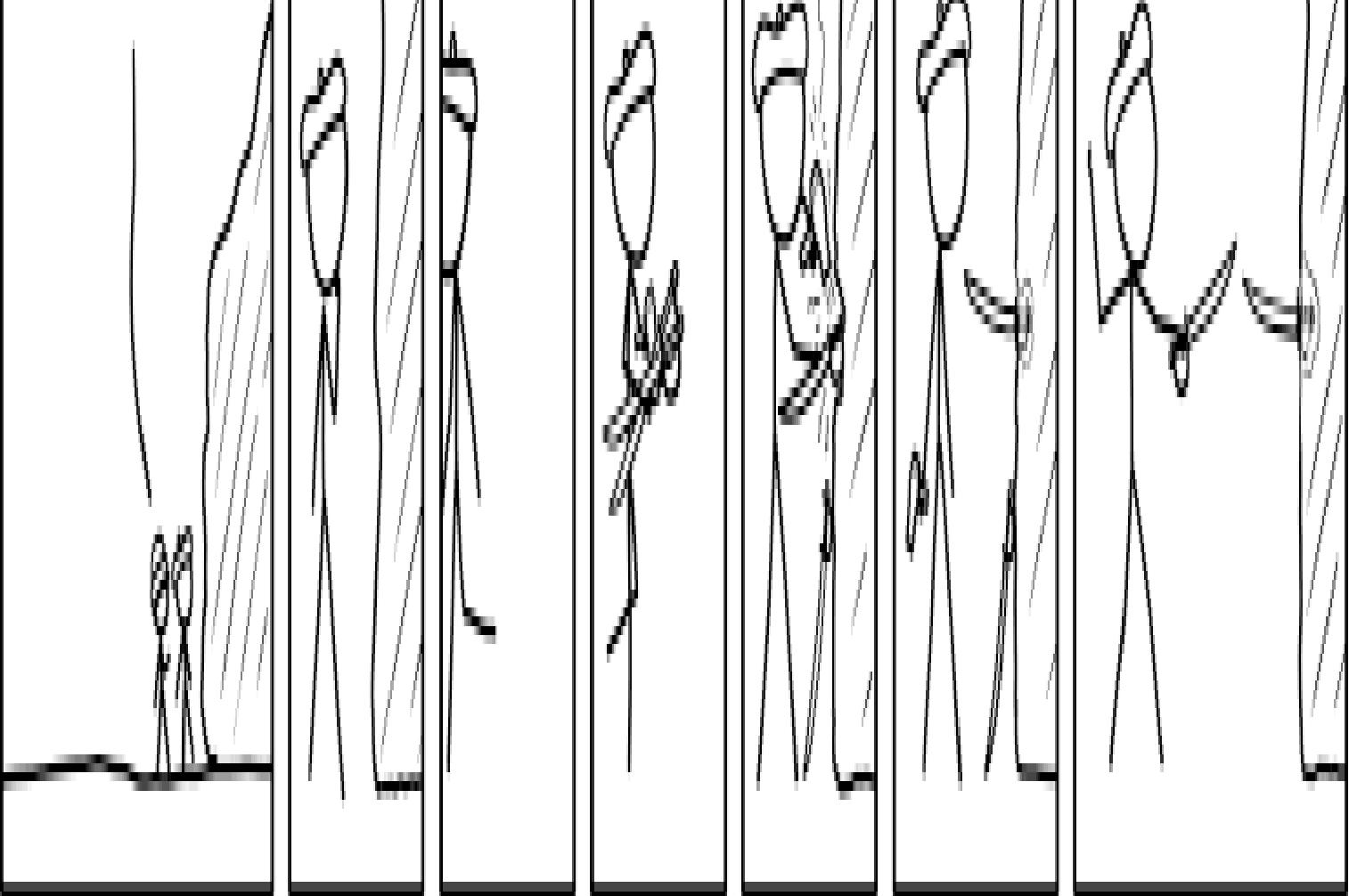
DO YOU WANT TO HELP?

THEY SAID IT'S "OKAY  
IF IT'S COMPLICATED."



THE PERFECT GIFT FOR  
A POLITICAL SCIENTIST

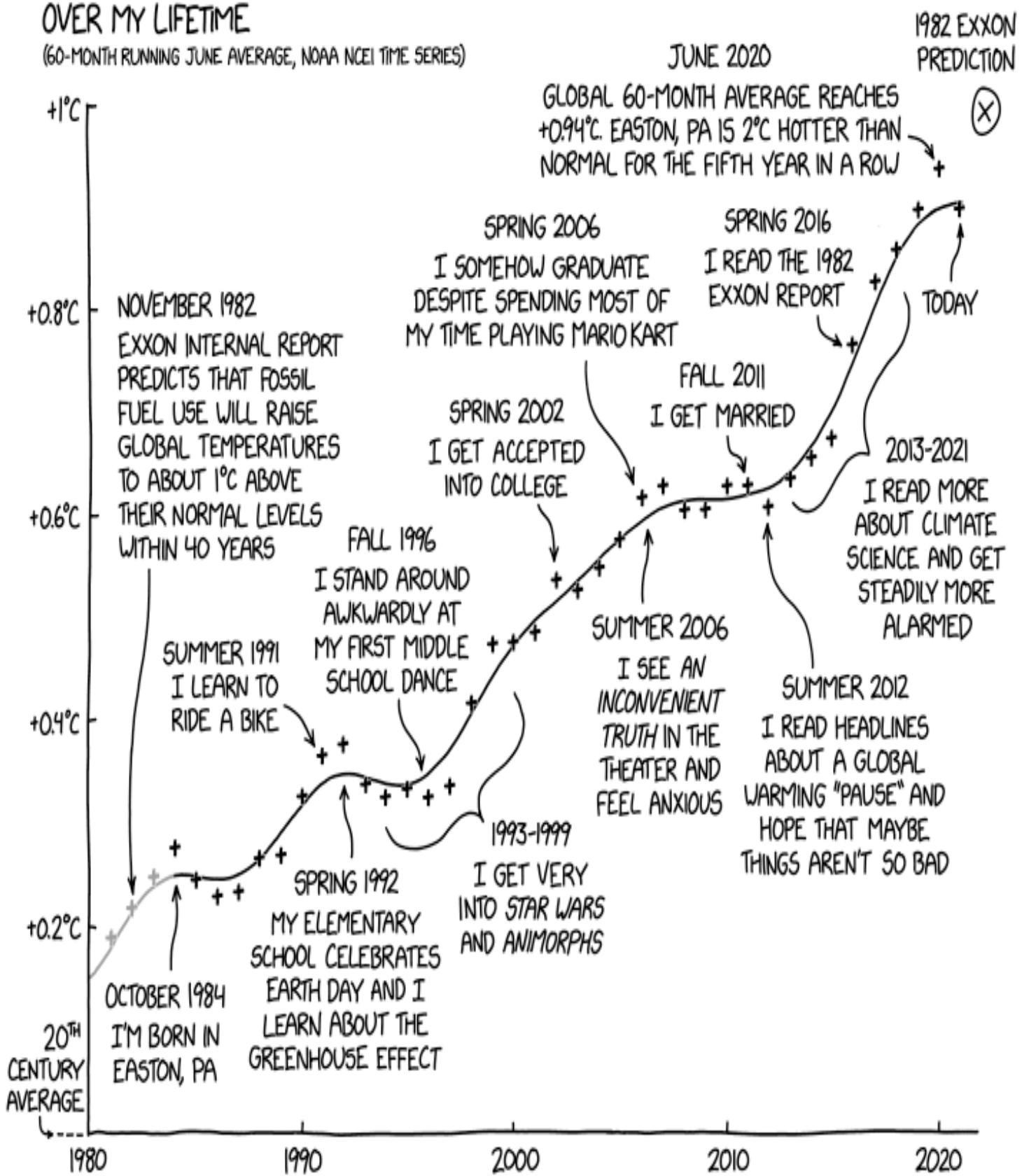
GLACIERS ARE SO  
NEAR, YOU CAN'T SEE  
IT, BUT THIS ICE IS  
SLOWLY ADVANCING



# GLOBAL AVERAGE TEMPERATURE

## OVER MY LIFETIME

(60-MONTH RUNNING JUNE AVERAGE, NOAA NCEI TIME SERIES)



## GOOFS (78)

THE SPACE DETECTIVE'S OFFICE IS ON CHESTNUT AVE, BUT LOWER MANHATTAN HAS NO STREET BY THAT NAME. AGENT GLENNIFER PURSUES THE CYBERNETIC DOG ONTO WHAT IS CLEARLY LUDLOW STREET.

GLENNIFER PURSUING CYBERNETIC DOG | 00:00:00

THE AGENTS DESTROY THE BLIMP DRONES IN UNION SQUARE WITH HARPOONS FROM A STORE DISPLAY RACK. THE NEAREST HARPOON STORE IS SEVERAL BLOCKS AWAY AND HAS NO OUTDOOR DISPLAYS.

AGENTS DESTROY BLIMP DRONES | 00:00:00

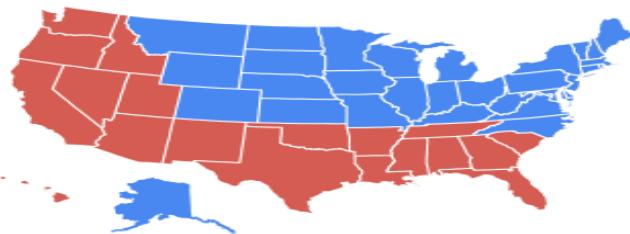
THE APARTMENT IN THE BACKGROUND OF THE HOLOGRAM KISSING SCENE ACTUALLY EXISTS IN DOWNTOWN VANCOUVER. WE CALLED THE OWNERS, WHO CONFIRMED THEY HAD NO RESIDENTS NAMED

SOMETIMES THE IMDB "GOOFS" SECTION REALLY SEEKS TO STRUGGLE WITH THE WHOLE PREMISE OF FICTION.

# THE LEAST INFORMATIVE GOOGLE TRENDS MAPS I'VE CREATED OVER THE YEARS

(ALL ARE REAL BUT NOT ALL  
COVER THE SAME DATE RANGE)

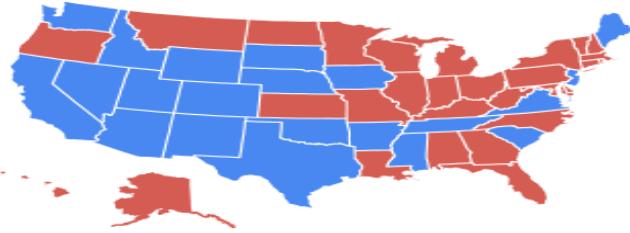
- FROSTBITE ● HEAT STROKE



- BIGFOOT ● MIKE PENCE



- LITTLE DOG ● BIG CAT



- SNAKES ● ANTS ● BEES ● ALLIGATORS



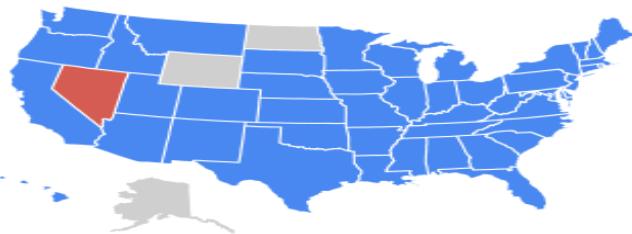
- SUPER BOWL ● FUNERAL HOME



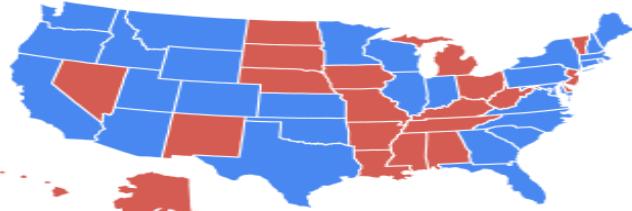
- DONALD TRUMP ● WHAT DO I DO



- BEST CHURCH ● BEST STRIP CLUB



- ETIQUETTE ● SEXTING



- SHARK ATTACK ● CHILDBIRTH



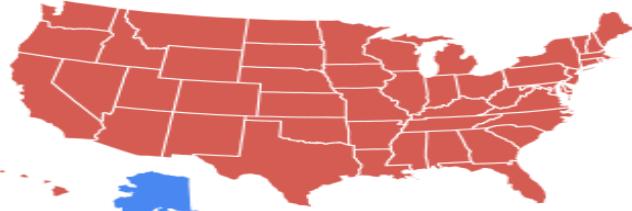
- RETIREMENT PLANNING ● BUNGEE JUMPING



- RESUME TIPS ● SKATEBOARD TRICKS

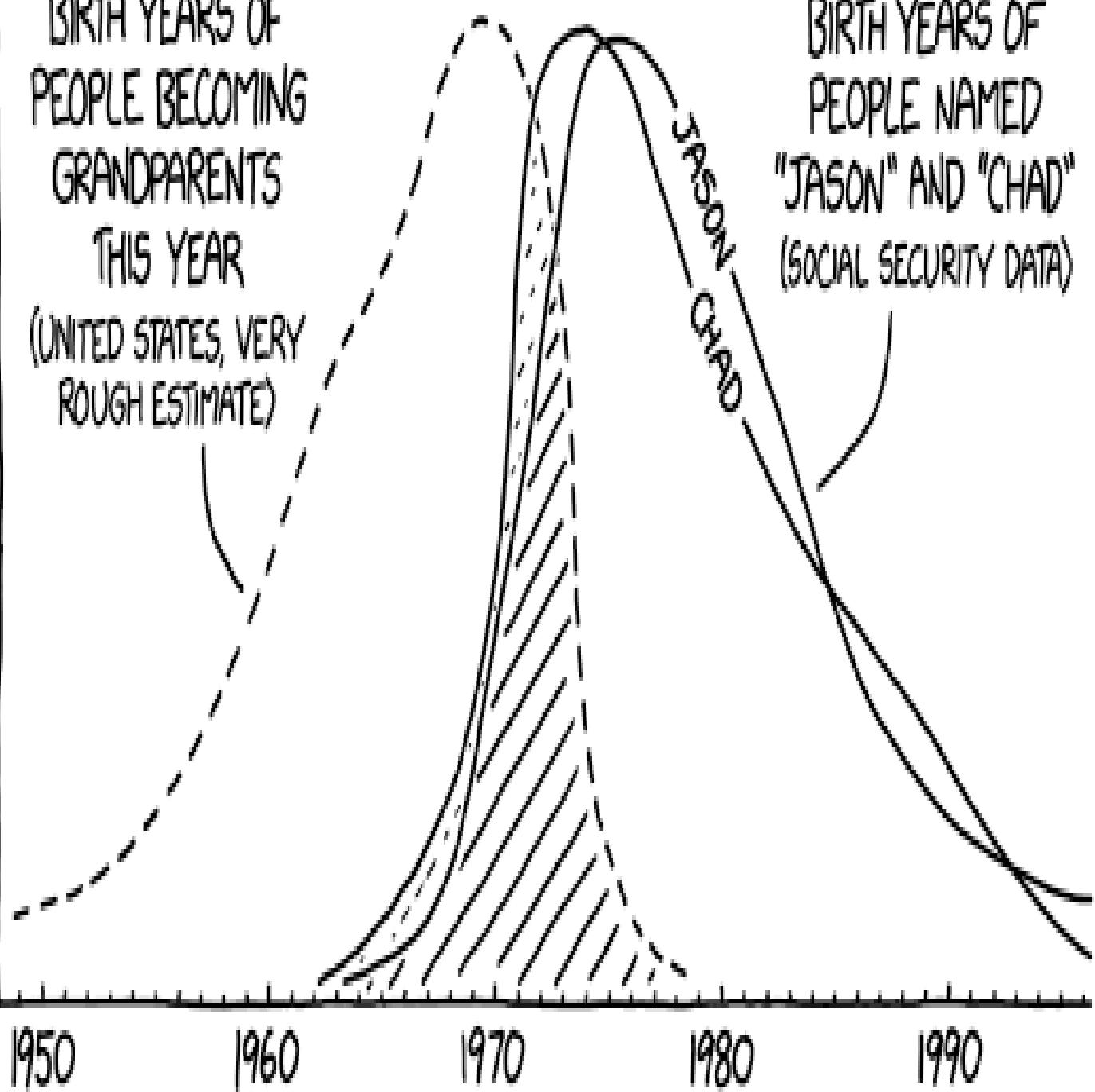


- EXISTENTIAL CRISIS ● MARCO RUBIO



BIRTH YEARS OF  
PEOPLE BECOMING  
GRANDPARENTS  
THIS YEAR  
(UNITED STATES, VERY  
ROUGH ESTIMATE)

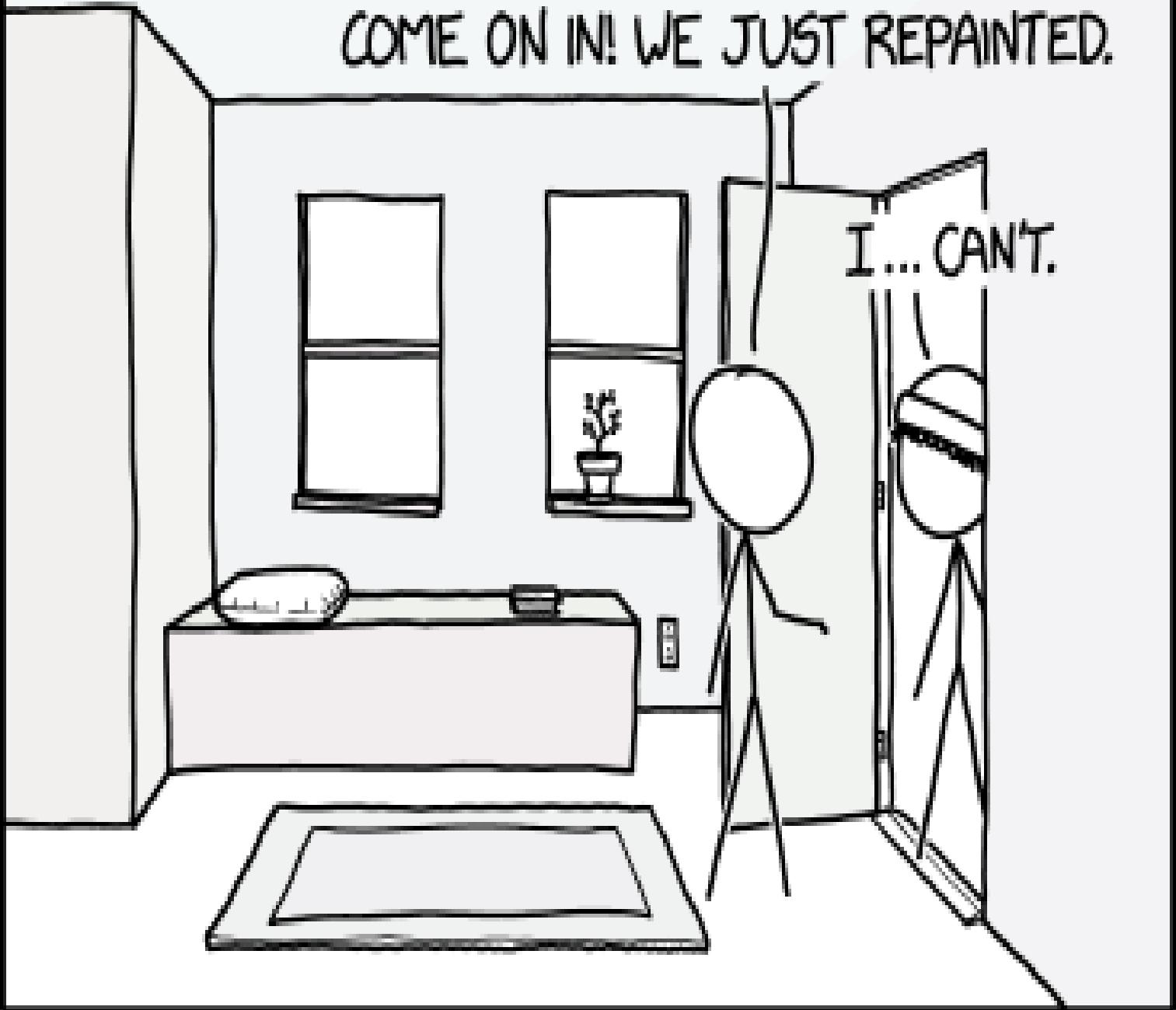
BIRTH YEARS OF  
PEOPLE NAMED  
"JASON" AND "CHAD"  
(SOCIAL SECURITY DATA)



FUN FACT: WE HAVE NOW ENTERED THE ERA  
OF "GRANDPA JASON" AND "GRANDPA CHAD."

COME ON IN! WE JUST REPAINTED.

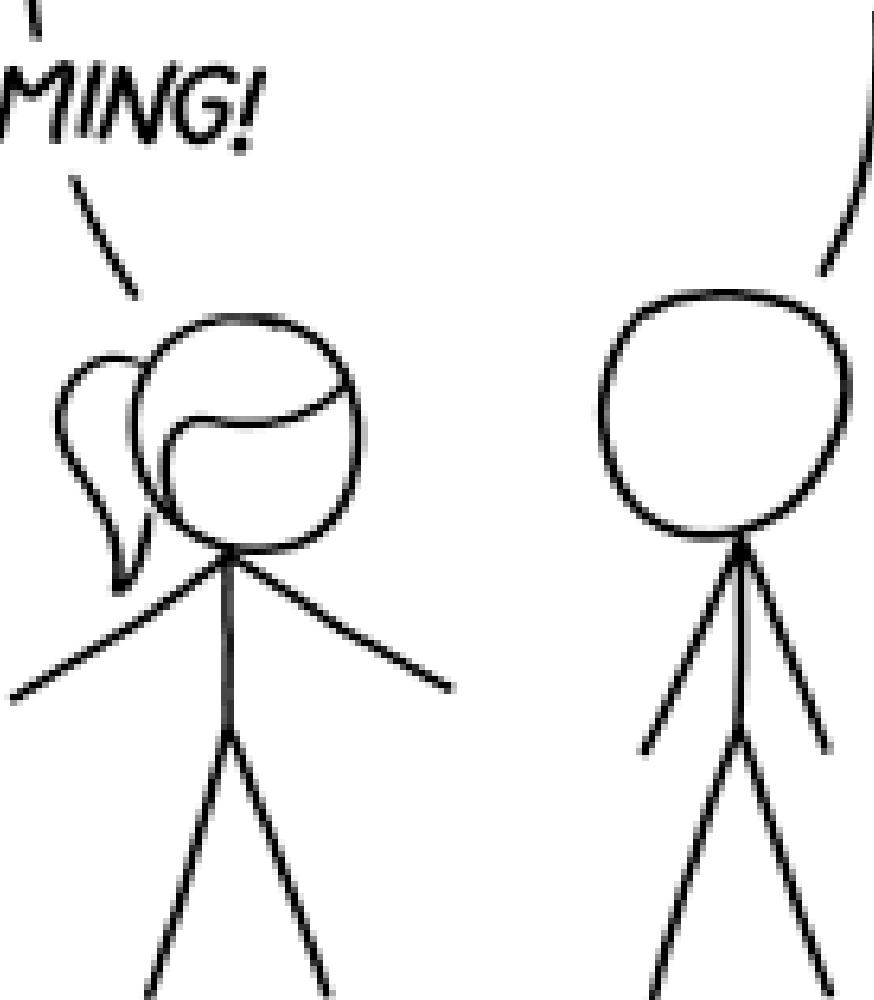
I... CAN'T.

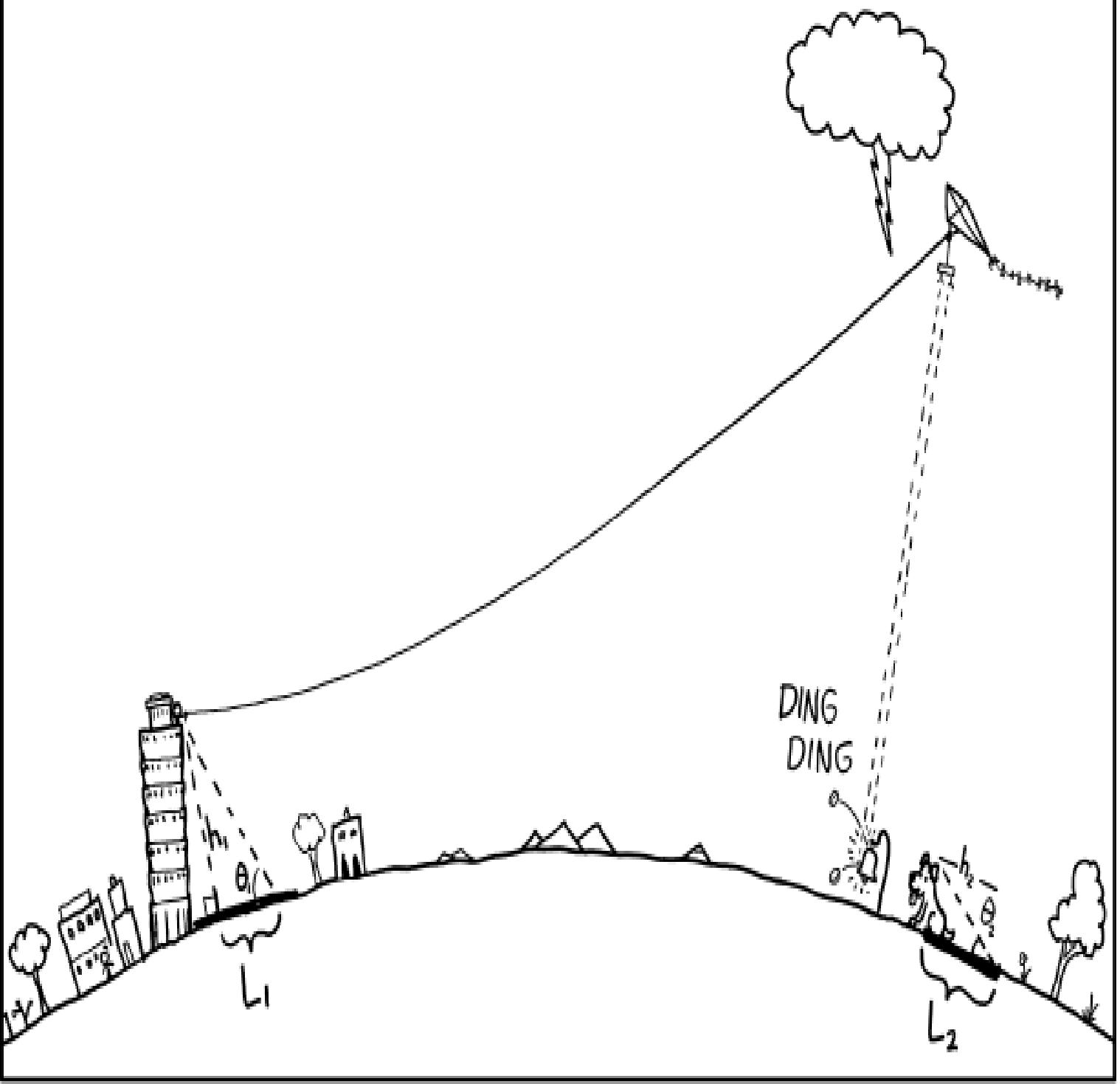


IF YOU WANT TO SET UP A VAMPIRE-STYLE BARRIER TO KEEP GRAPHIC DESIGNERS FROM ENTERING YOUR HOUSE, JUST PAINT EVERY SURFACE A SLIGHTLY DIFFERENT SHADE OF OFF-WHITE.

ASK ME WHAT THE SECRET  
TO DETECTING GRAVITATIONAL  
WAVES USING PULSARS IS.

WHAT'S THE SECRET  
TO DETECTING GRAV-  
**TIMING!**





HISTORY'S GREATEST SCIENTIST WAS PROBABLY THAT ONE WHO MEASURED THE SHADOW OF THE LEANING TOWER OF PISA WHILE FLYING A KITE INTO A DISTANT THUNDERSTORM WHERE LIGHTNING CAUSED TWO MOLDY PETRI DISHES TO FALL ONTO A BELL NEXT TO A SALIVATING DOG WHOSE SHADOW ANGLE DETERMINED THE CIRCUMFERENCE OF THE EARTH.

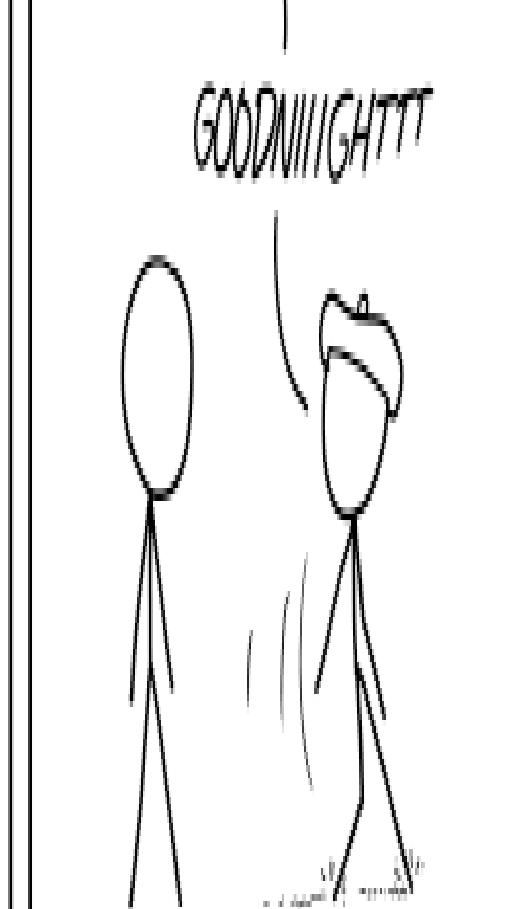
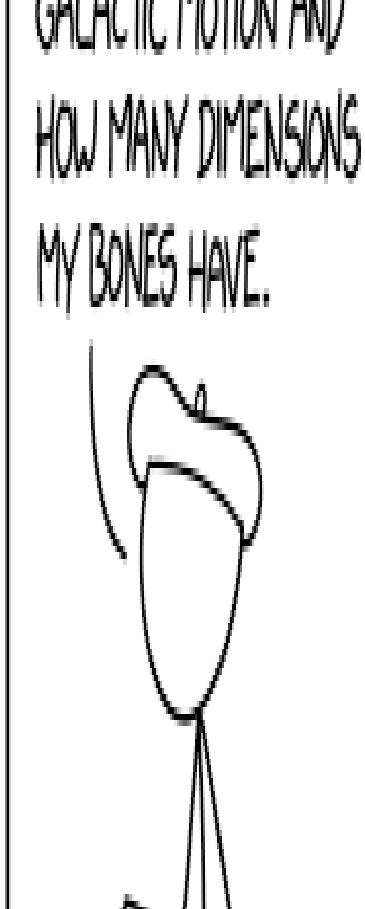
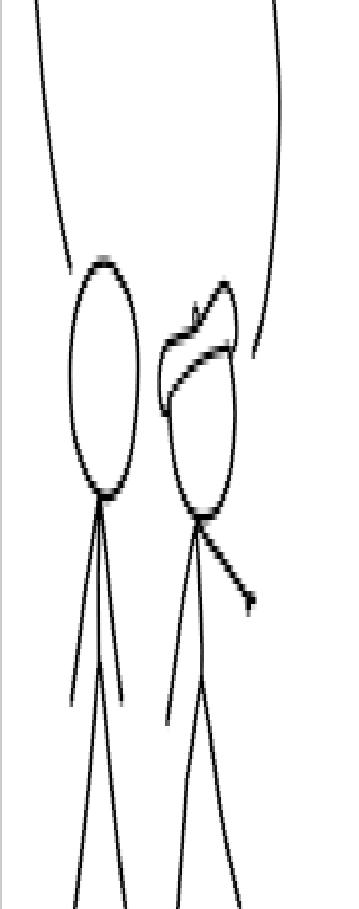
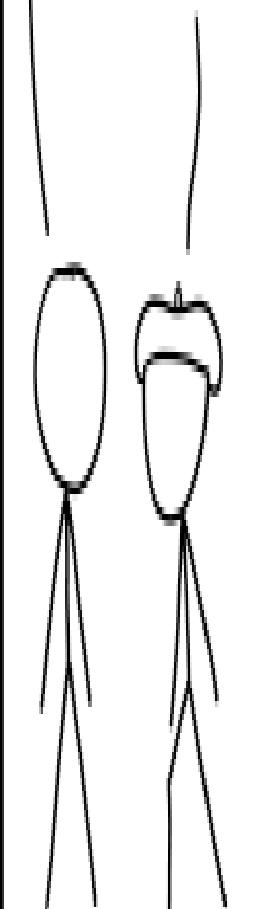
I CAN'T BELIEVE  
IT'S STILL LIGHT  
OUT, IT'S 8:00 PM!  
  
SERIOUSLY! THIS  
MORNING I FELL  
OFF THE WALL.

WAIT, WHY WERE YOU  
SLEEPING ON THE WALL?  
  
THE GREAT ATTRACTOR  
IS NEAR THE HORIZON  
AT NIGHT RIGHT NOW.

THE GREAT ATTRACTOR?  
YEAH! THE SPACE ONE.  
IT PULLS ON ME EXTRA  
HARD. DOCTORS SAID IT'S  
SOMETHING TO DO WITH  
GALACTIC MOTION AND  
HOW MANY DIMENSIONS  
MY BONES HAVE.

THIS TIME OF YEAR, IT'S BELOW US  
ALL DAY, SO I STAND VERTICALLY.  
BUT DAY-SLIDING SEASON IS NEAR!  
  
LET ME KNOW IF YOU  
HAVE ANY ERRANDS  
TO RUN TO THE SOUTH!

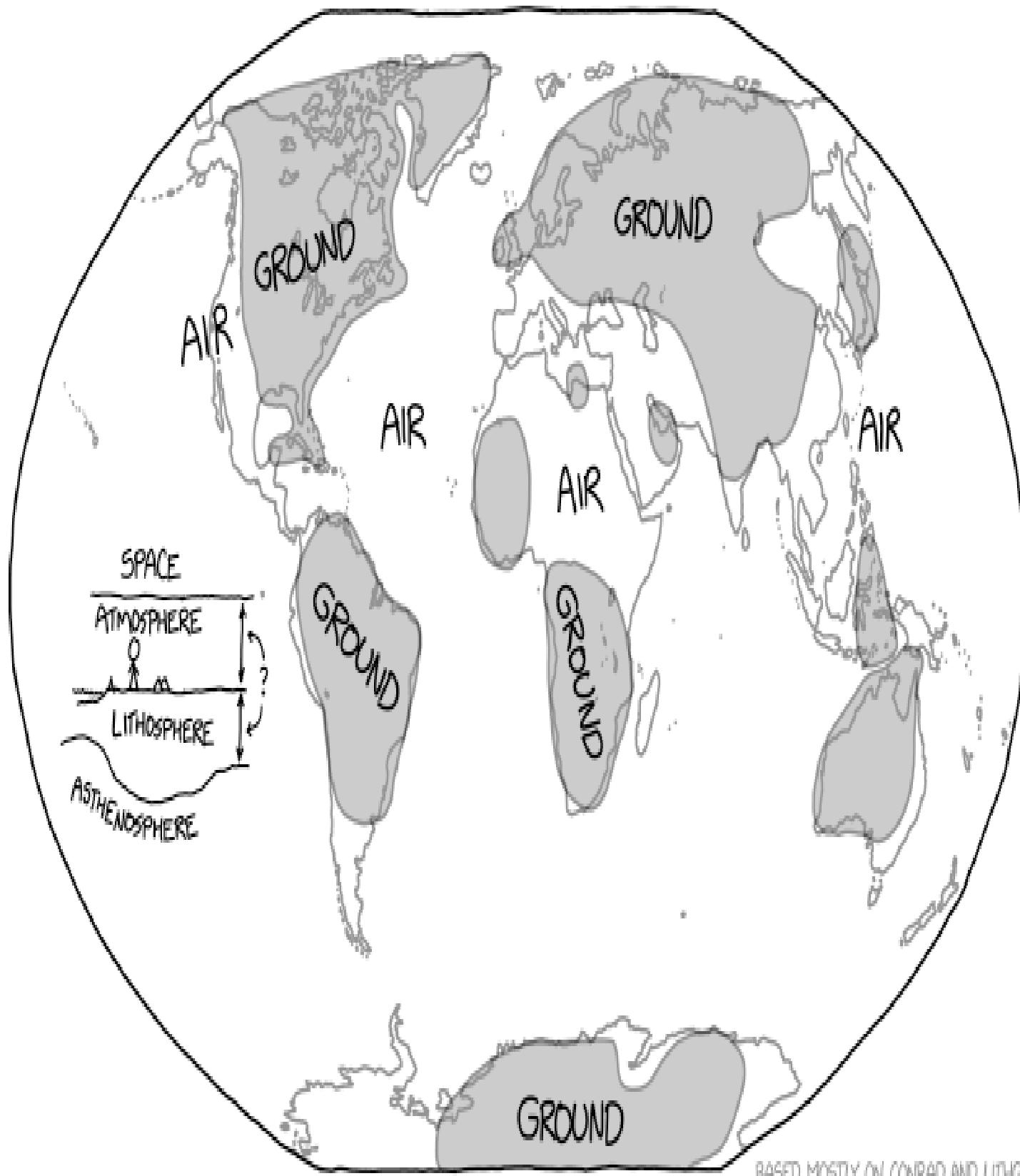
GOODNIGHTTT



# WHAT GREEK LETTERS MEAN IN EQUATIONS

- π THIS MATH IS EITHER VERY SIMPLE OR IMPOSSIBLE.
- △ SOMETHING HAS CHANGED.
- δ SOMETHING HAS CHANGED AND IT'S A MATHEMATICIAN'S FAULT.
- θ CIRCLES!
- ∅ ORBS
- ε NOT IMPORTANT, DON'T WORRY ABOUT IT.
- υ, ν IS THAT A V OR A U? OR...OH NO, IT'S ONE OF THOSE.
- μ THIS MATH IS COOL BUT IT'S NOT ABOUT ANYTHING THAT YOU WILL EVER SEE OR TOUCH, SO WHATEVER.
- Σ THANK YOU FOR PURCHASING ADDITION PRO®!
- Π ...AND THE MULTIPLICATION® EXPANSION PACK!
- ζ THIS MATH WILL ONLY LEAD TO MORE MATH.
- β THERE ARE JUST TOO MANY COEFFICIENTS.
- α OH BOY, NOW THIS IS MATH ABOUT SOMETHING REAL. THIS IS MATH THAT COULD KILL SOMEONE.
- Ω OOOH, SOME MATHEMATICIAN THINKS THEIR FUNCTION IS COOL AND IMPORTANT.
- ω A LOT OF WORK WENT INTO THESE EQUATIONS AND YOU ARE GOING TO DIE HERE AMONG THEM.
- ο SOME POOR SOUL IS TRYING TO APPLY THIS MATH TO REAL LIFE AND IT'S NOT WORKING.
- ξ EITHER THIS IS TERRIFYING MATHEMATICS OR THERE WAS A HAIR ON THE SCANNED PAGE.
- γ ZOOM! PEW PEW PEW [SPACE NOISES] ZOOOOM!
- ρ UNFORTUNATELY, THE TEST VEHICLE SUFFERED AN UNEXPECTED WING SEPARATION EVENT.
- Ξ GREETINGS! WE HOPE TO LEARN A GREAT DEAL BY EXCHANGING KNOWLEDGE WITH YOUR EARTH MATHEMATICIANS.
- ψ YOU HAVE ENTERED THE DOMAIN OF KING TRITON, RULER OF THE WAVES.

# WHICH IS THICKER—THE GROUND OR THE AIR?



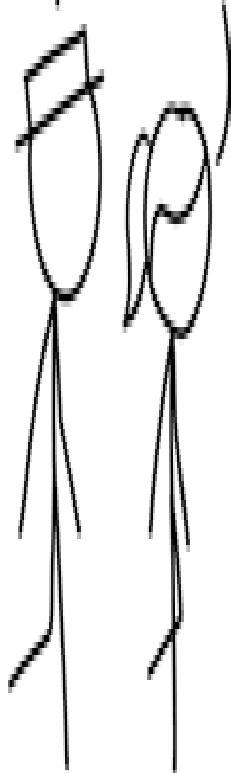
BASED MOSTLY ON CONRAD AND LITHGOW-BERTELLONI (2006) DOI:10.1016/j.dog.2005.06.025

# RULES FOR THIS GROUP CHAT

1. ONCE YOU'VE SENT A TYPING NOTIFICATION, YOU HAVE TO SAY SOMETHING, C'MON.
2. SHOW YOU CARE BY TRIMMING THE TRACKING JUNK OFF LINKS YOU PASTE.
3. DO NOT TALK ABOUT *FIGHT CLUB* (1999).
4. THERE ARE TWO TYPES OF CHATS: THOSE WITH A RELEVANT GROUP NAME, AND THOSE WHERE THE NAME IS RANDOM NONSENSE THAT CHANGES REGULARLY. ONLY THE SECOND KIND ARE GOOD.
5. WHEN MENTIONING IT ELSEWHERE, ALWAYS JUST REFER TO IT AS "THE GROUP CHAT" TO CREATE AN AURA OF EXCLUSIVE MYSTERY.
6. ROBERT'S RULES OF ORDER ARE OPTIONAL BUT ENCOURAGED.
7. PERIODICALLY PART OF THE GROUP WILL SPLIT OFF TO FORM A NEW CHAT WITH EVERYONE MINUS ONE PERSON. THIS IS HOW GROUP CHATS REPRODUCE; DON'T DRAW ATTENTION TO IT.
8. SINCE THERE'S NO ALGORITHMIC FEED, THE RESPONSIBILITY FOR INJECTING LOTS OF GARBAGE NO ONE ASKED FOR FALLS ON YOU.
9. THE ENUMERATION, IN THESE RULES, OF CERTAIN RIGHTS, SHALL NOT BE CONSTRUED TO DENY OR DISPARAGE OTHERS RETAINED BY THE PEOPLE.
10. SORRY ABOUT ALL THE NOTIFICATIONS.

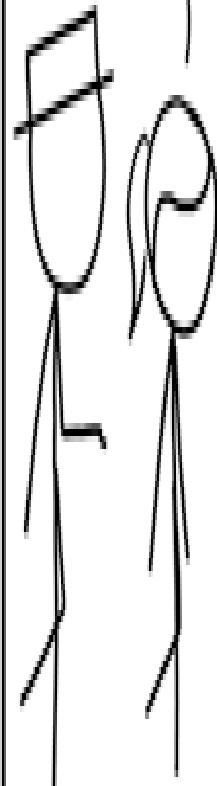
THE AVERAGE HEAD HAS  
ABOUT 100,000 HAIRS.  
  
AND HAIR GROWS AT  
ABOUT  $\frac{1}{2}$ " PER MONTH.  
  
PLUS OR MINUS.

OKAY...

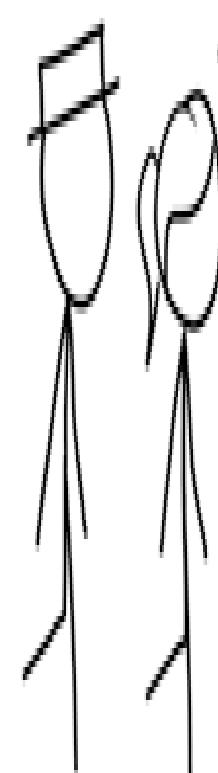


SO OUR HEADS  
ARE PRODUCING  
AN INCH OF HAIR  
EVERY MINUTE.

I SEE.



I'M JUST GLAD IT'S  
EVENLY DISTRIBUTED.  
IT WOULD SUCK IF  
WE GREW A SINGLE  
NEW FIVE-FOOT-LONG  
HAIR EVERY HOUR.



HMM, WOULD THE HAIR GROW  
STEADILY, OR WOULD IT SUDDENLY  
SHOOT OUT 5 FEET ON THE HOUR?

IF THE LATTER, WHAT  
NOISE WOULD IT MAKE?

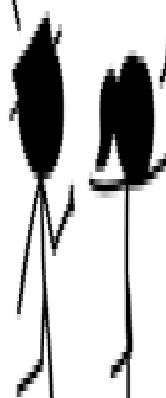
ZIIP? PUUFF?

FWIIP?

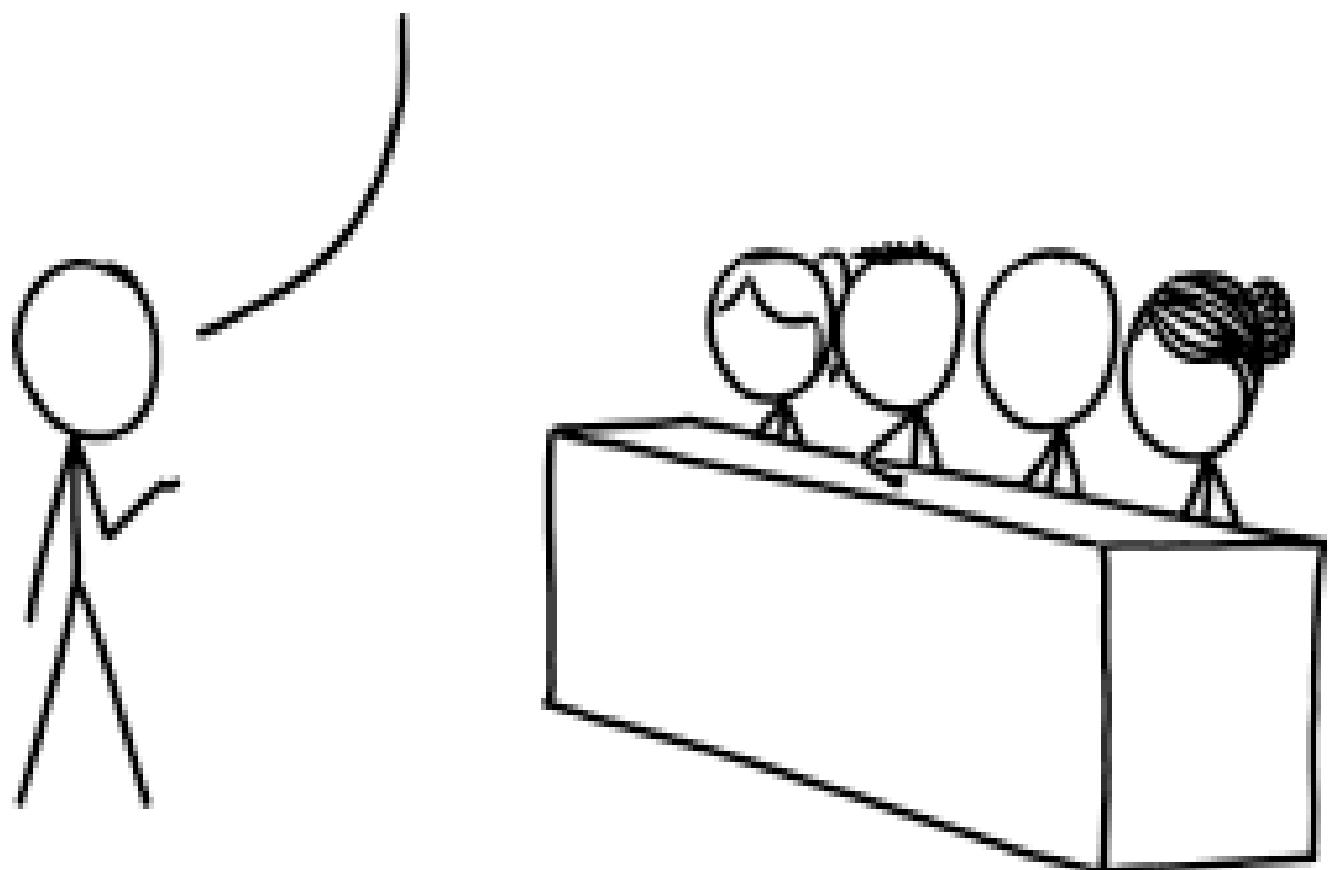
BUP.

ZHOOOP?

PEW!

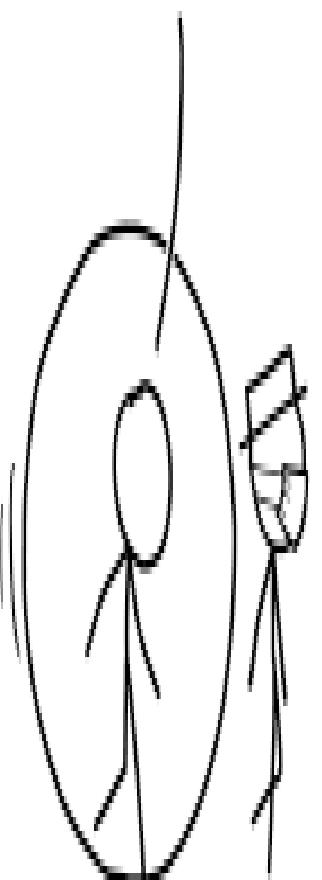


YES, I KNOW YOU'RE MAD THAT  
I DROPPED THAT HAMMER.  
I  
BUT THINK ABOUT ME—  
I  
SEVEN YEARS OF BAD LUCK!

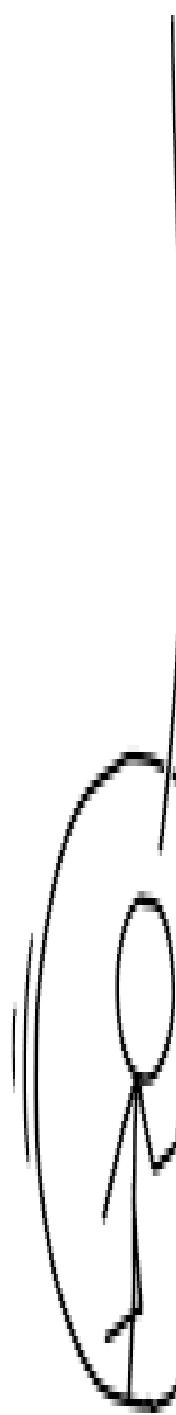


MAN, NASA IS REALLY ON MY CASE ABOUT  
THE JAMES WEBB SPACE TELESCOPE.

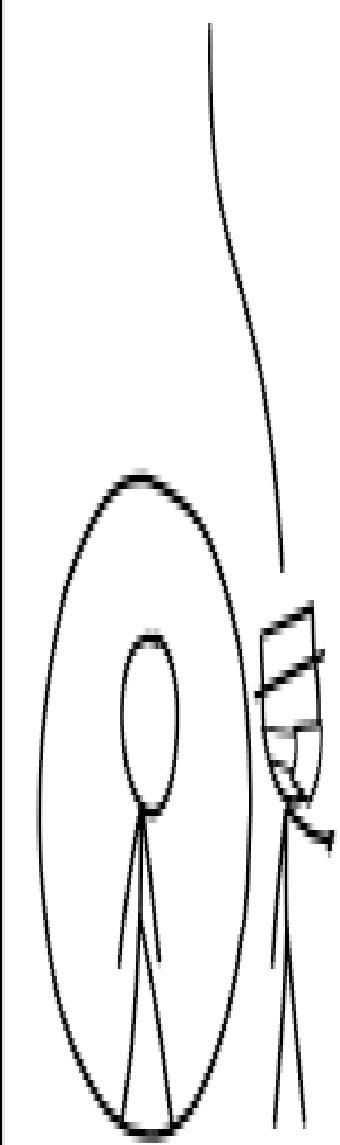
THEY LAUGHED  
AT ME, ALL  
THOSE YEARS AGO,  
WHEN I GOT THIS  
HUMAN-SIZED  
HAMSTER BALL.



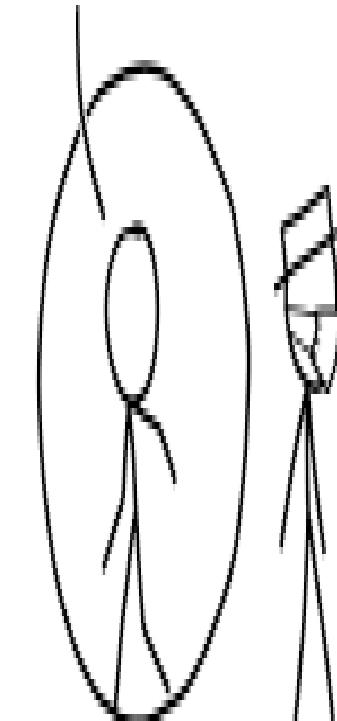
BUT WHO'S  
LAUGHING NOW?!!



SOUNDS LIKE THE  
SAME PEOPLE.  
SEE? THERE'S SOME  
OF THEM OVER THERE.



YEAH, NEIGHBORHOOD KIDS.  
AT LEAST THEY'VE  
STOPPED TRYING TO ROLL  
ME INTO SOCCER GOALS.  
  
NO, HERE THEY COME.  
RUN!

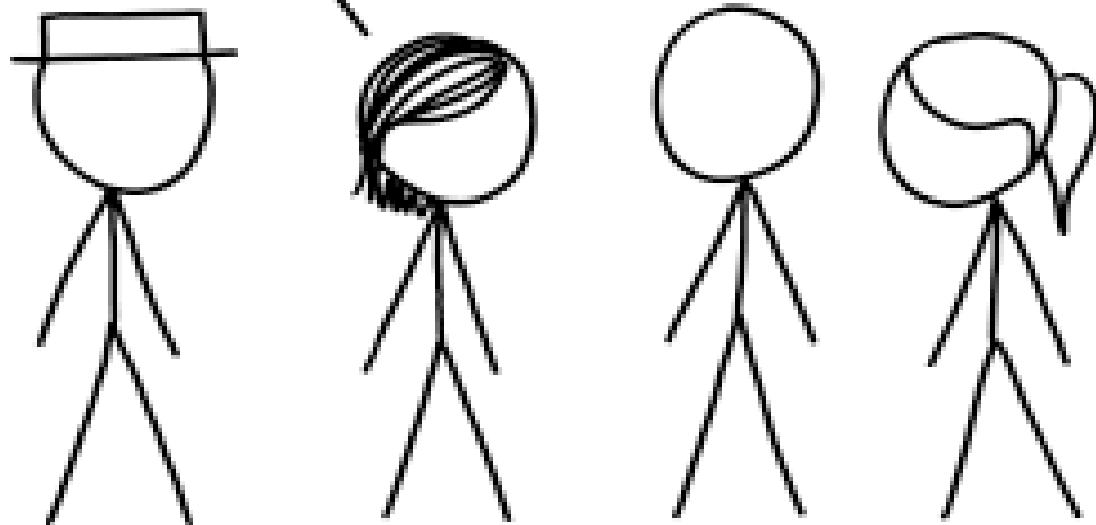


MAYBE ROB SHOULDN'T HOST THE PARTY. HE HAS CATS AND SOME OF US ARE ALLERGIC.

WOW, MAJOR SNUB FOR WIDELY-TOUTED TOP SPOT AS LAVISH GALA BID NIXED.

WHY ARE YOU TALKING SO WEIRD? PLEASE STOP

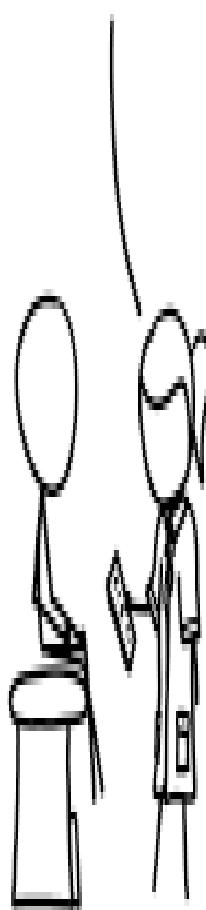
ILL-ADVISED SCHEME MULLED AS TENSION MOUNTS AMID GROWING BACKLASH.



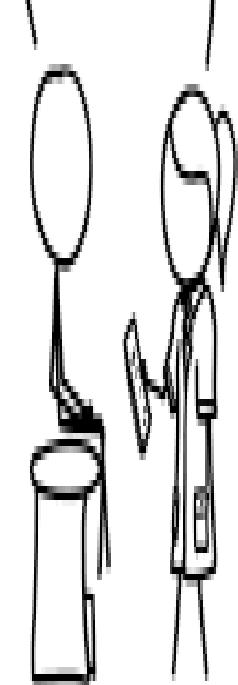
MY PROJECT TO SPEAK ONLY IN WEIRD HEADLINE WORDS DIDN'T LAST LONG.

I'M TAKING A LOOK AT  
YOUR NUMBERS, AND IT  
DOESN'T LOOK GOOD.

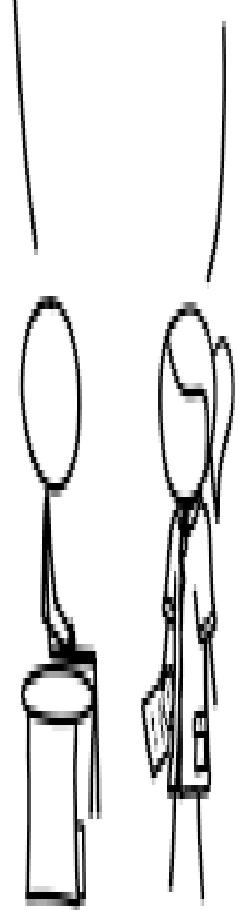
YOU HAVE A LOT OF  
MEASUREMENTS. QUITE  
A FEW VARIABLES.



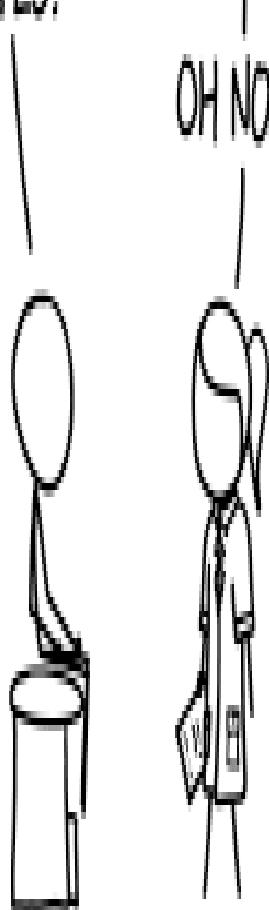
IS THAT... BAD?  
VARIABLES ARE  
THE #1 RISK FACTOR  
FOR OUTCOMES.  
THE PAST IS A  
BIG CONTRIBUTOR  
TO THE FUTURE.



ISN'T THAT JUST  
CAUSALITY?  
CAUSALITY IS  
THE LEADING  
CAUSE OF DEATH  
IN THIS COUNTRY.



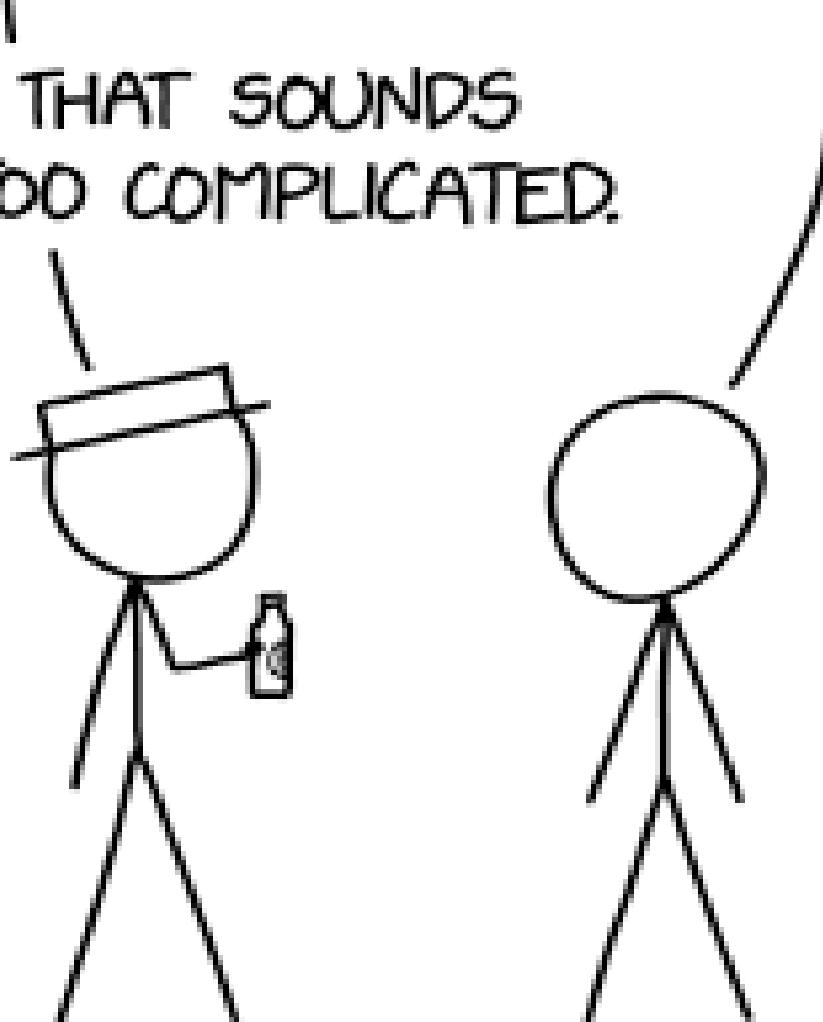
SO WHAT ARE MY ODDS?  
DO YOU HAVE A  
FAMILY HISTORY?  
OF WHAT?  
JUST, IN GENERAL.  
...YES?



MY NEW HEALTH DRINK IS PACKED  
WITH AMINO ACID NANOENZYMES  
THAT I DESIGNED TO TRAIN YOUR  
IMMUNE SYSTEM TO FIGHT INFECTIONS!

CAN YOU GIVE IT TO SOME  
PEOPLE AND SEE IF THEY  
GET SICK LESS OFTEN?

WHOA, THAT SOUNDS  
WAY TOO COMPLICATED.



NEW HEALTH STAT! ☺

LEFT HAND BLOOD

VOLUME: 21.83 mL

OH, COOL. NOT SURE  
HOW TO INTERPRET  
THAT, BUT GOOD TO

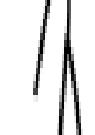
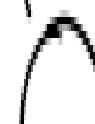
KNOW, I  
GUESS.

I GUESS!

LEFT HAND BLOOD

VOLUME: 21.81 mL

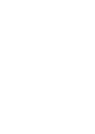
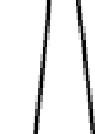
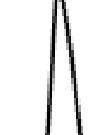
HUH, IT'S GOING  
DOWN. I GUESS  
THAT HAPPENS.



LEFT HAND BLOOD

VOLUME: 21.86 mL

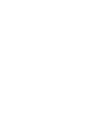
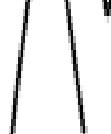
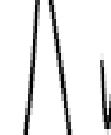
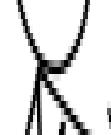
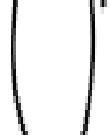
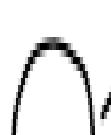
OH WEIRD, NOW  
IT'S GOING UP  
HIGHER THAN  
BEFORE.



LEFT HAND BLOOD

VOLUME: 22.09 mL

IT'S GOING WAY UP! IS  
MY HAND EXPLODING?  
AND NOW MY PULSE  
IS RISING! AAAAAA!!!!



MAYBE YOU  
SHOULDN'T  
LOOK AT-

SO SORRY. WE  
WILL TREASURE  
YOUR MEMORY.

# MOST HEART-STOPPING TEXTS TO RECEIVE OUT OF THE BLUE

DID YOU FORGET  
WHAT DAY IT IS?

I BET YOU'RE PROBABLY  
GETTING BOMBARDED WITH  
TEXTS RIGHT NOW, HUH?

DID YOU MEAN TO POST  
THAT TO EVERYONE?

IS THIS YOUR HOUSE?  
[CNN.COM/2021/11/19/S...](https://CNN.COM/2021/11/19/S...)

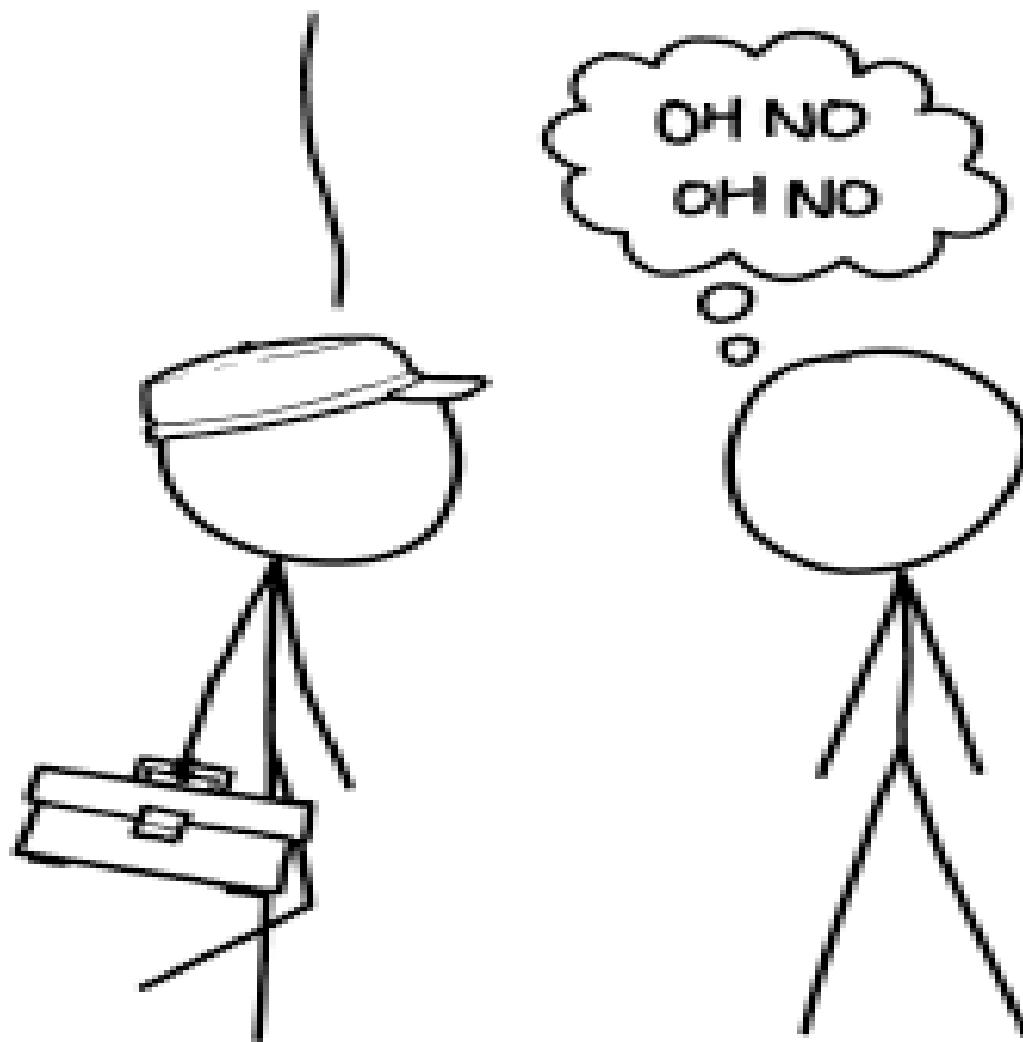
YOU DIDN'T CLICK ON  
ANY WEIRD EMAILS  
RECENTLY, DID YOU?

CAN I CALL?

WAIT, DO YOU KNOW JOE  
ROGAN? HOW DOES HE  
KNOW YOUR NAME?

WHY ARE YOU  
TRENDING ON TWITTER?

DO YOU HAVE THE KEY TO THE SERVER ROOM? I'M FROM THE BUILDING AND I'M HERE TO CHECK THE FIRE ALARM.



THANKS TO MOVIES, WHENEVER ANYONE ASKS ME TO OPEN ANY DOOR, I IMMEDIATELY ASSUME I'M A MINOR CHARACTER IN A HEIST.



ESCAPE ROOMS



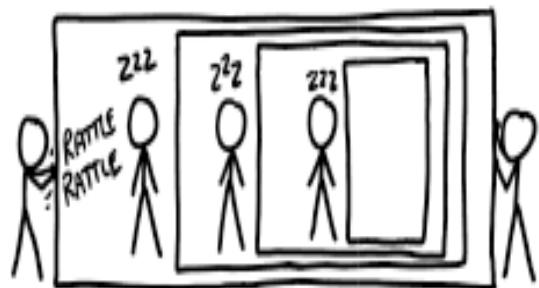
HEIST MOVIES



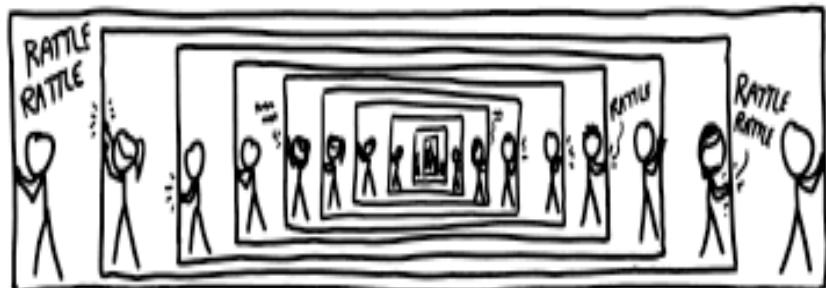
HOME ALONE (1990)



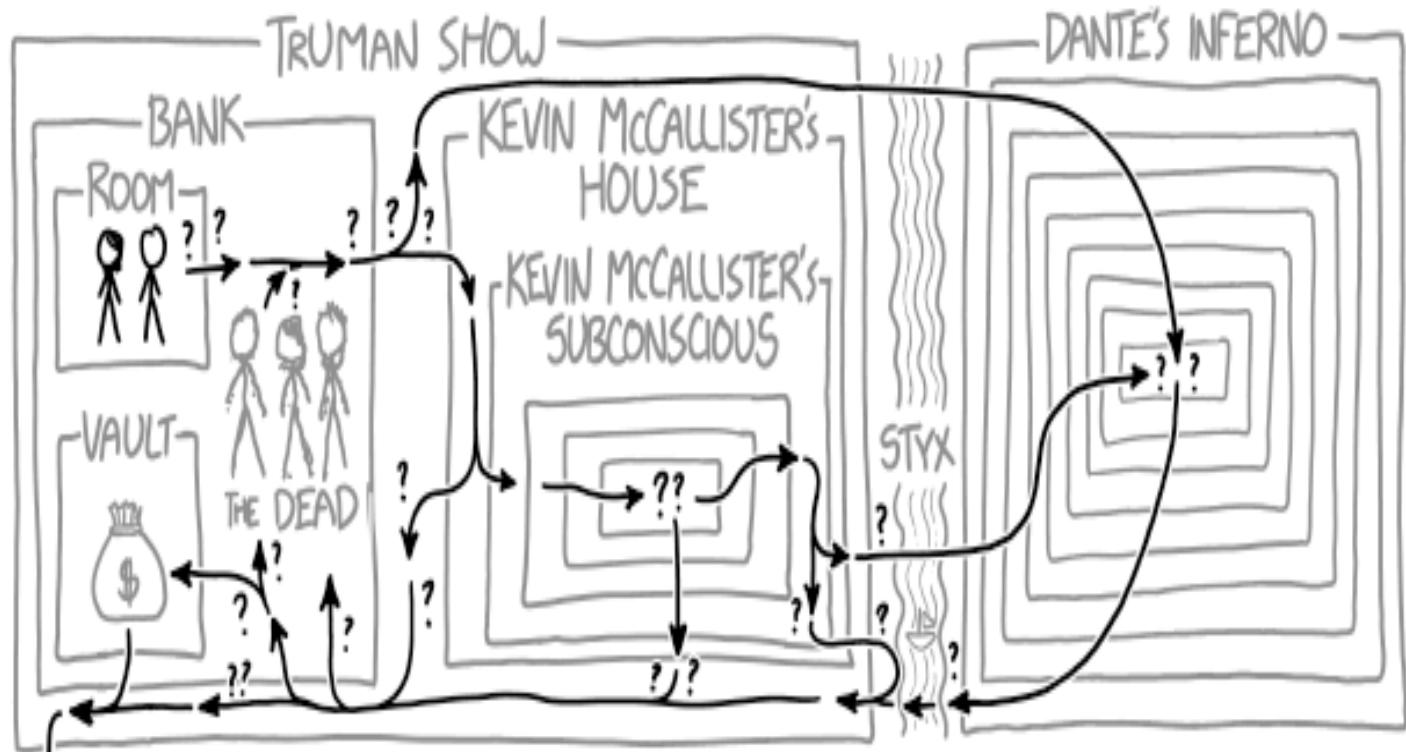
THE BATTLE OF WINTERFELL



INCEPTION (2010)



THE DIVINE COMEDY (1320)



MY PLAN FOR THE GREATEST ESCAPE ROOM GAME OF ALL TIME

I HATE UNSOURCED STATISTICS.  
THIS VIRAL POST SAYS HIPPOS  
KILL 2,900 PEOPLE A YEAR, BUT  
THIS RANDOM LISTICLE SAYS 500.

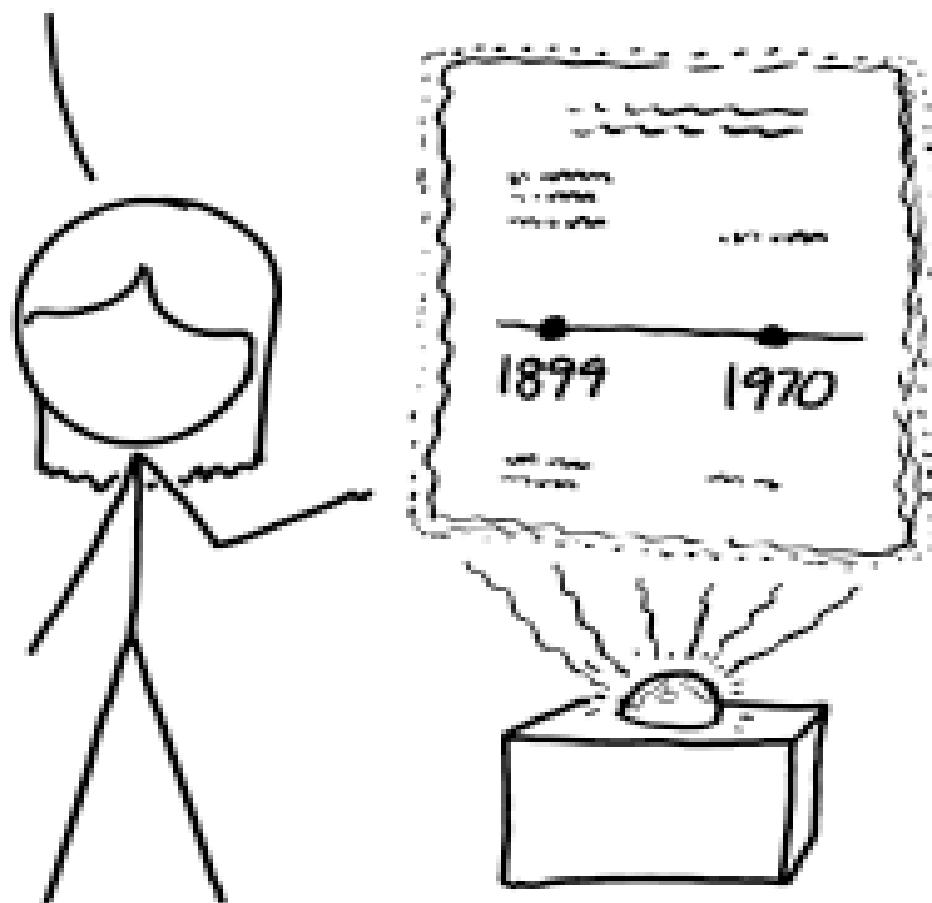
MAKES SENSE.

PUBLISHING THE REAL  
NUMBER WOULD BE  
A HIPPO VIOLATION.



HISTORICAL RECORDS SHOW MILLIONS OF BUSINESS TRANSACTIONS OCCURRED ON DEC 30<sup>TH</sup>, 1899.

THIS ECONOMIC ACTIVITY SPARKED THE DIGITAL AGE, CULMINATING IN A "DATA FESTIVAL" ON JAN 1<sup>ST</sup>, 1970, WHEN MANY EARLY DIGITAL FILES WERE CREATED.

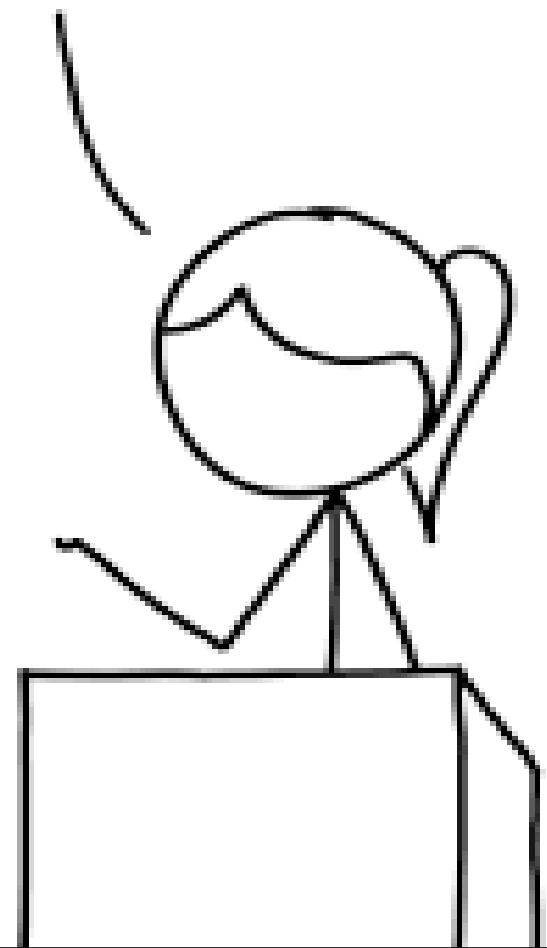
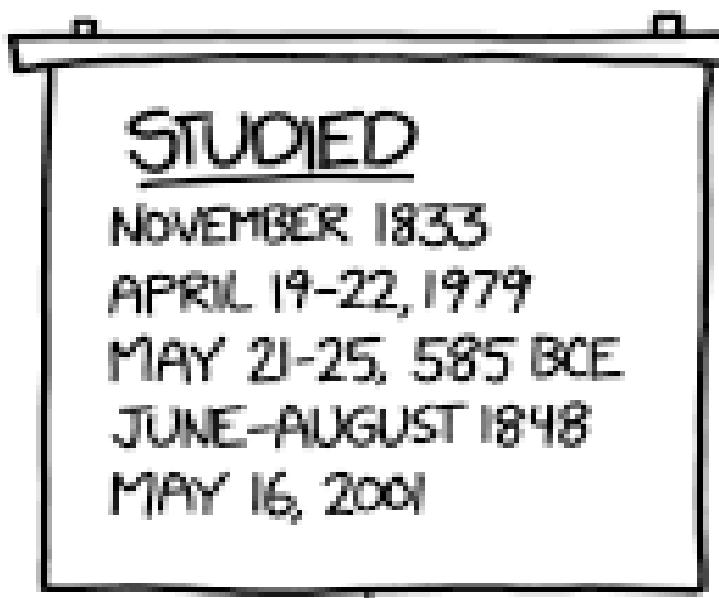


IT'S GOING TO BE WEIRD WHEN HISTORIANS FORGET WHY SOME DATES SHOW UP A LOT.

2018 WAS A PRODUCTIVE YEAR FOR THE HISTORY DEPARTMENT—WE WERE ABLE TO FULLY ANALYZE OVER FOUR MONTHS OF HISTORY.

UNFORTUNATELY, OVER THAT SAME TIME PERIOD, AN ENTIRE YEAR OF NEW HISTORY WAS PRODUCED.

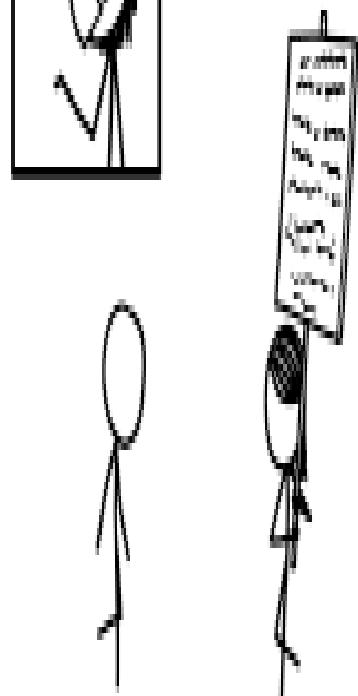
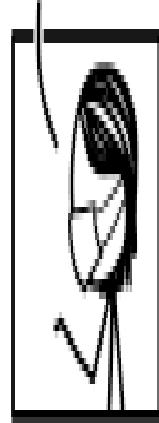
I'M AFRAID WE'RE FALLING BEHIND.



HOMEMADE MASK, HUH?  
YOU THINK THEY HELP?

I  
I'VE READ SO MANY  
CONFFLICTING THINGS.

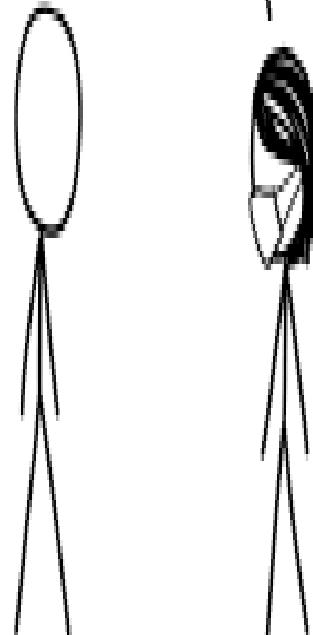
WELL, WHAT I WAS DOING BEFORE  
WAS CARRYING AROUND A BIG SIGN  
THAT SAID "THERE'S A PANDEMIC SO  
PLEASE GIVE ME SPACE BECAUSE  
I DON'T WANT TO GET SICK OR  
MAKE ANYONE ELSE SICK!"



THE PROBLEM WAS, I HAD TO  
WRITE SMALL TO FIT, SO PEOPLE  
KEPT WALKING CLOSER TO READ IT.

OOPS.

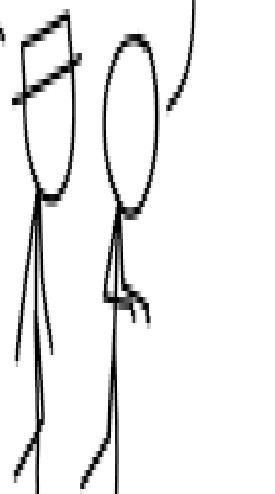
YEAH, THE MASK GETS  
IT ACROSS BETTER.



SO YOU DON'T LIKE  
ANY HORROR MOVIES?

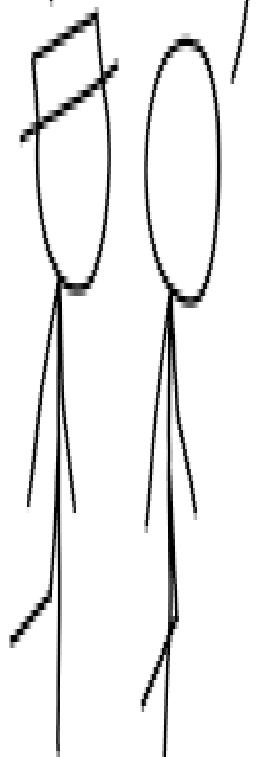
SPOKY STUFF IS NEAT,  
BUT I HATE JUMP  
SCARES AND WATCHING  
PEOPLE GET MURDERED.

WHY WOULD YOU  
WANT TO SEE THAT?



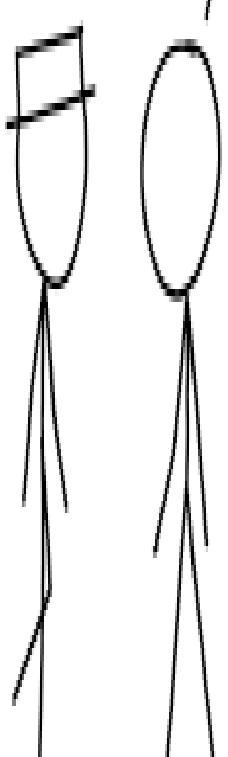
IT'S LIKE ROLLER COASTERS.  
PEOPLE LIKE EXPERIENCING  
POWERFUL FEELINGS IN A  
SAFE, CONTROLLED SETTING.

BUT WHY NOT  
GOOD FEELINGS?



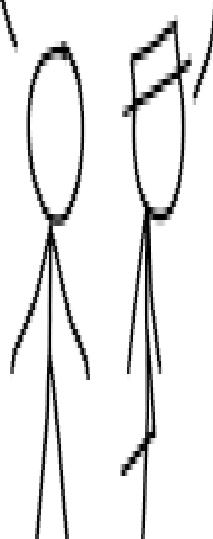
WE'VE ALWAYS  
BEEN INTO TRAGIC  
STORIES. ROMEO  
AND JULIET, TITANIC...

SEE, THAT'S  
ANOTHER THING  
I DON'T GET!



I LOVED TITANIC BECAUSE  
ROSE AND JACK FOUND EACH  
OTHER AND SEEMED SO HAPPY!  
I JUST HATED THE ENDING.

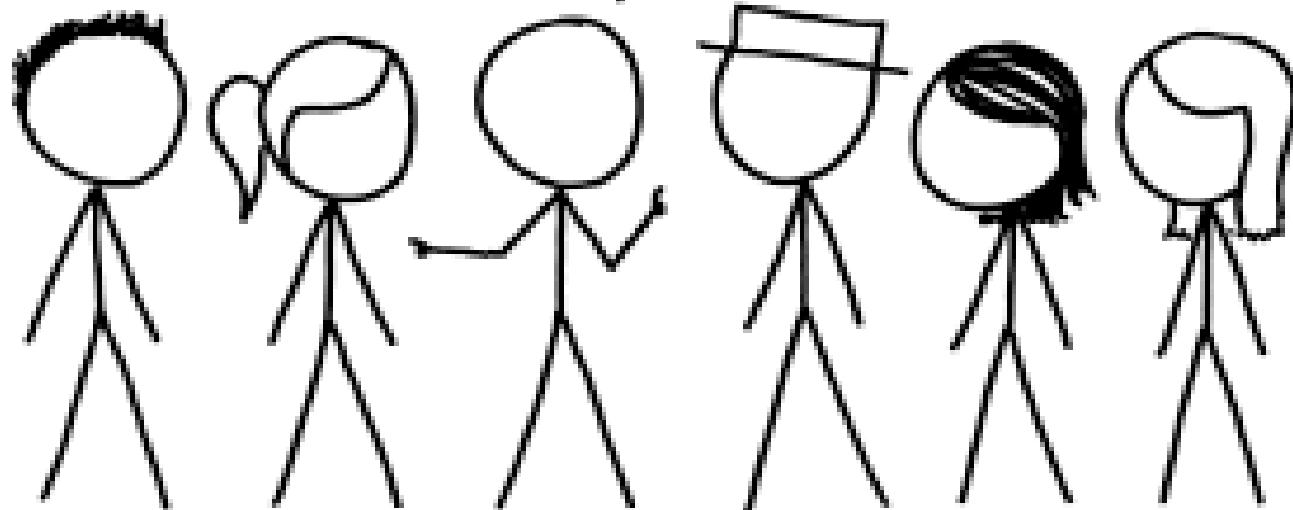
I'LL BE SURE TO GIVE  
JAMES CAMERON  
AND SHAKESPEARE  
YOUR FEEDBACK.



OK EVERYONE, LET'S BREAK INTO TEAMS.

KATIE, GET THE WIRE CUTTERS AND START DISASSEMBLING THE TV. YOU TWO CAN STRIP THE WALLPAPER. MIKE AND I WILL WORK ON SHREDDING THE MATTRESS.

YOU, START SHOPPING FOR MAINTENANCE AND CLEANING SERVICES. WE DON'T WANT TO LEAVE THE STAFF TO DEAL WITH THIS.



IT'S MY FIRST TIME THROWING ONE OF THOSE PARTIES WHERE YOU TRASH A HOTEL ROOM AND I WANT TO MAKE SURE I GET IT RIGHT.

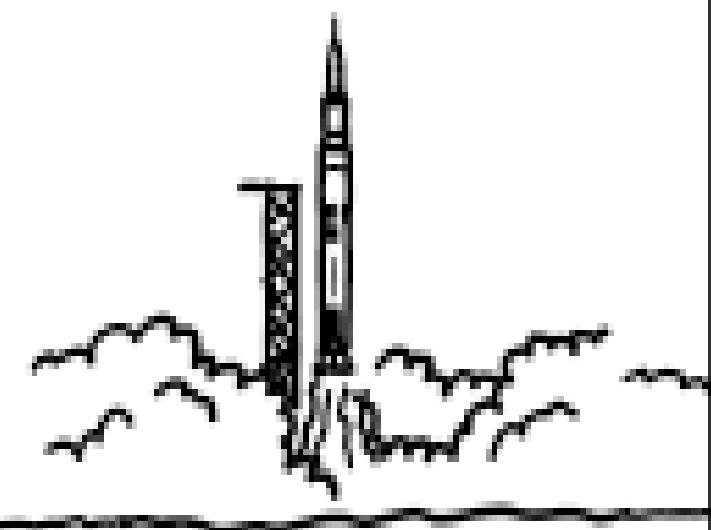
6:27 AM

CREW DEPARTS  
FOR LAUNCH SITE



9:32 AM

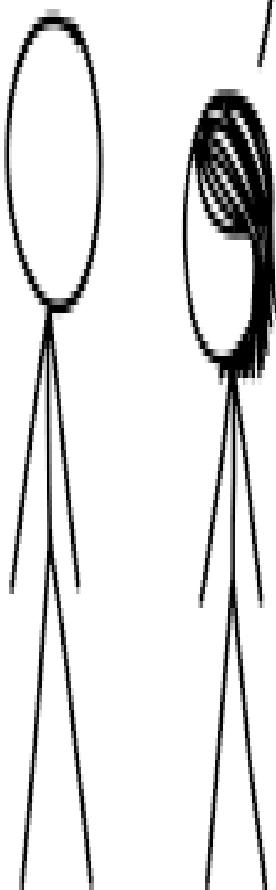
LIFTOFF



I KNOW I TEND TO ARRIVE TOO EARLY AT THE AIRPORT, BUT IT STILL WEIRDS ME OUT THAT NEIL ARMSTRONG LEFT FOR THE LAUNCH SITE JUST THREE HOURS BEFORE DEPARTURE.

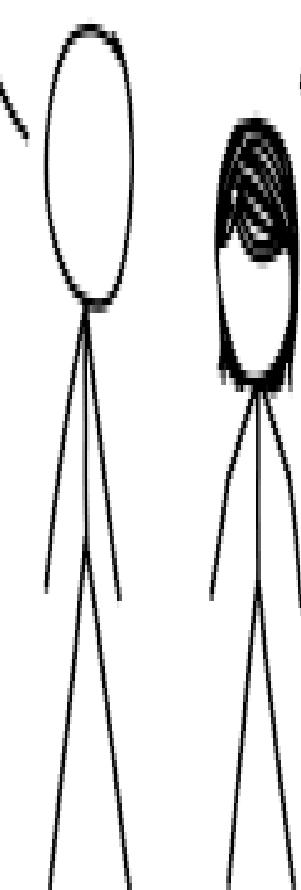
NOW THAT WE'RE FULLY  
VACCINATED, WE CAN  
INVITE PEOPLE OVER.

EXCITING!



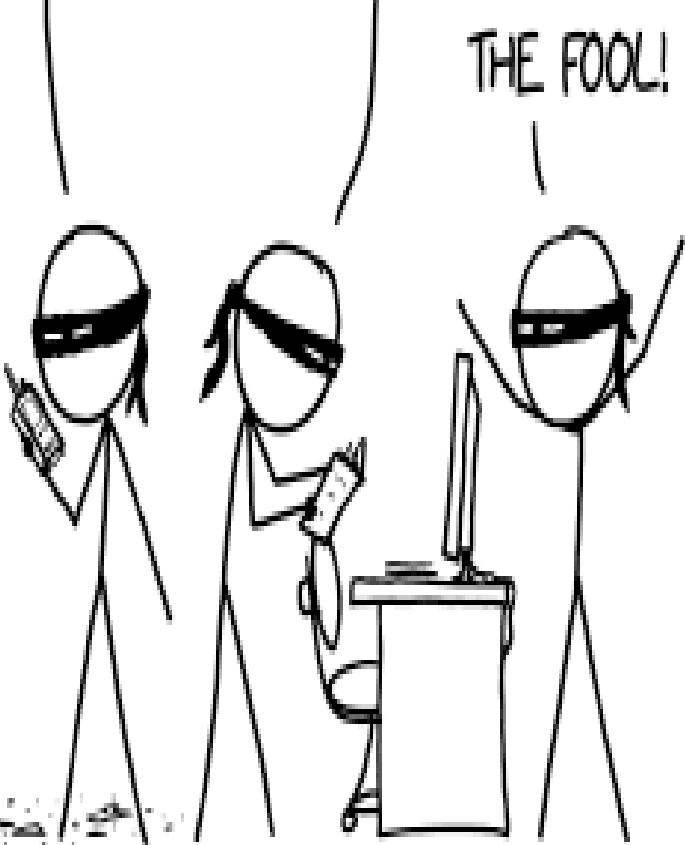
WHICH MEANS WE HAVE TO CLEAN.  
...YOU KNOW, I SUDDENLY FEEL  
ONLY ABOUT 98% VACCINATED.

YEAH, LET'S GIVE IT  
A FEW MORE DAYS.



CONTROL, WE HAVE FLOWN  
TO THE USA AND BREACHED  
THE TARGET'S HOUSE.

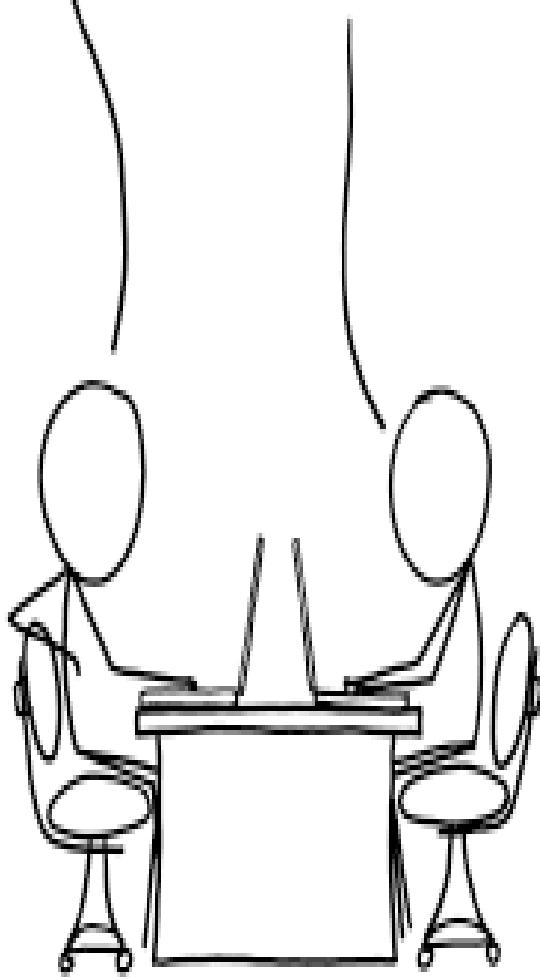
THEY WROTE ALL THEIR  
PASSWORDS IN A BOOK  
LABELED "PASSWORDS"!



HOW PEOPLE THINK  
HACKING WORKS

HEY LOOK, SOMEONE LEAKED THE  
EMAILS AND PASSWORDS FROM THE  
SMASH MOUTH MESSAGE BOARDS.

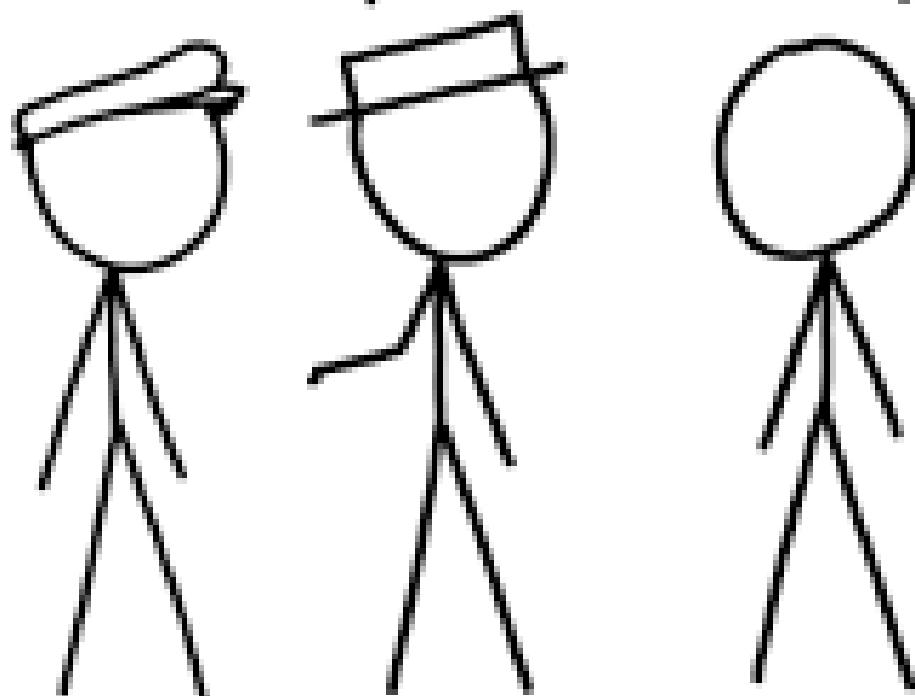
COOL, LET'S TRY  
THEM ALL ON VENMO.



HOW IT ACTUALLY WORKS

I'D LIKE YOU TO MEET MY DAD.

Aww, HOW OLD IS HE?



INTERACTION TIP: THIS IS A COMMON QUESTION TO ASK PARENTS ABOUT THEIR KIDS, BUT FOR SOME REASON IN THE OTHER DIRECTION IT'S WEIRD.

# HOW TO DELIVER CHRISTMAS PRESENTS

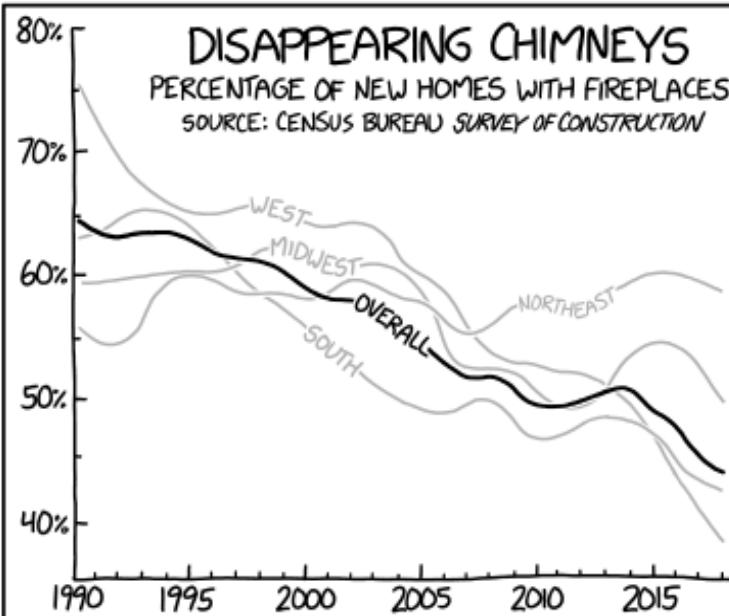
## IN A FUTURE WITHOUT CHIMNEYS



FOR MORE QUESTIONABLE IDEAS FOR USING SCIENCE  
TO SOLVE PROBLEMS, CHECK OUT MY NEW BOOK, HOW TO!  
CLICK ON THIS COMIC OR GO TO [XKCD.COM/HOW-TO](http://XKCD.COM/HOW-TO)

GOOD CHRISTMAS GIFT!

THE TRADITIONAL WAY TO GET CHRISTMAS PRESENTS INTO A HOUSE IS TO HAVE A LARGE REINDEER-MERGING MAN SLITHER DOWN THE CHIMNEY WITH THEM. UNFORTUNATELY, CHIMNEYS ARE BECOMING LESS COMMON IN THE UNITED STATES.



BUT THAT'S OK;  
THERE ARE OTHER  
WAYS TO GET A  
GIFT INTO A HOUSE  
HERE ARE A  
FEW OPTIONS!



1 EVEN WITHOUT CHIMNEYS, HOUSES AREN'T AIRTIGHT. IF YOU VAPORIZIZE THE GIFT, PARTS OF IT WILL ENTER THE HOUSE THROUGH THE INTAKE VENTS...



2 THE CRITICAL MOMENTUM NECESSARY FOR A PROJECTILE TO BREAK GLASS IS AROUND  $4 \text{ kg} \cdot \text{m/s}$ . (40 FOR  $\frac{1}{2}$ " PLYWOOD)

SOURCE: FEMA.GOV/PREVIOUS-MISSILE-IMPACT-TESTS-WOOD-SHEATHING

THIS MEANS YOU CAN DELIVER A BOOK-SIZED GIFT BY HURLING IT AT A WINDOW AT 25+ MPH

$$\text{SPEED} = \frac{\text{BOOK MASS}}{4 \text{ kg} \cdot \text{m/s}} = 25 \text{ MPH}$$

BUT IF THEY'VE PUT UP PLYWOOD SHUTTERS, YOU'LL NEED 250 MPH+ DELIVERY SPEEDS.

...AND IT WILL STAY THERE.

ACCORDING TO A 2008 STUDY FROM CLARKSON UNIVERSITY, PARTICLES OF YOUR GIFT THAT SETTLE IN THEIR HOUSE WILL REMAIN THERE FOR AN AVERAGE OF SEVERAL MONTHS IF THEY VACUUM, AND SEVEN DECADES IF THEY DON'T.  
SOURCE: DOI 10.3155/1047-3289.58.4.502

SEVEN DECADES?!!  
BRB, I NEED TO GO VACUUM.  
HOUSES ARE DISGUSTING.

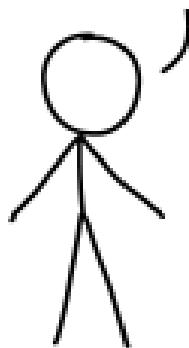


3 WAIT UNTIL THEY ORDER A DIFFERENT BOOK, THEN INTERCEPT THE PACKAGE, OPEN THE BINDING, AND REPLACE THE PAGES WITH THE ONES FROM YOURS.



...UGH, REAL-LIFE CONTENT INJECTION.  
WE NEED HTTPS FOR PAPER.

IT FEELS WEIRD THAT IT'S 2019 AND  
YET I STILL SOMETIMES FIND THAT  
THE EASIEST WAY TO MOVE A FILE  
AROUND IS TO EMAIL IT TO MYSELF.



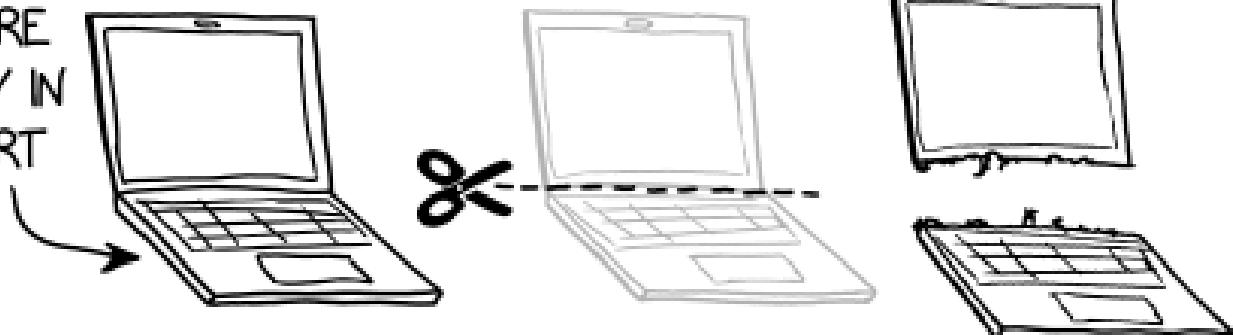
IF ONLY THERE WERE  
A BETTER WAY...



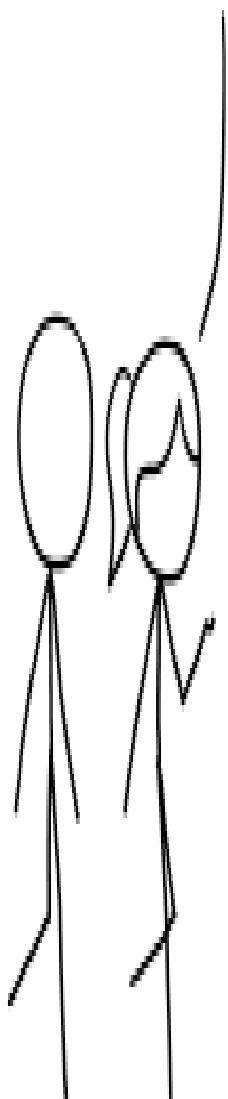
MY NEW BOOK **HOW TO** IS OUT NEXT WEEK!  
IF YOU WANT TO LEARN HOW TO SEND DATA,  
YOU CAN VISIT [BLOG.XKCD.COM](http://BLOG.XKCD.COM) FOR A SNEAK  
PREVIEW OF CHAPTER 19: HOW TO SEND A FILE.

EXCLUSIVE ADVICE FROM **HOW TO**:  
WHEN SENDING A FILE, IT HELPS TO KNOW WHICH  
PART OF YOUR DEVICE THE FILE IS STORED IN.

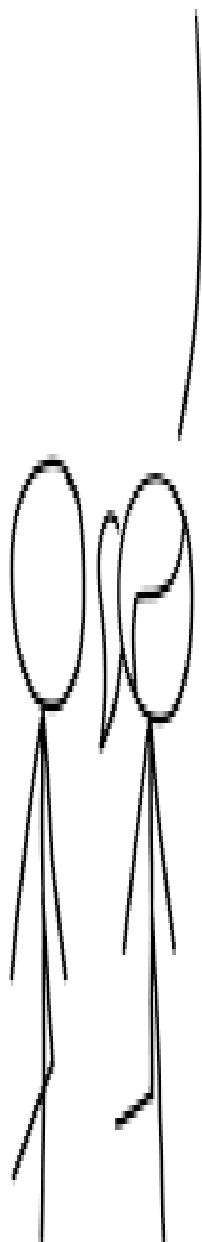
FILES ARE  
USUALLY IN  
THIS PART



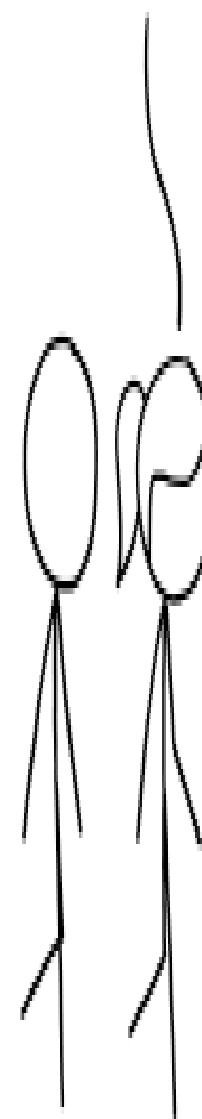
THERE ARE THREE  
MAIN ESTIMATES  
OF THE UNIVERSE'S  
EXPANSION RATE AND  
THEY ALL DISAGREE.



MEASUREMENTS OF STAR  
DISTANCES SUGGEST THE  
UNIVERSE IS EXPANDING  
AT 73 KM/S/MEGAPARSEC.

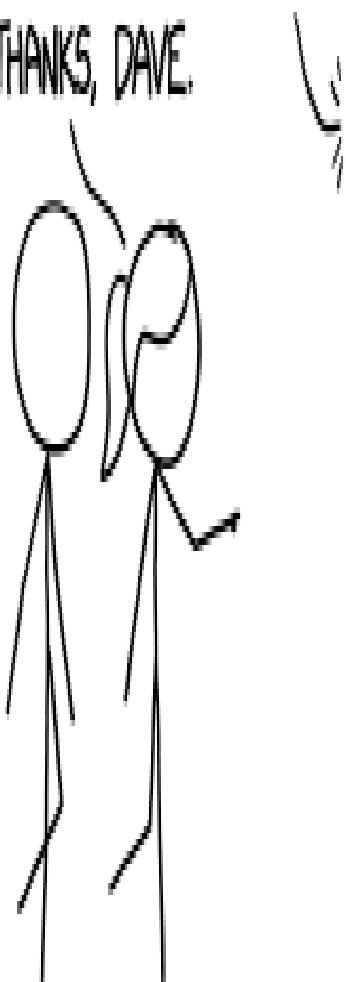


MEASUREMENTS OF THE  
COSMIC MICROWAVE  
BACKGROUND SUGGEST  
IT'S EXPANDING AT 68  
KM/S/MEGAPARSEC.

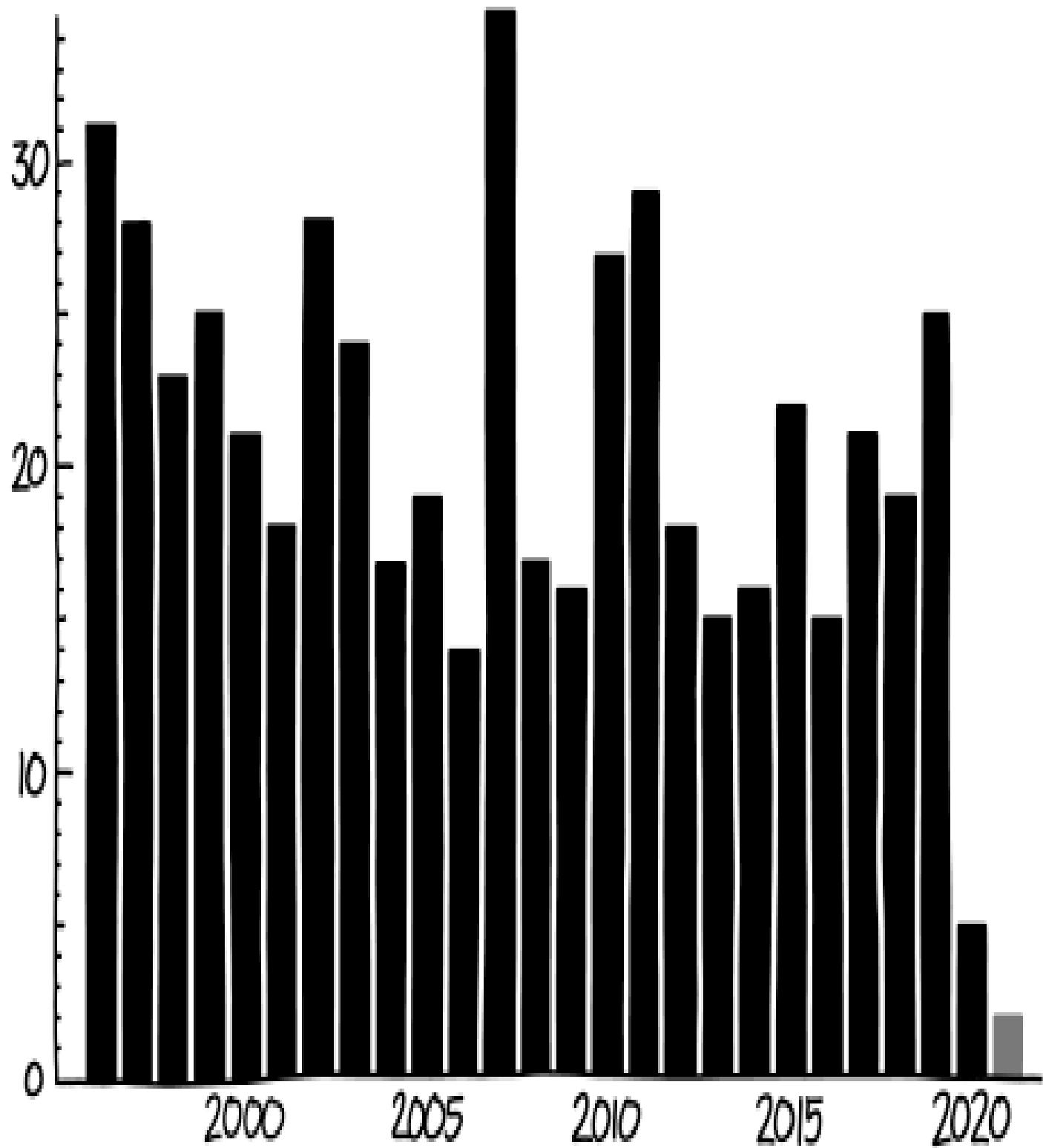


AND DAVE, WHO HAS A  
RADAR GUN, SAYS IT'S  
EXPANDING AT 85 MPH  
IN ALL DIRECTIONS.

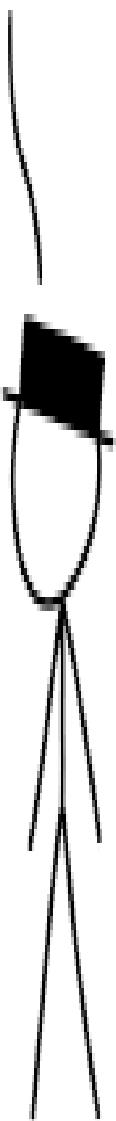
THOSE GALAXIES ARE  
REALLY BOOKING IT!  
THANKS, DAVE.



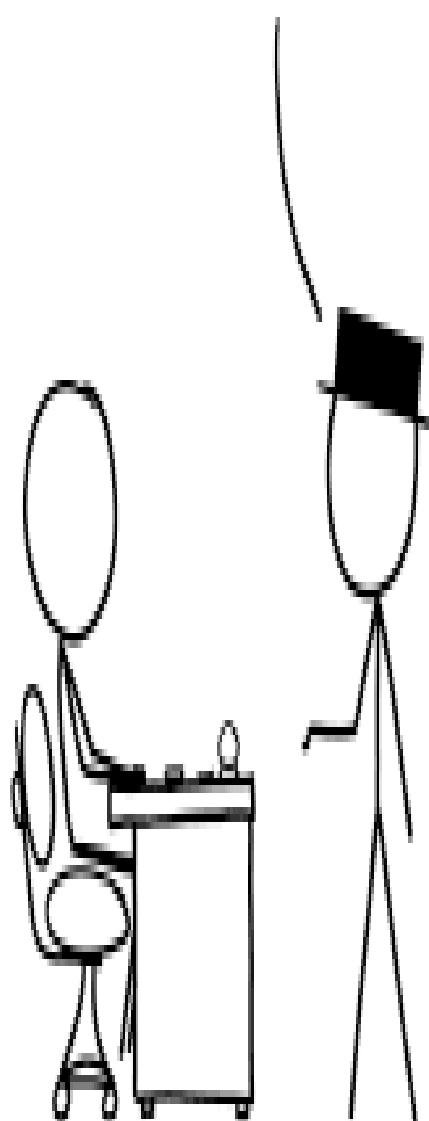
# ESTIMATED NUMBER OF DISTINCT PEOPLE HUGGED PER YEAR



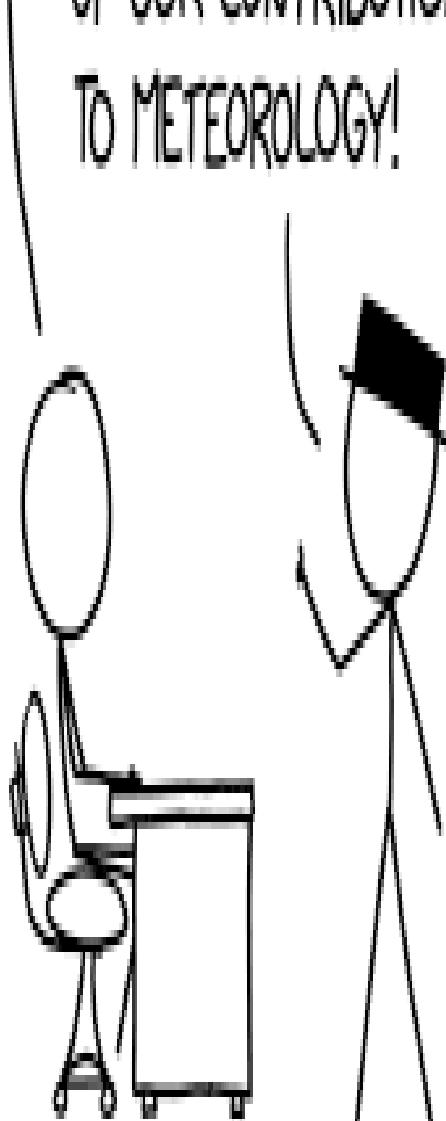
YES, FLYING INTO  
THE EYE OF A  
HURRICANE IS  
DANGEROUS.



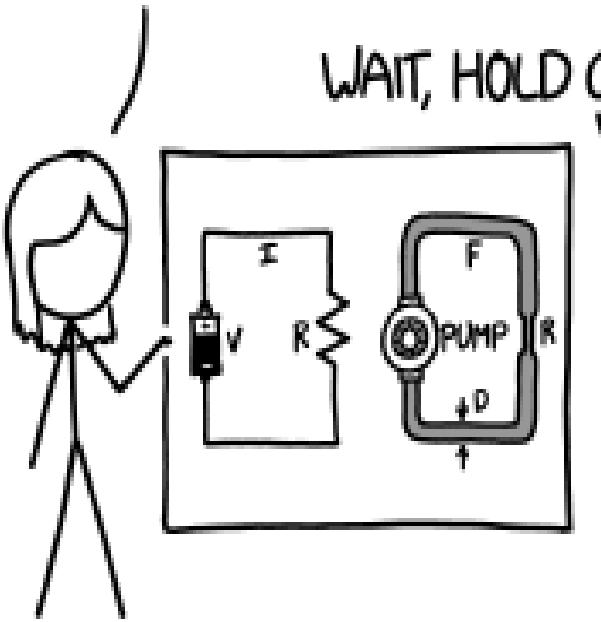
BUT IT PROVIDES US WITH  
CRUCIAL DATA THAT HELPS  
US UNDERSTAND AND  
PREDICT THESE STORMS.



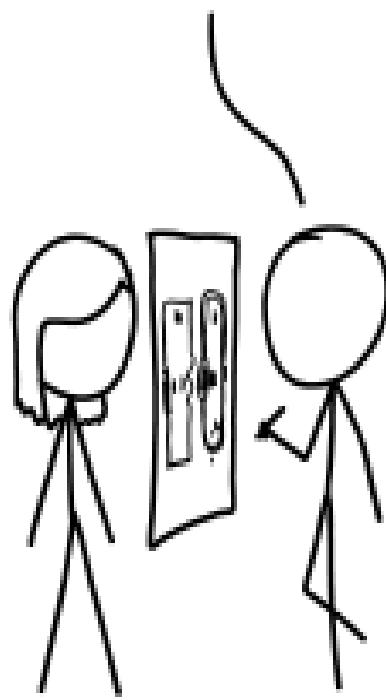
BUT YOUR PASSENGERS HAD  
BOUGHT TICKETS TO ST. LOUIS.  
THEY SHOULD BE PROUD  
OF OUR CONTRIBUTIONS  
TO METEOROLOGY!



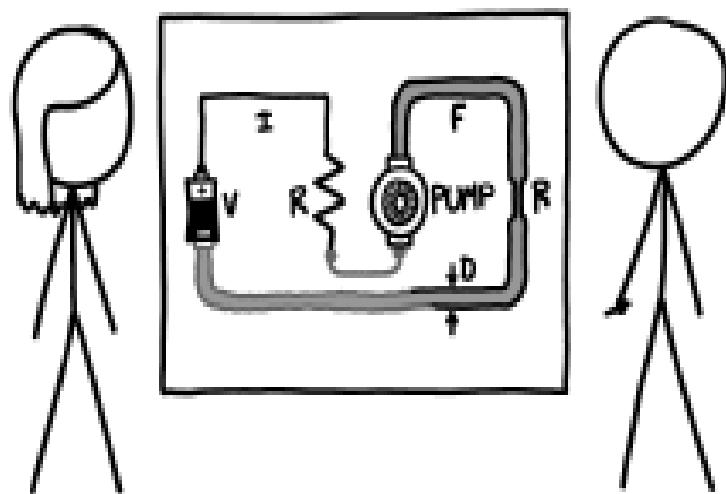
ELECTRIC CURRENT IS LIKE  
WATER FLOWING IN A PIPE.  
THE PRESSURE REPRESENTS-



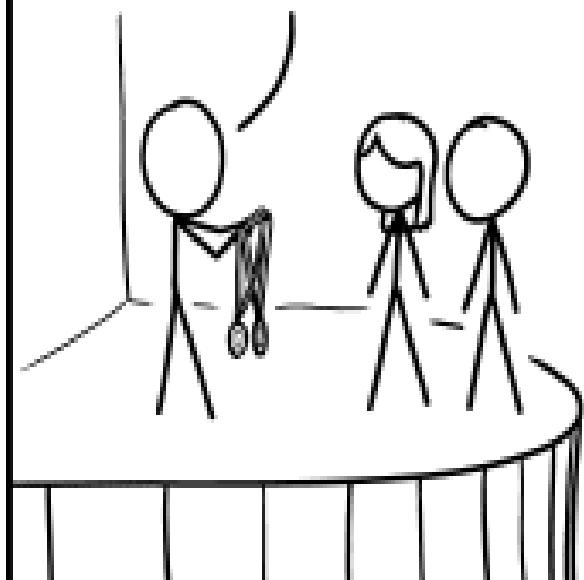
DO YOU MIND  
IF I JUST...



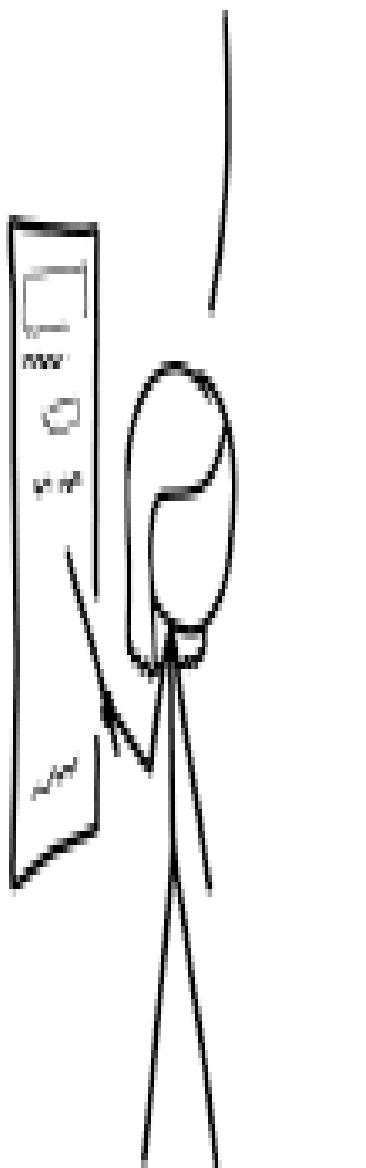
SCRIBBLE  
SCRIBBLE  
SCRIBBLE



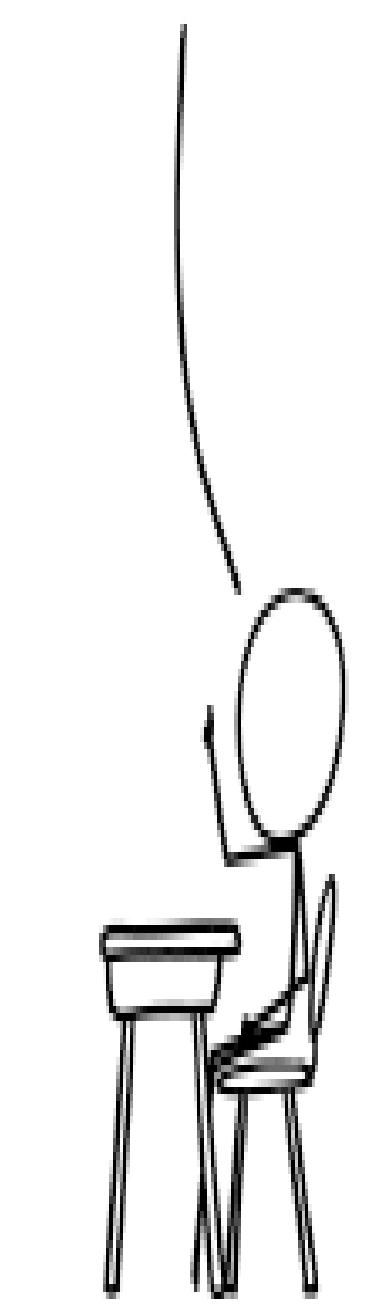
AND FOR THE DESIGN AND  
CONSTRUCTION OF THE  
LIQUITRICITY DEVICE, THE  
NOBEL PRIZE GOES TO...



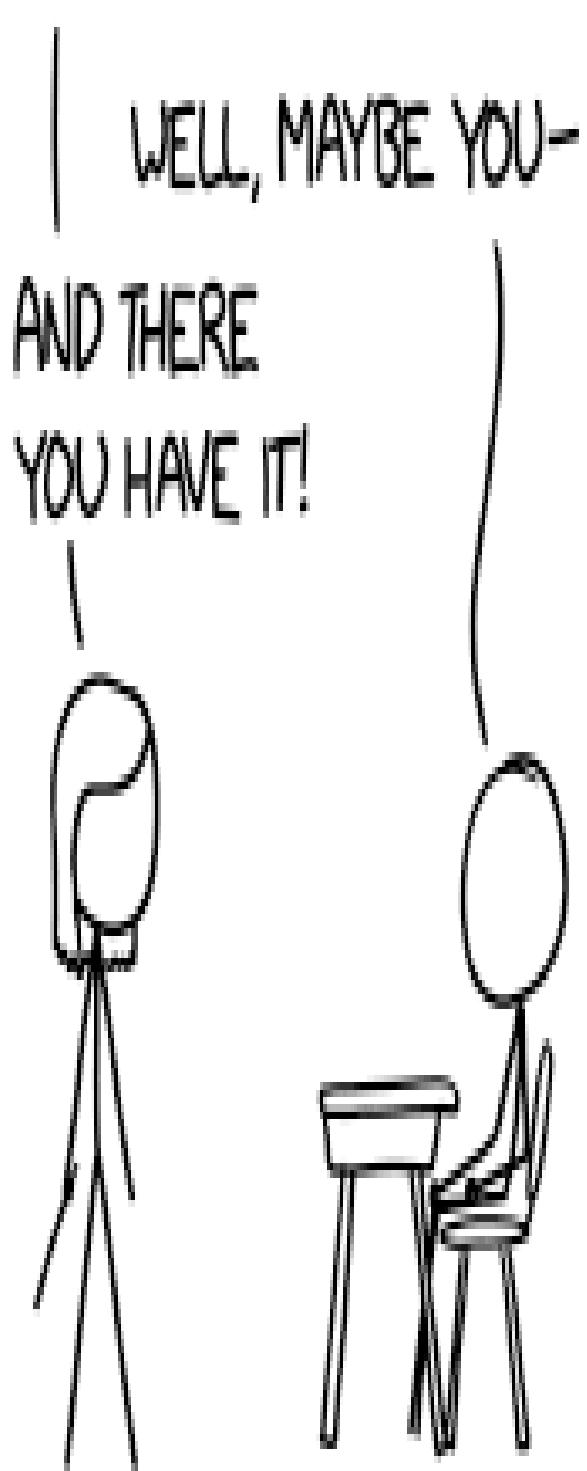
TO DO SCIENCE,  
YOU GENERATE  
A HYPOTHESIS,  
THEN TEST IT.



BUT HOW DO  
YOU GENERATE  
A HYPOTHESIS?



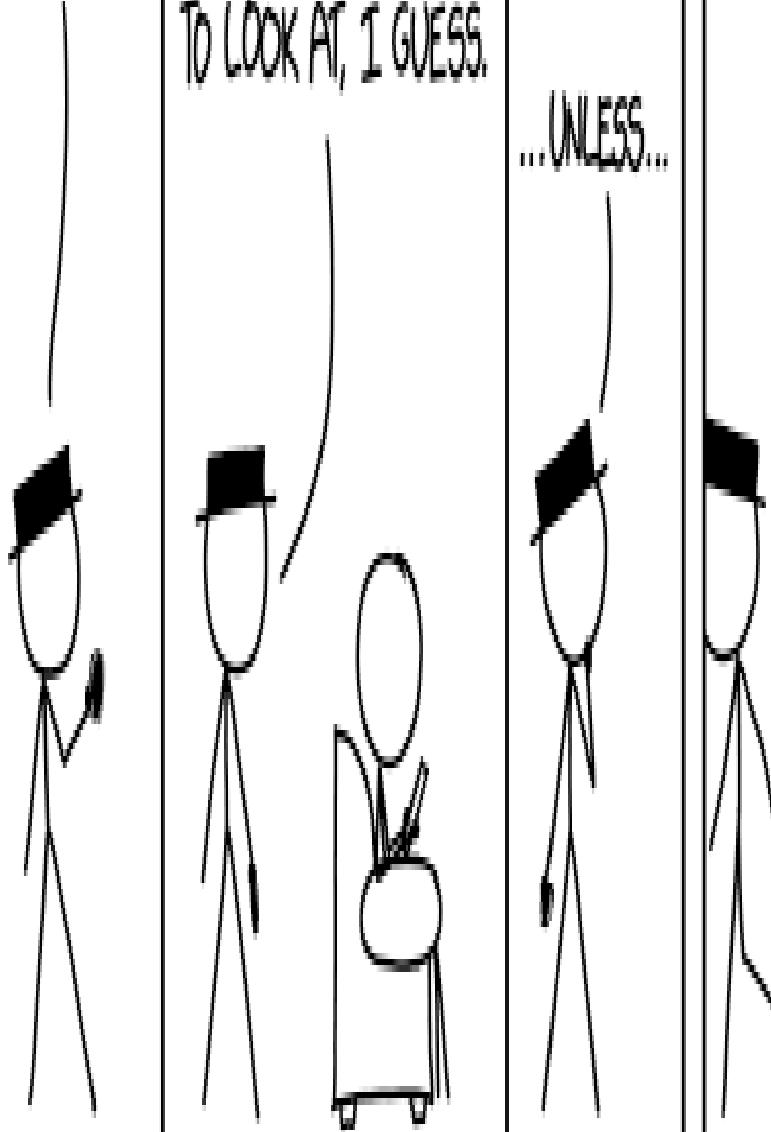
GREAT QUESTION. HOW DO  
YOU THINK YOU DO IT?



AND THERE  
YOU HAVE IT!

I GOT AN  
H-ALPHA  
FILTER FOR  
LOOKING AT  
THE SUN.  
IT ALSO WORKS FOR  
NEBULAE. BUT THAT'S  
ABOUT IT. THERE JUST  
AREN'T THAT MANY HOT  
BLOBS OF HYDROGEN  
TO LOOK AT, I GUESS.

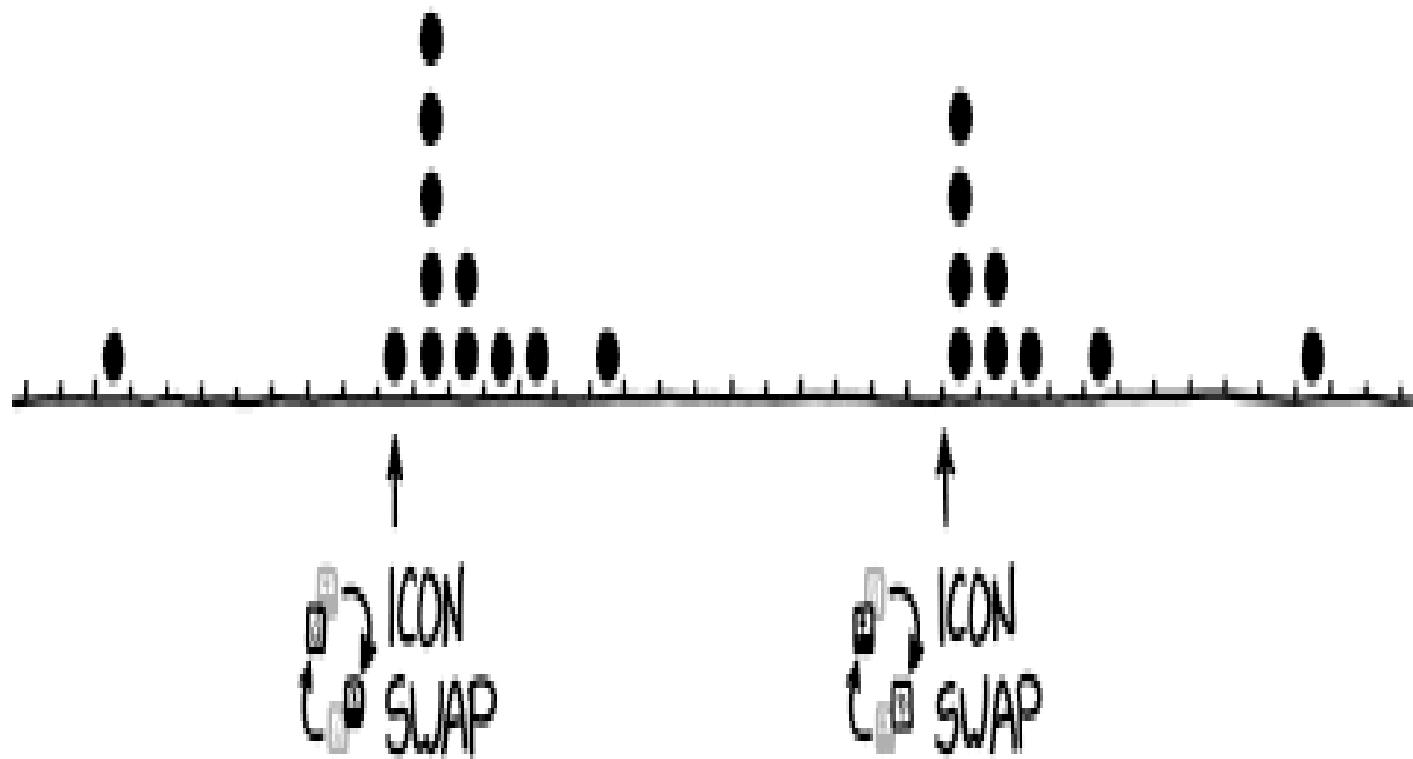
...UNLESS...



HUH, DID YOU KNOW BUMPS  
ALL USE HELIUM NOW?  
YOU LEARN SOMETHING NEW  
EVERY DAY! BY THE WAY,  
WE'RE OUT OF FIREWORKS.  
AND SOME ADVERTISING  
COMPANY IS REAL MAD.

# BOOKS FINISHED OVER TIME

• ONE BOOK



I'M NOT SAYING I HAVE A PROBLEM COMPULSIVELY CHECKING NEWS AND SOCIAL MEDIA ON MY PHONE, BUT WHEN I REPLACE THE SOCIAL MEDIA APP ICON WITH MY EBOOK READER, I READ A HALF-DOZEN BOOKS BEFORE I GET USED TO THE CHANGE.

UGH, A PLAYER NAMED  
"REELECT TRUMP 2020"  
PUT A FROG POKEMON IN  
THE GYM NEXT TO MINE.

IMAGINE GOING BACK  
IN TIME AND SAYING  
THAT TO YOURSELF  
20 YEARS AGO.

OH, I HAVE A  
TIME MACHINE!  
I'LL TRY THAT

1000

...NEXT  
TO MINE.

I SEE.  
POKEMON  
IS STILL  
POPULAR  
IN 2019?

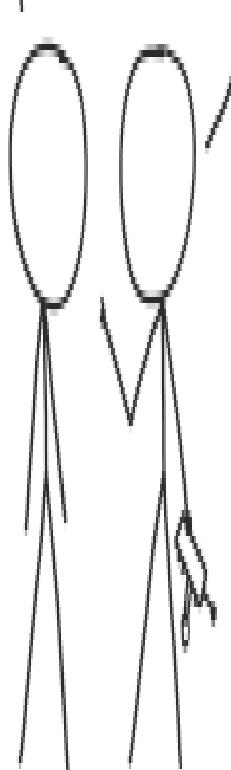
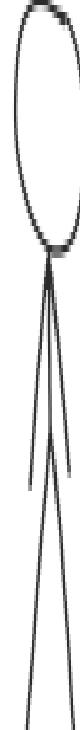
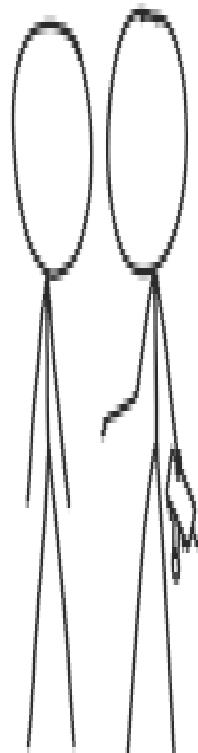
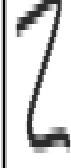
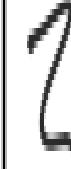
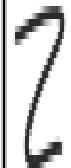
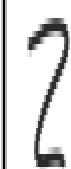
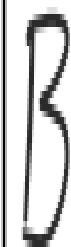
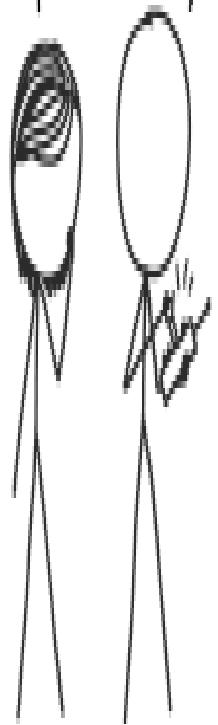
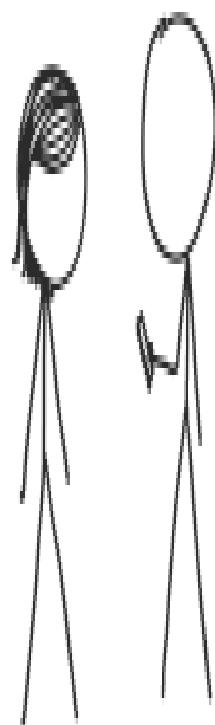
YEAH.

AND IT'S COOL FOR PEOPLE  
YOUR AGE TO PLAY IT?

OK, I DID NOT COME  
HERE TO BE MOCKED.

THIS IS A SOBERING  
CAUTIONARY TALE.

LISTEN, SELF...



FOR THE THRONE ROOM SCENE, I  
THINK IT'S ALL THREE UNTIL THE  
EMPEROR DIES, THEN VADER ONLY.

IT CAN'T BE LUKE ONLY, SINCE HE'S  
VISITING VADER, WHO IS CLEARLY  
AT ELEVATED RESPIRATORY RISK.

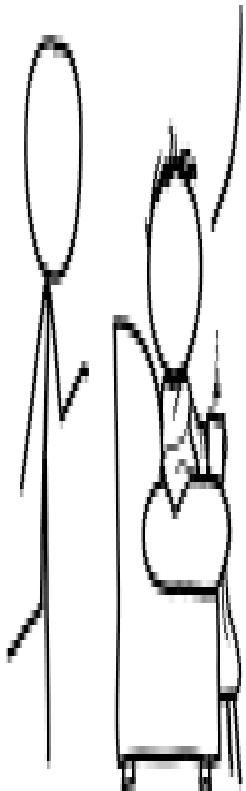
PLUS, HE REMOVES VADER'S MASK!



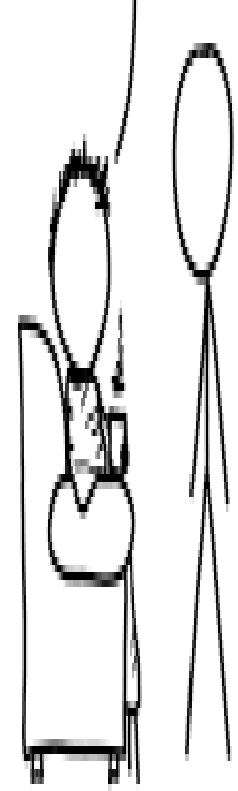
MY HOBBY: EDITING IMDB TO NOTE THE  
MINIMUM SET OF PEOPLE WHO NEED TO BE  
VACCINATED IN EACH SCENE FOR IT TO PASS  
MUSTER UNDER CURRENT CDC GUIDANCE

I GUESS THE FIRST SHOT  
MADE YOUR BODY BUILD  
DEFENSES, AND NOW IT'S  
RAMMING UP PRODUCTION.

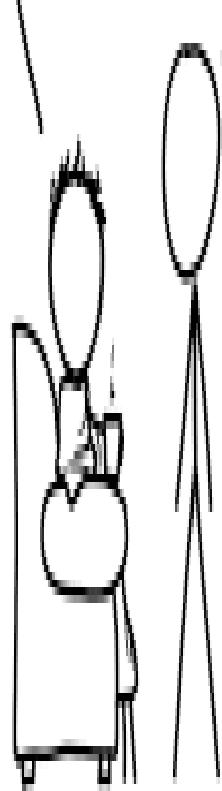
SO I'VE BECOME AN  
ANTIBODY FACTORY.



I DON'T FEEL GREAT. I  
THINK MY FACTORY HAS  
SOME OSHA VIOLATIONS.  
  
MY LYMPHATIC SYSTEM  
IS PROTESTING BRUTAL  
WORKING CONDITIONS.



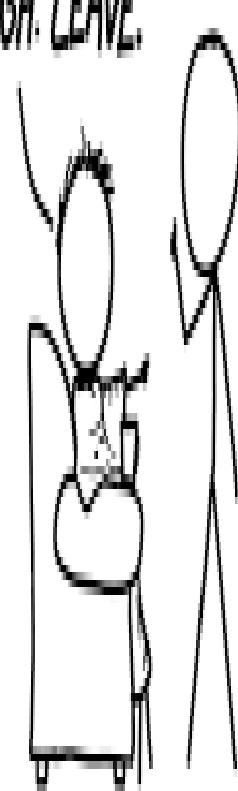
UPDATE: MY IMMUNE  
CELLS HAVE UNIONIZED.  
  
COMMON SIDE EFFECT:  
HELPS MAINTAIN A  
HEALTHY BALANCE.



IMMUNE SYSTEM UNIONS  
ARE ACTUALLY WHY WE  
STOPPED DOING VAROLATION.

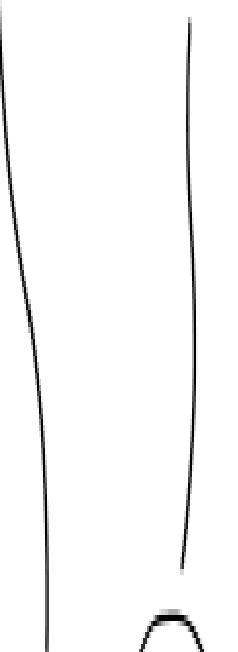
OH? WHY?

THEY DON'T LIKE SCABS.  
UGH. LEAVE.



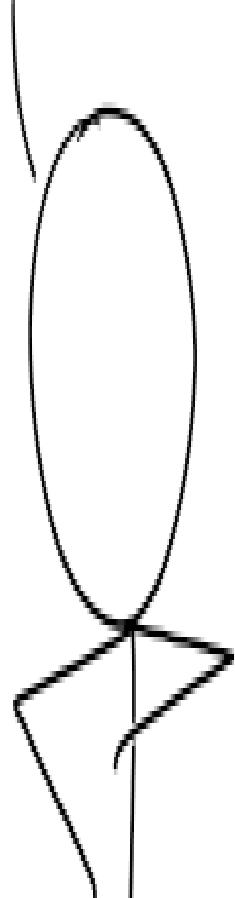
HOW YOU FEELING?

NOT BAD. TIRED.  
A LITTLE SORE.



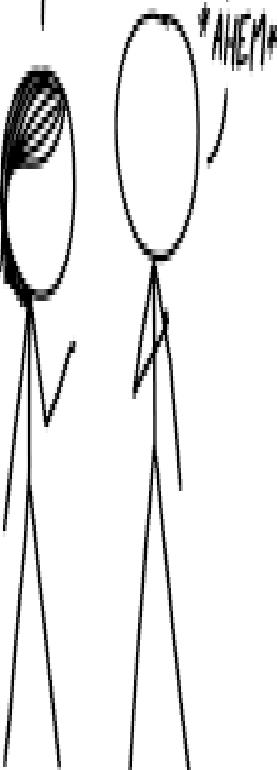
I FEEL BAD FOR MY IMMUNE  
SYSTEM. IT DOESN'T KNOW  
THIS ISN'T A REAL VIRUS.  
IT MUST BE FREAKING OUT.

HEY BUDDY, DON'T WORRY!  
WE'RE GOING TO BE FINE.  
THIS IS JUST PRACTICE!



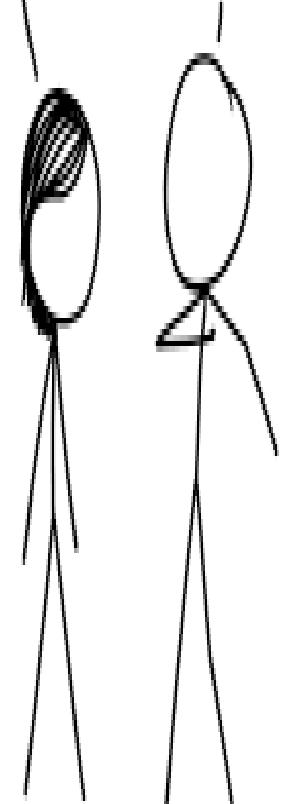
NO, DON'T TELL IT THAT.  
YOU WANT IT TO PANIC  
AND BUILD DEFENSES  
THAT WILL BE ABLE TO  
HANDLE THE REAL THING.

I GUESS.  
OKAY, LET ME  
TRY AGAIN.

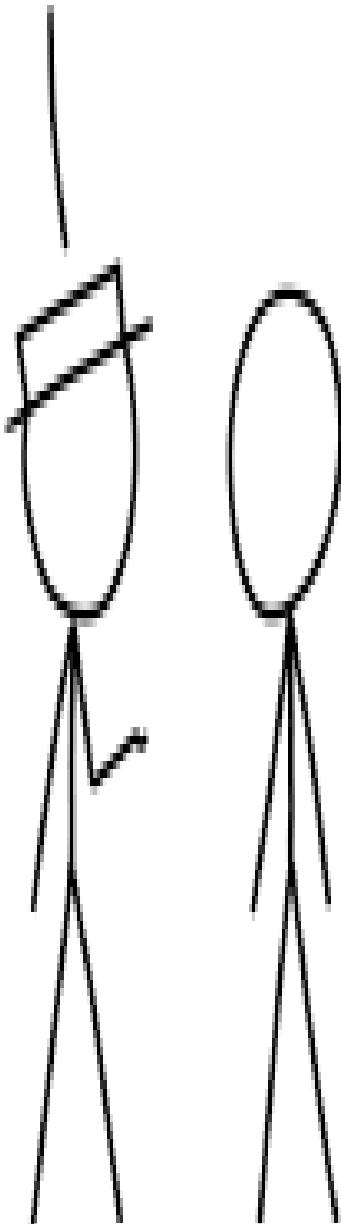


WOE! MY ARM IS STRICKEN  
BY A DREADFUL PLAGUE!  
I FEEL DEATH DRAW NEAR!  
MY ONLY HOPE IS THOSE  
HEROIC IMMUNE CELLS!

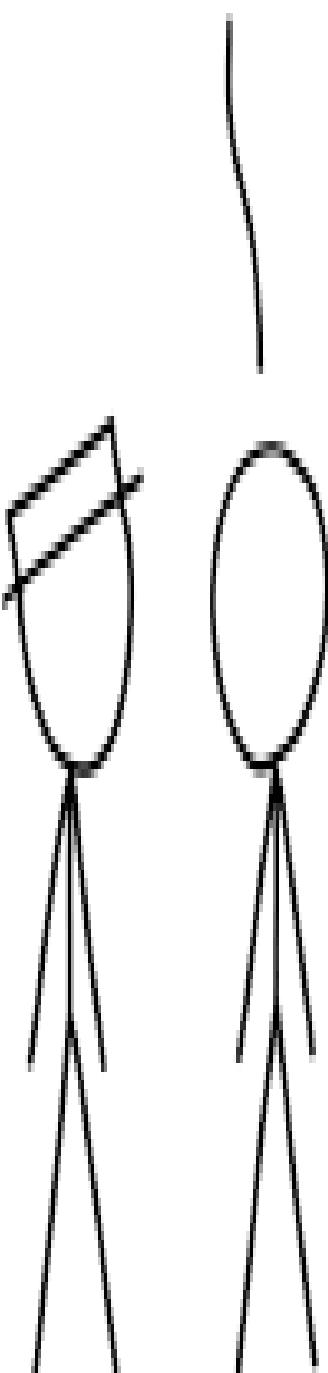
PERFECT. PSST-  
YOU'RE DOING GREAT!  
I'M SO PROUD OF YOU



SEE, IT'S GOOD TO GET  
INFECTED, BECAUSE IT  
GIVES YOU IMMUNITY.

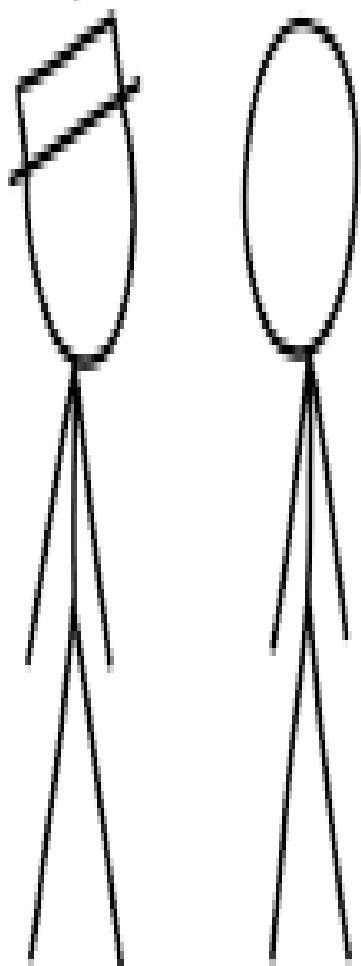


WHY WOULD I  
WANT IMMUNITY?



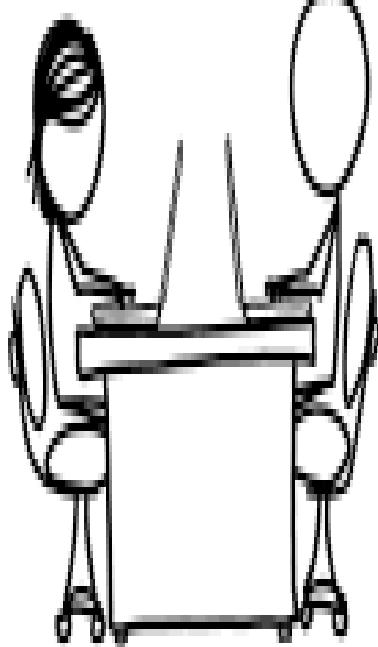
TO PROTECT YOU  
FROM GETTING INF...

...WAIT.



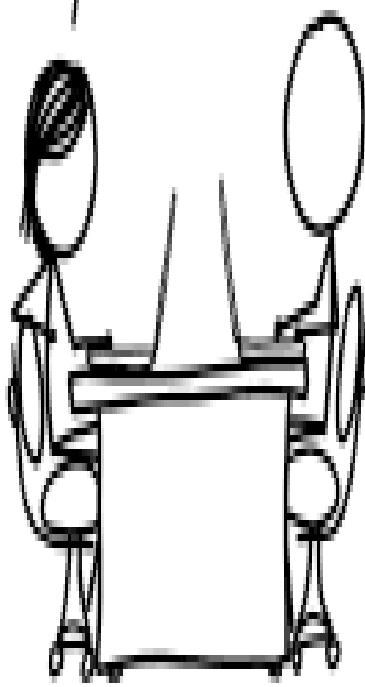
ANSWERING EMAIL IS  
THE WORST. IT JUST  
LEADS TO GETTING  
MORE EMAIL.

YEAH, EMAIL  
IS A TRAP.



I BET THE REASON THE  
ANCIENT ROMANS GOT SO  
MUCH DONE WAS THAT  
THEY HAD NO CONCEPT  
OF INBOX ZERO.

THAT EXPLAINS IT.



FACILITY

EAST VALLEY NUCLEAR PLANT

DATE

12/10/2021

REPORT ID

9603120071

## EVENT DESCRIPTION

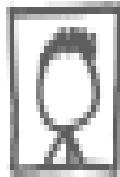
ROUGHLY 18 HOURS PRIOR TO THE INCIDENT, AN AMAZON PACKAGE CONTAINING FIREWORKS WAS MISTAKENLY DELIVERED TO THE REACTOR CONTROL ROOM AND LEFT UNDER THE CONSOLE.

THE NEXT DAY, AT APPROXIMATELY 14:00, TECHNICIAN A ARRIVED AT THE FACILITY WITH A BAG CONTAINING FOUR JUGGLING PINS. AT 14:20, TECHNICIAN A ENTERED THE CONTROL ROOM. AND JOINED TECHNICIAN B AT THE CONSOLE.

AT 14:28, TECHNICIAN C EXITED THE ELEVATOR AND APPROACHED THE CONTROL ROOM HOLDING A BIRTHDAY CAKE INTENDED FOR TECHNICIAN B.

AT 14:29:22, TECHNICIAN A SAID "HEY [TECHNICIAN B], CHECK OUT THIS COOL TRICK I LEARNED" WHILE TAKING OUT THE JUGGLING PINS. TECHNICIAN B TURNED TO LOOK JUST AS, AT 14:29:26, TECHNICIAN C ENTERED HOLDING THE CAKE.

YOU KNOW THINGS ARE ABOUT TO GET BAD WHEN THE INCIDENT REPORT STARTS INCLUDING SECONDS IN THE TIMESTAMPS.



What's on your mind today?

Open Close



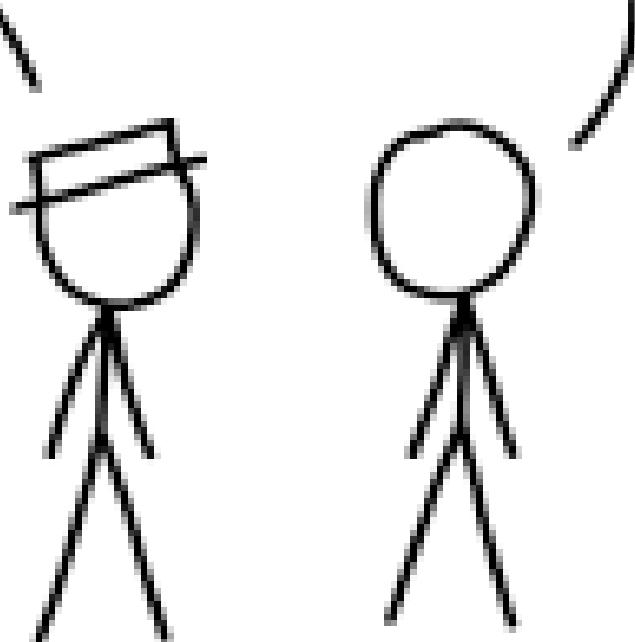
EVERYONE ON HERE NEEDS TO STOP LAUGHING ABOUT HOW "ADOPTING PETS FROM A SHELTER IS FOR LOSERS" AND "THOSE ANIMALS SHOULD ALL BE HUNTED FOR SPORT INSTEAD." IT'S REPREHENSIBLE ON SO MANY LEVELS! FIRST OF ALL...

SOMETIMES, ONE OF MY FRIENDS POSTS AN ANGRY RESPONSE TO SOME TERRIBLE OPINION I'VE NEVER HEARD BEFORE, AND IT'S A WEIRD INDIRECT WAY TO LEARN HOW AWFUL THEIR OTHER FRIENDS MUST BE.

HOW ARE YOU?

EXCRUCIATINGLY AWARE  
OF HOW MUCH OF EACH  
OTHER'S GROSS LUNG  
AIR WE'RE BREATHING.

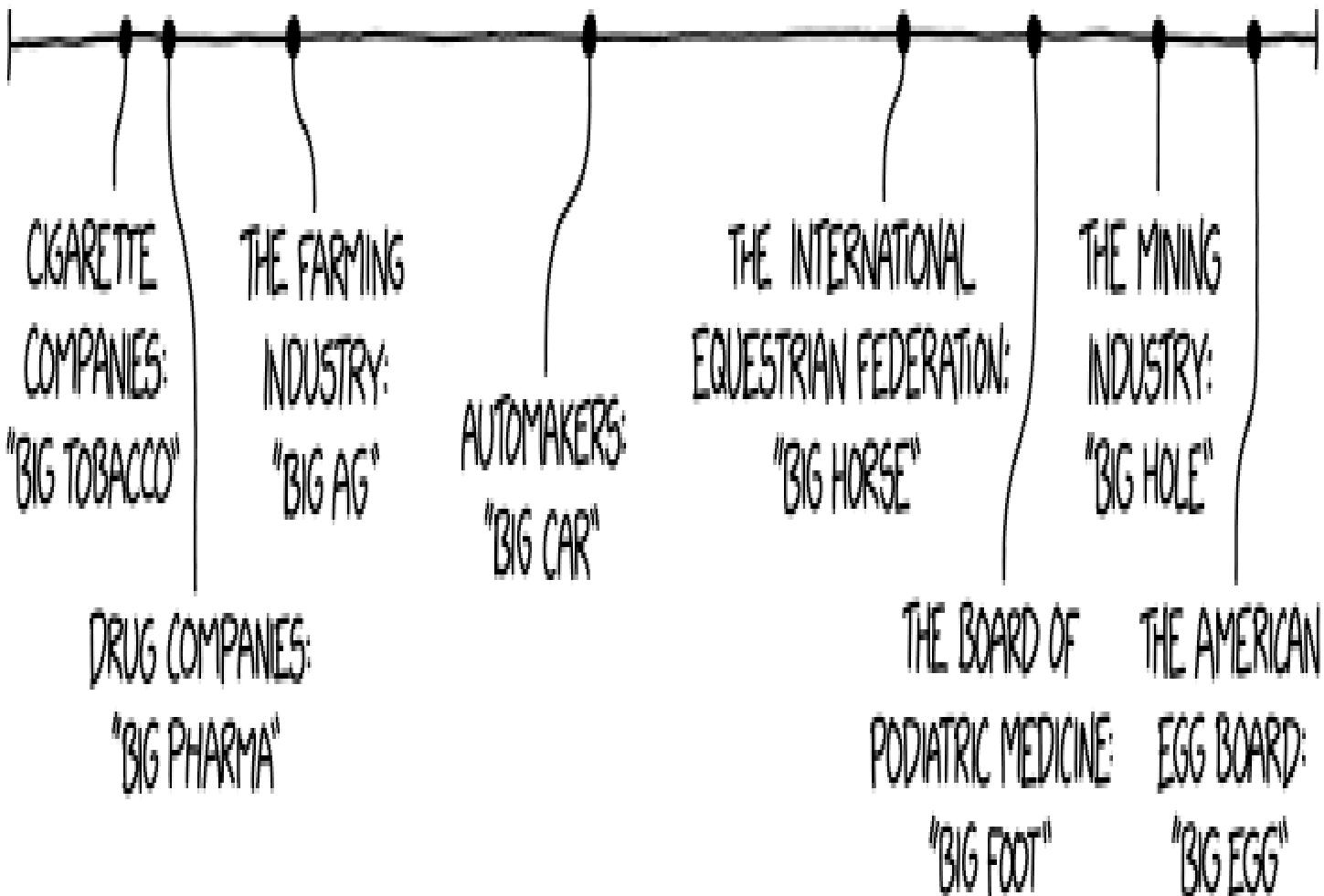
I  
I MEAN, FINE!  
HOW ARE YOU?



# NICKNAMES FOR INDUSTRIES AND ORGANIZATIONS

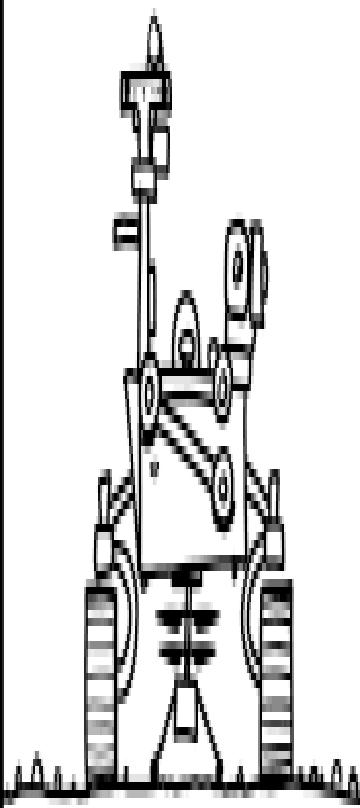
RANKED BY HOW SILLY IT SOUNDS WHEN  
YOU SAY SOMEONE IS "IN THE POCKET OF..."

SILLIER

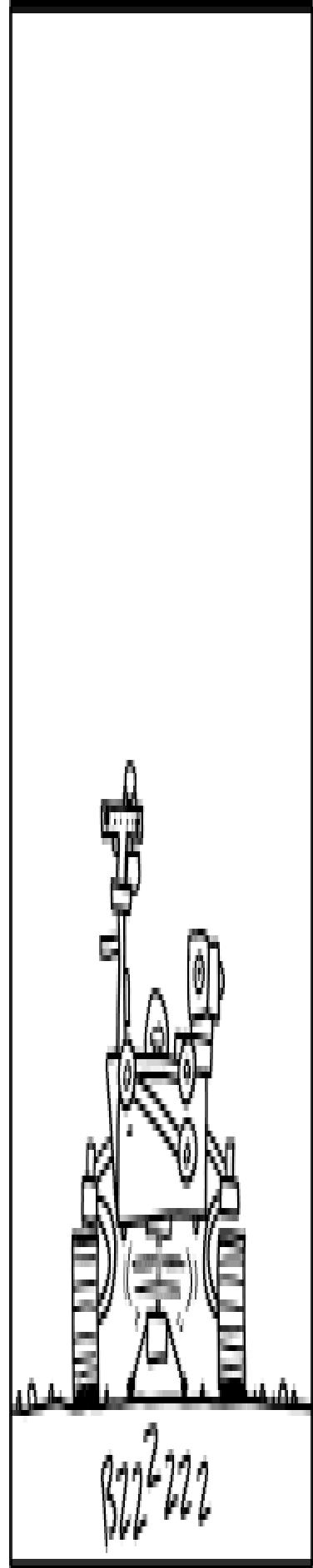
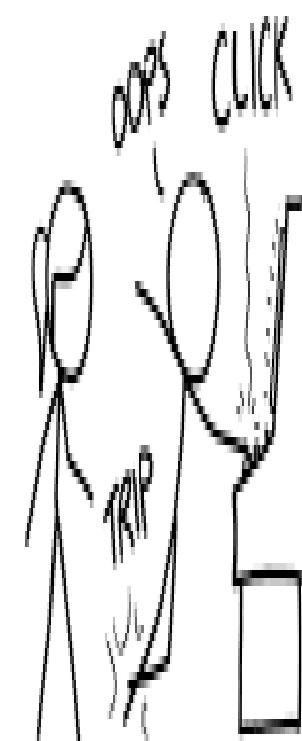
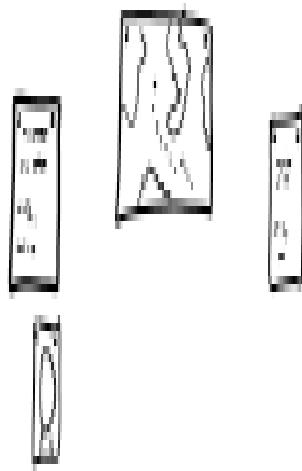


INGENUITY HELICOPTER  
HAS BEEN LOWERED

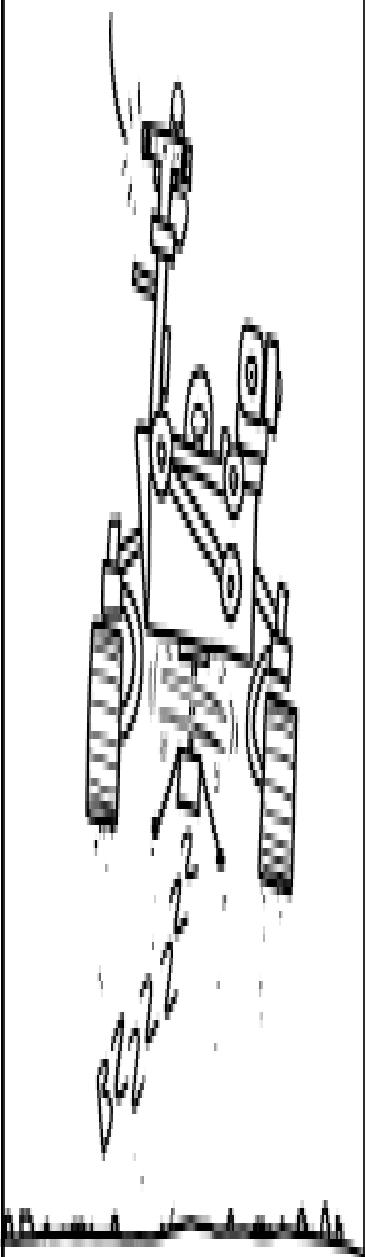
PREPARING TO RELEASE  
IT ONTO THE SURFACE.



MISSION CONTROL



WHEEE!



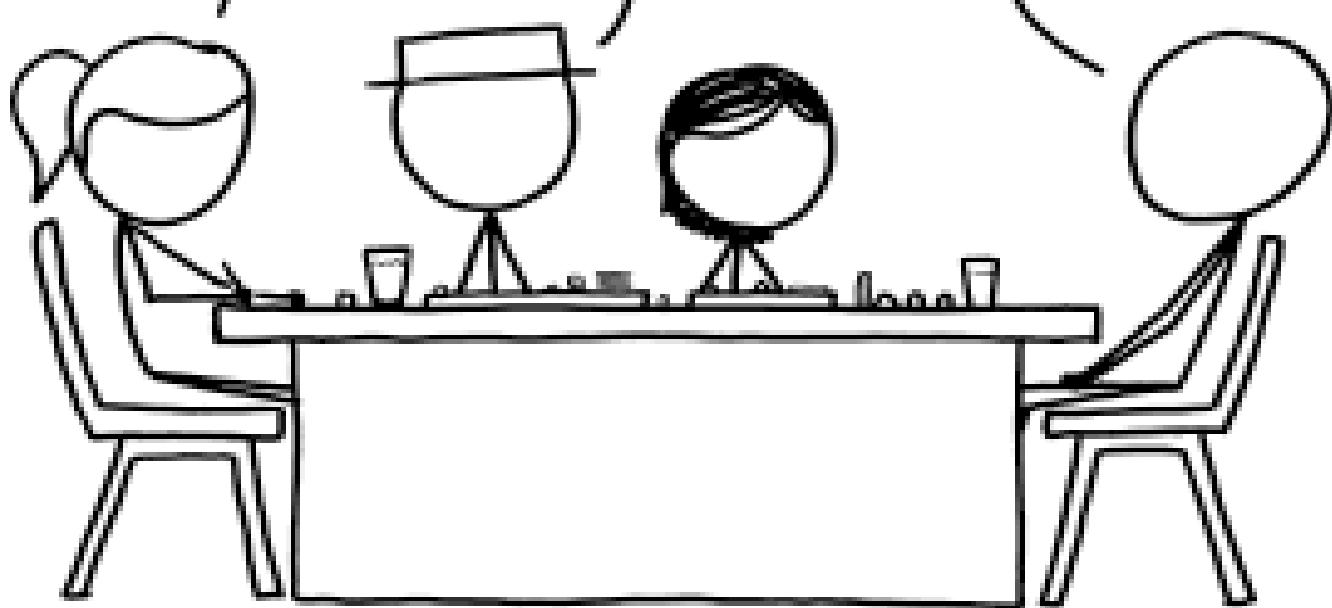
LET'S SEE... I GOT 31, YOU  
HAVE 28, 35 FOR YOU, AND -

-I'VE GOT 10,019.

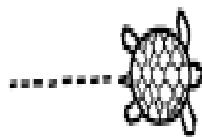
\*SIGH\*

HEY, ADD ANOTHER 20  
TO EVERYONE, ON ME!

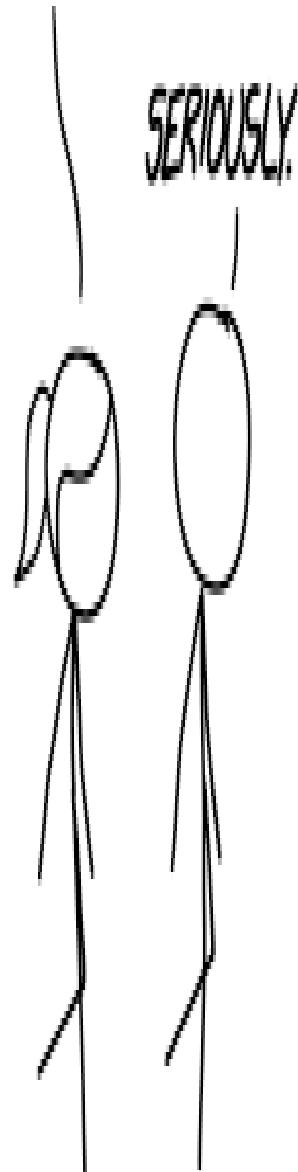
I HATE THIS.



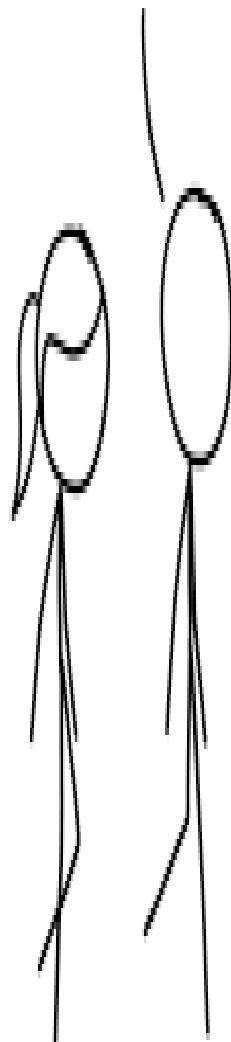
NO ONE WANTS TO PLAY BOARD GAMES WITH  
ME EVER SINCE I INHERITED 4,000,000  
VICTORY POINTS FROM MY GRANDFATHER.



THE INTERNET ARCHIVE  
IS SO WEIRD. IF IT DIDN'T  
EXIST, IT WOULD SOUND  
TOTALLY IMPLAUSIBLE.



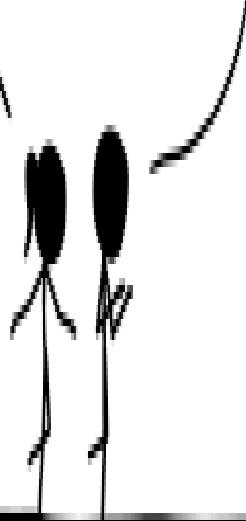
DO YOU EVER WORRY ABOUT HOW  
RELIANT WE ARE ON SYSTEMS THAT  
SOMEONE HAPPENS TO MAINTAIN FOR  
SOME REASON BUT WHICH COULD  
DISAPPEAR AT ANY TIME?



YEAH - THE SAME THING FREAKS  
ME OUT ABOUT HAVING A BODY.

I KNOW, RIGHT?? I DON'T EVEN  
KNOW WHAT HALF THESE PARTS DO!  
AND YET IF THEY STOP, WE DIE!

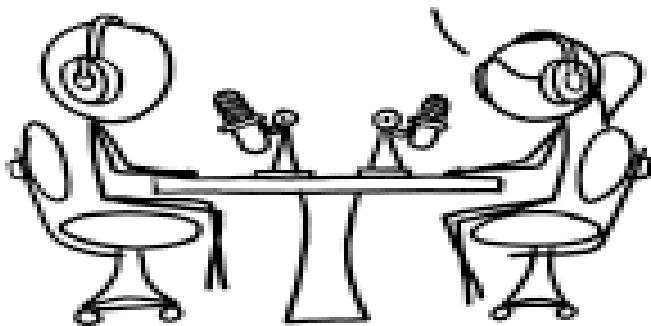
PROBABLY BEST NOT  
TO THINK ABOUT IT.



...AND THAT'S WHEN  
YOU KNEW SHE HAD  
BETRAYED YOU?

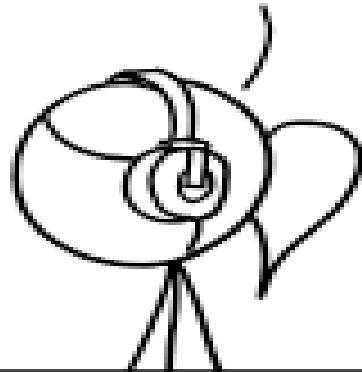
YEAH.

SHE PICKED UP  
THE MONEY AND  
WALKED OUT.



TO THIS DAY, I  
DON'T KNOW IF SHE  
PLANNED IT ALL.

BUT THERE WAS  
ONE MOMENT THAT  
MAKES ME THINK,  
MAYBE SHE DID.



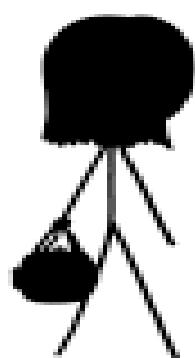
JUST BEFORE SHE  
DISAPPEARED, SHE  
PAUSED AT THE  
DOOR, LOOKED BACK  
AT ME, AND SAID,

HEY—

IF I EVER SEE  
YOU AGAIN,

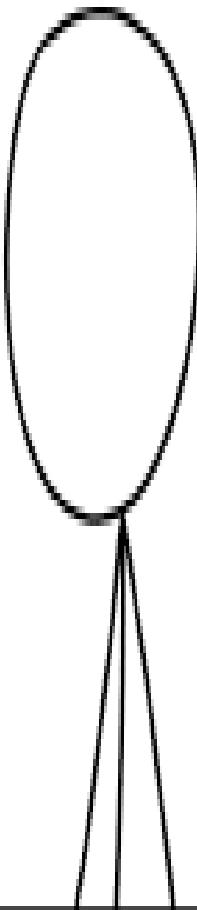


TURN LEFT AT  
THE NEXT LIGHT.



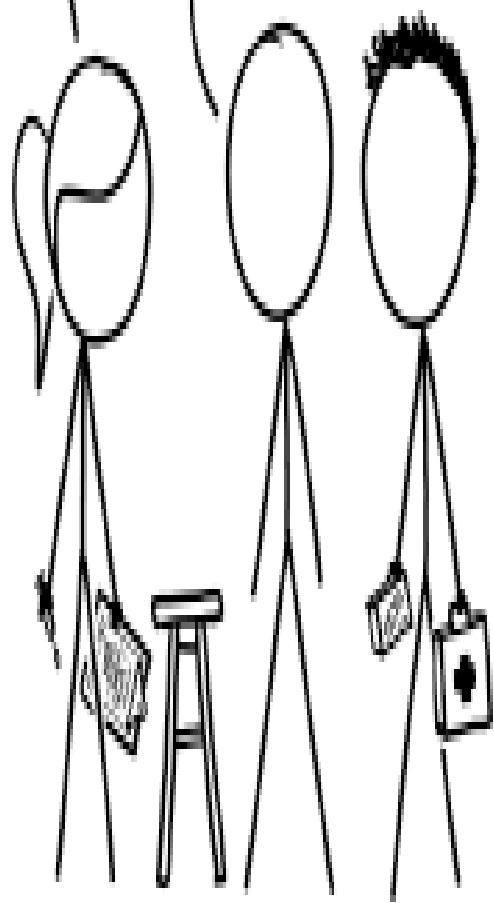
IT'S SO DISORIENTING WHEN A PODCASTER HAS  
A VOICE THAT'S SIMILAR TO MY NAVIGATION APP.

YESSSSS  
I  
INJECT THIS  
DIRECTLY INTO  
MY VEINS



OK, BUT THE VACCINE  
IS INTRAMUSCULAR...  
WHY DO PEOPLE  
KEEP SAYING THAT?

SORRY, SORRY.  
JUST EXCITED.



A A B I U E E E

SELECT

ere, but would **not** have to m  


CLICK  
A A B I U E E E

ere, but would **not** have to m

A A B I U E E E

...NAH, THE BOLD IS TOO MUCH.

ere, but would **not** have to m  


A A B I U E E E

SELECT

ere, but would **not** have to m  


CLICK  
A A B I U E E E

ere, but would **not** have to m

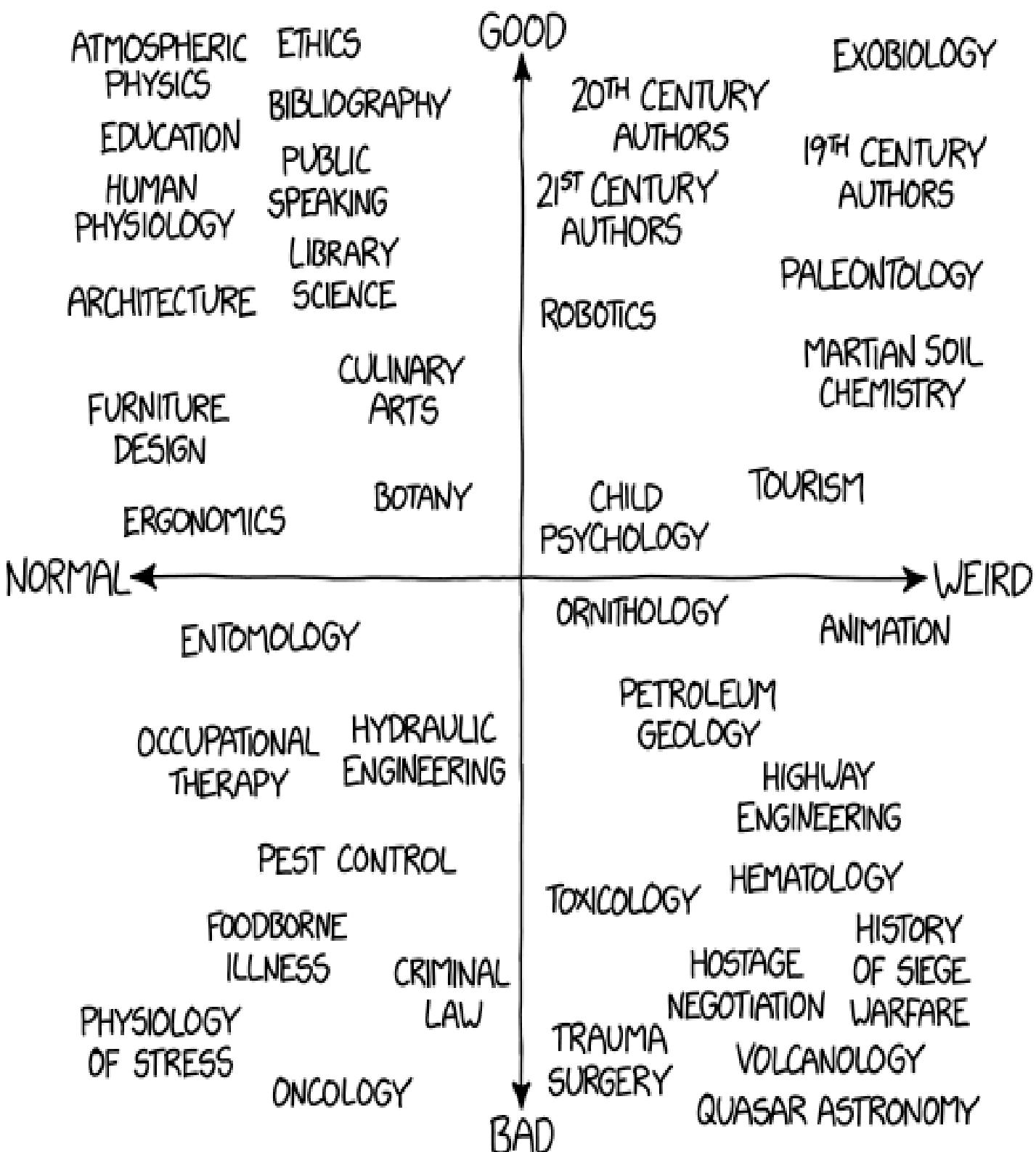
A A B I U E E E

HIDDEN BOLD SPACE

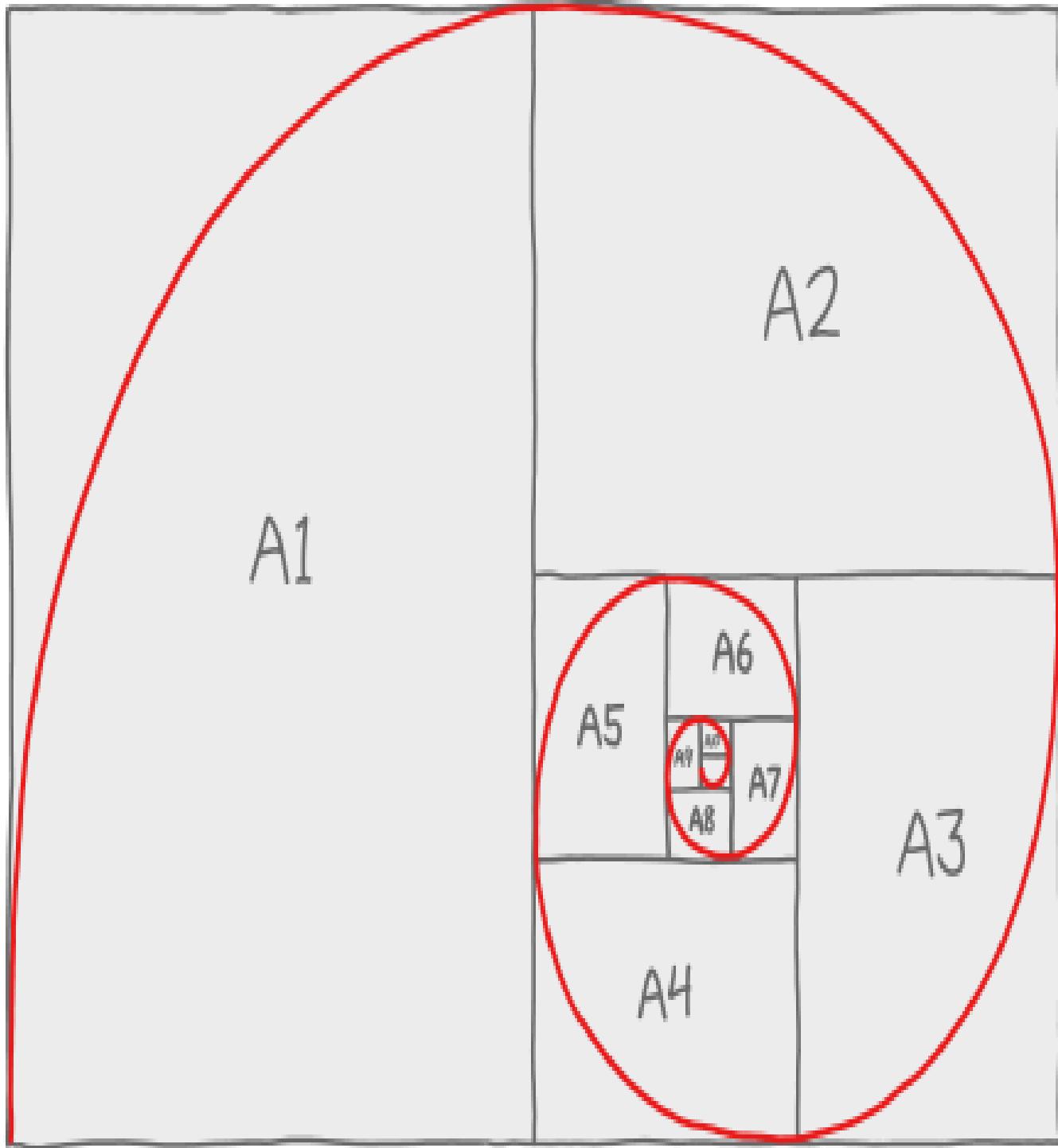
ere, but would **not** have to m  


WHEN EDITING TEXT, IN THE BACK OF MY MIND I ALLWAYS  
WORRY THAT I'M ADDING INVISIBLE FORMATTING THAT WILL  
SOMEHOW CAUSE A PROBLEM IN THE DISTANT FUTURE.

# THE THING YOU STUDY JUST SHOWED UP IN YOUR CLASSROOM! THAT'S...



# THE GOLDEN RATIO IS EVERYWHERE!



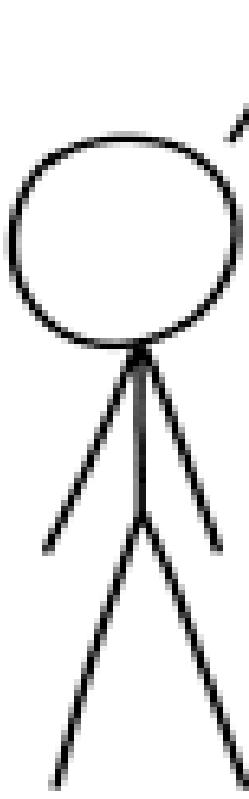
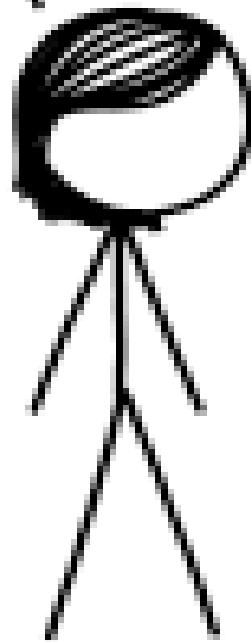
HOW TO ANNOY BOTH GRAPHIC DESIGNERS AND MATHEMATICIANS

I JUST REALIZED -

THE ASTRONAUTS ON THE  
ISS PROBABLY CAN'T GET THE  
VACCINE UNTIL THEY LAND.

SURE THEY CAN.

NASA'S GOOD AT  
ORBITAL INJECTIONS.

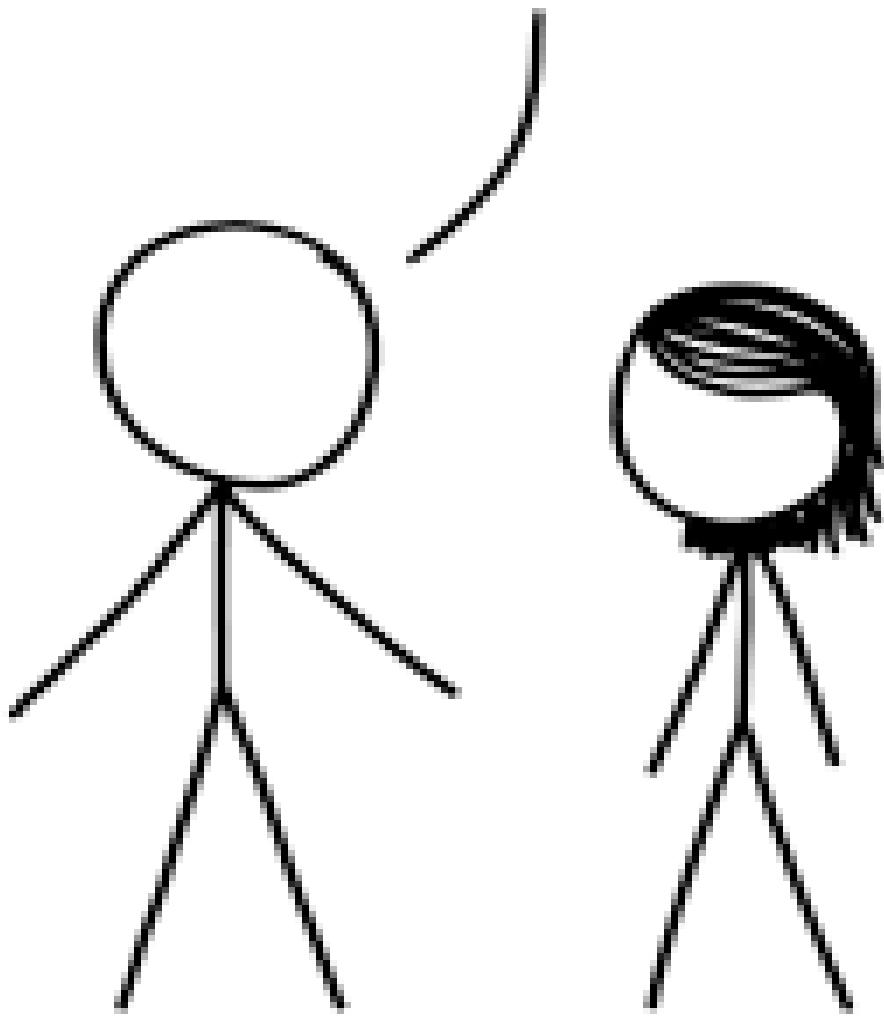


NO\*

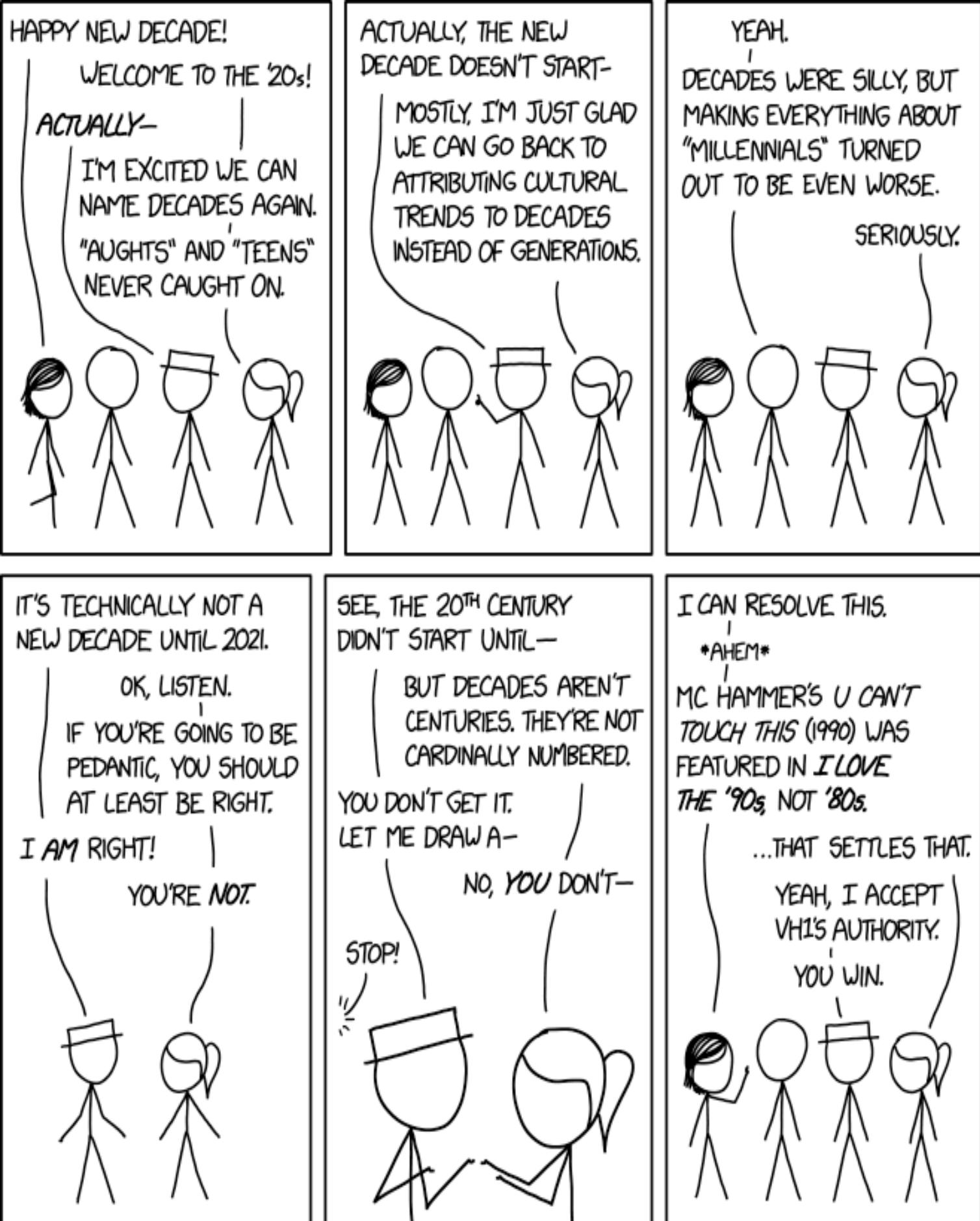
\*99.73% ACCURATE

XKCD.COM PRESENTS A NEW "IS IT CHRISTMAS"  
SERVICE TO COMPETE WITH ISITCHRISTMAS.COM

I JUST DON'T TRUST  
THEM, AND I DON'T WANT  
TO PUT SOMETHING THEY  
DEVELOPED INTO MY BODY.



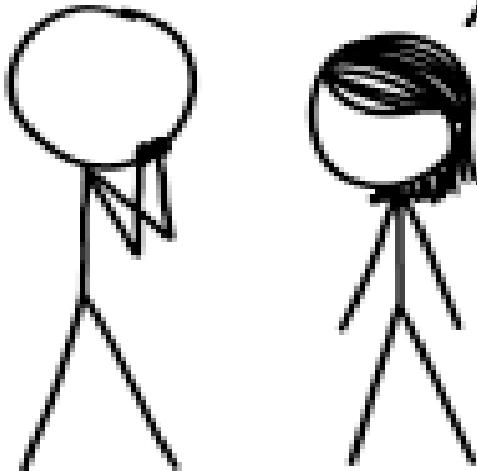
HOW I FEEL ABOUT BATS



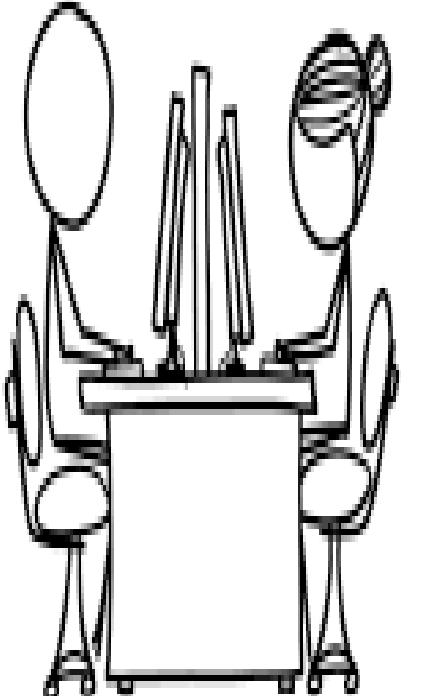
I CAN'T BELIEVE YOU FELL HEADFIRST INTO A GARBAGE CAN AND WERE STUCK THERE FOR TWO HOURS WHILE WASPS STUNG YOUR EXPOSED LEGS!

I SHOULDN'T COMPLAIN! LOTS OF PEOPLE HAVE BEEN STUCK FOR LONGER IN WORSE PLACES.

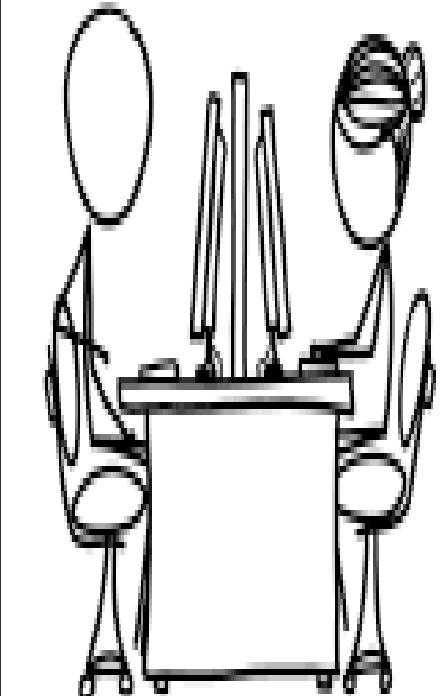
REALLY, I'M LUCKY.



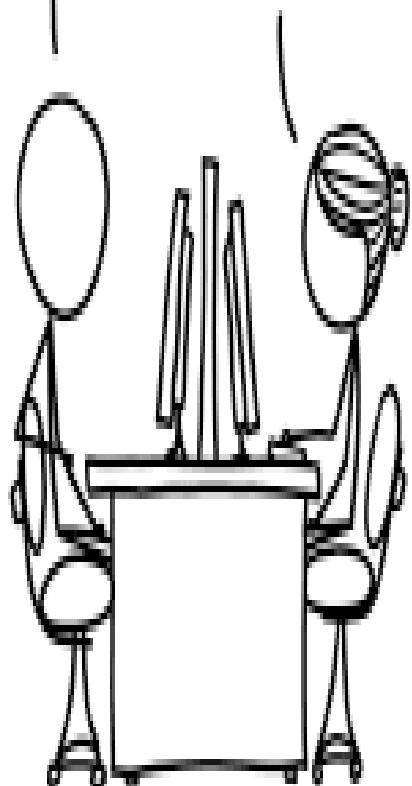
THE MORE UNPLEASANT SOMEONE'S EXPERIENCE IS, THE MORE THEY APOLOGIZE FOR COMPLAINING BECAUSE IT COULD BE WORSE.



I'M STARTING TO WORRY  
THAT JPEG 2000 ISN'T  
CATCHING ON AS FAST  
AS WE EXPECTED.



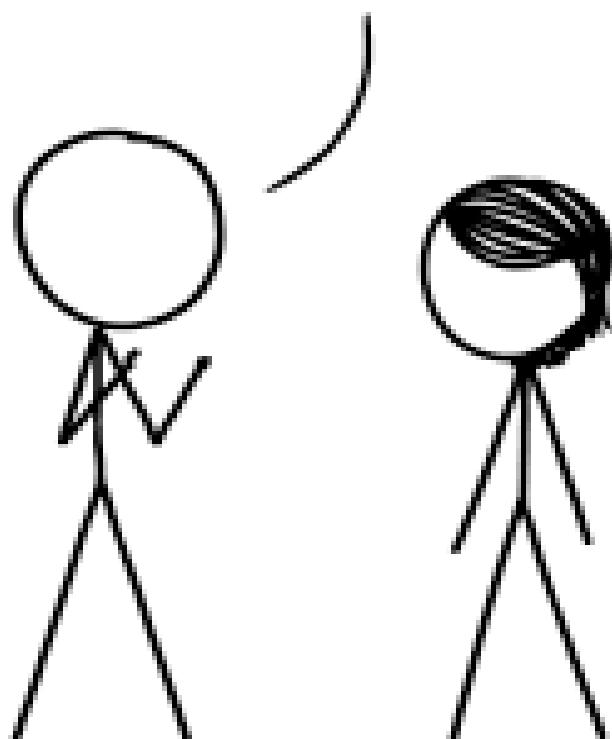
DON'T WORRY!  
WE'RE IN THIS FOR  
THE LONG HAUL.



LINCOLN WAS "PRESIDENT" IN THE CIVIL WAR (1990), THE SAME OFFICE HELD BY JOHNSON IN THE VIETNAM WAR (2017).

AND BASEBALL (1994) BRIEFLY SHOWED 1960s "PROTESTERS." I THINK THEY WERE PROTESTING JOHNSON'S WAR!

IT ALL FITS!



I HAVE A FAN THEORY THAT EVERY KEN BURNS MINISERIES EXISTS WITHIN A SINGLE COHESIVE UNIVERSE.

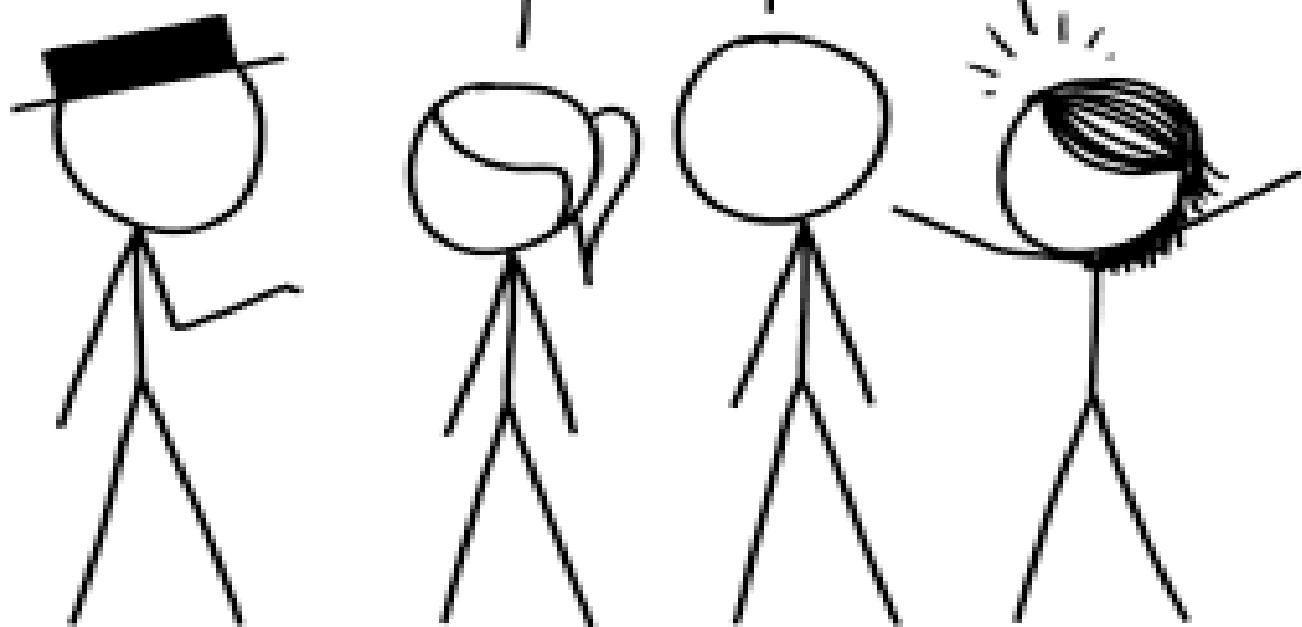
TO END MANY YEARS OF CONFUSION,  
THE INTERNATIONAL COMMITTEE FOR  
WEIGHTS AND MEASURES HAS JUST  
VOTED TO REDEFINE THE KILOGRAM.

AS OF NEXT MAY, IT WILL  
EQUAL EXACTLY ONE POUND.

OH, COOL.

THAT DOES MAKE  
THINGS SIMPLER.

NO!!



PLEASE JUST HOLD OFF UNTIL THE END OF SUMMER. WE CAN'T AFFORD THE PERSONNEL HIT RIGHT BEFORE THE LATE JULY LAUNCH WINDOW.

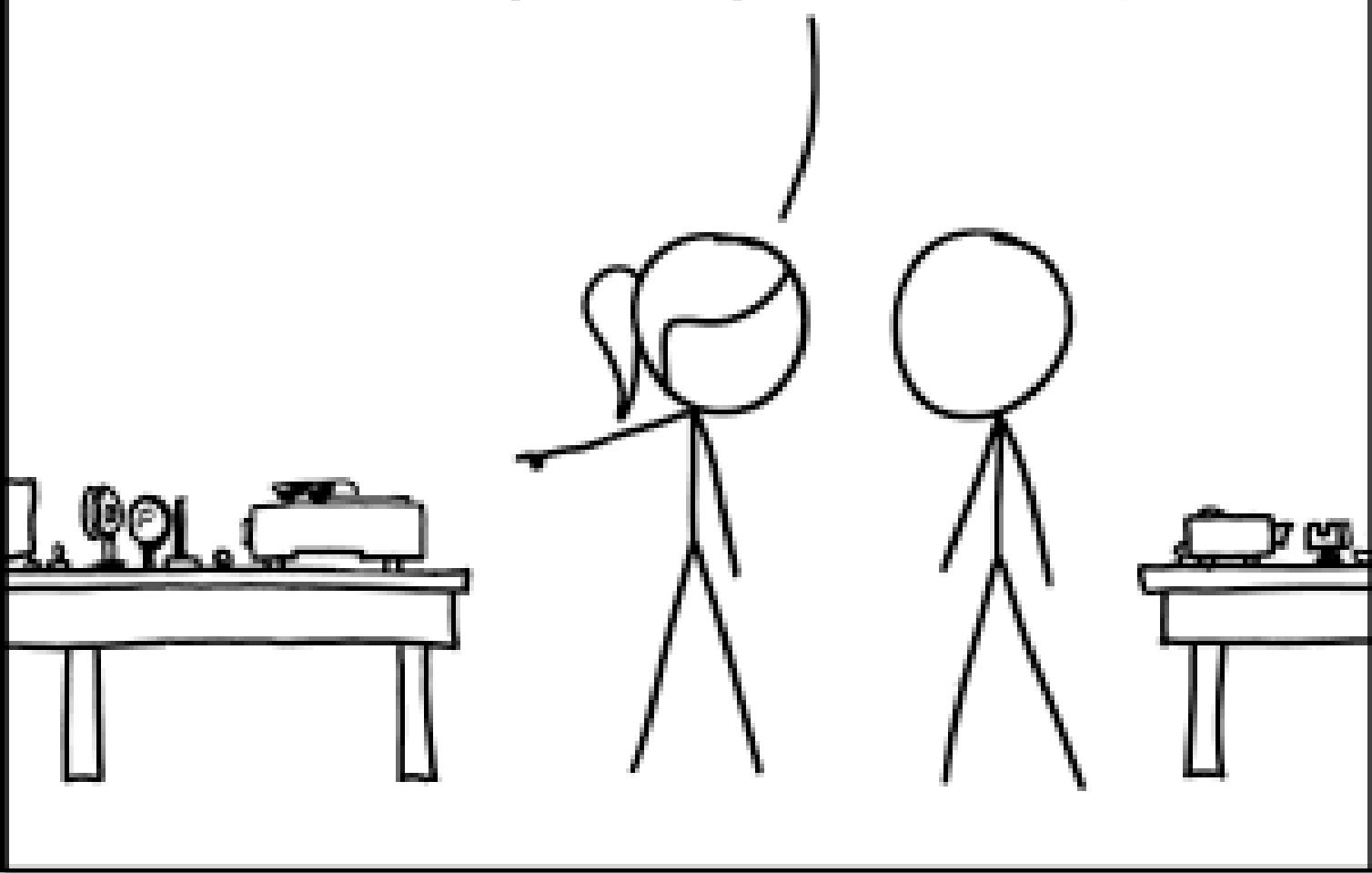
PEOPLE HAVE ALREADY STARTED CALLING IN SICK!

DO YOU WANT A MOON?  
WELL GIVE YOU A MOON!



NASA TRIES DESPERATELY TO GET THE KERBAL SPACE PROGRAM TEAM TO DELAY KSP 2 UNTIL AFTER THE MARS 2020 MISSION LAUNCHES.

THE SPECTROMETER IS OVER HERE,  
THE ND:YAG LASERS ARE OVER HERE,  
AND IN THE CORNER IS A LASER THAT  
TURNED OUT NOT TO BE USEFUL FOR  
US, BUT WE KEEP IT BECAUSE IT'S FUN  
TO TOAST MARSHMALLOWS WITH IT.



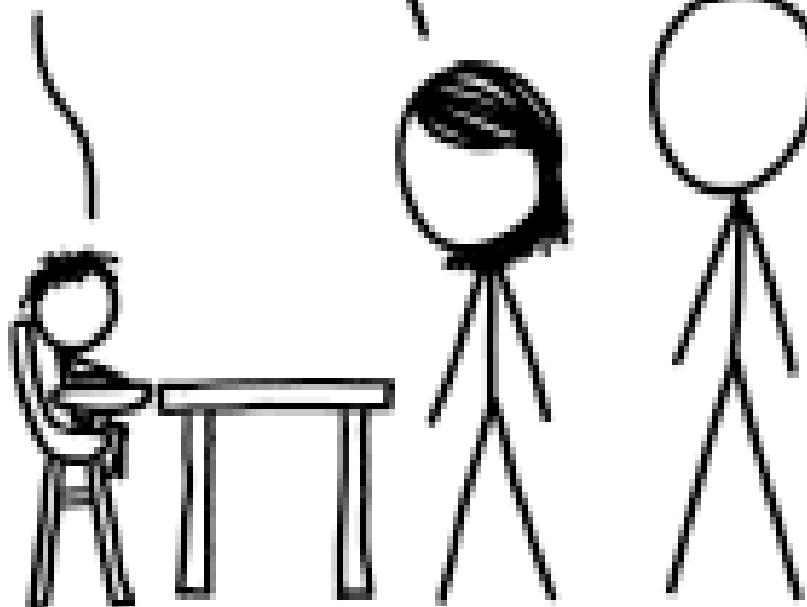
EVERY LAB IN EVERY FIELD HAS  
SOME PIECE OF EQUIPMENT LIKE THIS.

HE'S ONLY 1, SO HE STILL MOSTLY SPEAKS PROTO-INDO-EUROPEAN.

BUT WE'VE HEARD A FEW GERMANIC WORDS ALREADY, SO OLD ENGLISH CAN'T BE FAR OFF.

THEY PROGRESS SO FAST!

\*MELG-  
\*PL(E)HK-



OH NO

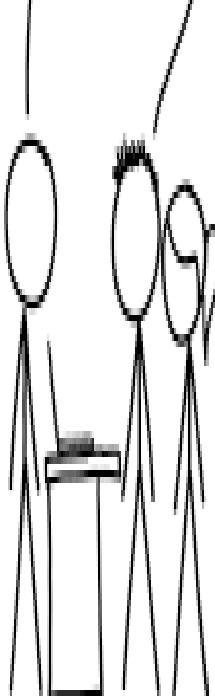
WHAT?

THIS GUY  
HE HAS THE  
WORST TECH  
PROBLEMS

TECH  
SUPPORT  
→

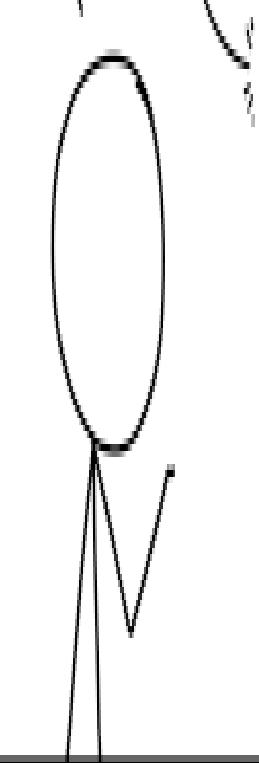
MY LAPTOP'S  
BATTERY WON'T  
HOLD A CHARGE.

WE CAN  
REPLACE IT.  
TRIED THAT, NOW  
THE NEW ONES  
WON'T EITHER.



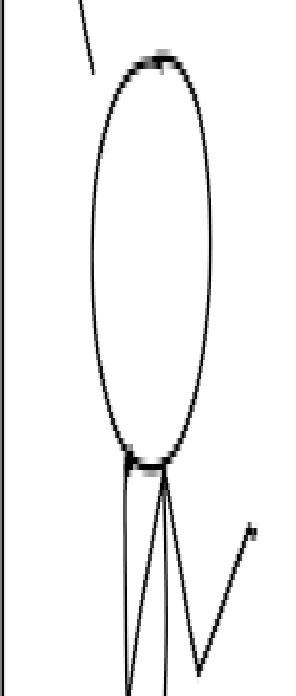
ALSO, RANDOM FILES  
GET CORRUPTED ON  
THE FIRST DAY OF  
EVERY MONTH.

FACTORY RESET  
DIDN'T HELP.  
YOU WEREN'T  
KIDDING.



WHEN IT'S PLUGGED IN,  
I GET STATIC SHOCKS  
FROM MY PLUMBING.

WHAT THE...  
AND IT REBOOTS IF  
SOMEONE USES AN  
ARC WELDER NEARBY.



TRANSITIONS® LENSES GO DARK  
WHEN EXPOSED TO THE SCREEN,  
AND WHEN I OPEN TOO MANY TABS,  
IT FOGS NEARBY PHOTOGRAPHIC FILM.

WE DON'T USUALLY DO THIS, BUT  
I'VE GOTTEN PERMISSION FROM MY  
MANAGER TO HAVE YOU AND THE  
LAPTOP HURLED INTO THE OCEAN.

THAT'S PROBABLY  
FOR THE BEST.



# WHAT THE WAY YOU WRITE LARGE NUMBERS SAYS ABOUT YOU

(USING THE APPROXIMATE CURRENT DISTANCE  
TO JUPITER IN INCHES AS AN EXAMPLE)

25,259,974,097,204

NORMAL PERSON

25 TRILLION

NORMAL PERSON

25 BILLION

OLD BRITISH  
PERSON

$2.526 \times 10^{13}$

SCIENTIST

$2.525997 \times 10^{13}$

SCIENTIST TRYING TO  
AVOID ROUNDING UP

2.526e13 OR

$2.526 * 10^{13}$

SOFTWARE DEVELOPER

25,259,973,541,888

SOFTWARE DEVELOPER WHO  
FORGOT ABOUT FLOATS

$10^{13}$

ASTRONOMER

{0,{0},{0,{0}},{{0,{0}},{{...}}}}

SET THEORIST

1,262,998,704,860  
SCORE AND FOUR

ABRAHAM LINCOLN

# TYPICAL PROCESS LATENCY:

AUTOMATED  
STEPS:

800 MS



AUTOMATED  
STEPS:

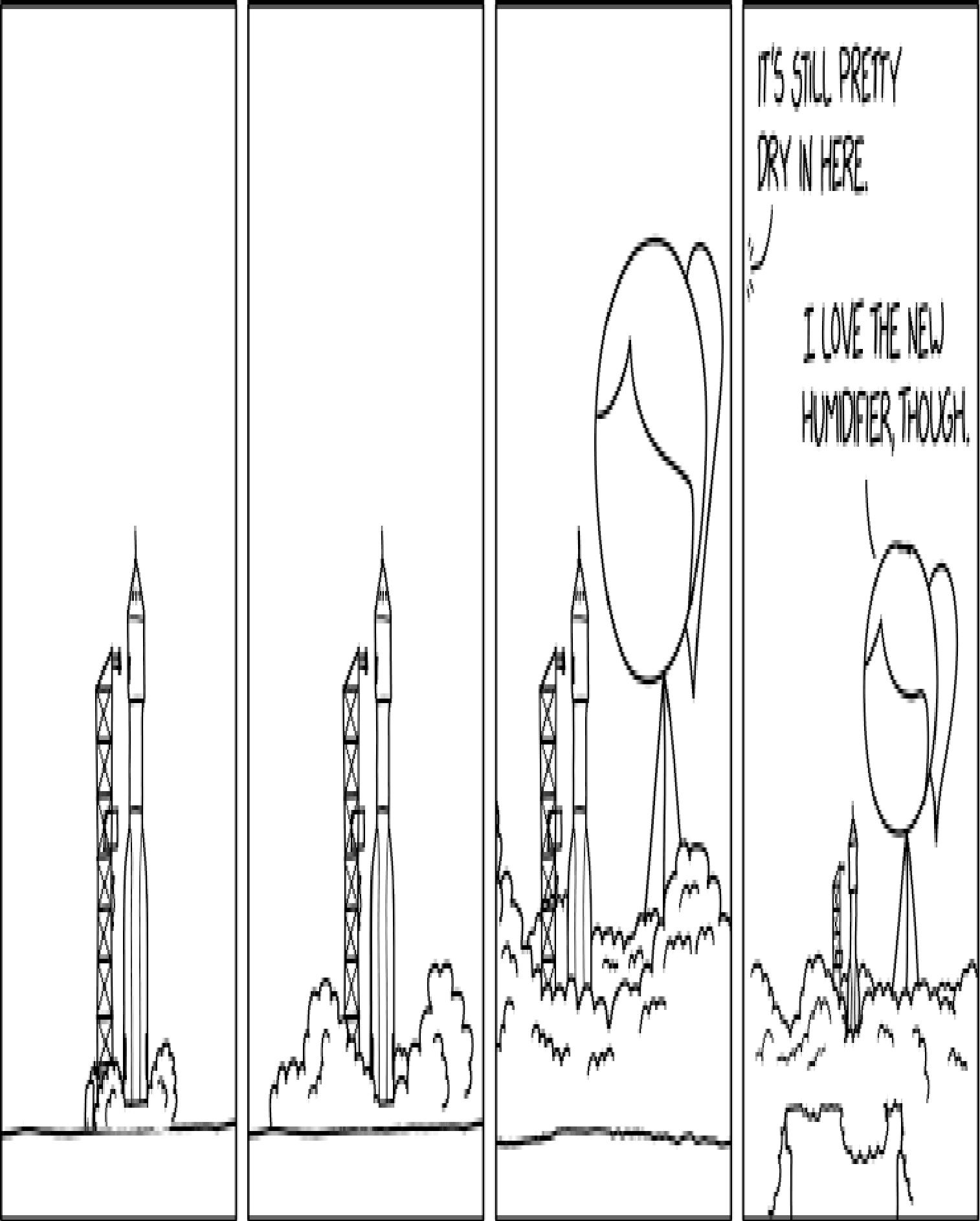
200 MS

SOMEONE COPIES AND PASTES DATA  
FROM A THING INTO ANOTHER THING:

2-15 MINUTES

(MORE IF THE PERSON ON CALL IS BUSY)

IT'S STILL PRETTY  
DRY IN HERE.  
I LOVE THE NEW  
HUMIDIFIER, THOUGH.



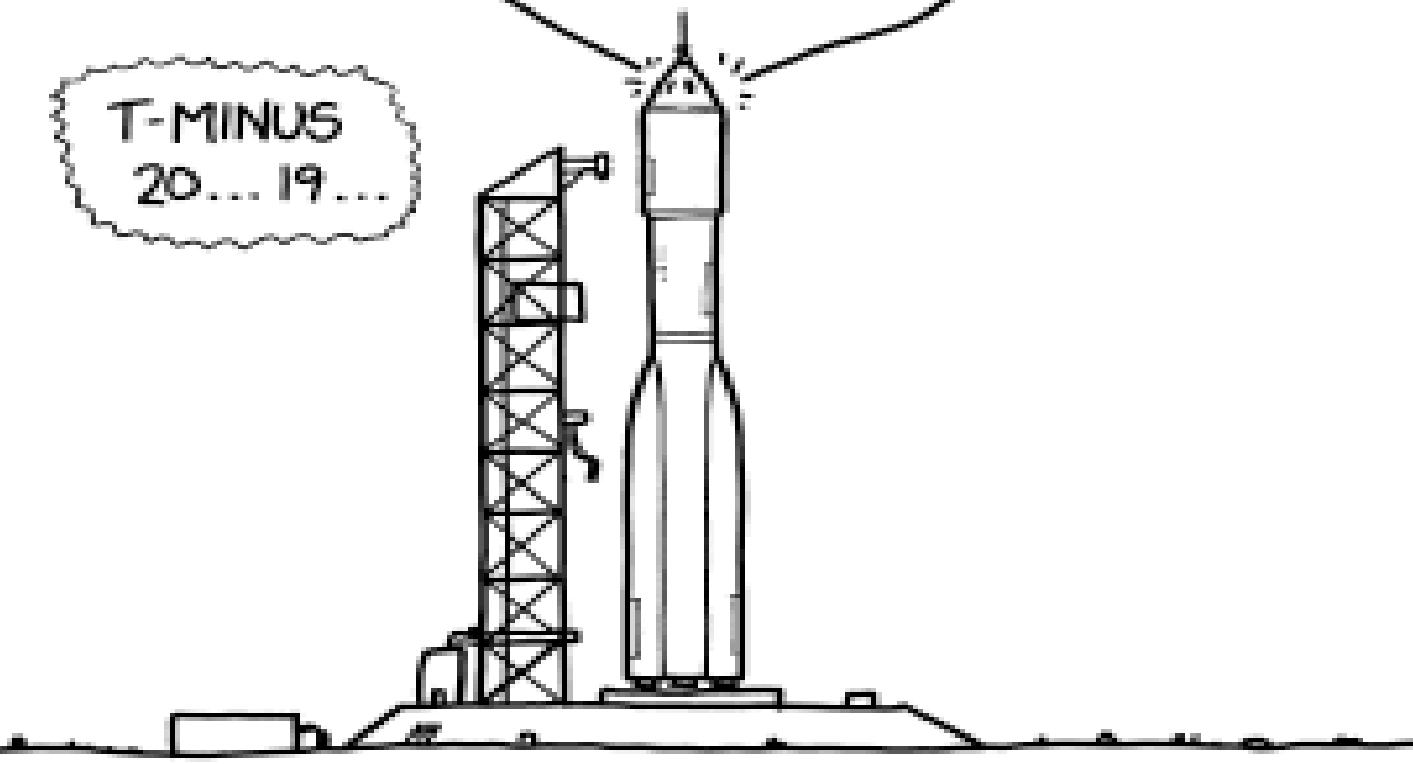
HOW YOU FEELING?

HONESTLY, PRETTY NERVOUS.

I KNOW IT SEEMS DANGEROUS,  
BUT JUST REMEMBER: YOU'RE  
MORE LIKELY TO BE STRUCK BY  
LIGHTNING THAN TO BE SELECTED  
TO BECOME AN ASTRONAUT.

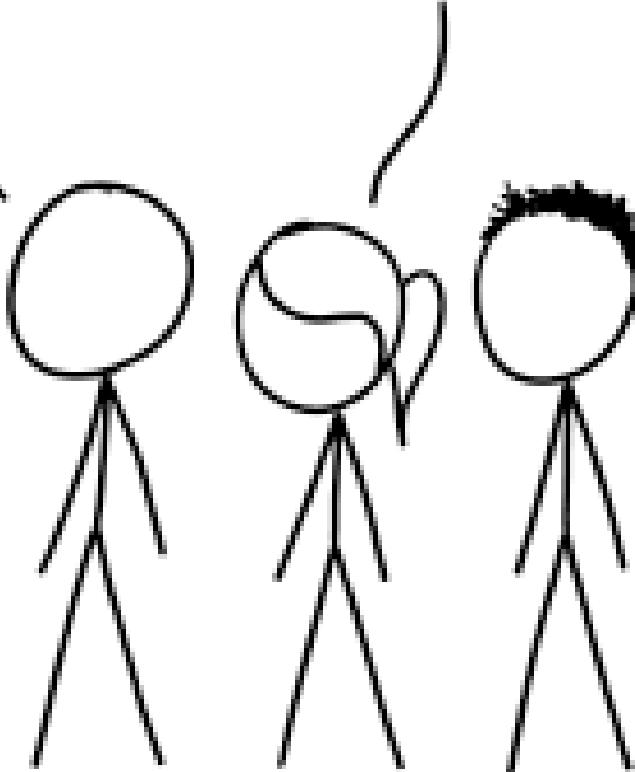
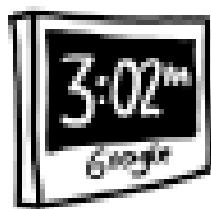
OH, THAT'S A GOOD-  
... WAIT.

T-MINUS  
20...19...



# WHY DO THE CLOCKS SAY IT'S 3AM?

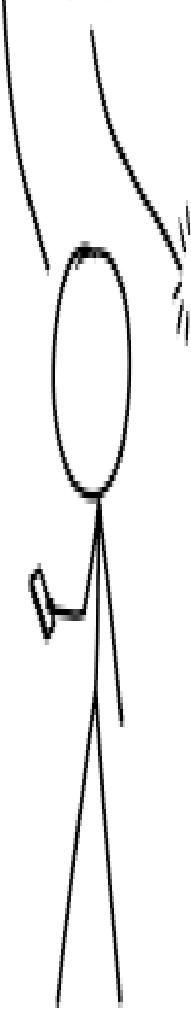
ADDING AN EXTRA DAY CREATES TOO MANY GLITCHES. INSTEAD, WE'RE JUST RUNNING OUR CLOCKS 3.4% SLOWER DURING FEBRUARY TO AVOID THE IRREGULARITY.



THIS YEAR, GOOGLE HAS EXPANDED THEIR LEAP SECOND "SMEARING" TO COVER LEAP DAYS AS WELL.

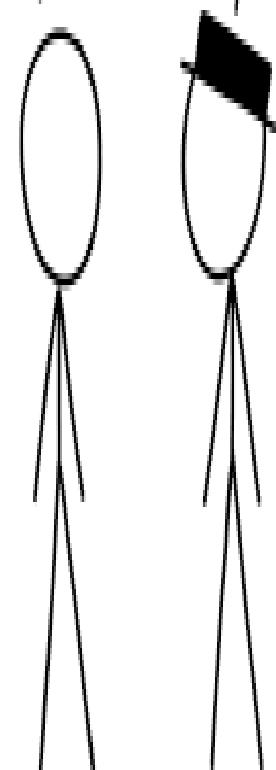
CAN'T BELIEVE  
IT'S ALREADY  
MARCH.

NAH, IT'S  
FEBRUARY  
29TH.



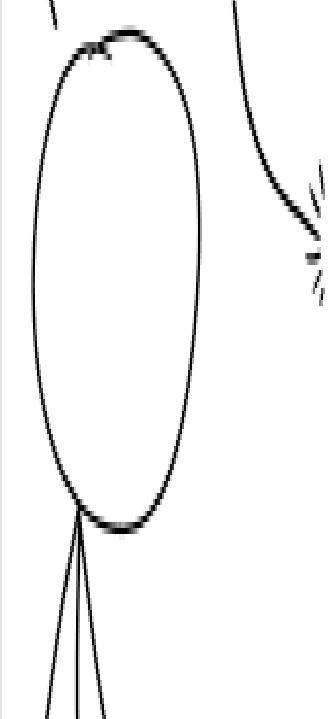
IT'S NOT A LEAP YEAR.  
I DECIDED TO MAKE  
IT ONE. EVERY YEAR  
DESERVES TO LEAP.  
CAN YOU DO THAT?

CAN ANYONE  
STOP ME?

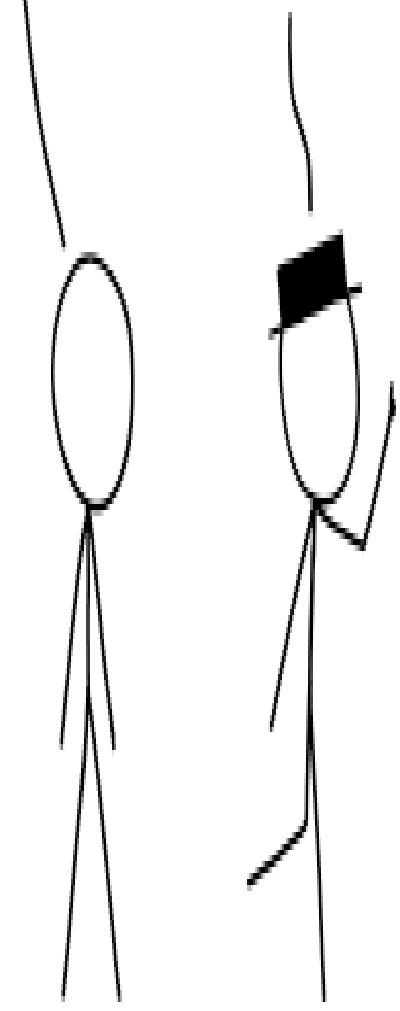


I GUESS IF YOU JUST  
ENCOURAGE PEOPLE  
TO CALL MARCH 1ST  
"FEBRUARY 29TH", THEY  
CAN GO ALONG WITH IT  
IF THEY WANT. JUST A  
ONE-DAY RENAMING.

NO, TOMORROW  
WILL BE MARCH 1ST.

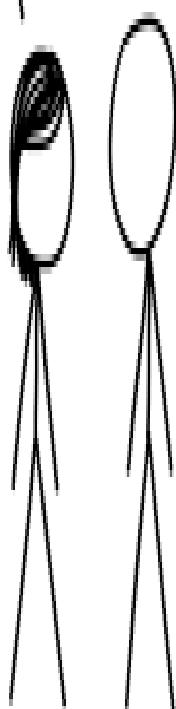


SO YOU'RE CAUSING CALENDAR  
DRIFT FOR FUTURE GENERATIONS.  
IF THEY DON'T WANT TO  
EXPERIENCE CONSEQUENCES,  
THEY SHOULDN'T HAVE DECIDED  
TO LIVE IN THE FUTURE.



WHAT DO YOU MISS  
MOST ABOUT LIFE  
BEFORE THE PANDEMIC?

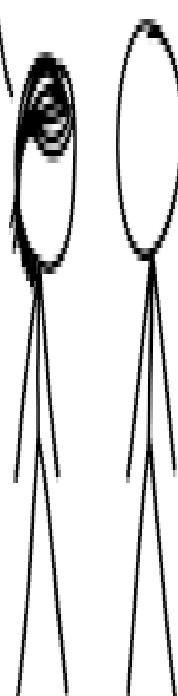
I CAN BARELY  
REMEMBER IT.



I MISS GOING SCUBA  
DIVING WITHOUT HAVING  
TO WEAR A MASK.

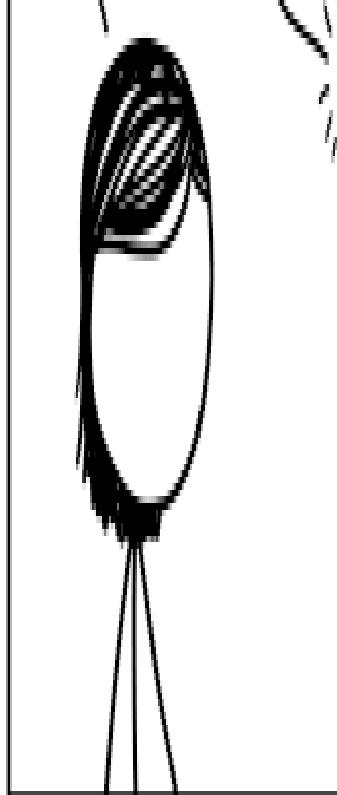
I MISS FREE REFILLS  
AT GAS STATIONS.

I MISS GRILLING  
IN THE LIBRARY.



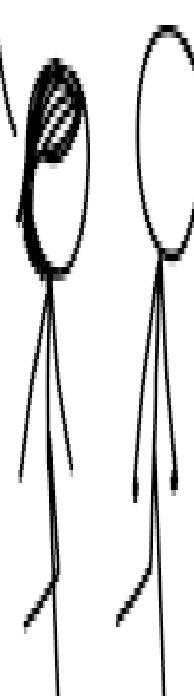
I MISS WHEN TENNIS  
PLAYERS DIDN'T HAVE  
TO HAVE THAT SAFETY  
NET BETWEEN THEM.

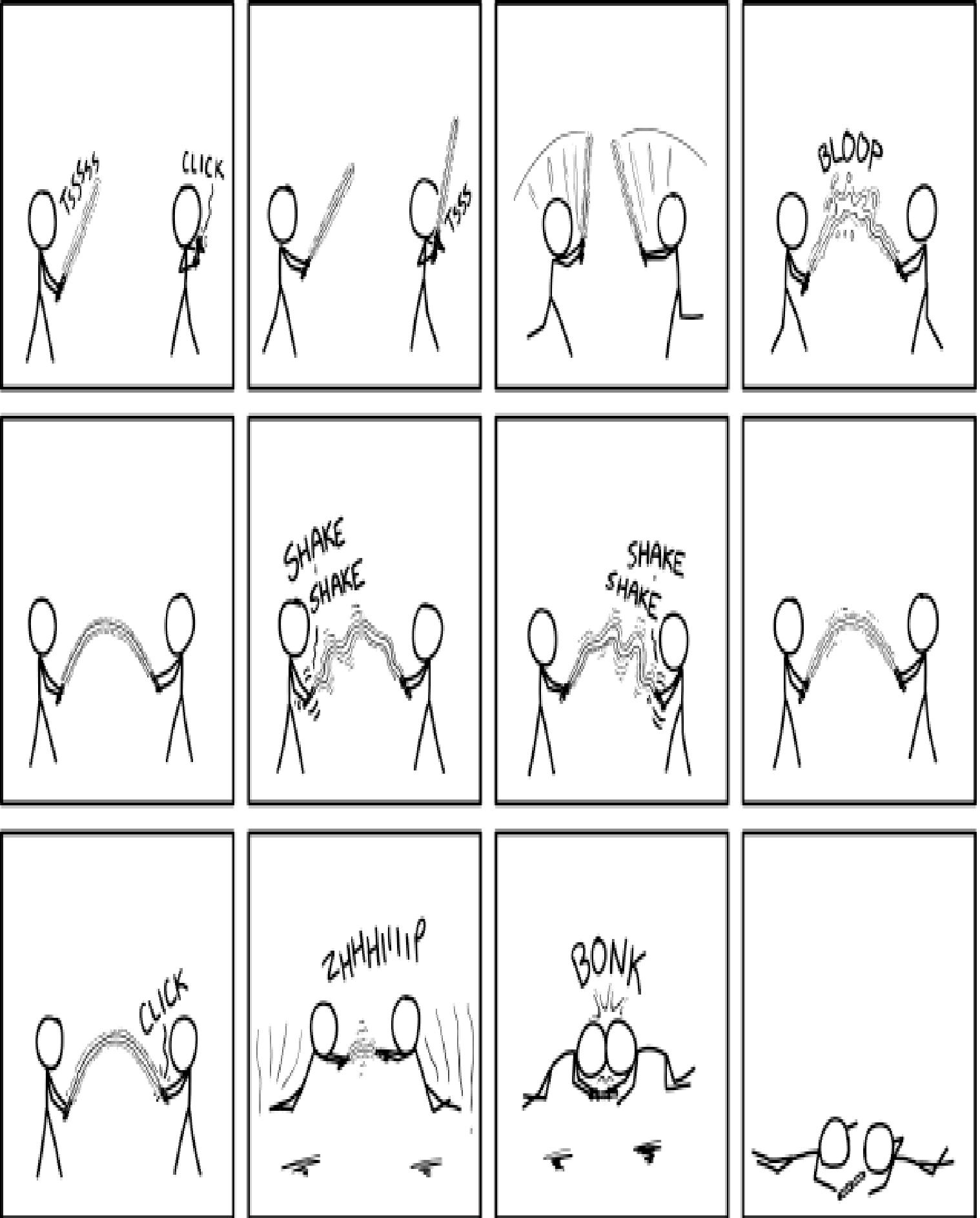
I MISS INDOOR  
FIREWORKS.



I MISS WHEN ARCADES LET  
YOU TAKE TOYS FROM THE  
BIN WITH YOUR HAND INSTEAD  
OF USING THAT STUPID CLAW.

UGH, I HATE THAT THING.  
I CAN'T WAIT  
FOR A VACCINE.





# LIGHT POLLUTION AND THE DISAPPEARING NIGHT SKY

HIGH LIGHT POLLUTION  
(CITIES)

MODERATE LIGHT POLLUTION  
(SUBURBS)

LOW LIGHT POLLUTION  
(VERY REMOTE AREAS)

NO LIGHT POLLUTION  
(HOW THE SKY SHOULD LOOK)

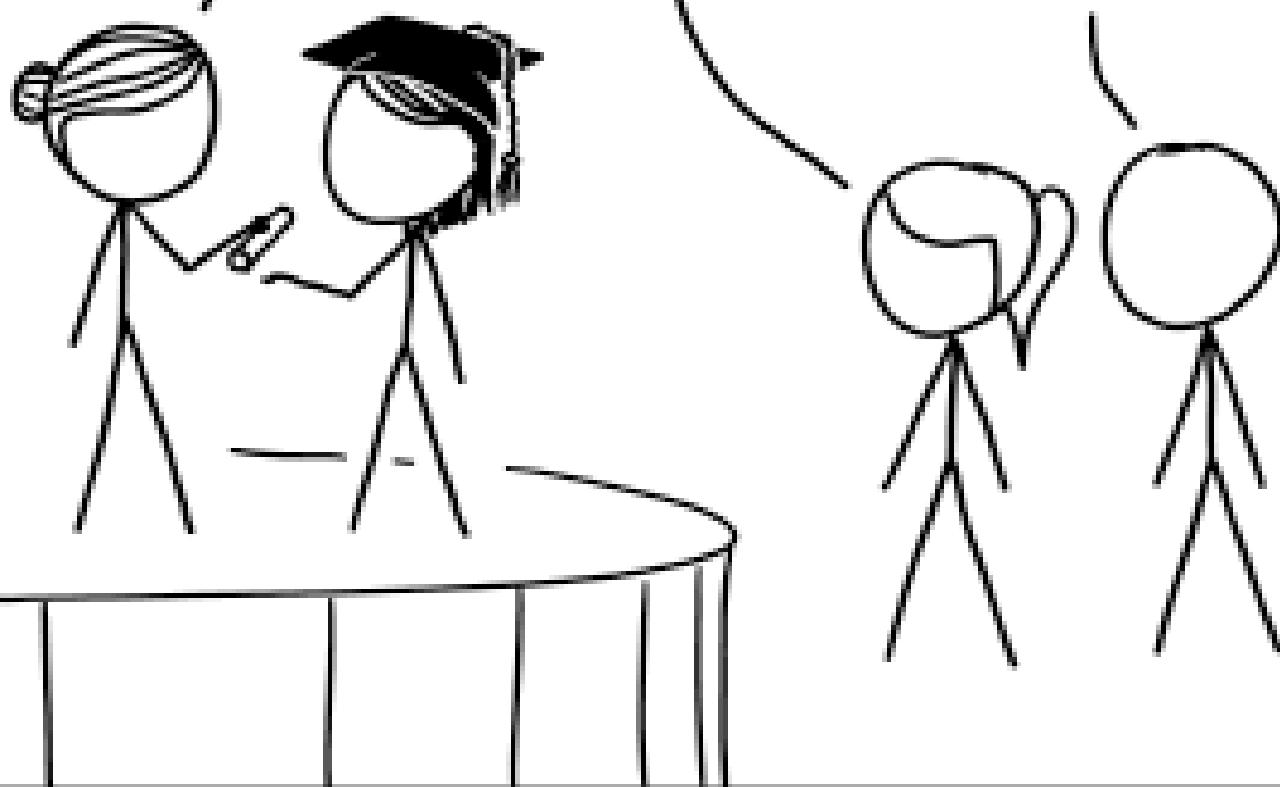
LATTICE OF  
THE CRYSTAL  
SPHERES

SHIPS OF THE SKY KING

CONGRATULATIONS ON THE DEGREE!  
YOUR WORD IS "BASSOON."

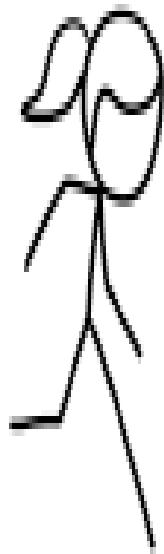
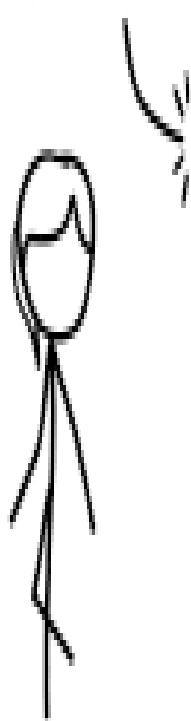
OH NICE! NOT AS COOL  
AS MY "JACKALOPE",  
BUT STILL NOT BAD.

YOU ALL ARE  
LUCKY. I'M STUCK  
WITH "SLURP."



EVERY LINGUISTICS DEGREE COMES WITH  
ONE WORD THAT YOU'RE PUT IN CHARGE OF.

HELP!  
I  
FELL  
DOWN A  
HOLE!



HEY!  
IS "FELL DOWN A HOLE" EXACTLY  
EQUIVALENT TO "FELL IN A HOLE",  
IN YOUR USAGE? OR DO THEY HAVE  
SLIGHTLY DIFFERENT IMPLICATIONS?



THERE'S A MYTH THAT LINGUISTS ARE PEDANTS WHO LOVE CORRECTING PEOPLE, BUT THEY'RE ACTUALLY JUST ENTHUSIASTIC ABOUT UNDERSTANDING LANGUAGE IN ALL ITS INFINITE VARIETIES, WHICH IS MUCH WORSE.

```
define traverseLinkedList(headPointer):
```

```
    myID = "XXXXXXXXXXXXXX"
```

```
    authToken = "XXXXXXXXXXXXXXXXXX"
```

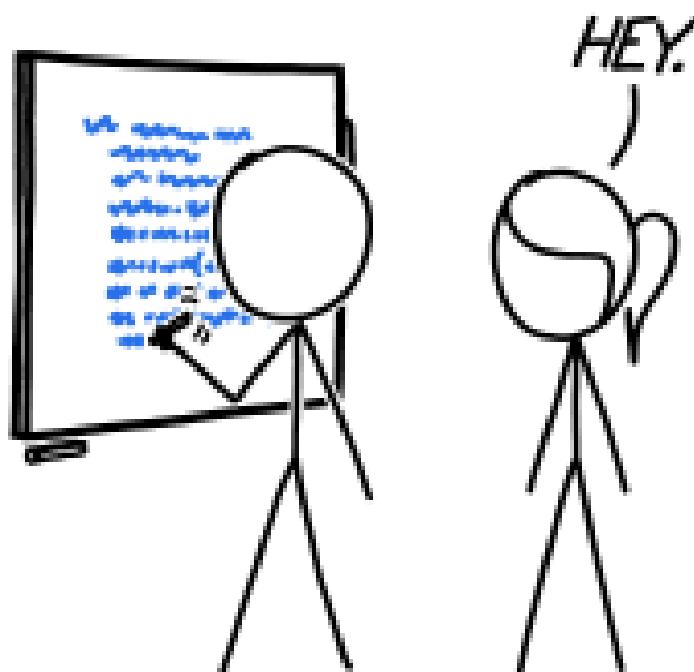
```
    museumAddress = "museum@quarium.com"
```

```
    client = MailRestClient(myID, authToken)
```

```
    client.messages.send(to=museumAddress,
```

```
    subj = "Item donation?", body="Thought you  
    might be interested: " + str(headPointer))
```

```
return
```

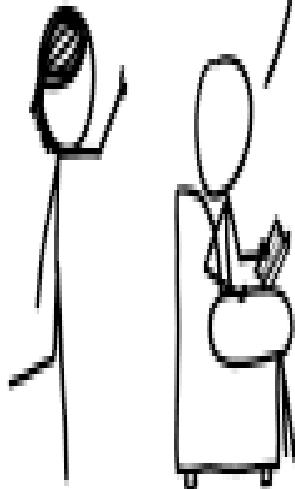


CODING INTERVIEW TIP: INTERVIEWERS GET  
REALLY MAD WHEN YOU TRY TO DONATE THEIR  
LINKED LISTS TO A TECHNOLOGY MUSEUM.

LITERARY OPINION:

I FIRMLY BELIEVE THAT WILLIAM S. BURROUGHS, HUNTER S. THOMPSON, CHUCK PALAHNIUK, AND DAVID FOSTER WALLACE ARE DIFFERENT NAMES FOR THE SAME PERSON.

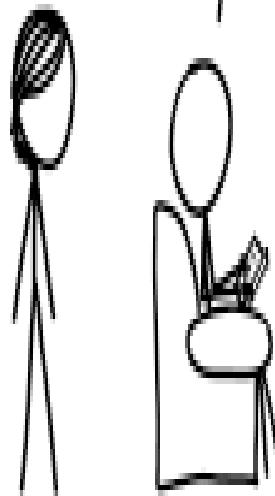
... I SEE.



FEAR AND LOATHING IN LAS VEGAS AND FIGHT CLUB? SAME BOOK WITH DIFFERENT COVERS, I BET.

I HAVE BOTH.  
WANT TO OPEN  
THEM AND CHECK?

I DO NOT.

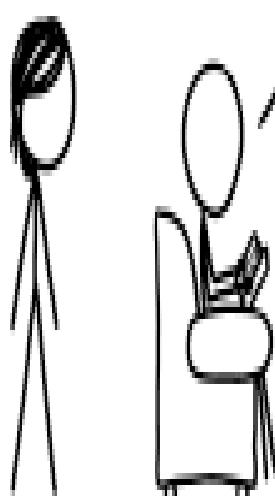


MOVING ON: MY NEXT OPINION-

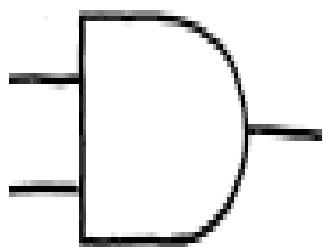
YOU SHOULD START A BOOK CLUB FOR DISCUSSING THE BOOKS YOU REFUSE TO READ.

-IS THAT E.B. WHITE  
AND T.H. WHITE ARE  
THE SAME PERSON.

OK, THAT  
I BELIEVE.



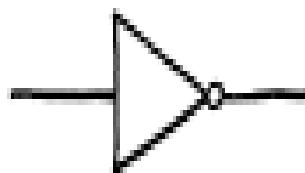
# COMMON LOGIC GATE SYMBOLS



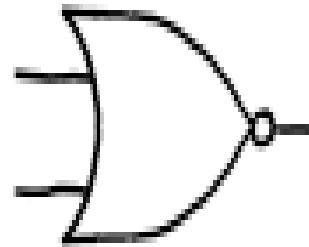
AND GATE



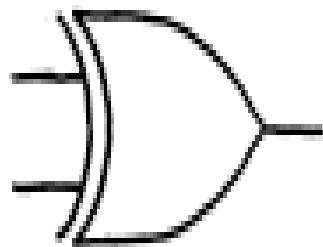
OR GATE



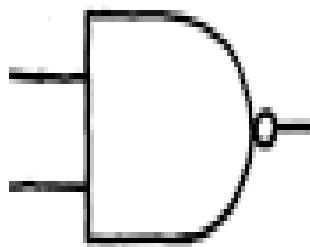
NOT GATE



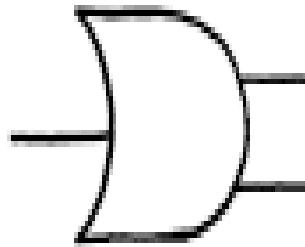
NOR GATE



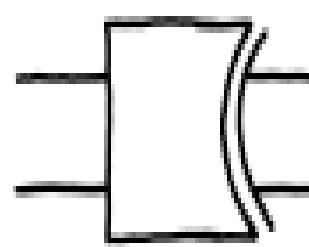
XOR GATE



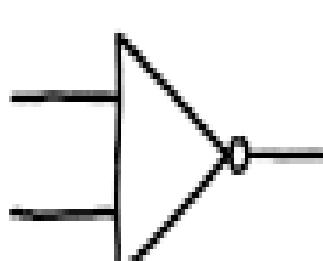
NAND GATE



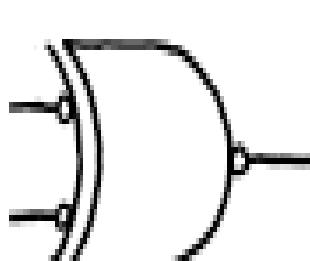
NORX GATE



GAND GATE



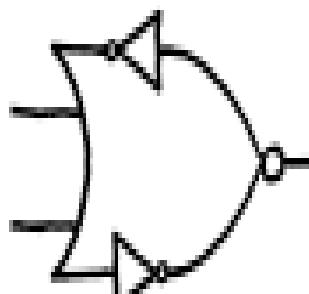
XAND GORT



NORG XORT



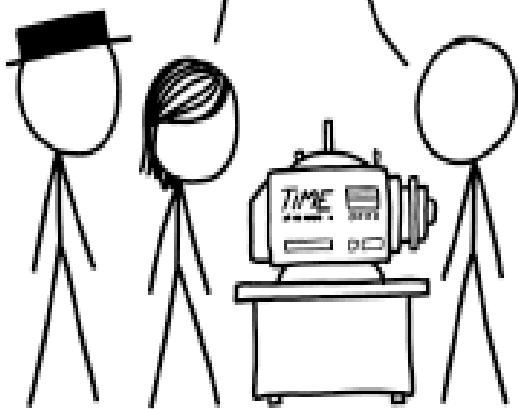
ANDORX GANT



NORXONDOR  
GORGONAX

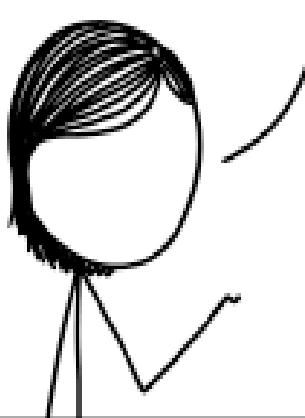
OUR TIME MACHINE WORKS.  
BUT WE'RE ALMOST OUT OF  
LOW-BACKGROUND METAL.

WHAT'S THAT?



MODERN METAL IS CONTAMINATED BY FALLOUT  
FROM NUCLEAR TESTING, AND LEAD ALSO HAS  
NATURAL RADIOACTIVITY THAT FADES OVER TIME.

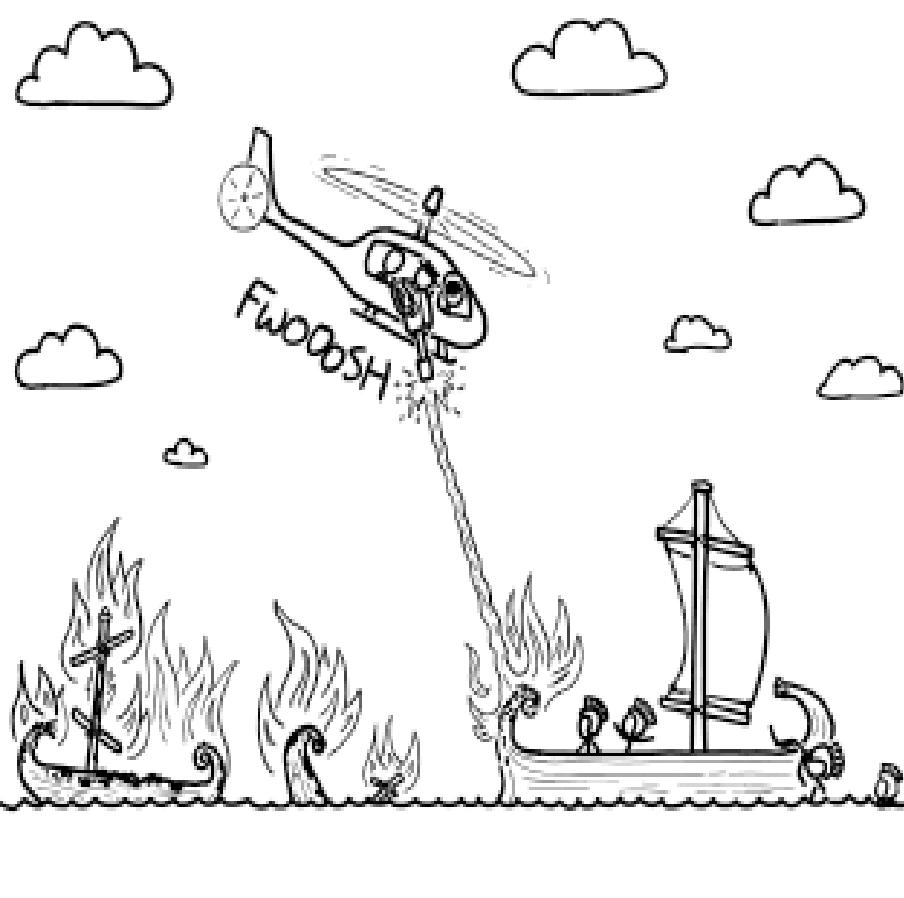
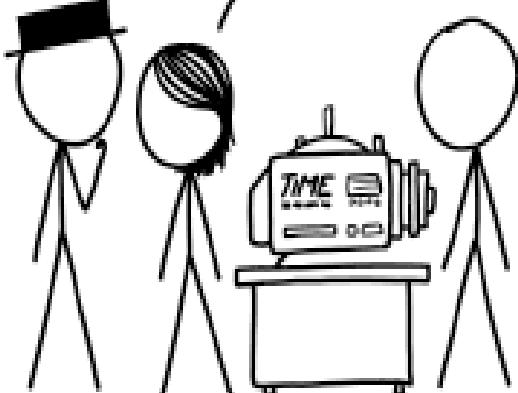
TO SHIELD SENSITIVE EQUIPMENT, PHYSICISTS  
USE LEAD FROM SUNKEN ROMAN SHIPS.  
BUT SHIPWRECK LEAD IS HARD TO FIND.



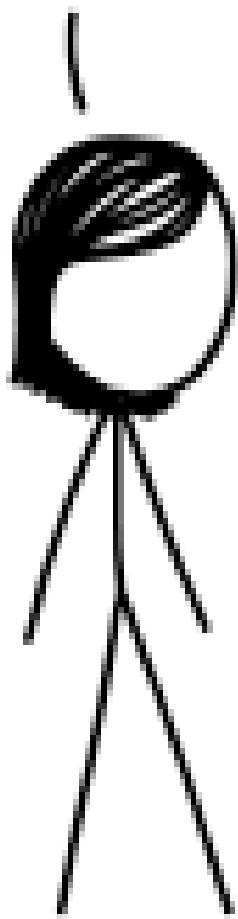
HOW MUCH DO WE HAVE?

ENOUGH FOR ONE  
TRIP THROUGH TIME.

HMM...

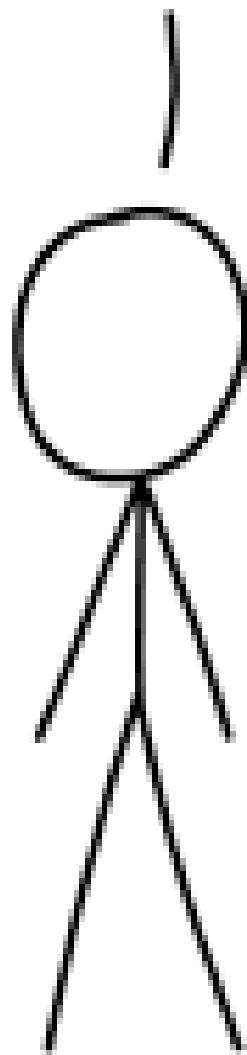


REALLY, WE'RE  
BOTH JUST  
CATEGORIZATION  
PEDANTS.



LUMPER

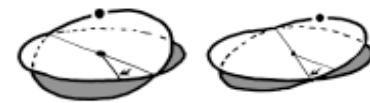
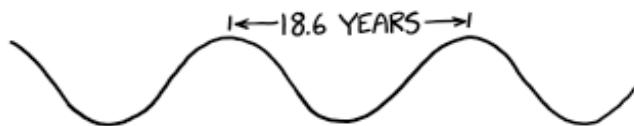
AHH, SO  
YOU'RE A  
META-LUMPER.



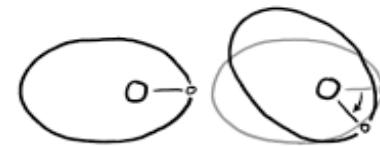
SPLITTER

# UNDERSTANDING LUNAR CYCLES

NODAL  
PRECESSION



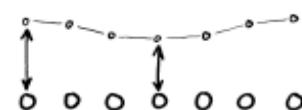
APSIDAL  
PRECESSION



PHASE



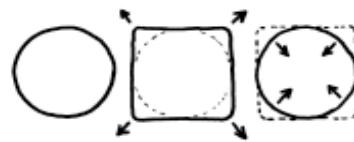
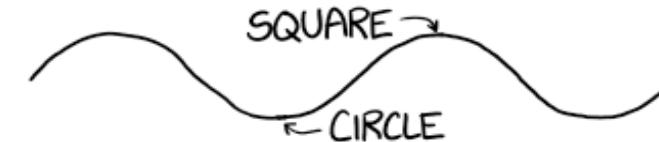
DISTANCE



EARTH-MOON  
RELATIVE SIZE



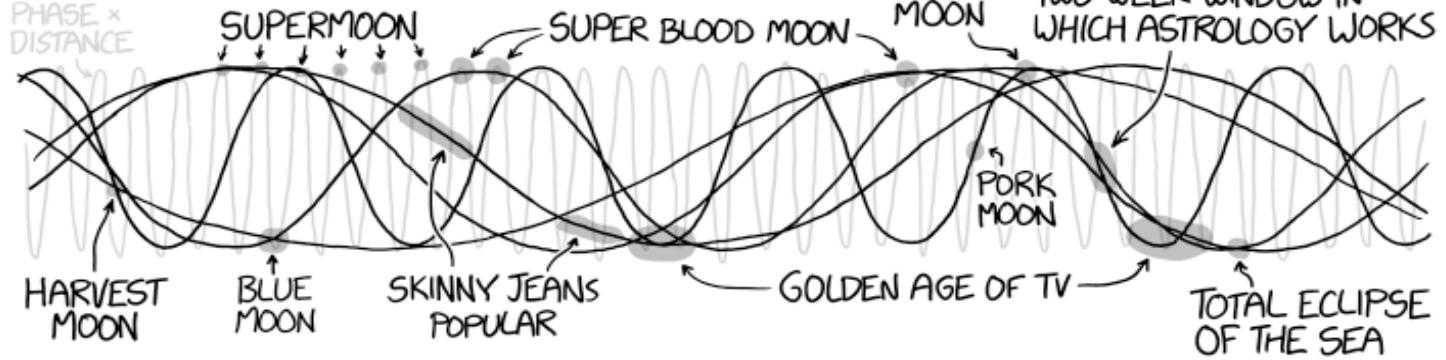
LUNAR SHAPE



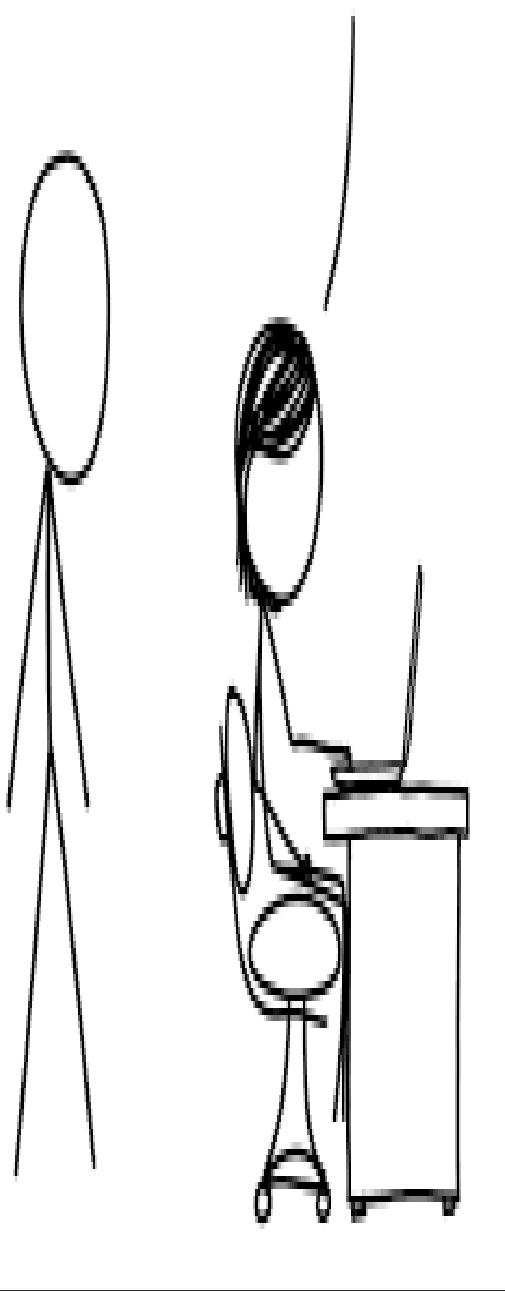
LUNAR MOOD



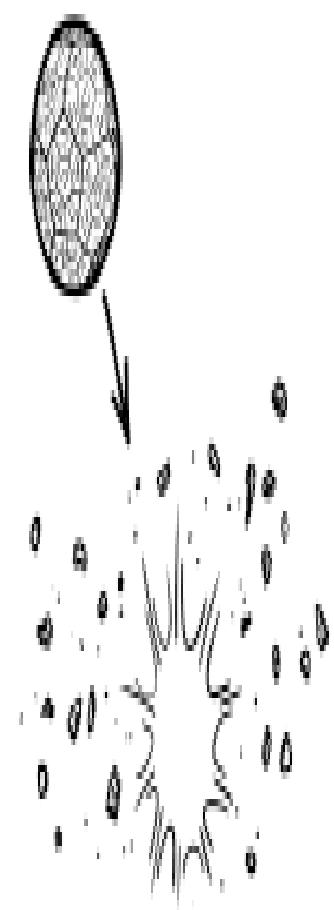
PHASE ×  
DISTANCE



HUH. LUNA 2, THE FIRST ARTIFICIAL OBJECT TO TOUCH ANOTHER WORLD, CARRIED A SPHERE MADE OF STEEL SOVIET FLAG EMBLEMS.



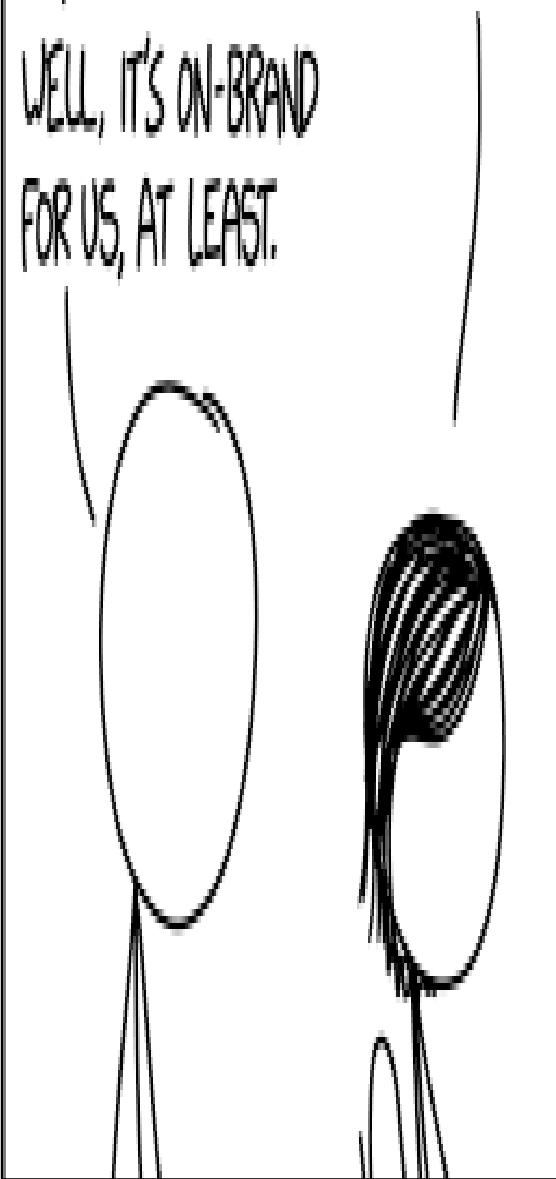
IT WAS DESIGNED TO BLOW APART ON IMPACT, SCATTERING TINY METAL FLAGS AND RIBBONS ACROSS THE SURFACE OF THE MOON.



SO THE FIRST PHYSICAL CONTACT HUMANS HAD WITH A HEAVENLY BODY...

... WAS THROWING A SHRAPNEL GRENADE FULL OF FLAGS AT IT.

WELL, IT'S ON-BRAND FOR US, AT LEAST.

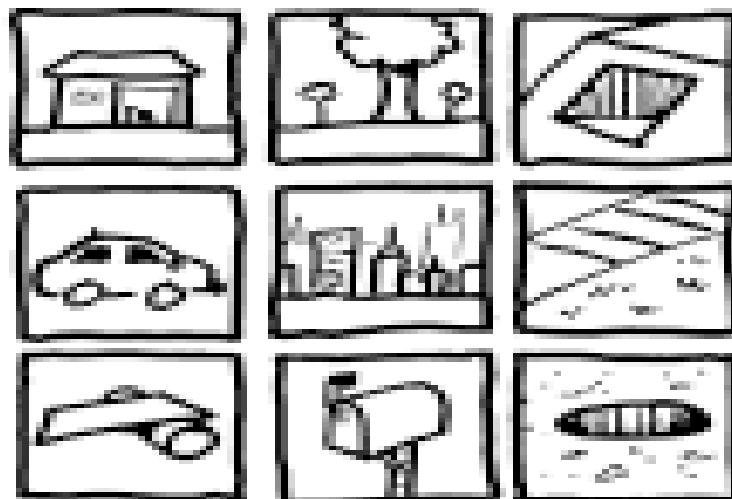


SIZE COMPARISON:  
THE M87 BLACK HOLE  
AND  
OUR SOLAR SYSTEM

EHT BLACK HOLE IMAGE  
SOURCE: NSF



TO PROVE YOU'RE A HUMAN,  
CLICK ON ALL THE PHOTOS  
THAT SHOW PLACES YOU  
WOULD RUN FOR SHELTER  
DURING A ROBOT UPRISING.



I JUST READ THAT THE EARTH'S NORTH MAGNETIC POLE IS DRIFTING RAPIDLY.

OH NO! I MUST UPDATE OUR DECLINATION TABLES POST HASTE, LEST OUR MERCHANT SCHOONERS RUN AGROUND ON THE SHOALS!

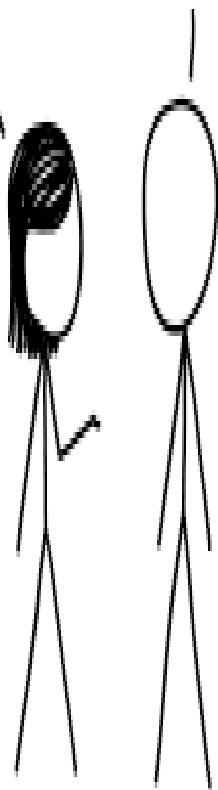


I LIKE WHEN THE EARTH'S MAGNETIC FIELD DOES WEIRD STUFF, BECAUSE IT'S A HUGE, COOL, URGENT-SEEMING SCIENCE THING, BUT THERE'S NOTHING I PERSONALLY NEED TO DO ABOUT IT.

...AND HER DAD LOOKS  
EXACTLY LIKE THE PIXAR  
GUY. STEVE WHAT'S-  
HIS-NAME JOBS?

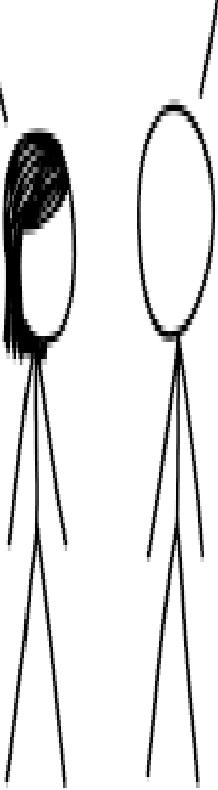
"PIXAR GUY"?

YOU ALWAYS KNOW  
FAMOUS PEOPLE FOR  
SUCH WEIRD REASONS.

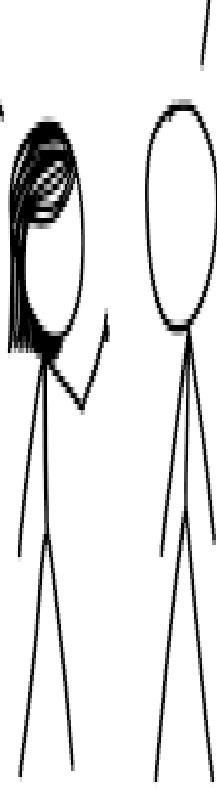


WHAT DO YOU MEAN?  
WHO IS JOHN LENNON?  
WASN'T HE IN A BAND?  
WITH RINGO FROM  
SHINING TIME STATION.

HOW IS THAT YOUR  
MAIN ASSOCIATION?

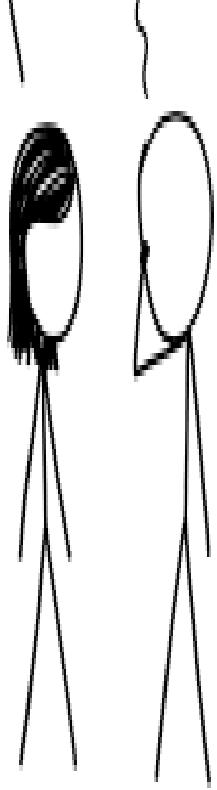


I ALSO KNOW HE ONCE  
DID A SONG WITH THE  
GUY FROM LABYRINTH!  
YOU MEAN DAVID  
BOWIE? I THINK HE'S  
FAMOUS FOR SOME  
OTHER STUFF, TOO.



OH YEAH, HE WAS  
ALSO IN ZOOLANDER!  
I FORGOT THAT MOVIE,  
IT CAME OUT BACK  
WHEN JENNA BUSH'S  
DAD WAS PRESIDENT.

\*SIGH\*



MANAGE YOUR PREFERENCES

AGREE TO WHATEVER

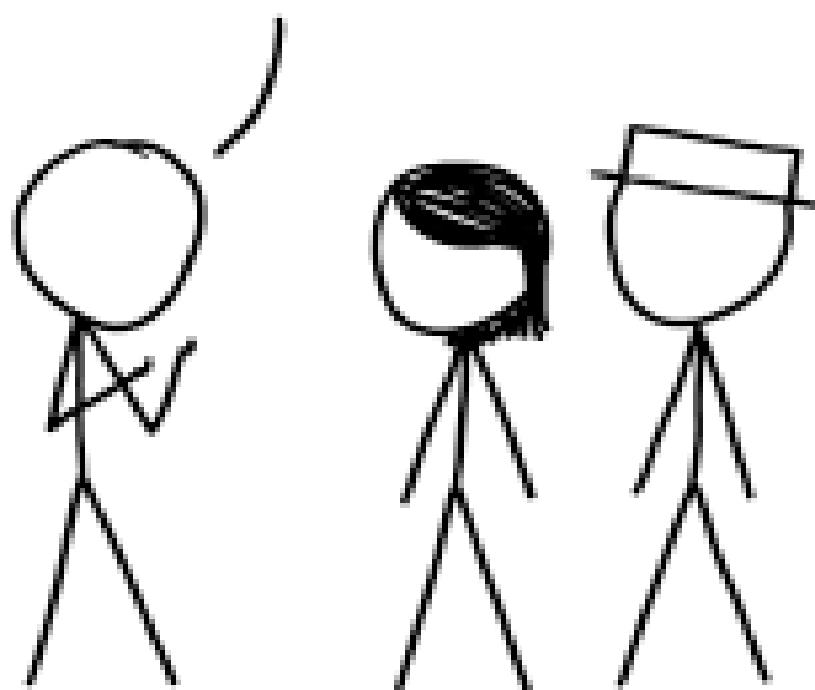
TRANSPORT ME TO AN IMMERSIVE  
MYST-LIKE GAME WHERE I CLICK  
CONFUSINGLY-LABELED TOGGLE  
SWITCHES, ONLY SOME OF WHICH  
WORK, PERHAPS NEVER TO FIND MY  
WAY BACK TO THE PAGE I WANTED.



YOU LOOK AROUND ONE DAY AND  
REALIZE THE THINGS YOU ASSUMED  
WERE IMMUTABLE CONSTANTS OF  
THE UNIVERSE HAVE CHANGED.

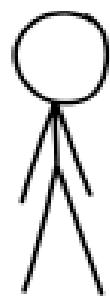
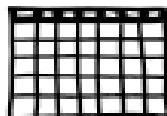
THE FOUNDATIONS OF OUR REALITY  
ARE SHIFTING BENEATH OUR FEET.

WE LIVE IN A HOUSE BUILT ON SAND.

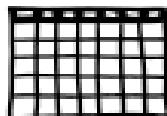


THE DAY I DISCOVERED THAT  
APPLE MAPS IS KIND OF GOOD NOW

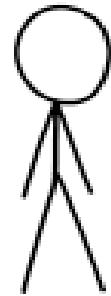
JANUARY  
2020



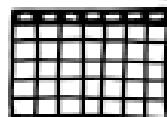
FEBRUARY  
2020



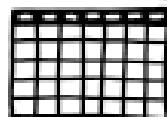
MARCH  
2020



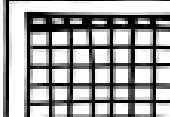
MARCH  
2020



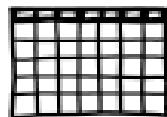
MARCH  
2020



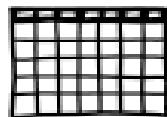
MARCH  
2020



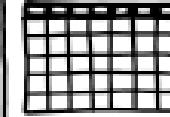
MARCH  
2020



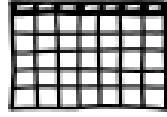
MARCH  
2020



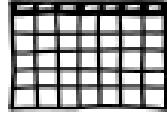
MARCH  
2020



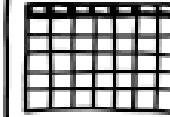
MARCH  
2020



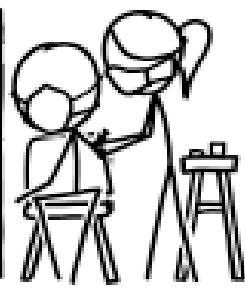
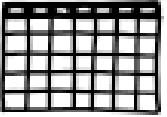
MARCH  
2020



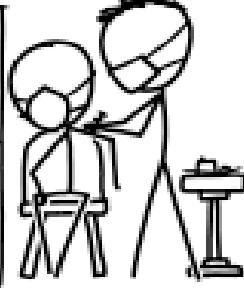
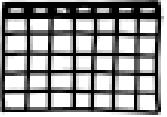
MARCH  
2020



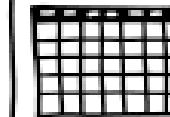
MARCH  
2020



MARCH  
2020



MAY  
2021



EARTH AND MARS MAY LOOK DIFFERENT NOW, BUT WITH SOME ORBITING MIRRORS AND ATMOSPHERIC ADJUSTMENTS, WE COULD CHANGE THAT.



I'M HAVING TROUBLE SELLING PEOPLE ON MY PROPOSAL TO TERRAFORM EARTH TO RESEMBLE MARS.

WE'RE EXCITED TO SHARE THE FIRST EVER  
FULL-SPEED VIDEO OF A MARS LANDING.

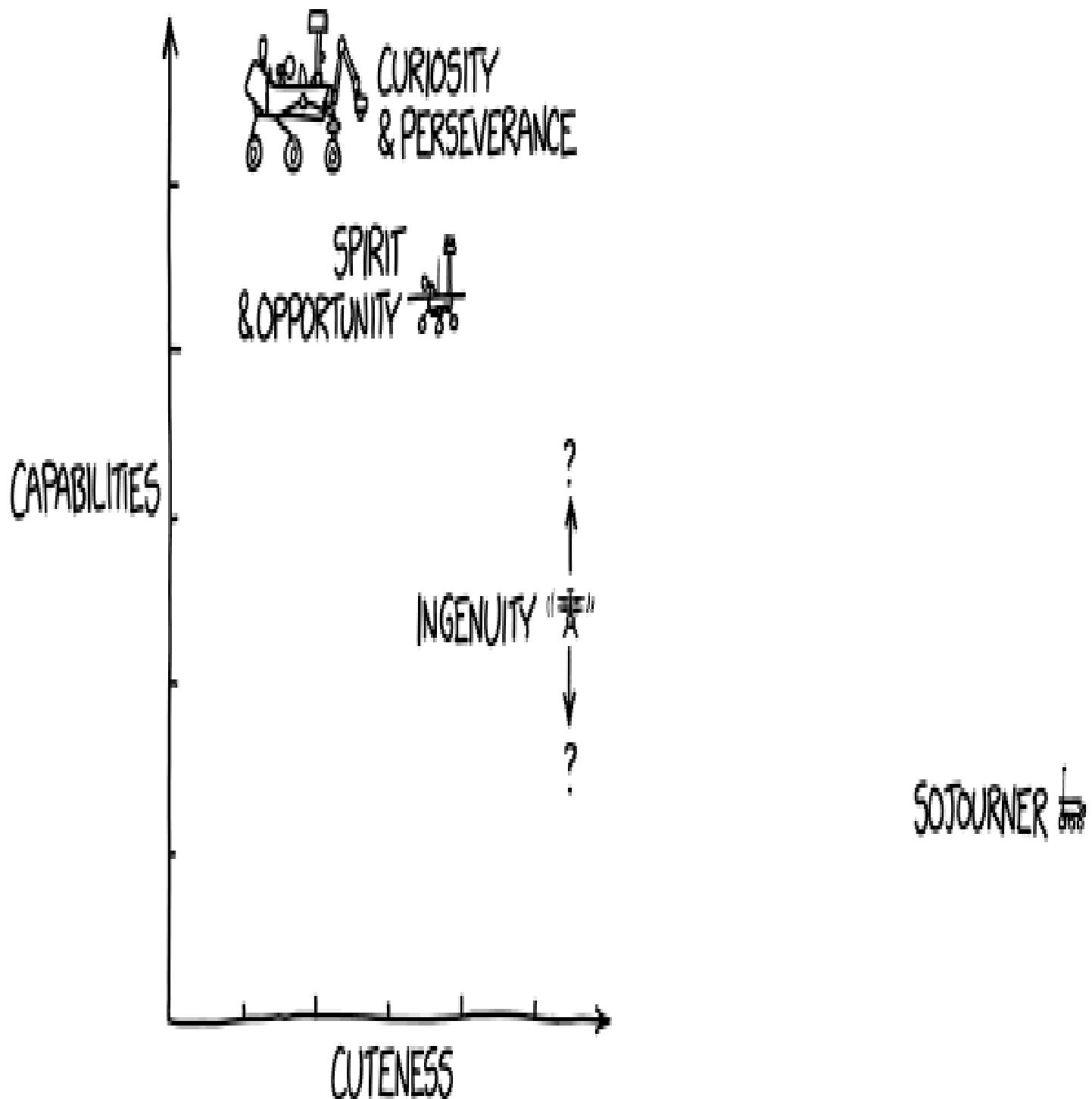


DOESN'T THAT MEAN IT'S ALSO  
THE WORST EVER FULL-SPEED  
VIDEO OF A MARS LANDING?

DO YOU EXPECT THAT RECORD  
TO STAND FOREVER, OR IS NASA  
WORKING ON A WORSE ONE?

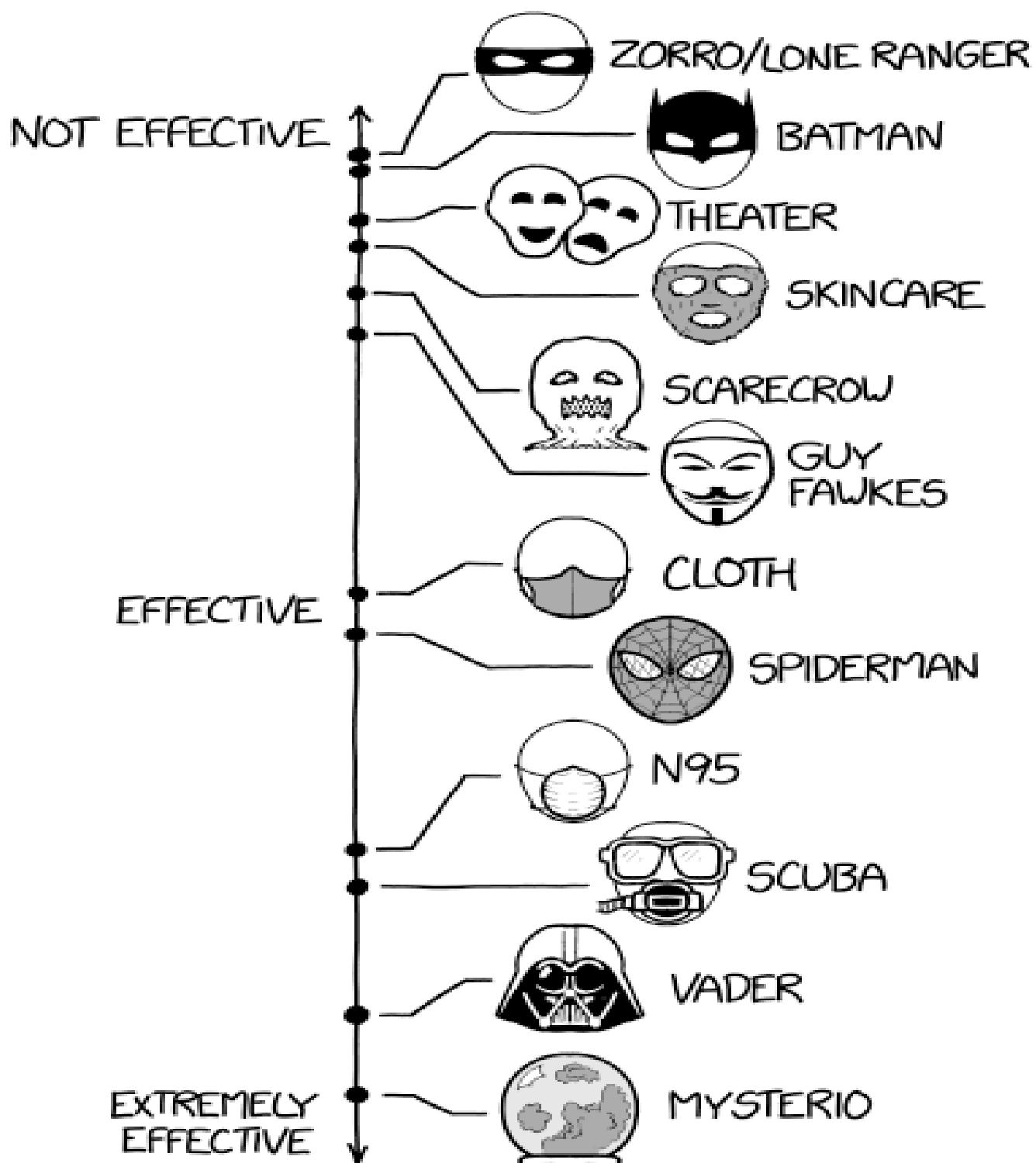
NASA TRIED TO BAN ME FROM THEIR PRESS  
BRIEFINGS, BUT IRONICALLY THEIR SECURITY WAS  
TOTALLY UNPREPARED TO DEAL WITH A SKYCRANE.

# MARS ROVERS



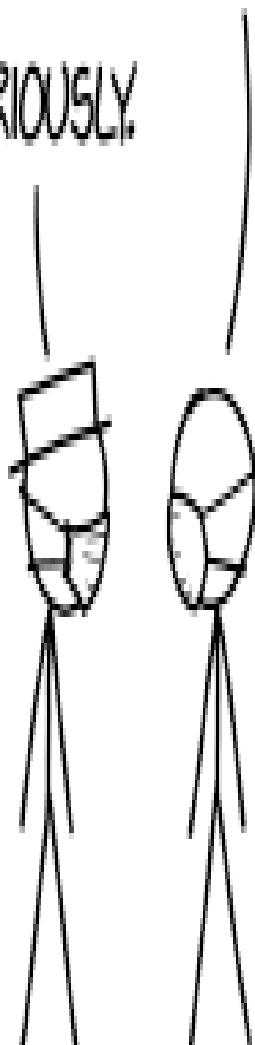
# MASKS

BY EFFECTIVENESS AT PREVENTING  
RESPIRATORY VIRUS TRANSMISSION



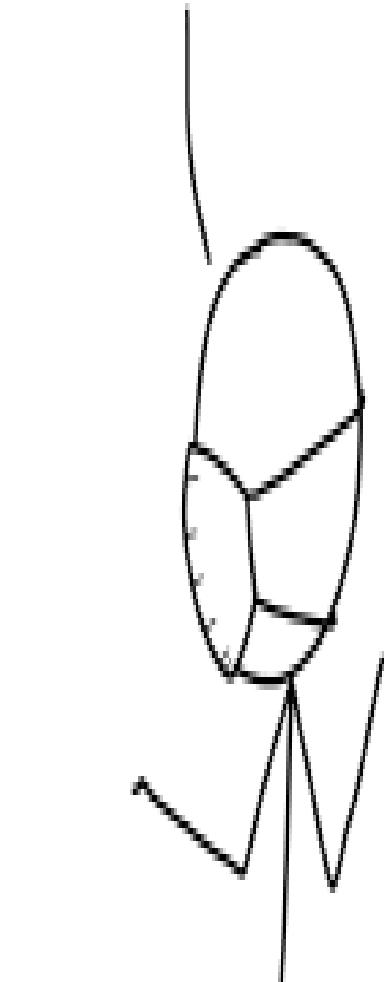
I AM SO EXCITED NOT TO  
HAVE SO MANY OPINIONS  
ABOUT DIFFERENT KINDS OF  
MASKS AT THE FOREFRONT  
OF MY BRAIN AT ALL TIMES.

SERIOUSLY.



"DO YOU KNOW ANY  
TRICKS FOR GETTING A  
GOOD SEAL AROUND THE  
BRIDGE OF YOUR NOSE?"

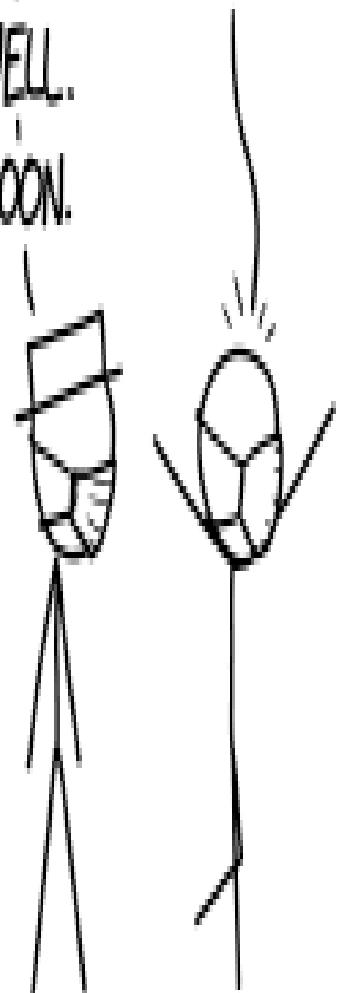
I DO, AND I WANT TO  
STOP KNOWING THEM.



YOU COULD ALWAYS  
TRY TALKING ABOUT  
SOMETHING ELSE.

HONESTLY NOT  
SURE I CAN!

WELL.  
SOON.



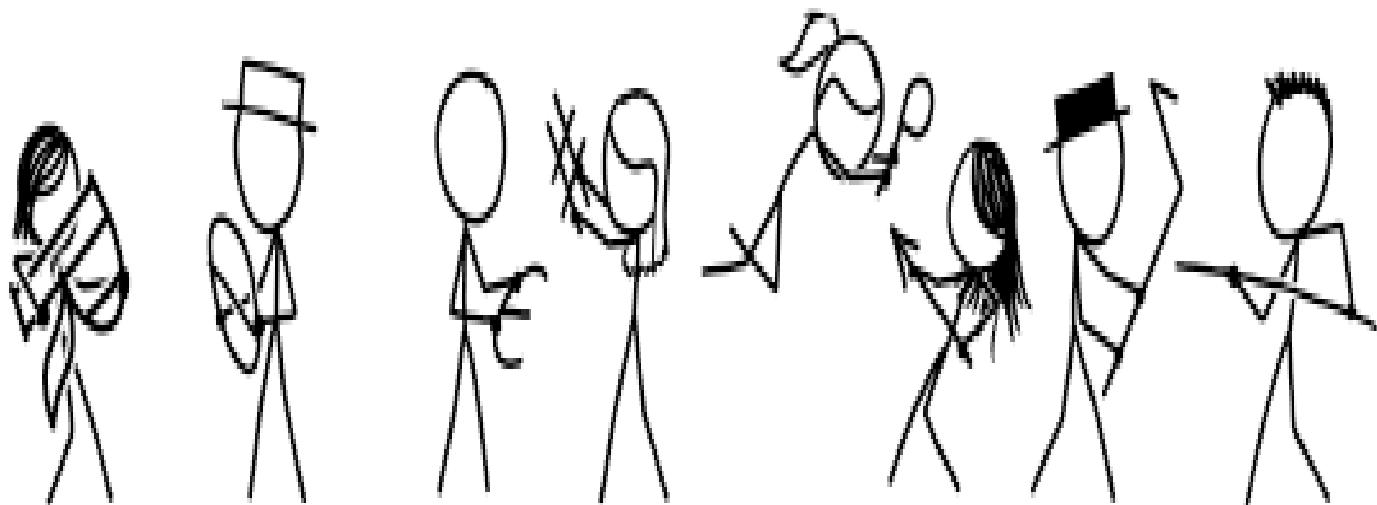
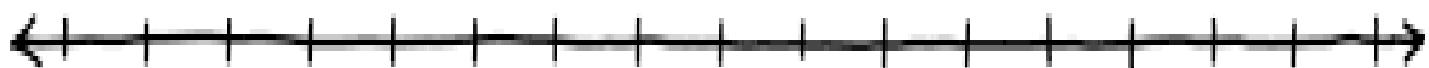
# MATHEMATICAL SYMBOLS

BY HOW USEFUL THEY WOULD BE IN A FIGHT

MORE USEFUL

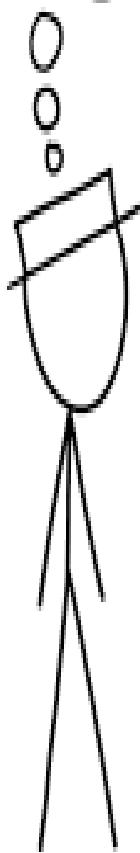


$R \theta \in \emptyset > \alpha \pi + \psi \Rightarrow \Gamma \sqrt{\int -}$   
 $\theta \in \emptyset \cup \forall \partial \neq \# \Delta \circ x^p \int \downarrow -$



AMAZING WATCHING A PHYSICIST  
AT WORK, EXPLORING UNIVERSES  
IN A SYMPHONY OF NUMBERS.

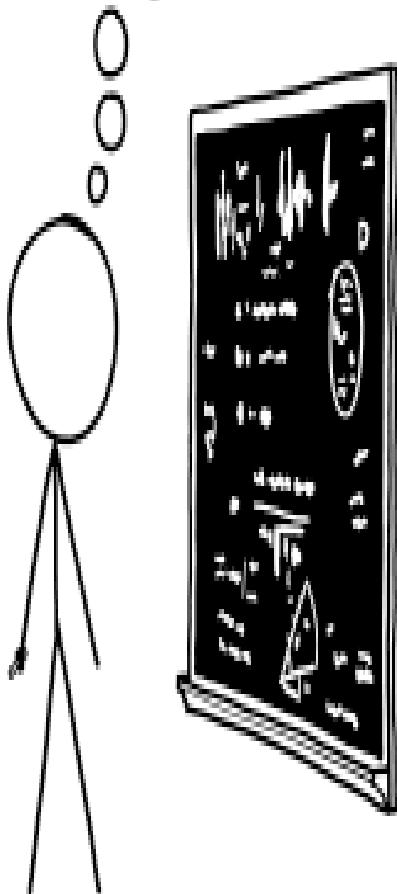
IF ONLY I HAD STUDIED MATH,  
I COULD APPRECIATE THE  
BEAUTY ON DISPLAY HERE.



OH NO. THIS HAS TWO UNKNOWNs.  
THAT'S GONNA BE REALLY HARD.

UGHHHHHHH.

THINK. THERE'S GOTTA BE A WAY  
TO AVOID DOING ALL THAT WORK...

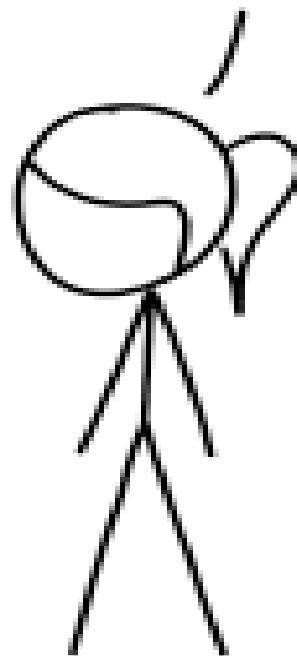
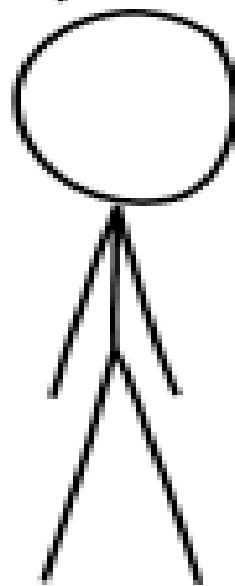


...IT'S FIRMER THAN MY OLD MATTRESS,  
WHICH I THOUGHT I WOULDN'T LIKE,  
BUT IT'S ACTUALLY REALLY NICE.

COOL, MAYBE I  
SHOULD GET ONE.

NOW LET'S TAKE SOME  
LISTENER QUESTIONS!

WHAT?



I CAN'T TALK ABOUT MATTRESSES,  
UNDERWEAR, OR THE POST OFFICE  
ANYMORE WITHOUT FEELING THE URGE  
TO SEGUE BACK INTO A PODCAST.

CONGRATULATIONS.  
USE THIS POWER WISELY.



KEY CODE (SECRET!!):

**ALT** + **TILODE** + **SCROLL  
LOCK** + **NUMBER**

1 2 3 H B 6 7 8 9 =

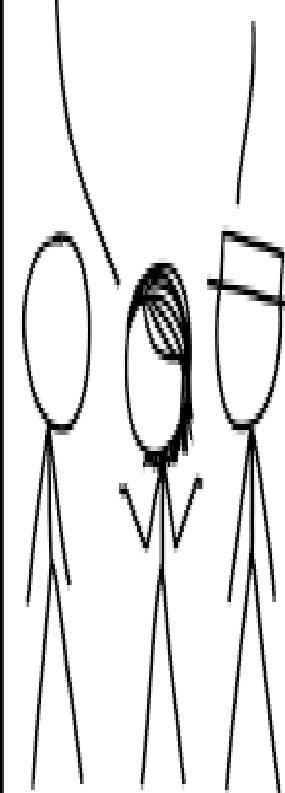


AFTER 30 YEARS, I FINALLY BEAT THE END BOSS OF MAVIS BEACON AND UNLOCKED THE ABILITY TO TYPE CAPITAL NUMBERS.

ODD HOW IN PHYSICS  
"mb" IS BOTH MILLIBARS  
(PRESSURE) AND  
MILLIBARNS (AREA).

I  
mb Mb COULD MEAN  
MILLIBAR-MILLIBARN,  
WHICH IS A UNIT OF  
FORCE, STRANGELY.

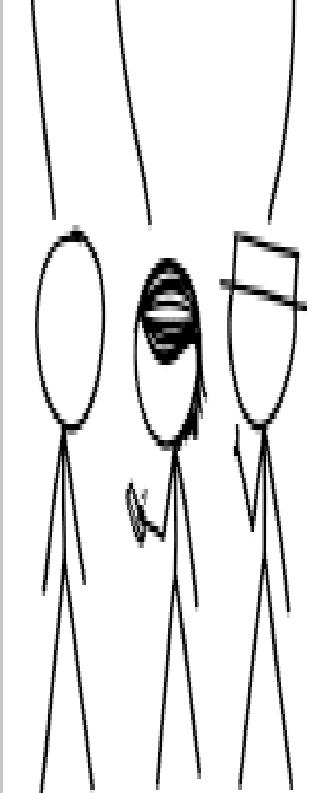
UNITS ARE WEIRD.



SO WHAT'S Mbmbam,  
THE MY-BROTHER-MY-  
BROTHER-AND-ME UNIT?

MILLIBAR-MILLIBARN-  
ATTOMETER, I GUESS?  
THAT'D BE A UNIT OF  
ENERGY.  $10^{-47}$  JOULES.

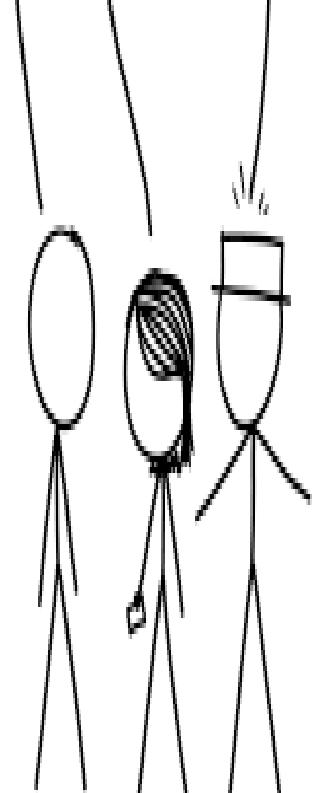
"ONE PODCAST"



$10^{-47}$  SOUNDS SMALL.

YEAH, IT'S ROUGHLY THE  
ENERGY YOU'D NEED TO  
LIFT ONE YEAST CELL  
BY ONE PLANCK LENGTH  
IN EARTH'S GRAVITY.

PLANCK YEAST!

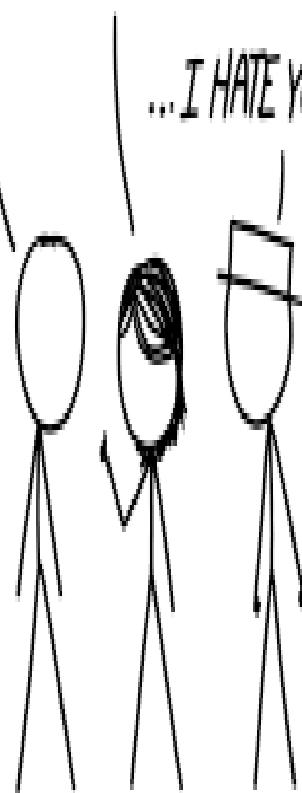


DOESN'T PLANCK YEAST  
RISE ON ITS OWN?

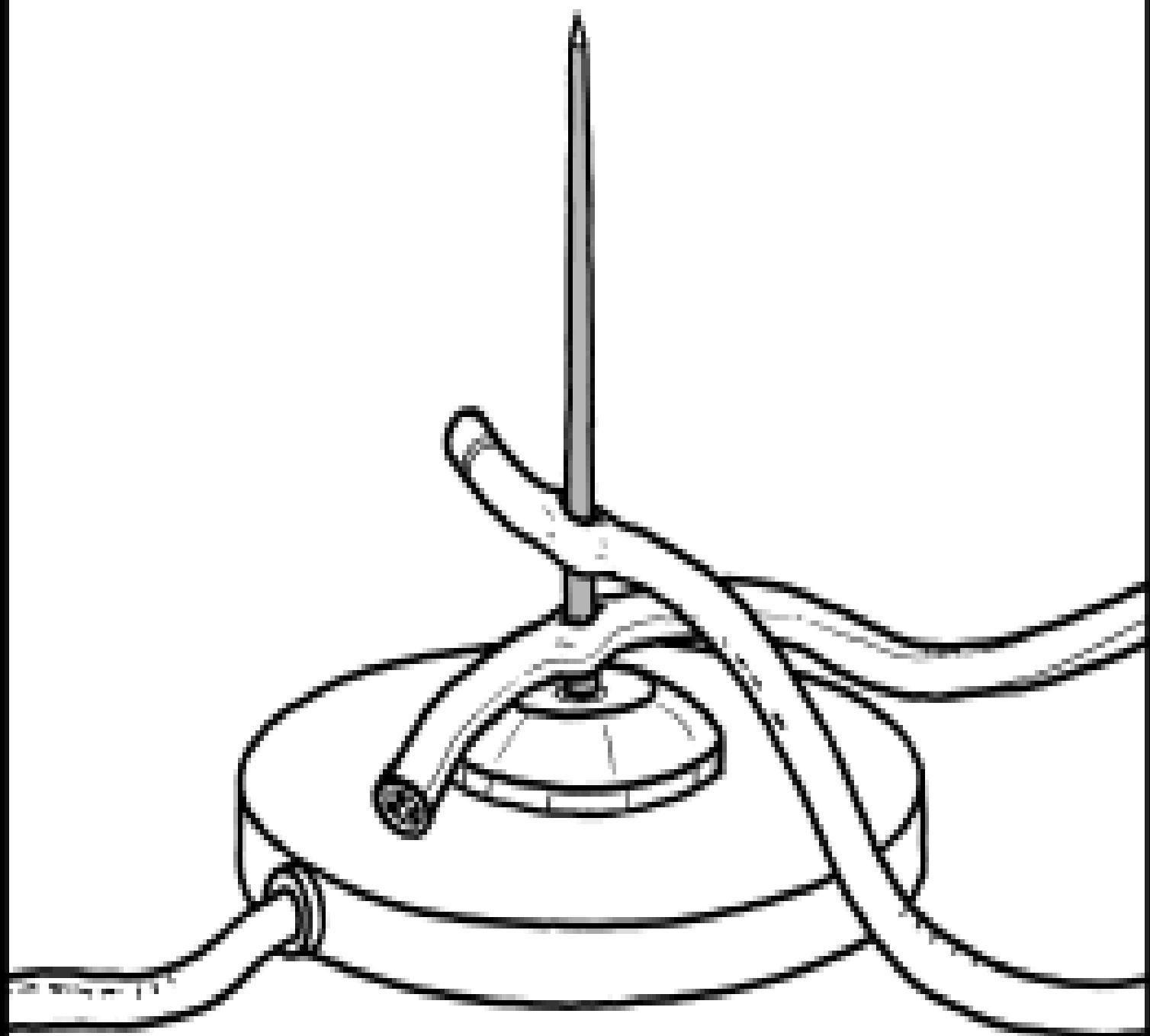
YEAH, THAT'S WHAT  
MAKES QUANTUM FOAM.  
BUT DATA SUGGESTS  
OUR UNIVERSE IS FLAT.

STRING THEORY SAYS IT'S  
BECAUSE SPACETIME HAS  
UNLEAVENED DIMENSIONS.

...I HATE YOU



# CURSED CONNECTORS #102



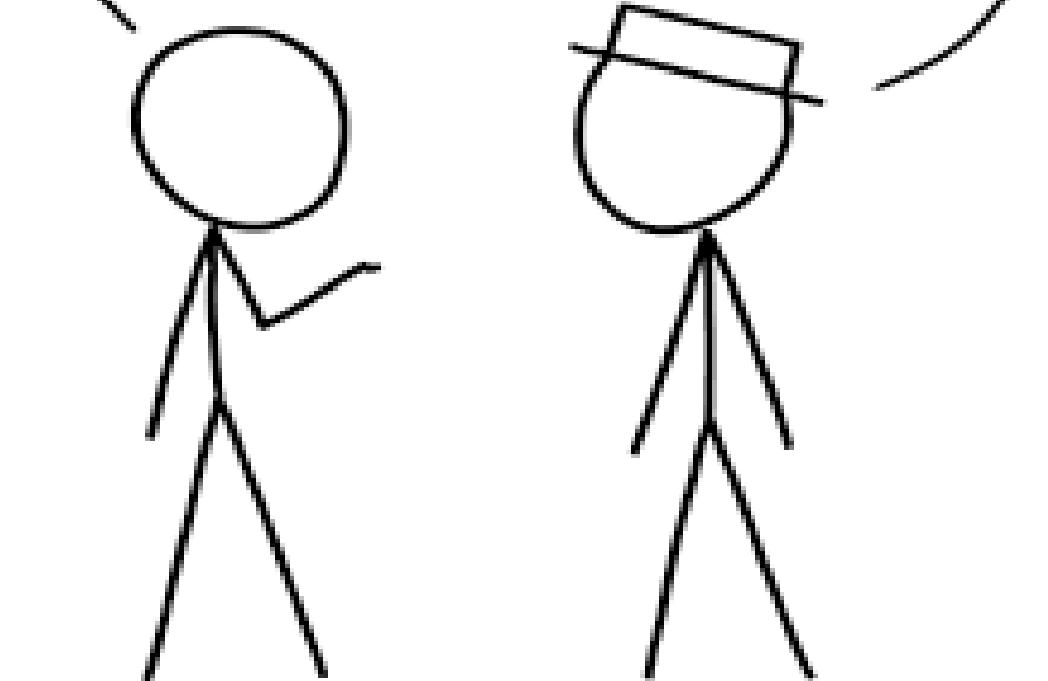
THE MEMO SPIKE

DID YOU KNOW CANADA IS ACTUALLY  
A SMALLISH ISLAND IN LAKE ONTARIO?

WHAT?

YEAH, IT ONLY APPEARS TO HAVE  
A LAND BORDER WITH THE U.S. DUE  
TO THE MERCATOR PROJECTION.

WOW! I HAD NO IDEA.



AT THIS POINT PEOPLE FEEL SO MISLED BY THE  
MERCATOR PROJECTION THAT YOU CAN USE IT TO  
CONVINCE THEM OF BASICALLY ANY MAP FACT.

# MOPED PRO FORUM

SEARCH

LOG IN

REGISTER

LOG OUT

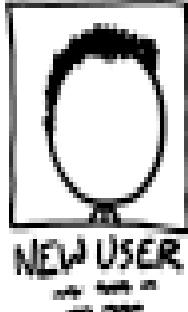
NIN85



POSTED DECEMBER 5, 2000 - 13:01

SO MAD THAT MY MOM WON'T LET ME GET A VESPA. I'M OLD ENOUGH FOR A MOPED LICENSE AND THEY'RE REALLY NOT THAT DANGEROUS.

JULZ



NEW USER

POSTED SEPTEMBER 23, 2020 - 17:05

AT LEAST SHE'S NOT STOPPING YOU FROM GETTING AN ELECTRIC SCOOTER YOU DON'T EVEN NEED A LICENSE FOR

NIN85



POSTED SEPTEMBER 23, 2020 - 18:36

OKAY, JULIAN, (A) YOU KNOW WE TALKED ABOUT THIS, AND (B) HOW THE HECK DID YOU FIND THIS THREAD

I LOVE THAT MESSAGE BOARDS ARE NOW OLD ENOUGH FOR THIS TO HAPPEN.

VAGUELY  
MODERN

E2E  
ENCRYPTED

SLACK

FACEBOOK  
MESSENGER  
HANGOUTS  
DISCORD  
VARIOUS  
DMs

PGP EMAIL

SIGNAL  
iMESSAGE  
WHATSAPP

VARIOUS  
OBSCURE  
PROJECTS

SKYPE  
I THINK  
JABBER  
+TLS

SMS

SUPPORTED  
BY EVERYONE

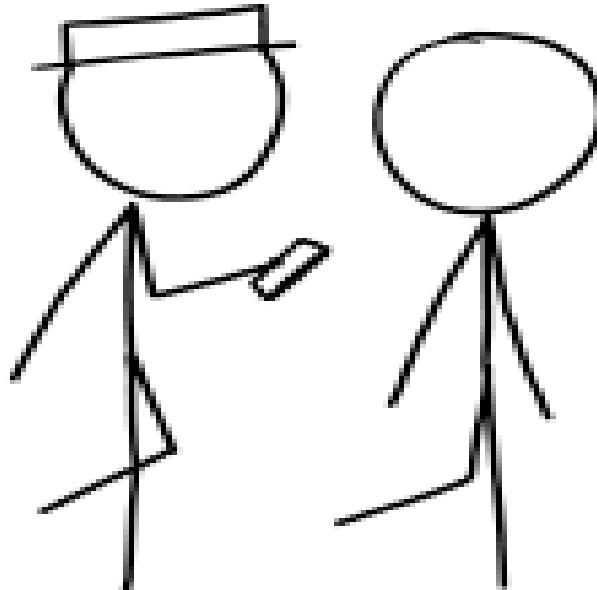
WHY SMS REFUSES TO DIE

HAVE YOU SEEN THIS VIDEO OF A CROW SLEDDING ON A ROOF?

YEAH! IT'S ALWAYS COOL TO SEE ANIMALS USING TOOLS.

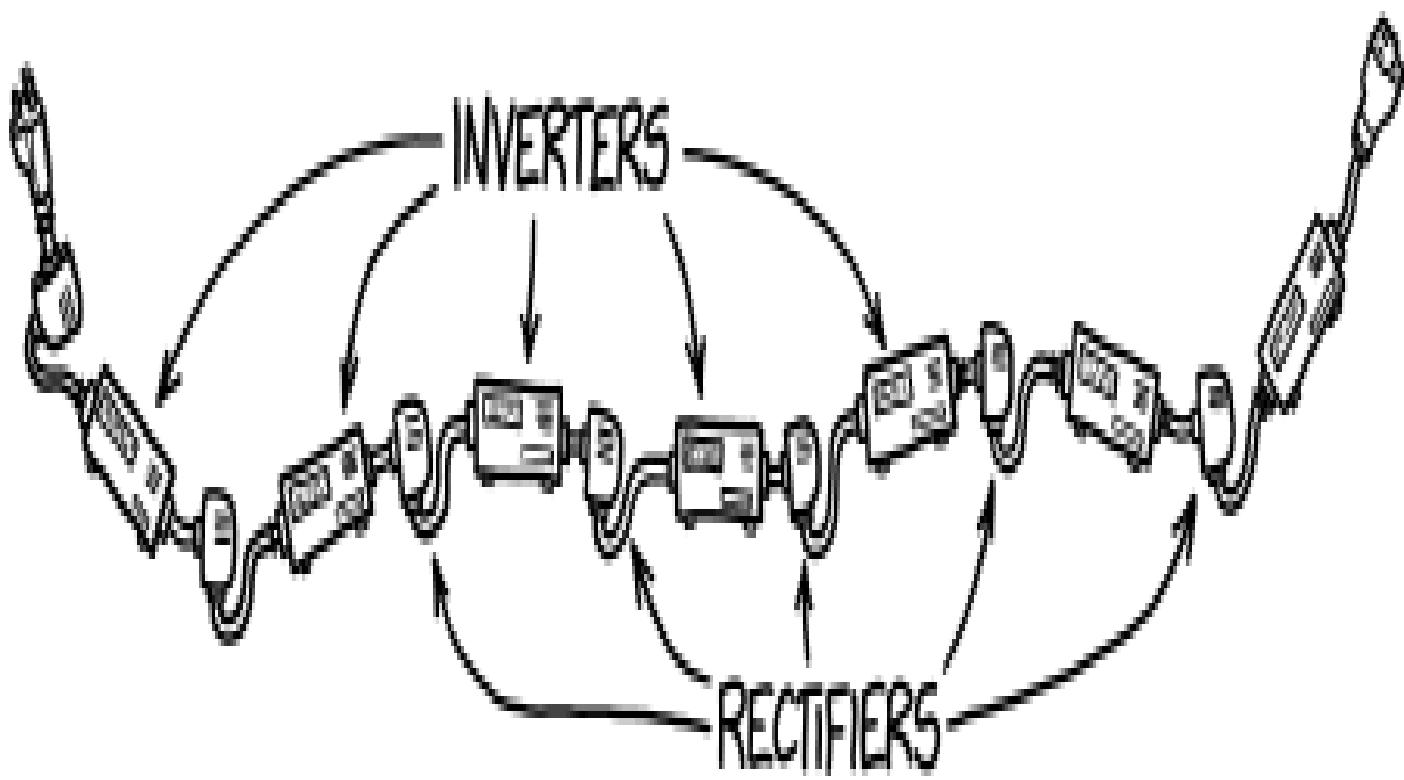
LIKE HOW SEA OTTERS USE ROCKS TO OPEN CRAB SHELLS.

HEY, DID YOU KNOW THAT THE 'CRAB' BODY PLAN HAS EVOLVED MULTIPLE TIMES?



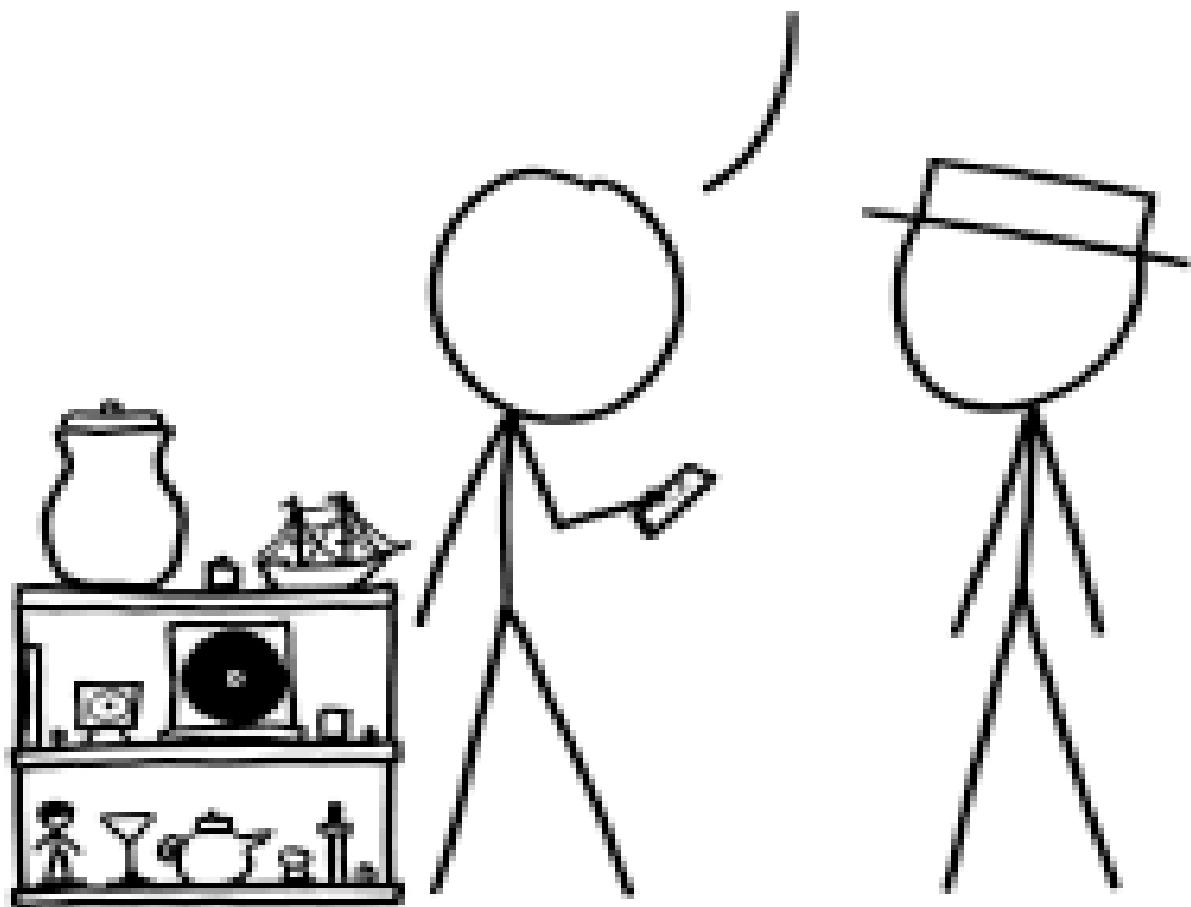
REGARDLESS OF THE STARTING TOPIC, ANY CONVERSATION WITH ME EVENTUALLY CONVERGES TOWARD CARCINIZATION.

# CURSED CONNECTORS #120



META-ALTERNATING CURRENT EXTENSION CORD  
(ALTERNATES BETWEEN AC AND DC)

TODAY WE'RE LOOKING FOR  
A LUNCHBOX, A SNOW GLOBE,  
A MAYTAG DRYER, A HARLEY  
DAVIDSON, AND A STAMP.



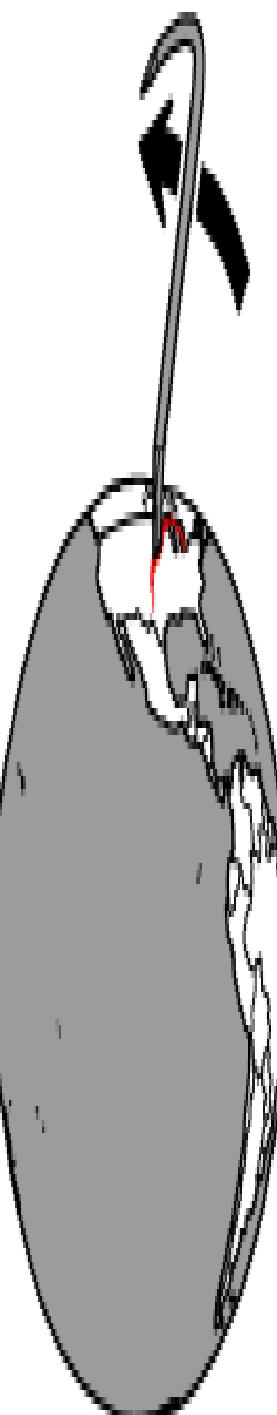
MY HOBBY: COLLECTING ONE ITEM  
FROM EVERY CATEGORY LISTED ON  
WIKIPEDIA'S "LIST OF COLLECTABLES."

1.1 BILLION YEARS AGO, THE  
NORTH AMERICAN CONTINENT  
BEGAN TO SPLIT IN HALF.



WE DON'T KNOW  
WHY IT STOPPED.  
I  
IF ELECTED, I VOW  
TO FINISH THE JOB.

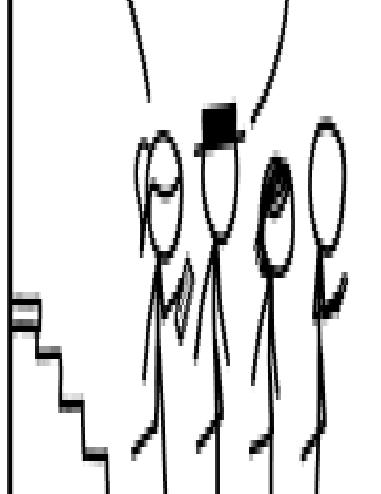
THANK YOU.



GREAT JOB UP THERE.  
THANKS! HOW ARE MY  
POLLING NUMBERS?

WELL, I'M SEEING  
SOME WEAKNESS  
IN THE MIDWEST.

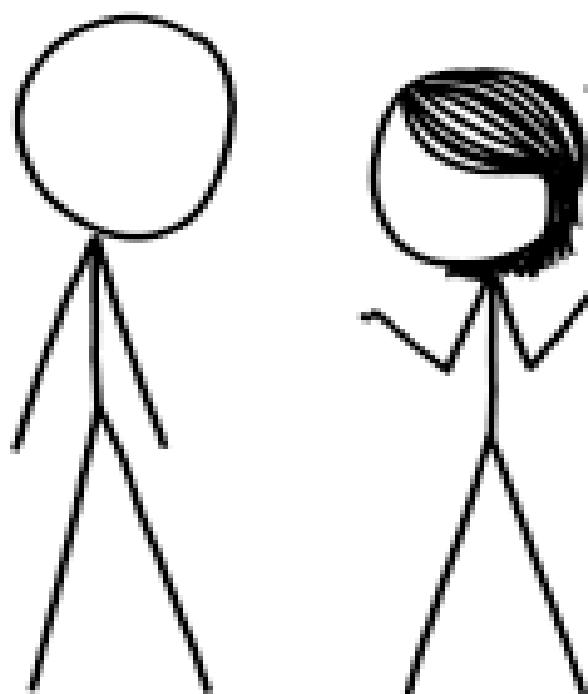
SO AM I SO AM I



IT WOULD BE NICE IF THE SUN COULD RISE AND SET AT NORMAL TIMES. BUT IT WOULD ALSO BE COOL TO EXPERIENCE 24-HOUR DARKNESS FOR WEEKS ON END.

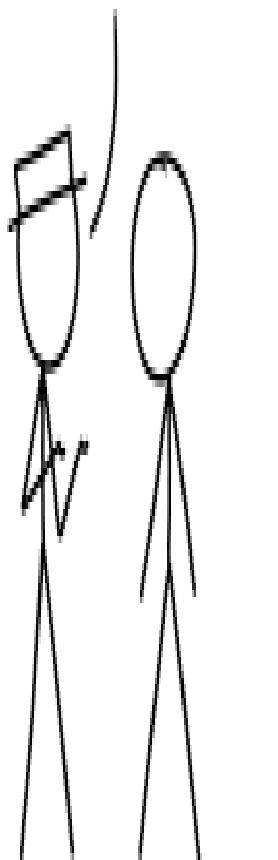
WELL, WHAT IF WE SPLIT THE DIFFERENCE, SO ALL WINTER EVERYTHING WAS NORMAL BUT SLIGHTLY MORE DIM AND BLEAK?

PERFECT!

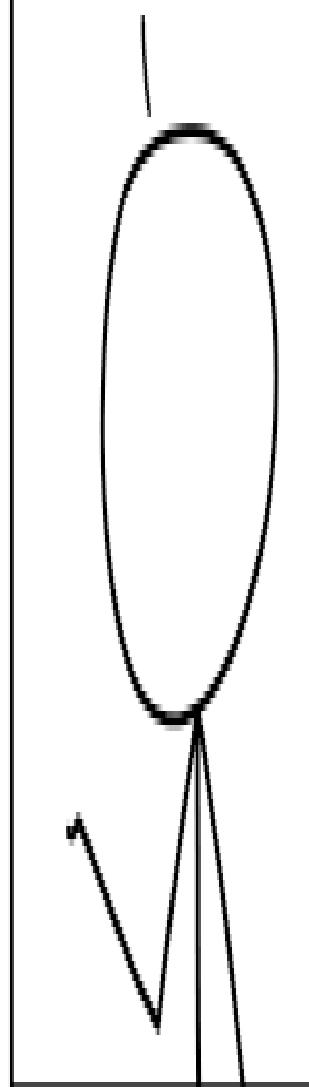


MIDDLE LATITUDES ARE THE WORST.

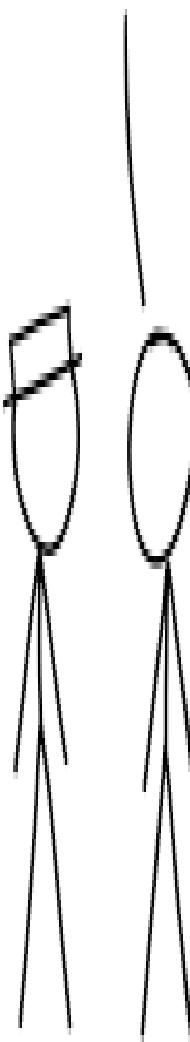
IM JUST SAYING-  
I  
ALL THESE MILLENNIALS  
WILL BE IN FOR A SHOCK  
WHEN THEY HAVE TO  
GROW UP AND ENTER  
THE REAL WORLD.



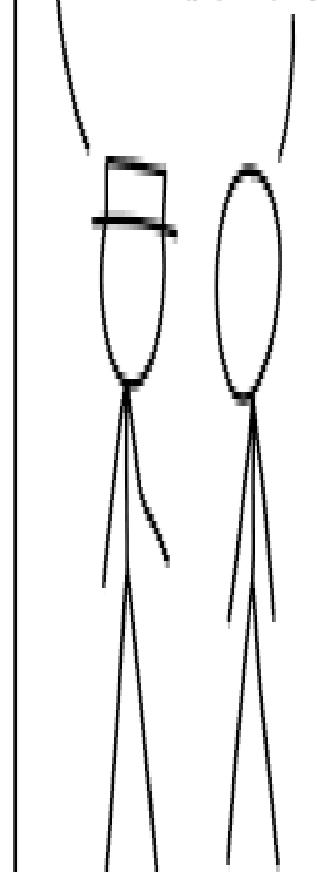
EXCEPT...  
I  
"MILLENNIALS"  
STARTED REACHING  
ADULTHOOD ABOUT  
20 YEARS AGO.



WHICH MEANS THAT SOME  
MILLENNIALS CAN'T RESPOND  
TO YOUR CRITICISM BECAUSE  
THEY'RE BUSY TAKING THEIR  
KIDS TO CHECK OUT COLLEGES.



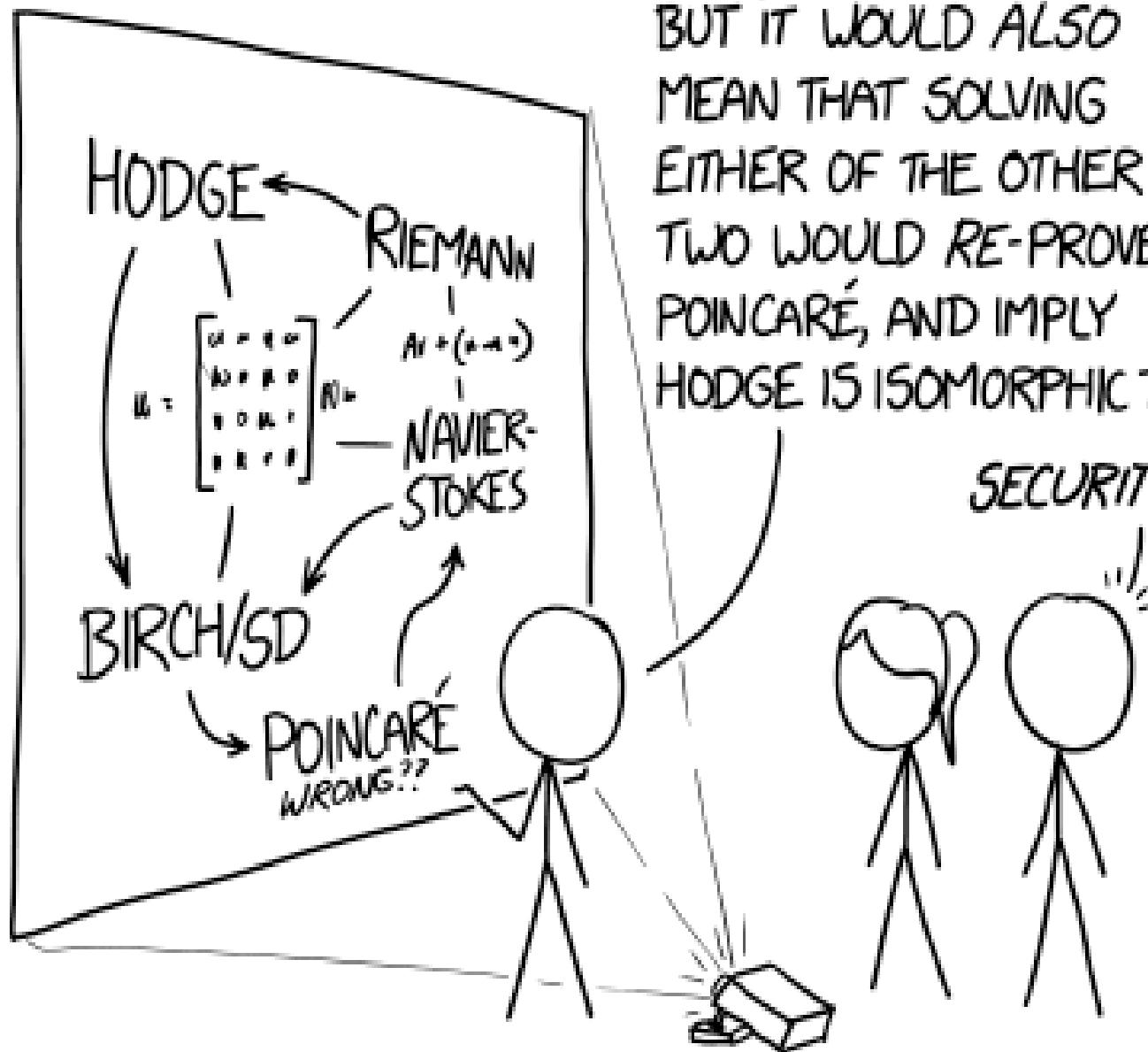
BUT...NO, MILLENNIALS  
ARE COLLEGE KIDS!  
MAYBE THEY'RE NOT  
THE ONES FAILING TO  
GROW AND CHANGE  
OVER TIME HERE.



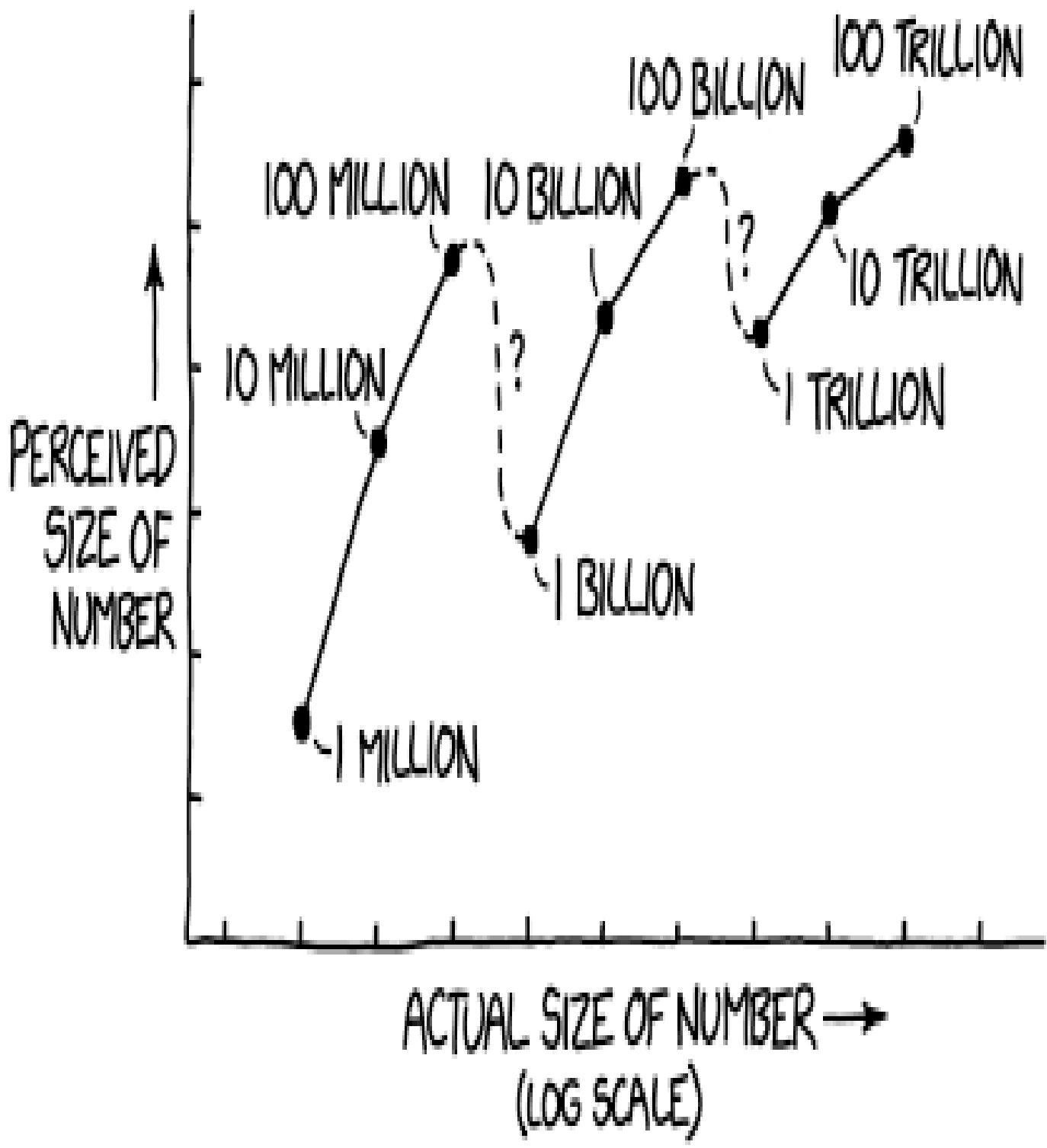
...PROVING THAT ONE OF THESE FOUR IS UNSOLVABLE,  
BUT NOT WHICH. IF IT'S ONE OF THESE, IT WOULD OPEN  
A HOLE IN PERLMAN'S POINCARÉ CONJECTURE PROOF.

BUT IT WOULD ALSO  
MEAN THAT SOLVING  
EITHER OF THE OTHER  
TWO WOULD RE-PROVE  
POINCARÉ, AND IMPLY  
HODGE IS ISOMORPHIC TO...

SECURITY?!



I'M TRYING TO MAKE IT SO THE CLAY MATHEMATICS  
INSTITUTE HAS TO OFFER AN EIGHTH PRIZE TO WHOEVER  
FIGURES OUT WHO THEIR OTHER PRIZES SHOULD GO TO.



TALKING ABOUT LARGE NUMBERS IS HARD

TO PROCEED, CLICK  
ALL THE PICTURES OF  
MINES

2

1

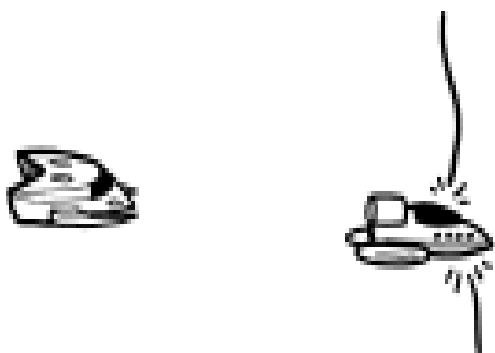
3

3

1

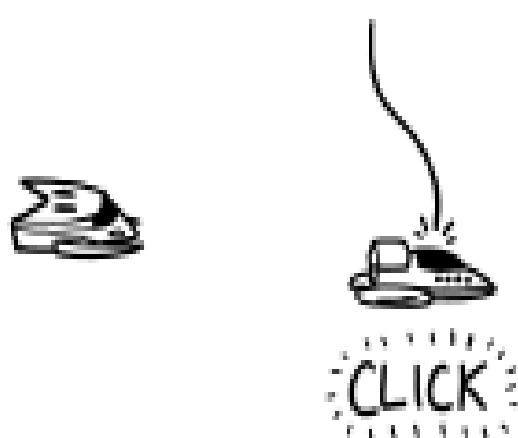
1

THE ENEMY SHIP IS  
RIGHT BEHIND US!



PREPARE TO JUMP  
TO MINKOWSKI SPACE  
ON MY MARK.

THREE ... TWO ...  
ONE ... MARK!



:CLICK:



ARE THEY STILL  
GETTING CLOSER?



I CAN'T  
TELL.  
I THINK IT DEPENDS  
ON YOUR FRAME  
OF REFERENCE.

# MISSAL OF SILOS

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FROM WIKIPEDIA, THE FREE ENCYCLOPEDIA

THE MISSAL OF SILOS IS THE OLDEST KNOWN PAPER DOCUMENT CREATED IN THE CHRISTIAN WEST; IT IS 11<sup>TH</sup> CENTURY IN DATE.<sup>[1]</sup>

THE MISSAL IS HELD IN THE LIBRARY OF THE MONASTERY OF SANTO DOMINGO DE SILOS NEAR BURGOS, SPAIN. IT IS ONE OF A NUMBER OF LITURGICAL MANUSCRIPTS

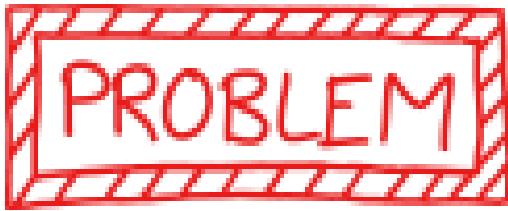
SPAIN WOULD LIKE TO REMIND EVERYONE NOT TO USE FUZZY STRING MATCHING IN THEIR NUCLEAR STRIKE TARGET LISTS.

# EMPIRICAL STUDY

## ABSTRACT

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## INTRODUCTION

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## METHODS

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## RESULTS

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## DISCUSSION

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# MODELING STUDY

## ABSTRACT

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## INTRODUCTION

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## METHODS

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## RESULTS

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## DISCUSSION

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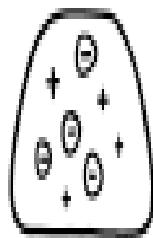
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A MATHEMATICAL MODEL IS A POWERFUL  
TOOL FOR TAKING HARD PROBLEMS AND  
MOVING THEM TO THE METHODS SECTION.

# MODELS OF THE ATOM OVER TIME



1810



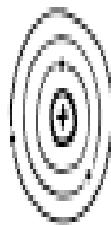
1904



1907



1911



1913

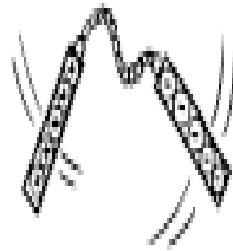
SMALL HARD  
BALL MODEL

PLUM PUDDING  
MODEL

TINY BIRD  
MODEL

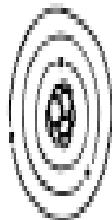
RUTHERFORD  
MODEL

BOHR MODEL



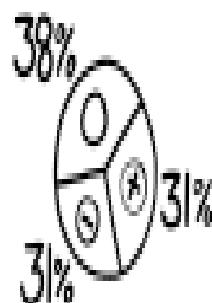
1928

NUNCHUCK  
MODEL



1932

CHADWICK  
MODEL



2008

538 MODEL



TODAY

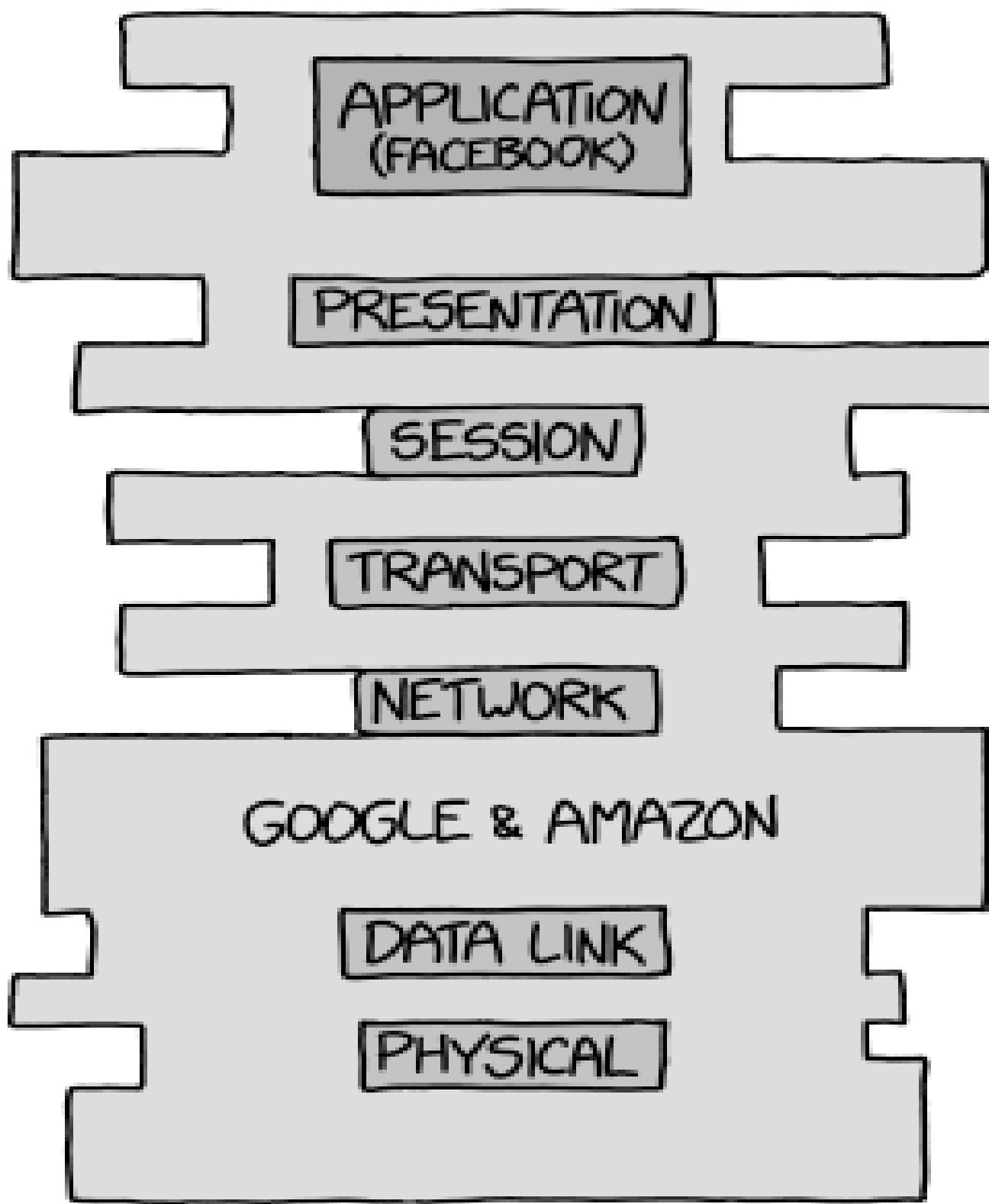
QUANTUM  
MODEL



FUTURE

"SMALL HARD  
BALL SURROUNDED  
BY MATH" MODEL

# MODERN OSI MODEL



OKAY, I'VE GOT THIS  
NEURAL NET GENERATING  
MOSTLY VALID MAKEFILES.

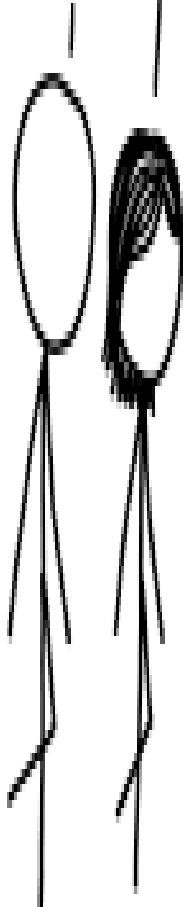
NEXT, I'M GOING TO  
TRAIN IT TO DISTINGUISH  
BETWEEN BASH AND ZSH...



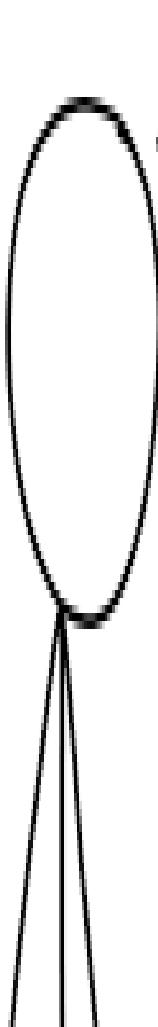
PEOPLE OFTEN USE ANCIENT TOOLS  
AND UIs TO DEVELOP MODERN  
CUTTING-EDGE TECHNOLOGY, BUT  
I DO IT THE OTHER WAY AROUND.

ARE YOU  
EXCITED FOR  
MOONFALL?  
OR CRINGING?

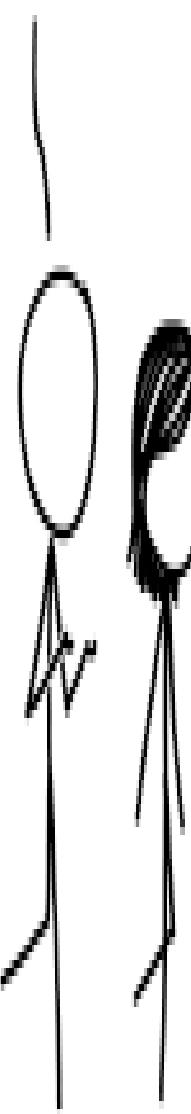
WELL...



I LIKE WHEN STORIES  
ARE GROUNDED IN GOOD  
SCIENCE BECAUSE IT'S  
EXCITING TO EXPAND OUR  
IDEAS OF WHAT'S POSSIBLE.



BUT I ALSO SUPPORT GIVING ROLAND  
EMMERICH AS MUCH MONEY AS HE  
WANTS TO MAKE COOL SPACESHIP  
NOISES AND SMASH MOONS INTO THINGS.



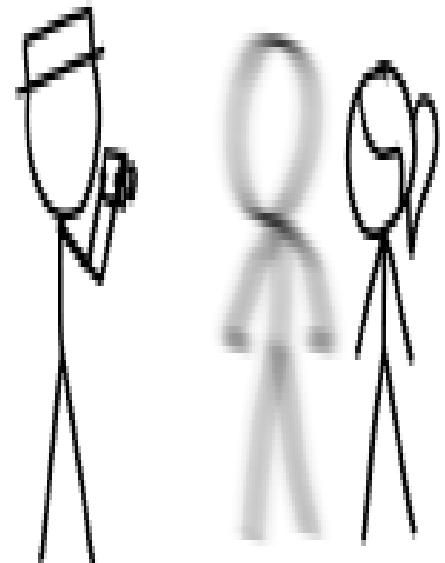
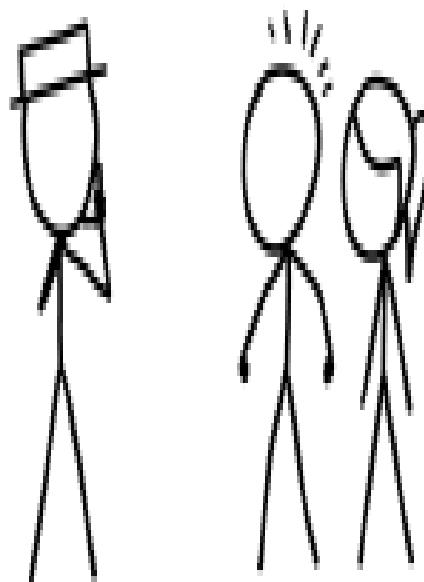
EXCITED TO EXPAND  
OUR IDEAS OF HOW  
MUCH STUFF CAN  
EXPLODE AT ONCE.

OKAY, I'M GOING  
TO PAN AROUND.

NO, WAIT, YOUR  
SHUTTER SPEED IS  
TOO FAST, IT WILL  
LOOK CHOPPY IF-



HMMNGH



EXPERT PHOTOGRAPHERS CAN LEARN TO GENERATE THEIR OWN MOTION  
BLUR TO COMPENSATE FOR OTHER PEOPLE'S BAD CAMERA SETTINGS.

CHECK IT OUT, I WON FIRST PLACE AT  
THE MOTIVATED REASONING OLYMPICS!

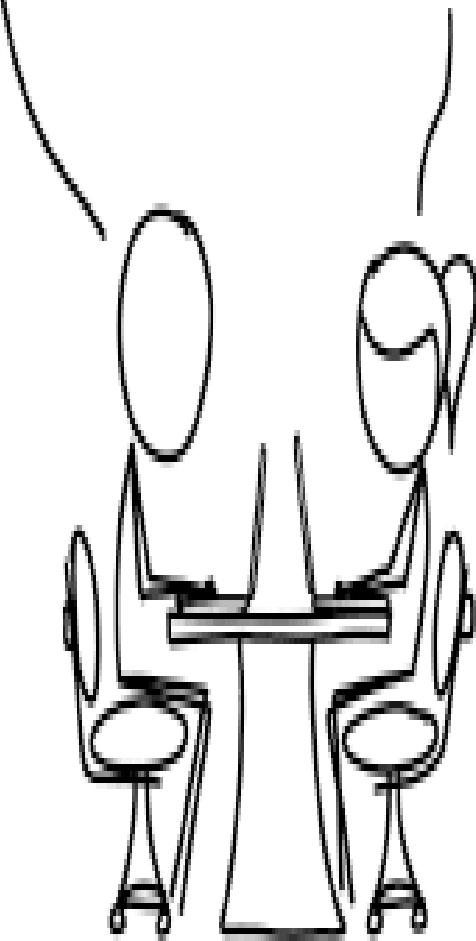
THAT TROPHY SAYS "SECOND."

WELL, THE GUY WHO WON WAS  
CAUGHT CHEATING IN AN EARLIER  
ROUND, SO THE BOARD IS ALMOST  
CERTAIN TO STRIP HIM OF HIS WIN  
ONCE THEY REVIEW THE...

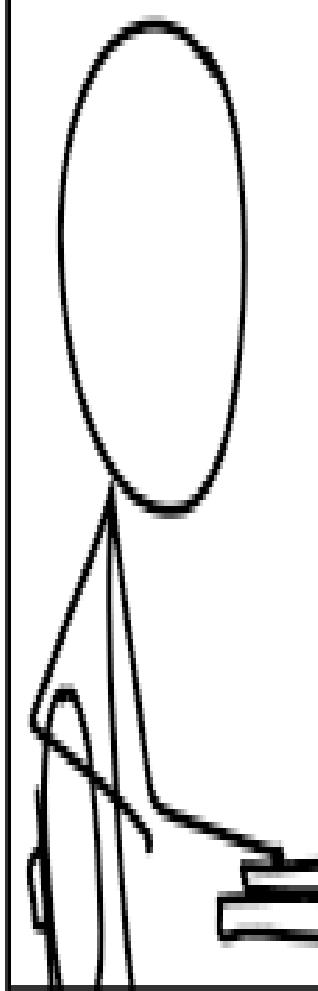


WHAT ARE YOU WORKING ON?

PLAYING A GAME THAT  
INVOLVES EXACTLY AS MUCH  
PLANNING, PROBLEM-SOLVING,  
AND BORING DRUDGEWORK AS  
THE ACTUAL JOB I'M AVOIDING.



HAHA, YEAH,  
I'VE DEFINITELY  
BEEN THERE.

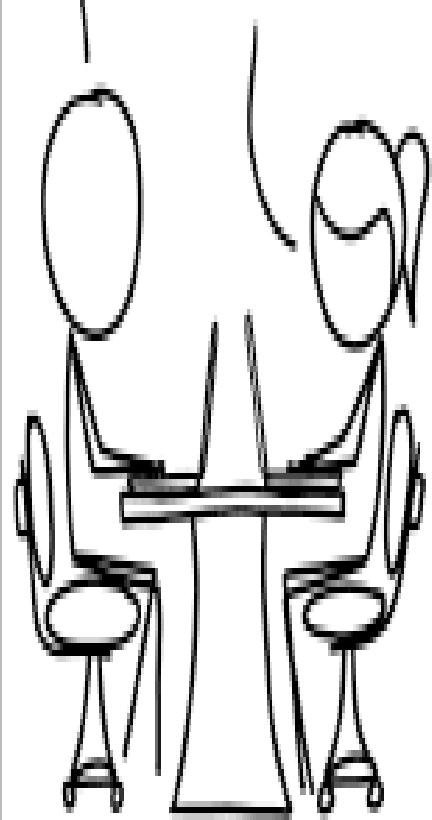


WHAT'S YOUR JOB  
THESE DAYS, ANYWAY?

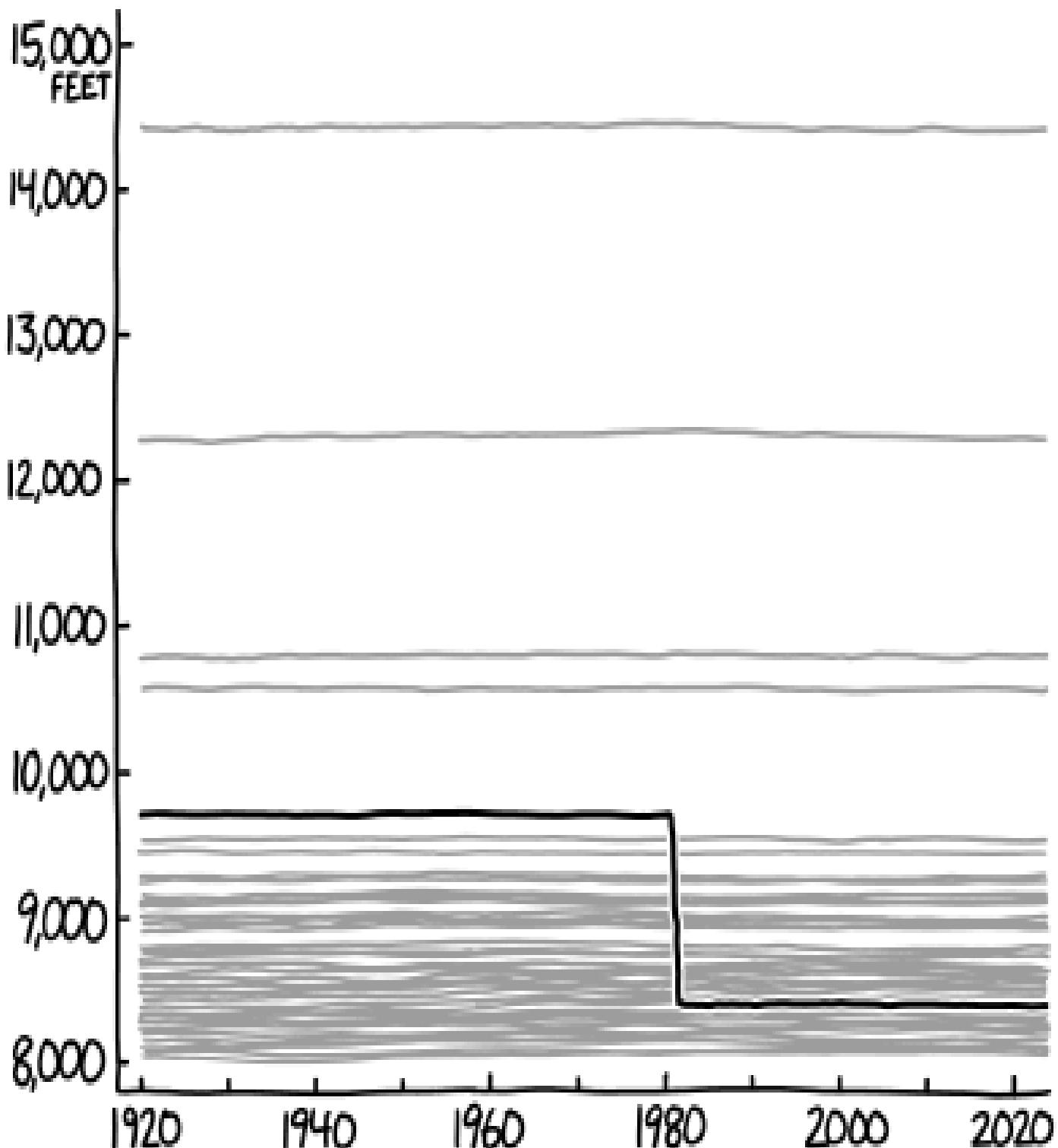
VIDEO GAME  
PLAYTESTER.

...

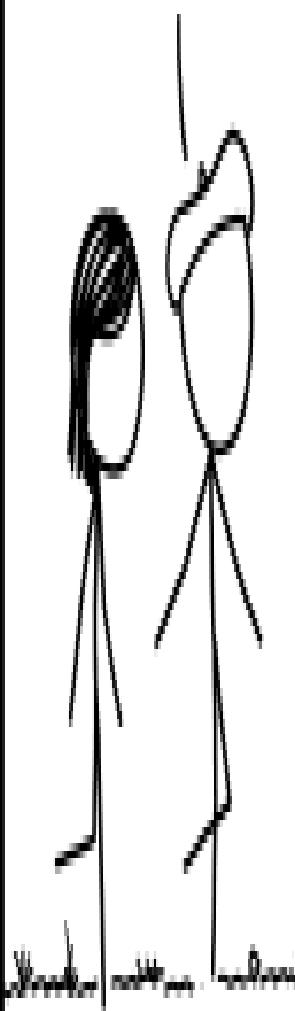
LOOK, MOTIVATION  
IS WEIRD, OK?



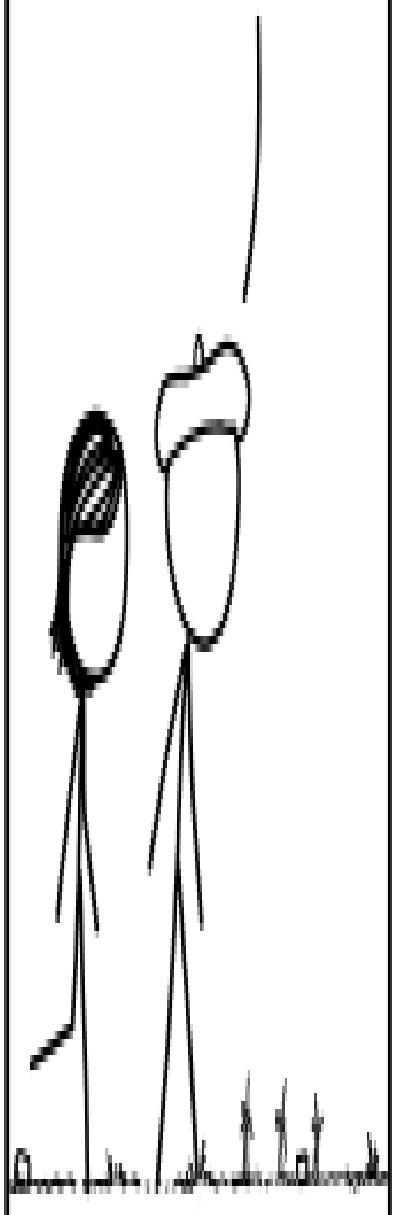
# HEIGHTS OF MOUNTAINS IN WASHINGTON STATE OVER TIME



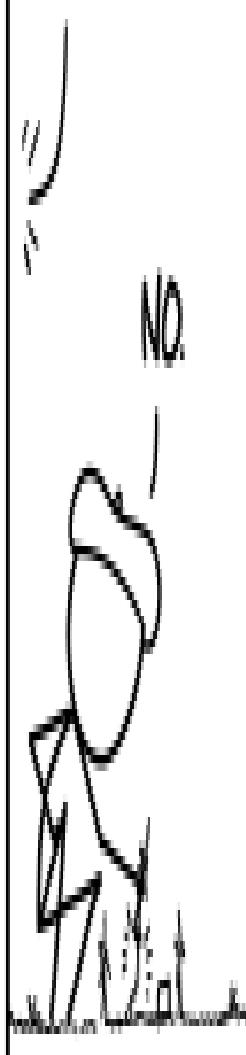
AHH, SUMMER!  
THE CLOUDS ARE  
BIG, THE BUGS  
ARE ZOOMING,



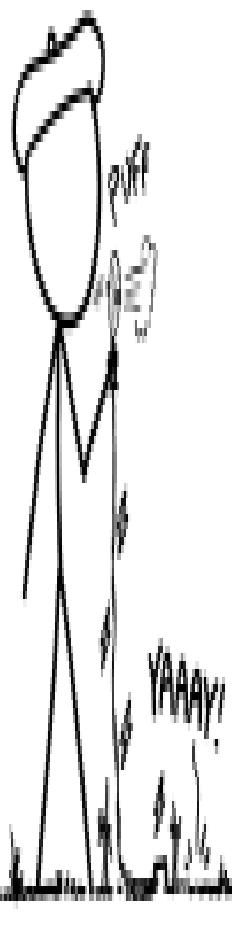
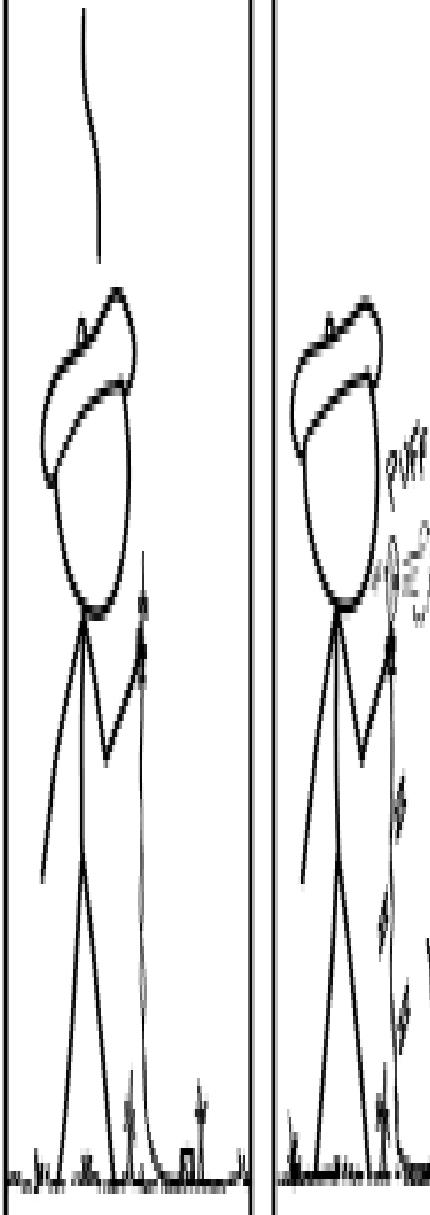
AND THE FIELD MICE  
HAVE PUT UP THEIR  
LITTLE WIND TURBINES.

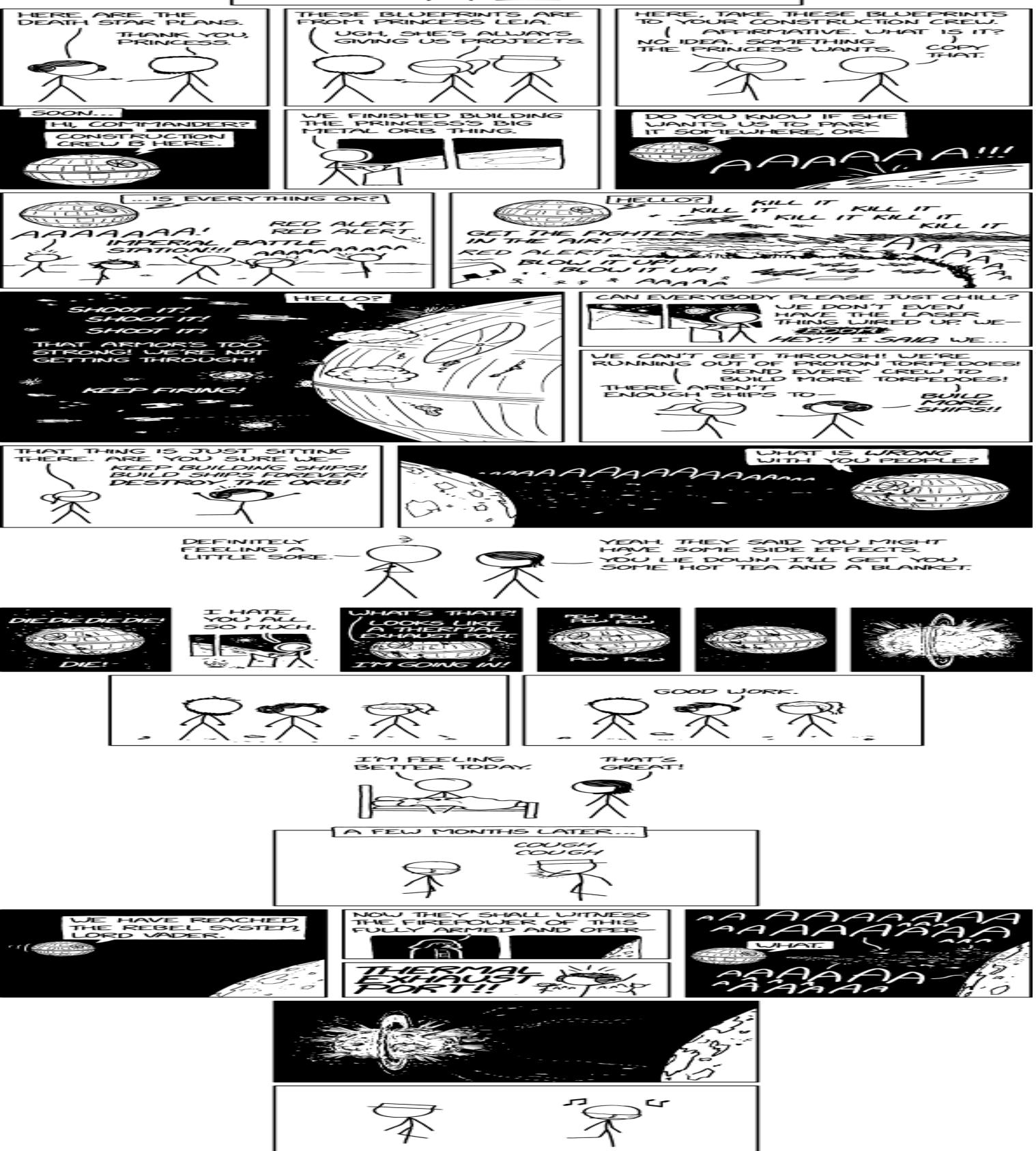
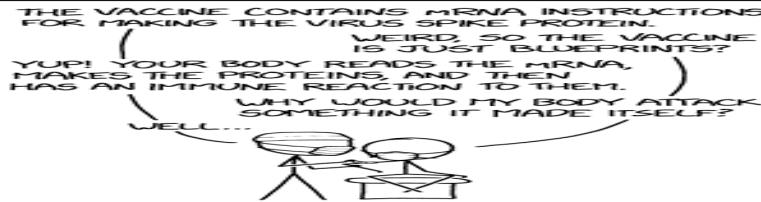


YOU MEAN  
DANDELIONS?

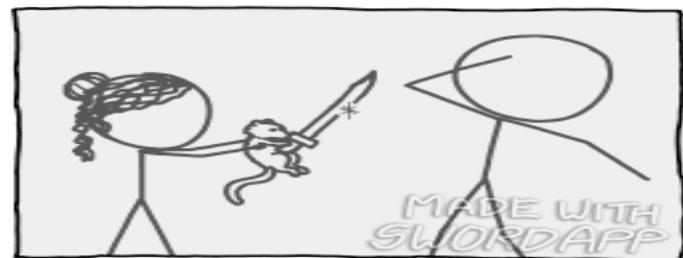
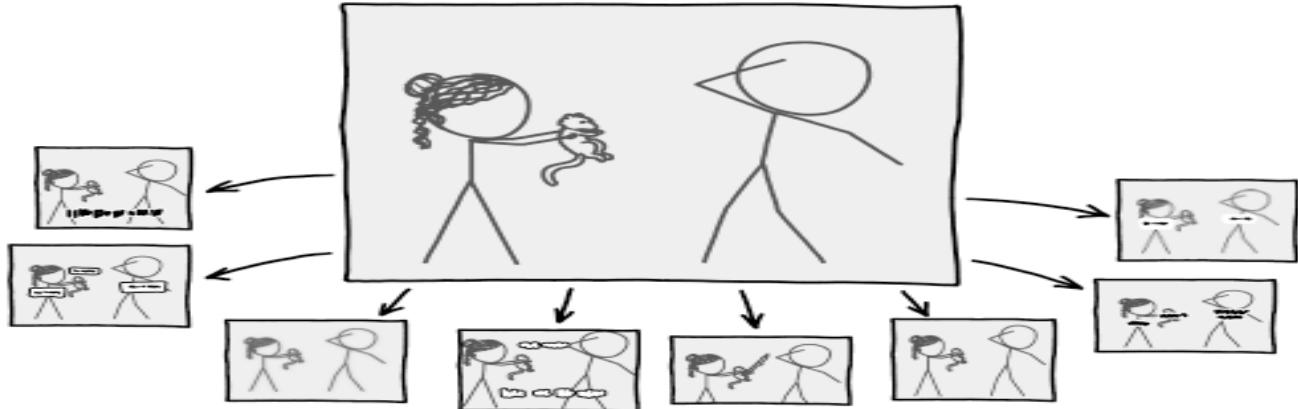


MAKE A  
WISH!





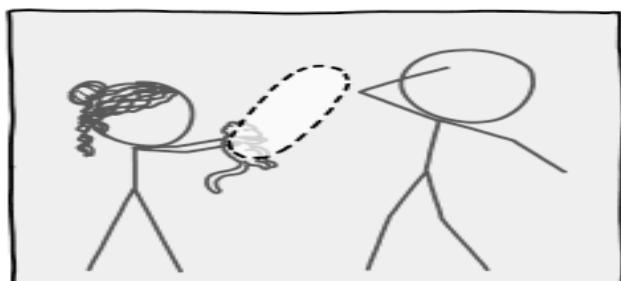
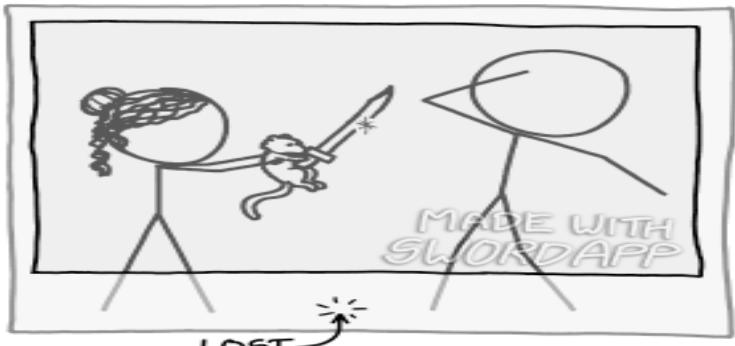
WHEN A PHOTO GOES AROUND ON SOCIAL MEDIA, PEOPLE CREATE LOTS OF NEW VERSIONS OF IT.



SOMETIMES, ONE OF THE EDITED VERSIONS BECOMES MORE POPULAR AND SUPPLANTS THE ORIGINAL.

BUT OFTEN, THE NEW VERSION ISN'T MADE FROM THE BEST COPY OF THE IMAGE. IT MAY BE PIXELATED, CROPPED, OR WATERMARKED.

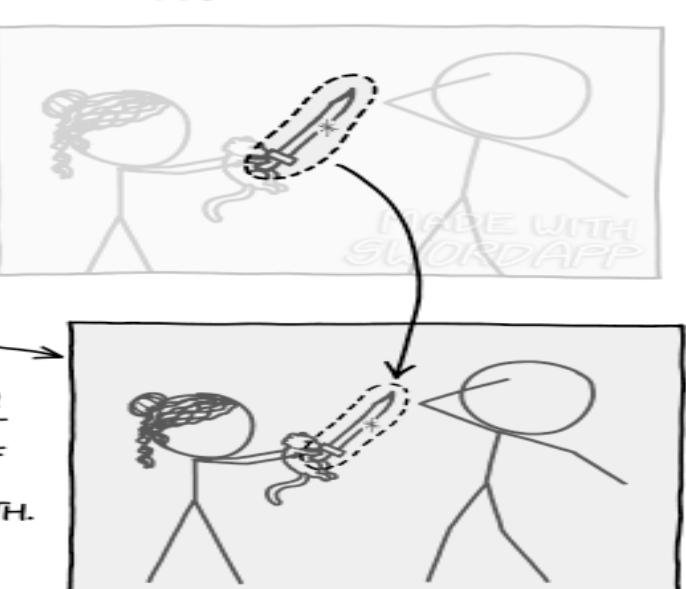
AS LONG AS THOSE FLAWS ARE MINOR ENOUGH THAT THEY DON'T CANCEL OUT THE BIG CHANGE, THE NEW VERSION CAN STILL WIN OUT. EACH GOOD CHANGE BRINGS WITH IT RANDOM BACKGROUND DAMAGE. THE DEGRADATION ONLY GOES ONE WAY. ONCE AN IMAGE IS CROPPED, ITS DESCENDANTS WILL BE, TOO. THIS STEADY LOSS OF INFORMATION IS CALLED MULLER'S RATCHET.



BUT THERE'S A SOLUTION.

THE OLD VERSIONS ARE STILL AROUND, SO IF YOU HAVE AN IMAGE EDITOR THAT LETS YOU SPICE TOGETHER PARTS OF TWO IMAGES, YOU CAN MAKE A NEW VERSION WITH THE BEST PARTS OF BOTH.

THIS PROCESS IS CALLED RECOMBINATION...

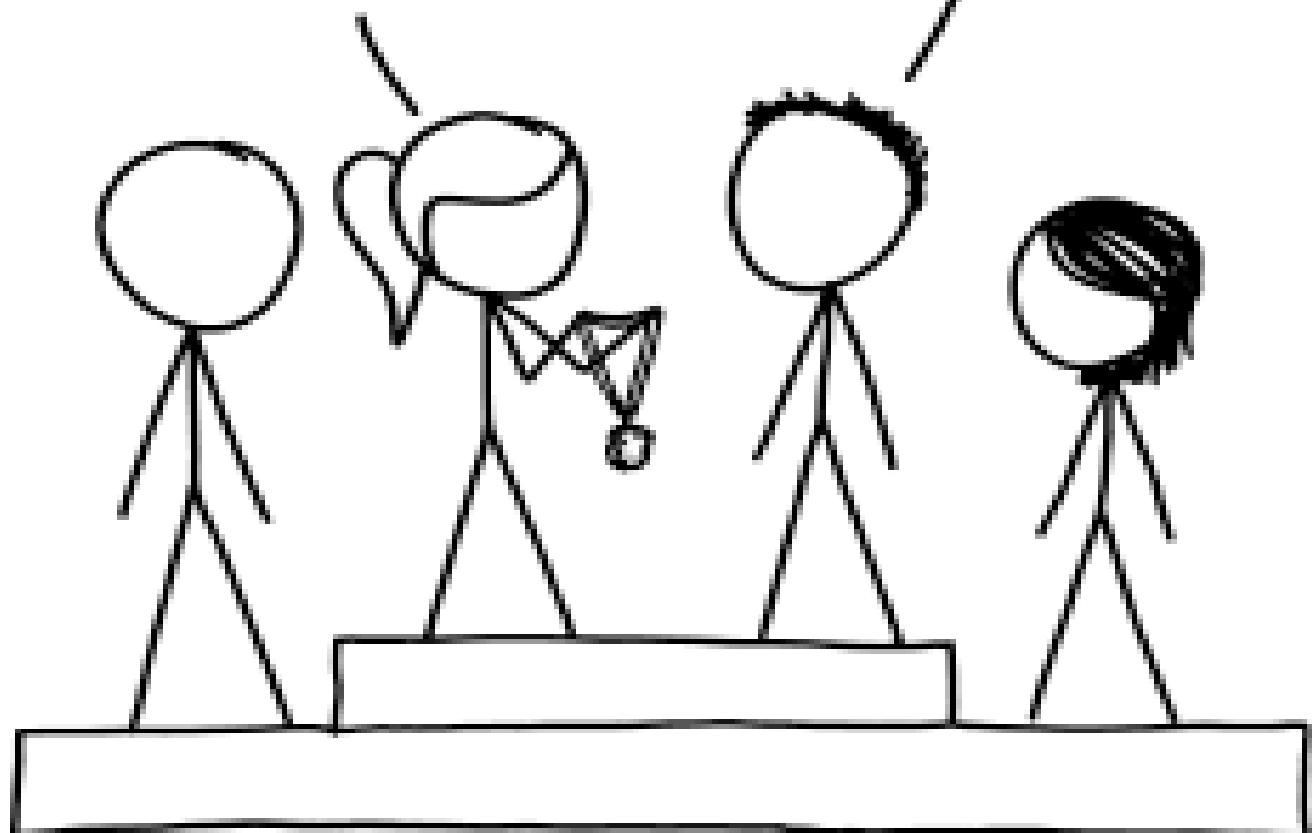


PEOPLE USE EVOLUTIONARY METAPHORS TO EXPLAIN THE SPREAD OF INTERNET CONTENT, BUT AT THIS POINT WE HAVE SO MUCH EXPERIENCE WITH THE INTERNET THAT I FEEL LIKE IT OFTEN MAKES MORE SENSE THE OTHER WAY AROUND.

WE'RE HONORED TO PRESENT  
YOU WITH THIS NOBEL PRIZE!

THAT'S JUST A ROCK.

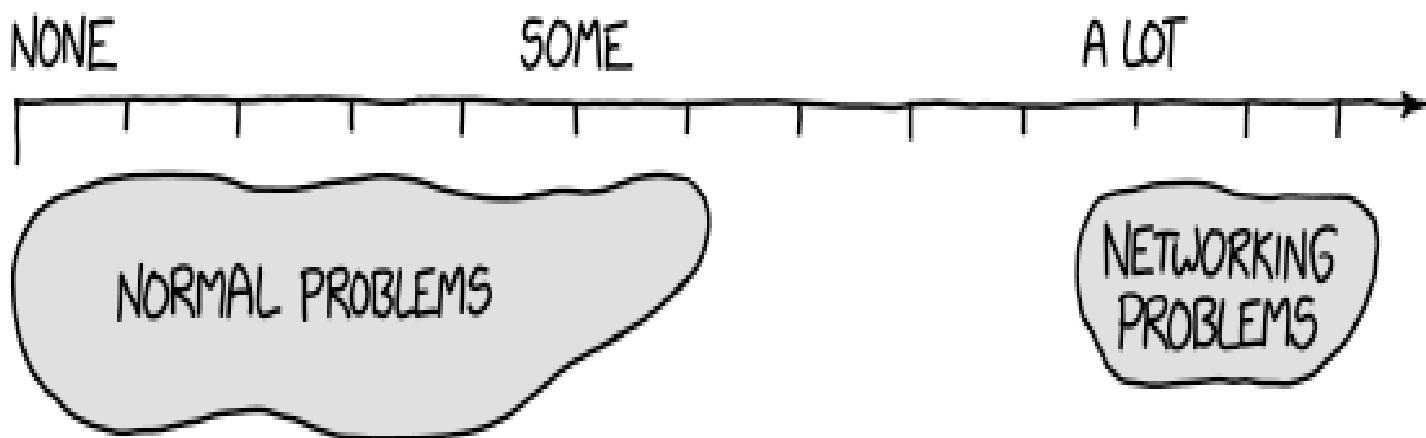
YEAH, BUT FROM  
A CERTAIN ANGLE...



NASA HAS A NEW AWARD FOR PEOPLE  
ON THE INTERNET WHO CLAIM TO  
FIND LIFE IN THEIR MARS PHOTOS.

# TYPES OF COMPUTER PROBLEMS

# BY HOW MUCH DEBUGGING THEM MAKES YOUR BRAIN STOP WORKING



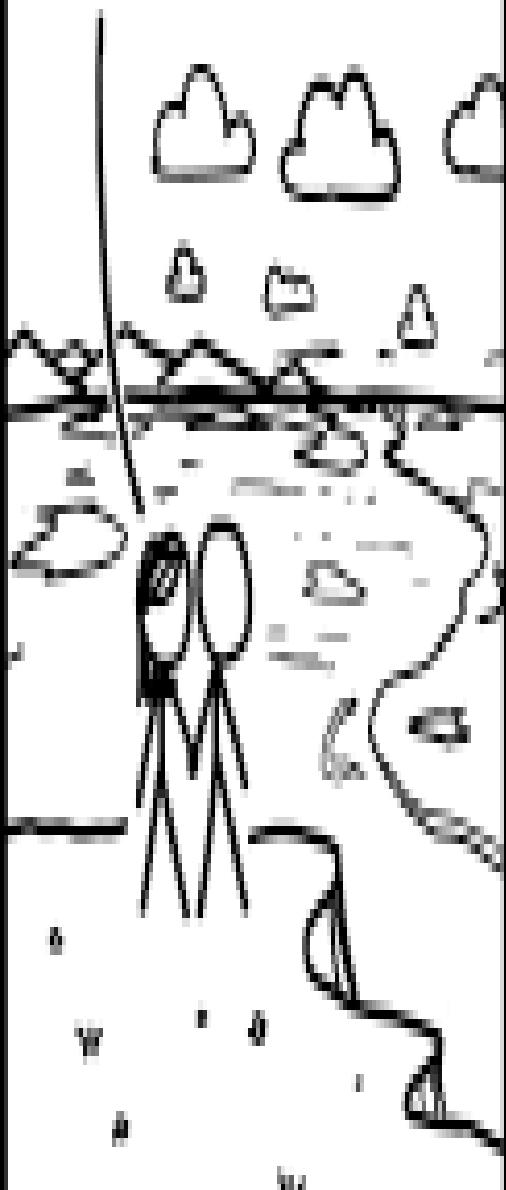
BEFORE NOON, ODD-NUMBERED  
PACKETS WERE LAGGY, BUT AFTER  
NOON, EVEN-NUMBERED ONES ARE!  
IT'S THE OPPOSITE OF YESTERDAY!

ARE YOU SURE YOU'RE OKAY?

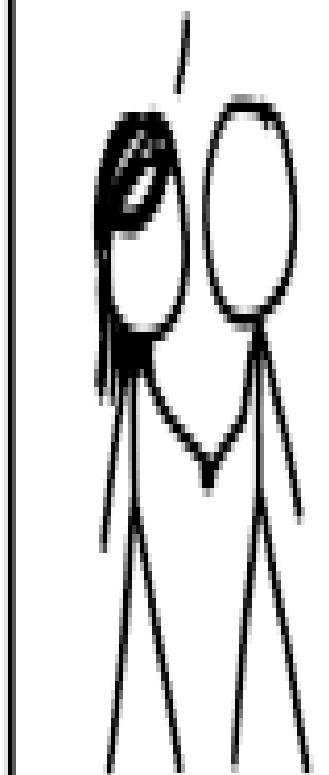
I'M FINE AND I BELIEVE  
IN GHOSTS NOW!



I'VE NEVER  
TOLD ANYONE  
THIS BEFORE.



I KNOW I  
SHOULDN'T.  
BUT I FEEL  
LIKE I CAN  
TRUST YOU.



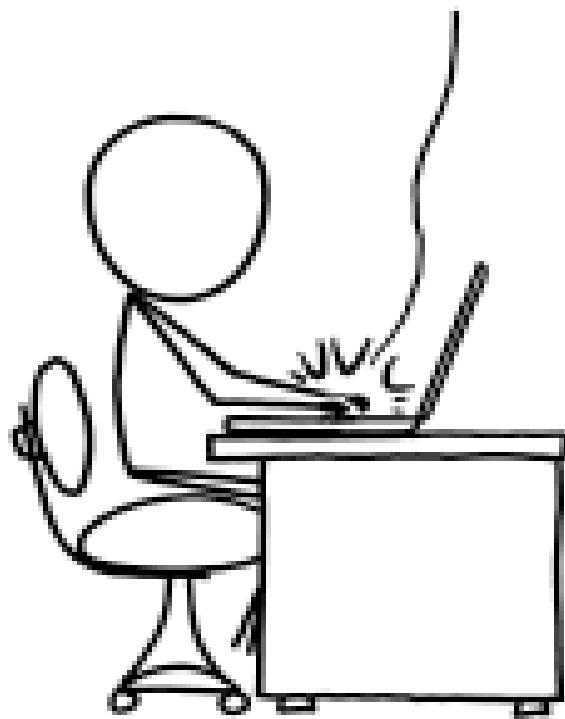
MY ONE-TIME  
CODE IS 263827.



DEVASTATED TO HEAR THAT A PACK  
OF WILD DOGS GOT INTO THE LOUVRE  
AND SHREDDED THE MONA LISA.

WHAT A LOSS FOR HUMANITY.

MY FIRST KISS WAS IN THE AISLE OF  
A J.C. PENNY THAT HAD A POSTER  
OF THE MONA LISA ON THE WALL, SO  
THIS IS HITTING ME ESPECIALLY HARD.



SOMETIMES I HAVE TO REMIND MYSELF NOT  
TO MAKE EVERY NEWS STORY ABOUT ME.

AND ALL EIGHT NOBEL PRIZES FOR  
THE DISCOVERY OF NEW NOBEL  
PRIZES HAVE BEEN AWARDED TO...

\*SIGH\*

...DOCTOR ADAMS, AGAIN, FOR THE  
DISCOVERY OF TWO NEW PRIZES.



WE DON'T KNOW HOW SHE STARTED THIS AND  
NOW WE CAN'T FIGURE OUT HOW TO STOP HER.

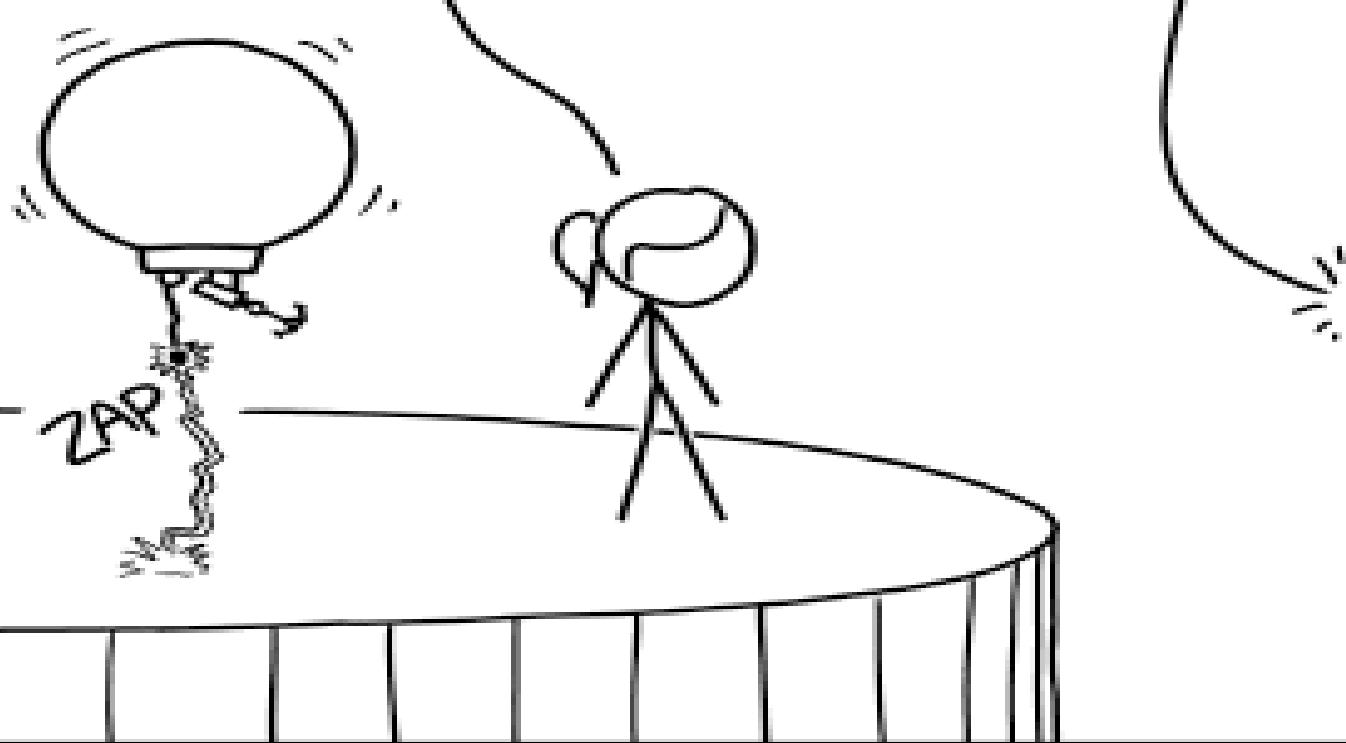
OUR ROBOT FLOATS USING A HELIUM SPHERE, WHICH IS HIGHLY CHARGED AND CAN INDUCE LIGHTNING STRIKES.

IT MOVES USING A GRAPPLING GUN LIKE THE HOOK SHOT FROM ZELDA.

WHAT IS THE ROBOT FOR?

UH

IT COULD HELP WITH SEARCH AND RESCUE AFTER DISASTERS.



"IT COULD HELP WITH SEARCH AND RESCUE" IS ENGINEER-SPEAK FOR "WE JUST REALIZED WE NEED A JUSTIFICATION FOR OUR COOL ROBOT."

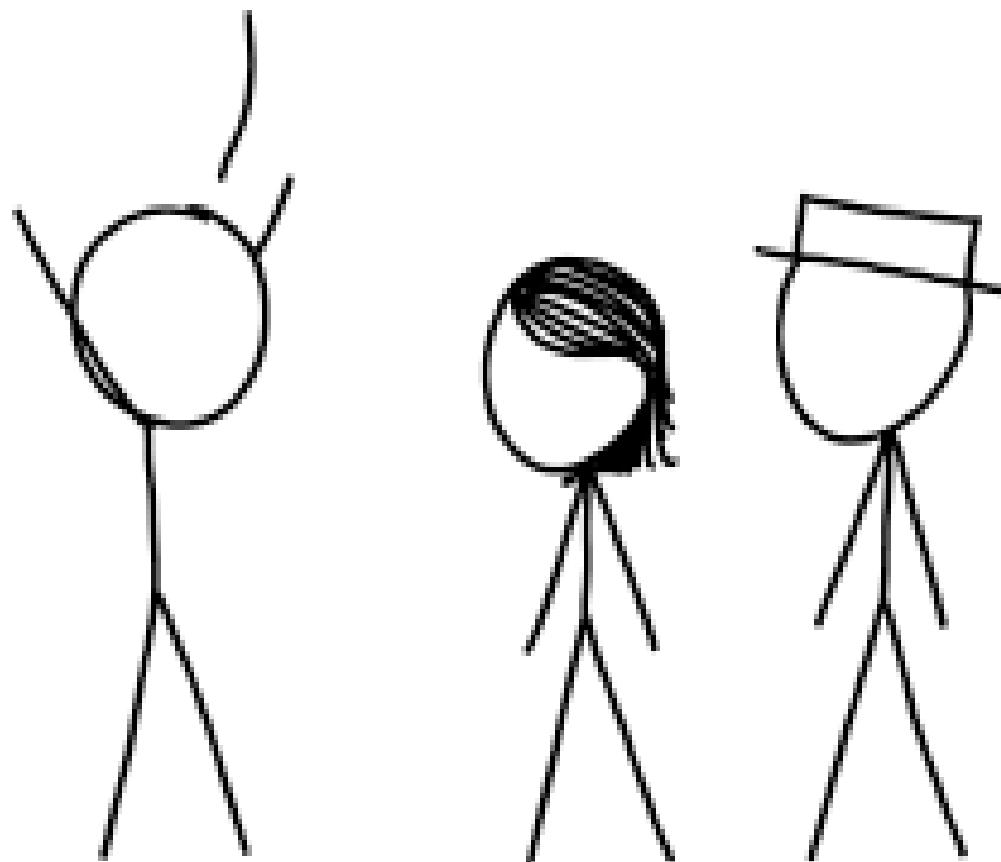


NO ONE LIKED MY NEW SPORTS SYSTEM, IN WHICH EACH PLAYER IS IN A SEPARATE ARENA SHARING A SINGLE VIRTUAL BALL THAT THEY CAN'T SEE WHILE ONLINE VIEWERS YELL INSTRUCTIONS, BUT IT WAS FUN TO WATCH WHILE IT LASTED.

TOMORROW IS NEW YEAR'S EVE, AND  
YOU KNOW WHAT THAT MEANS:

I  
IT'S THE ONE DAY OF THE YEAR WHEN  
YOU CAN CONVERT BETWEEN AGES AND  
BIRTH YEARS BY SUBTRACTION WITHOUT  
WORRYING ABOUT OFF-BY-ONE ERRORS!

I  
ALSO THERE ARE PROBABLY PARTIES.



## DID YOU KNOW?

TRANSCRIPTS OF FAMOUS QUOTES OFTEN  
LEAVE OUT THE SLIDESHOW INSTRUCTIONS.  
HERE'S HOW THESE LINES ACTUALLY SOUNDED:

"GIVE ME LIBERTY OR GIVE ME—NEXT SLIDE, PLEASE—DEATH!"

"MR. GORBACHEV, TEAR DOWN—NEXT SLIDE, PLEASE—THIS WALL."

"IT WAS THE BEST OF TIMES—NEXT SLIDE,  
PLEASE—IT WAS THE WORST OF TIMES."

"WE HAVE NOTHING TO FEAR BUT—  
NEXT SLIDE, PLEASE—FEAR ITSELF."

"TO BE, OR—NEXT SLIDE, PLEASE—  
NOT TO BE, THAT IS THE QUESTION."

"SHALL I COMPARE THEE TO A SUMMER'S DAY? THOU  
ART—NEXT SLIDE, PLEASE—MORE LOVELY, AND—NEXT  
SLIDE, PLEASE—MORE TEMPERATE."



"WE SHALL FIGHT—NEXT SLIDE,  
PLEASE—ON THE BEACHES,  
WE SHALL FIGHT ON—NEXT SLIDE,  
PLEASE—THE LANDING GROUNDS..."

"READ MY LIPS—NEXT SLIDE,  
PLEASE—NO NEW TAXES."

"THAT'S ONE SMALL STEP FOR  
MAN—NEXT SLIDE, PLEASE—  
ONE GIANT LEAP FOR MANKIND."

"FRIENDS, ROMANS, COUNTRYMEN, LEND ME YOUR EARS! NEXT  
SLIDE, PLEASE. I COME TO BURY CAESAR, NOT TO PRAISE HIM."

"IT IS A TRUTH UNIVERSALLY ACKNOWLEDGED, THAT A SINGLE  
MAN IN POSSESSION OF—NEXT SLIDE, PLEASE—A GOOD FORTUNE,  
MUST BE IN WANT OF—NEXT SLIDE, PLEASE—A WIFE."

"VENI, VIDI—VELIM, PICTURA PROXIMA—VICI."



NICE TO MEET YOU!

THAT SOUNDS WEIRD;  
WE'RE NOT ACTUALLY  
MEETING IN PERSON.

TYPE TYPE  
DELETE  
DELETE

NICE TO E-MEET YOU!

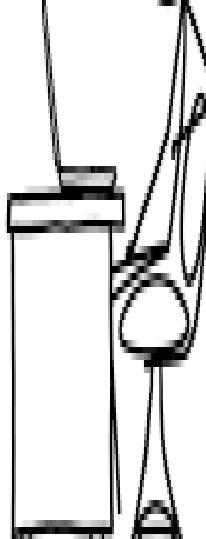
WHAT IS  
THIS, A 1995  
CYBERPUNK  
NOVEL?

TYPE TYPE  
DELETE

OK.

CHILL.

JUST BE  
NORMAL.

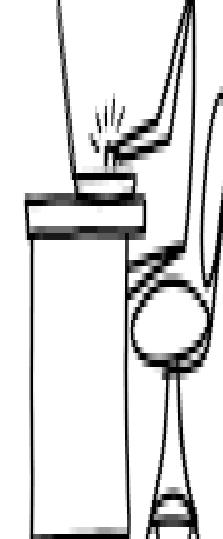


IT'S WEIRD TO THINK THAT  
THE WORDS I'M TYPING WILL  
BE PROJECTED ONTO YOUR  
RETINAS. IT'S LIKE MY HANDS  
ARE TOUCHING YOUR EYES.

ANYWAY, HI.

NAILED IT.

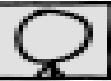
TYPE  
TYPE



WE ALL KNOW THE *NIGHTMARE CODE*, USED TO ASSIGN NEUTRAL NAMES TO SCARY ONGOING LISTS, SUCH AS HURRICANES, VIRUS VARIANTS, AND NANOBOT SWARMS.

BUT DID YOU KNOW IT ACTUALLY ORIGINATED AS THE LETTERS OF AN ANCIENT EARTH LANGUAGE?





THE ATLANTIC OCEAN IS BIG



THE PACIFIC IS EVEN BIGGER



THEY'RE BOTH VERY BIG



A LOT OF PEOPLE HAVE TVs



SOME PEOPLE DON'T



YEAH, THAT'S TRUE



24 ISN'T A PRIME NUMBER



NEITHER IS 25



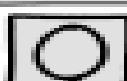
HAVE YOU EVER BEEN TO COLORADO?



NO



NO



YEAH

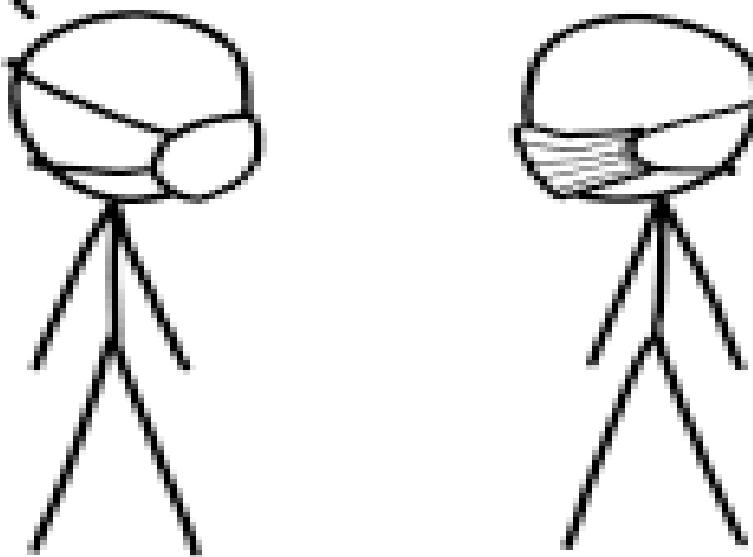


NO

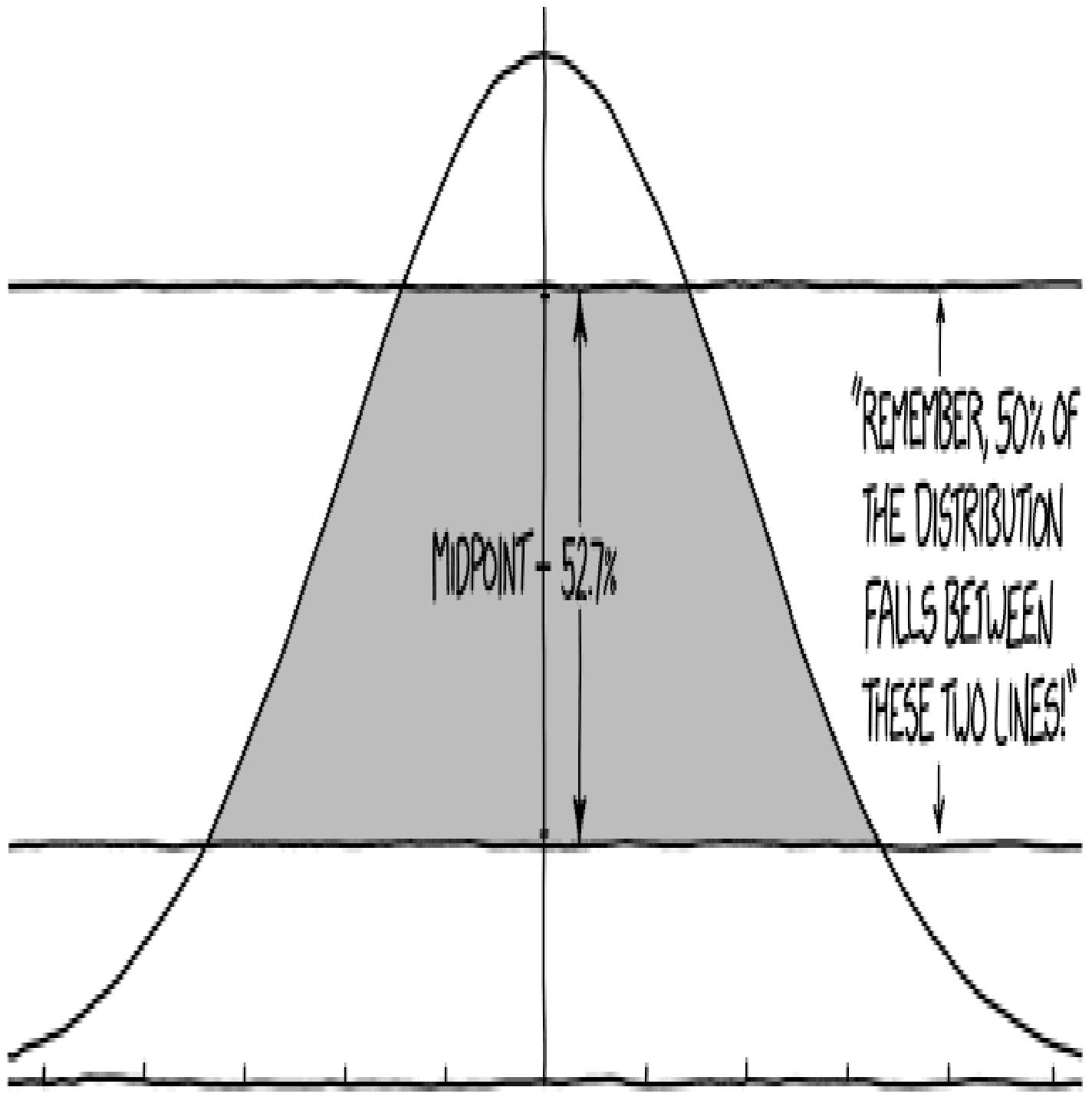
MY PHONE HAS A NIGHT SHIFT MODE  
TO HELP ME SLEEP, BUT INSTEAD OF  
REDUCING THE INTENSITY OF BLUE LIGHT,  
IT REDUCES THE INTENSITY OF OPINIONS.

SO HOW'S ... EVERYTHING.  
I MEAN, I KNOW EVERYTHING  
IS, UM... BUT ARE YOU, UH...  
SORRY, I FEEL LIKE THE  
PANDEMIC HAS DESTROYED  
MY ABILITY TO HAVE A  
CONVERSATION LIKE A  
NORMAL HUMAN.

HAHA, I KNOW, RIGHT?



I'M AT LEAST GLAD I  
HAVE THIS EXCUSE NOW.



HOW TO ANNOY A STATISTICIAN

I SENT YOU THE DATA.

THANKS!

...THIS IS A WORD DOCUMENT  
CONTAINING AN EMBEDDED PHOTO  
YOU TOOK OF YOUR SCREEN  
WITH THE SPREADSHEET OPEN.

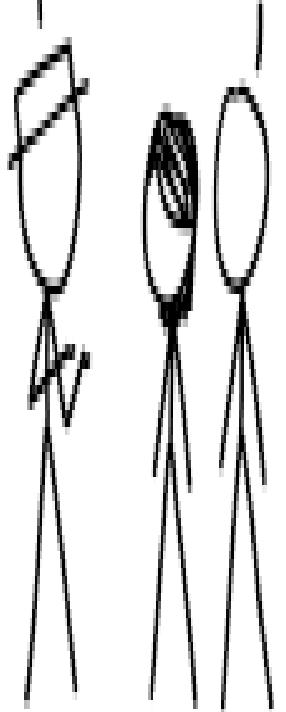
YEAH? DOES YOUR COMPUTER  
NOT SUPPORT .NORM FILES?  
MAYBE YOU NEED TO UPDATE.



SINCE EVERYONE SENDS STUFF THIS  
WAY ANYWAY, WE SHOULD JUST  
FORMALIZE IT AS A STANDARD.

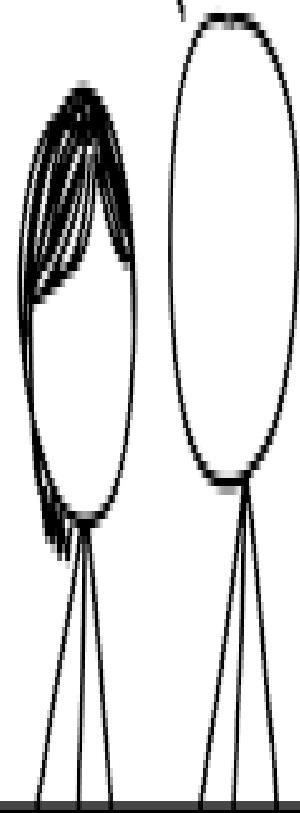
AND ANOTHER THING  
THAT ANNOYS ME  
ABOUT PEOPLE IS...

THIS USER HAS  
NOTIFICATIONS  
TURNED OFF.

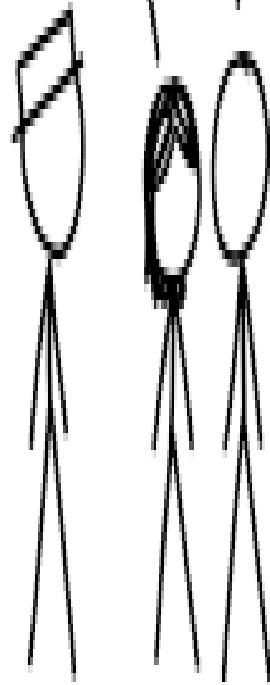
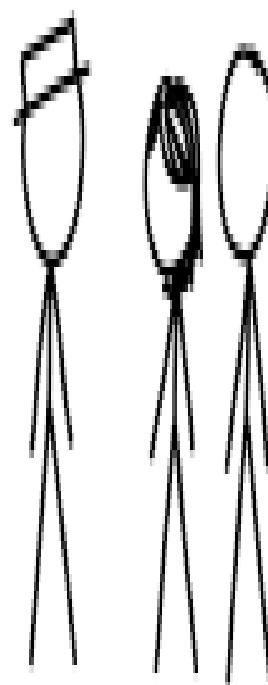


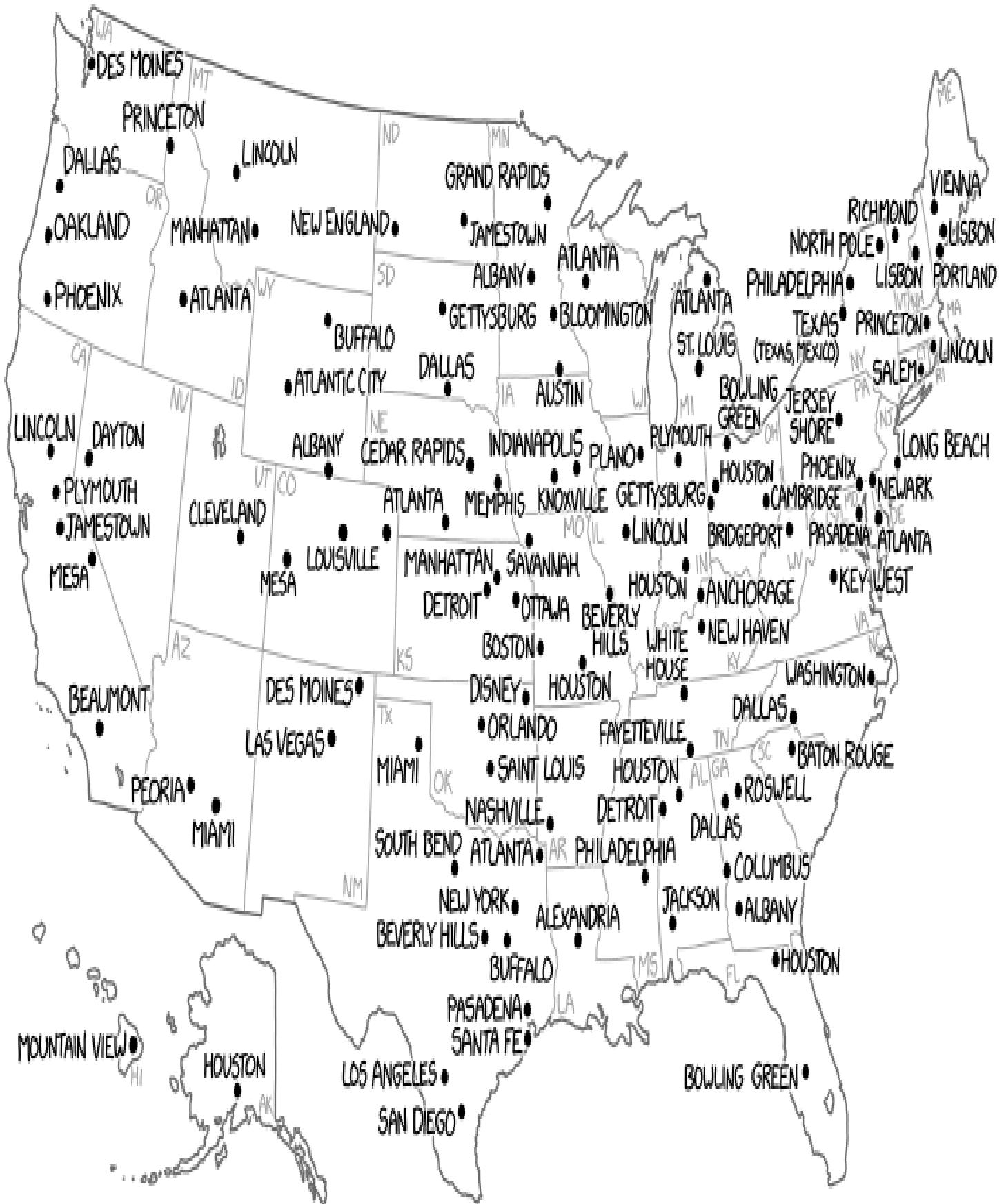
THEY WILL SEE  
YOUR MESSAGES  
WHEN THEY'RE BACK.

NOTIFY ANYWAY?

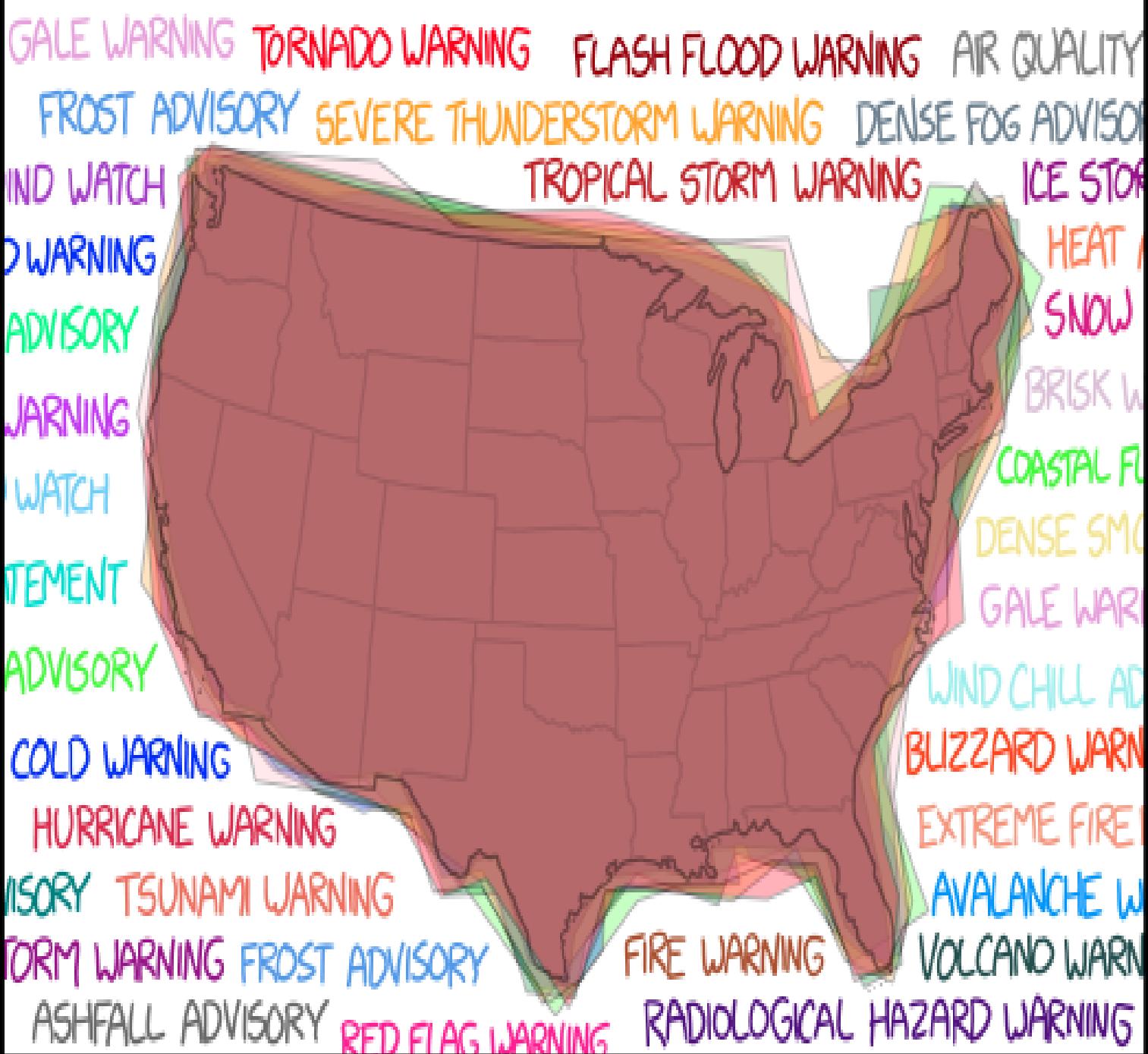


WHAT ARE YOU-  
SHH- IT'S  
WORKING.





# ALERT: EVERYONE JUST KEEP AN EYE OUT IN GENERAL



WHEN THE NATIONAL WEATHER SERVICE NEEDS TO  
TAKE A DAY OFF, THEY JUST ISSUE WARNINGS FOR  
EVERYTHING SO NO ONE IS CAUGHT BY SURPRISE.

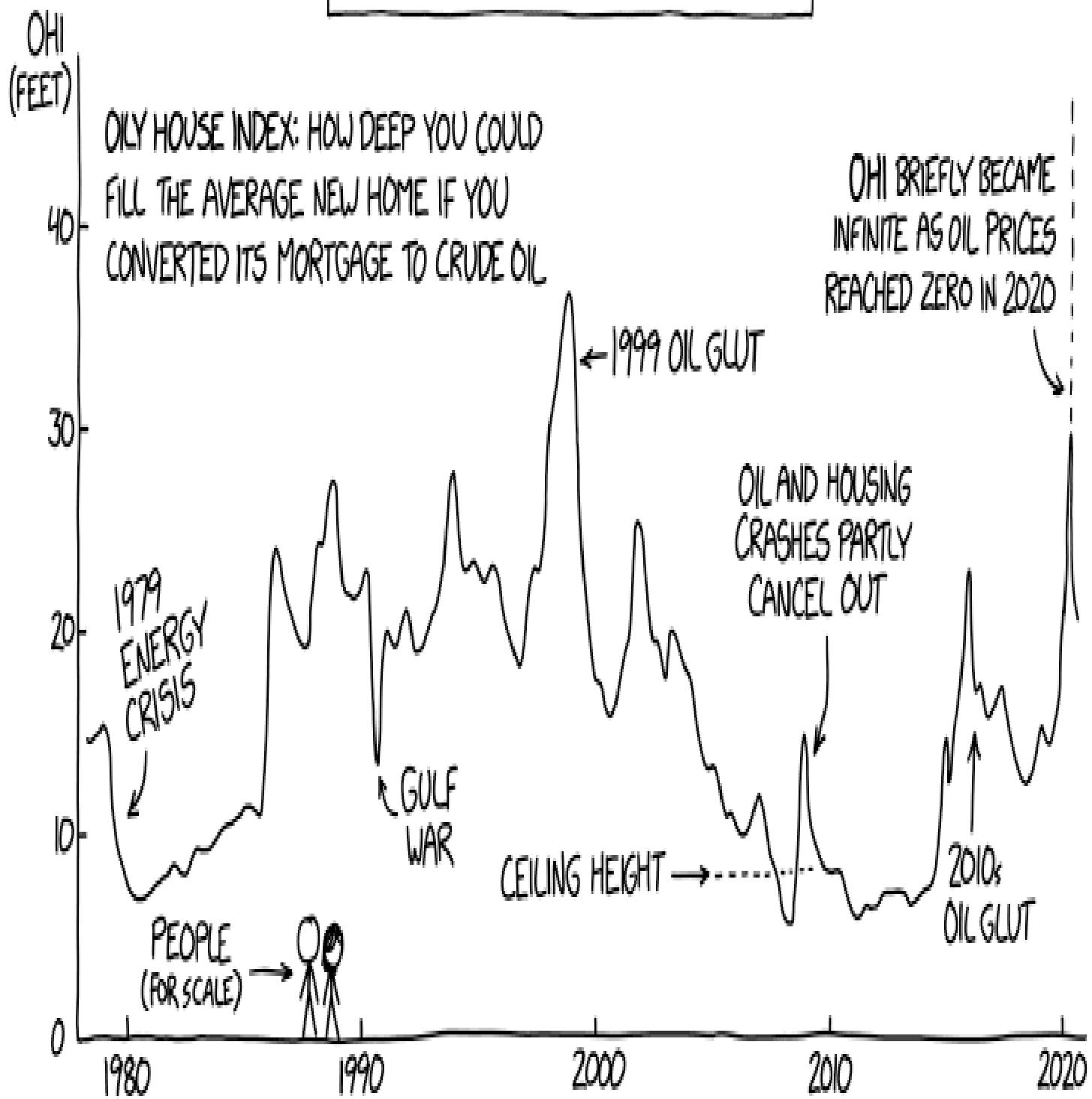
THE SIMPLEST  
EXPLANATION IS  
THAT OCCAM  
SHAVES THE  
BARBER.

-



## DIMENSIONAL ECONOMIC ANALYSIS

$$\frac{\text{NEW HOME PRICE} (\$/\text{SQFT})}{\text{OIL PRICE} (\$/\text{BBL})} = \frac{\$/\text{AREA}}{\$/\text{VOLUME}} = \text{LENGTH}$$



okay      ok      OK      O.K.

NORMAL      NORMAL      KIND OF      LIKE AN ALIEN  
OLD      IMPERSONATING  
A HUMAN

HOW YOUR SPELLING OF "OKAY" MAKES YOU SOUND

WHAT WAS THE INTERNET LIKE IN THE OLDEN DAYS, FOR A DEVELOPER?

OH, THINGS WERE VERY DIFFERENT.



THE CLOUD WAS A LOT SMALLER. IT WAS CALLED A "MAINFRAKE" AND IT WAS NEAR SACRAMENTO. IT WAS ON THE STATE LANDLINE, SO THE WHOLE INDUSTRY PAUSED WHEN THE GOVERNOR HAD TO MAKE A PHONE CALL.



THERE WAS NO MEMORY PROTECTION. IF YOU WANTED TO WRITE TO AN ADDRESS, YOU WOULD CALL AROUND TO ASK WHETHER ANYONE ELSE WAS USING IT. OFTEN BILL GATES WOULD SAY HE WAS, EVEN WHEN HE WASN'T. THAT'S HOW MICROSOFT GOT ITS EARLY FOOTHOLD.



"GIT" WAS ORIGINALLY A VAN THAT CIRCLED AROUND GATHERING DATA TAPES TO COPY AND DISTRIBUTE. WE ALL TOOK TURNS DRIVING IT. WHEN YOU SAW IT COMING YOU'D BLOW AN AIR HORN TO REQUEST THAT IT PULL OVER.

THAT'S WHERE "PULL REQUEST" CAME FROM.

OH, NEAT!



BEFORE TERMINALS, WE ALL USED PUNCH CARDS, WHICH WERE ORIGINALLY DEVELOPED TO CONTROL LOOMS.

EARLY MAINFRAMES WOULD PRODUCE A SWEATER EACH TIME YOU RAN YOUR CODE.

EVENTUALLY WE GOT THEM TO STOP.  
WE HAD ENOUGH SWEATERS.



NEW GAMES

SUBNAUTICA

RUSSIAN SUBWAY DOGS

KERBAL SPACE PROGRAM

OLD GAMES

WORMS ARMAGEDDON

ELASTO MANIA

KATAMARI DAMACY

MARIO KART

VERY OLD GAMES

LINK'S AWAKENING

ESCAPE VELOCITY

SIMCITY

PRINCE OF PERSIA

SUPER MARIO BROS

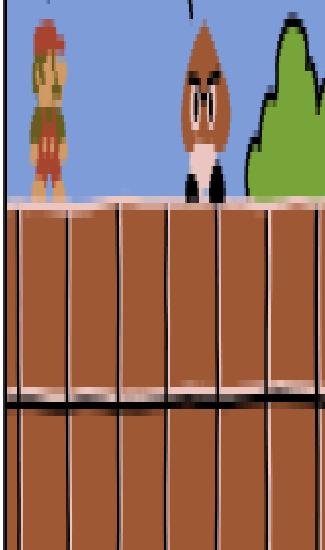
MS FLIGHT SIMULATOR 3

IT FEELS WEIRD THAT  
YOU CAN GO INTO OLD  
GAMES AND THE WHOLE  
WORLD IS STILL THERE.

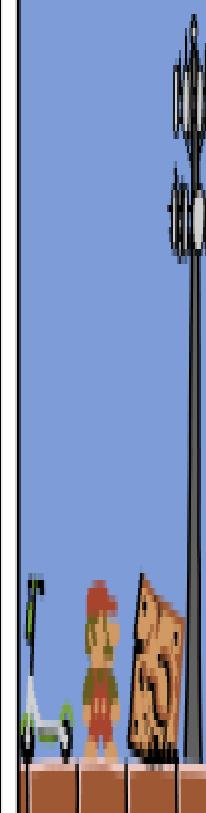
MARIO?

IT'S ME!

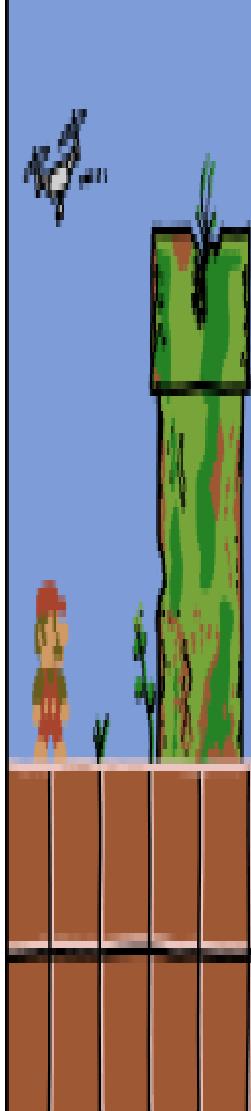
WHAT ARE YOU  
DOING HERE?



PART OF ME  
EXPECTS TO  
FIND THAT  
EVERYTHING'S  
CHANGED.

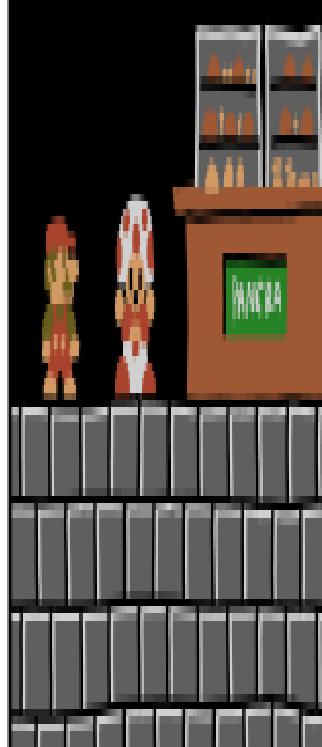


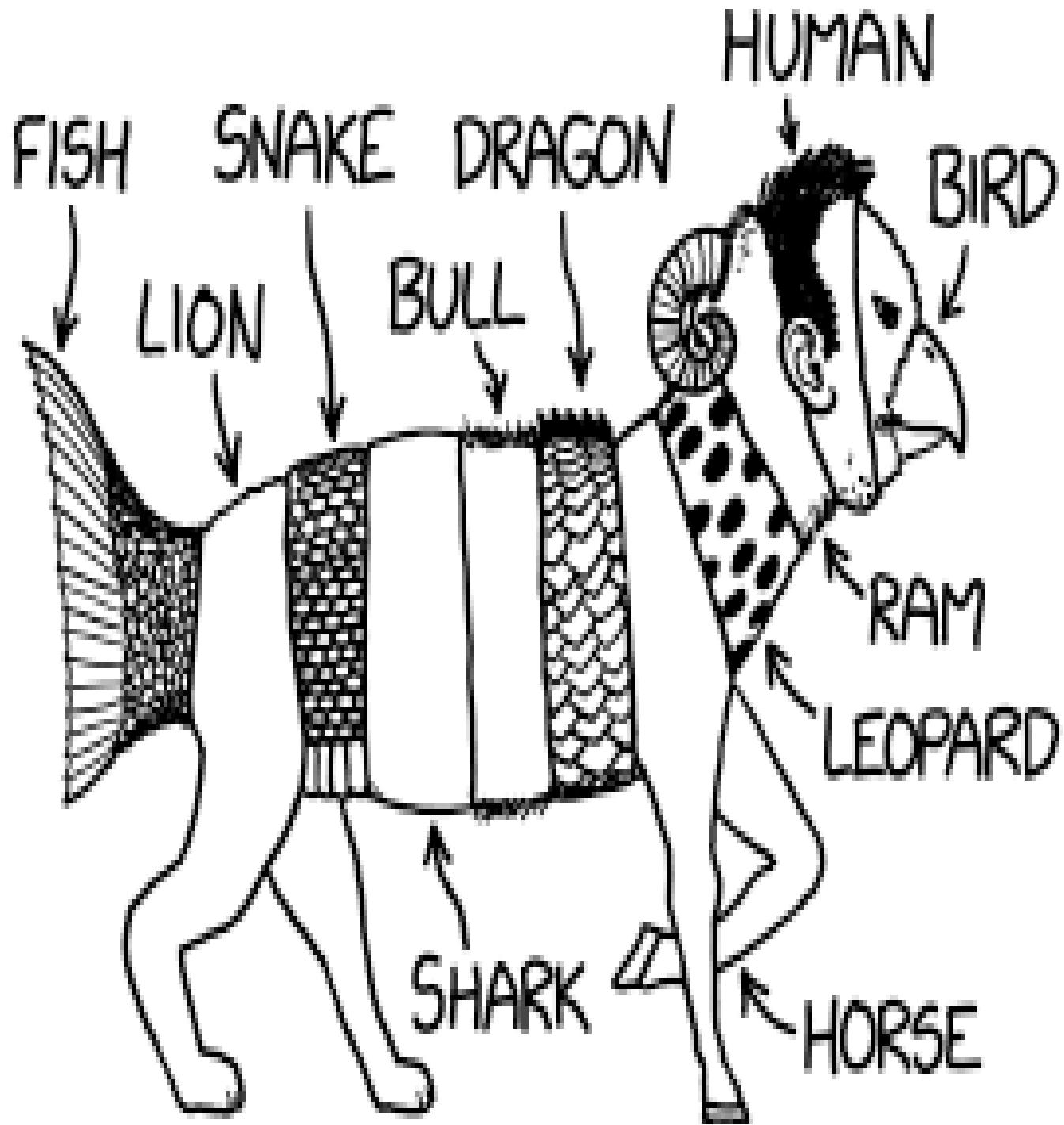
THAT PIPES HAVE  
ROTTED, WALLS  
HAVE CRUMBED,  
BAD GUYS HAVE  
MOVED ON.



THAT EVEN OUR GAME  
WORLDS CAN'T ESCAPE  
THE PASSAGE OF TIME.

THANK YOU, MARIO!  
BUT THIS IS A  
PANERA NOW!

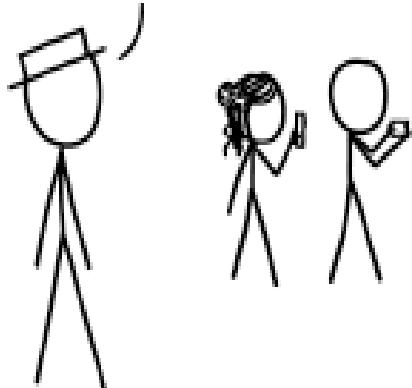




THE OMNITAURO

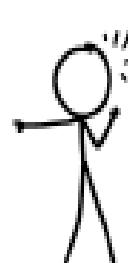
SOME PEOPLE COMPLAIN  
THAT WE SEE THE WORLD  
THROUGH OUR CAMERAS.

KIDS THESE DAYS...



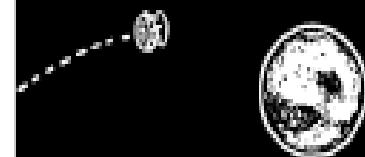
BUT TO ME, THE REALLY  
EXCITING PART OF FINDING  
SOMETHING NEW

WOW, YOU GOTTA  
COME SEE THIS!



HAS ALWAYS BEEN  
SHOWING IT TO OTHERS.

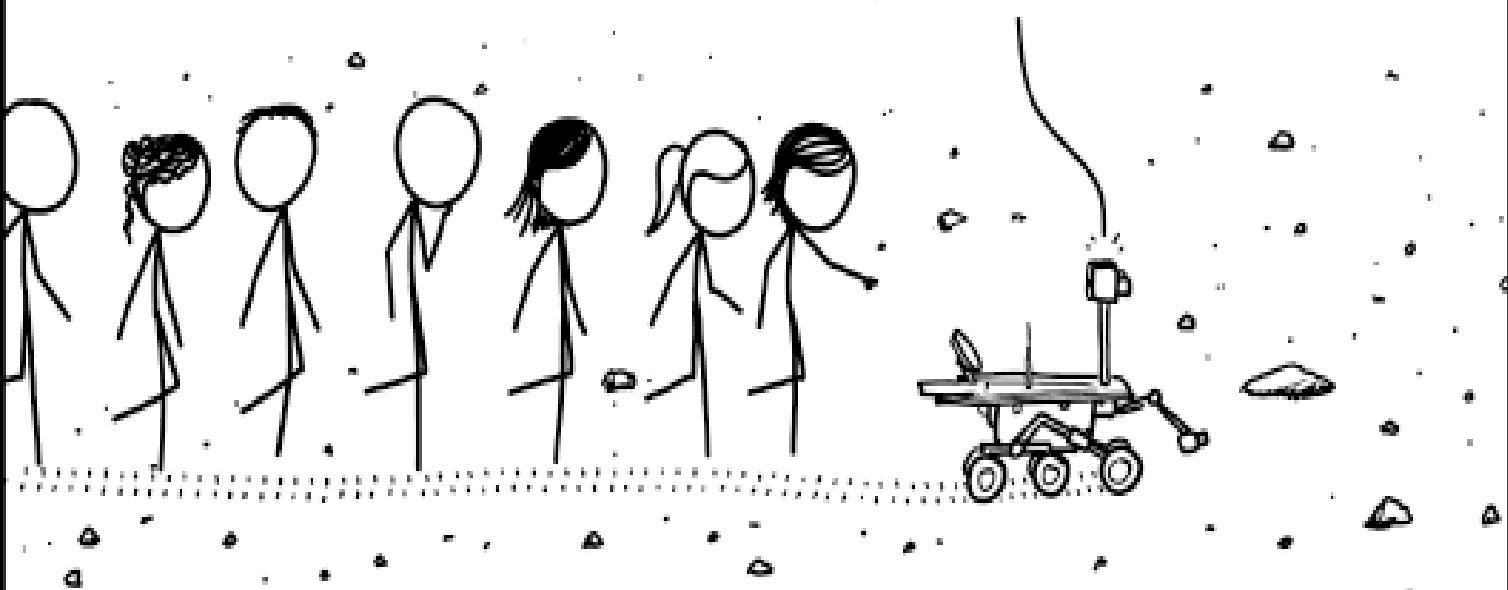
EXPLORING AN  
ENTIRE NEW WORLD  
WOULD ALREADY BE  
THE ADVENTURE  
OF A LIFETIME.



IMAGINE HAVING THE  
CHANCE TO SHARE  
EVERY NEW SIGHT

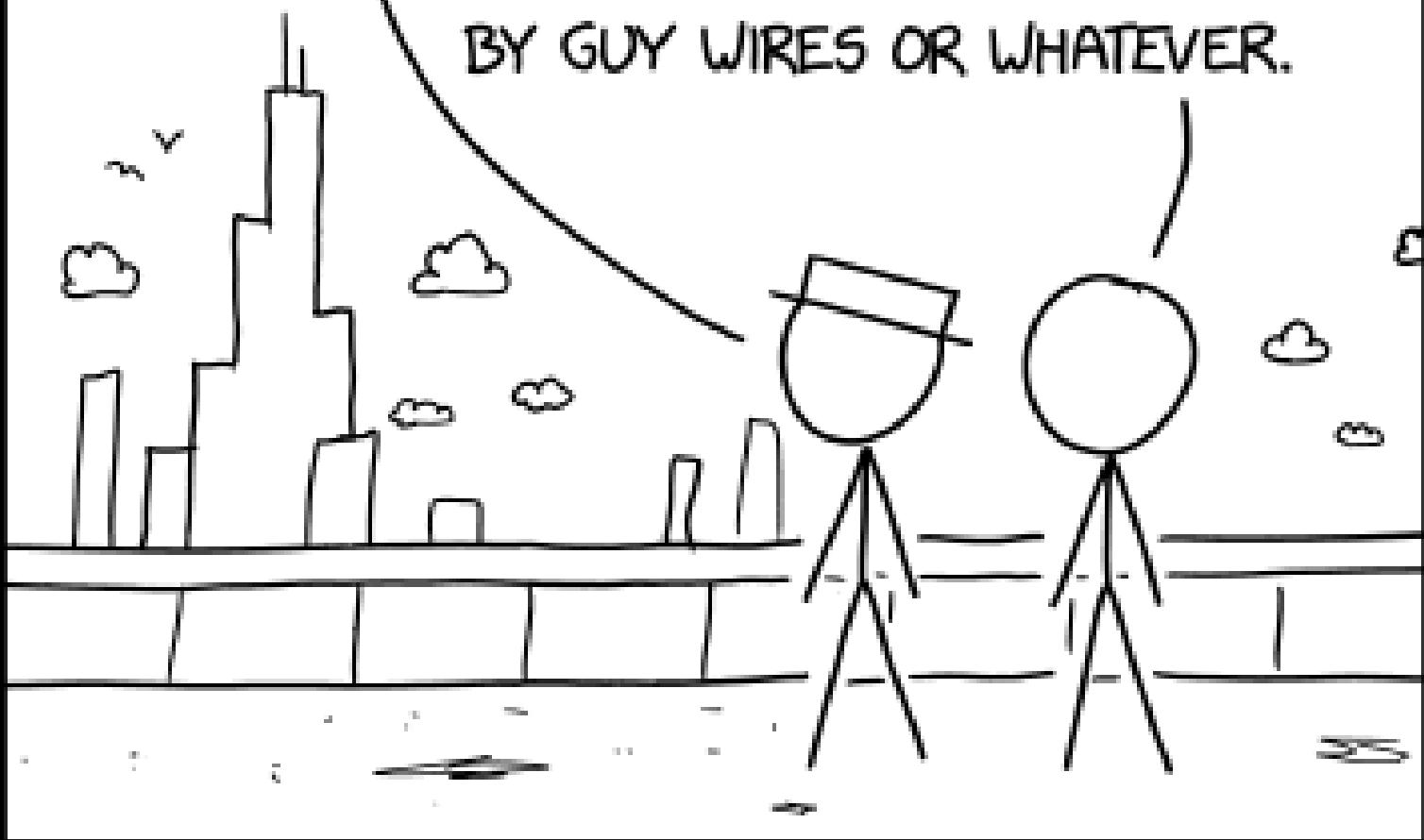
WITH SEVEN BILLION FRIENDS.

...AND HERE'S A TRENCH I DUG WITH MY WHEEL, AND HERE'S  
WHERE A DUST DEVIL WENT RIGHT PAST ME, AND OVER THERE  
IS THE BIGGEST CLIFF I'VE EVER SEEN, AND THIS IS...



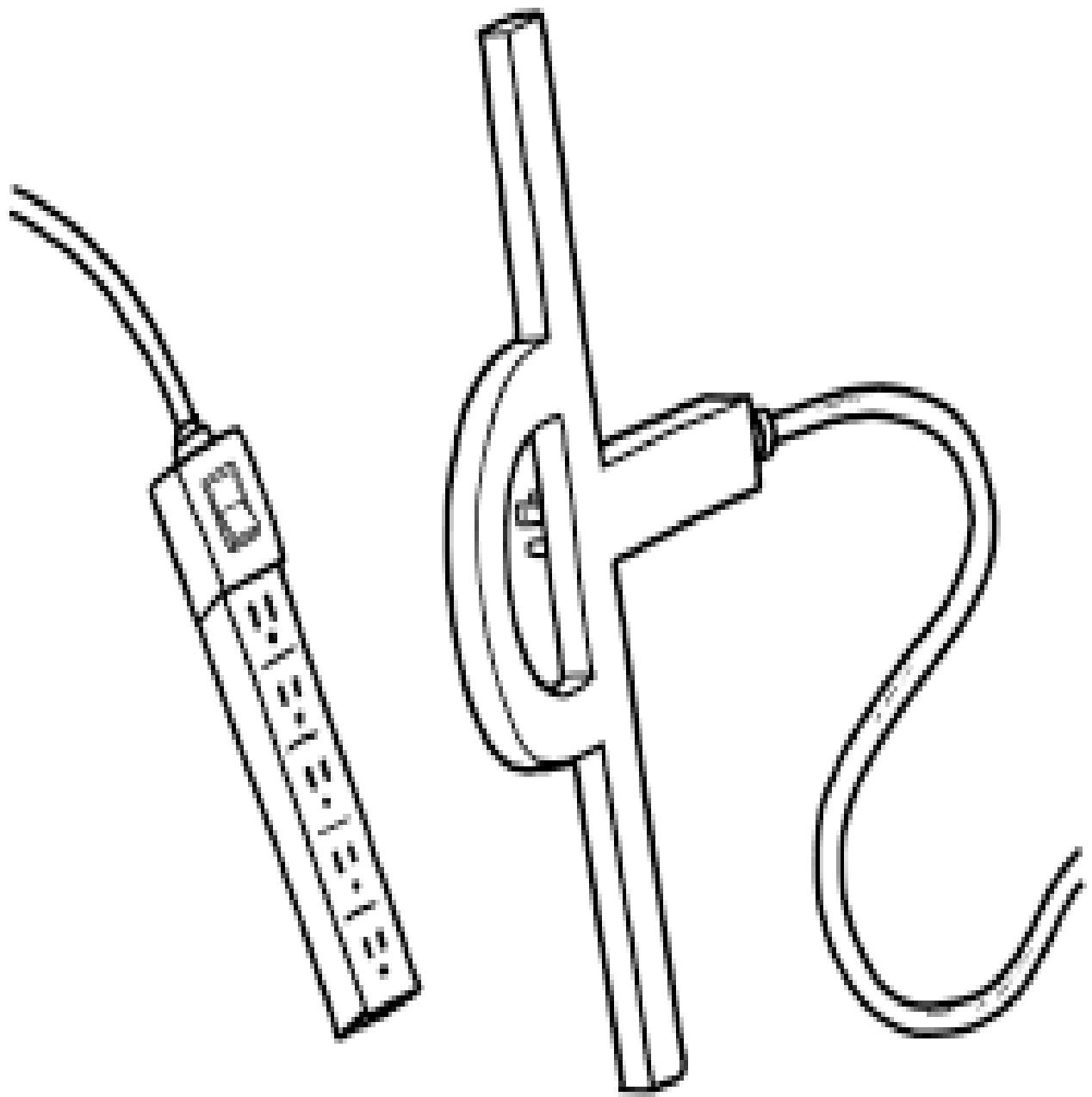
YOU KNOW, BACK IN THE 90s, THE SEARS TOWER WAS THE WORLD'S TALLEST TOWER.

YEAH! OR "BUILDING" THE CN TOWER AND THE KVLY-TV ANTENNA WERE TALLER, BUT THE CN TOWER ISN'T ALWAYS CONSIDERED A BUILDING AND THE ANTENNA IS SUPPORTED BY GUY WIRES OR WHATEVER.



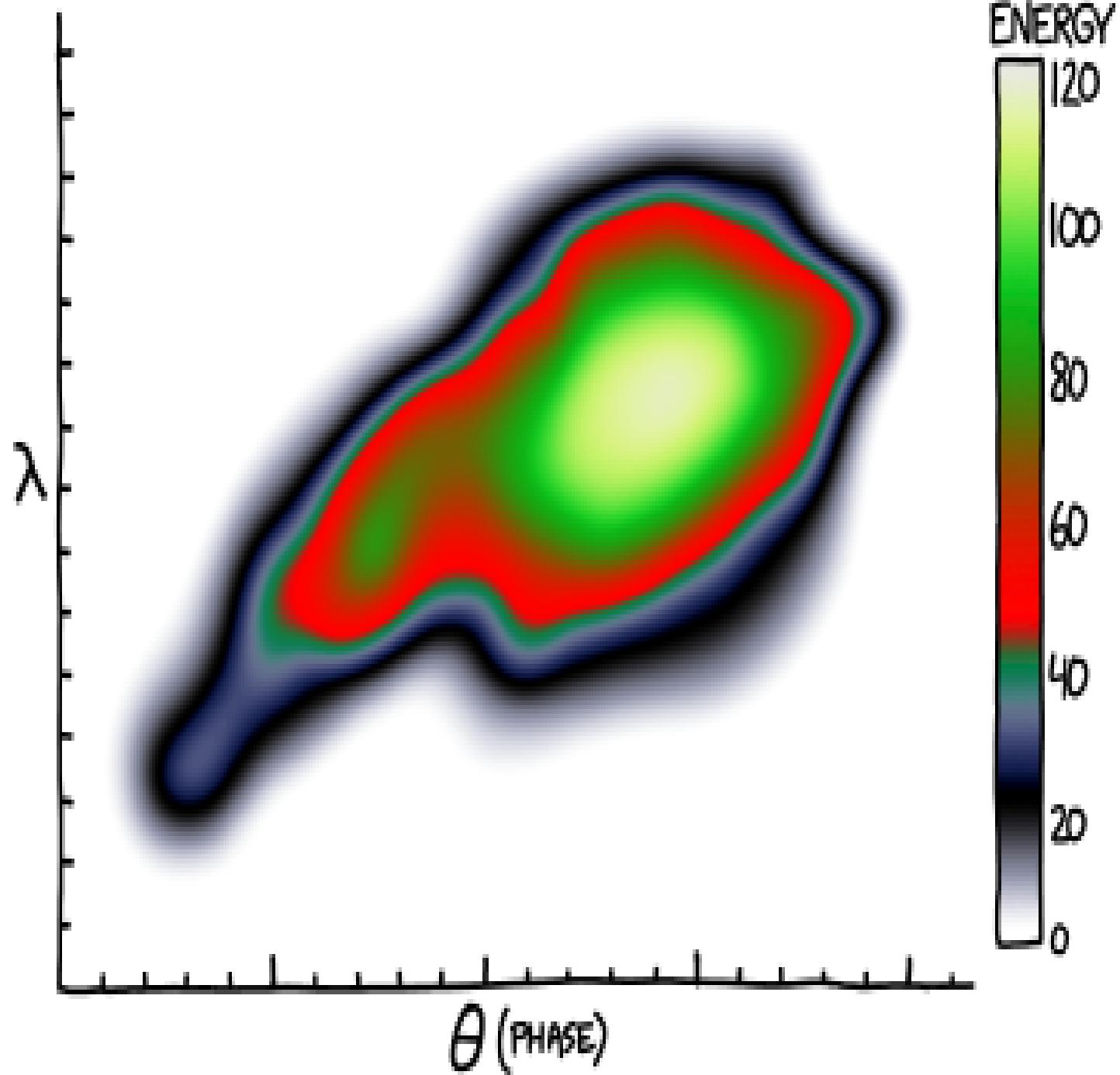
WHENEVER I GET SELF-CONSCIOUS ABOUT HOW OBSESSIVE I SOUND ABOUT SOME RANDOM TOPIC, I PANIC AND TACK ON "OR WHATEVER"

# CURSED CONNECTORS #78



THE OUTLET DENIER

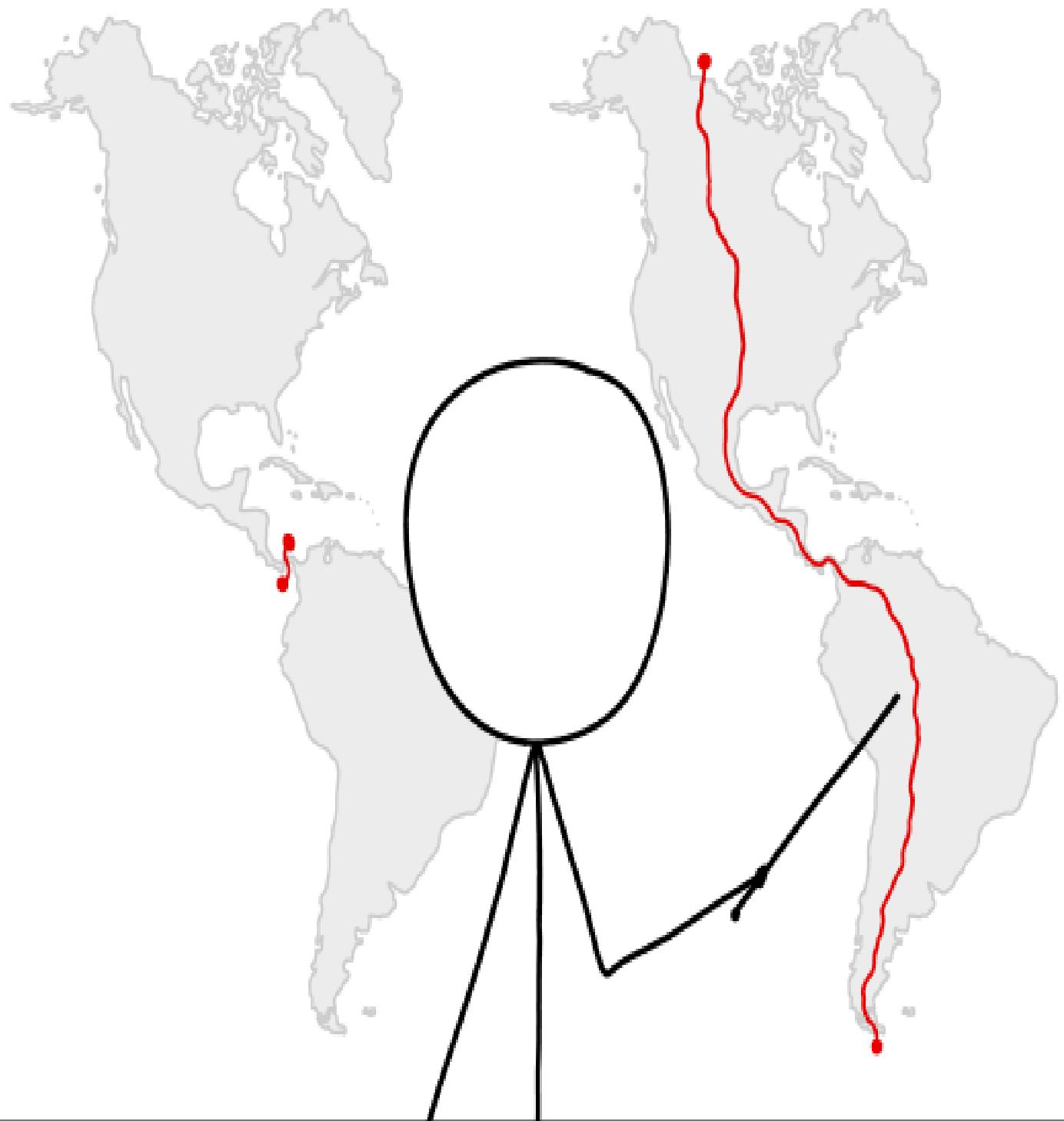
FIGURE 2



EVERY YEAR, DISGRUNTLED SCIENTISTS COMPETE  
FOR THE PAINBOW AWARD FOR WORST COLOR SCALE.

ATLANTIC-PACIFIC OPTION

ARCTIC-ANTARCTIC OPTION



I STILL DON'T UNDERSTAND WHY THE PANAMA  
CANAL PLANNERS REJECTED MY PROPOSAL.

DO YOU WANT TO GO SEE SONIC (THE HEDGEHOG)?

WHY ARE THERE SO MANY BOOKS ABOUT JACK (THE RIPPER)?

I DIDN'T KNOW ROBIN WILLIAMS ONCE PLAYED POPEYE (THE SAILOR MAN)



### MY HOBBY:

WHENEVER I MENTION ANYONE CALLED "<NAME> THE <X>", I PUT "THE <X>" IN PARENTHESES, LIKE I ADDED IT AS A CLARIFICATION.

LISTEN, I KNOW I SAID  
YOUR NAME THREE TIMES.

BUT BEFORE YOU COME OUT OF  
THE MIRROR AND MURDER ME,  
CAN YOU HOLD THIS COBALT-60  
AND TAKE SOME MEASUREMENTS?

SEE, I'M RESEARCHING  
PARITY CONSERVATION...



IT TOOK SOME NEGOTIATING, BUT I'VE  
FINALLY BECOME THE FIRST PERSON TO  
COAUTHOR A PAPER WITH BLOODY MARY.

LOOKING DOWN  
TOWARD THE SUN  
AND THE  
PIRATES SOLAR PROBE  
COMPLETED ONE TO EIGHT  
SIXES ARE ADDED TO SCALE

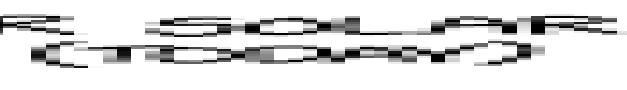
CELESTIAL SCALES

EARTH 

 VENUS

MERCURY 

MARS 

PIRATES SOLAR  
PROBE 

PIRATES SOLAR  
PROBE (2025) 

SUN 

— FUN FOR ME —

NO

YES

FUN FOR  
GUESTS

YES



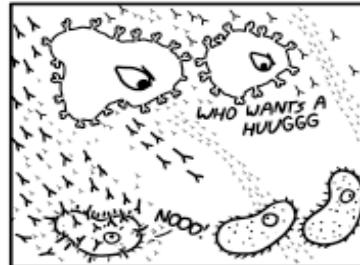
I KEEP ACCIDENTALLY PLANNING PARTIES IN THE TOP RIGHT QUADRANT.

I'M WORRIED ABOUT HUMANS DEVELOPING RESISTANCE TO US.

USING PASTA.



THE HUMAN IMMUNE SYSTEM IS A NIGHTMARE. IT'S THE WORST. IT'S THE SCARIEST THING IN THE UNIVERSE.

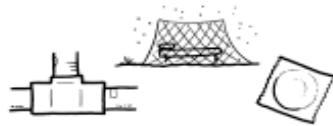


WE CAN ONLY SURVIVE BY STAYING AHEAD OF IT. KEEP JUMPING FROM PERSON TO PERSON, KEEP MUTATING AND EVOLVING. BUT NOW HUMANS ARE ADAPTING TOO FAST.

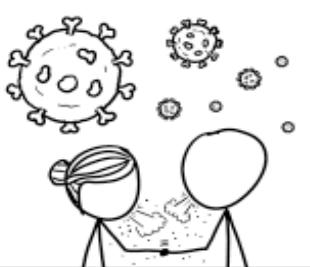


WE SPREAD THROUGH THEIR WATER. THEY BUILT PIPES. WE USED MOSQUITOES. THEY PUT OUT NETS AND POISON EVERYWHERE.

WE SPREAD THROUGH SEX, AND SUDDENLY THEY ALL HAD THESE PLASTIC THINGS.



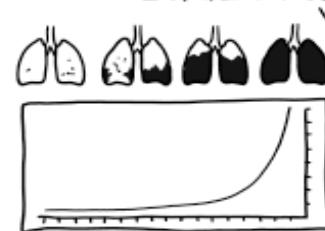
THIS TIME, WE REALLY THOUGHT WE HAD THEM. ONE OF US GOT GOOD AT TRANSMISSION THROUGH EVERYDAY CONTACT.



IT WAS GREAT. WE WERE TEARING THROUGH LUNGS, SPREADING LIKE WILDFIRE.

HOORAY!

I HATE LUNGS.



THEN, ALL OF A SUDDEN, HUMANS EVERYWHERE JUST... STOPPED. THEY STOPPED WORKING, THEY STOPPED SEEING FRIENDS.



WHAT ARE THEY DOING?

NOTHING!

THEY'RE JUST SITTING THERE IN THEIR HOUSES WASHING THEIR HANDS.

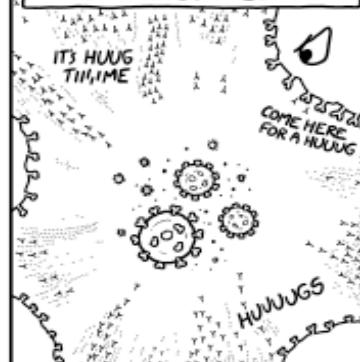


SUDDENLY, HUMANS HAVE BECOME DEAD ENDS. WE TRY TO JUMP FROM ONE TO THE NEXT, BUT THERE'S NO ONE TO JUMP TO.

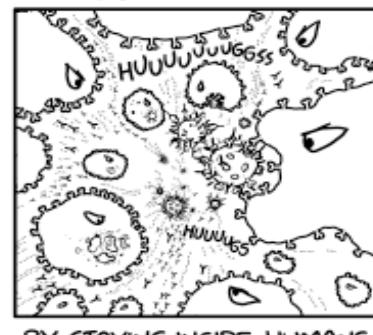


WE CAN'T ESCAPE.

WE'RE TRAPPED IN THERE WITH THOSE GHASTLY IMMUNE SYSTEMS.



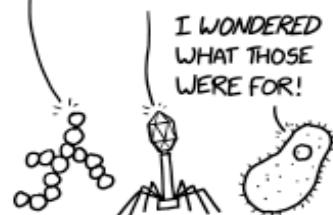
EVEN IF WE WIN A FIGHT, THERE'S NOWHERE TO GO.



BY STAYING INSIDE, HUMANS HAVE BECOME RESISTANT.

HOW COULD THEY EVOLVE THAT FAST? HUMANS TAKE DECADES TO REPRODUCE!

IT'S NOT EVOLUTION. IT'S SOMETHING WITH THEIR BRAINS.



I WONDERED WHAT THOSE WERE FOR!

HUMANS STARTED LOOKING AT THEIR PHONES, TALKING, WRITING WORDS, AND MAKING SIGNS. A HUMAN NAMED "GLORIA GAYNOR" FILMED HERSELF SINGING AT HER BATHROOM SINK. AND THEY BOUGHT LOTS OF PASTA.

THEN, AROUND THE WORLD, THEY ALL WENT HOME AND STARTED WASHING THEIR HANDS.

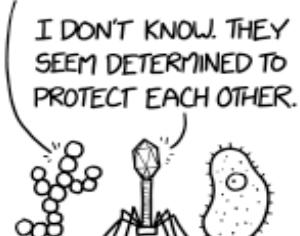


THEY SAW WHAT WE WERE DOING AND CHANGED THEIR BEHAVIOR TO STOP US.



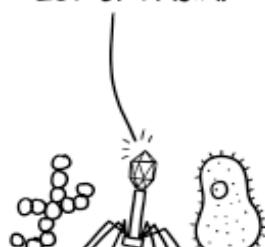
BRAINS ARE THE WORST.

IT'S NOT OVER, RIGHT? THEY CAN'T SUSTAIN THIS. THEY MUST BE BORED AND TIRED. WILL THEY GIVE UP?



I DON'T KNOW. THEY SEEM DETERMINED TO PROTECT EACH OTHER.

AND THEY HAVE A LOT OF PASTA.



# PERCENTAGE STYLES IN ORDER OF ACCEPTABILITY

BEST

† 65%  
† 65 PERCENT

65 PER CENT

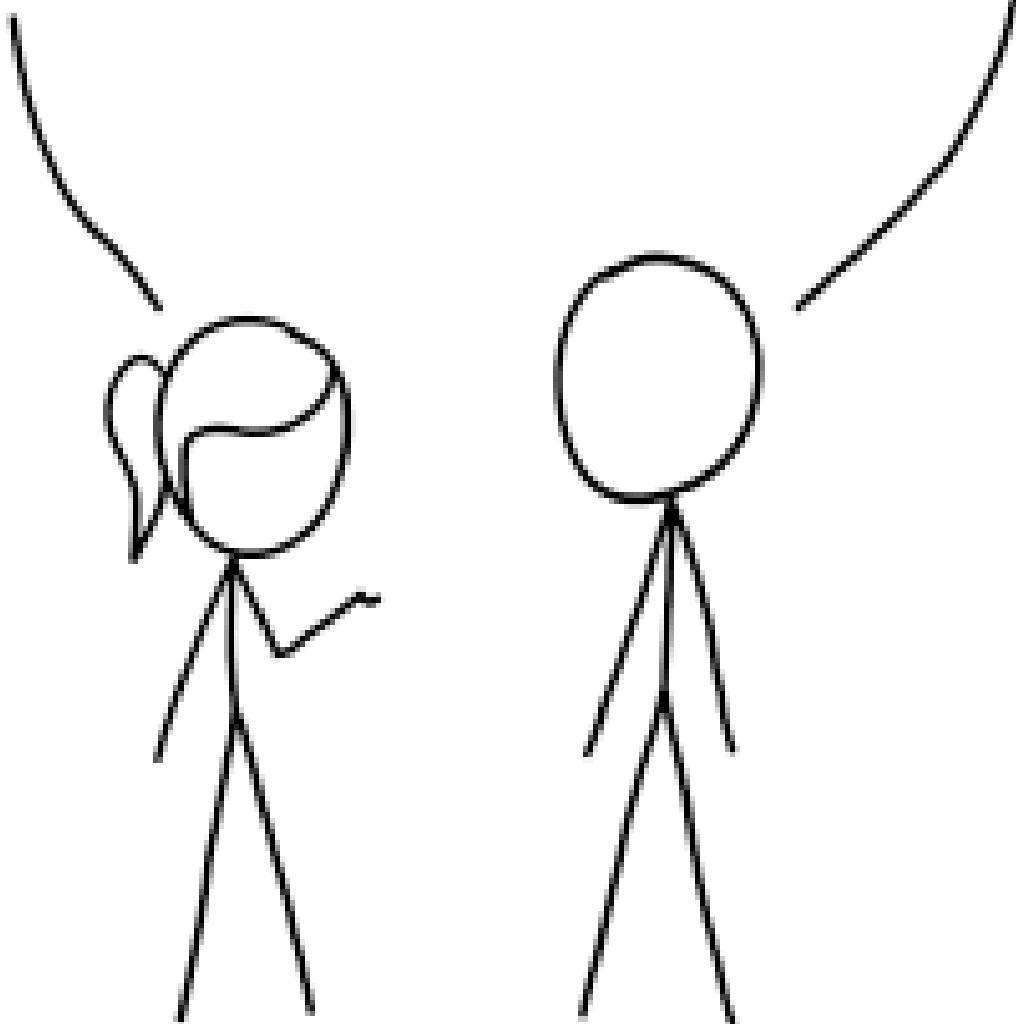
SIXTY-FIVE%

† 65 PERC

"2% MILK" IS 2% MILKFAT. BUT "WHOLE MILK" ISN'T 100% MILKFAT—IT'S 3.5%.

| WEIRD. WHAT'S THE REST OF IT?

ABOUT 27% IS DARK MATTER.  
THE REMAINDER IS DARK ENERGY.



# CHANGES I WOULD MAKE TO THE PERIODIC TABLE

The diagram shows a periodic table grid with several changes proposed:

- Period 1:** Hydrogen (H) is in its own box, and Helium (He) is moved to the right of Carbon (C).
- Period 2:** Lithium (Li) and Beryllium (Be) are merged with Titanium (Ti) and Vanadium (V).
- Period 3:** Sodium (Na) and Magnesium (Mg) are merged with Titanium (Ti) and Vanadium (V). Iron (Fe) is placed in the same box as Cobalt (Co) and Nickel (Ni).
- Period 4:** Calcium (Ca) is placed in the same box as Scandium (Sc), Titanium (Ti), Chromium (Cr), and Manganese (Mn). Iron (Fe) is placed in the same box as Cobalt (Co) and Nickel (Ni).
- Period 5:** Rubidium (Rb) and Strontium (Sr) are merged with Yttrium (Y) and Zirconium (Zr). Ruthenium (Ru) and Rhodium (Rh) are merged with Technetium (Tc). Palladium (Pd) is merged with Ruthenium (Ru) and Rhodium (Rh).
- Period 6:** Cesium (Cs) and Barium (Ba) are merged with Lanthanum (La) and Hafnium (Hf). Technetium (Tc) is merged with Rhenium (Re) and Osmium (Os). Rhodium (Rh) and Ruthenium (Ru) are merged with Rhodium (Rh) and Osmium (Os). Iridium (Ir) and Platinum (Pt) are merged with Rhodium (Rh) and Osmium (Os). Gadolinium (Gd) and Holmium (Ho) are merged with Gadolinium (Gd) and Holmium (Ho). Cerium (Ce) and Praseodymium (Pr) are merged with Cerium (Ce) and Praseodymium (Pr). Lanthanum (La) and Cerium (Ce) are merged with Lanthanum (La) and Cerium (Ce). Neodymium (Nd) and Promethium (Pm) are merged with Neodymium (Nd) and Promethium (Pm). Americium (Am) and Curium (Cm) are merged with Americium (Am) and Curium (Cm). Bk and Cf are merged with Bk and Cf.
- Period 7:** Francium (Fr) and Radium (Ra) are merged with Francium (Fr) and Radium (Ra). Actinium (Ac) and Thorium (Th) are merged with Actinium (Ac) and Thorium (Th). Rutherfordium (Rf) and Protactinium (Pa) are merged with Rutherfordium (Rf) and Protactinium (Pa). Dubnium (Db) and Neptunium (Np) are merged with Dubnium (Db) and Neptunium (Np). Sg and Br are merged with Sg and Br. Hs and Mt are merged with Hs and Mt. Ds and Rg are merged with Ds and Rg. Cn and Nh are merged with Cn and Nh. Fl and Mc are merged with Fl and Mc. Lv and Ts are merged with Lv and Ts. Og is merged with Og.
- Period 8:** A new row is added above the current Period 8, containing elements TBD, B, C, N, O, F, and Ne.
- Elements:** Elements in the top-right corner (B, C, N, O, F, Ne) are labeled "REPLACE THE BLANDER POST-TRANSITION METALS WITH NEW KINDS OF CARBON".
- Special Element:** Helium (He) is labeled "Sp (SPITE ELEMENT)".
- Neodymium Magnet:** A note says "NEODYMIUM CAN STAY MAGNETS ARE COOL" with "THAT W ANNOYS ME" written vertically next to it.
- Lanthanides and Actinides:** A note says "MOVE" with arrows pointing to the Lanthanide and Actinide boxes. Another note says "INSERTING THE LANTHANIDES AND ACTINIDES PROPERLY MAKES THE TABLE TOO WIDE. TRIAGE IS NEEDED. EACH ELEMENT WILL BE OFFERED FREE TRAINING TO HELP ADJUST TO ITS NEW COLUMN."
- Ytterby Elements:** A note says "3.4% OF ALL ELEMENTS ARE NAMED AFTER YTTERBY, SWEDEN (POP. 3,000) LET'S KEEP YTTRIUM, BUT RENAME THE OTHER 3 AFTER BIGGER CITIES (TOKIUM, DELHIUM, AND JAKARTIUM?) TO BE MORE FAIR."

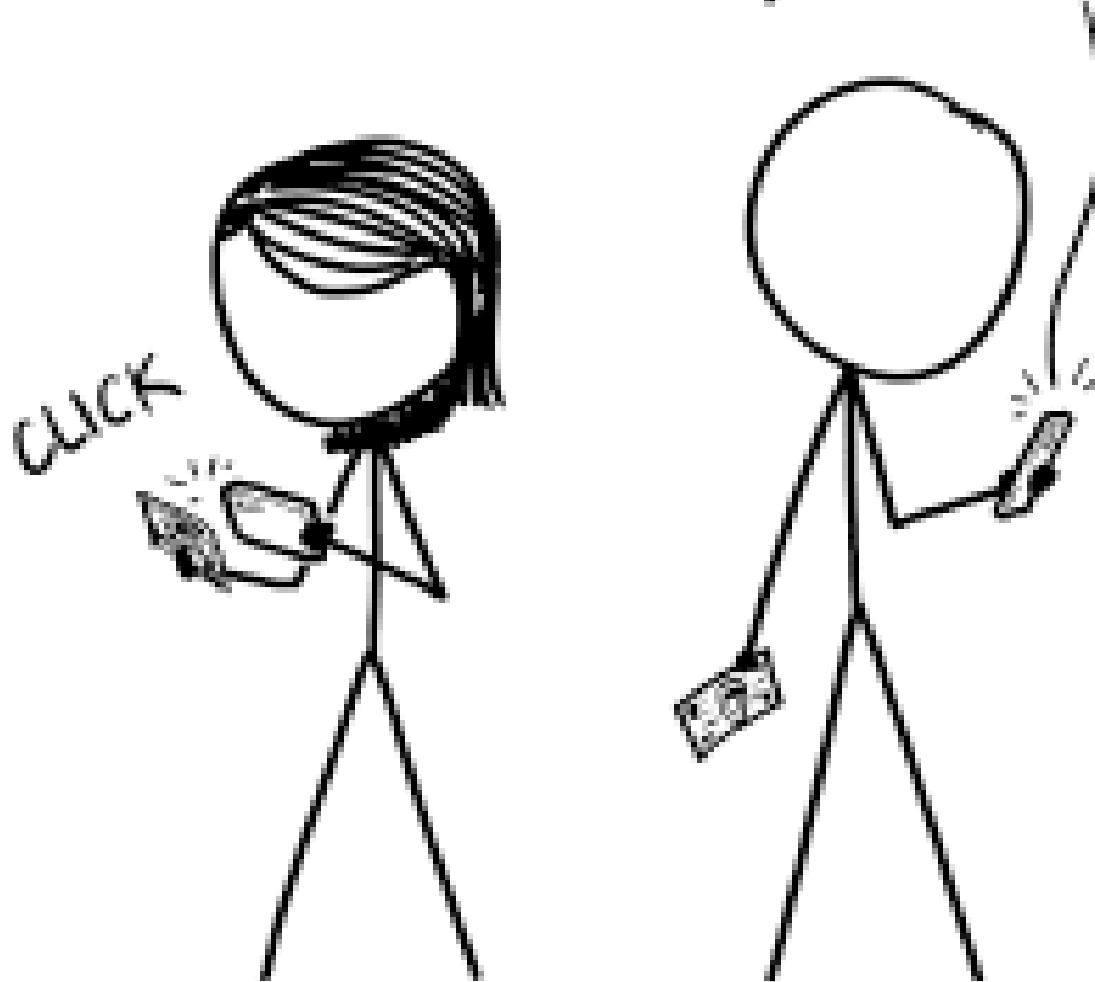
# PERSEVERANCE'S MICROPHONES ARE ACTIVE! DOWNLINKING AUDIO!

I'M READY WITH  
THE LOOPER PEDAL.

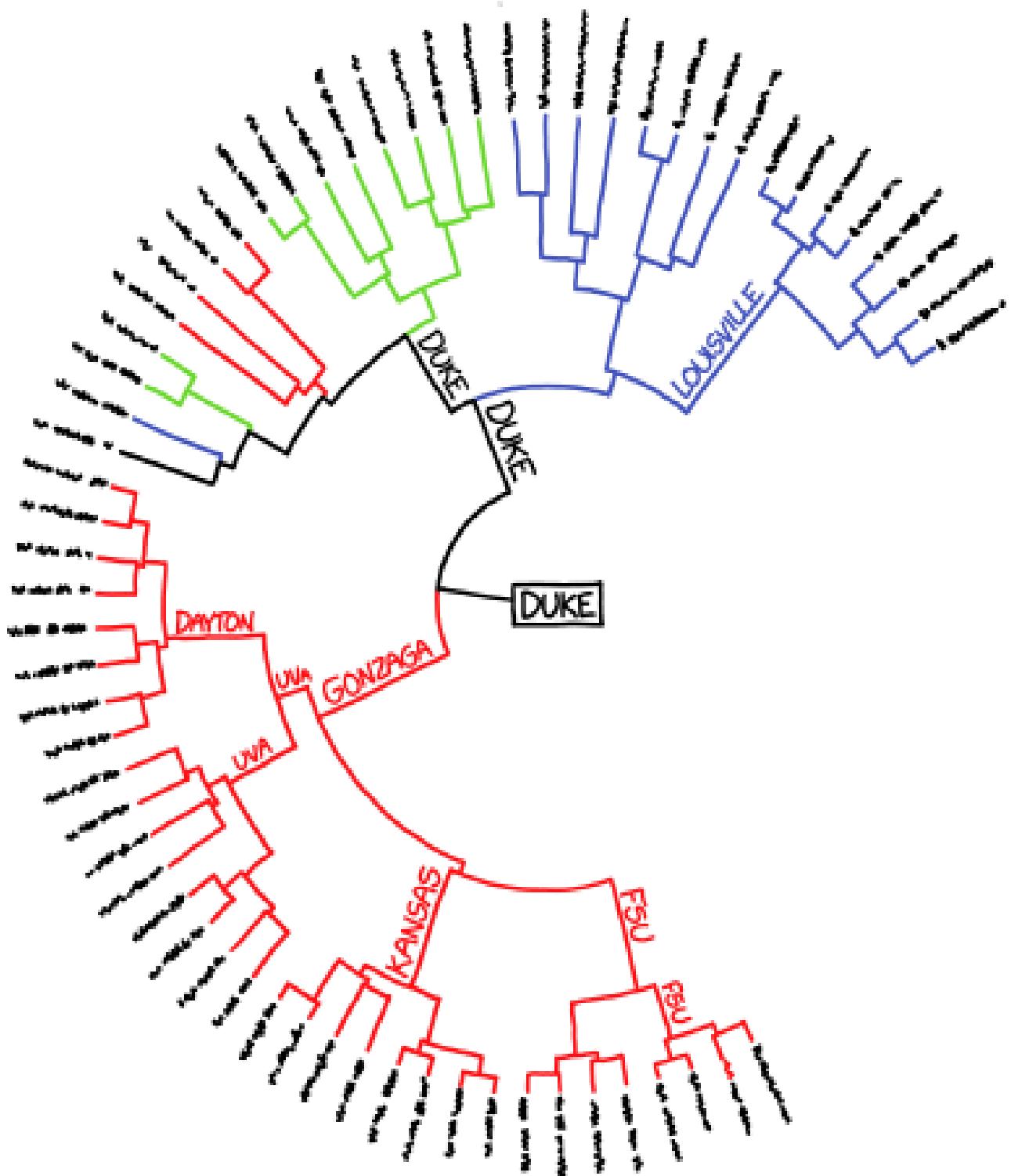


THE FIRST MARS SAMPLE RETURN

DEPOSIT  
ACCEPTED!

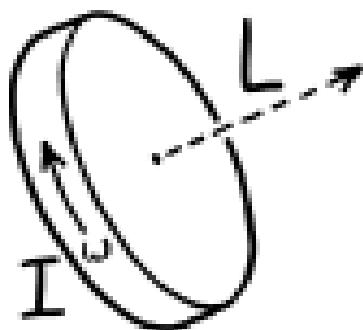


AFTER A LUCRATIVE SIX HOURS FOR US,  
OUR BANK REMOVED THE NEW FEATURE  
IN THEIR APP THAT LET YOU DEPOSIT  
CASH BY TAKING A PICTURE OF IT.



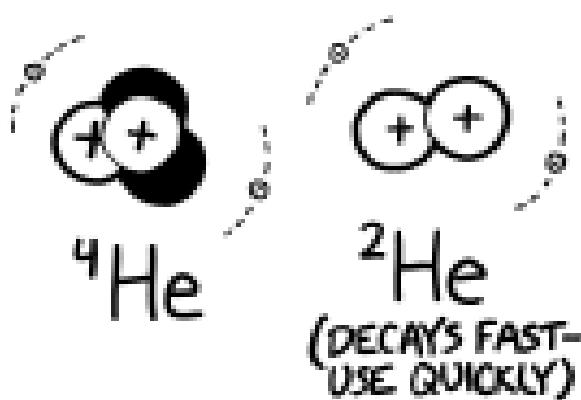
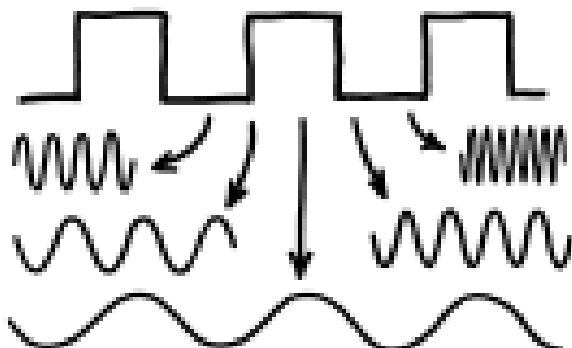
I WAS KICKED OFF THE BIOLOGY PROJECT AFTER I  
SECRETLY REPLACED ALL THE PHYLOGENETIC TREES  
IN OUR NEW PAPER WITH MARCH MADNESS BRACKETS.

# PHYSICS COST-SAVING TIPS



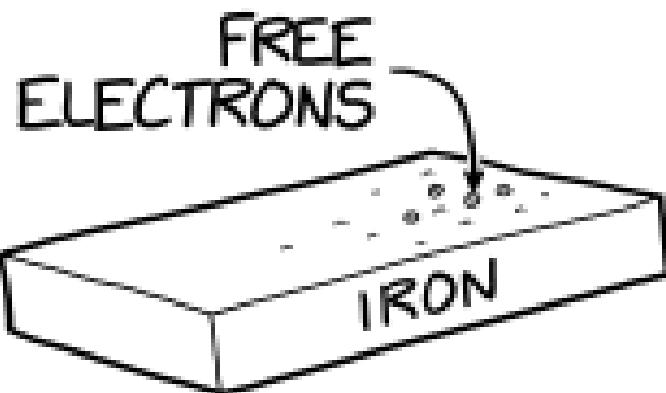
TRY REPLACING  
REGULAR VECTORS  
WITH PSEUDO VECTORS  
WHENEVER POSSIBLE

A SQUARE WAVE CAN  
BE BROKEN DOWN INTO  
AN INFINITE SUPPLY OF  
VALUABLE SINE WAVES



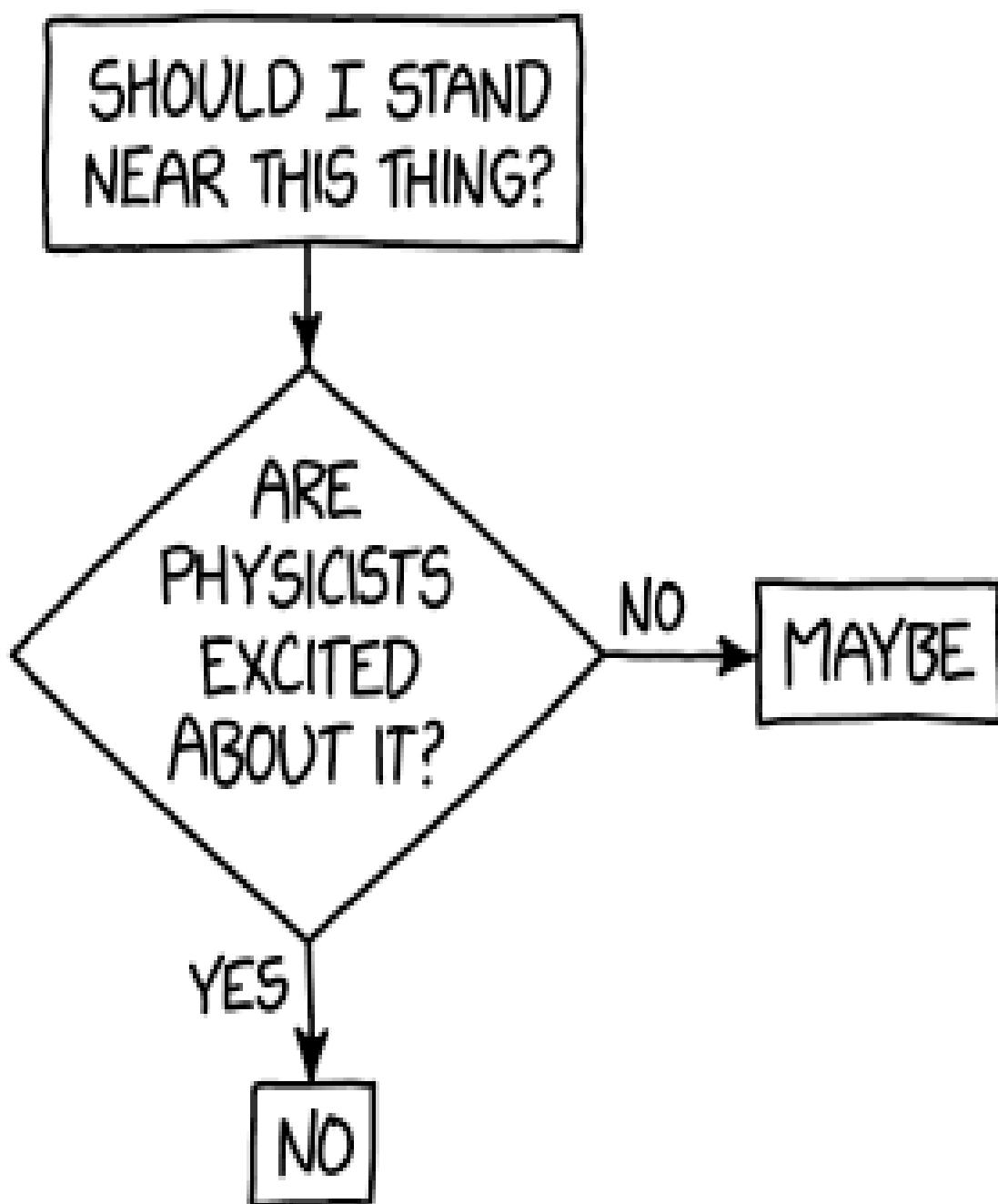
CUT WASTE BY BUYING  
LIGHTER ISOTOPES THAT  
DON'T HAVE ANY DEAD-  
WEIGHT NEUTRONS

CONDUCTORS ARE A  
GREAT SOURCE OF  
FREE ELECTRONS  
(MAY CARRY CHARGES)



# GENERAL PHYSICS SAFETY TIP:

(FROM WHAT IF? 2, [xkcd.com/whatif2](http://xkcd.com/whatif2))

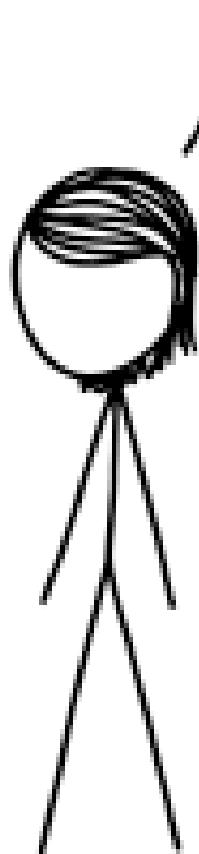
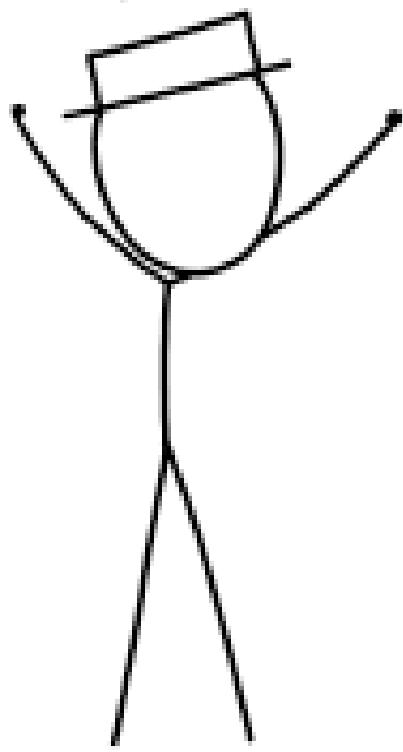


YOU PHYSICISTS ARE SUPPRESSING MY THEORY  
BECAUSE IT'S INCONVENIENT FOR YOUR MODELS!

WAIT, WE HAVE A MAFIA THAT CAN  
SUPPRESS ANNOYING RESULTS?

WHY DIDN'T THEY DO SOMETHING  
ABOUT THE DARK ENERGY PEOPLE?!

WE GAVE THEM A NOBEL PRIZE  
BUT I'M STILL MAD AT THEM!



I FEEL LIKE BY NOW I SHOULD KNOW ABOUT THE STOCK MARKET.  
WHAT IS INVESTING? DO YOU JUST OPEN A WEBSITE AND PICK THE COMPANIES YOU LIKE?



WELL, YOU TOTALLY CAN. BUT THERE'S A LOT OF EVIDENCE THAT NO INVESTING STRATEGY CONSISTENTLY PICKS STOCKS THAT OVERPERFORM THE AVERAGE OF THE WHOLE MARKET. A LOT OF FUND MANAGEMENT IS A MYTH.



HUH, OKAY.

BUT THERE'S A WEIRD COROLLARY TO THAT IDEA: IT IMPLIES THAT, IGNORING FEES AND STUFF, IT'S JUST AS HARD TO CONSISTENTLY LOSE MONEY BY PICKING BAD STOCKS FROM AN INDEX.



IF SOMEONE COULD CONSISTENTLY BUY BAD STOCKS, YOU COULD BEAT THE AVERAGE BY HIRING THEM, LETTING THEM PRETEND TO INVEST, THEN BUYING EVERY STOCK EXCEPT THE ONES THEY PICK. IN A WAY, BAD JUDGMENT IS JUST AS HELPFUL AS GOOD JUDGMENT.

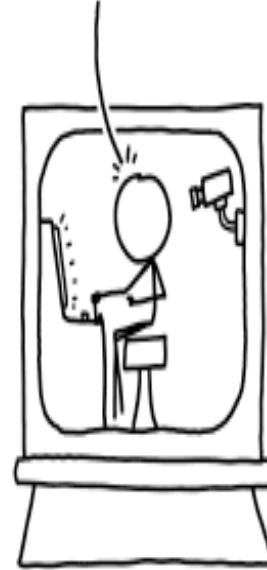


OH MY GOD.  
I CAN DO THAT!  
NO, IT'S JUST  
AN EXAMPLE—  
THIS IS THE  
JOB I WAS  
BORN FOR.



SOON...

HEY, THIS COMPANY'S CEO WANTS REVENGE ON THE SAME GHOST AS ME! I'M BUYING!  
OOH, AND THIS ONE IS PLANNING TO DEVELOP A "CAMPING ROOMBA." THAT'S A SURE BET!



DROP COMPANIES  
#208 AND #1434  
FROM THE INDEX.



DONE.

# PILOT PRIORITY LIST

---

## STANDARD SECTION

---

1. **AVIATE**  
MAINTAIN CONTROL OF THE AIRCRAFT
2. **NAVIGATE**  
FIGURE OUT WHERE YOU'RE GOING
3. **COMMUNICATE**  
STAY IN TOUCH WITH ATC AND OTHERS

---

## EXTENDED SECTION

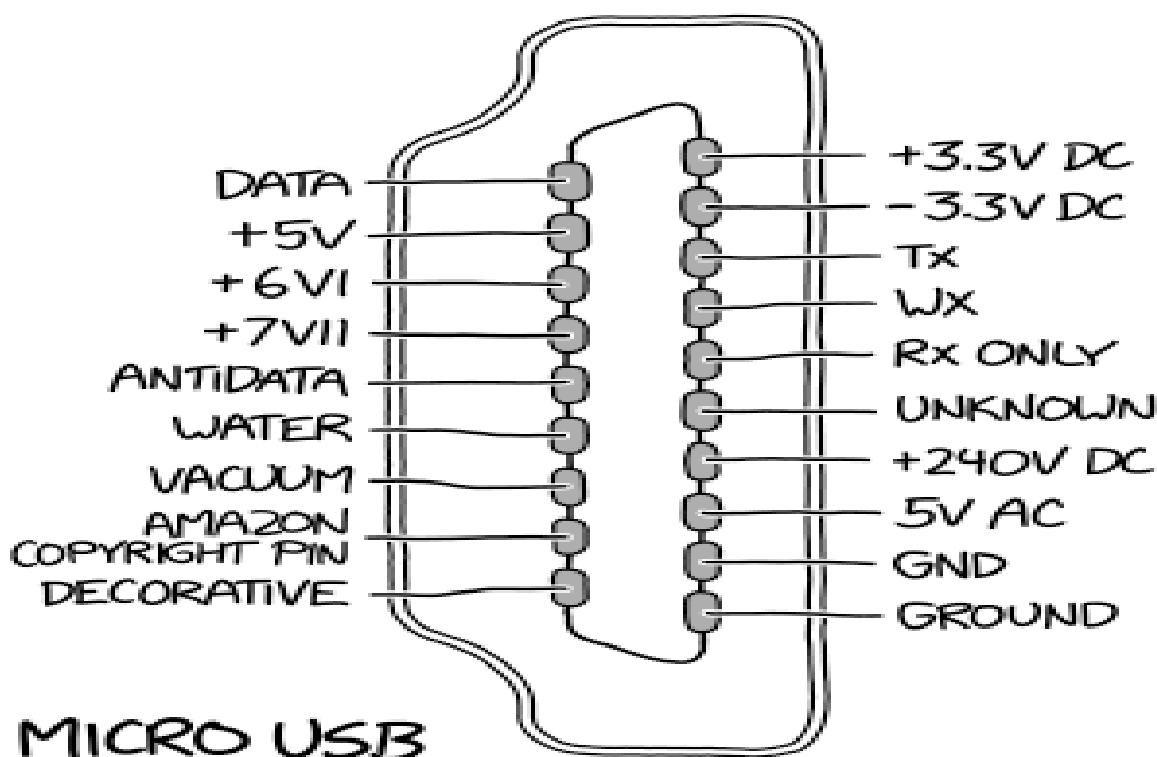
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4. **DECORATE**  
MAKE THE COCKPIT FANCY
5. **ACCELERATE**  
SEE HOW FAST YOU CAN GO
6. **ROLLER SKATE**  
ZOOM DOWN THE AISLE
7. **EXFOLIATE**  
SCRUB AWAY DEAD SKIN
8. **SUBLIMATE**  
TURN DIRECTLY TO A VAPOR
9. **POLLINATE**  
FLY LOW TO STIR UP POLLEN
10. **CONGRATULATE**  
YOU'RE DOING A GOOD JOB FLYING A PLANE!

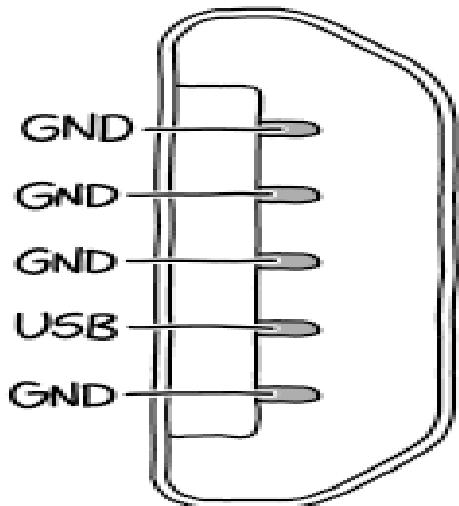
# PINOUTS

## QUICK REFERENCE GUIDE

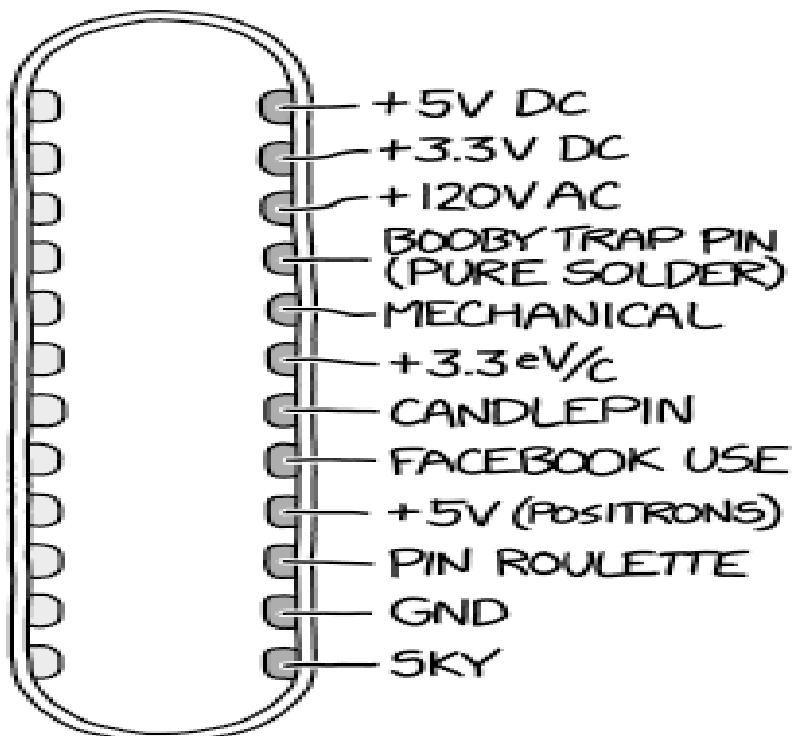
### HDMI



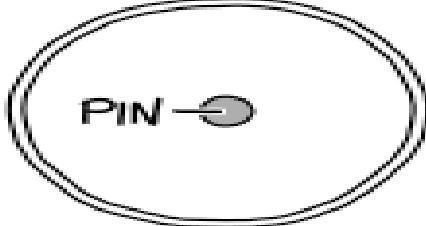
### MICRO USB



### USB-C



### COAX



HOW WILL WE KEEP THE SPACECRAFT SUPPLIED WITH HEAT AND ELECTRICITY?

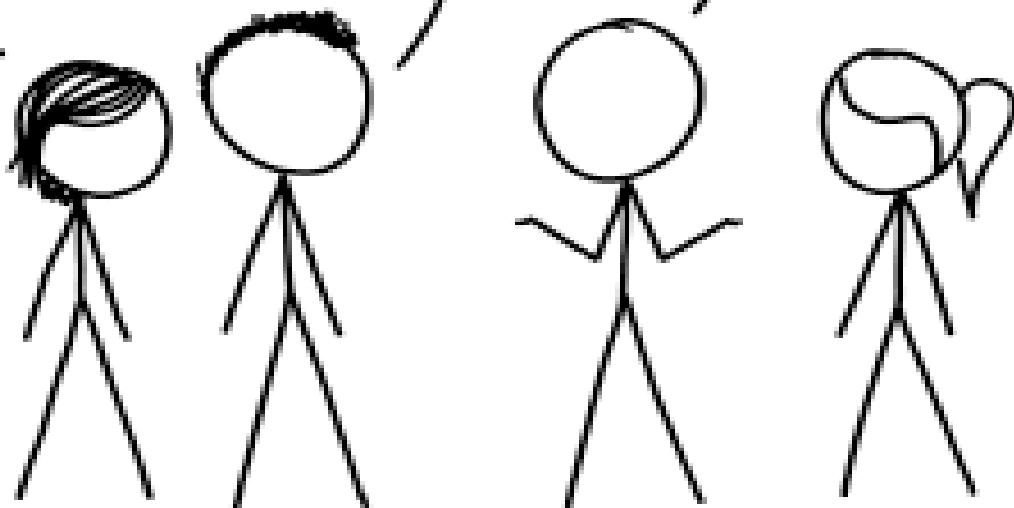
| WE COULD USE A POWER ORB. THEY GIVE OFF THOUSANDS OF WATTS 24/7.

HUH? HOW DO YOU RECHARGE IT? |

| YOU DON'T. IT'S JUST MADE OF A METAL THAT EMITS ENERGY.

OK, COME ON.

CAN WE PLEASE BE SERIOUS HERE?



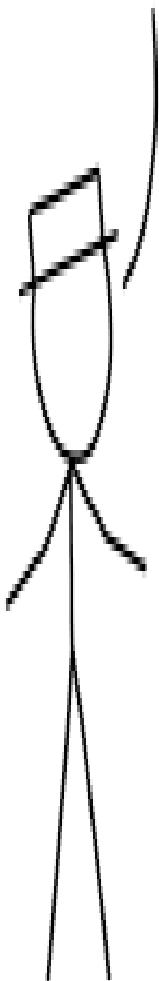
FOR SOMETHING THAT'S REAL,  
PLUTONIUM IS SO UNREALISTIC.

I REFUSE TO BUBBLE  
WITH ANYONE WHO  
CALLS IT A "POD"  
AND NOT A "BUBBLE".



THIS IS PROBABLY MY OPINION THAT  
WOULD HAVE SOUNDED THE MOST  
INCOHERENT TO ME A YEAR AGO.

POLLS ARE  
JUST NUMBERS.  
  
YOU HAVE TO  
TALK TO PEOPLE  
ON THE STREET.



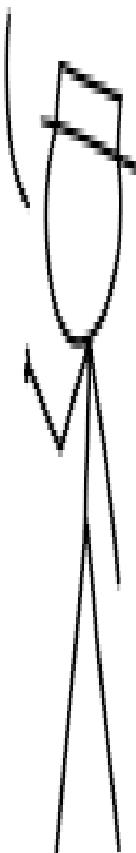
POLLS SAY MOST  
PEOPLE SUPPORT  
<CANDIDATE X>  
  
BUT THE PEOPLE  
I TALK TO ON THE  
STREET SUPPORT  
<CANDIDATE Y>



POLLS CLAIM MOST PEOPLE  
DON'T LIVE IN MY TOWN AND  
HAVE NEVER BEEN HERE.  
  
BUT THE PEOPLE I MEET  
ON THE STREET TELL A  
VERY DIFFERENT STORY.



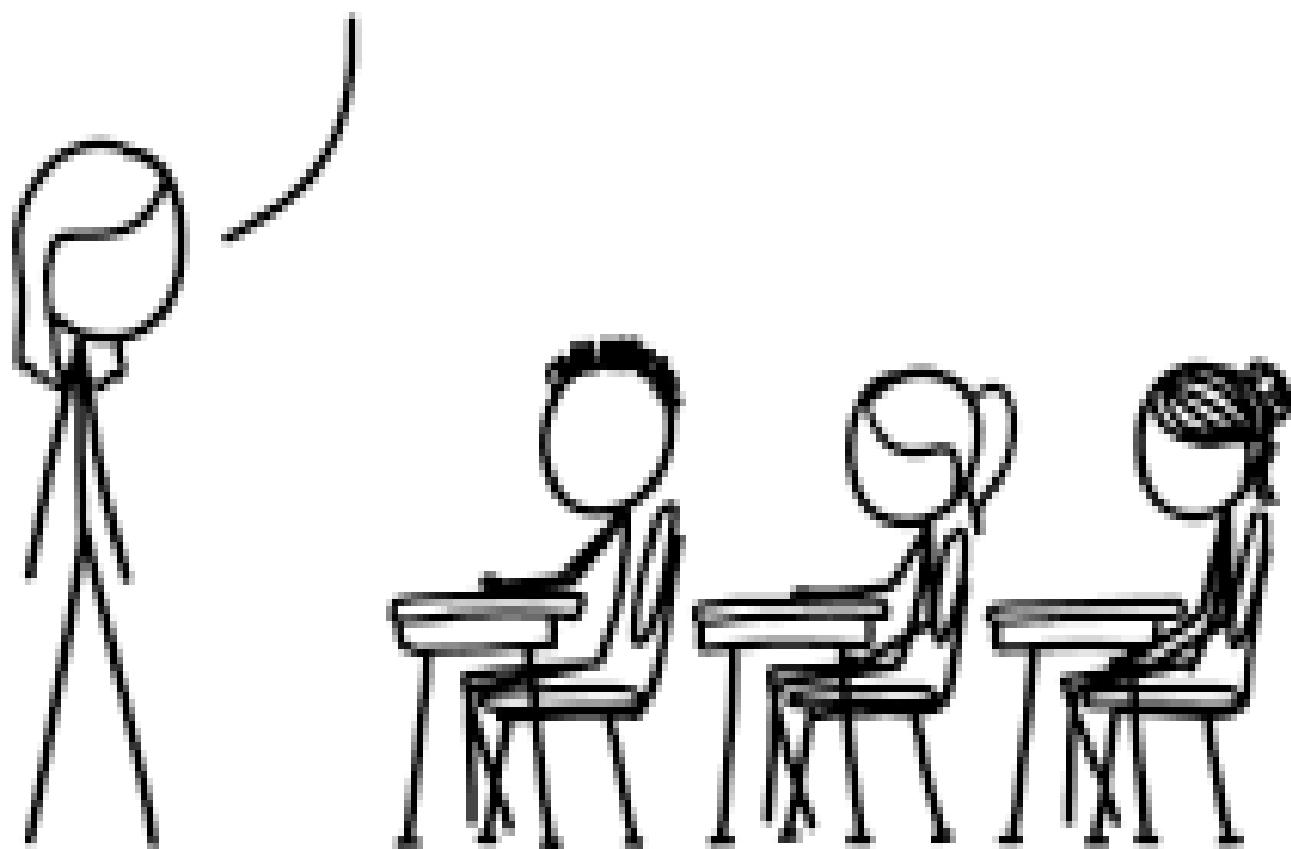
ACCORDING TO POLLS,  
MOST PEOPLE DON'T  
LIKE PLAYING IN TRAFFIC.  
  
SO WHY DO I NEVER  
SEEM TO MEET THESE  
PEOPLE ON THE STREET?



THERE'S NO EVIDENCE THAT  
KARL POPPER WASN'T BORN  
ON JULY 28<sup>TH</sup> 1902.

I

NO ONE HAS PROVEN THAT HE  
DIDN'T GROW UP IN VIENNA...





HAT FOR POST-PANDEMIC SOCIALIZING

## DRINKS

~~SODA~~  
~~WINE~~  
~~BEER~~  
~~COCKTAILS~~

~~SMALL CUPS  
OF ICE WATER~~

## FOOD

~~PIZZA~~  
~~NACHOS~~  
~~VARIOUS SNACKS~~

~~THREE M&Ms  
AND A SALTINE  
PER PERSON~~

## ENTERTAINMENT

~~MUSIC (AMBIENT)~~

~~KARAOKE~~

~~BIG SCREEN TV~~

~~SHOWING SPORTS~~

~~BOB ROSS~~

## ACTIVITIES

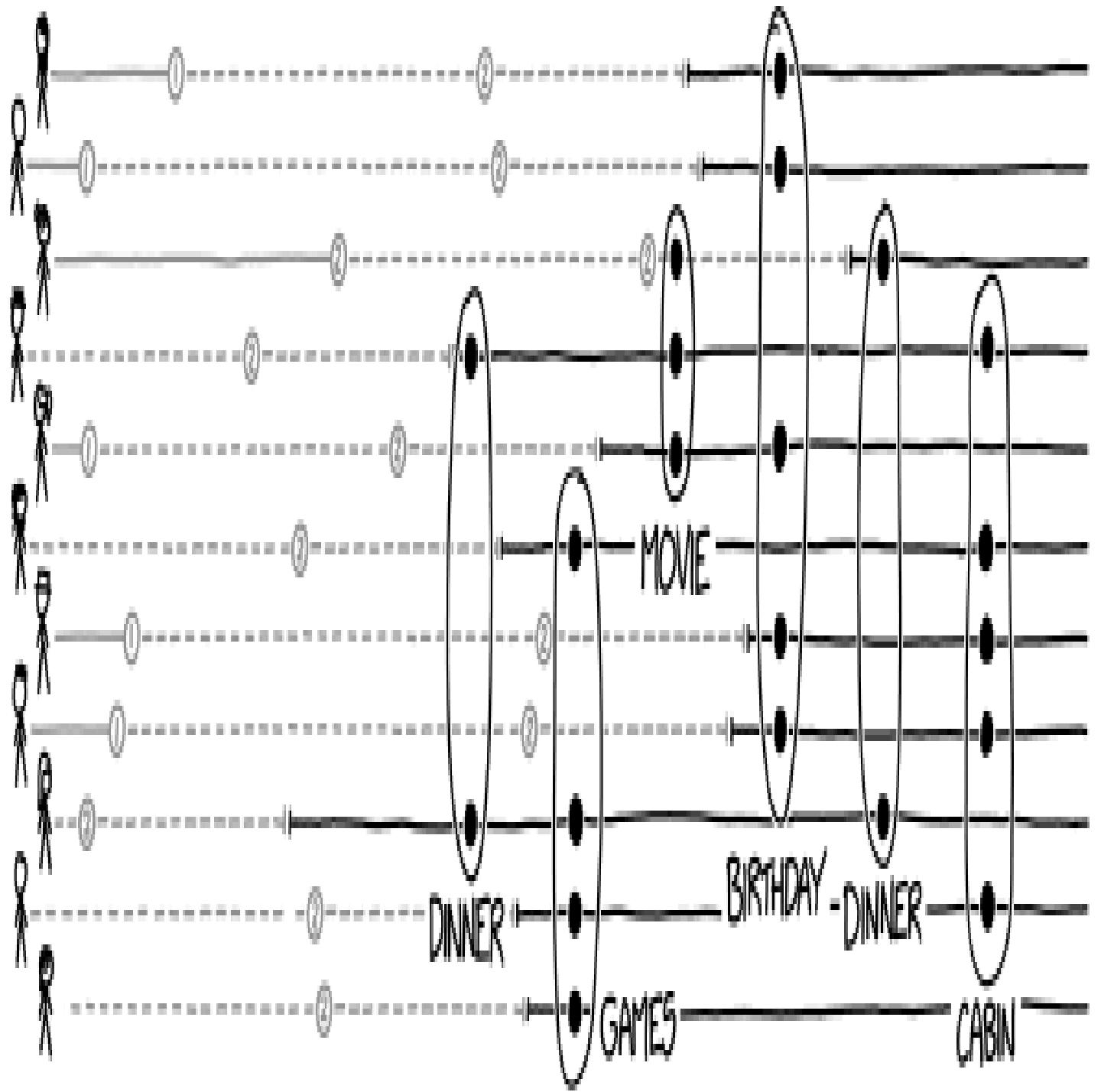
~~BOARD GAMES~~ <sup>3</sup>  
~~\$1-CARD~~

~~VIDEO GAMES~~ <sup>PICKUP</sup>

~~PING PONG~~ <sup>1</sup>

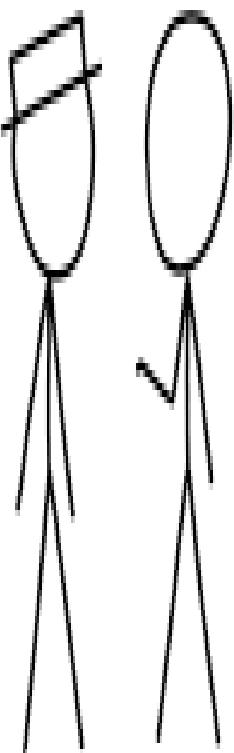
~~GOOD CONVERSATION~~

WE'RE PLANNING OUR FIRST POST-VACCINE  
PARTY, BUT WE WANT TO START SLOW.

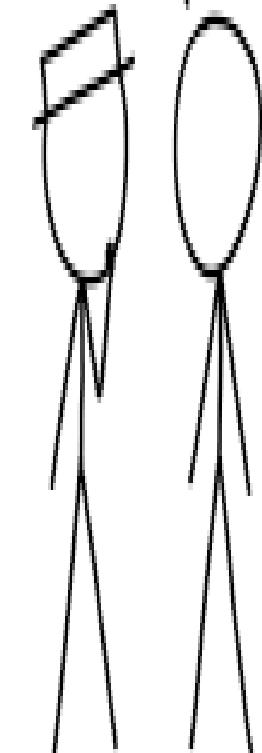


## POST-VACCINE SOCIAL SCHEDULING

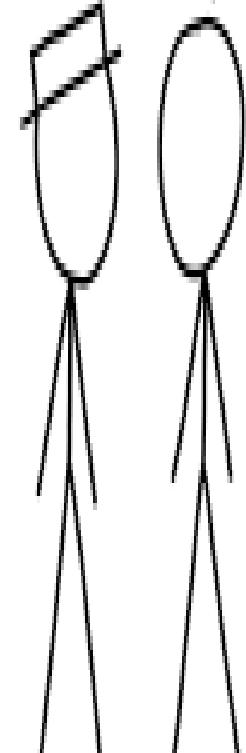
EVENT A IS  
MORE LIKELY  
THAN EVENT B.



SO YOU'RE SAYING  
THAT EVENT A  
WILL HAPPEN.



SO YOU'RE  
SAYING IT'S  
50/50.

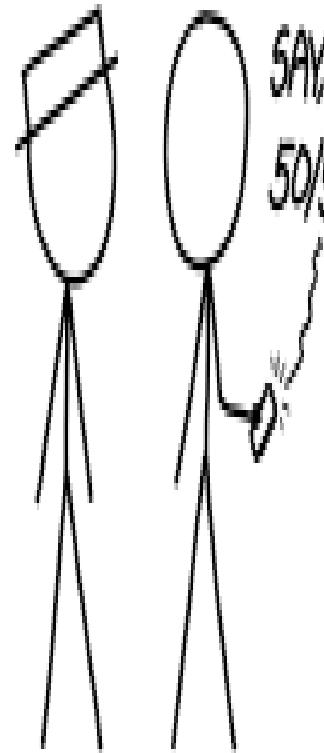


NO, EVENT B  
COULD ALSO  
HAPPEN.

SOUNDS LIKE YOU HAVE NO  
IDEA WHAT WILL HAPPEN.

AND YET I KNEW EXACTLY  
HOW THIS CONVERSATION  
WOULD GO. HERE, LISTEN:

\*CLICK\*  
THEN YOU'LL  
SAY "SO IT'S  
50/50..."



LONG LIVE THE REVOLUTION.  
OUR NEXT MEETING WILL BE  
AT THE DOCKS AT MIDNIGHT  
ON JUNE 28 TAB

AHA, FOUND THEM!



WHEN YOU TRAIN PREDICTIVE MODELS  
ON INPUT FROM YOUR USERS, IT CAN  
LEAK INFORMATION IN UNEXPECTED WAYS.

~~ACCORDING TO A NEW PREPRINT...~~

~~...AN UNPUBLISHED STUDY...~~

~~ACCORDING TO A NEW PAPER  
UPLOADED TO A PREPRINT  
SERVER BUT WHICH HAS NOT  
UNDERGONE PEER REVIEW...~~

~~ACCORDING TO A NEW PDF...~~

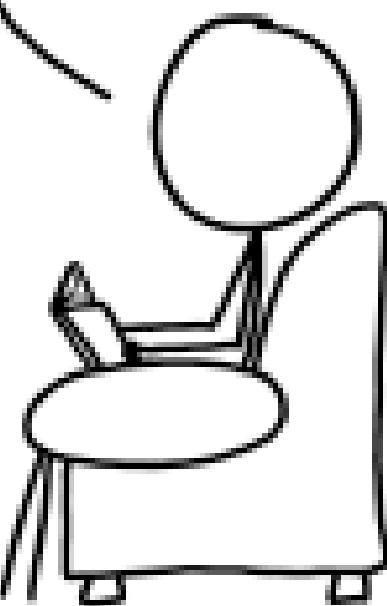


### BENEFITS OF JUST SAYING "A PDF":

- AVOIDS IMPLICATIONS ABOUT PUBLICATION STATUS
- IMMEDIATELY RAISES QUESTIONS ABOUT AUTHOR(S)
- STILL IMPLIES "THIS DOCUMENT WAS PROBABLY PREPARED BY A PROFESSIONAL, BECAUSE NO NORMAL HUMAN TRYING TO COMMUNICATE IN 2020 WOULD CHOOSE THIS RIDICULOUS FORMAT."

YOU KNOW, IT'S BEEN A WHILE SINCE THERE'S BEEN A REALLY BIG METEOR IMPACT.

WILL YOU STOP THAT?!

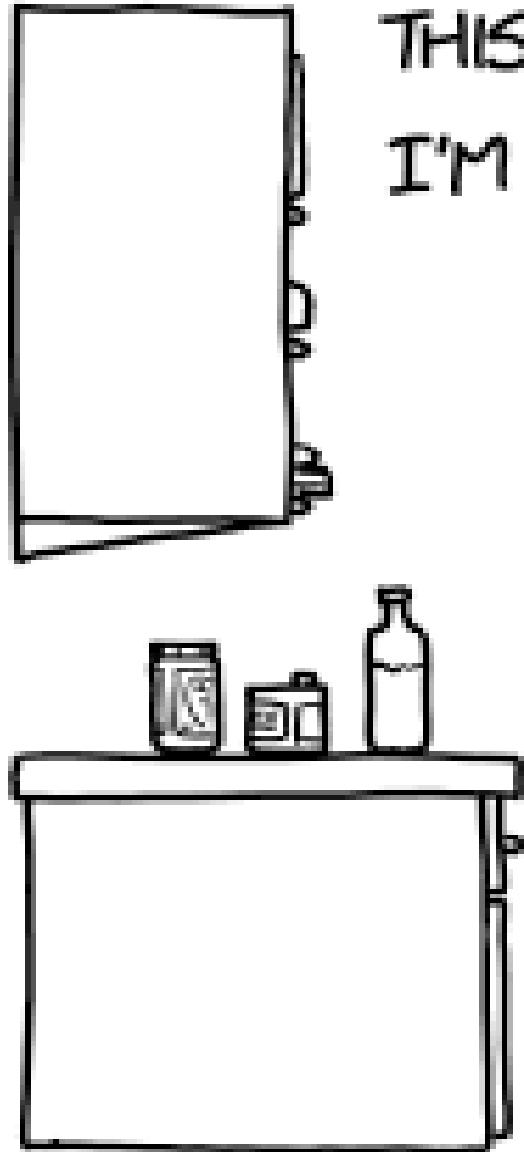


I SAY THIS KIND OF THING EVERY SO OFTEN, BECAUSE I DON'T BELIEVE IT AFFECTS THE OUTCOME AND IT HAS A SLIM CHANCE OF LOOKING INCREDIBLY PRESCIENT.

# PRETTIEST PRESIDENTIAL MIDDLE NAMES OFFICIAL RANKINGS (UPDATED FOR 2021)

1. GAMALIEL (WARREN HARDING)
2. ROBINETTE (JOE BIDEN) (NEW!)
3. DELANO (FRANKLIN ROOSEVELT)

OH WOW, PRE-  
PANDEMIC KETCHUP!  
WE HAVEN'T BOUGHT  
THIS KIND SINCE BEFORE.  
I'M GONNA TOSS IT.



EWW,  
YES.

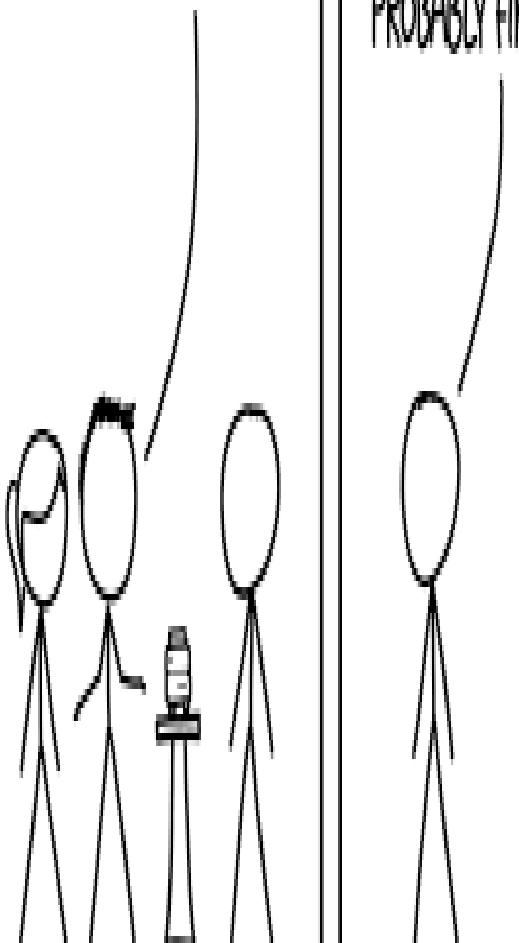
SPRING 2020 FORMS A WEIRD  
DIVIDING LINE IN MY KITCHEN.

# PROBABILITY COMPARISONS

|       |                                                                                                                                                      |                    |                                                                                                                                                           |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.01% | YOU GUESS THE LAST FOUR DIGITS OF SOMEONE'S SOCIAL SECURITY NUMBER ON THE FIRST TRY                                                                  | 39%                | LEBRON JAMES GETS TWO FREE THROWS BUT MISSES ONE                                                                                                          |
| 0.1%  | THREE RANDOMLY-CHOOSEN PEOPLE ARE ALL LEFT-HANDED                                                                                                    | 40%                | A RANDOM SCRABBLE TILE IS A LETTER IN "STEPH CURRY"                                                                                                       |
| 0.2%  | YOU DRAW 2 RANDOM SCRABBLE TILES AND GET M AND M                                                                                                     | 46%                | THERE'S A MAGNITUDE 7 QUAKE IN LA WITHIN 30 YEARS                                                                                                         |
|       | YOU DRAW 3 RANDOM M&Ms AND THEY'RE ALL RED                                                                                                           | 48%                | MILWAUKEE HAS A WHITE CHRISTMAS<br>A RANDOM SCRABBLE TILE IS A LETTER IN "CARLY RAE JEPSEN"                                                               |
| 0.3%  | YOU GUESS SOMEONE'S BIRTHDAY IN ONE TRY                                                                                                              | 50%                | YOU GET HEADS IN A COIN TOSS                                                                                                                              |
| 0.5%  | AN NBA TEAM DOWN BY 30 AT HALFTIME WINS                                                                                                              | 53%                | SALT LAKE CITY HAS A WHITE CHRISTMAS                                                                                                                      |
|       | YOU GET 4 M&Ms AND THEY'RE ALL BROWN OR YELLOW                                                                                                       | 54%                | LEBRON JAMES GETS TWO FREE THROWS AND MAKES BOTH                                                                                                          |
| 1%    | STEPH CURRY GETS TWO FREE THROWS AND MISSES BOTH<br>LEBRON JAMES GUESSES YOUR BIRTHDAY, IF EACH GUESS COSTS ONE FREE THROW AND HE LOSES IF HE MISSES | 58%                | A RANDOM SCRABBLE TILE IS A LETTER IN "NATE SILVER"                                                                                                       |
| 1.5%  | YOU GET TWO M&Ms AND THEY'RE BOTH RED<br>YOU SHARE A BIRTHDAY WITH A BACKSTREET BOY                                                                  | 60%                | YOU GET TWO M&Ms AND NEITHER IS BLUE                                                                                                                      |
| 2%    | YOU GUESS SOMEONE'S CARD ON THE FIRST TRY                                                                                                            | 65%                | BURLINGTON, VERMONT HAS A WHITE CHRISTMAS                                                                                                                 |
| 3%    | YOU GUESS 5 COIN TOSSES AND GET THEM ALL RIGHT<br>STEPH CURRY WINS THAT BIRTHDAY FREE THROW GAME                                                     | 66%                | A RANDOMLY CHOSEN MOVIE FROM THE MAIN LORD OF THE RINGS TRILOGY HAS "OF THE" IN THE TITLE TWICE                                                           |
| 4%    | YOU SWEEP A 3-GAME ROCK PAPER SCISSORS SERIES<br>PORTLAND, OREGON HAS A WHITE CHRISTMAS                                                              | 67%                | YOU ROLL AT LEAST A 3 WITH A D6                                                                                                                           |
|       | YOU SHARE A BIRTHDAY WITH TWO US SENATORS                                                                                                            | 71%                | A RANDOM SCRABBLE TILE BEATS A RANDOM DICE ROLL                                                                                                           |
| 5%    | AN NBA TEAM DOWN 20 AT HALFTIME WINS                                                                                                                 | 73%                | LEBRON JAMES MAKES A FREE THROW                                                                                                                           |
|       | YOU ROLL A NATURAL 20                                                                                                                                | 75%                | YOU DROP TWO PLAIN M&Ms AND ONE OF THEM LANDS WITH THE "M" UP SO IT'S CLEAR THEY'RE NOT SKITTLES                                                          |
| 6%    | YOU CORRECTLY GUESS SOMEONE'S CARD GIVEN 3 TRIES                                                                                                     | 76%                | YOU GET TWO M&Ms AND NEITHER IS RED                                                                                                                       |
| 7%    | LEBRON JAMES GETS TWO FREE THROWS AND MISSES BOTH                                                                                                    | 77%                | YOU GET AN M&M AND IT'S NOT BLUE                                                                                                                          |
| 8%    | YOU CORRECTLY GUESS SOMEONE'S CARD GIVEN 4 TRIES                                                                                                     | 78%                | AN NBA TEAM WINS WHEN THEY'RE UP 10 AT HALFTIME                                                                                                           |
| 9%    | STEPH CURRY MISSES A FREE THROW                                                                                                                      | 79%                | ST. LOUIS DOESN'T HAVE A WHITE CHRISTMAS                                                                                                                  |
| 10%   | YOU DRAW 5 CARDS AND GET THE ACE OF SPADES<br>THERE'S A MAGNITUDE 8+ EARTHQUAKE IN THE NEXT MONTH                                                    | 81%                | TWO RANDOM PEOPLE ARE BOTH RIGHT-HANDED                                                                                                                   |
| 11%   | YOU SWEEP A 2-GAME ROCK PAPER SCISSORS SERIES<br>A RANDOMLY-CHOSEN AMERICAN LIVES IN CALIFORNIA                                                      | 83%                | STEPH CURRY GETS TWO FREE THROWS AND MAKES BOTH                                                                                                           |
| 12%   | YOU CORRECTLY GUESS SOMEONE'S CARD GIVEN 6 TRIES<br>YOU SHARE A BIRTHDAY WITH A US PRESIDENT                                                         | 85%                | YOU ROLL A D20 AND GET AT LEAST 4                                                                                                                         |
|       | A D6 BEATS A D20                                                                                                                                     | 87%                | AN NBA TEAM UP BY 10 GOING INTO THE 4TH QUARTER WINS<br>SOMEONE FAILS TO GUESS YOUR CARD GIVEN 7 TRIES                                                    |
| 13%   | AN NBA TEAM DOWN 10 GOING INTO THE 4TH QUARTER WINS<br>YOU PULL ONE M&M FROM A BAG AND IT'S RED                                                      | 88%                | A RANDOMLY CHOSEN AMERICAN LIVES OUTSIDE CALIFORNIA                                                                                                       |
| 14%   | A RANDOMLY DRAWN SCRABBLE TILE BEATS A D6 DIE ROLL                                                                                                   | 89%                | YOU ROLL A 3 OR HIGHER GIVEN TWO TRIES                                                                                                                    |
| 15%   | YOU ROLL A D20 AND GET AT LEAST 18                                                                                                                   | 90%                | SOMEONE FAILS TO GUESS YOUR CARD GIVEN 5 TRIES                                                                                                            |
| 16%   | STEPH CURRY GETS TWO FREE THROWS BUT ONLY MAKES ONE                                                                                                  | 91%                | YOU INCORRECTLY GUESS THAT SOMEONE WAS BORN IN AUGUST<br>STEPH CURRY MAKES A FREE THROW                                                                   |
| 17%   | YOU ROLL A D6 DIE AND GET A 6                                                                                                                        | 92%                | YOU GUESS SOMEONE'S BIRTH MONTH AT RANDOM AND ARE WRONG                                                                                                   |
| 18%   | A D6 BEATS OR TIES A D20                                                                                                                             | 93%                | LEBRON JAMES MAKES A FREE THROW GIVEN TWO TRIES                                                                                                           |
| 19%   | AT LEAST ONE PERSON IN A RANDOM PAIR IS LEFT-HANDED                                                                                                  | 94%                | SOMEONE FAILS TO GUESS YOUR CARD GIVEN 3 TRIES                                                                                                            |
| 20%   | YOU GET A DOZEN M&Ms AND NONE OF THEM ARE BROWN                                                                                                      | 95%                | AN NBA TEAM WINS WHEN THEY'RE UP 20 AT HALFTIME                                                                                                           |
| 21%   | ST. LOUIS HAS A WHITE CHRISTMAS                                                                                                                      | 96%                | SOMEONE FAILS TO GUESS YOUR CARD GIVEN 2 TRIES                                                                                                            |
| 22%   | AN NBA TEAM WINS WHEN THEY'RE DOWN 10 AT HALFTIME                                                                                                    | 97%                | YOU TRY TO GUESS 5 COIN TOSSES AND FAIL                                                                                                                   |
|       | YOU GET AN M&M AND IT'S BLUE                                                                                                                         | 98%                | YOU INCORRECTLY GUESS SOMEONE'S BIRTHDAY IS THIS WEEK                                                                                                     |
| 23%   | YOU SHARE A BIRTHDAY WITH A US SENATOR                                                                                                               | 98.5%              | AN NBA TEAM UP 15 POINTS WITH 8 MINUTES LEFT WINS                                                                                                         |
| 24%   | YOU CORRECTLY GUESS THAT SOMEONE WAS BORN IN THE WINTER                                                                                              | 99%                | STEPH CURRY MAKES A FREE THROW GIVEN TWO TRIES                                                                                                            |
| 25%   | YOU CORRECTLY GUESS THAT SOMEONE WAS BORN IN THE FALL                                                                                                | 99.5%              | AN NBA TEAM THAT'S UP BY 30 POINTS AT HALFTIME WINS                                                                                                       |
|       | YOU ROLL TWO PLAIN M&Ms AND GET M AND M                                                                                                              | 99.7%              | YOU GUESS SOMEONE'S BIRTHDAY AT RANDOM AND ARE WRONG                                                                                                      |
| 26%   | YOU CORRECTLY GUESS SOMEONE WAS BORN IN THE SUMMER                                                                                                   | 99.8%              | THERE'S NOT A MAGNITUDE 8 QUAKE IN CALIFORNIA NEXT YEAR                                                                                                   |
| 27%   | LEBRON JAMES MISSES A FREE THROW                                                                                                                     | 99.9%              | A RANDOM GROUP OF THREE PEOPLE CONTAINS A RIGHT-HANDER                                                                                                    |
| 32%   | PITTSBURGH HAS A WHITE CHRISTMAS                                                                                                                     | 99.99%             | YOU INCORRECTLY GUESS THE LAST FOUR DIGITS OF SOMEONE'S SOCIAL SECURITY NUMBER                                                                            |
|       | A RANDOMLY CHOSEN STAR WARS MOVIE (EPISODES I-IX) HAS "OF THE" IN THE TITLE                                                                          |                    | YOU PICK UP A PHONE, DIAL A RANDOM 10-DIGIT NUMBER, AND SAY "HELLO BARACK OBAMA, THERE'S JUST BEEN A MAGNITUDE 8 EARTHQUAKE IN CALIFORNIA!" AND ARE WRONG |
| 33%   | YOU WIN THE MONTY HALL SPORTS CAR BY PICKING A DOOR AND REFUSING TO SWITCH                                                                           | 99.99999999999995% | 0.00000001% YOU ADD "HANG ON, THIS IS BIG—I'M GOING TO LOOP IN CARLY RAE JEPSEN," DIAL ANOTHER RANDOM 10-DIGIT NUMBER, AND SHE PICKS UP                   |
|       | YOU WIN ROCK PAPER SCISSORS BY PICKING RANDOMLY                                                                                                      |                    |                                                                                                                                                           |
| 34%   | YOU DRAW 5 CARDS AND GET AN ACE                                                                                                                      |                    |                                                                                                                                                           |
| 35%   | A RANDOM SCRABBLE TILE IS ONE OF THE LETTERS IN "RANDOM"                                                                                             |                    |                                                                                                                                                           |

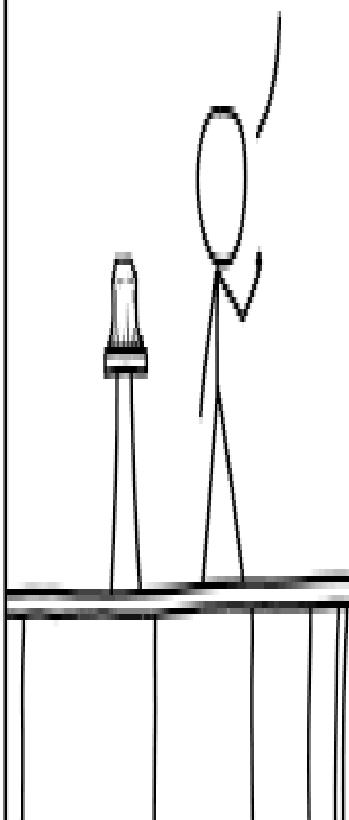
SOURCES: XKCD.COM/2379/SOURCES

THE PRESS IS HERE FOR  
THE PRODUCT LAUNCH!  
I  
REMEMBER, PEOPLE ARE  
WARY OF SMART DEVICES,  
SO WE WANT TO STRIKE  
A NONTHREATENING TONE.



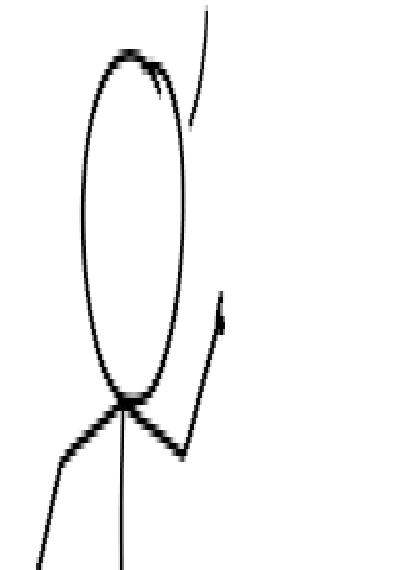
HANG ON, DID  
YOU SAY NON-  
THREATENING?  
YES, WHY-  
NOTHING. IT'S  
PROBABLY FINE.

SOON...  
THEY SAY TECHNOLOGY CAN  
CHANGE THE WORLD, FOR GOOD  
OR FOR EVIL. OUR NEW PRODUCT  
WILL SHOW HOW TRUE THAT IS.  
WE HEAR THE PLAINTE CRIES  
OF OUR CUSTOMERS. WE WANT TO  
GIVE THEM WHAT THEY DESERVE.

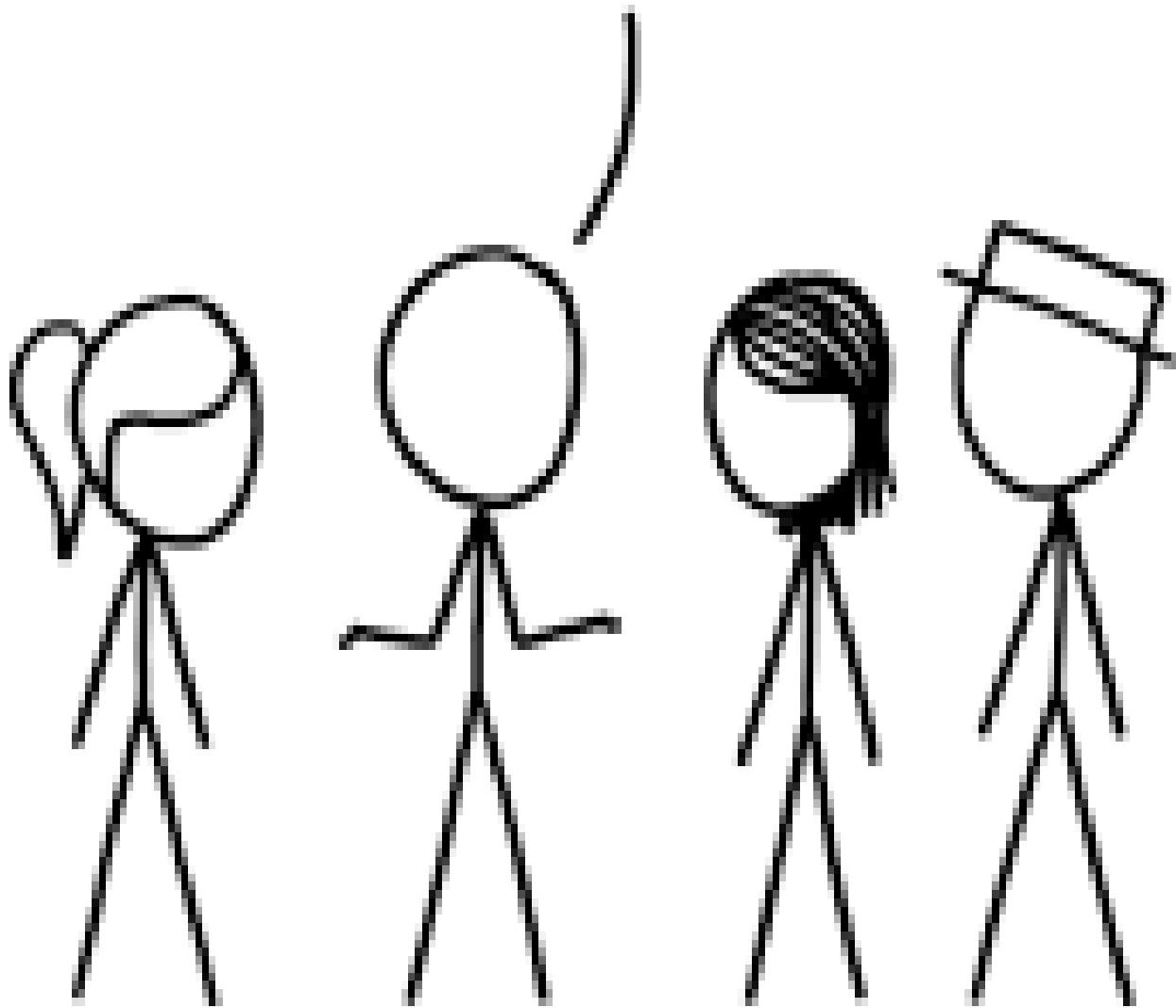


NOW, LET US EXPOSE OUR  
PRODUCT TO THE ATMOSPHERE  
FOR THE FIRST TIME, SURPRISING  
AND DELIGHTING CUSTOMERS  
WITHIN A FIVE-BLOCK RADIUS.

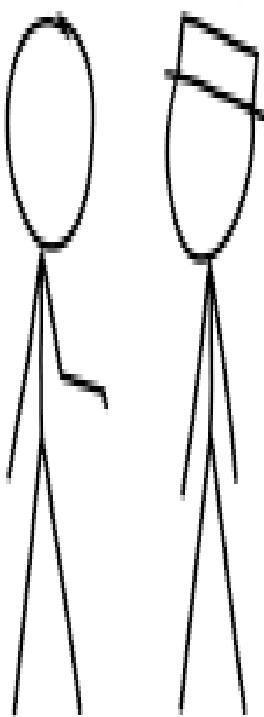
I'M LEAVING.  
NO, DON'T WORRY! A  
STAGGERING NUMBER OF  
PEOPLE WILL SURVIVE!



LIKE A LOT OF YOU, I  
HAVE A REAL PROBLEM  
WITH PROJECTION.

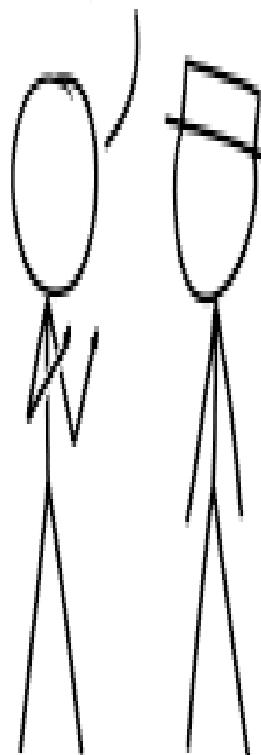


OUR GARDEN GREW  
REALLY WELL LAST  
YEAR, SO WE THINK  
WE MIGHT PUT A  
SECOND RAISED BED  
ALONG THE GARAGE,  
IF WE CAN FIND A...



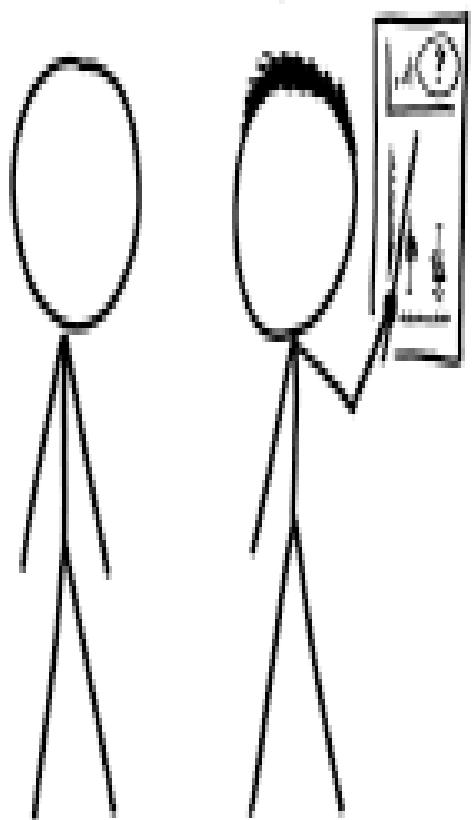
...IT WOULD ABSORB THE NUCLEAR BLAST,  
RECOIL, AND THEN RETURN TO  
POSITION FOR THE NEXT BOMB.

SUCH A WILD IDEA! PROBABLY  
GOOD THAT IT WAS ABANDONED.

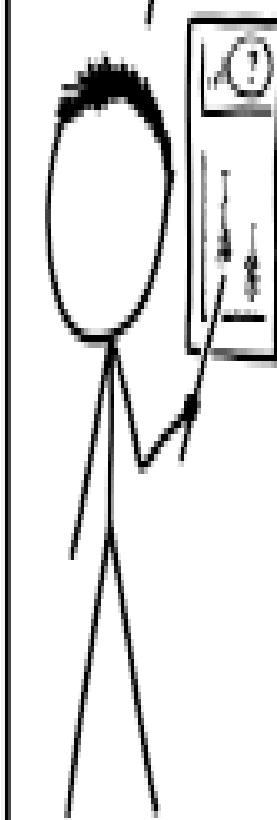


IF YOU TEMPORARILY TUNE OUT WHILE A PHYSIOLOGIST IS TALKING, WHEN  
YOU TUNE BACK IN THEY'LL BE TALKING ABOUT PROJECT ORION.

WE WANT TO STUDY  
THIS VARIABLE, BUT  
IT'S HARD TO OBSERVE.

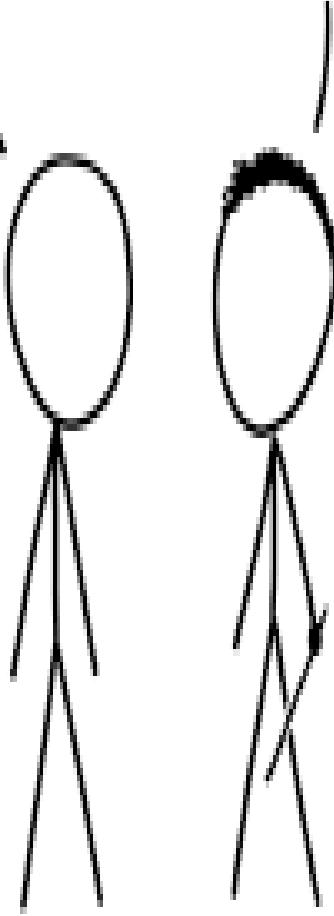


SO WE'RE  
STUDYING  
THIS PROXY  
VARIABLE.



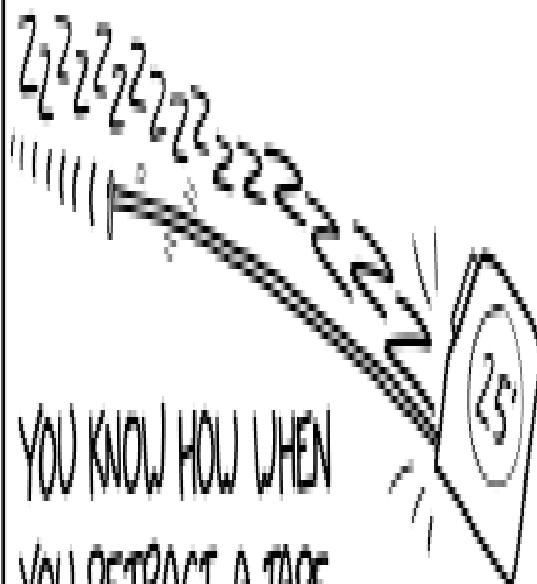
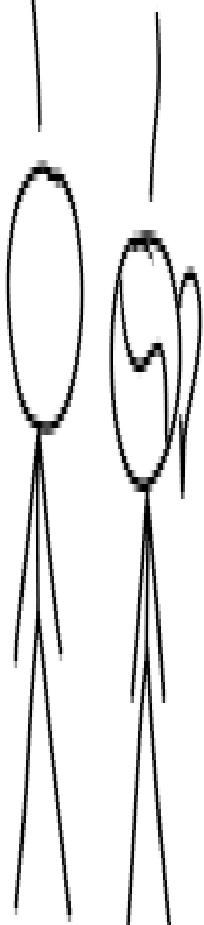
IS IT CORRELATED WITH  
THE OTHER VARIABLE?

LOOK, WE DONT  
HAVE THE FUNDING  
TO ANSWER EVERY  
LITTLE QUESTION.



WHY DO PULSARS  
SPIN SO FAST?

HMM, LET ME  
THINK OF AN  
ANALOGY...



YOU KNOW HOW WHEN  
YOU RETRACT A TAPE  
MEASURE AND LET GO,  
IT LEAVES IT SPINNING?

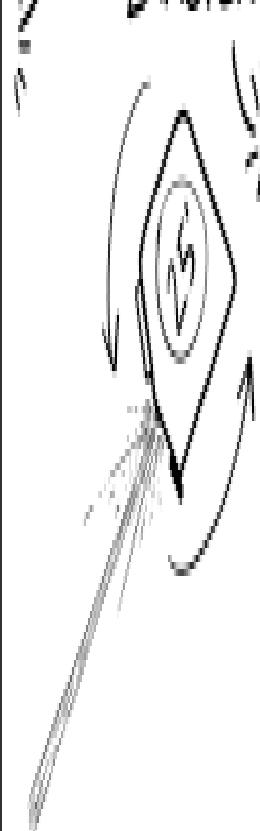
IT'S LIKE  
THAT.

OH, I  
SEE



AND IF THE TAPE  
MEASURE IS THE  
KIND WITH A  
LASER LEVEL,  
THAT'S THE BEAM  
OF RADIATION?

EXACTLY!



AND WHEN THE TAPE  
WHIPS AROUND AND  
SMACKS YOUR HAND,  
THAT'S THE NEUTRON  
DEGENERACY SHOCKWAVE.

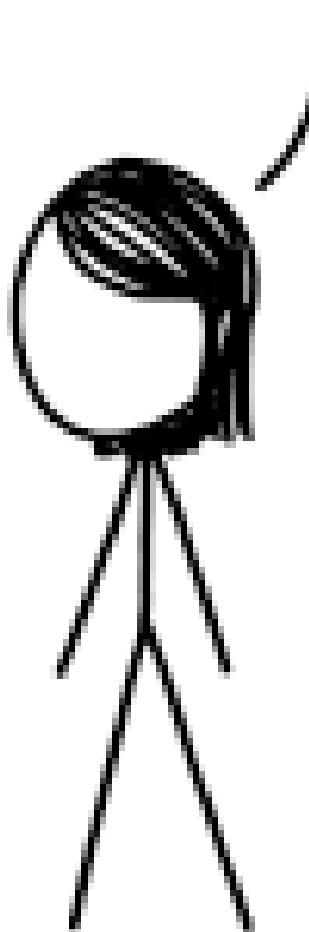
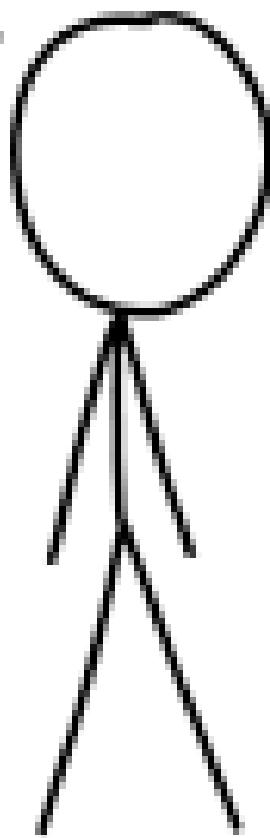
SOUNDS PAINFUL!

TOP CAUSE OF  
ASTRONOMER  
HAND INJURIES.

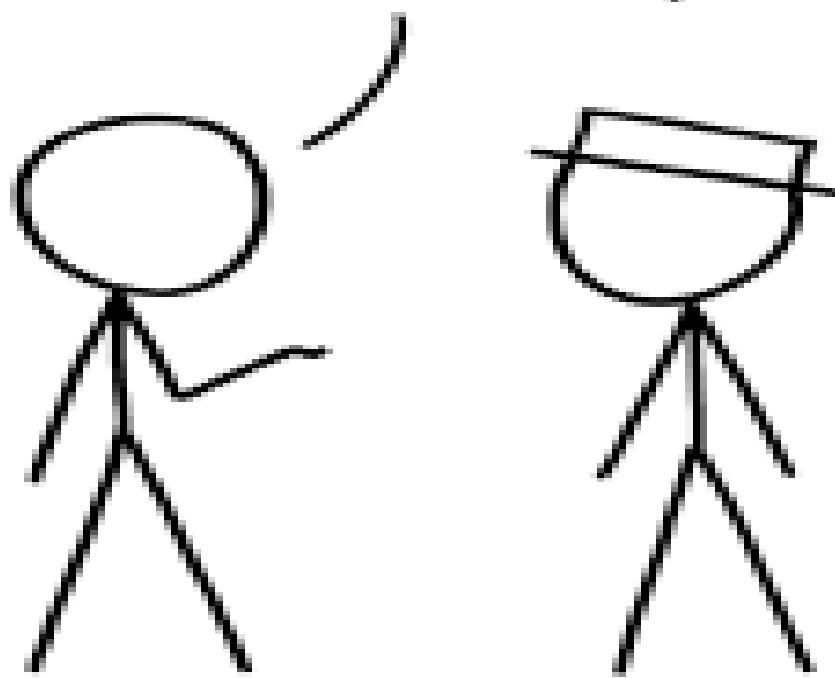


PEOPLE MOSTLY USE "QUA"  
TO SOUND PRETENTIOUS. YOU  
RARELY HEAR QUA QUA QUA.

NICE USE OF QUA QUA  
QUA QUA QUA QUA QUA.



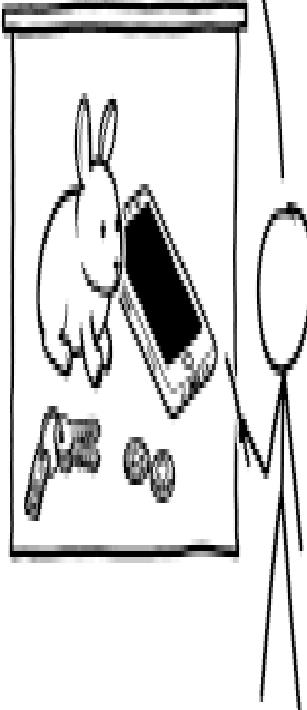
OK, SO, LISTEN, THE THING IS, WELL, LIKE, I'M JUST SAYING, AND MAYBE IT'S JUST ME, BUT, I MEAN HERE'S THE THING, I COULD BE WAY OFF HERE, BUT, LOOK, I GOTTA SAY,



WHEN I FORGET WHAT I WAS GOING TO SAY, I JUST KEEP PREFIXING QUALIFIERS UNTIL I THINK OF SOMETHING NEW.

THE US'S SMALLEST  
RABBIT SPECIES IS THE  
PYGMY RABBIT, FROM  
THE GREAT BASIN AREA.

WE'RE SEEKING A  
GRANT TO INTRODUCE  
THEM INTO THE EAST.



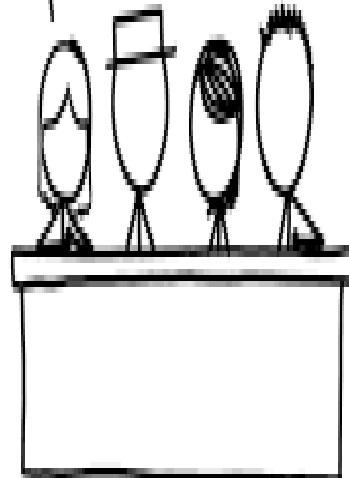
ARE THEY NATIVE HERE?

NO.

WILL THEY CONTROL  
SOME INVASIVE PEST?

DUNNO!

THEN... WHY  
WOULD YOU  
DO THIS?



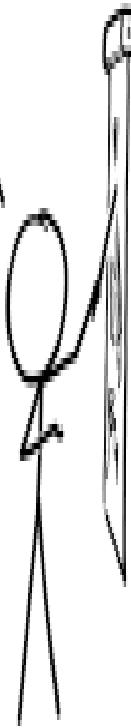
I DON'T UNDERSTAND

DID YOU SEE HOW

SMALL THEY ARE?

THEY'RE SO ROUND!

THOSE TINY EARS!

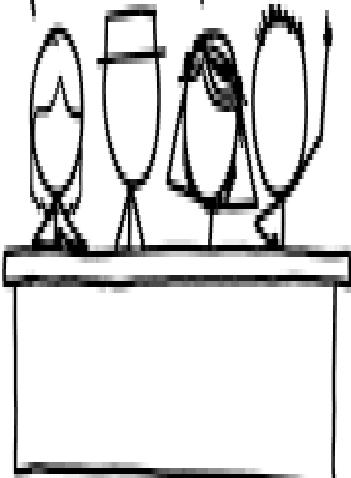


I SEE. I'M AFRAID WE'LL  
BE DENYING YOUR GRANT.

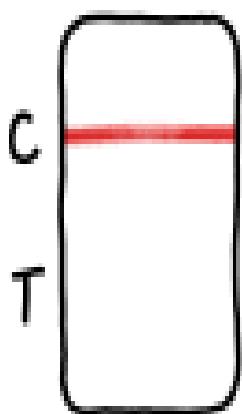
HANG ON. HE IS RIGHT  
ABOUT THEIR EARS...

THE LITTLE FEET!

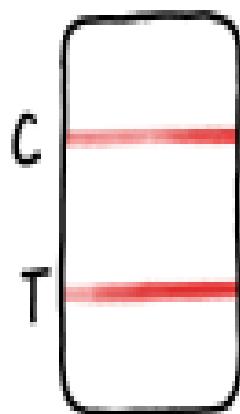
I VOTE WE  
FUND THEM!



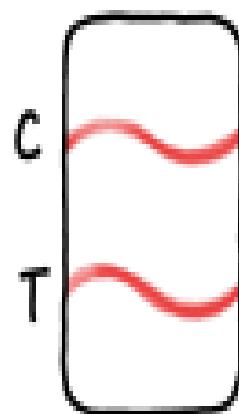
# INTERPRETING RAPID TEST RESULTS



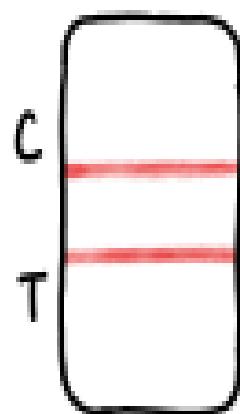
NEGATIVE



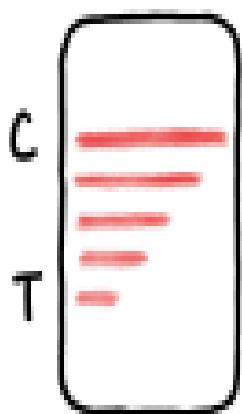
POSITIVE



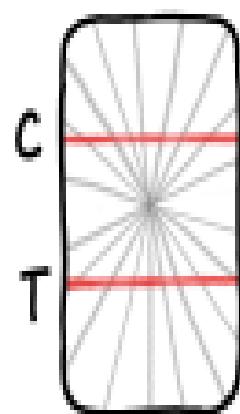
APPROXIMATELY  
POSITIVE



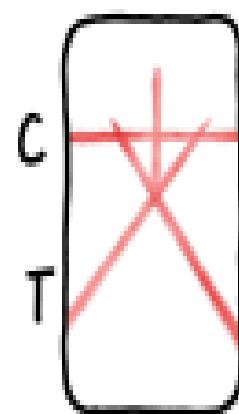
POSITIVE  
(COLLEGE  
RULED)



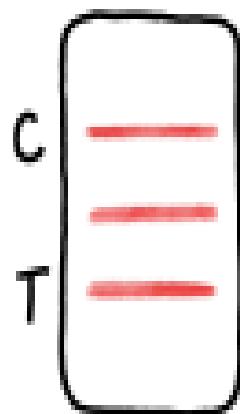
GOOD  
CELL  
SIGNAL



DID YOU KNOW  
THESE LINES  
ARE ACTUALLY  
PARALLEL?



THE BLAIR  
WITCH IS  
NEAR



CLICK TO  
EXPAND  
COVID  
MENU

TEXTING TIP

OK

IS YOUR REACTION  
TOO INTENSE TO  
BE EXPRESSED IN  
AN EMOJI OR GIF?

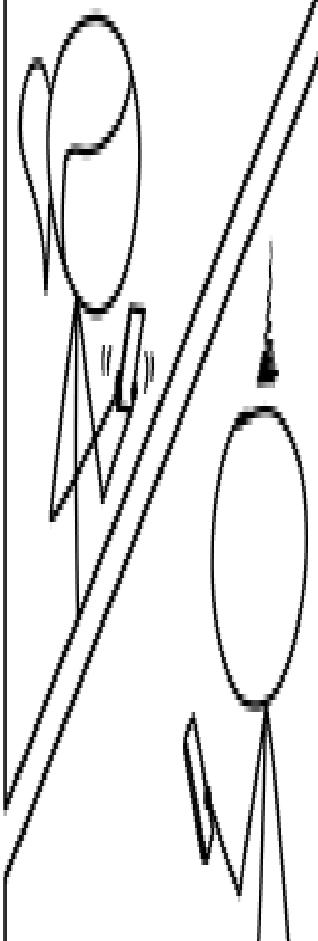
TRY USING  
DRIVING  
DIRECTIONS!

THE EXTRA  
RESEARCH IT  
REQUIRES SHOWS  
HOW STRONGLY  
YOU FEEL.

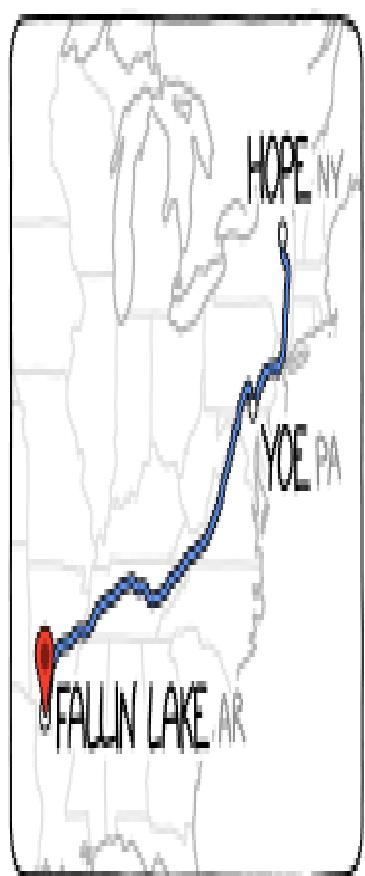
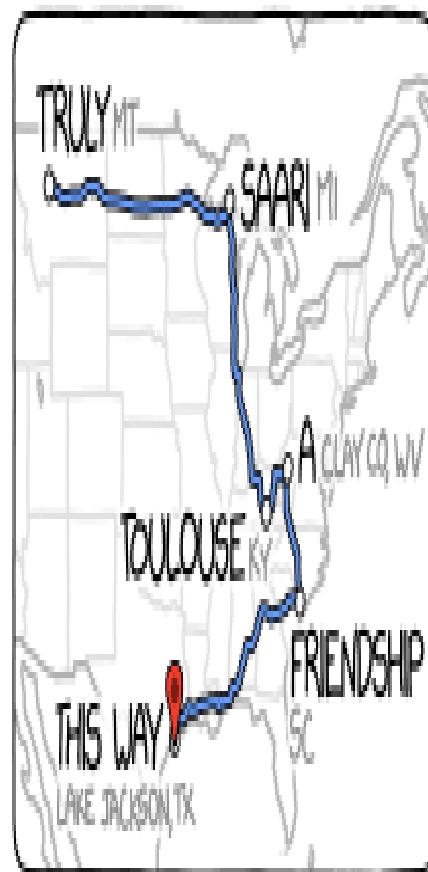
YOU SHOULD NAME  
YOUR NEW HONDA  
CIVIC THE TREATY  
OF EDINBURGH

BECAUSE IT'S A  
TUDOR COMPACT

GET IT

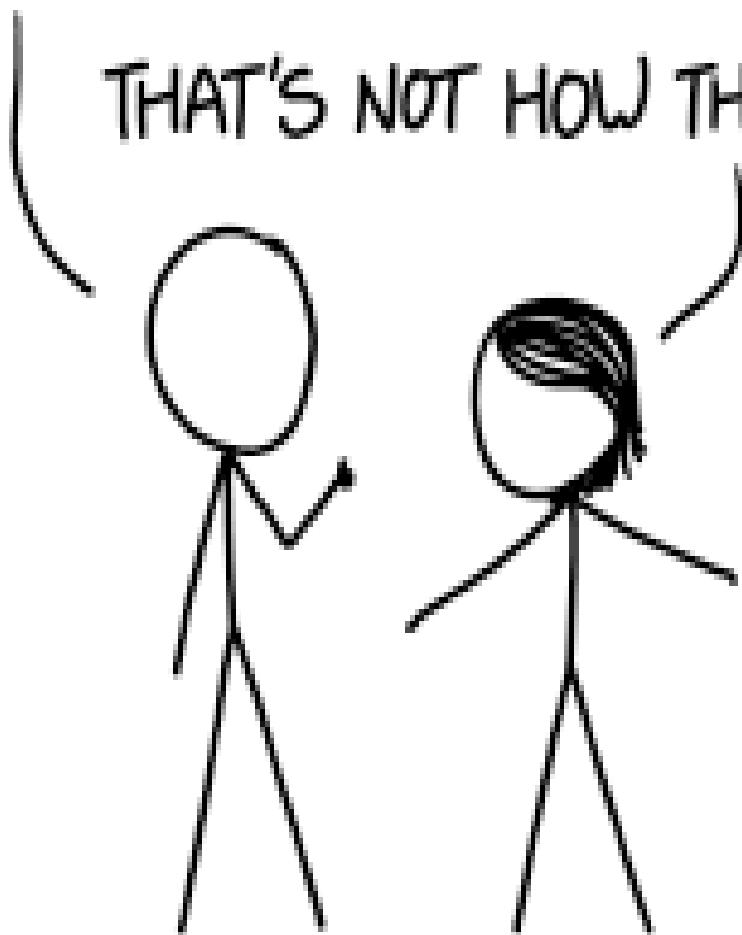


GET IT



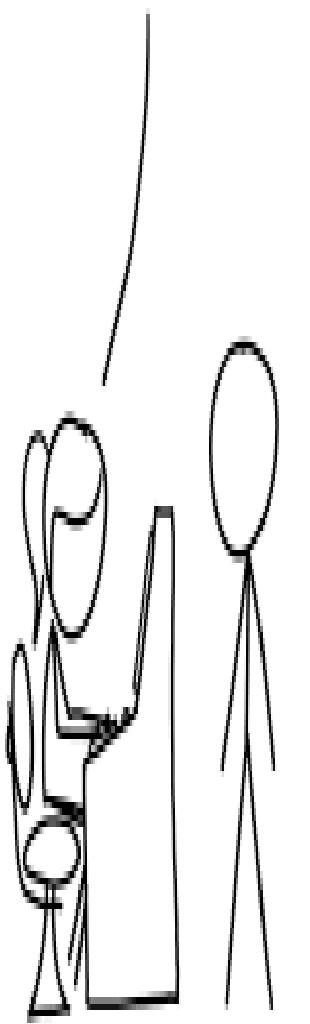
IT'S IN THE "LANGUAGES" BOX IN THE LOWER LEFT. IT TOOK A WHILE TO LEARN, BUT I FIND I GET SO MUCH MORE OUT OF IT BY READING IT AS IT WAS INTENDED.

THAT'S NOT HOW THAT WORKS!



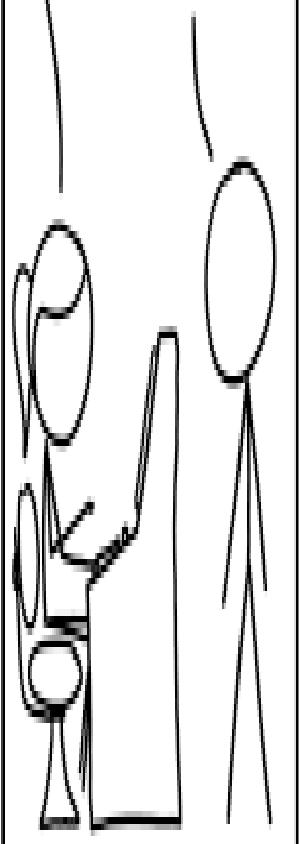
PEOPLE GET MAD WHEN I TELL THEM I ONLY READ WIKIPEDIA IN THE ORIGINAL GREEK.

OUR LAB IS TRYING TO  
PICK UP THE SPIN LINE  
OF NEUTRAL HYDROGEN.  
IT'S THE ONLY RADIATION  
FROM THE ERA BEFORE  
THE FIRST STARS FORMED.



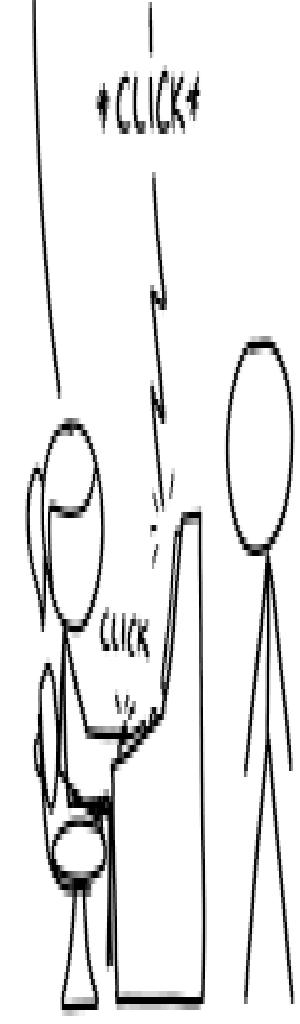
IT WAS 1.4 GHz AT  
FIRST, BUT BY NOW  
IT'S REDSHIFTED TO  
THE 100-MHz RANGE.

ISN'T THAT ALSO  
WHERE FM RADIO  
BROADCASTS?



YEAH, THAT'S THE  
PROBLEM. LISTEN:

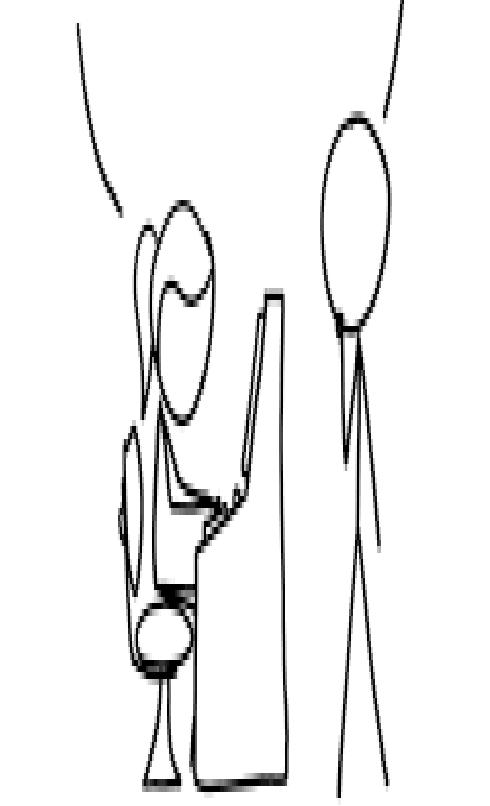
\*CLICK\*  
|  
YOU'RE TUNED TO  
HOT 92.7: THE VIBE!  
COMING UP NEXT...



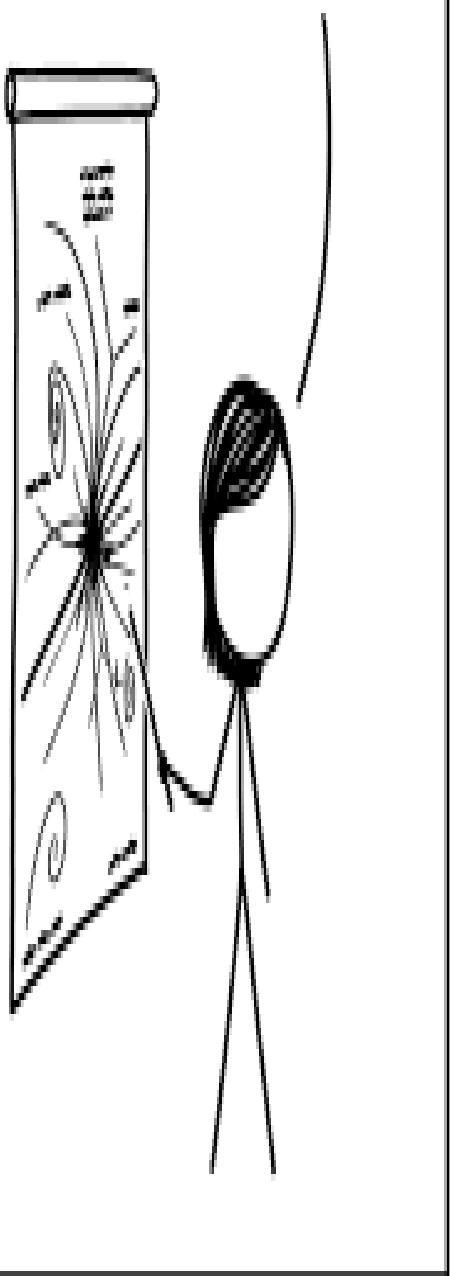
BUT ONCE THIS GUY STOPS TALKING,  
THAT NOBEL PRIZE WILL BE OURS.

MAYBE THAT'S NOT A STATION-  
MAYBE THAT'S JUST WHAT  
REIONIZATION SOUNDS LIKE.

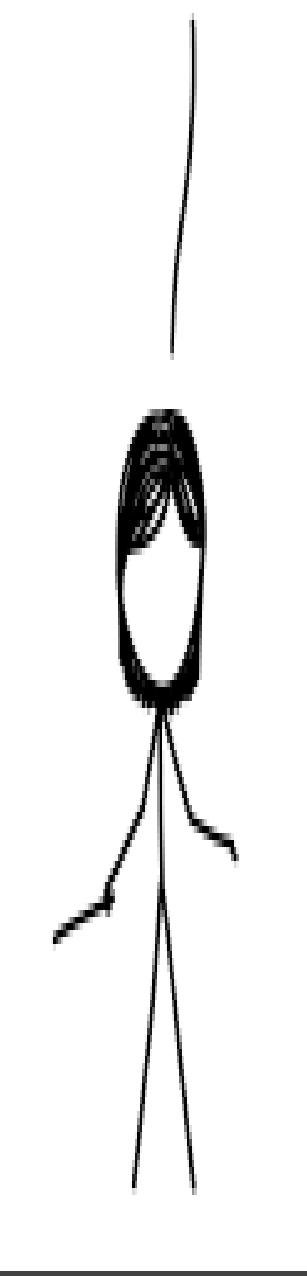
REIONIZATION PLAYS A  
LOT OF SELENA GOMEZ.



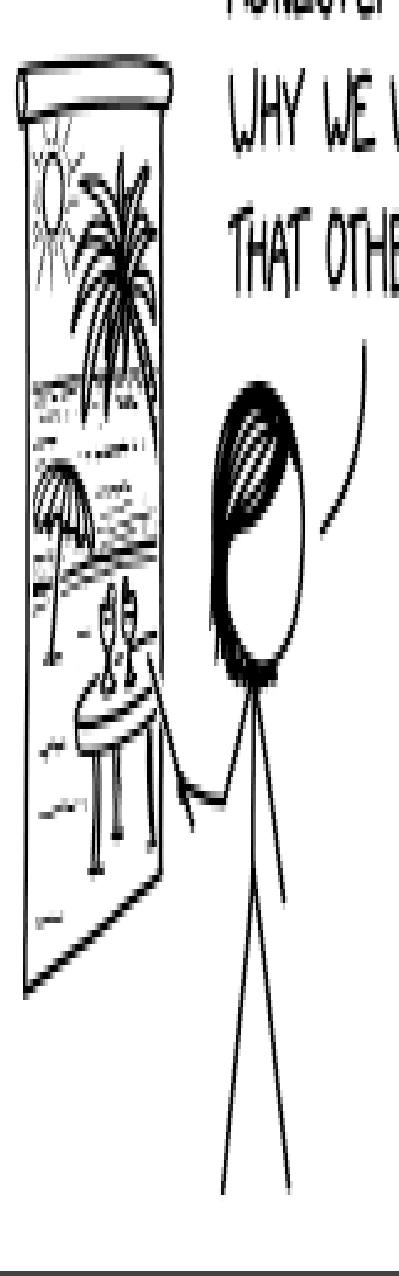
OUR LAB WAS TRYING TO RECREATE THE CONDITIONS THAT OCCURRED SECONDS AFTER THE BIG BANG.



BUT IT TURNS OUT THEY WERE EXTREMELY HOT AND UNPLEASANT.



SO NOW WE'RE TRYING TO RECREATE THE CONDITIONS THAT OCCURRED ON THIS TROPICAL BEACH IN EARLY 2014.

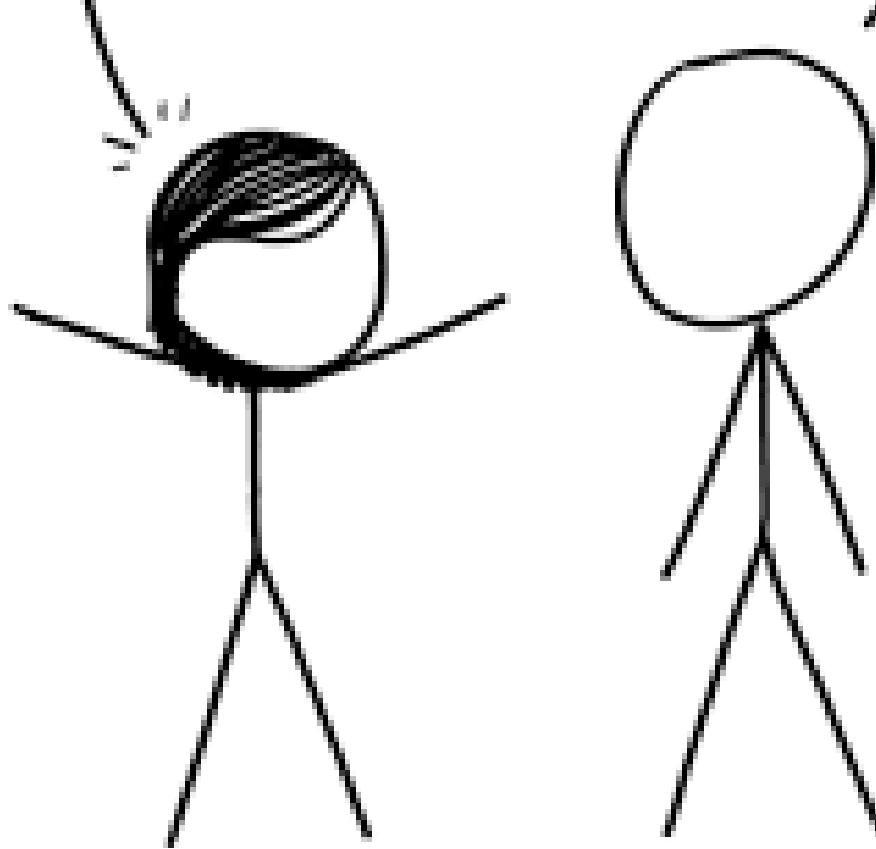


I HONESTLY DON'T KNOW WHY WE WERE DOING THAT OTHER THING.

I KEEP HAVING NIGHTMARES THAT  
I SHOW UP AT SCHOOL, AND THEN  
SUDDENLY PANIC AS I REALIZE-

| -THAT YOU'RE NAKED?

THAT I'M IN A  
CROWDED ROOM!



# WHAT DOES THE RED LINE THROUGH HTTPS MEAN?

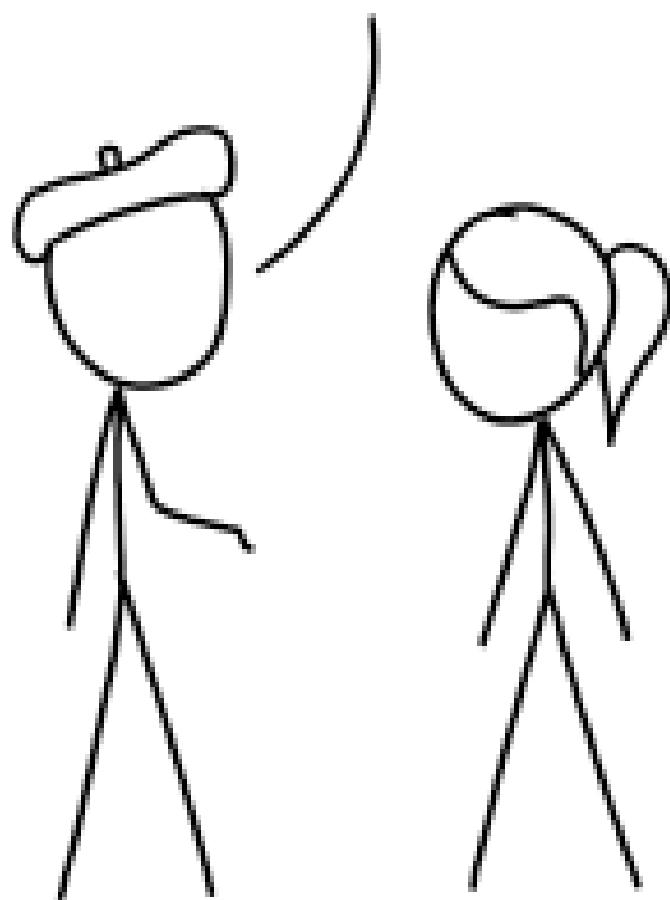
OH, JUST THAT THE SITE HASN'T  
BEEN UPDATED SINCE 2015 OR SO.

AND SINCE IT'S BEEN AROUND THAT  
LONG IT MEANS IT'S PROBABLY LEGIT.



WE DON'T WANT TO REINVENT THE WHEEL,  
SO EVERY DAY WE GOOGLE IMAGE SEARCH  
"WHEEL", AND WHATEVER OBJECT COMES UP,  
THAT'S WHAT WE ATTACH TO OUR VEHICLES.

SURE, EXTERNAL DEPENDENCIES  
CARRY RISKS, BUT SO FAR THEY'VE  
ALL BEEN PRETTY GOOD WHEELS.



IN WHAT IF? 2 ([xkcd.com/whatif2](http://xkcd.com/whatif2)), I ANSWER RIDICULOUS QUESTIONS SENT IN BY READERS ABOUT EVERYTHING FROM VOLCANOES TO SPACESHIPS TO SOUP.

HERE ARE A FEW OF THE COMMON TYPES OF QUESTION THAT I DID NOT ANSWER:

PEOPLE CHEATING ON HOMEWORK

WHAT IF I MADE A PENDULUM BY HANGING A ROCK ON A 2.75 METER STRING? WHAT WOULD ITS PERIOD BE IN SECONDS? (SHOW YOUR WORK!)

MEDICAL ADVICE

WHAT IF YOU GOT A SCRATCH AND THE NEXT DAY YOUR HAND LOCKED LIKE THIS  ATTACHMENT? SHOULD YOU SEE A DOCTOR OR WHAT?

PERSONAL

WHY DON'T THE SQUIRRELS IN MY YARD LIKE ME???

SPAM

DO YOU WANT TO MEET LONELY SINGLES IN YOUR AREA TONIGHT?

PHISHING

HAVE YOU RECENTLY BEEN THE VICTIM OF PHISHING? TO CHECK, LOG IN TO YOUR ACCOUNT BY CLICKING [HERE](#).

REQUESTS FOR HELP WITH A CRIME

USING MODERN SCIENCE, WHAT WOULD BE THE FASTEST WAY TO GET THROUGH THIS BANK VAULT DOOR? 

UNANSWERABLE

WHY AM I ME AND NOT SOMEONE ELSE

VAGUE

WHAT IS GOING TO HAPPEN? (BE SPECIFIC)

VAGUE+OMINOUS

WILL I HAVE TO START WORRYING ABOUT SPIDERS AFTER TUESDAY?

?????

HI, WE'RE LONELY SINGLES IN YOUR AREA, AND WE'RE WONDERING WHAT WOULD HAPPEN IF WE SHOT A NUCLEAR BOMB INTO A VOLCANO! [CLICK HERE](#) TO LOG IN AND TELL US

YOU GOT THIS EMAIL SIX DAYS AGO.  
DO YOU WANT TO FOLLOW UP?

OH, RIGHT, I SHOULD DO THAT.

\*TYPE TYPE\*

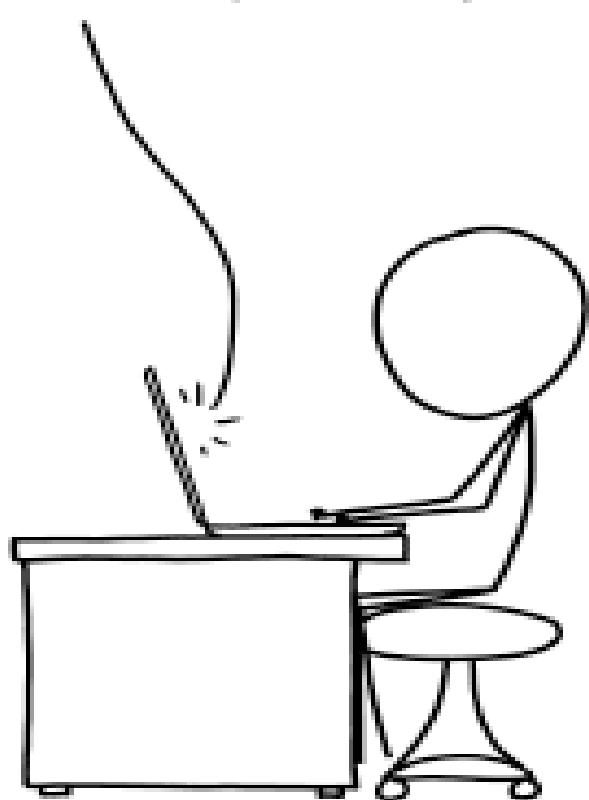
DID YOU FORGET THE ATTACHMENT?

OOPS, YES.

TODAY IS THE RECIPIENT'S BIRTHDAY.

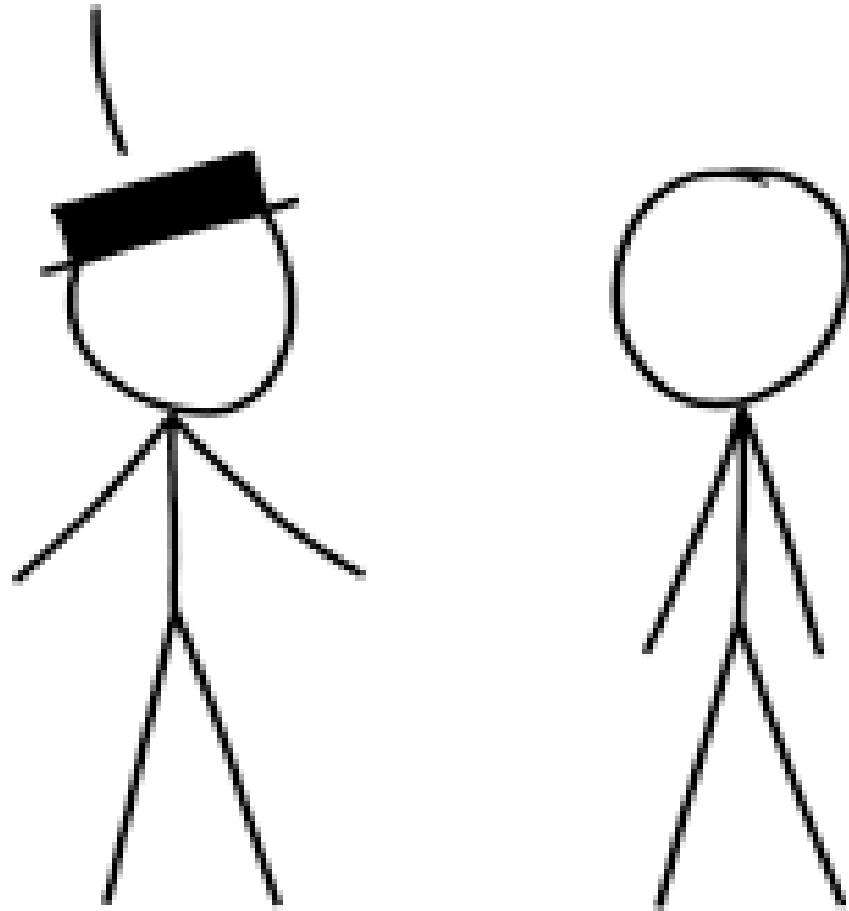
DID YOU WANT TO MENTION THAT?

WAIT, IT IS?



THESE REMINDERS MAKE ME UNCOMFORTABLE, NOT  
BECAUSE COMPUTERS ARE GETTING TOO SMART, BUT  
BECAUSE IT REMINDS ME HOW OFTEN I FALL SHORT  
OF EVEN BASELINE LEVELS OF CONSCIENTIOUSNESS.

SO GLAD YOU'RE FEELING BETTER!  
I  
BE SURE TO GET DEHYDRATED  
AND RUN ON A TREADMILL  
UNTIL YOU BLACK OUT!

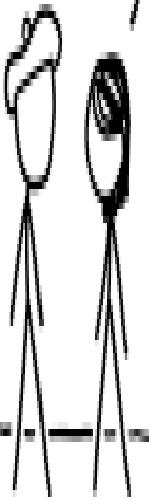


ONCE PEOPLE AREN'T SICK ANYMORE,  
IT'S IMPORTANT TO REMIND THEM TO  
STOP RESTING AND DRINKING FLUIDS.

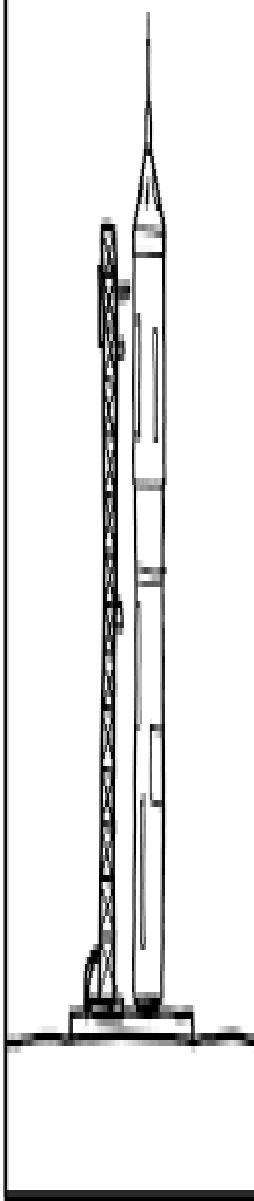
WE'RE TESTING  
OUR NEW  
RETRACTABLE  
ROCKET.

YOU MEAN  
REUSABLE?

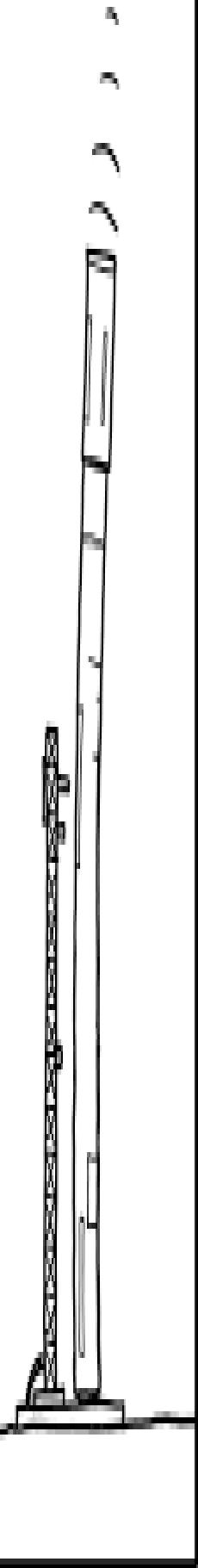
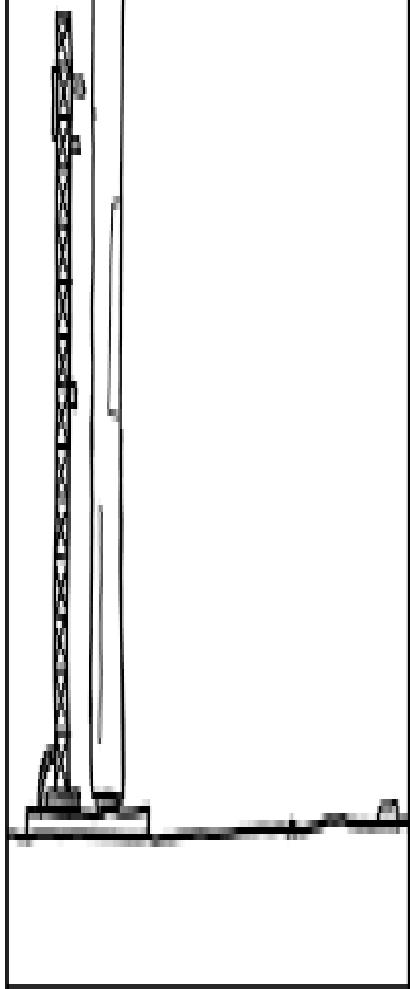
NO.

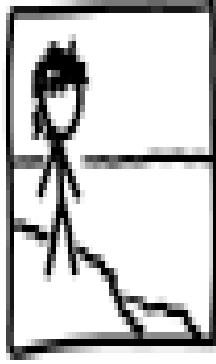


THREE...TWO...  
ONE...LIFTOFF!



HI, WELCOME  
TO THE ISS!  
HELLO!

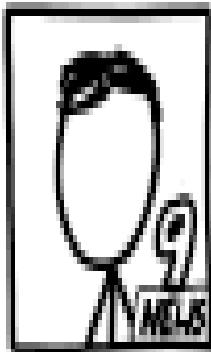




AND I BEHELD WHEN HE HAD OPENED  
THE SIXTH SEAL, AND, LO, THERE WAS  
A GREAT EARTHQUAKE; AND THE SUN  
BECAME BLACK AS SACKCLOTH OF HAIR,  
AND THE MOON BECAME AS BLOOD.

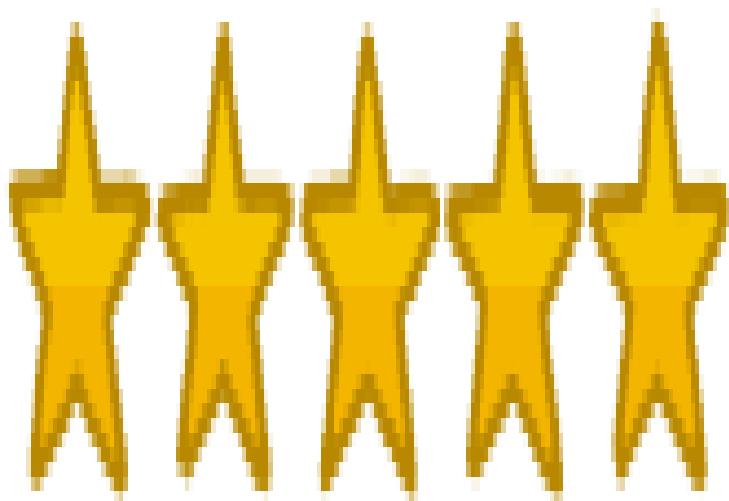
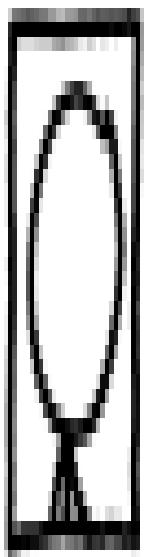
D u m   C u m   D u m   D u m

---



HI JOHN, INCREDIBLE STORY, HOPE  
YOU AND YOUR FAMILY ARE SAFE.  
CAN CHANNEL 9 NEWS SHARE YOUR  
ACCOUNT IN BROADCAST AND PRINT?

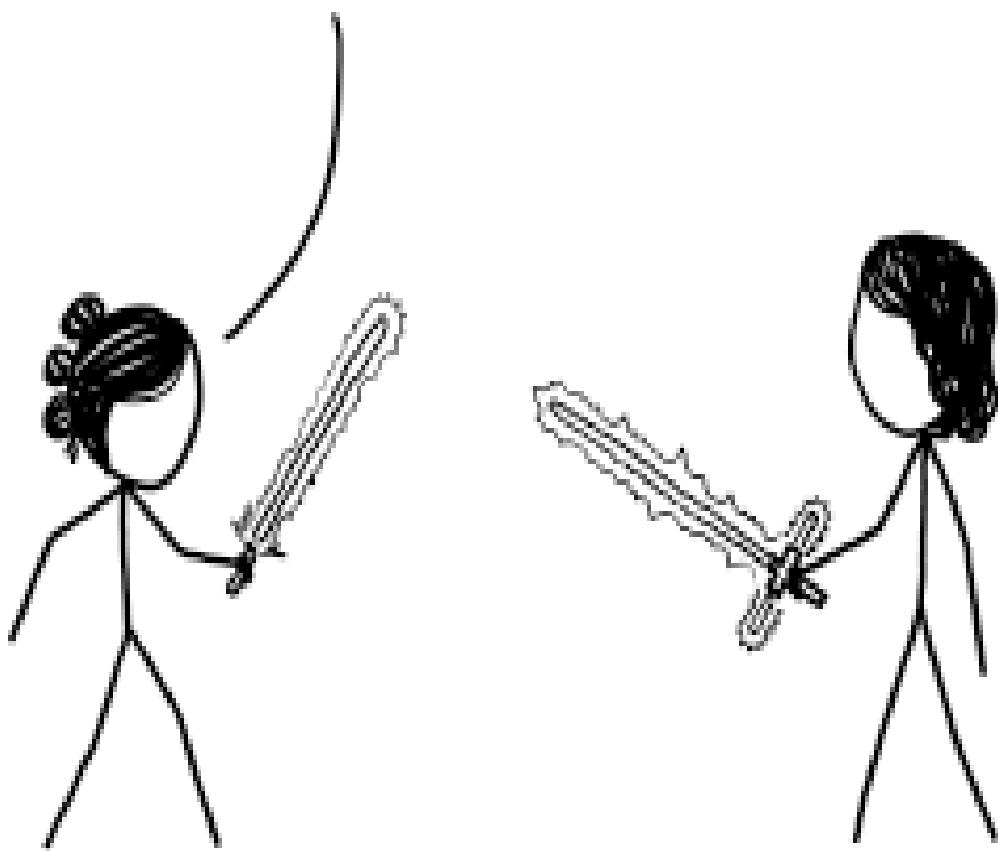
D u m   C u m   D u m   D u m



**GREAT GRAPHICS, HUGE WORLD**

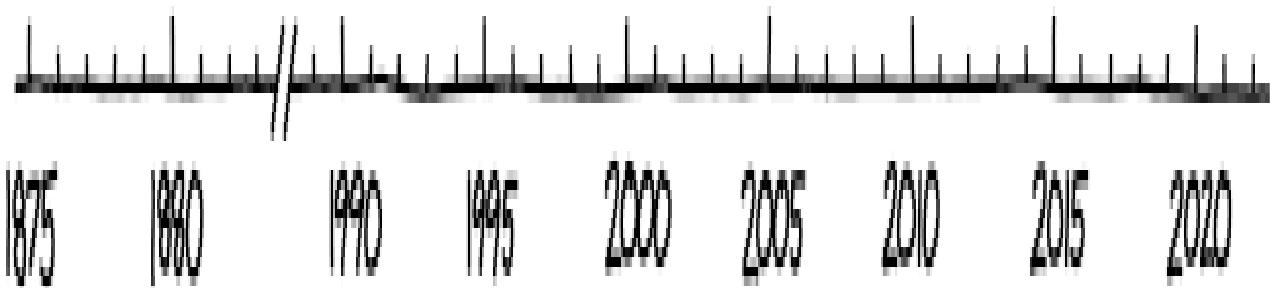
**MY OVERALL REVIEW OF EARTH**

KYLO, WE SHOULDN'T FIGHT! LET'S SET ASIDE OUR DIFFERENCES AND WORK TOGETHER TO MEASURE THE LOCAL PROPERTIES OF SPACE, JUST IN CASE SOMEONE IN THE FAR FUTURE IS WATCHING FROM ANOTHER GALAXY AND WANTS OUR HELP TO CONSTRAIN THE EXPANSION RATE!

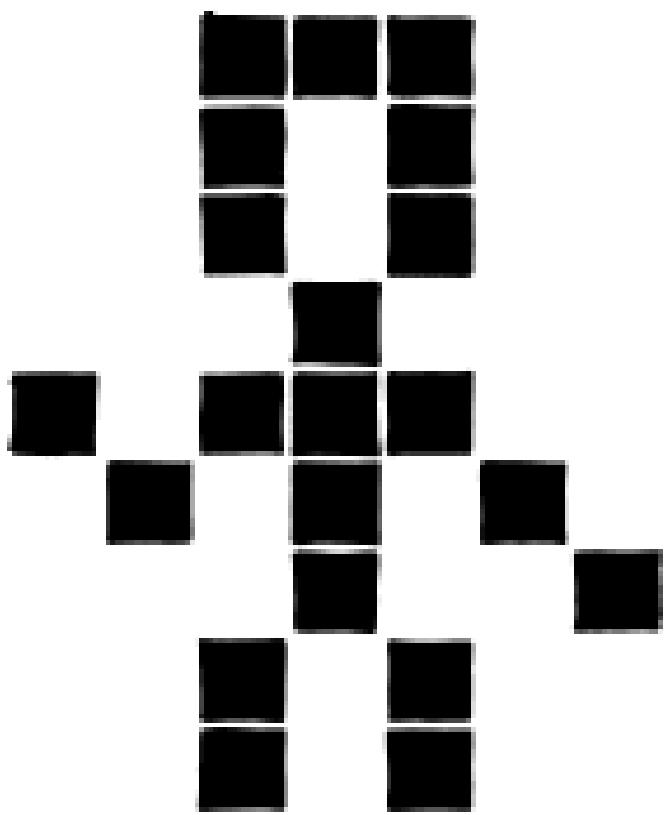


THE NEW STAR WARS TOTALLY PANDERS TO COSMOLOGISTS.

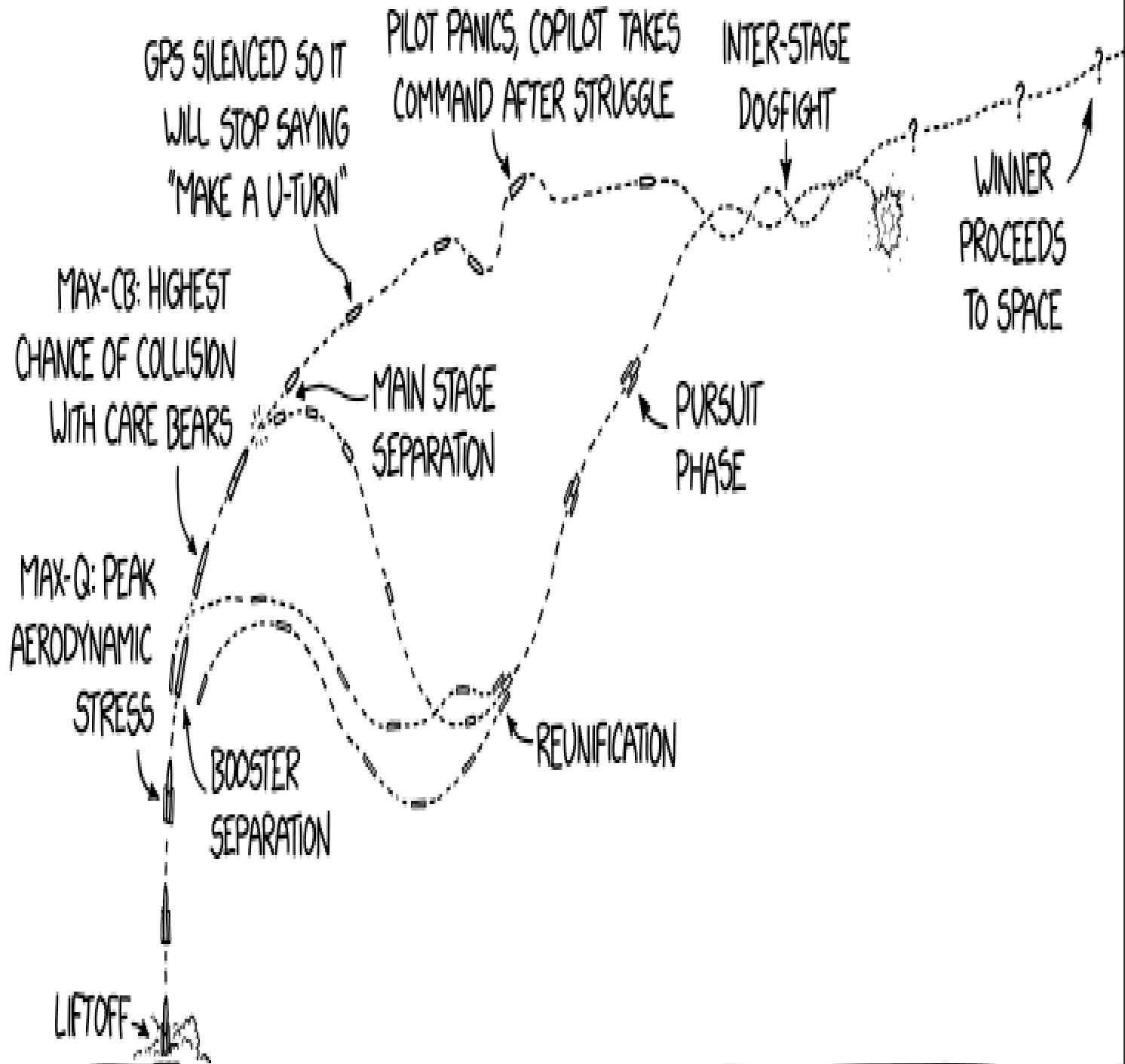
|           |         |         |       |                     |       |         |               |
|-----------|---------|---------|-------|---------------------|-------|---------|---------------|
| TELEPHONE | NORMAL  | NORMAL  | COOL  | SONG AND<br>NOVELTY | COOL  | NORMAL  | EVERYONE SETS |
| RINGER    | RINGING | RINGING | SPACE | RINGTONES           | SPACE | RINGING | THEIR PHONES  |
| INVENTED  | SOUNDS  | SOUNDS  | BEEPS | BEEPS               | BEEPS | SOUNDS  | TO VIBRATE    |



AFTER 140 YEARS, HUMANITY IS FINALLY ON THE  
VERGE OF WINNING THE WAR AGAINST RINGTONES.



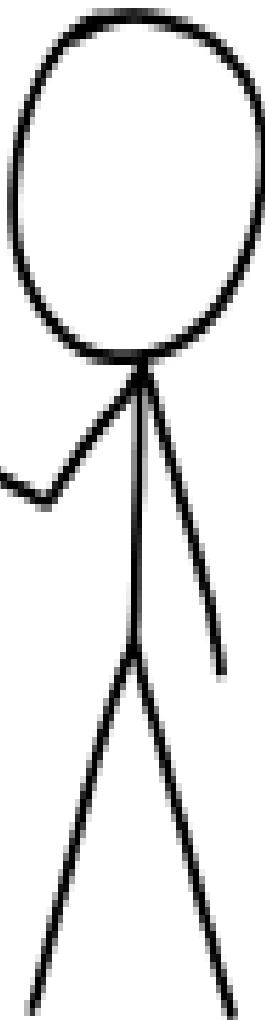
# OUTLINE OF A TYPICAL ROCKET LAUNCH



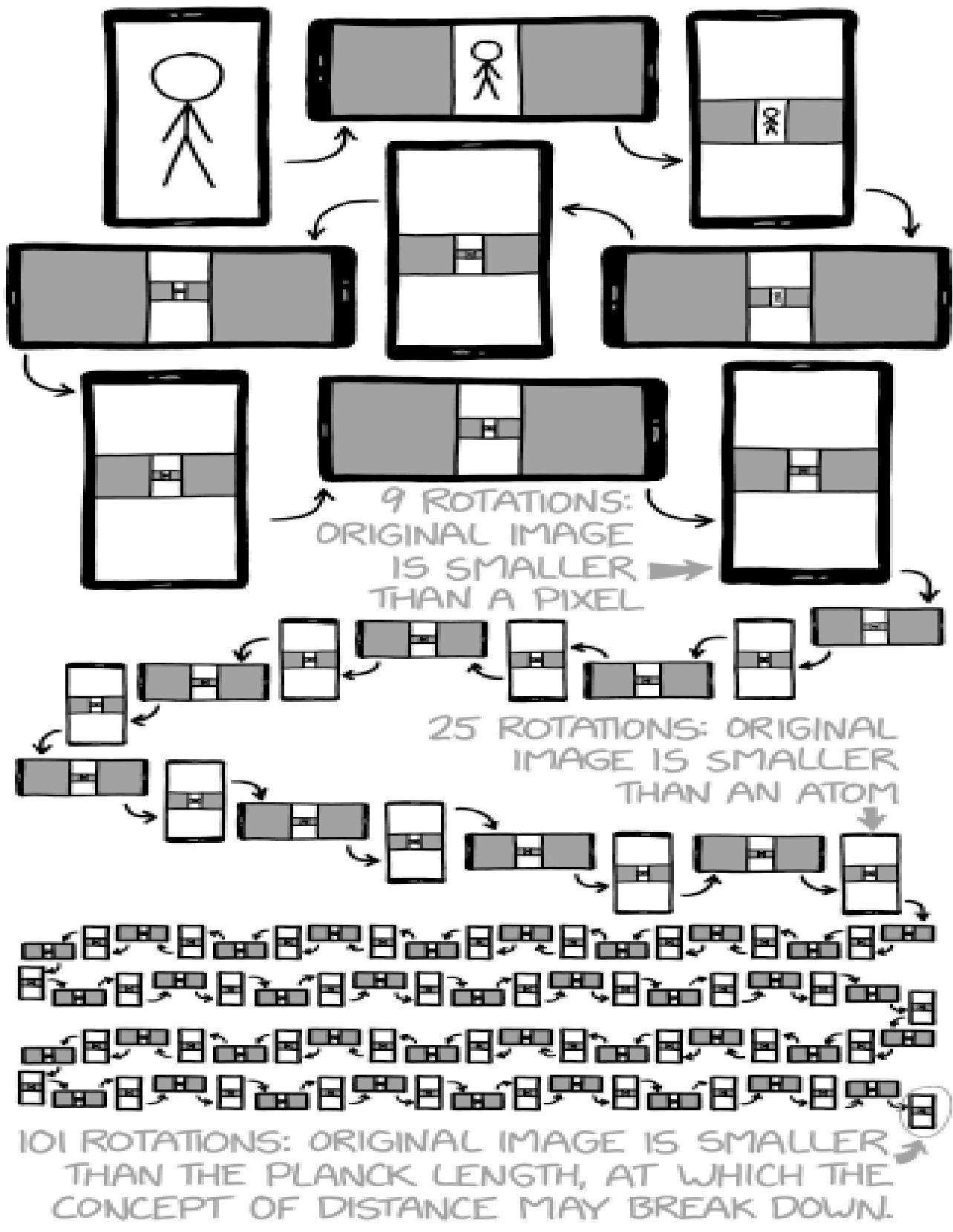
$$| + | = ||$$

$$|| + || = |5$$

$$|5 + 5 = |10$$



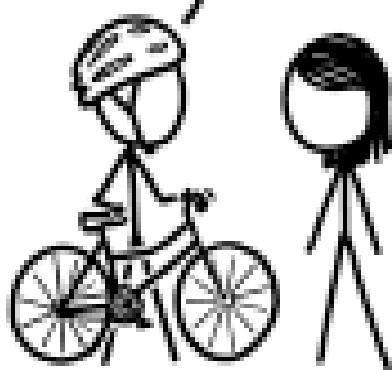
REMEMBER, ROMAN NUMERALS ARE  
ARCHAIC, SO ALWAYS REPLACE THEM  
WITH MODERN ONES WHEN DOING MATH.



PHONE TIP: DON'T ROTATE AND SCREENSHOT AN IMAGE TOO MANY TIMES OR IT WILL BECOME LOST IN THE QUANTUM FOAM OF THE UNIVERSE.

I CAN RIDE MY  
BIKE AT 45 MPH.

IF YOU ROUND:



17 MPH



8 METERS/SEC

16 KNOTS

5 FATHOMS/SEC

3 FURLONGS/MIN

6 FATHOMS/SEC

40 KPH → 22 KNOTS

26 MPH ← 204 FURLONGS/HR ← 41 KPH ←

12 M/S → 4 FURLONGS/MIN → 15 YARDS/SEC

34 MPH ← 15 M/S ← 8 FATHOMS/SEC ←

5 FURLONGS/MIN → 33 KNOTS

10 FATHOMS/SEC ← 19 YARDS/SEC ←

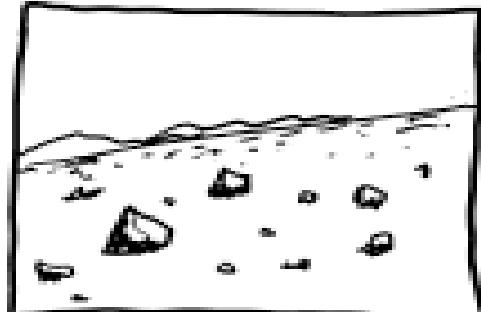
36 KNOTS → 6 FURLONGS/MIN



45 MPH



JUST COLLECTED A SAMPLE!



~~~~~  
THESE PICTURES ARE GREAT!



~~~~~  
I'M SO PROUD OF YOU



~~~~~  
WOW YOU KNOW A LOT ABOUT ROCKS



~~~~~  
GO GO GO GO GO!



~~~~~  
MORE PROPAGANDA FROM NASA'S 5G
VACCINE MICROCHIP FACTORY



~~~~~  
QUIET, WE'RE NOT DOING THAT HERE



~~~~~  
HELLO FROM MISSOURI (EARTH)!



~~~~~  
DID YOU FIND ANY SKELETONS YET



~~~~~  
I HOPE YOUR HELICOPTER COMES BACK!

THE MOST UNEXPECTEDLY WHOLESOME
PLACE ON THE INTERNET IS THE REPLIES
TO NASA'S ROVERS ON SOCIAL MEDIA.

I SEE YOU'RE STILL GETTING TOGETHER TODAY! I'LL BE THERE, DOING MY SPOKEN-WORD BABY SHARK KARAOKE ALL EVENING. WE'LL ALSO BE SETTING UP A PETTING ZOO FOR THE KIDS. WE'VE SPENT ALL WEEK TRAPPING WILD SKUNKS!

REPLY



IN THE CORONAVIRUS ERA, DESPERATE TIMES CALL FOR DESPERATE MEASURES.

WE'D LIKE TO EXTEND AN OFFER!
THE STARTING SALARY IS \$55,000.

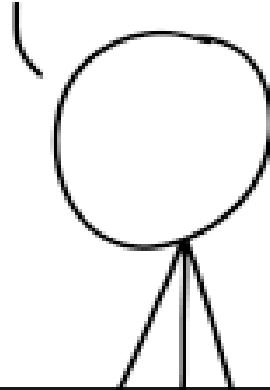
WOW. I GUESS I'M
INSIDE A NEGOTIATION!

I...WEIRD TO PHRASE
IT LIKE THAT, BUT—

I CAN DO THIS.



I WON'T ACCEPT A PENNY
OVER \$50,000. SORRY, I
MEAN UNDER. UNDER \$60.
I MEAN, \$600. THOUSAND.
\$600,000. I WANT A 15%
CUT OF THE SALARY. RAISE.
DOUBLE DOWN. FOLD PASS.
FILL IT UP WITH REGULAR.



ARE YOU—

SORRY, SORRY, LET
ME START OVER.

OK, MY CHART SAYS...

...CAN I BORROW A
CALCULATOR? WHAT'S
20% OF \$55,000?



LISTEN, IF YOU NEED TO—

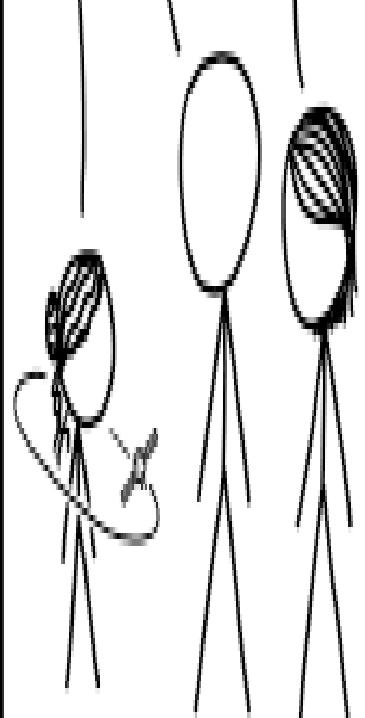
I WON'T TAKE THIS JOB FOR LESS
THAN \$61,333 POINT 3 REPEATING!
SURE, \$61,333 IS FINE.
THAT'S ACTUALLY—

POINT 3 REPEATING
OR I WALK!



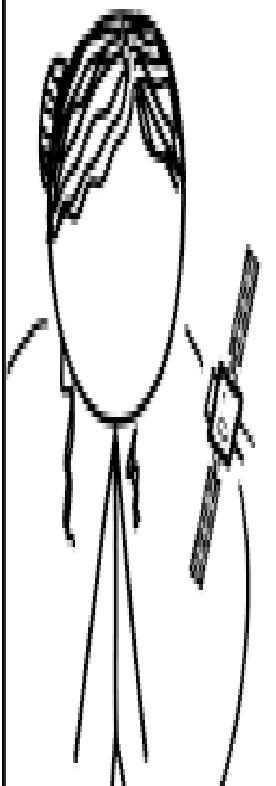
HEY, LOOK, I FOUND
A SATELLITE! CAN I
KEEP IT? PLEASE?

SWEETIE, NO.
PUT IT BACK
WHERE YOU
FOUND IT.



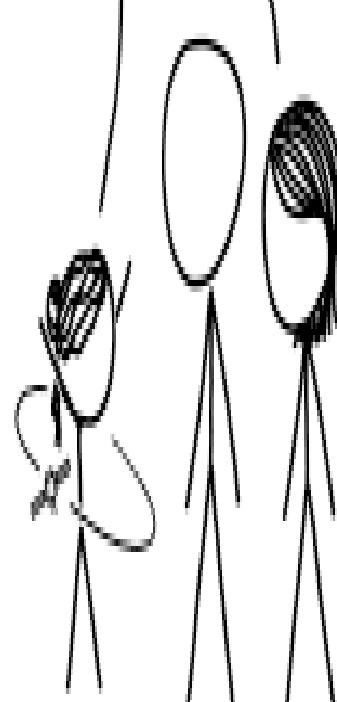
BUT I THINK IT
WAS ABANDONED!
AND IT'S SO CUTE!

PLEASE?
PLEEEASE?



FINE BUT YOU HAVE TO
PROMISE TO BOOST IT
TO A GRAVEYARD ORBIT
WHEN IT STOPS WORKING.
DON'T JUST LEAVE IT
DRIFTING AROUND.

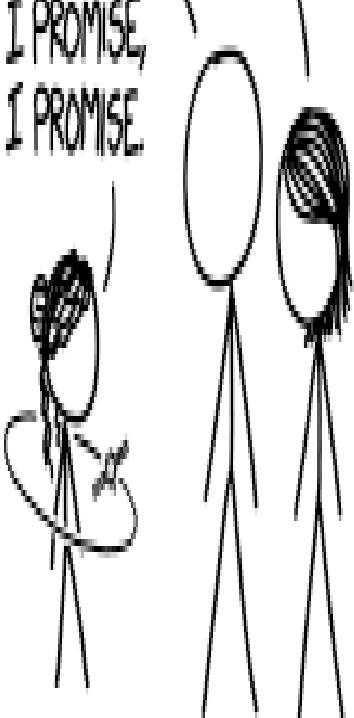
YAAAAAY!



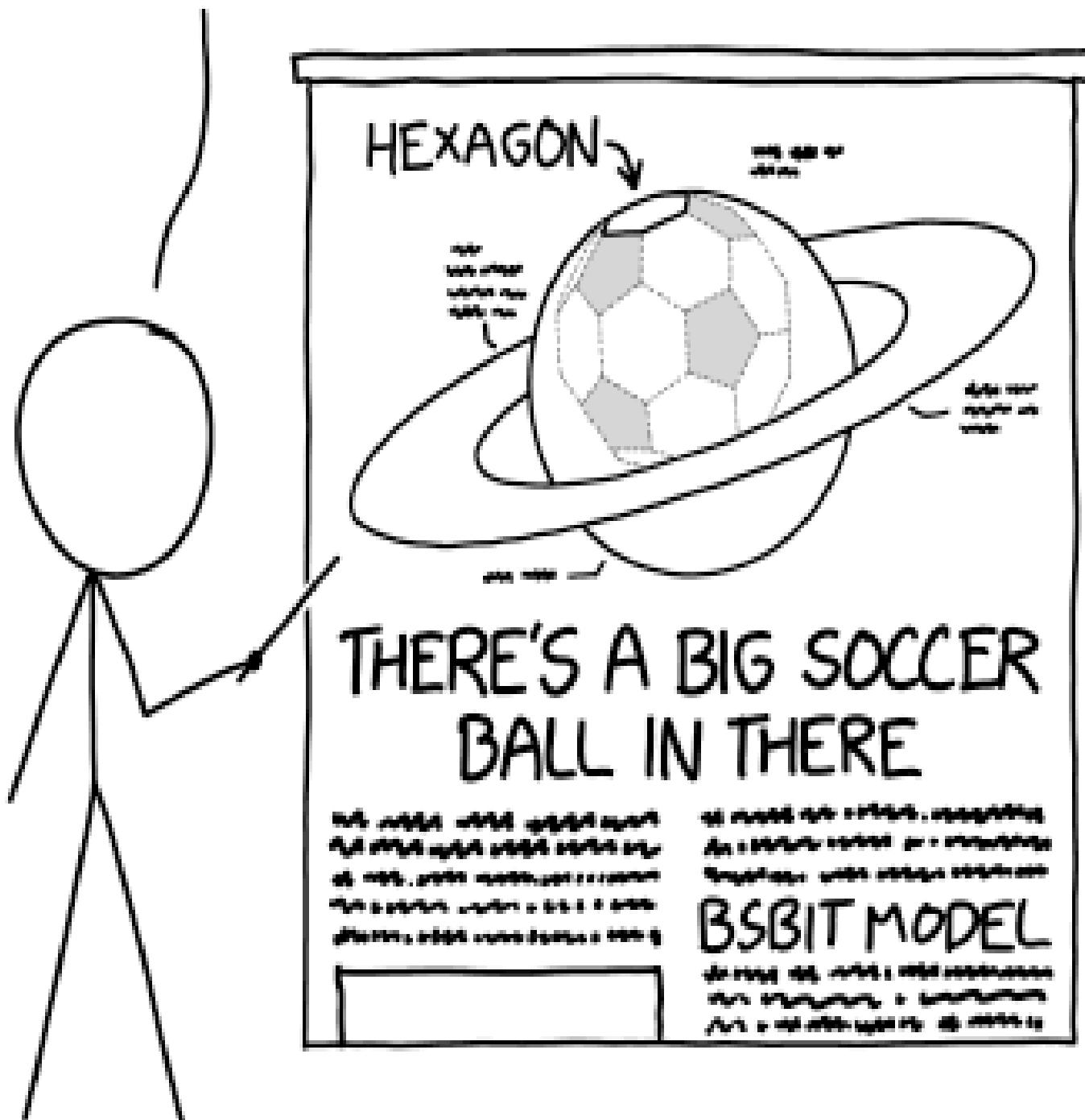
WE'RE SERIOUS. I
AM NOT CLEANING
UP AFTER KESSLER
SYNDROME AGAIN.

WE COULDN'T
USE THE DINING
ROOM FOR WEEKS!

I PROMISE,
I PROMISE

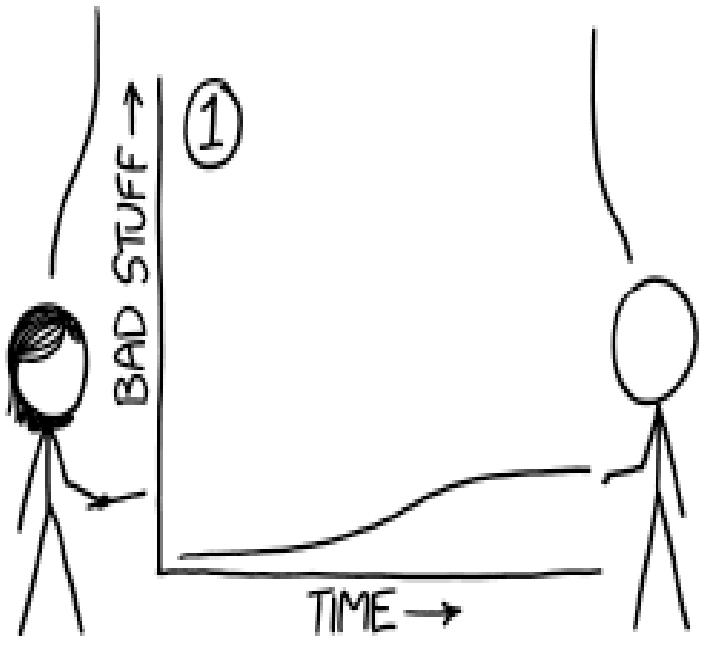


WE'RE PROUD TO ANNOUNCE THAT OUR TEAM HAS FINALLY DETERMINED THE ORIGIN AND NATURE OF SATURN'S POLAR HEXAGON.

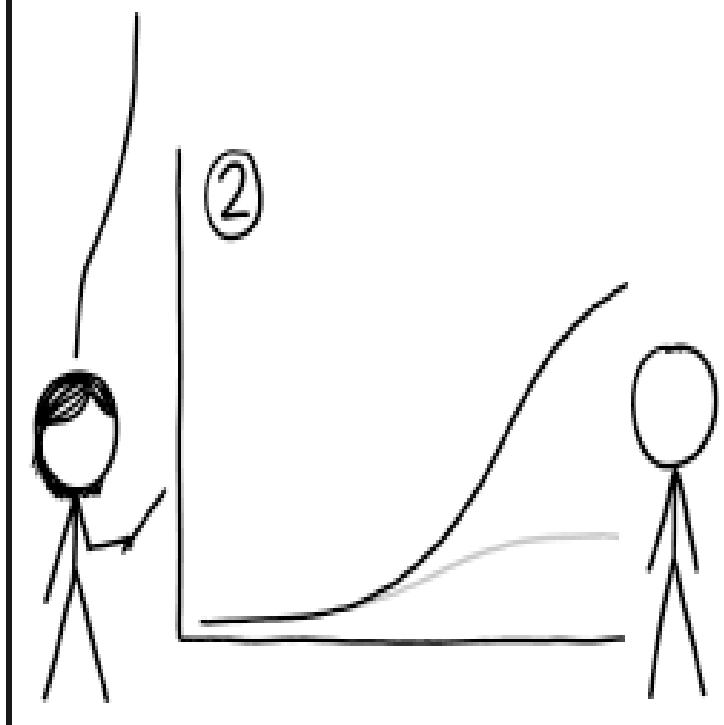


OUR NEW MODELS
OUTLINE A FEW
POSSIBLE SCENARIOS.

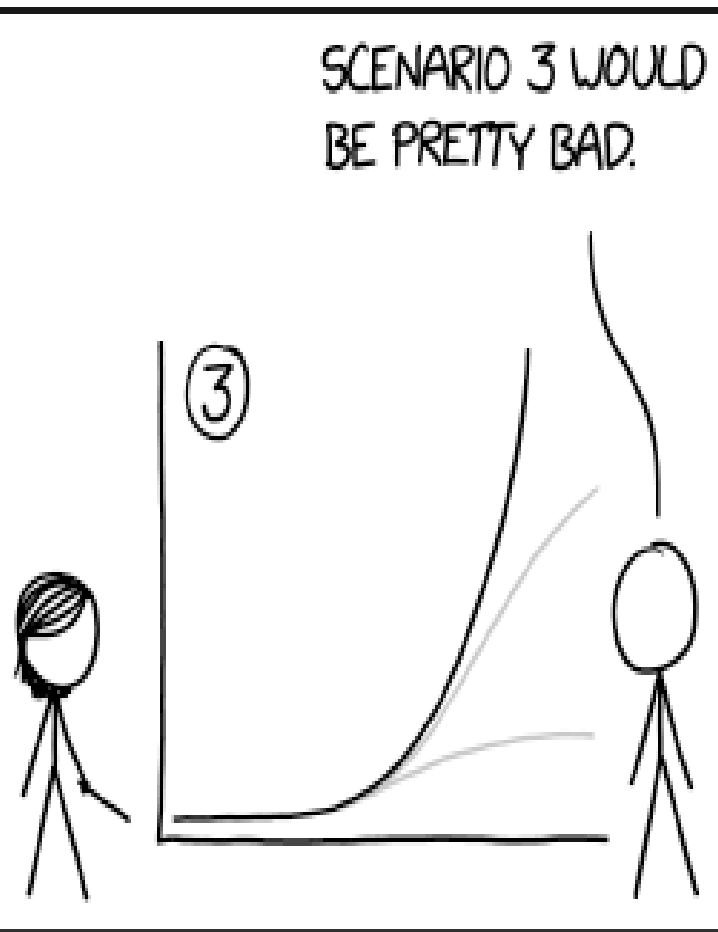
#1 IS THE
BEST CASE
SCENARIO.



SCENARIO 2 IS
NOT SO GREAT.

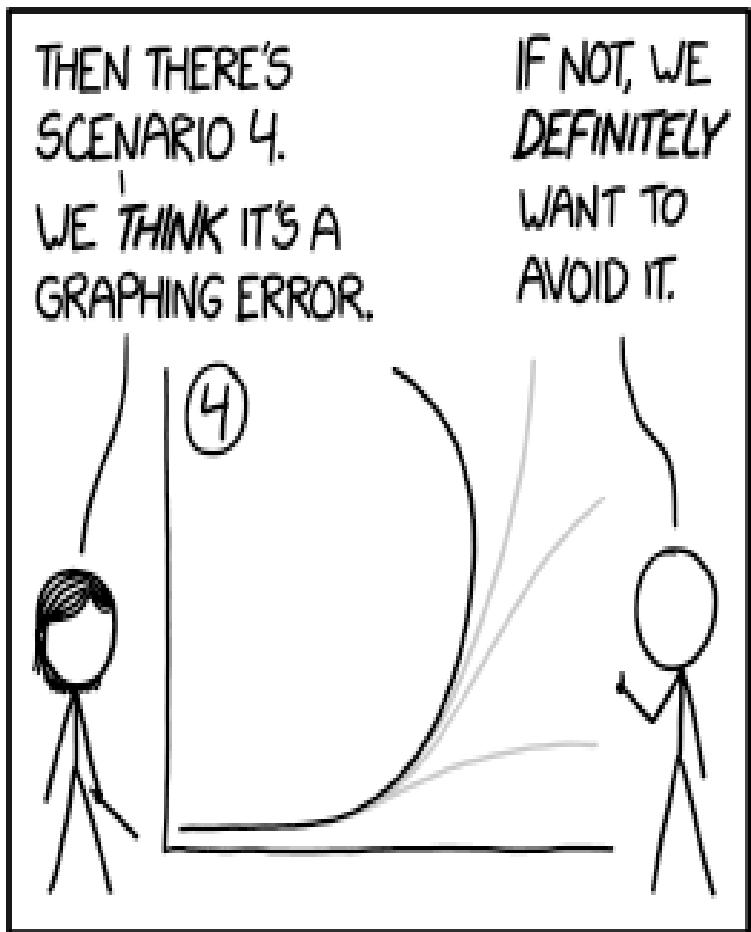


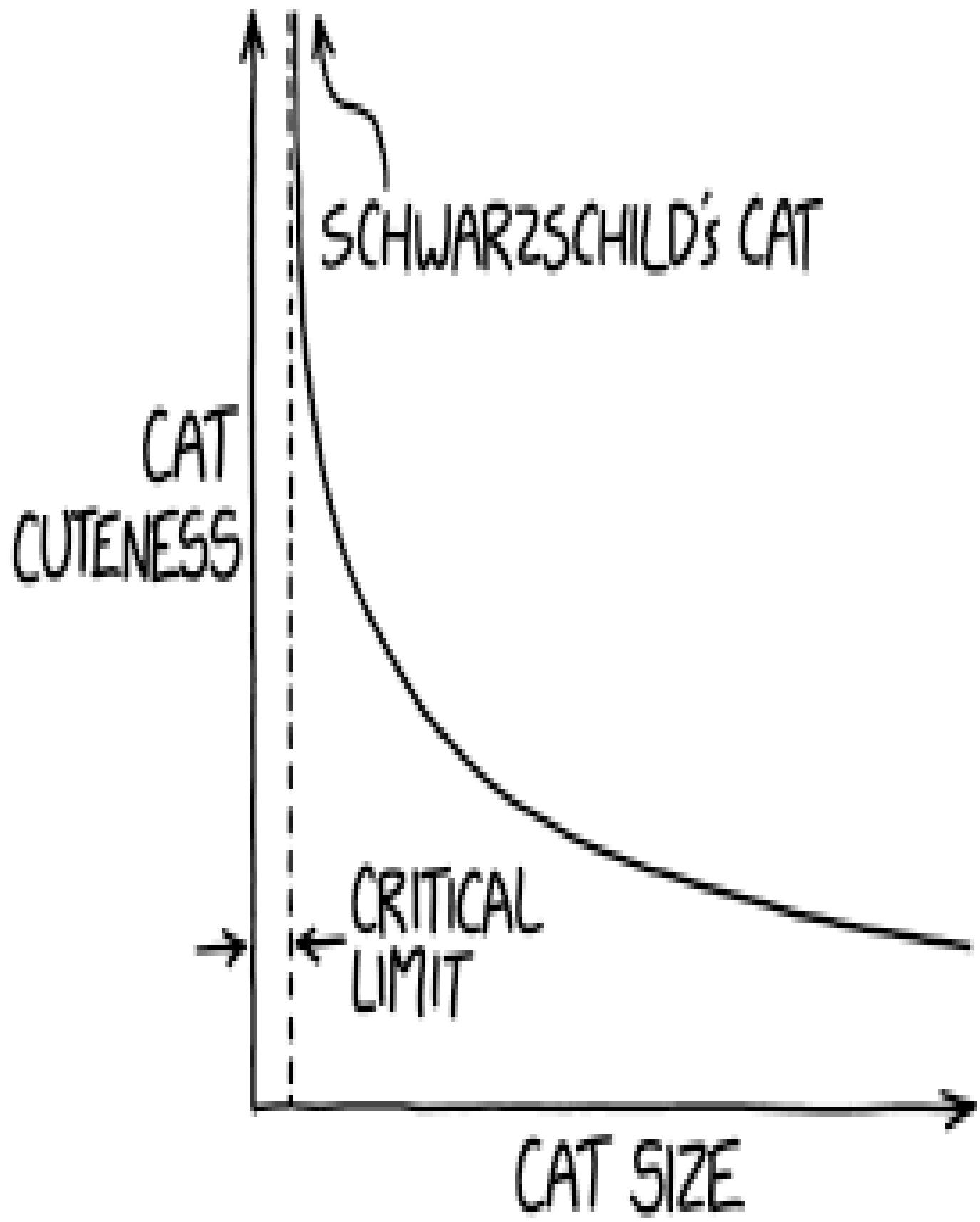
SCENARIO 3 WOULD
BE PRETTY BAD.



THEN THERE'S
SCENARIO 4.
WE THINK IT'S A
GRAPHING ERROR.

IF NOT, WE
DEFINITELY
WANT TO
AVOID IT.

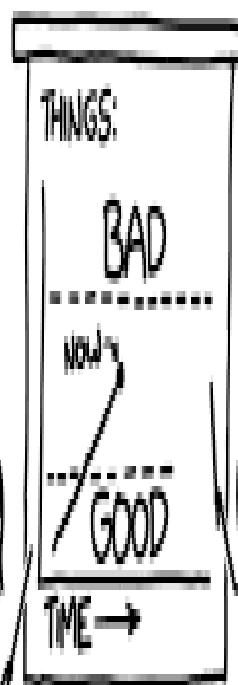




HERE'S THE SITUATION:

THIS LINE IS HERE.

BUT IT'S GOING UP TOWARD HERE



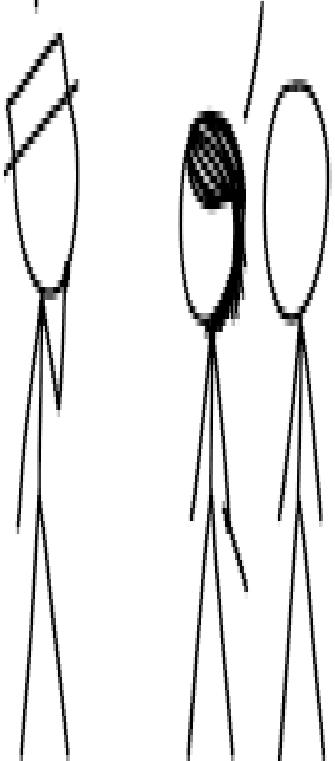
SO THINGS WILL BE BAD?

UNLESS SOMEONE DOES
SOMETHING TO STOP IT.

WILL ANYONE DO THAT?

...WE DON'T KNOW.

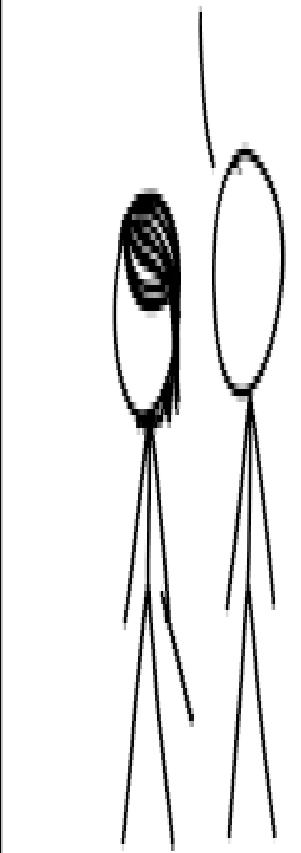
THAT'S WHY WE'RE
SHOWING YOU THIS.



SO YOU DON'T KNOW,

AND THE GRAPH SAYS
THINGS ARE NOT BAD.

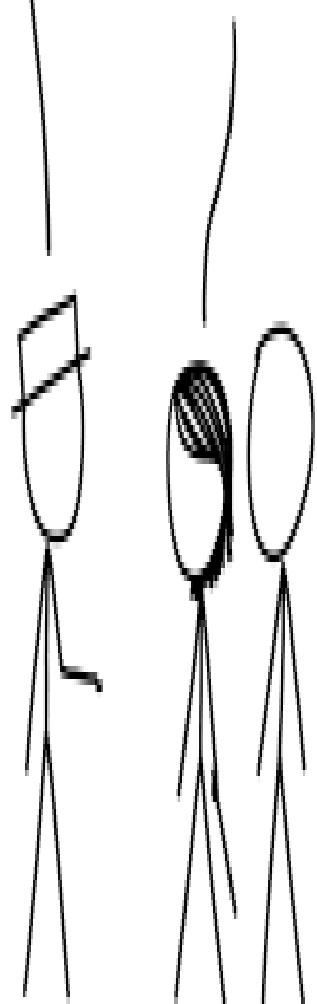
BUT IF NO ONE
ACTS, THEY'LL
BECOME BAD.



WELL, PLEASE LET ME

KNOW IF THAT HAPPENS!

BASED ON THIS
CONVERSATION,
IT ALREADY HAS.



NUMBER OF SEARCH RESULTS ON GOOGLE SCHOLAR

PHYSICS CHEMISTRY BIOLOGY ENGINEERING PSYCHOLOGY THEOLOGY DENTISTRY

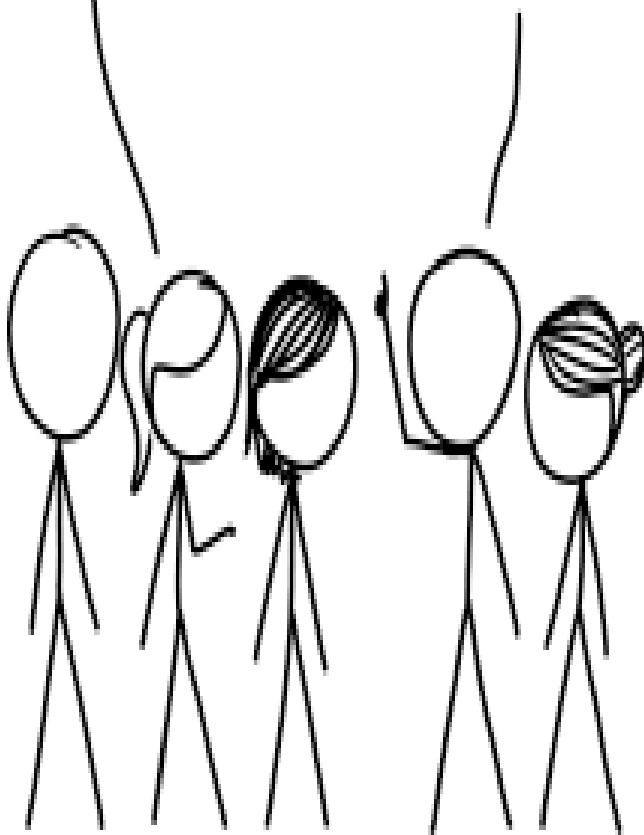
	PHYSICS	CHEMISTRY	BIOLOGY	ENGINEERING	PSYCHOLOGY	THEOLOGY	DENTISTRY
THEORETICAL	3,990,000	445,000	553,000	2460	15,500	726	41
QUANTUM	478,000	740,000	7,620	2,100	699	447	NONE
HIGH-ENERGY	844,000	9,600	3	119	1	NONE	NONE
COMPUTATIONAL	510,000	599,000	2,910,000	67,400	4,620	40	11
MARINE	3920	136,000	945,000	108,000	35	6	1
ASTRO-	2010,000	20,600	226,000	430	64	580	NONE

POTENTIAL RESEARCH OPPORTUNITIES: QUANTUM DENTISTRY,
HIGH-ENERGY DENTISTRY, ASTRODENTISTRY, AND HIGH-ENERGY THEOLOGY

WHAT TECH PEOPLE THINK SCIENTISTS NEED HELP WITH:

PLEASE—OUR DATA, IT'S TOO COMPLEX! CAN YOUR MAGICAL MACHINE MINDS UNEARTH THE PATTERNS THAT LIE WITHIN?

WE SHALL MARSHAL
OUR FINEST ALGORITHMS!



WHAT SCIENTISTS ACTUALLY NEED:

FOR A FEW WEEKS IN JUNE, THE LAB WAS INFESTED BY WASPS, SO WE HAD TO TAKE PICTURES OF THE EQUIPMENT THROUGH THE WINDOW.

HOW DO YOU GET GRAPHS FROM A POLAROID PHOTO INTO EXCEL?



SCREEN TIME REPORT:

WHILE AWAKE, YOU AVERAGED
2H 48M PER DAY LOOKING AT
THINGS OTHER THAN YOUR PHONE.
THAT'S UP 6% FROM LAST WEEK!



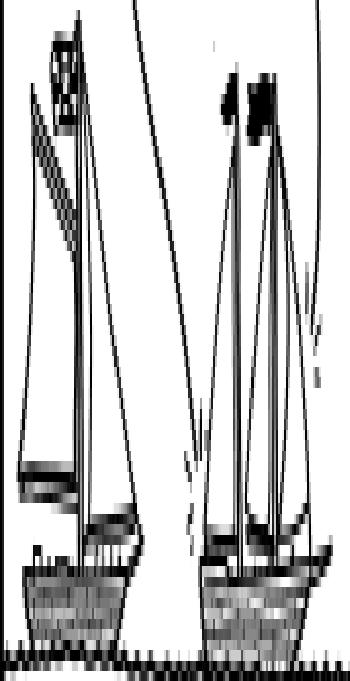
AT SOME POINT, IT STARTS MAKING MORE
SENSE TO TRACK NON-SCREEN TIME.

THEY'RE CLOSING IN!

HANG ON, WE'RE

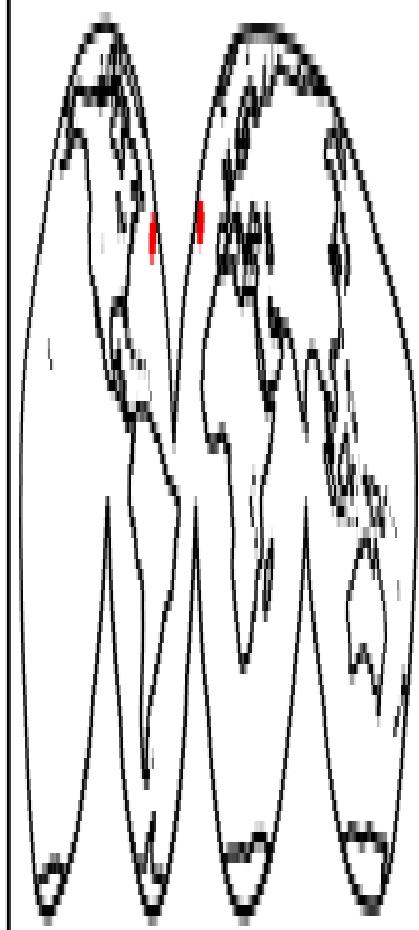
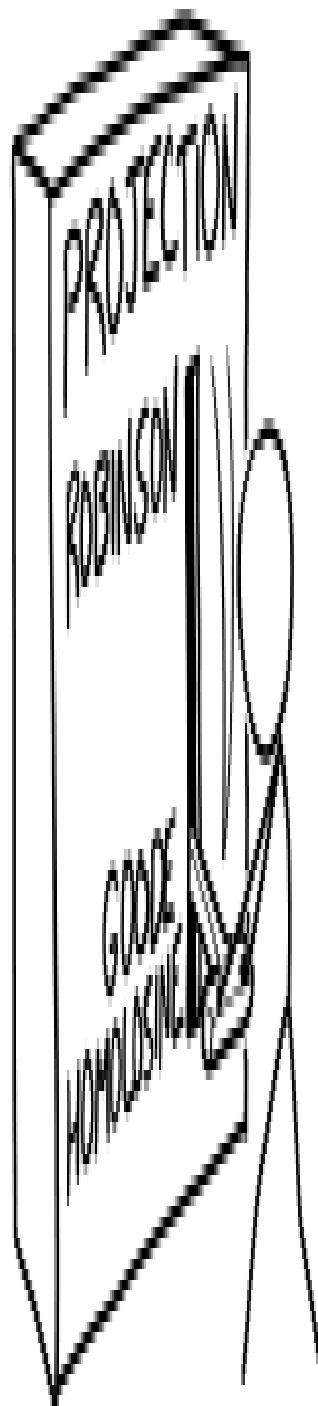
ALMOST AT

THE MERRY-



NOW THRU'

THE SWITCH!



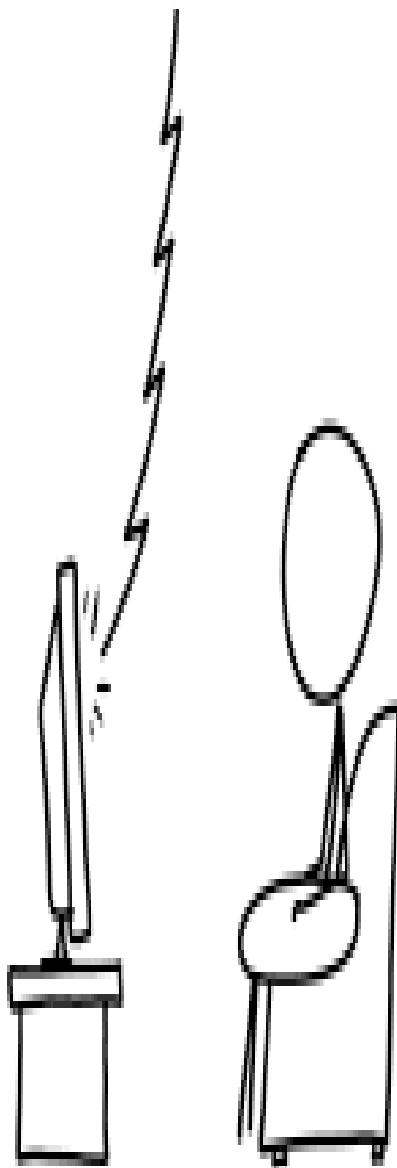
STATISTICS
CONFERENCE
~2022~

RAISE YOUR HAND
IF YOU'RE FAMILIAR
WITH SELECTION BIAS.

AS YOU CAN SEE,
IT'S A TERM MOST
PEOPLE KNOW...

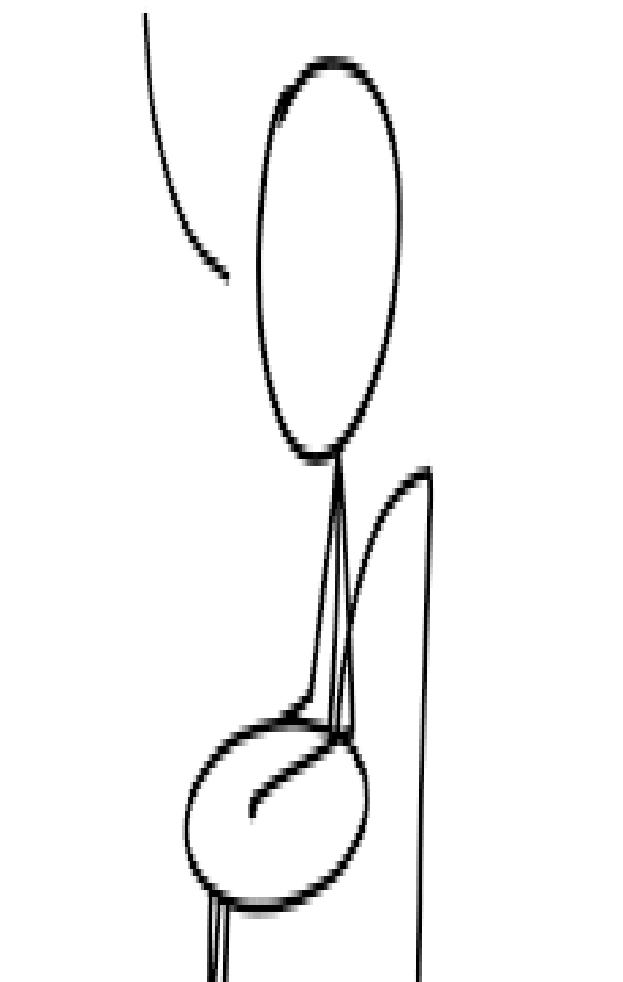


EXPERTS ARE SAYING
PEOPLE MAY NEED
TO "SELF-ISOLATE" TO
COMBAT THE VIRUS.



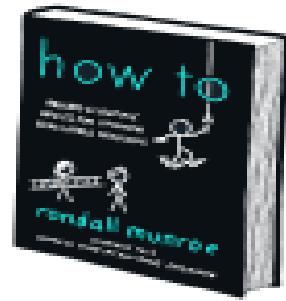
... I'VE BEEN PRACTICING FOR
THIS MOMENT MY WHOLE LIFE.

I DON'T THINK THAT'S-
QUICK, MAKE PLANS AND
WATCH HOW FAST I CANCEL!

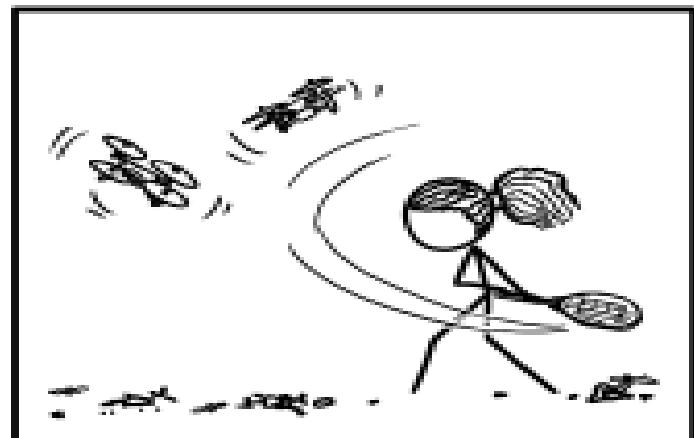
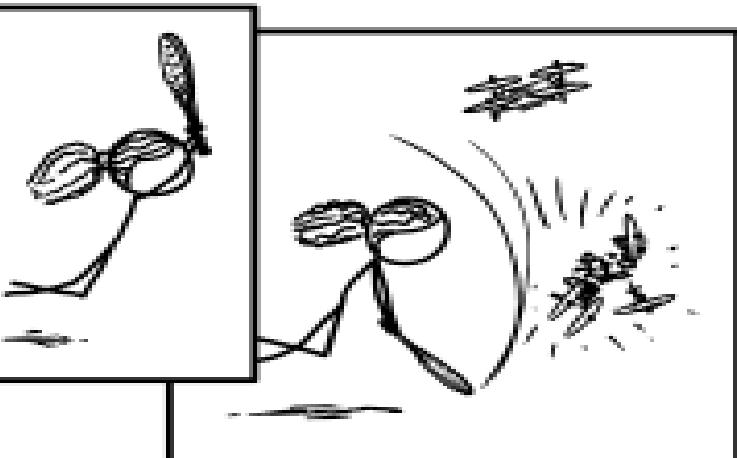
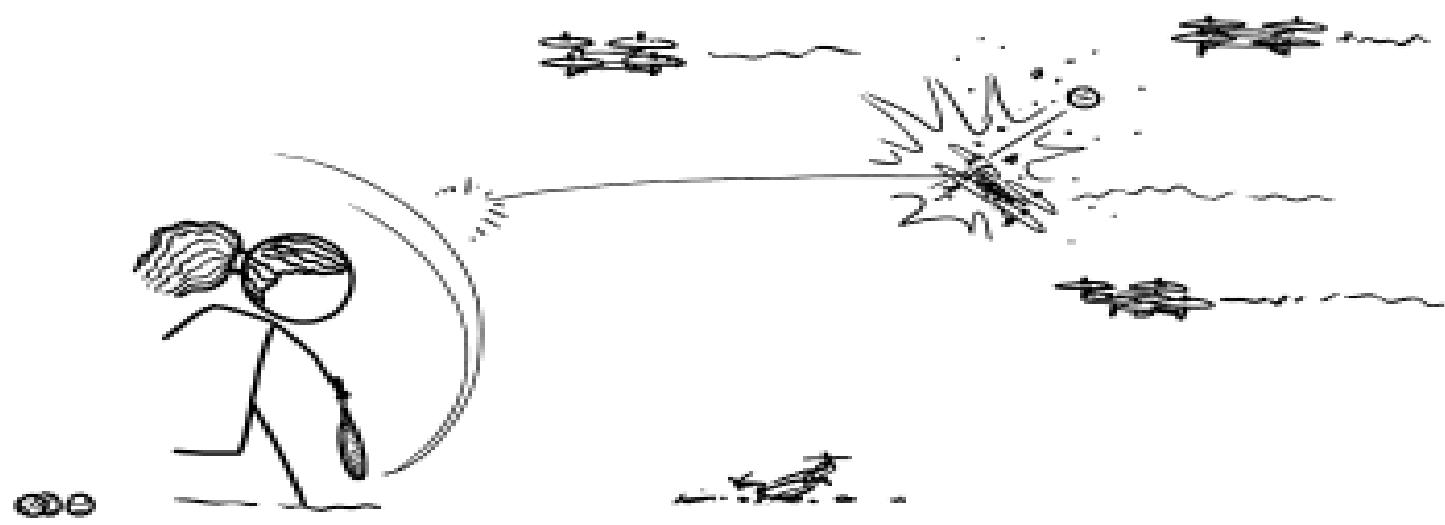


"IT'S A PRETTY BAD IDEA."

—SERENA WILLIAMS
ON MY IDEA

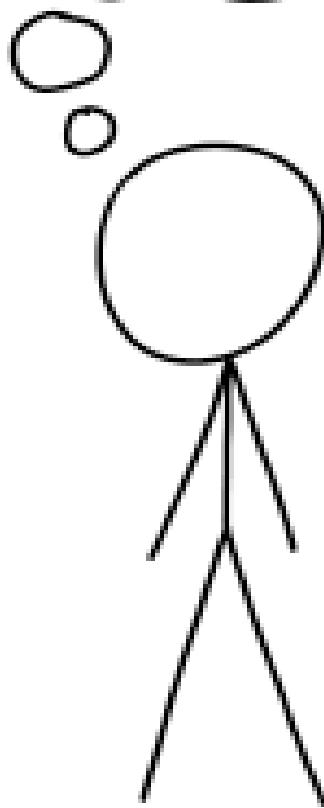
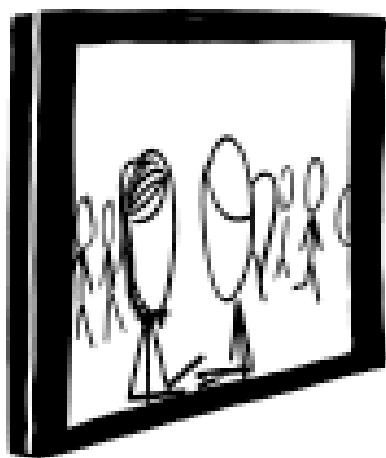


WHICH TYPES OF SPORTS EQUIPMENT WOULD BE MOST EFFECTIVE AT BRINGING DOWN A ROGUE PHOTOGRAPHY DRONE? MY NEW BOOK FEATURES A REAL-WORLD TEST BY SERENA WILLIAMS.



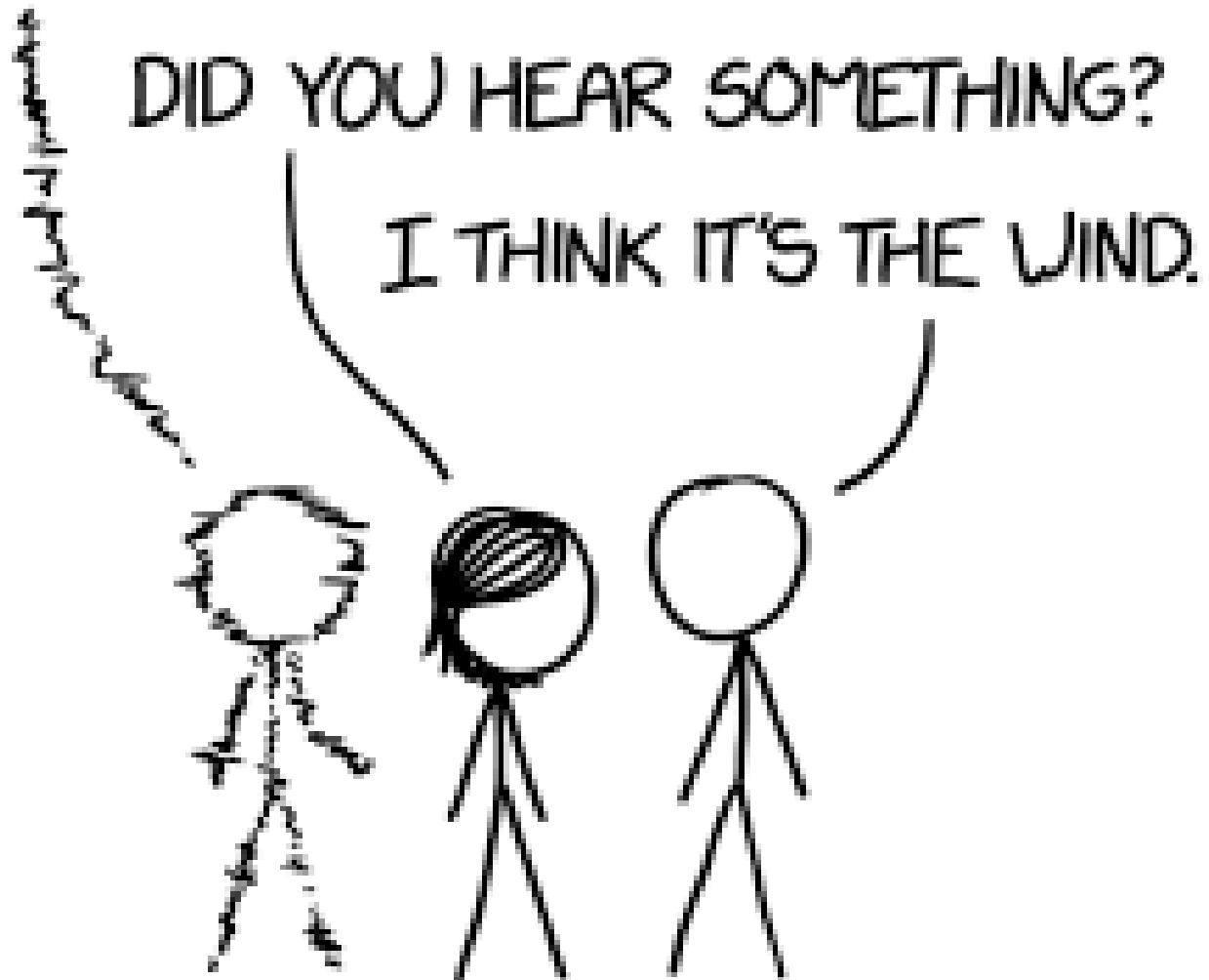
TO READ AN EXCERPT ABOUT SERENA'S DRONE BATTLE, CLICK [HERE](#) OR GO TO BLOG.XKCD.COM

OKAY, THEY'RE HUGGING, AND NO ONE HAS MASKS, BUT SHE HAS A MODERN PHONE. IS THIS STORY SET IN 2019? OR IS THIS A POST-VACCINE FUTURE? OR AN ALTERNATE NO-COVID TIMELINE? OR ARE WE SUPPOSED TO THINK THESE CHARACTERS ARE IRRESPONSIBLE?



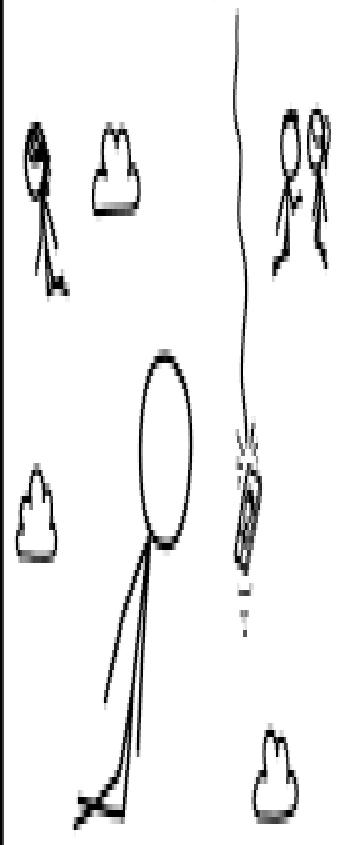
MOVIES AND SHOWS THAT ARE VAGUELY SET IN "THE PRESENT" WILL BE AWKWARD FOR A WHILE.

THESE DAYS MOST OF OUR FUNDING COMES IN FROM THE SHADOW BIOTECH INDUSTRY.

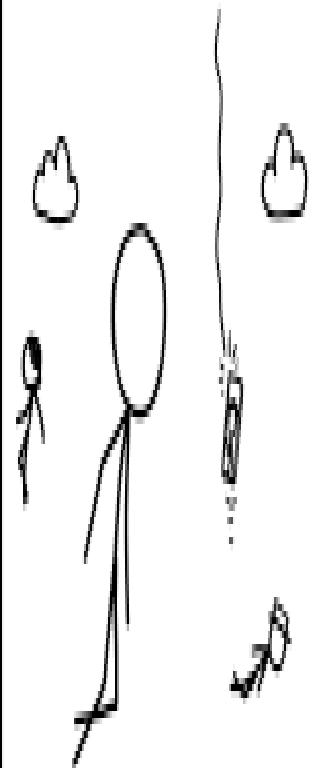


THE SHADOW BIOSPHERE EXISTS, BUT IF YOU STUDY IT, YOU BECOME A SHADOW BIOLOGIST.

WELCOME TO SOCIAL MEDIA! WHEN YOU PUT STUFF HERE, YOU HAVE TWO OPTIONS: (1) YOU CAN MAKE IT AVAILABLE TO A SMALL SET OF 300 OR SO APPROVED FRIENDS.

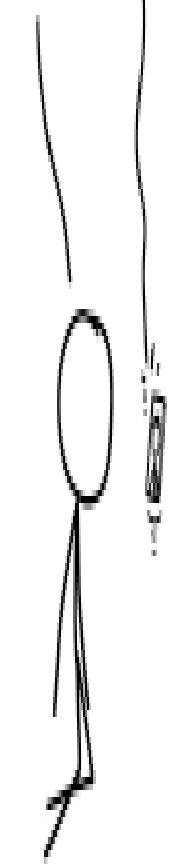


OR (2) YOU CAN SHARE PERMANENT COPIES OF IT ALL WITH BILLIONS OF PEOPLE, INCLUDING INTERNET SCAMMERS, RANDOM PREDATORY COMPANIES, AND HOSTILE FOREIGN GOVERNMENTS.



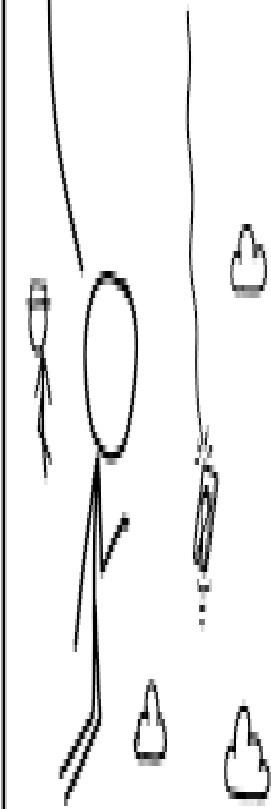
WHY WOULD ANYONE PICK OPTION TWO?

TWO IS THE DEFAULT.
YIKES.



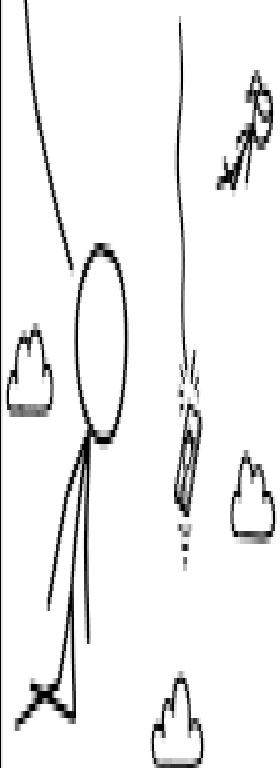
SO THOSE ARE THE ONLY TWO OPTIONS? THERE'S NOTHING IN BETWEEN?

I DON'T UNDERSTAND. LIKE WHAT?



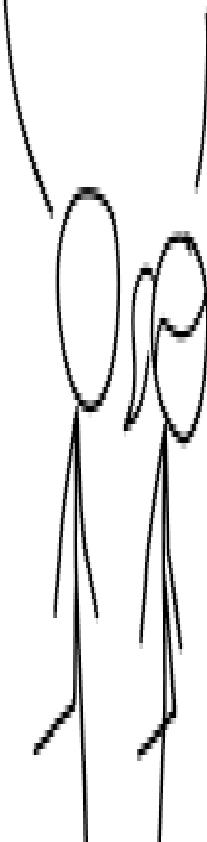
I MEAN...THERE ARE NUMBERS BETWEEN 300 AND A BILLION.

HUH? NAME ONE.
I PRETTY SURE I WOULD HAVE HEARD OF THOSE.

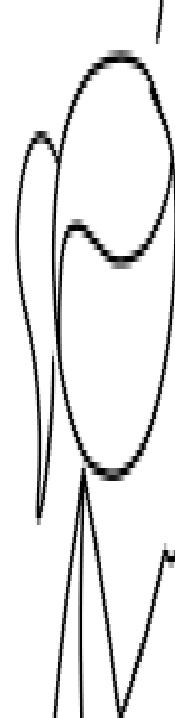


I DON'T UNDERSTAND
SHORTING STOCKS

IT'S LIKE WHEN
YOU PROMISE
YOUR FIRSTBORN
TO A WITCH FOR
FIVE MAGIC BEANS.

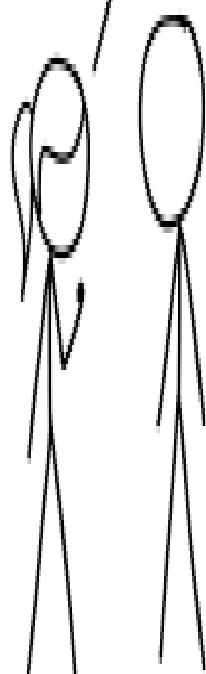


IS THAT A
COMMON-
SHE'S A SUCKER,
RIGHT? YOU KNOW
YOUR AWFUL KID
WILL BE WORTH
ONE OR TWO
BEANS AT BEST.



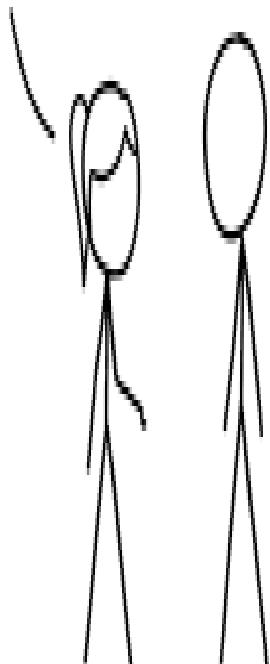
BUT THEN IT TURNS OUT
YOU LOVE YOUR KID, A LOVE
WORTH 200 BEANS! YOU
CAN'T AFFORD THAT LOSS!

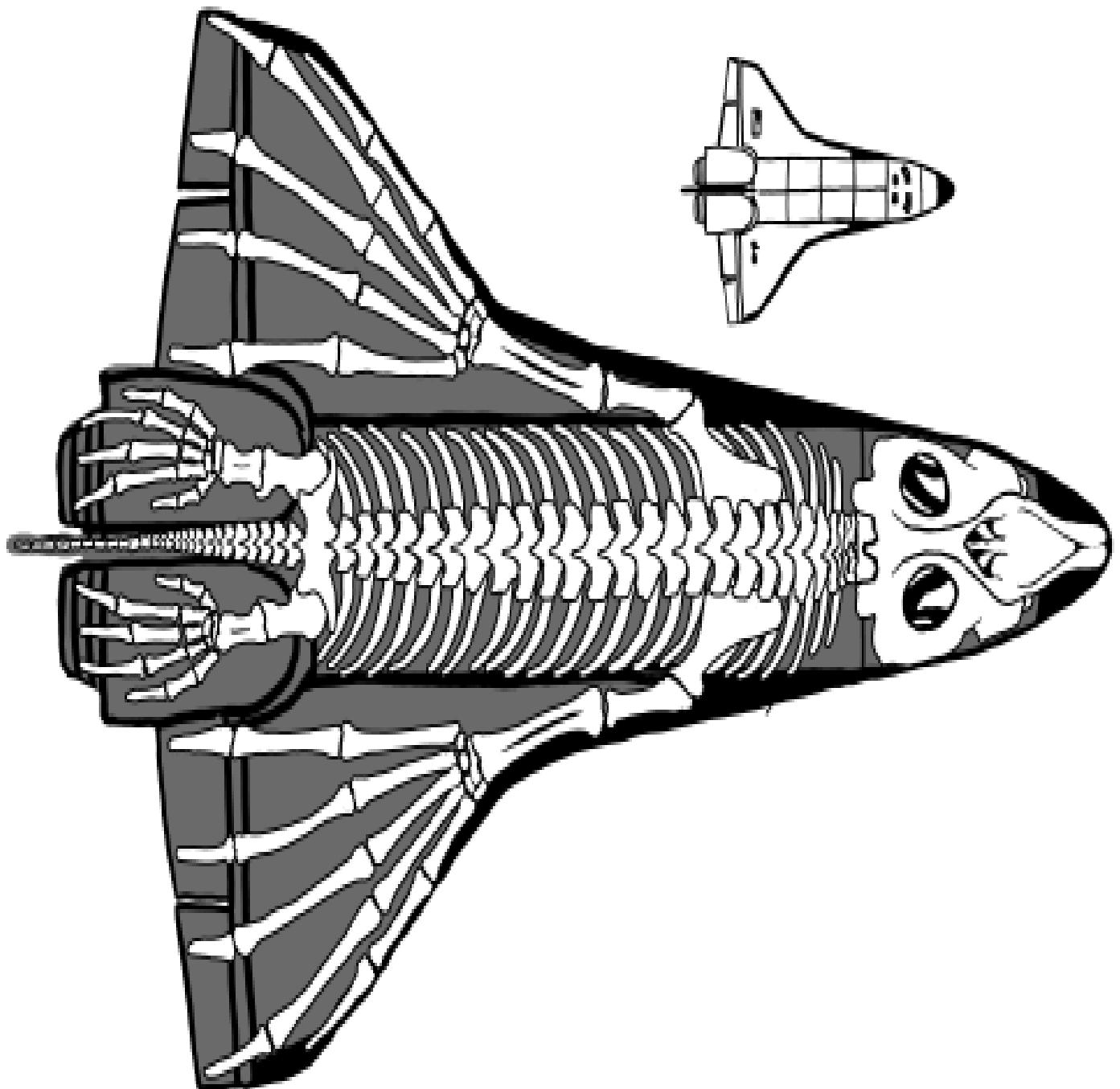
THERE'S ONLY ONE WAY OUT:
YOU GOTTA FIGHT THE WITCH.



SO YOU SEND YOUR KID UP THE
BEANSTALK TO BATTLE THE GIANT,
WHO REPRESENTS INTEREST RATES.

THIS ANALOGY IS GETTING LESS
HELPFUL BY THE MINUTE.
IF ONLY YOU'D SOMEHOW
SHORTED MY WISDOM
BEFORE YOU ASKED.



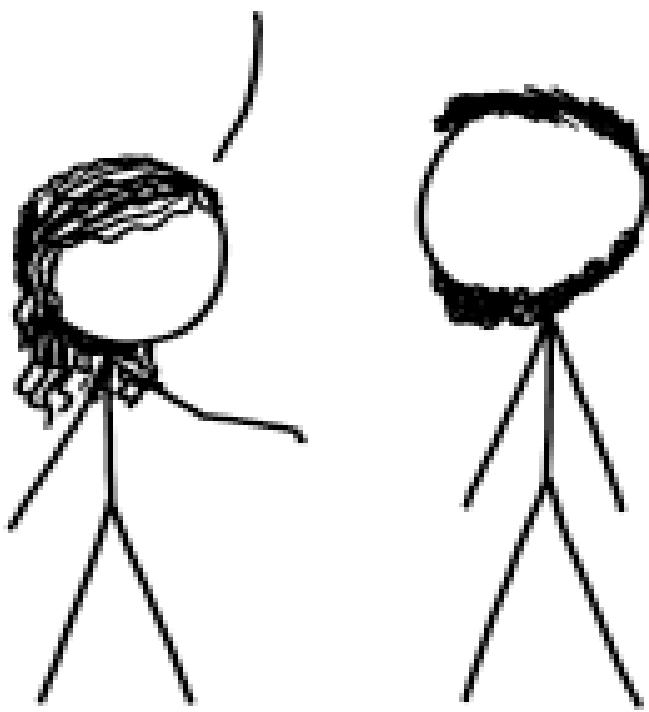


THE SPACE SHUTTLE WAS LONG ASSUMED TO BE A TYPE OF FISH OR SHARK, BUT AFTER IT WAS DECOMMISSIONED IN 2011, ANALYSIS OF ITS SKELETON DETERMINED THAT IT WAS ACTUALLY A MAMMAL.

REMEMBER, ODYSSEUS:

AS YOU PASS THE ROCKS YOU WILL
HEAR A WOMAN CALLING OUT TO YOU,
URGING YOU TO STRAY FROM YOUR
PATH, BUT PLUG YOUR EARS AND HOLD
YOUR COURSE, FOR HER BEGUILING LIES
WILL DRAW YOU TO A WATERY GRAVE.

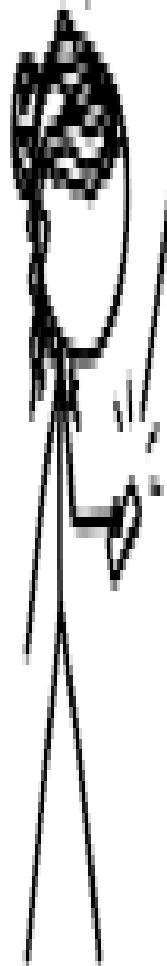
I DON'T KNOW ^{WHY} THEY CAN'T JUST
FIX IT. I KEEP FILING ERROR REPORTS.



CIRCE WAS ACTUALLY JUST TELLING
ODYSSEUS TO IGNORE HIS GPS.

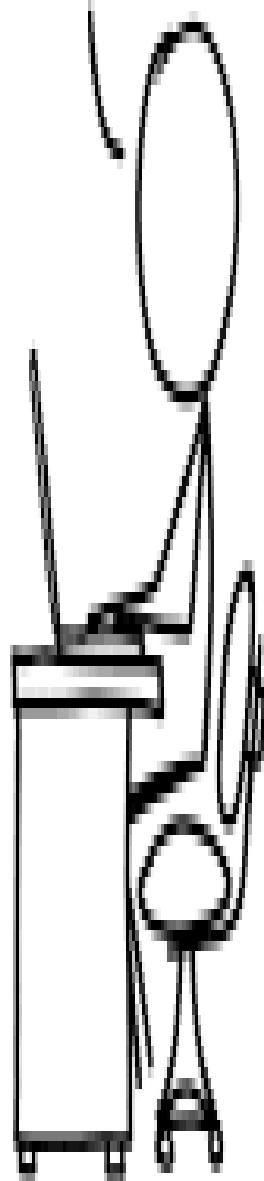
YOUR TIMER
IS SET

THANKS

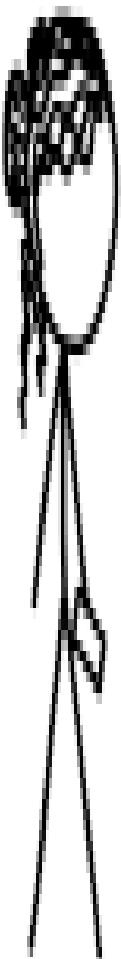


IS SRI ALIVE?

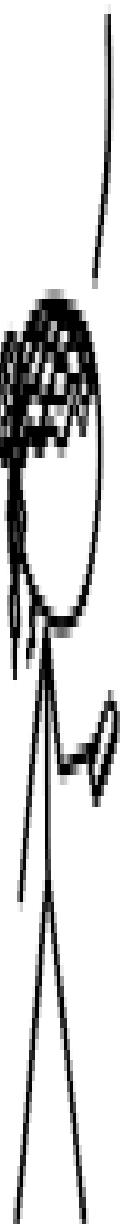
NO.



OH, OK.



HOW DID
SHE DIE?



LITTLE

BIG

LARGE

BANG THEORY

ENCHILADA

BOARD

SUR

BEND

BEAR LAKE

BARRIER REEF

WALL OF CHINA

DEPRESSION

TERROR

AUNT

ORPHAN ANNIE

HOUSE ON THE PRAIRIE

RICHARD

DIPPER

PLANET LIES

SISTER

FOOT

TIME

SCREEN

WORLD

ONE

END

GAME

WHITE

HEARTED

BILLED
SEED
FINCH

FLYING FOX

POX
CARDIAC
VEIN

CIRCLE

ROOM

POTATOES

PROFESSOR

FOREST BAT

FORMAT

FOUNDATION

TOOTHED
ASPEN

MILLIMETER
TELESCOPE

HADRON COLLIDER

EYED CONGER
BLUE
INTESTINE
MAGELLANIC CLOUD

FROG

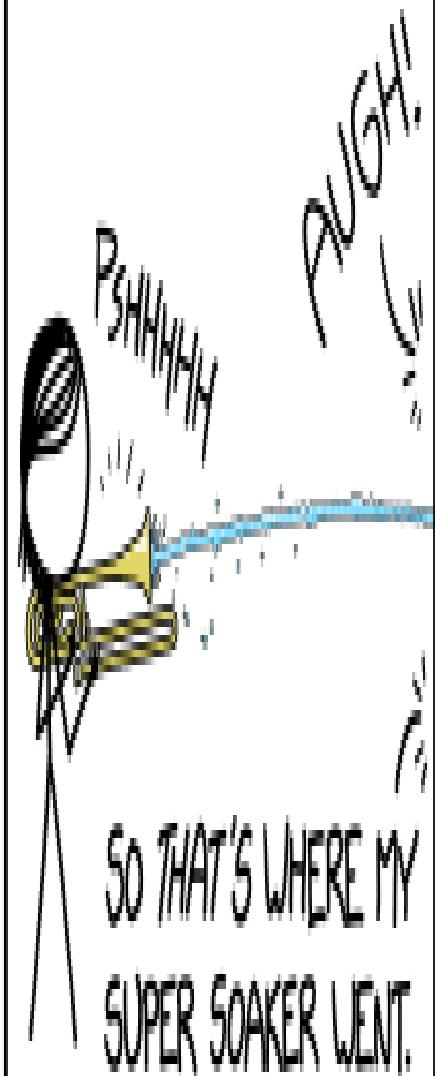
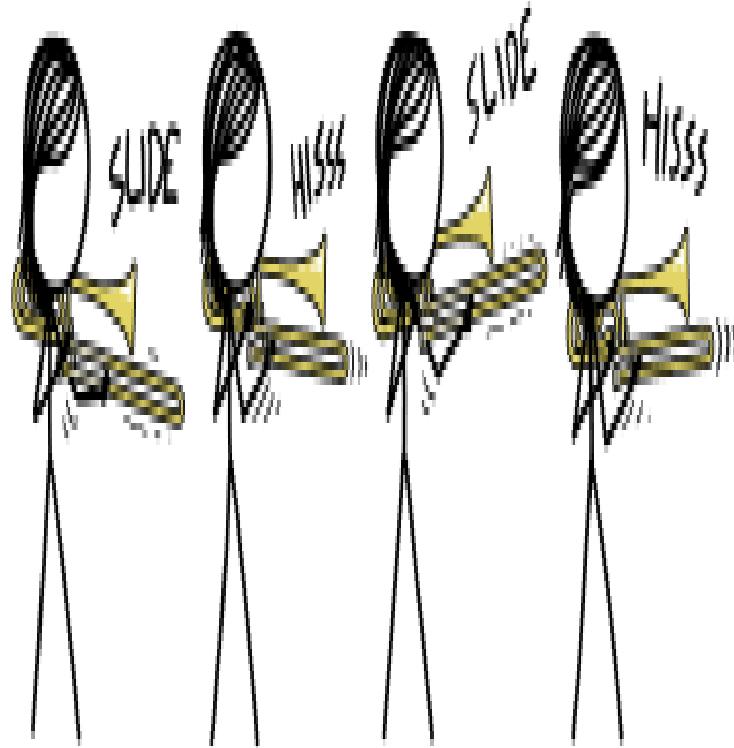
EMERALD

WONDER
SOLDIERS

CLAIMS COURT

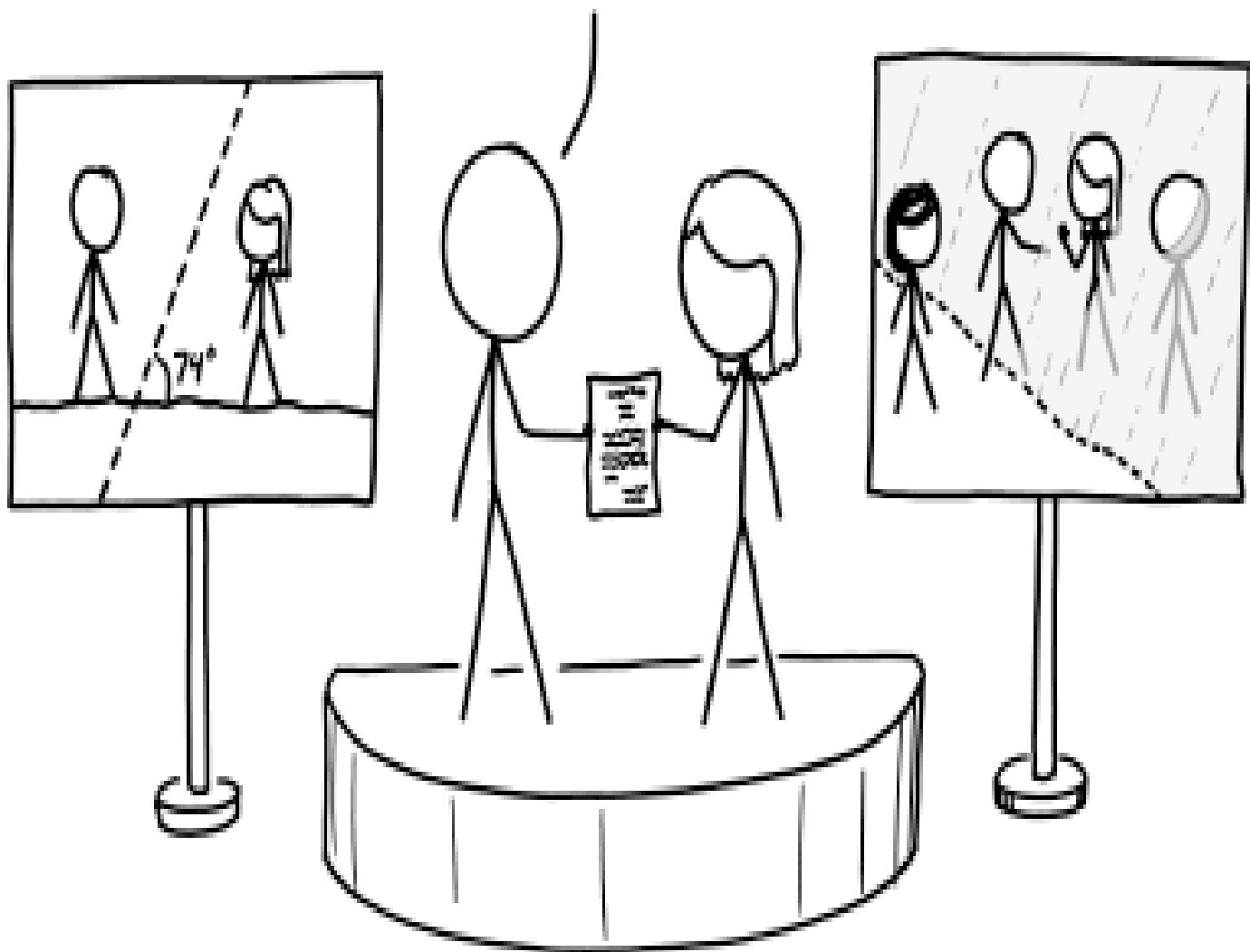
HEY, HER OLD
TROMBONE.

COOL, I HAVEN'T
SEEN THAT THING
SINCE THE 90s.



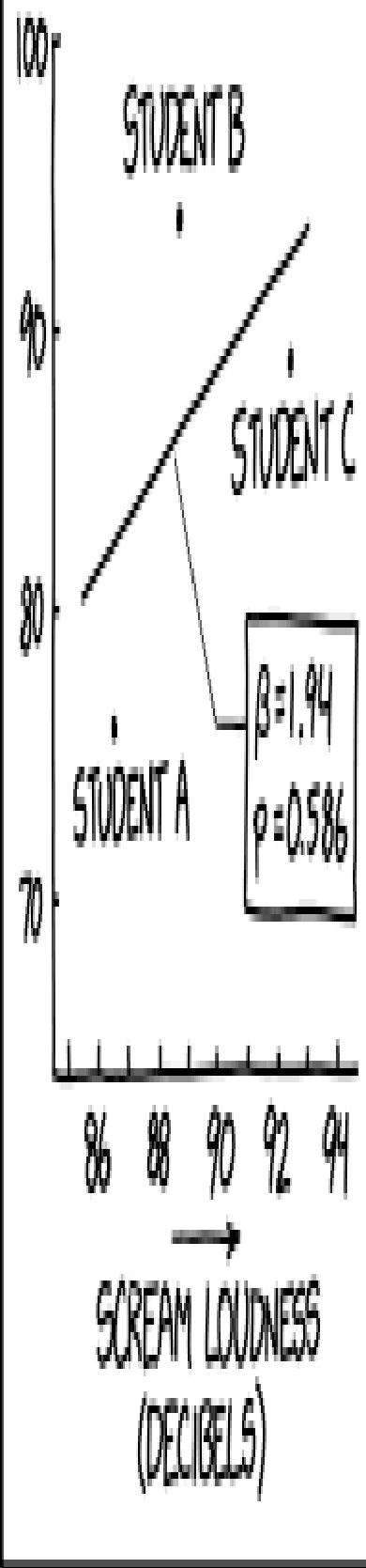
SO THAT'S WHERE MY
SUPER SOAKER WENT.

WITH THIS TREATY, WE ARE PROUD TO
ANNOUNCE THE CREATION OF THE WORLD'S
FIRST SLOPED INTERNATIONAL BORDER!



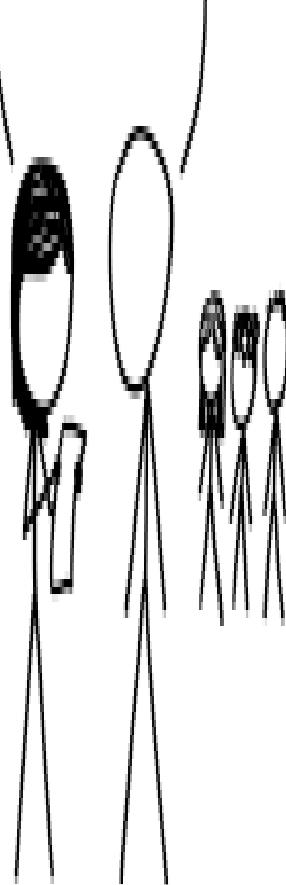
IF I'M EVER PUT IN CHARGE OF A COUNTRY, I'M GOING
TO SPEND ALL MY TIME TRYING TO THINK OF NEW
WAYS TO MAKE LIFE A NIGHTMARE FOR GIS PEOPLE.

STATS EXAM GRADE

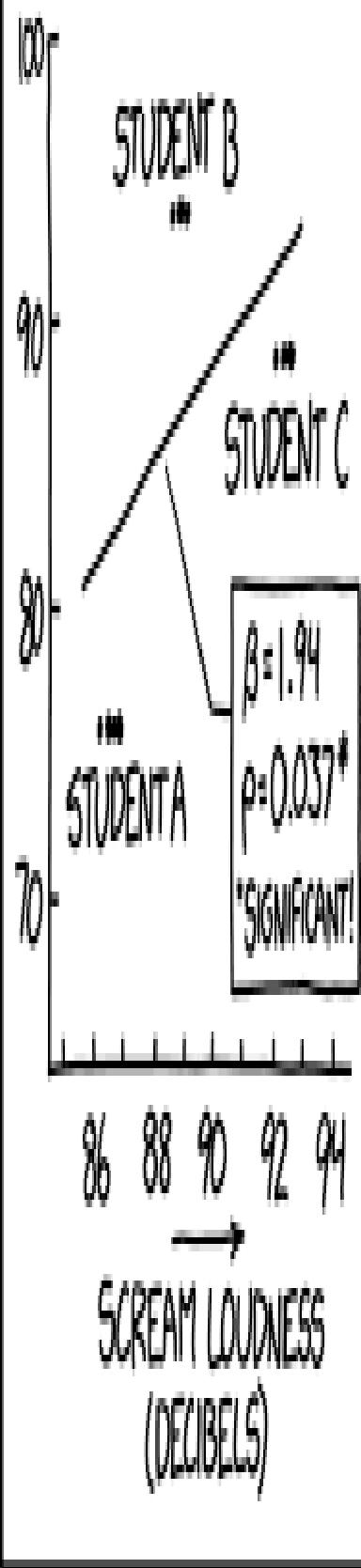


DARN, NOT SIGNIFICANT.

WE NEED MORE DATA.
HAVE THEM EACH TRY
YELLING INTO THE MIC
A FEW MORE TIMES.

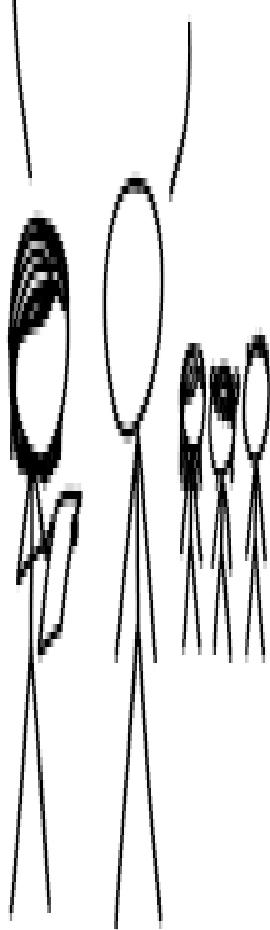


STATS EXAM GRADE



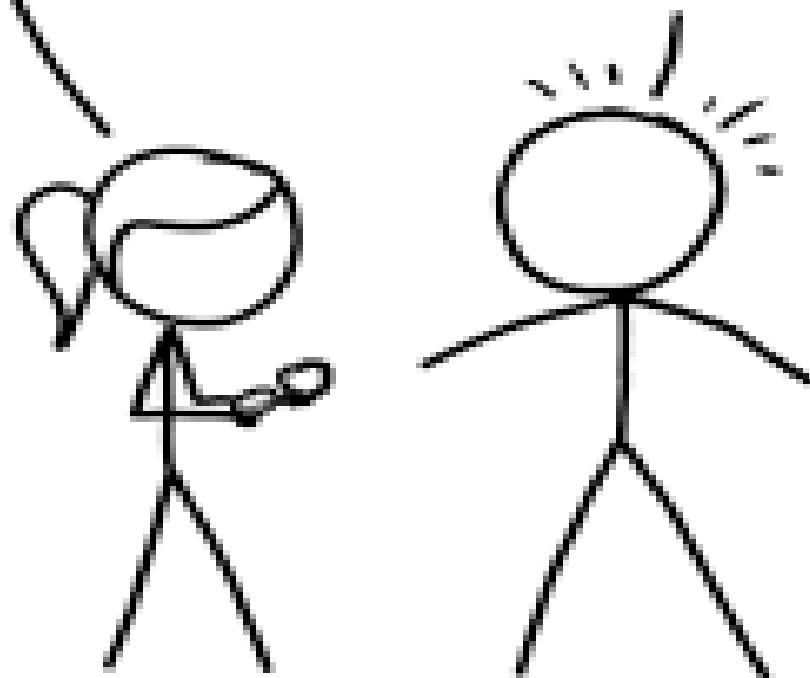
PERFECT!

ARE YOU SURE
WE'RE DOING
SLOPE HYPOTHESIS
TESTING RIGHT?

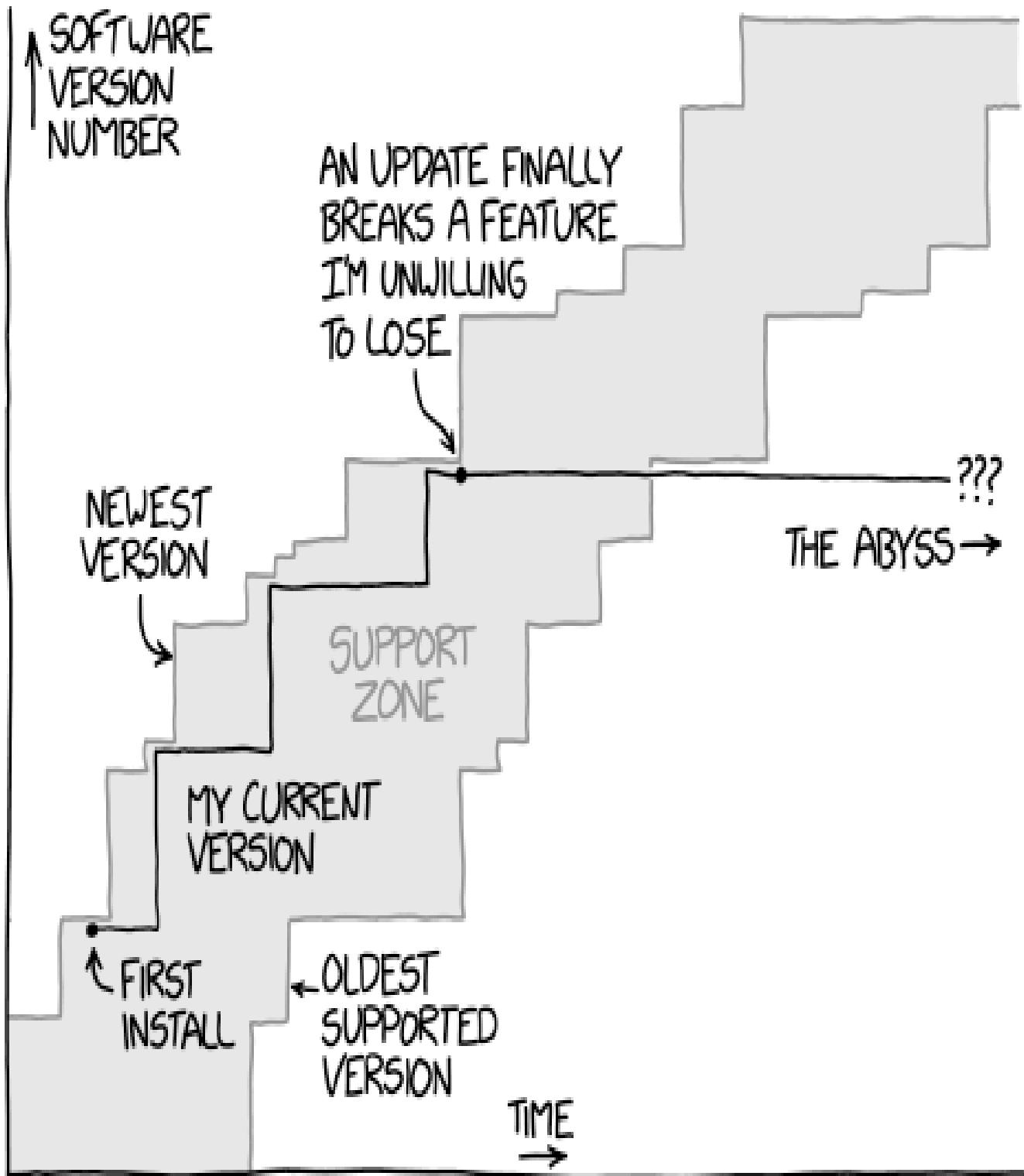


HEY, DO YOU WANT A
COOKIE? OR AN APPLE?

WHO ARE YOU? DID
THE IRB APPROVE
THIS!? IS EVERYONE
HERE AN ACTOR!?

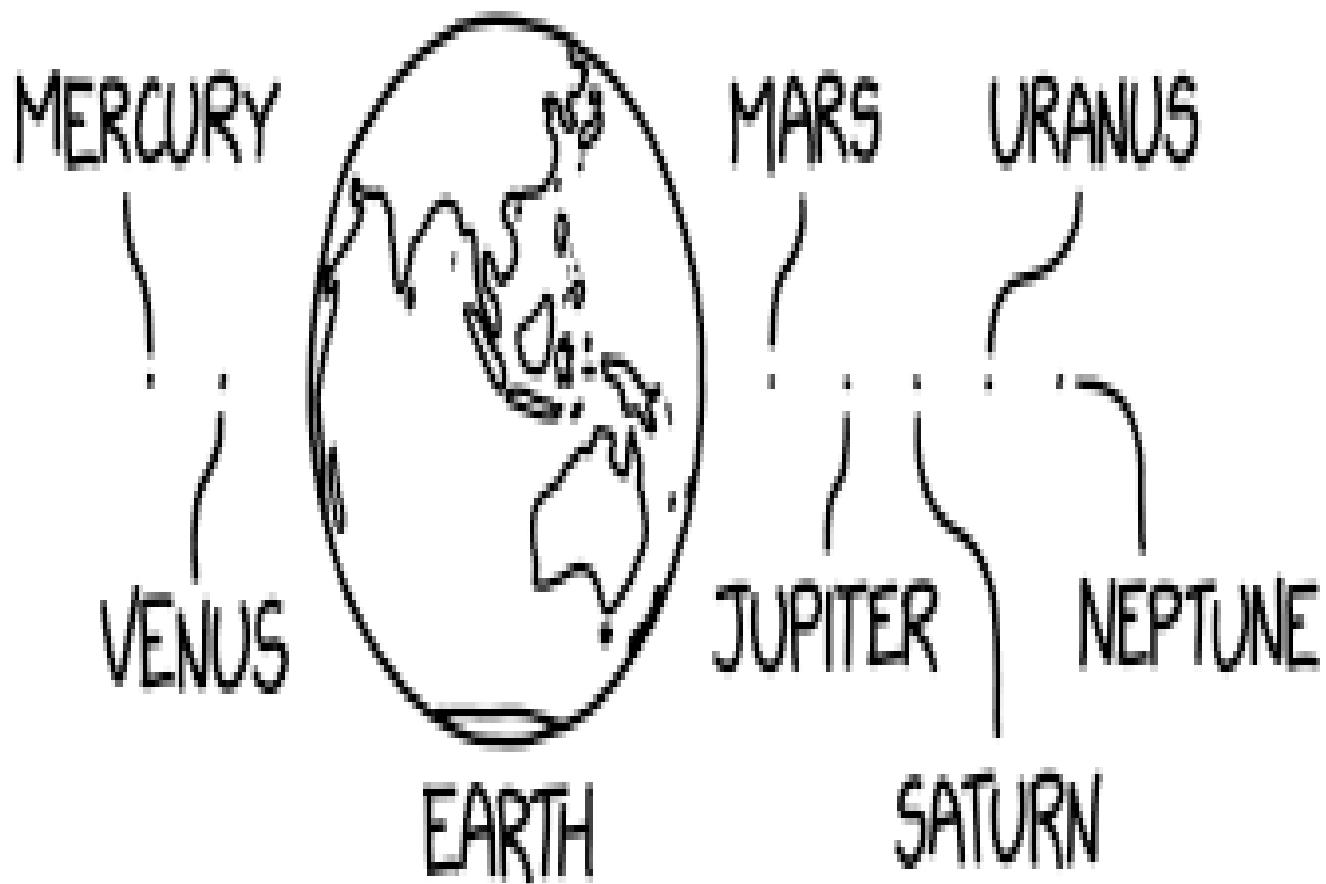


THE BEST PRANK YOU CAN
PLAY ON PSYCH MAJORS IS
JUST TO OFFER THEM A SNACK.



ALL SOFTWARE IS SOFTWARE AS A SERVICE.

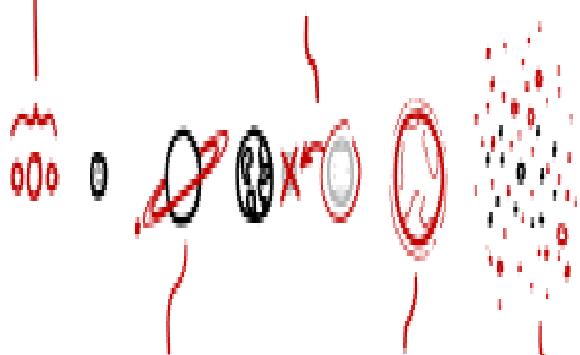
MOST SOLAR SYSTEM DIAGRAMS ARE MISLEADING.
THIS CHART OFFERS A MORE ACCURATE VIEW BY
SHOWING THE PLANETS SIZED BY POPULATION.



CHANGES I WOULD MAKE TO THE SOLAR SYSTEM

ADD MYSTERIOUS PLANETS
INSIDE MERCURY'S ORBIT

REPLACE OUR MOON WITH MARS.
MARS IS MORE INTERESTING AND
WE CAN CONSOLIDATE MISSIONS.



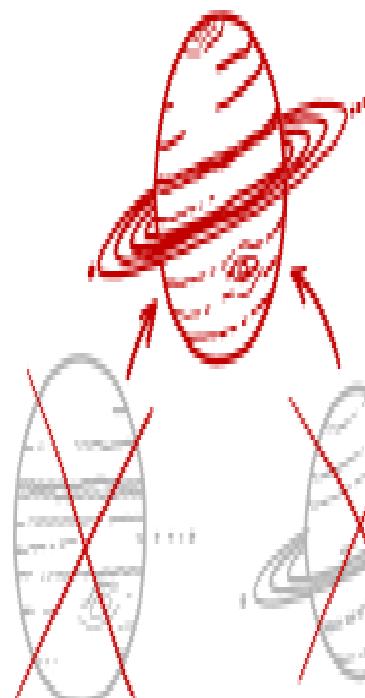
AFTER WHAT IT'S BEEN THROUGH, VENUS DESERVES RINGS AND A MOON

THE SOLAR SYSTEM NEEDS A SUPER-EARTH

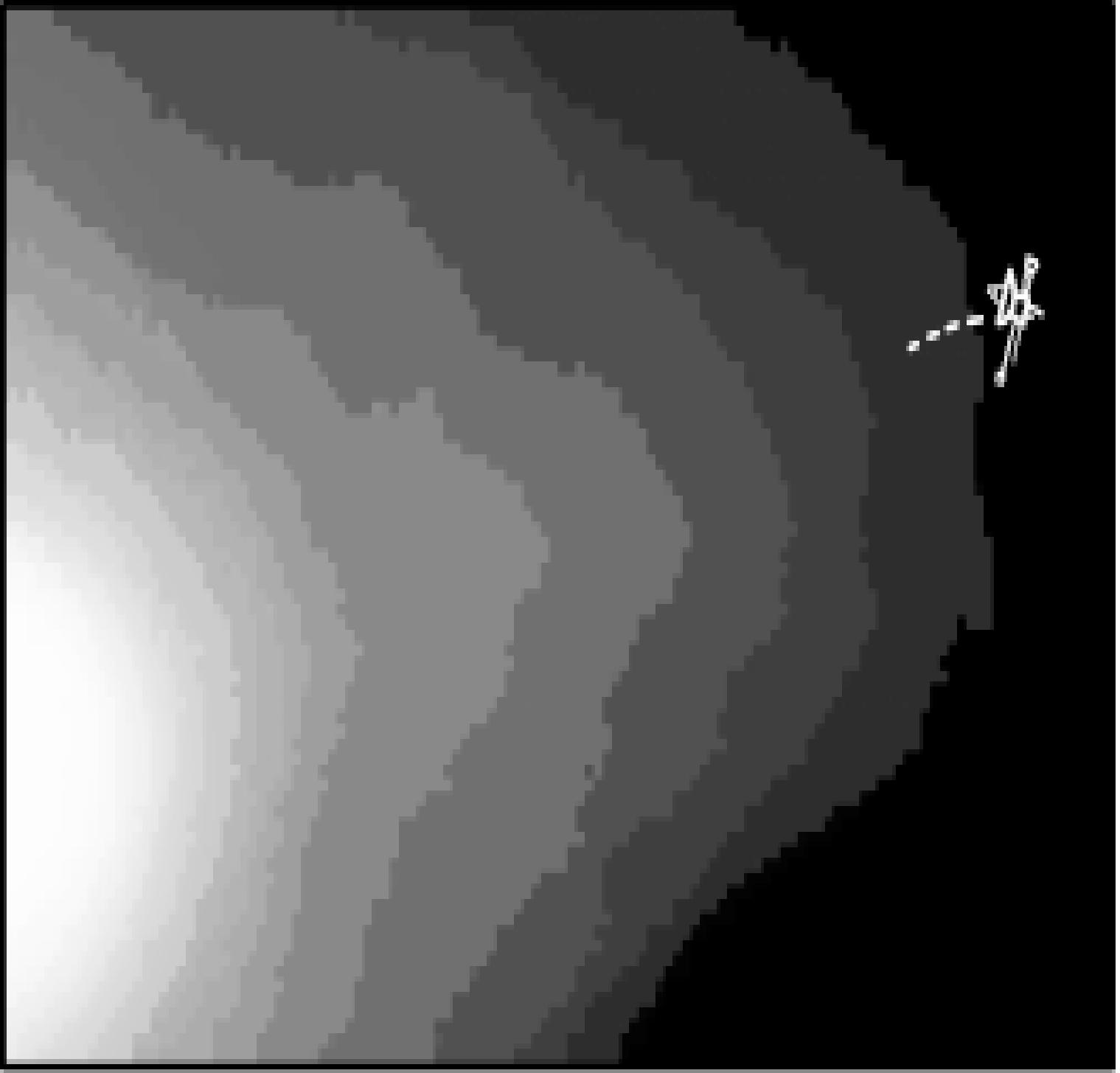
MORE ASTEROIDS!

MERGE THE BIG PLANET AND THE RINGED PLANET INTO A BIG RINGED PLANET ("JATURN")

CUT URANUS. URANUS AND NEPTUNE ARE REDUNDANT AND NEPTUNE IS BETTER, TOUGH BUT FAIR.

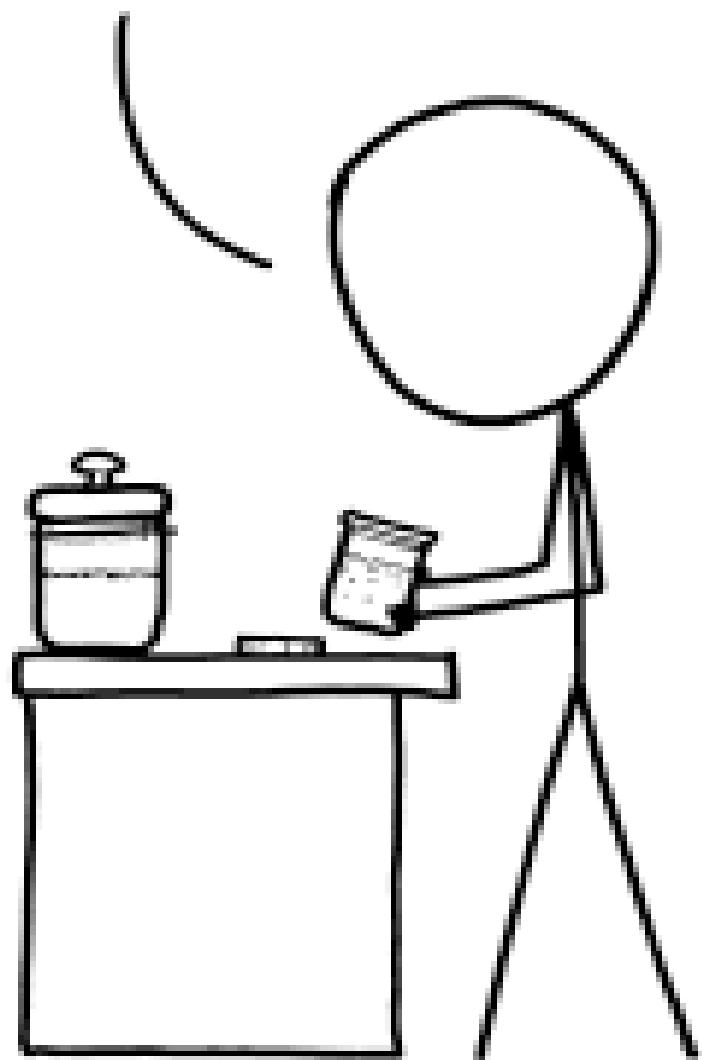


SETTLE THE PLANET THING BY MAKING PLUTO A MOON OF NEPTUNE



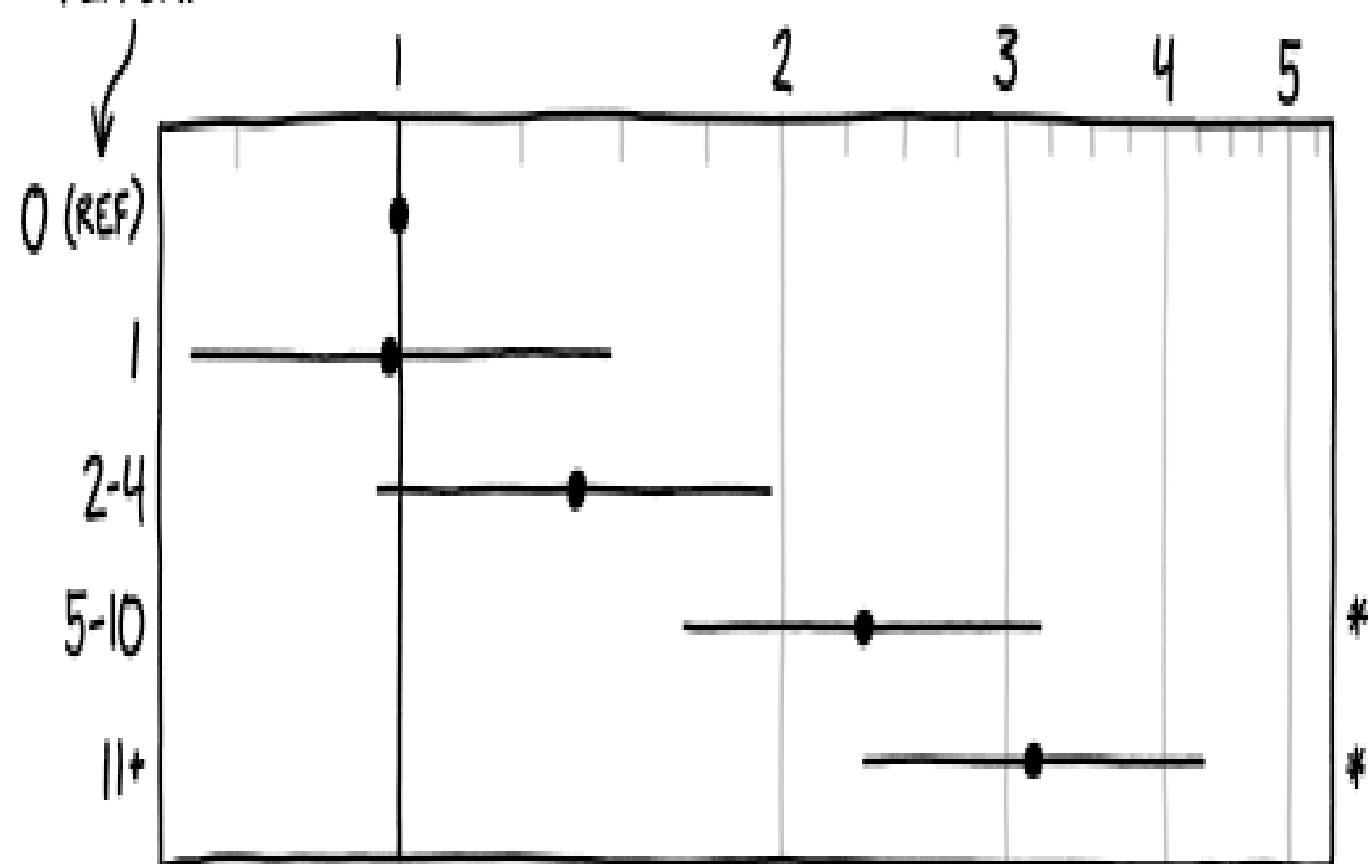
MILESTONE: *VOYAGER HAS PASSED THROUGH THE STREAMING VIDEO COMPRESSION ARTIFACTS THAT MARK THE EDGE OF THE SOLAR SYSTEM*

MY SOURDOUGH STARTER IS COMING ALONG NICELY!



THEORY: THE CORONAVIRUS IS A YEAST Symbiont WITH AN *EXTREMELY CONVOLUTED* PARASITIC LIFE CYCLE.

ODDS RATIO FOR HEAD INJURIES FROM FALLING SPACECRAFT DEBRIS (MONTE CARLO SIMULATION)



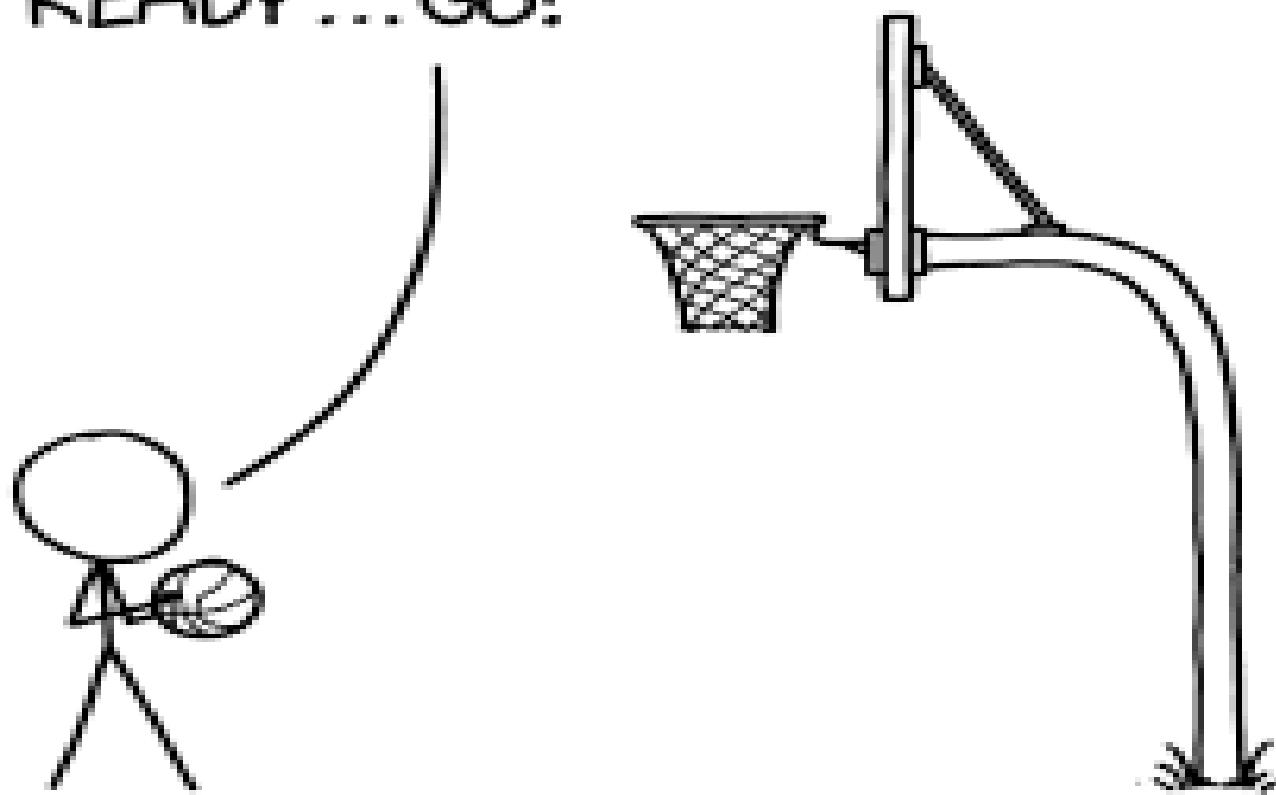
OUR NEW STUDY SUGGESTS THAT SPENDING MORE THAN 5 HOURS OUTSIDE SIGNIFICANTLY INCREASES YOUR RISK OF HEAD INJURY FROM SPACECRAFT DEBRIS, SO TRY TO LIMIT OUTDOOR ACTIVITIES TO 4 HOURS OR LESS.

OKAY HERE ARE THE RULES:

I HAVE TO MAKE 30 SHOTS
IN A ROW BEFORE A METEOR
FALLS THROUGH THE HOOP.

I'M A 30% FREE THROW
SHOOTER SO THE ODDS ARE
ACTUALLY PRETTY EVEN.

READY... GO!

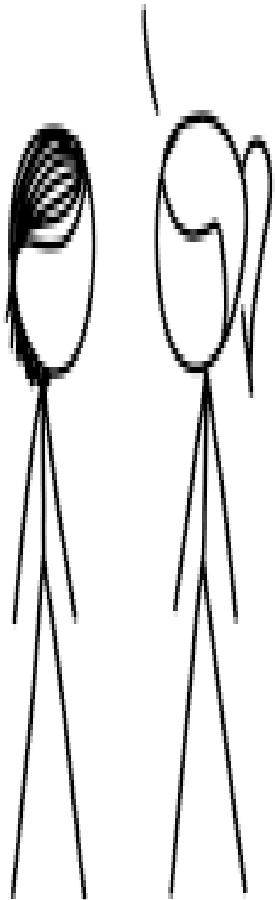


MY HOBBY: PLAYING
BASKETBALL AGAINST SPACE

ALL READY FOR THE
HEARING? LET'S GO OVER
THINGS ONE MORE TIME.

AHEM

WHAT IS THE MAIN REASON
TO FUND THIS MISSION?



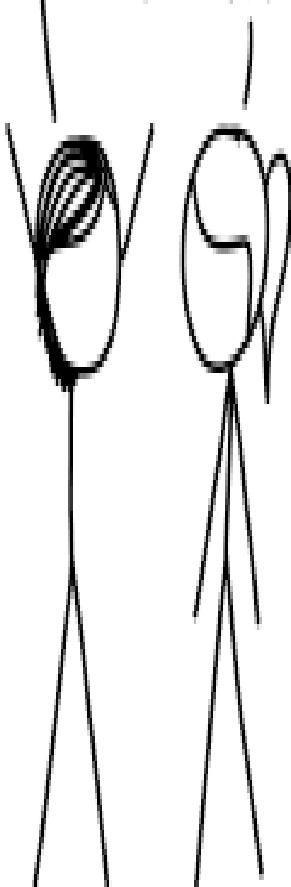
IT WILL SIGNIFICANTLY ADVANCE OUR LONG-TERM GOAL OF BETTER UNDERSTANDING THE FORMATION AND EVOLUTION OF THE SOLAR SYSTEM, WHILE FULFILLING OUR MANDATE TO DEVELOP A NEW GENERATION OF INTERPLANETARY SPACECRAFT.

GREAT.



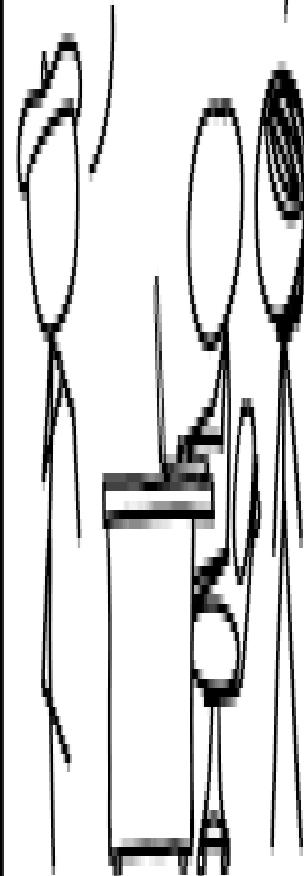
AND BECAUSE
IT'S SPACE!
I SPAAAAAAACE.
I PEW PEW PEW!
SPACE!

DIAL IT BACK.



GOT THE VACCINE!

CONGRATS!
TIME TO GO MAKE
SPIKE PROTEINS.



OK!

HERE'S MY
FIRST TRY.

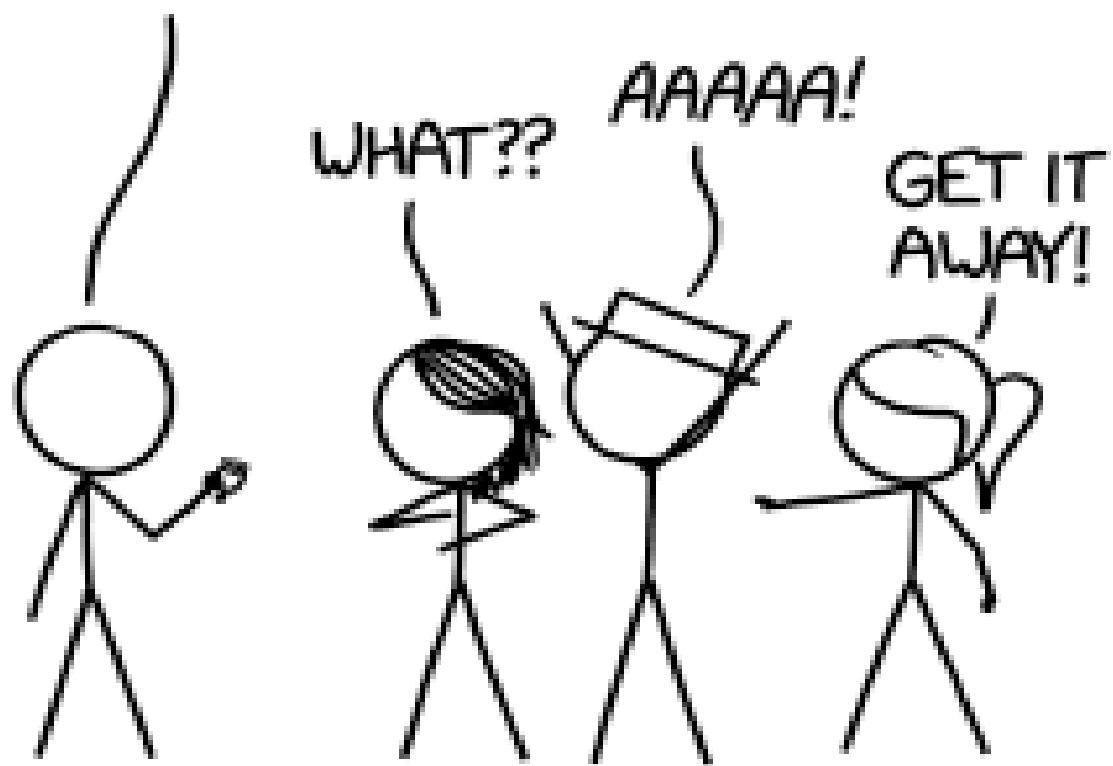


MORE!

EWWWW
WHY IS IT
SO WET??



IT'S A SPINTHARISCOPE, A 1940s TOY WITH A RADIOACTIVE ISOTOPE INSIDE. IF YOU LET YOUR EYES ADJUST TO TOTAL DARKNESS AND LOOK INTO THE LENS, YOU CAN SEE THE FLASHES OF INDIVIDUAL ATOMS DECAYING.

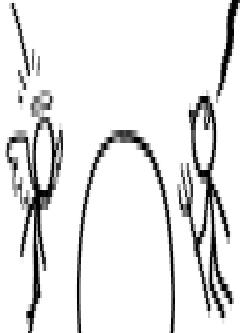


FUN FACT: SPINTHARISCOPES HAVE THE HIGHEST RATIO OF "THAT CAN'T POSSIBLY BE SAFE AND LEGAL" TO ACTUAL SAFETY AND LEGALITY OF ANY KNOWN TOY.

DON'T USE A SPREAD-SHEET! DO IT RIGHT.

BUT A SPREADSHEET
WOULD BE SO EASY.

IN THE LONG RUN
YOU'LL REGRET IT!

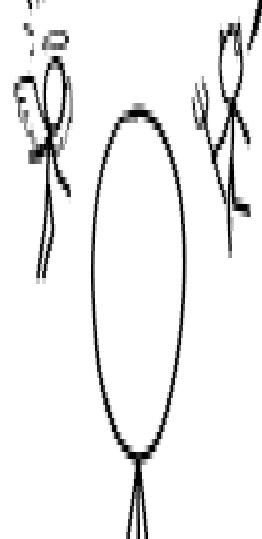


TAKE THE TIME TO
WRITE REAL CODE.

JUST PASTE THE DATA!
TINKER UNTIL IT WORKS!

BUILD A LABYRINTH OF
REGEXREPLACE() AND
ARRAYFORMULA()

FEEL THE POWER!



FIGHT THE TEMPTATION!
✓

EVER TRIED QUERY()
IN GOOGLE SHEETS?
IT LETS YOU TREAT A
BLOCK OF CELLS LIKE
A DATABASE AND RUN
SQL QUERIES ON THEM.



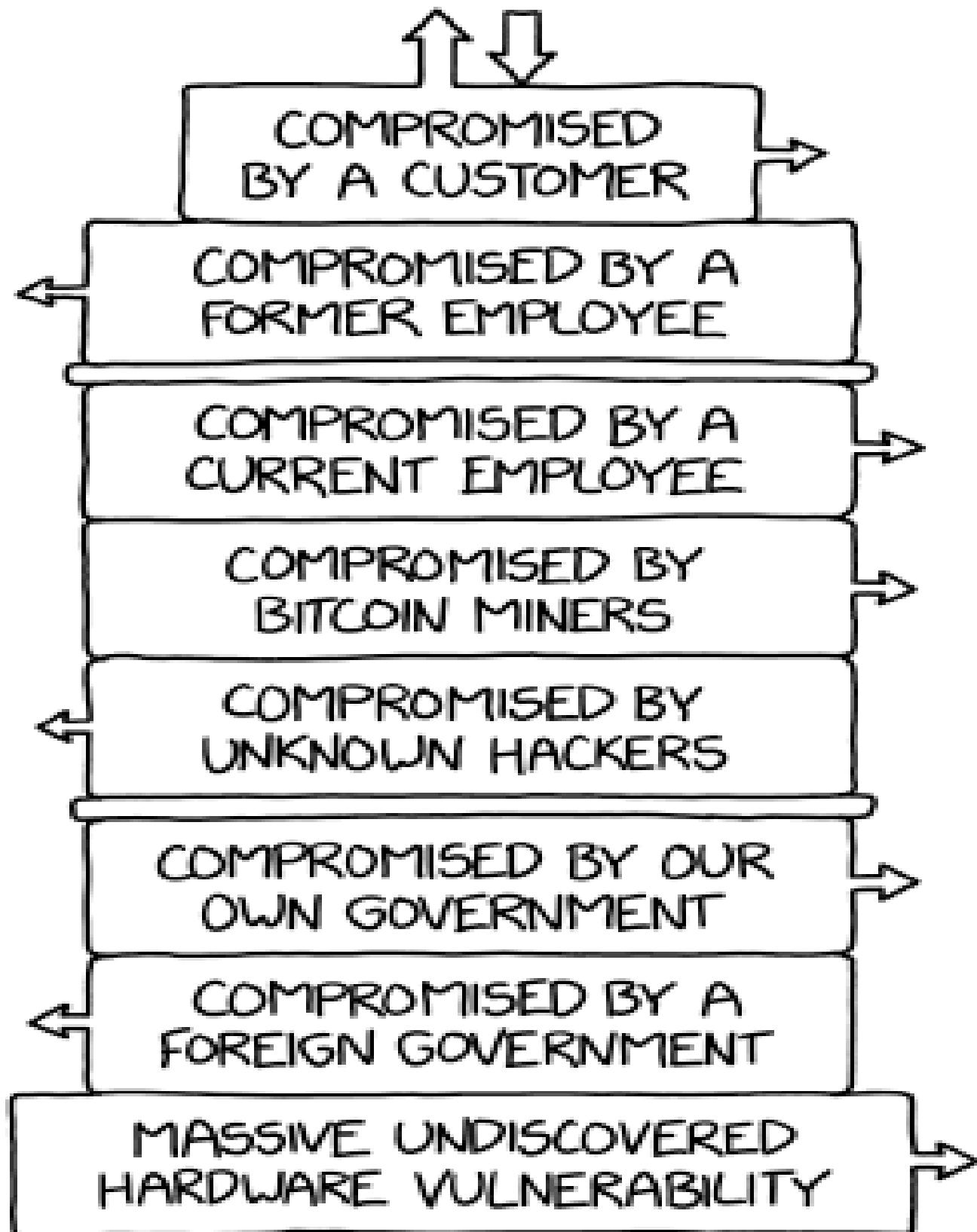
DON'T LISTEN TO-
I
...WAIT, REALLY?

YES, AND LET ME
TELL YOU ABOUT
IMPORTHTML()

OOOH...



THE MODERN TECH STACK



CHANGES I WOULD MAKE TO THE STANDARD MODEL

CONSISTENT QUARK NAMES

(USE "STRANGE" AND "CHARM" FOR BOSONS)

u
UP

c
LEFT

t
TOP

g
GLUON

h
VIN DIESEL

WITH ALL RESPECT
TO PETER H, THE
HIGGS BOSON NEEDS
A FLASHIER NAME

d
DOWN

s
RIGHT

b
BOTTOM

γ
PHOTON

g
GRAVITON

LET'S JUST
INCLUDE IT, IT'S
PROBABLY FINE

e
ELECTRON

μ
MUON

NO ONE NEEDS
TAU LEPTONS

s
STRANGE
BOSON

m
MAGIC

DECoy PARTICLE
FOR PEOPLE MAKING
NONSENSE CLAIMS
ABOUT "QUANTUM"
PHILOSOPHY STUFF

n_e
ELECTRON
NEUTRINO

τ
NEUTRINO

TOO MANY
NEUTRINOS

d
DARK
MATTER

c
CHARM
BOSON

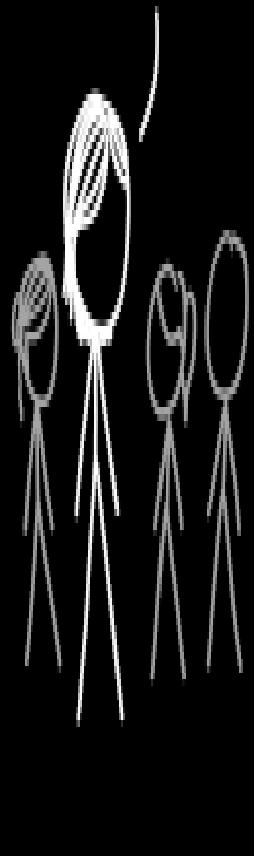
b
COOL
BUGS

VERY SMALL BUGS
ARE FUNDAMENTAL
PARTICLES NOW

Fix NEUTRINO SYMBOL SO
I STOP MIXING UP ν AND τ
WE FOUND IT!

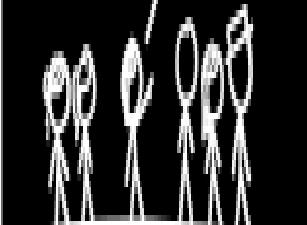
WELCOME BACK
TO STARGAZING.

THERE ARE NO
NEW STARS SINCE
LAST TIME, BUT
YOU CAME BACK
FOR SOME REASON.



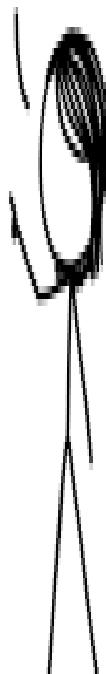
THAT STAR IS VEGA.
AT MAGNITUDE 0.03,
IT'S THE BRIGHTEST
STAR I'M CURRENTLY
TALKING ABOUT.

THAT ONE IS POLARIS.
IT'S OVER THE NORTH
POLE, WHICH IS ALL
IT HAS GOING FOR IT.



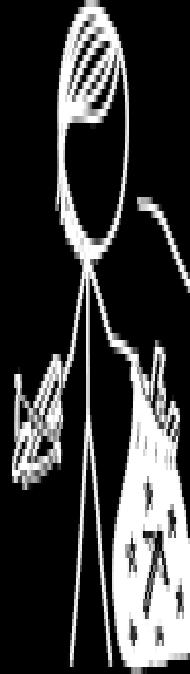
THAT'S A COMET. SOME OF
THEM COME BACK EVERY
FEW DECADES, NO MATTER
HOW MUCH I YELL AT THEM.

BUT STARGAZING ISN'T ALL
FUN YELLING. WE FACE A
PROBLEM EVEN WORSE THAN
COMETS: LIGHT POLLUTION.



THE SKY IS GONE AWAY BECAUSE
PEOPLE KEEP SHINING LIGHTS AT IT.
THE NEW LEDS ARE EVEN WORSE—
THEY'RE TOO BLUE, AND YOU CAN'T
TURN THEM OFF BY THROWING ROCKS
AT THEM LIKE WITH THE OLD ONES.

LUCKILY, I BROUGHT
THESE ASTRONOMY
CROSSBOWS.



TAKE ONE, THEN
LET'S FAN OUT AND
LOOK FOR LAMPS.

STAR WARS SPOILER GENERATOR

IN THIS STAR WARS MOVIE, OUR HEROES RETURN TO TAKE ON THE FIRST ORDER AND NEW VILLAIN...

KYLE REN
MALLOC
DARTH SEBELIUS
THERANDS
LORD JUUL

...WITH HELP FROM THEIR NEW FRIEND...

KIM SPACEMEASURER
TEEN YODA
DAB TWEETDECK
YAZ PROGESTIN
TI-83

REY BUILDS A NEW LIGHTSABER WITH A...

BEIGE
OCHRE
MAUVE
AQUAMARINE
TAUPE

...BLADE, AND THEY HEAD OUT TO CONFRONT THE FIRST ORDER'S NEW SUPERWEAPON, THE...

SUN OBUTERATOR
MOONSQUISHER
WORLD EATER
PLANET ZESTER
SUPERCONDUCTING
SUPERCOLLIDER

...A SPACE STATION CAPABLE OF...

BLOWING UP A PLANET WITH A BUNCH OF BEAMS OF ENERGY THAT COMBINE INTO ONE
BLOWING UP A BUNCH OF PLANETS WITH ONE BEAM OF ENERGY THAT SPLITS INTO MANY
CUTTING A PLANET IN HALF AND SMASHING THE HALVES TOGETHER LIKE TWO CYMBALS
INCREASING THE CO₂ LEVELS IN A PLANET'S ATMOSPHERE, CAUSING RAPID HEATING
TRIGGERING THE END CREDITS BEFORE THE MOVIE IS DONE

THEY UNEXPECTEDLY JOIN FORCES WITH THEIR OLD ENEMY...

BOBA FETT
SALACIOUS CRUMB
THE SPACE SLUG
THE BOTTOM HALF OF DARTH MAUL
YOUTUBE COMMENTERS

...AND DESTROY THE SUPERWEAPON IN A BATTLE FEATURING...

A BOW THAT SHOOTS LITTLE LIGHTSABER-HEADED ARROWS
X-WINGS AND TIE FIGHTERS DODGING THE GIANT LETTERS OF THE OPENING CRAWL
A SITH EDUCATIONAL DISPLAY THAT USES FORCE LIGHTNING TO DEMONSTRATE THE DIELECTRIC BREAKDOWN OF AIR
KYLO REN PUTTING ON ANOTHER HELMET OVER HIS SMALLER ONE
A SITH CAR WASH WHERE THE BRISTLES ON THE BRUSHES ARE LITTLE LIGHTSABERS

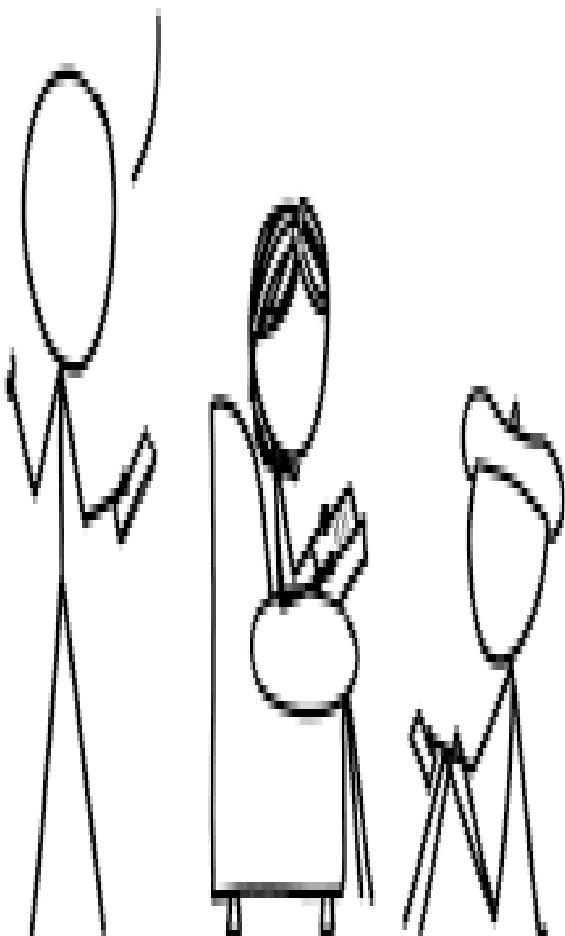
P.S. REY'S PARENTS ARE...

LUKE
LEIA
HAN
OBI-WAN
A RANDOM JUNK TRADER

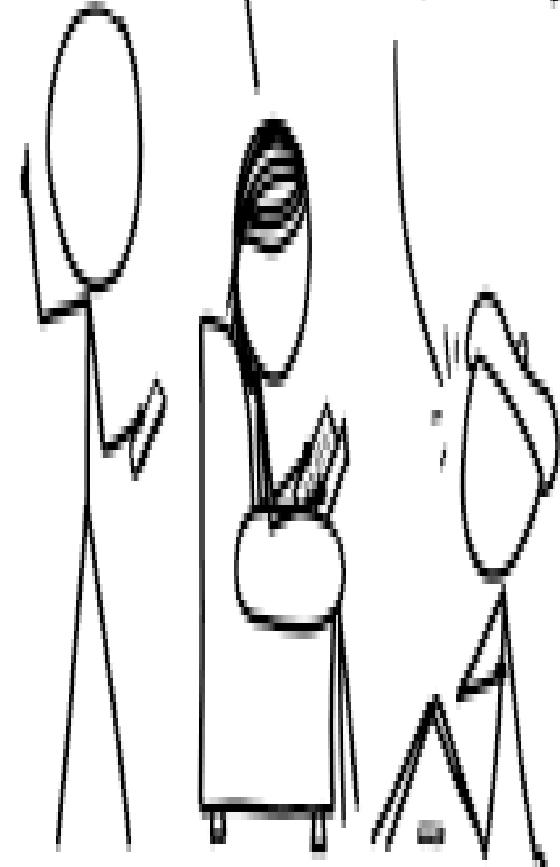
...AND...

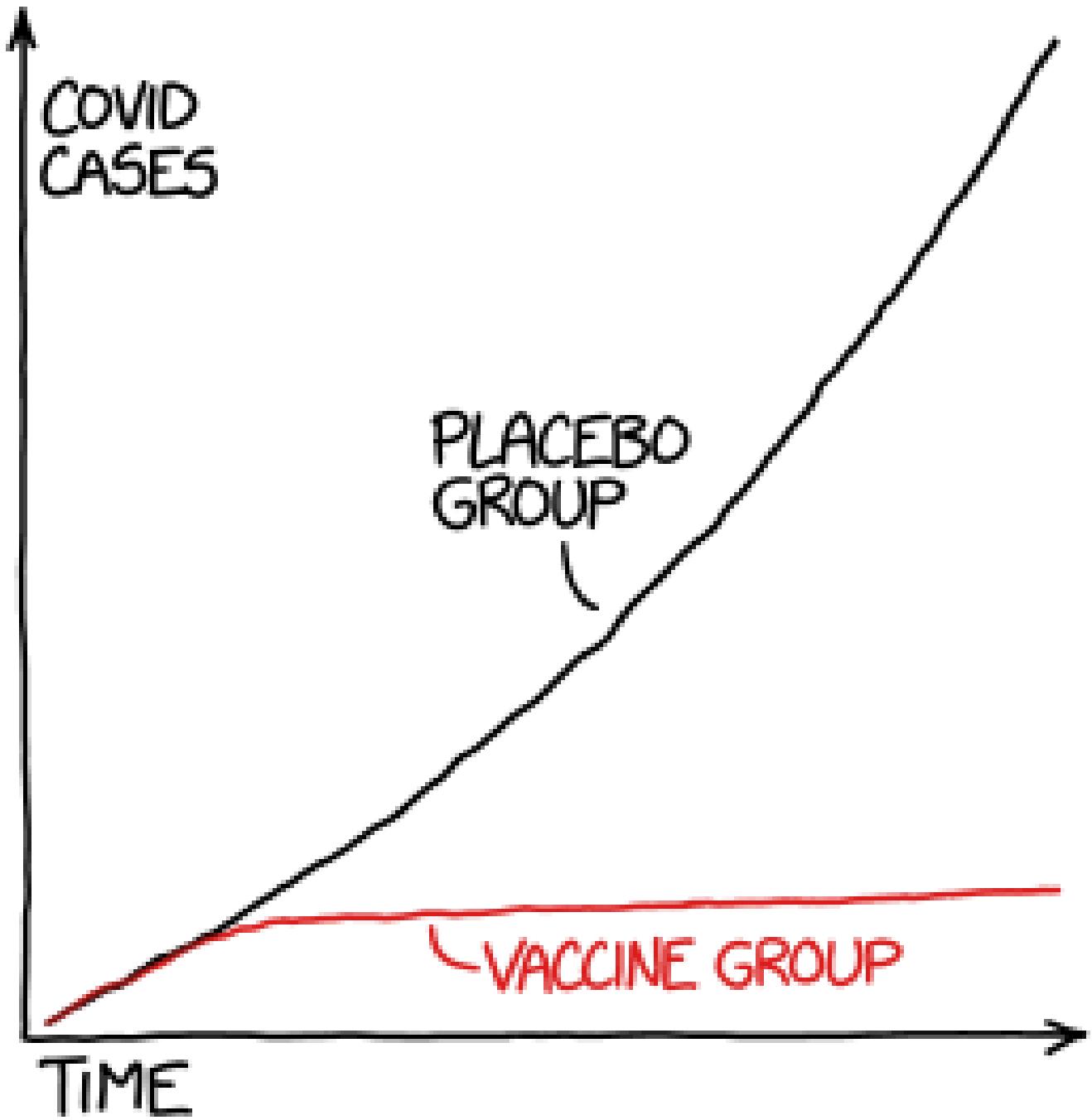
POE
BB-8
AMILYN HOLDO
LAURA DERN
A RANDOM JUNK TRADER
THAT ONE DROID FROM THE JAWA SANDCRAWLER
THAT SAYS GONK

THE TIME IT TAKES LIGHT TO
TRAVEL BETWEEN EARTH AND
VOYAGER 1 IS EXACTLY EQUAL
TO THE COMBINED RUNTIME OF
STAR WARS EPISODES I-X...



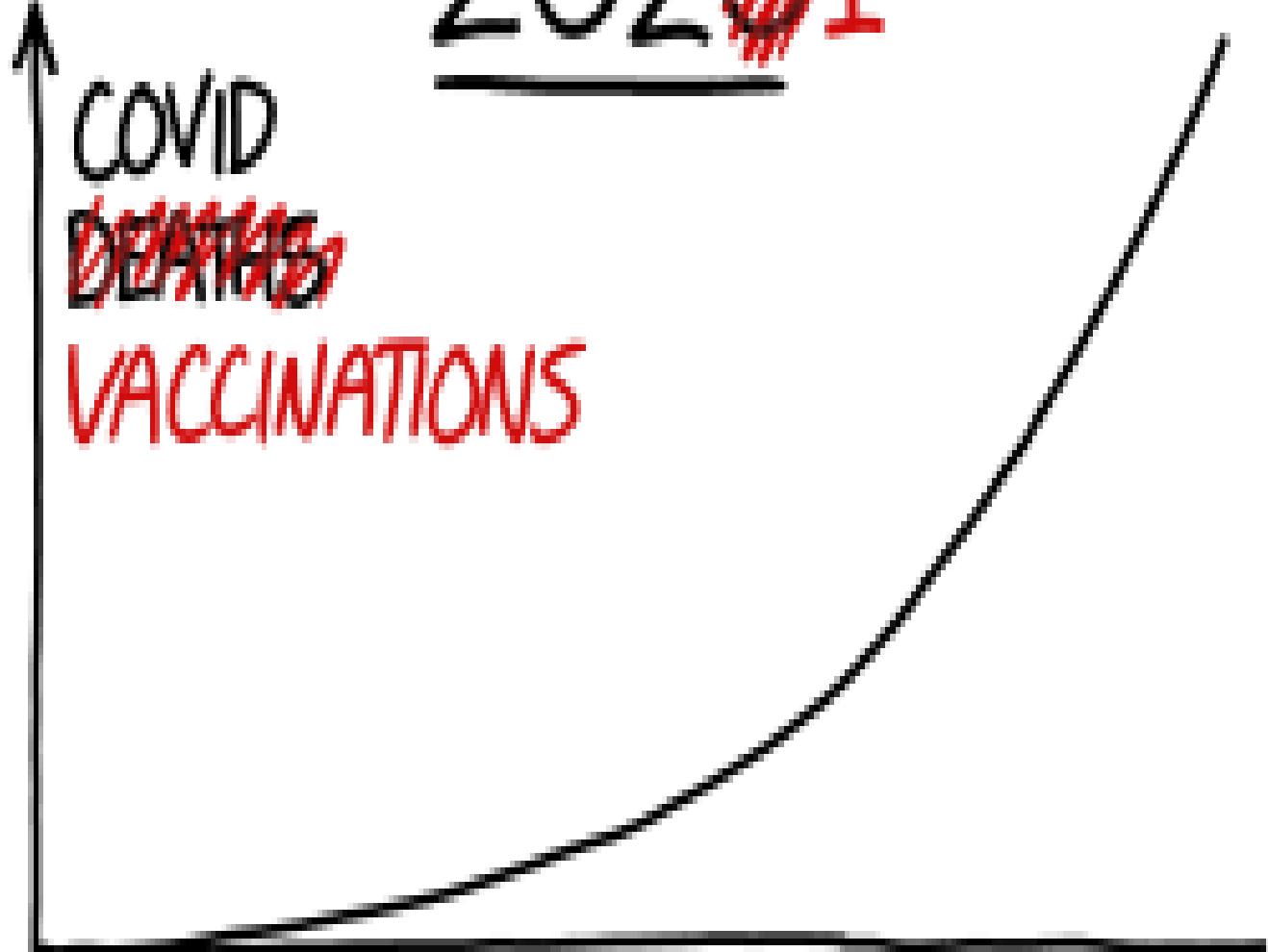
...NOW! WEIRD THAT I DON'T
HEAR ANY FIREWORKS.
SHOULD OLD
ACQUAINTANCE
BE FORGOTTEN?





STATISTICS TIP: ALWAYS TRY TO GET DATA THAT'S GOOD ENOUGH THAT YOU DON'T NEED TO DO STATISTICS ON IT

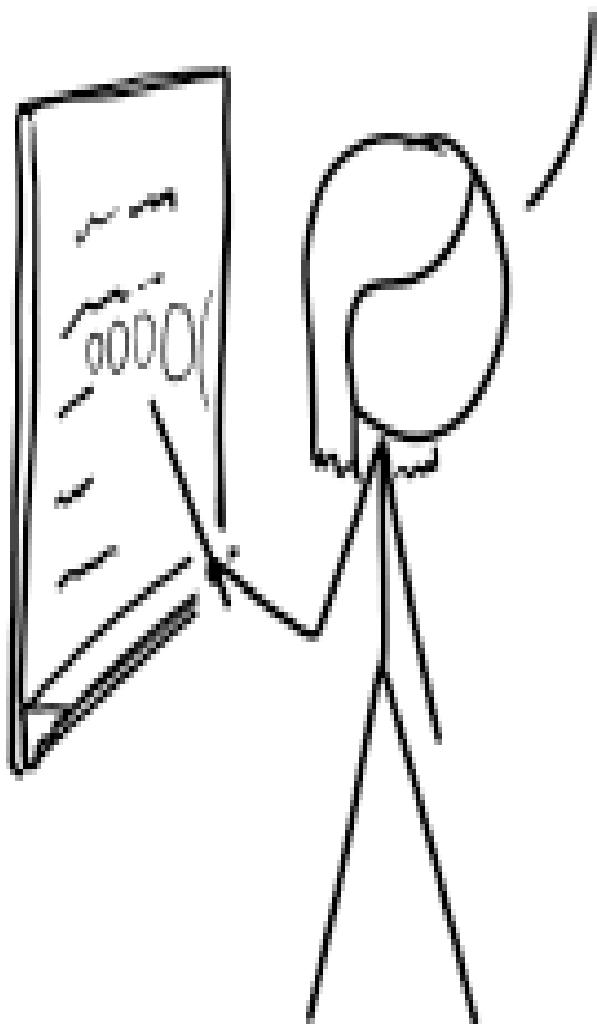
20201



~~FLATTEN~~ THE CURVE
STEEPEN

AFTER A STAR BEGINS FUSING HYDROGEN, IT
MAY REACH A STABLE EQUILIBRIUM IN WHICH
IT SEPARATES FROM MASSACHUSETTS AND
DEVELOPS A THRIVING LOBSTER INDUSTRY.

THIS IS KNOWN AS THE MAINE SEQUENCE.



OKAY, UNIVERSE-

SMILE!



CLICK

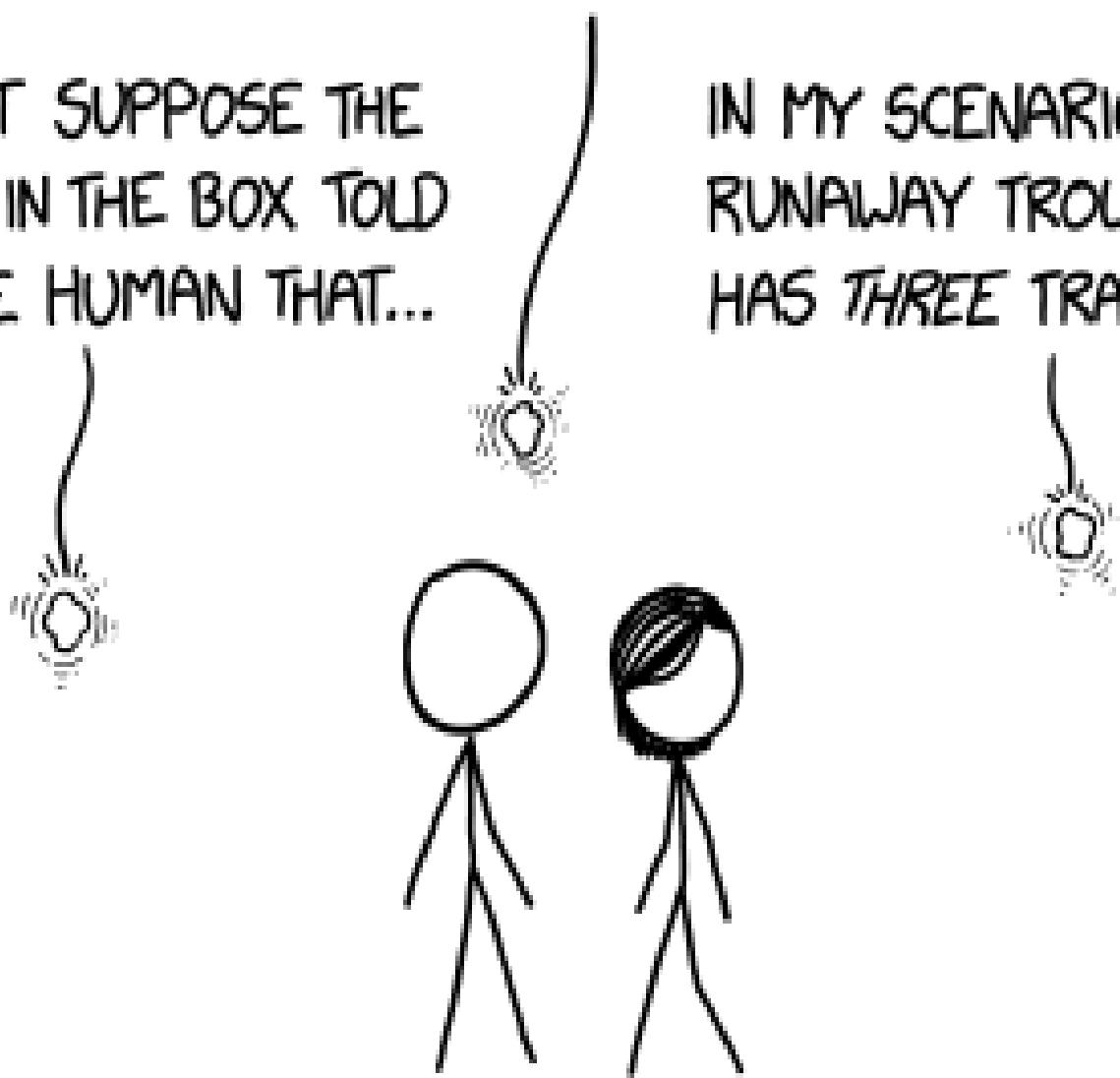


ASTRONOMY FACT: THE PURPOSE OF THE JWST SUNSHIELD IS TO PROTECT
THE SUN AND THE EARTH FROM THE TELESCOPE'S POWERFUL FLASH.

WHAT YOU DON'T UNDERSTAND IS
THAT TURING INTENDED HIS TEST
AS AN ILLUSTRATION OF THE...

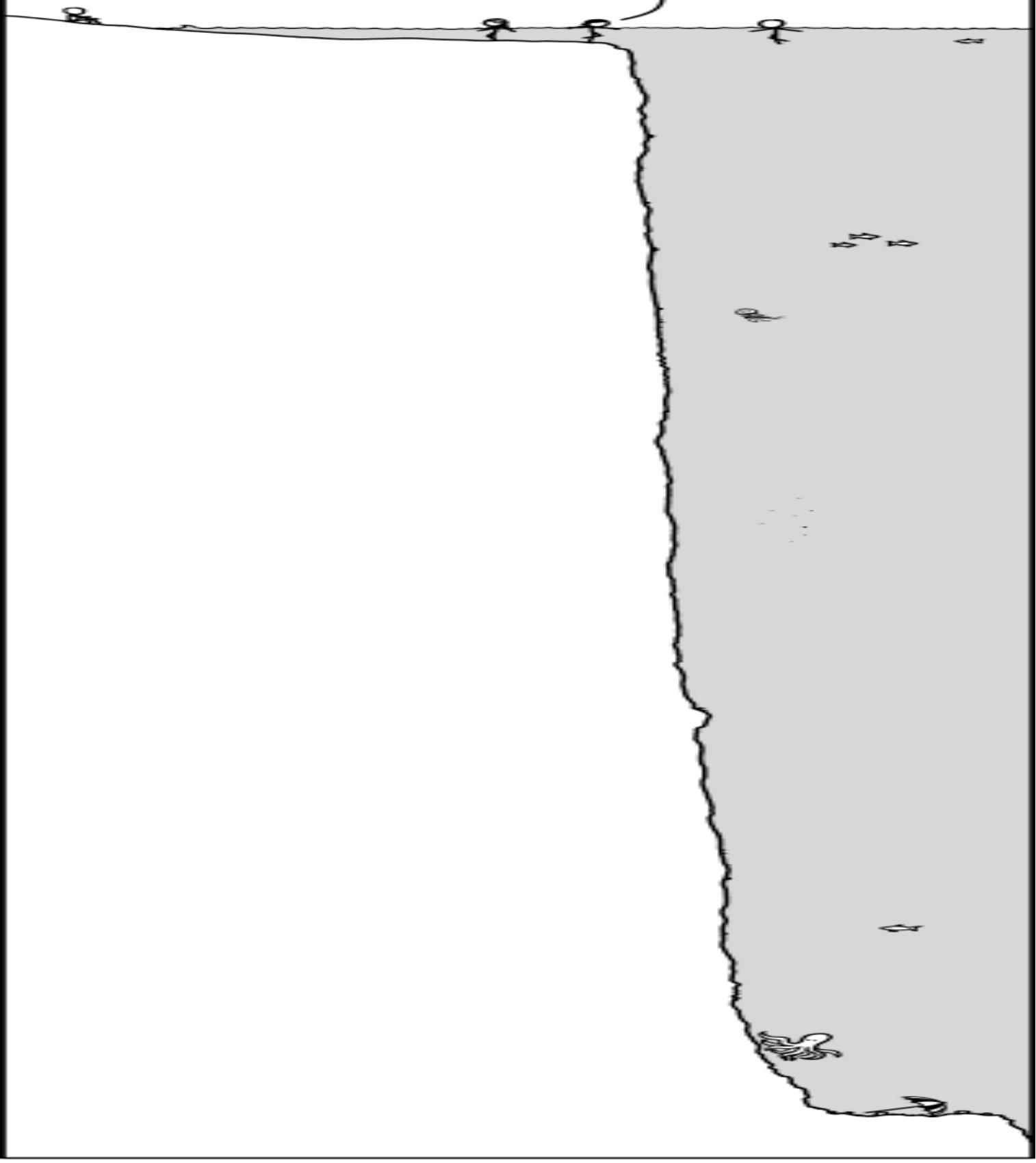
BUT SUPPOSE THE
AI IN THE BOX TOLD
THE HUMAN THAT...

IN MY SCENARIO, THE
RUNAWAY TROLLEY
HAS THREE TRACKS...

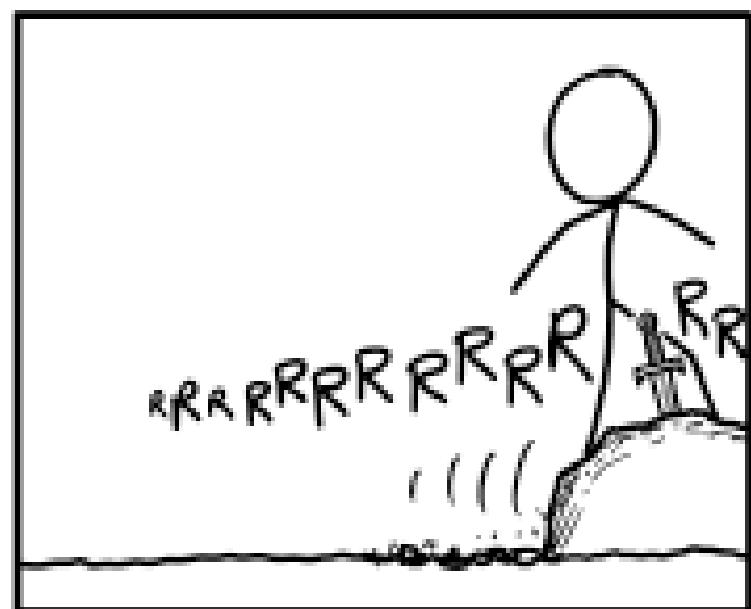
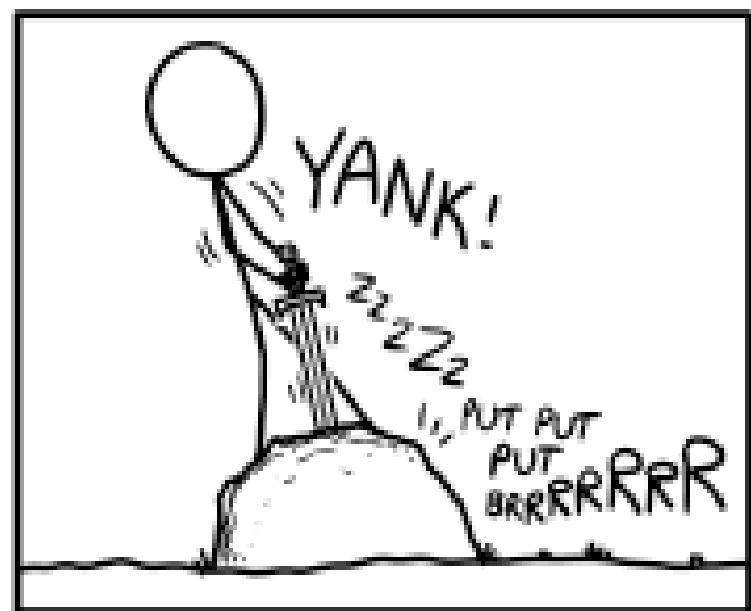
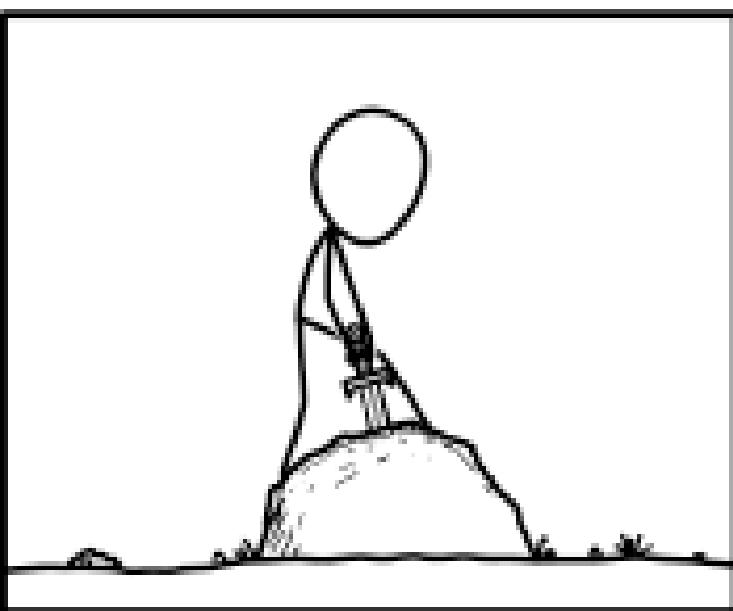
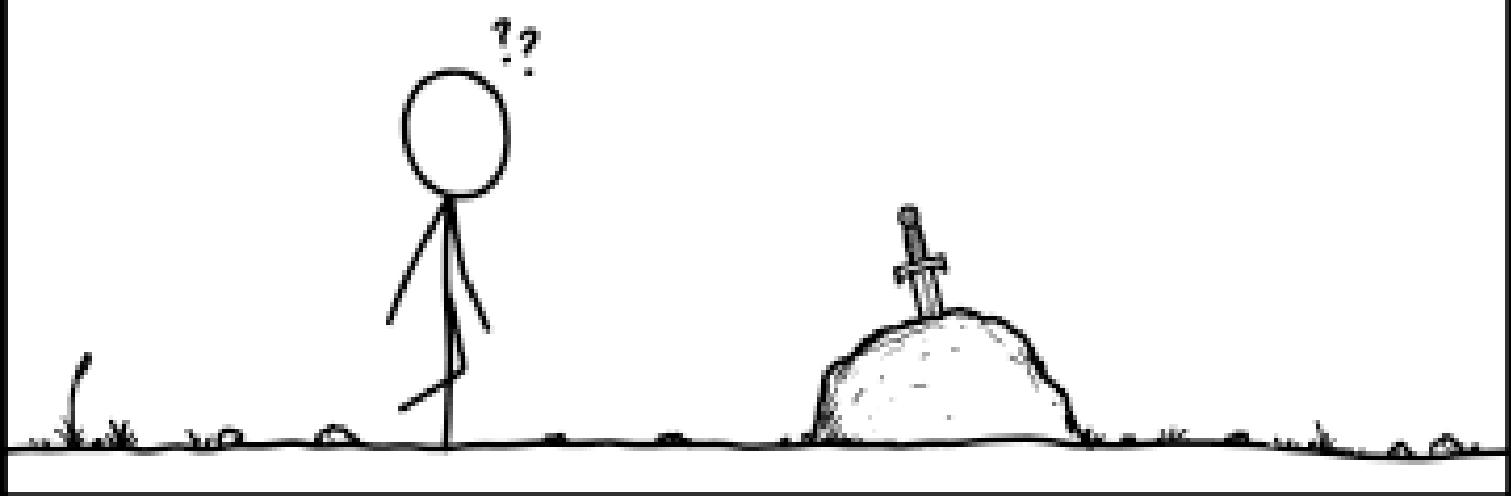


IN RETROSPECT, GIVEN THAT THE SUPERINTELLIGENT
AIs WERE ALL CREATED BY AI RESEARCHERS, WHAT
HAPPENED SHOULDN'T HAVE BEEN A SURPRISE.

IT'S OK, I CAN STILL
TOUCH BOTTOM HERE.



I LOVE SWIMMING, BUT OCCASIONALLY I
REALIZE I DON'T KNOW HOW DEEP THE WATER
UNDER ME IS AND IT FREAKS ME OUT.

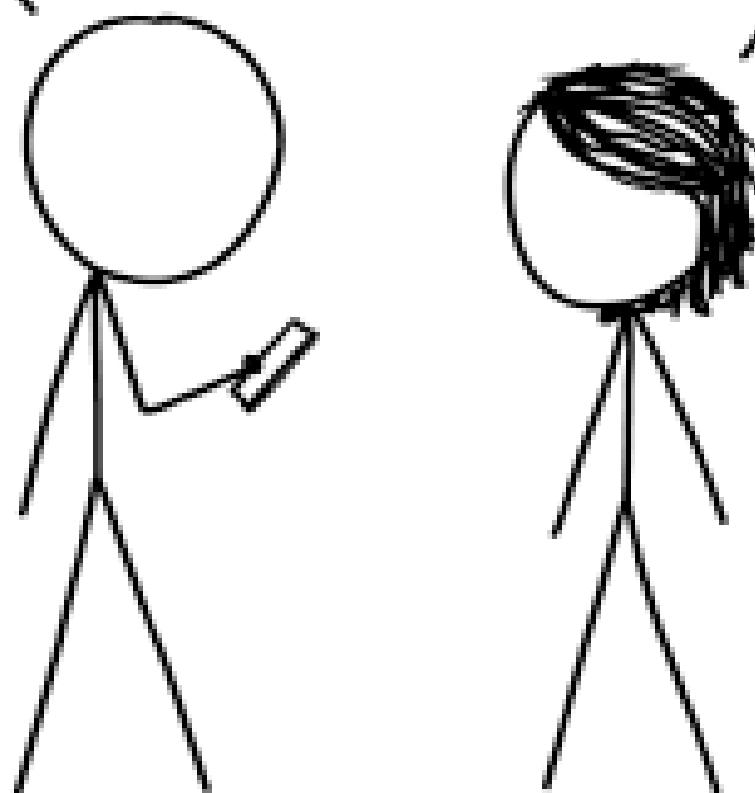


SYMBOLS AND WHAT THEY MEAN

- $\frac{d}{dx}$ AN UNDERGRAD IS WORKING VERY HARD
- $\frac{\partial}{\partial x}$ A GRAD STUDENT IS WORKING VERY HARD
- \hbar OH WOW, THIS IS APPARENTLY A QUANTUM THING
- R_e SOMEONE NEEDS TO DO A LOT OF TEDIOUS NUMERICAL WORK; HOPEFULLY IT'S NOT YOU
- $(T_a^4 - T_b^4)$ YOU ARE AT RISK FOR SKIN BURNS
- N_A YOU'RE PROBABLY ABOUT TO MAKE AN INCREDIBLY DANGEROUS ARITHMETIC ERROR
- μm CAREFUL, THAT EQUIPMENT IS EXPENSIVE
- mK CAREFUL, THAT EQUIPMENT IS VERY EXPENSIVE
- nm DON'T SHINE THAT IN YOUR EYE
- eV DEFINITELY DON'T SHINE THAT IN YOUR EYE
- mSv YOU'RE ABOUT TO GET IN AN INTERNET ARGUMENT
- mg/kg GO WASH YOUR HANDS
- Mg/kg GO GET IN THE CHEMICAL SHOWER
- $\pi \text{ or } \tau$ WHATEVER ANSWER YOU GET IS GOING TO BE WRONG BY A FACTOR OF EXACTLY TWO

IT SAYS HERE COMMON SYMPTOMS
INCLUDE SHORTNESS OF BREATH,
FEVER, FATIGUE, AND A DRY COUGH.

THAT'S REASSURING TO ME, A
PERSON WITH POWERFUL LUNGS,
ICY SKIN, FRENZIED ENERGY, AND
AN INCREDIBLY WET COUGH.

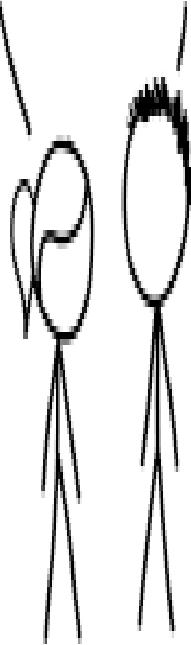


SO HOW IS SHE?

WELL... SHE'S A
TALENTED WRITER.
SEEMS VERY COOL.

...BUT?

SHE'S REALLY
INTO... SYNONYMS.



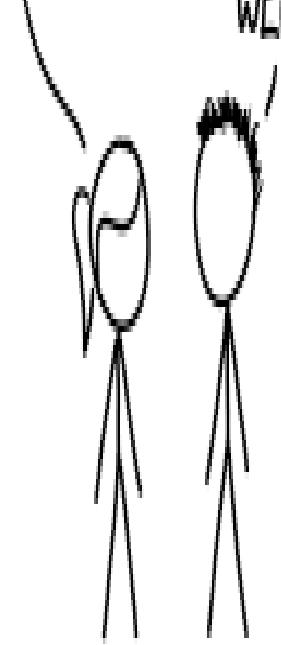
I DON'T UNDERSTAND.

HER HOBBY IS FINDING THE
MOST UNSETTLING POSSIBLE
WORDS FOR ANY SENTENCE.

WORD GAMES?

THAT DOESN'T
SOUND TOO BAD.

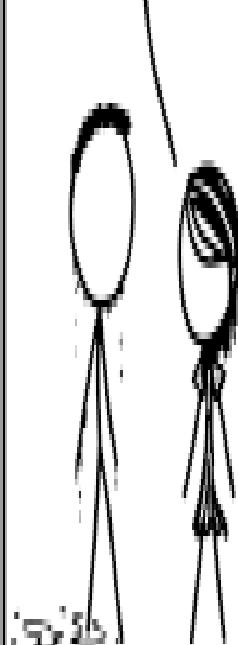
WELL...



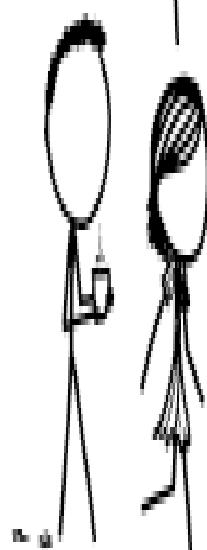
EARLIER...

UGH, IT'S SO
WATERY OUT.

YOU MUST BE
CLAMMY! WANT
TO GUZZLE
SOME TEA?



LET ME SLOUGH
OFF THIS DRESS,
AND SLITHER INTO
SOMETHING MORE
COMFORTABLE.



TATTOO IDEAS

~~LOREM IPSUM TEXT~~

~~EMAIL PASSWORD~~

~~GRAPH OF THE POPULARITY OF TATTOOS
OVER TIME, WITH THE DATE I GOT THE
TATTOO MARKED (UPDATE REGULARLY)~~

~~"CHANGEME"~~

~~SLIDE RULE MARKINGS ON FOREARMS~~

~~EURION CONSTELLATION, SO NO ONE
CAN PHOTOCOPY PICTURES OF ME~~

~~THE SENTENCE "IT'S WHAT MY TATTOO
SAYS" WRITTEN IN ANOTHER LANGUAGE~~

~~TISSOT'S INDICATRIX~~

~~SUMMARY OF THE SNOPES PAGE ON THE
TATTOO EPIDURAL THING (LOWER BACK)~~

~~PRE-SURGICAL CHECKLIST~~

~~TATTOO ARTIST'S SOCIAL SECURITY NUMBER~~

~~BOARDING PASS FOR AN UPCOMING FLIGHT~~

~~RECAP OF THE PLOT OF MEMENTO~~

~~THIS LIST, IN ITS ENTIRETY~~

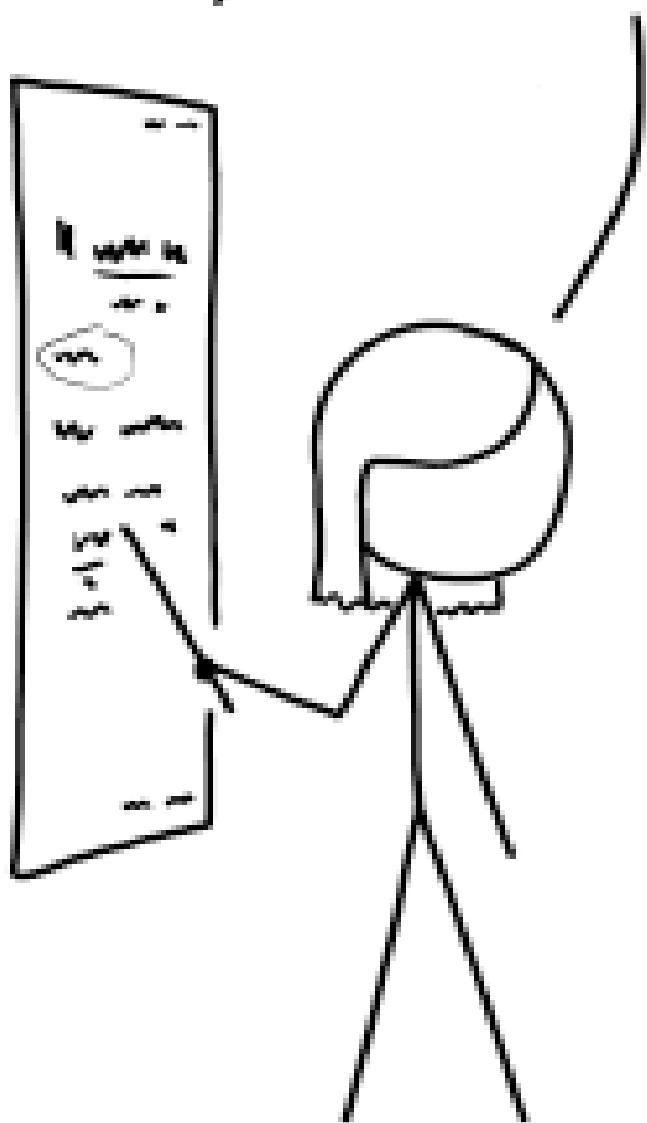
YOU MAY CLAIM UP TO 1040 DEFENDANTS ON YOUR SENTAN LOCAL INCOME TAX FOR FISCAL YEAR 20202 BY TAKING THE STANDARD DEDUCKLING AND ATOMIZING YOUR CLAMS.



I USED A NEURAL NET TO PREPARE MY TAX RETURNS, BUT I THINK I CUT OFF ITS TRAINING TOO EARLY.

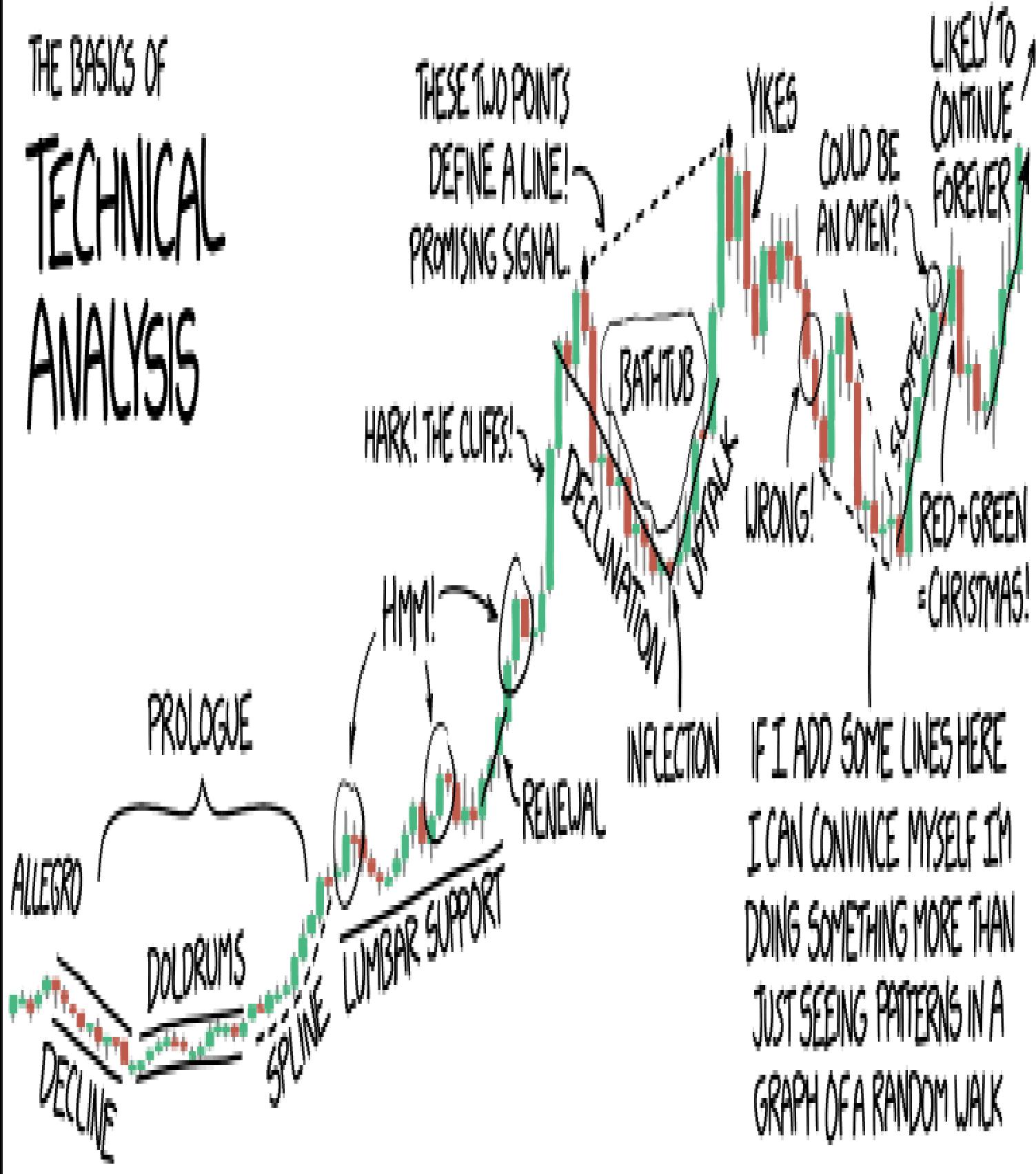
AT THIS POINT, YOU'RE PROBABLY THINKING, "I LOVE THIS EQUATION AND WISH IT WOULD NEVER END!"

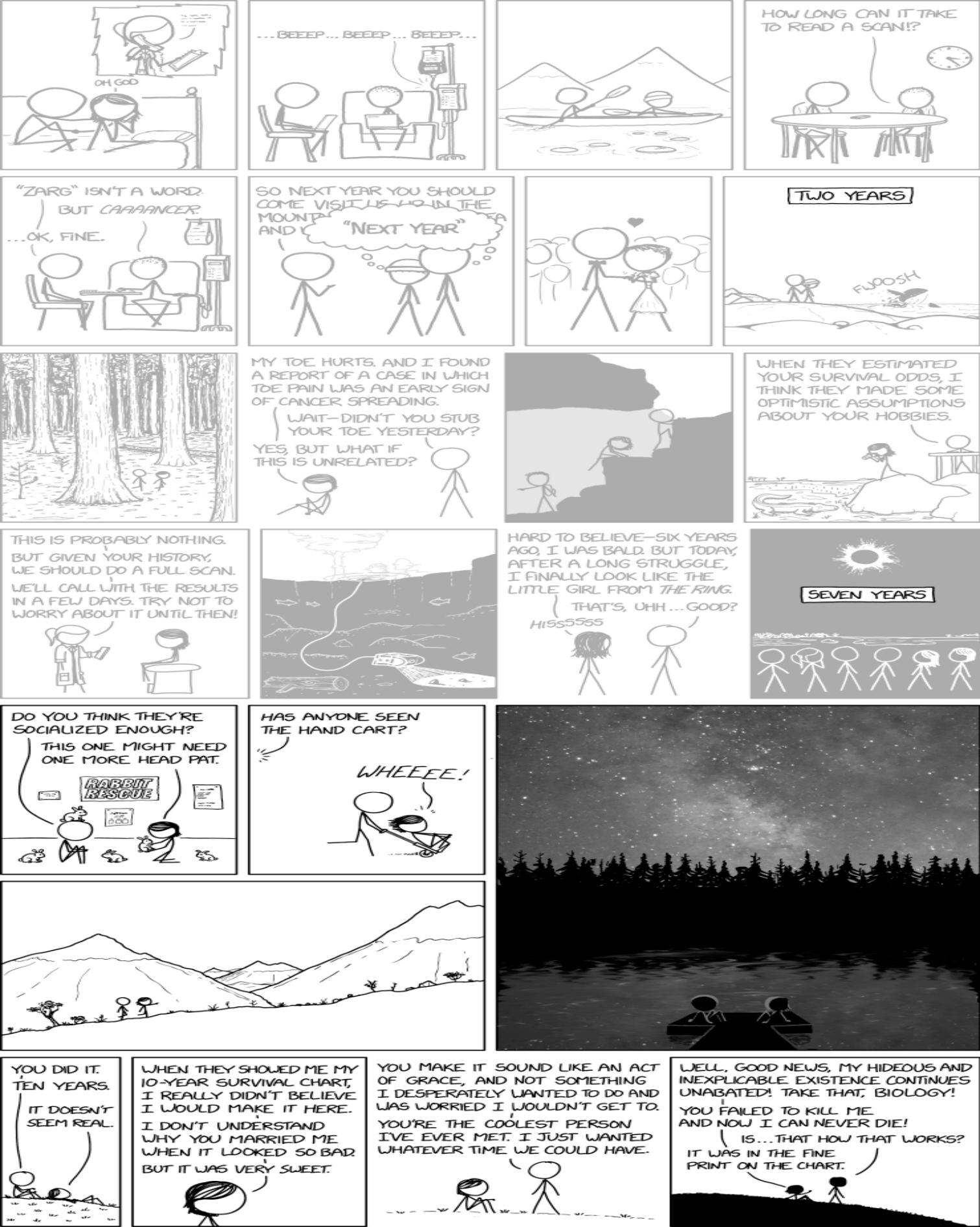
WELL, GOOD NEWS!

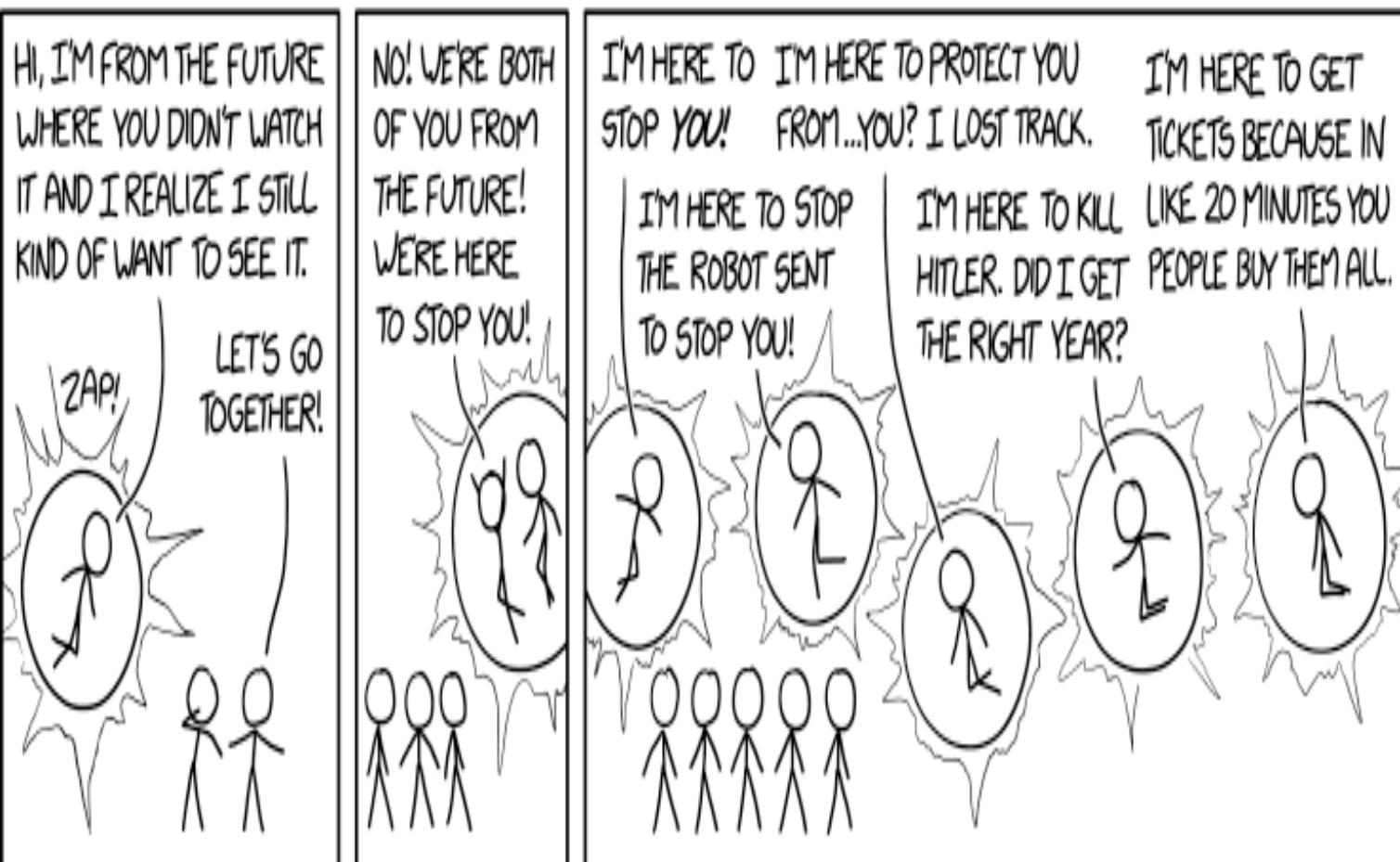
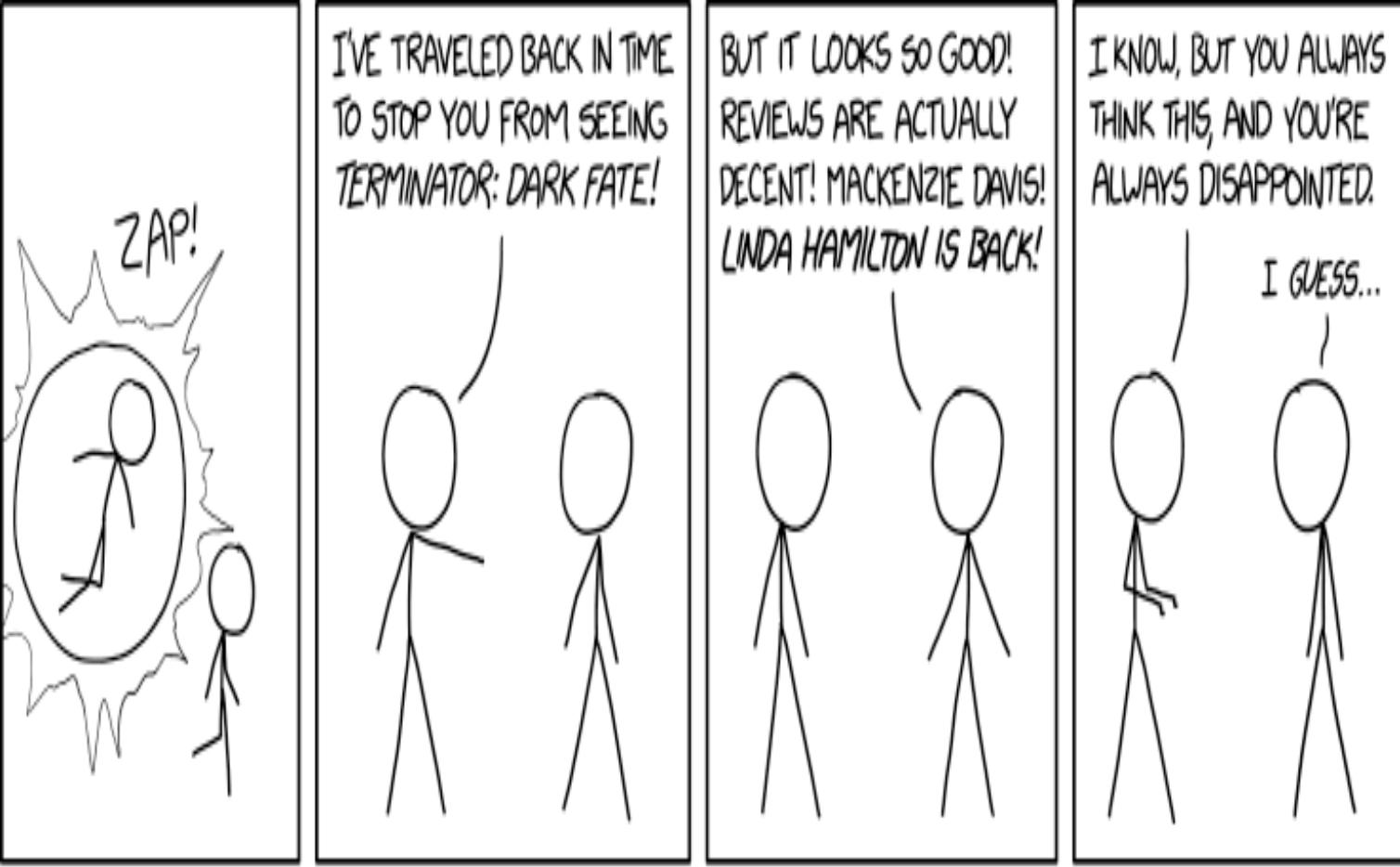


TAYLOR SERIES EXPANSION IS THE WORST.

THE BASICS OF TECHNICAL ANALYSIS

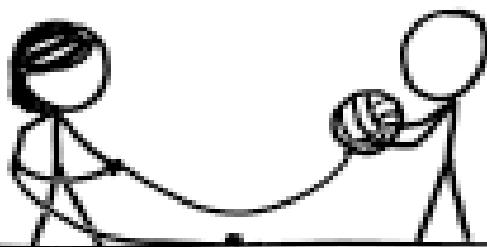




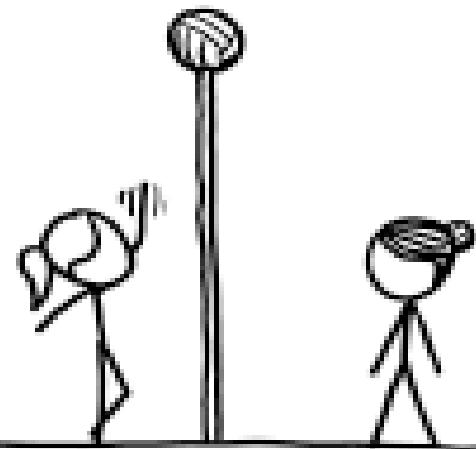


TETHERBALL CONFIGURATION PLAYABILITY RATINGS

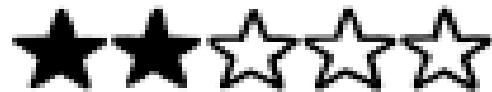
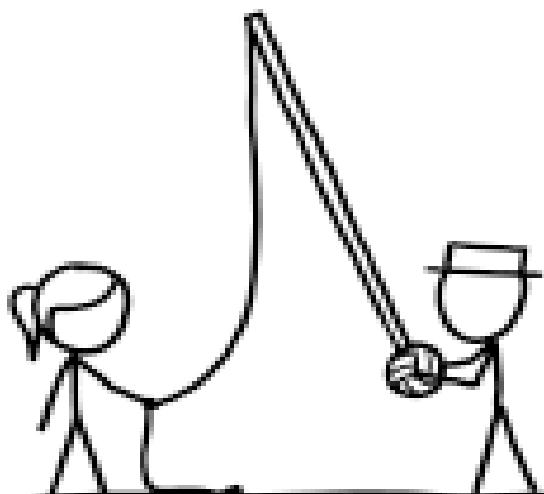
GROUND-ROPE-BALL



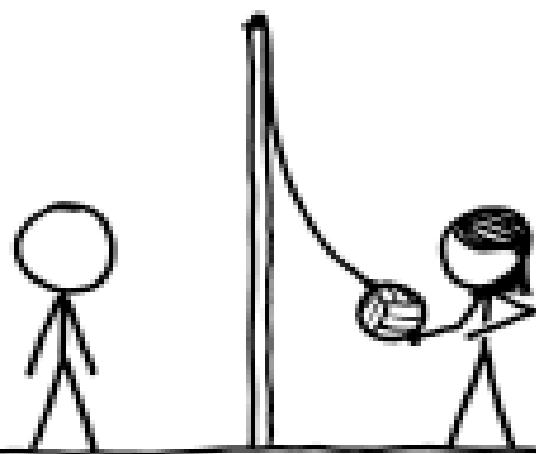
GROUND-POLE-BALL



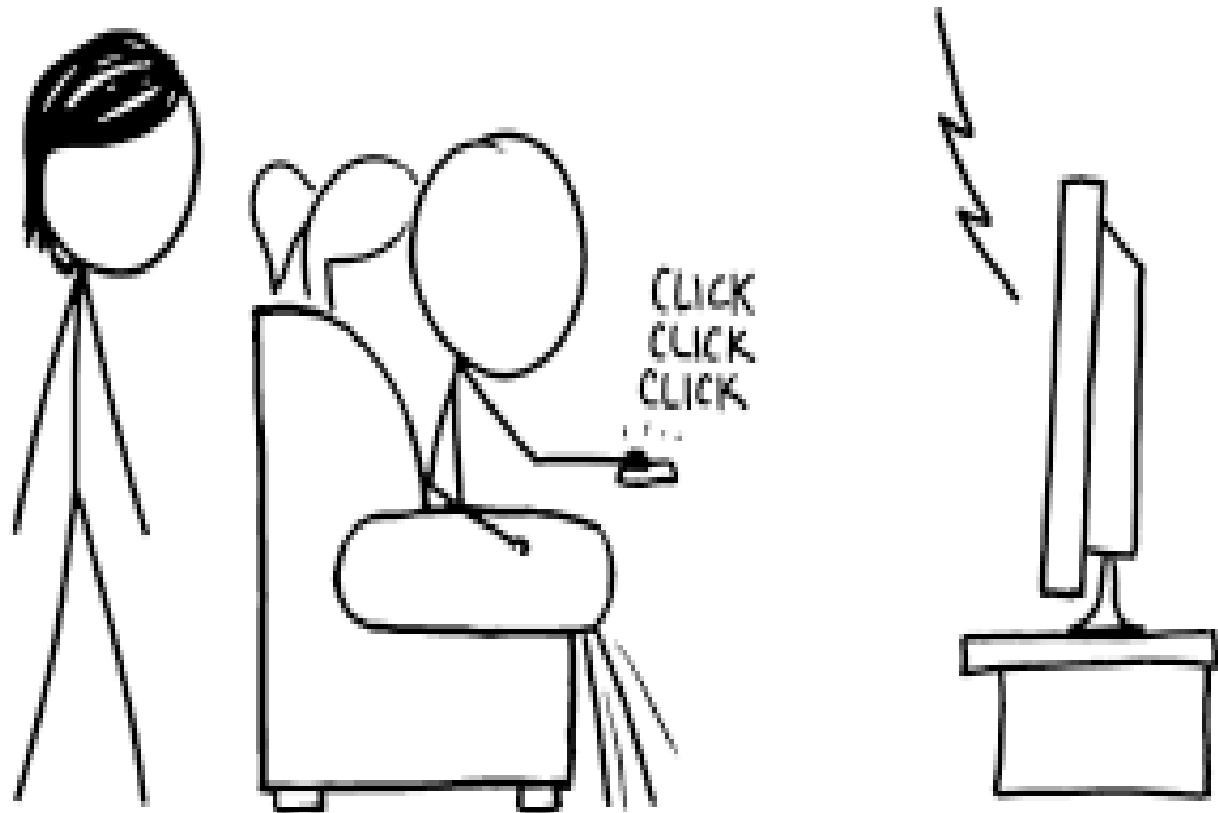
GROUND-ROPE- POLE-BALL



GROUND-POLE- ROPE-BALL



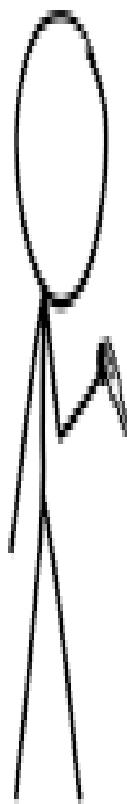
O...U...R... **SPACE** ...P...L...



THE WEIRDEST THING ABOUT 2019 IS OBVIOUSLY THAT DONALD TRUMP IS PRESIDENT, BUT I THINK THE SECOND WEIRDEST IS THAT YOU SOMETIMES STILL HAVE TO TYPE STUFF IN BY PICKING LETTERS ON A SCREEN ONE AT A TIME WITH A CURSOR LIKE YOU'RE ENTERING A HIGH SCORE IN A 1980s ARCADE GAME.

THE THERMOMETER
IS IN CELSIUS. HOW
DO YOU CHANGE IT?

LONG PRESS
THE BUTTON.

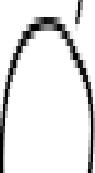


PRESS

:BEEP:

UNITS:
KELVIN

NO...

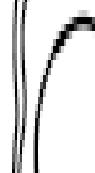


PRESS

:BEEP:

UNITS:
DEGREES
RANKINE

WHAT.

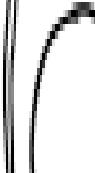


PRESS

:BEEP:

UNITS: AVERAGE
TRANSLATIONAL
KINETIC ENERGY.

THIS IS THE WORST
THERMOMETER.



BOLTZMANN'S
CONSTANT IS
ON THE SIDE IF
YOU NEED IT.

THEY SAY THE BEST
CAMERA IS THE ONE
YOU HAVE WITH YOU.

IT TURNS OUT

THEY'RE WRONG.



WITH THE DISCOVERY OF THE LAST MOLECULE, I'M PLEASED TO ANNOUNCE THAT CHEMISTRY IS FINALLY COMPLETE.

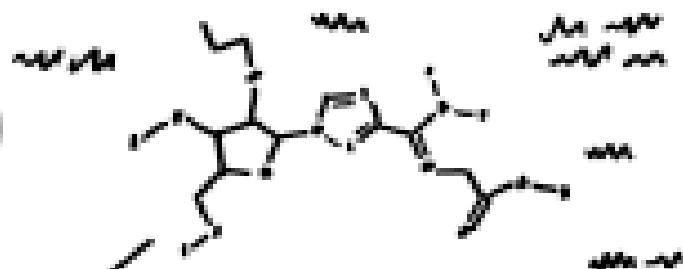
BEST OF LUCK TO OUR COMPETITORS IN THEIR RACE FOR SECOND PLACE.

BIOLOGY CHEMISTRY PHYSICS

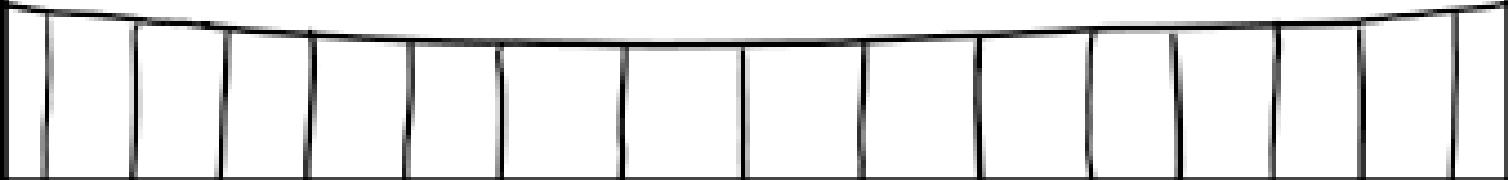
93%
COMPLETE

100%
COMPLETE

98%
COMPLETE



THE LAST ONE



(TIMELINE NOT TO SCALE)

ROCKY GROUND THE LAND THYMUS
PLANETS EARTH NESTING BEES BEFORE GENUS
BIG BANG FORM FORMS EVOLVE TIME DIVERGES NOW



THE TIME
BEFORE LAND

TIME FOR LAND BEES!

THE TIME BEFORE BEES

BEES LAND
ON THYME

THE LAND BEFORE THYME

WOW—ACCORDING TO THE INTERNET, WE DON'T KNOW THE TRUE NAME OF THE BEAR.

WHAT?



APPARENTLY THERE WAS A SUPERSTITION THAT SAYING ITS NAME WOULD SUMMON IT. "BEAR" AND "BRUIN" MEAN "THE BROWN ONE." ITS ACTUAL NAME HAS BEEN LOST.

WOW.

GRETCHEN, IS THIS FOR REAL?



WELL, SORT OF
THE PROTO-INDO-EUROPEAN ROOT WAS *RKTO-

IT WAS LOST IN THE GERMANIC LANGUAGES LIKE ENGLISH, BUT SURVIVED ELSEWHERE, E.G. GREEK "ARKTOS" AND LATIN "URSUS"



SO COULD WE FIGURE OUT WHAT THE WORD WOULD HAVE BEEN IN ENGLISH?

HMM. I MEAN, WE'LL NEVER KNOW, BUT GIVEN GERMANIC SOUND SHIFTS, A REASONABLE GUESS MIGHT BE "ARTH"?

NO!!



STOP!
AAAAAA!

WHAT??
DON'T
SAY IT!



WHAT HAVE
YOU DONE?

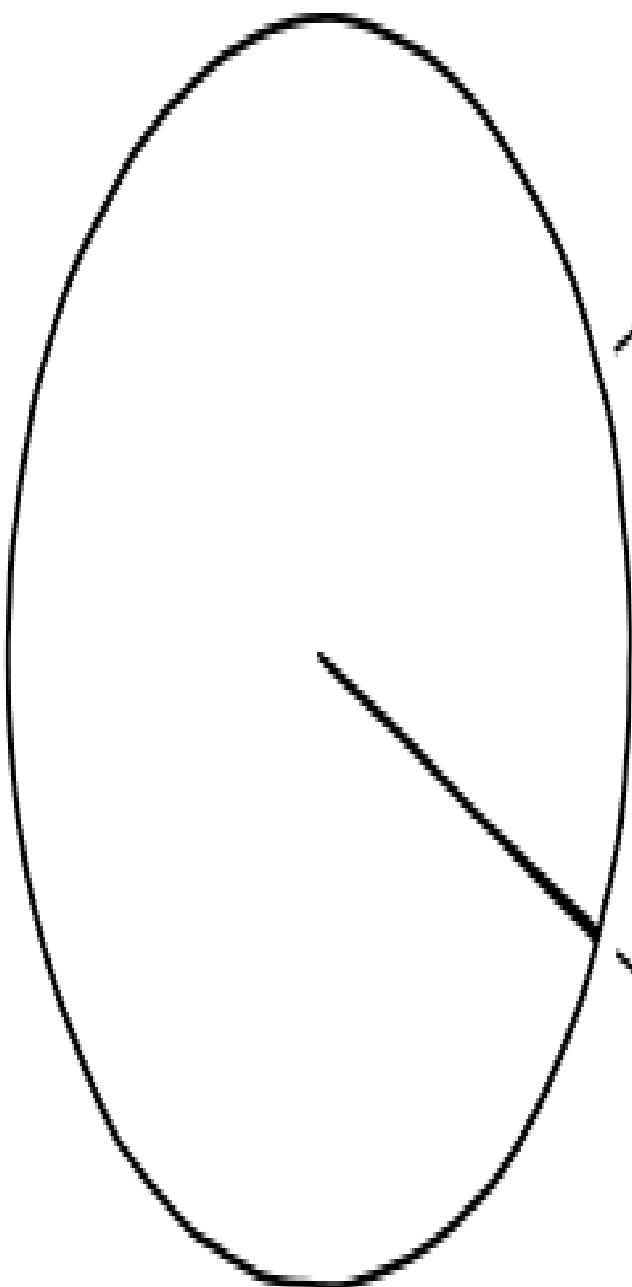


OH
OH NO



THE UNIVERSE

BY SCIENTIFIC FIELD



ASTRONOMY

OTHER

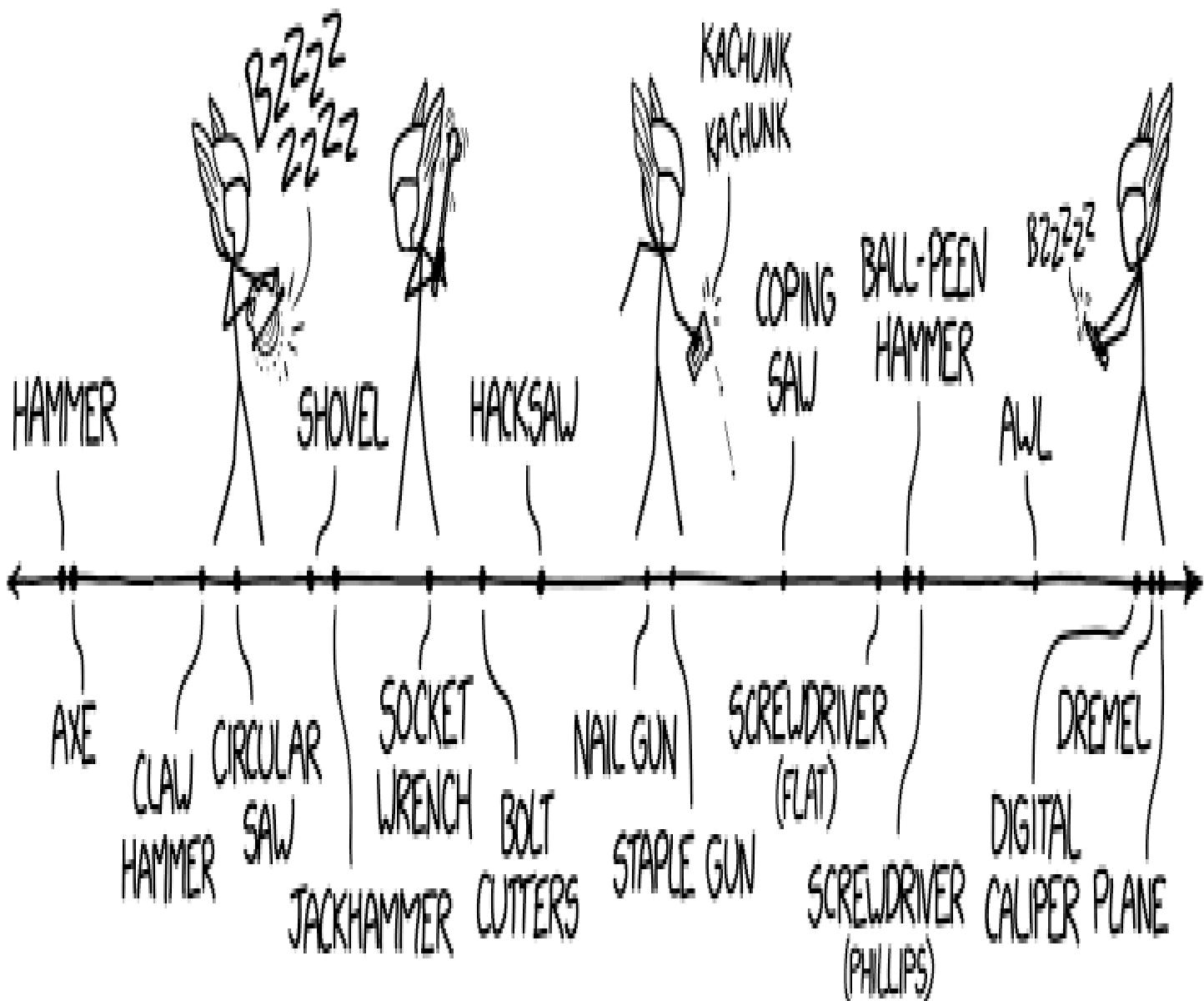
UPDATES TO MY "THINGS YOU SHOULD NOT DO" LIST,
BASED ON WHAT I LEARNED WRITING WHAT IF? 2
(OUT 9/13, xkcd.com/whatif2)

THINGS YOU SHOULD NOT DO (PART 3,647 OF ????)

- #156,812 EAT TIDE PODS
 - #156,813 WALK ON STILTS IN A THUNDERSTORM
 - #156,814 SET OFF FIREWORKS AT A GAS STATION
 - #156,815 FEED YOUR CAT TREATS THAT ARE THE EXACT SHAPE AND TEXTURE OF A HUMAN HAND
-
- #156,816 LEAN OVER A GEYSER VENT AND TRY TO LOOK DOWN INTO IT
 - #156,817 FLY A HOT-AIR BALLOON OVER A FIRING RANGE
 - #156,818 PEEL AWAY THE EARTH'S CRUST
 - #156,819 TRY TO PAINT THE SAHARA DESERT BY HAND
 - #156,820 REMOVE SOMEONE'S BONES WITHOUT ASKING
 - #156,821 SPEND 100% OF YOUR GOVERNMENT'S BUDGET ON MOBILE GAME IN-APP PURCHASES
 - #156,822 FILL A LAVA LAMP WITH ACTUAL LAVA
 - #156,823 DRINK THE BLOOD OF SOMEONE WITH A VIRAL HEMORRHAGIC FEVER
 - #156,824 EAT MEAT FROM RABID ANIMALS
 - #156,825 PERFORM YOUR OWN LASER EYE SURGERY
 - #156,826 TELL CALIFORNIA POULTRY REGULATORS THAT YOUR FARM IS SELLING POKEMON EGGS
 - #156,827 FUNNEL THE ENTIRE FLOW OF NIAGARA FALLS INTO THE OPEN WINDOW OF A PHYSICS LAB
 - #156,828 PUMP AMMONIA INTO YOUR ABDOMEN
 - #156,829 SUSPEND YOURSELF INSIDE A 10-METER BALL OF SUNSCREEN AND FALL INTO THE SUN

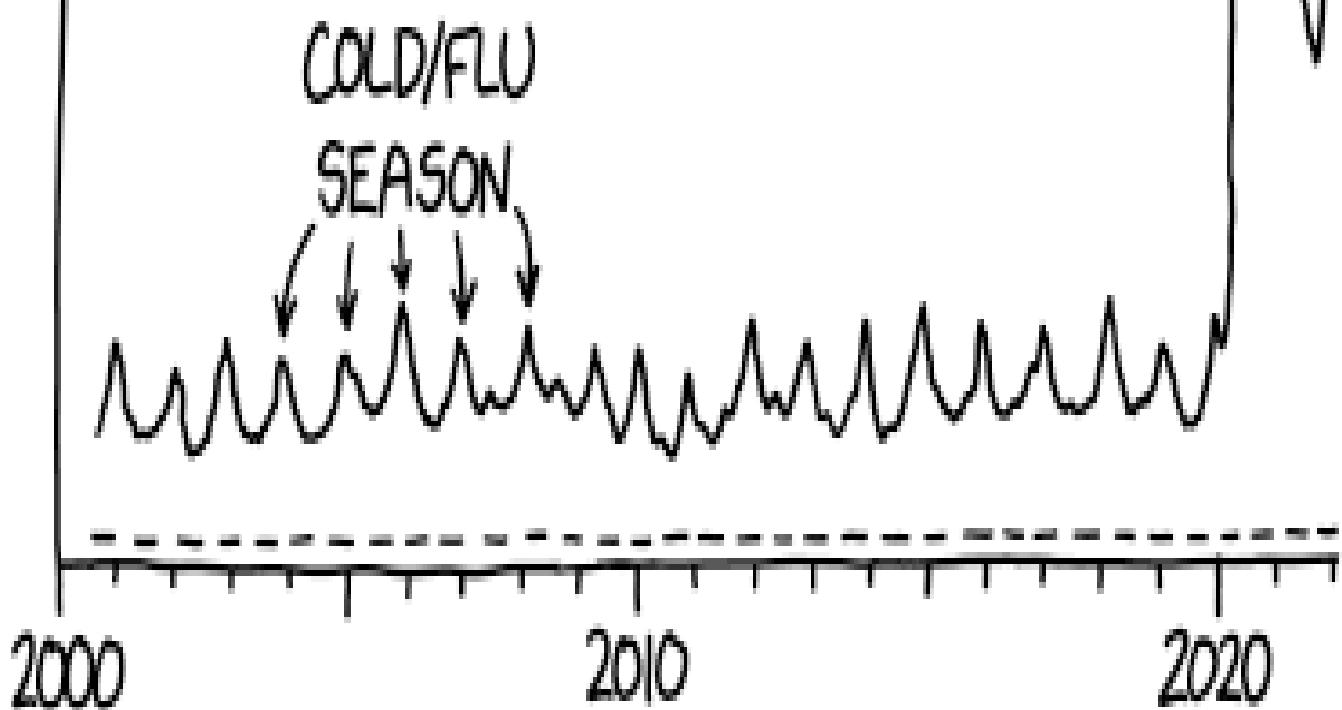
HAND TOOLS THOR COULD HAVE ENDED UP WITH

BEST ←————→ WORST



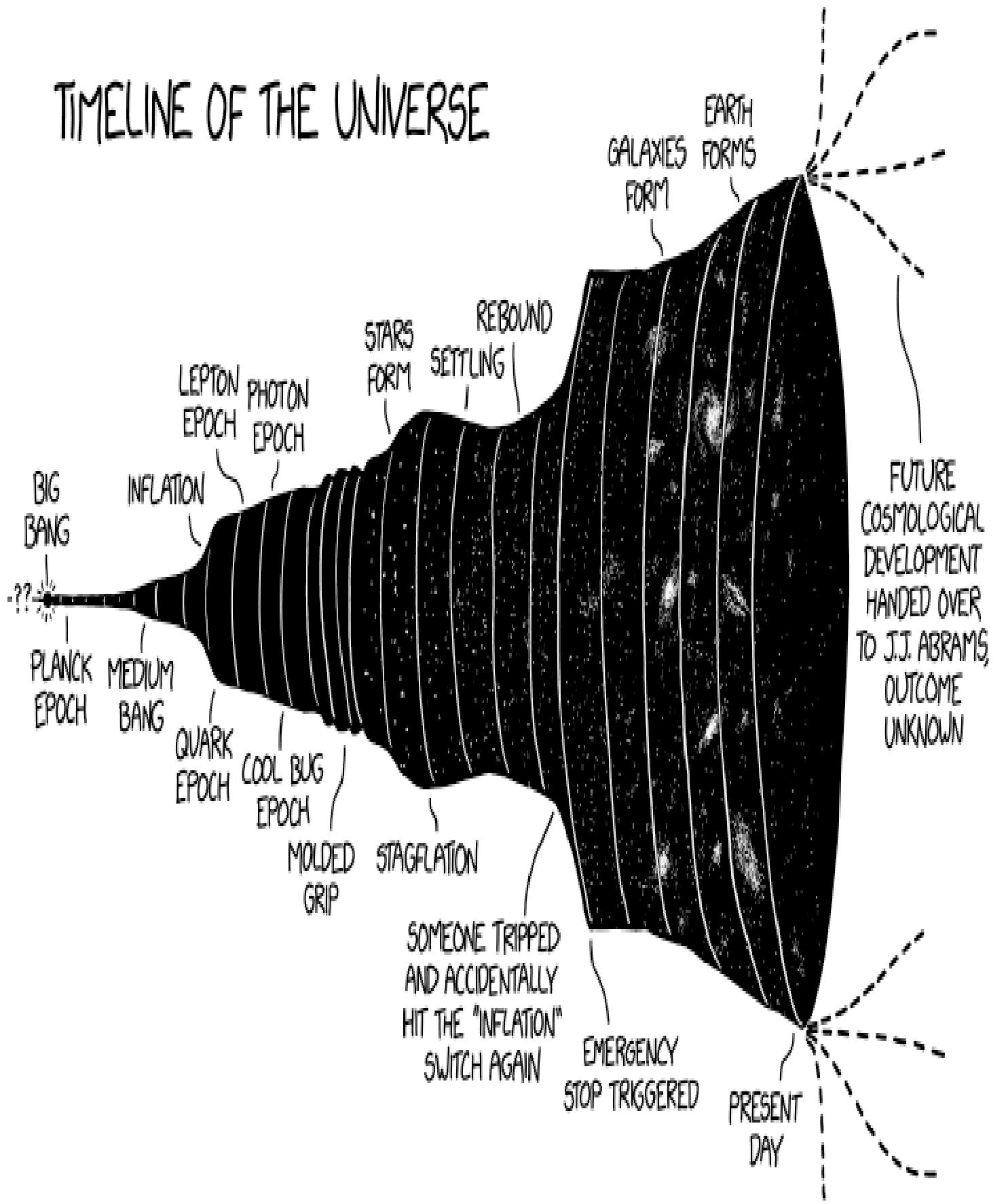
— HOW MUCH TIME I HAVE SPENT
— THINKING ABOUT MY THROAT AND
NASAL PASSAGES, OVER TIME

--- HOW MUCH I WANT
--- TO THINK ABOUT THEM



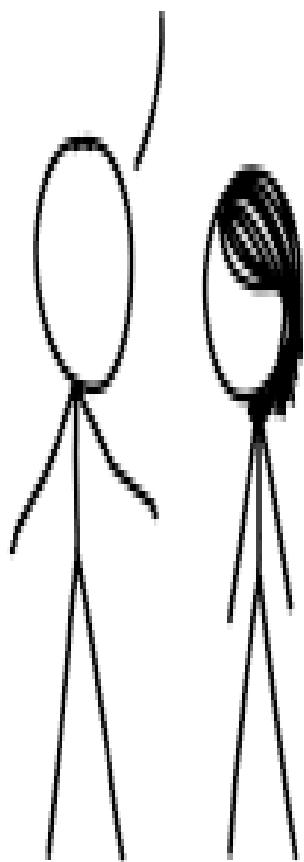


TIMELINE OF THE UNIVERSE

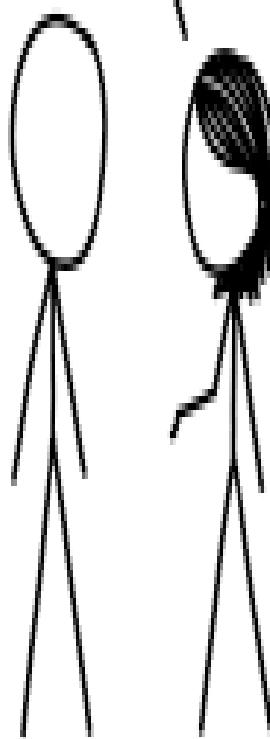


I CAN'T BELIEVE
SHE SAID THAT.

SHE APOLOGIZED,
BUT YOU CAN'T PUT
THE TOOTHPASTE
BACK IN THE TUBE.

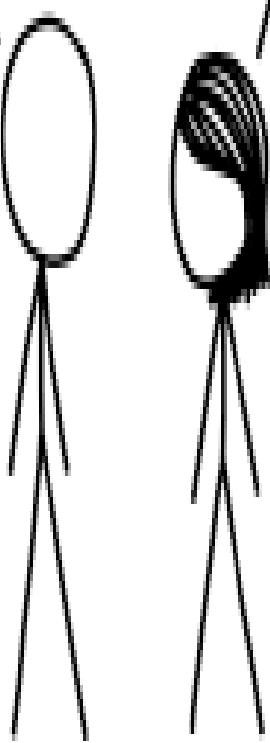


SURE YOU CAN; IT'S
EASY. YOU JUST
PUT YOUR MOUTH
OVER THE OPENING.



WELL, THAT'S THE WORST
THING YOU'VE EVER SAID.

SORRY, I CAN TAKE IT
BACK. IT'S JUST LIKE-
NO!



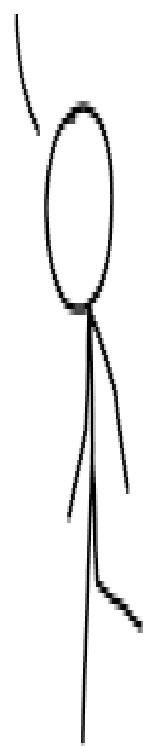
HOW WAS THE PARTY?

TAAALK!!!!!!NG

BLABLABLABLA

I TALKED SO MUCH.
TOO MUCH? PROBABLY.

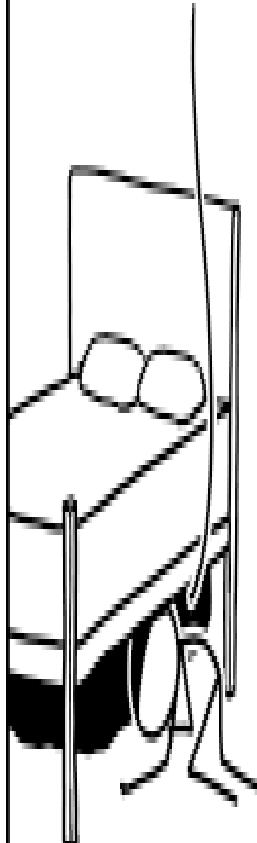
MY FACE IS TIRED.



SO MANY CONVERSATIONS.

I'M WORRIED THAT ALL MY
OPINIONS WERE BAD. WHY
DID I TALK SO MUCH?

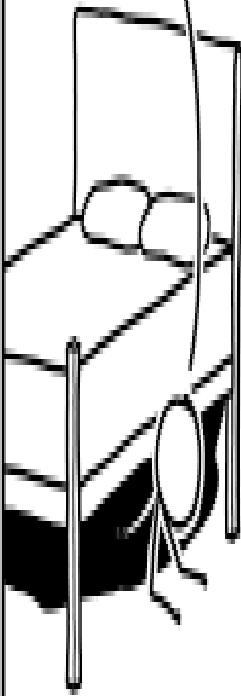
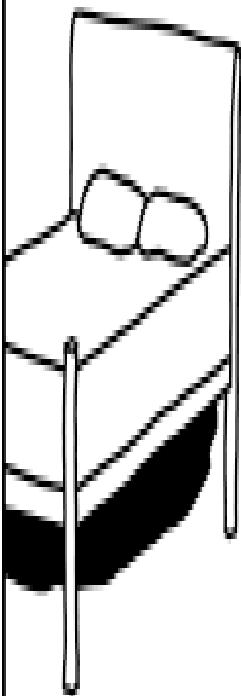
TIME TO HIDE UNDER MY
BED AND NEVER SPEAK TO
ANOTHER HUMAN AGAIN.



FIVE MINUTES LATER...

I HAVE SOME
NEW OPINIONS.

THAT DIDN'T
TAKE LONG.



THE TOWER
OF BABEL IS
COMPLETE!

LET'S GO
MEET GOD!

HI GOD!

WOW, NICE TOWER!
YOU DID A GREAT
JOB! I'M SO PROUD!

THANKS!

I'M GOING TO GIVE
YOU A REWARD.

WHAT DO YOU LIKE
ABOUT THE WORLD?

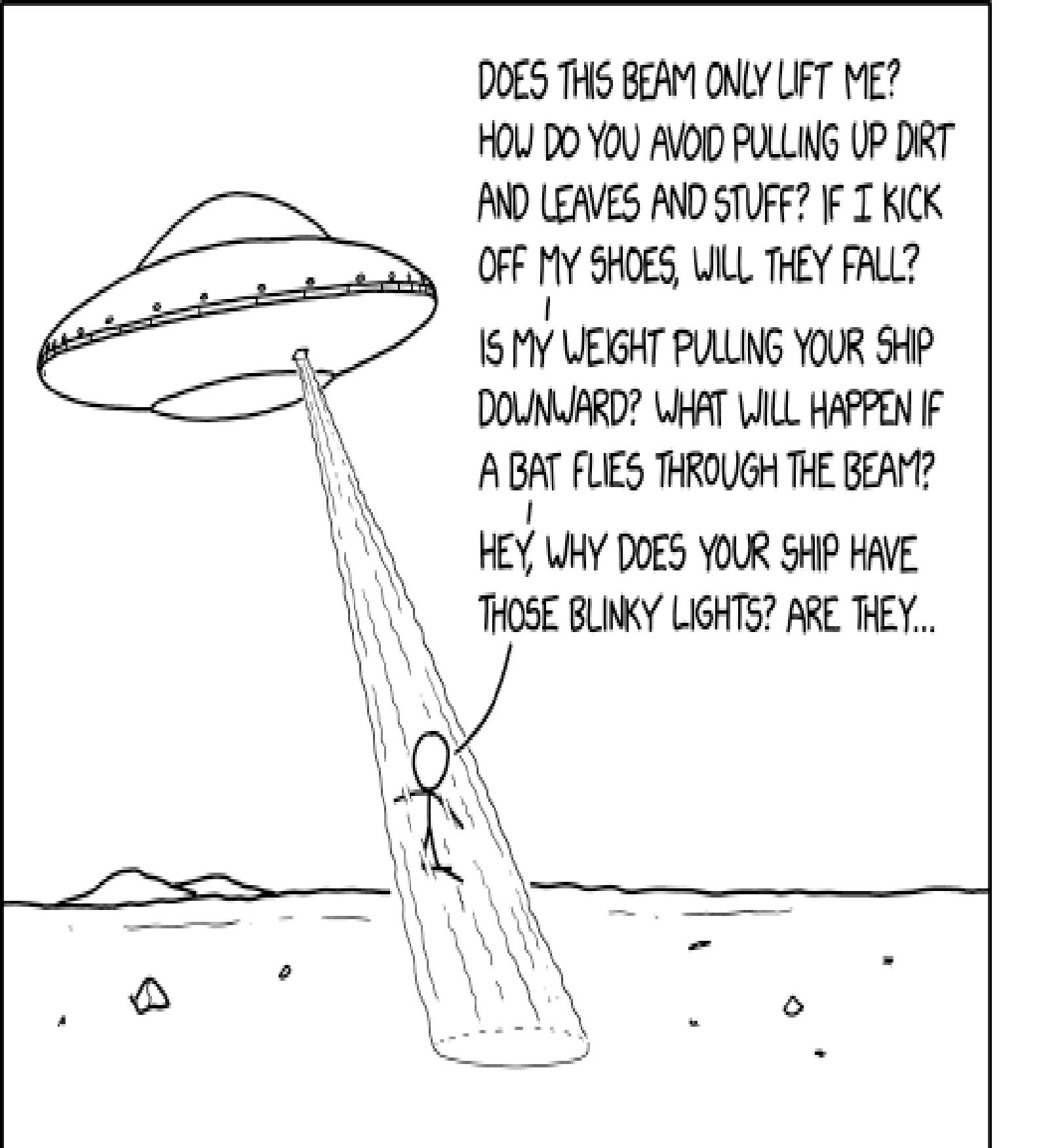
HMM. WORDS ARE
REALLY COOL.

NO, WAIT-

GREAT! I'M GOING TO GIVE YOU LOTS
OF LANGUAGES TO STUDY, EACH WITH
ITS OWN PHONOLOGY, WORD ORDERING,
MORPHOSYNTACTIC ALIGNMENT...

YESSSSSSS!

WE SHOULD NOT
HAVE BROUGHT
A LINGUIST.



DOES THIS BEAM ONLY LIFT ME?
HOW DO YOU AVOID PULLING UP DIRT
AND LEAVES AND STUFF? IF I KICK
OFF MY SHOES, WILL THEY FALL?

IS MY WEIGHT PULLING YOUR SHIP
DOWNWARD? WHAT WILL HAPPEN IF
A BAT FLIES THROUGH THE BEAM?

HEY, WHY DOES YOUR SHIP HAVE
THOSE BLINKY LIGHTS? ARE THEY...

MOMENTS LATER, THE ALIENS SET ME BACK DOWN AND LEFT.

OH, HEY, YOU ORGANIZED
OUR PHOTO ARCHIVE!

YEAH, I TRAINED A NEURAL
NET TO SORT THE UNLABELED
PHOTOS INTO CATEGORIES.

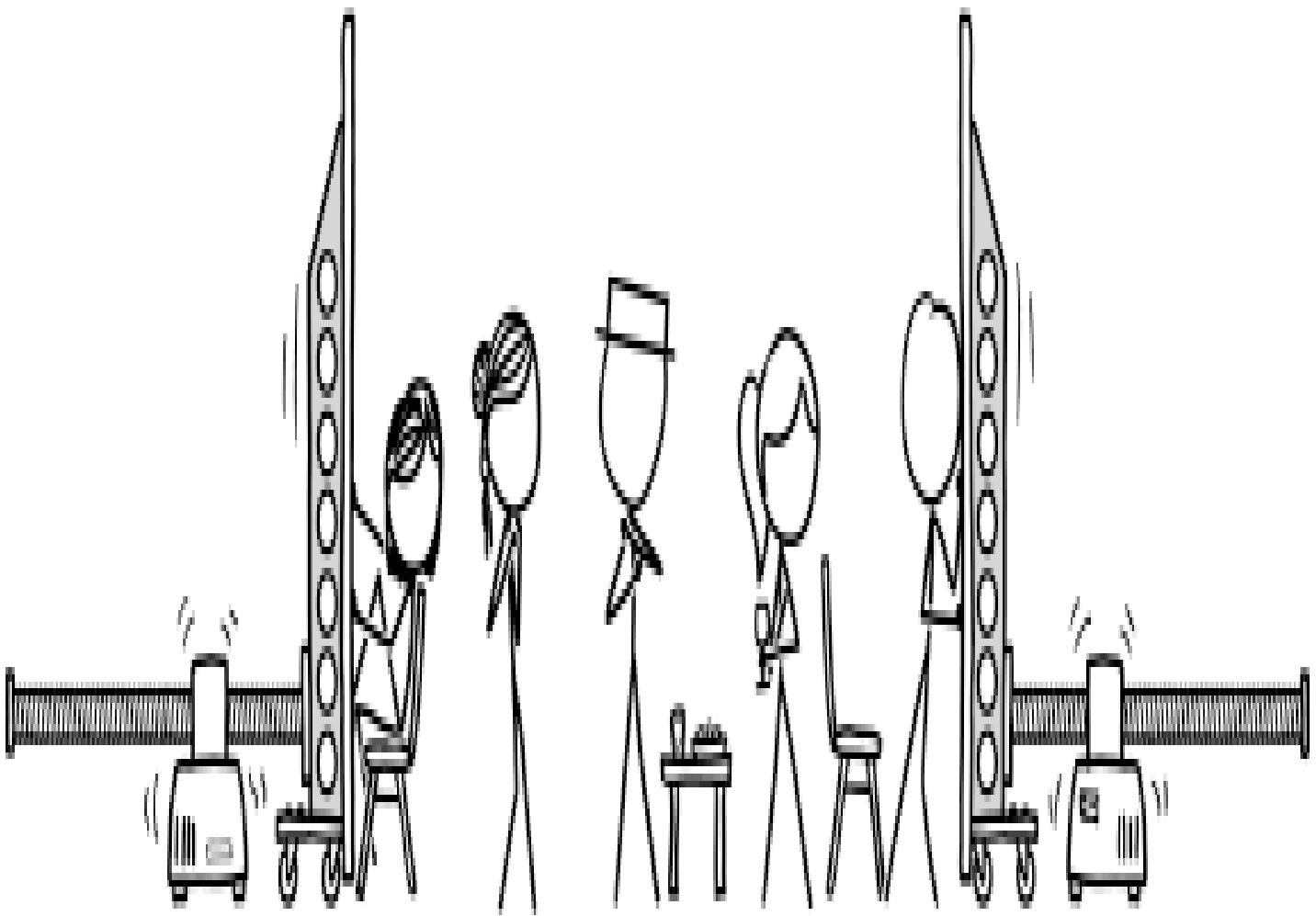
WHOA! NICE WORK!



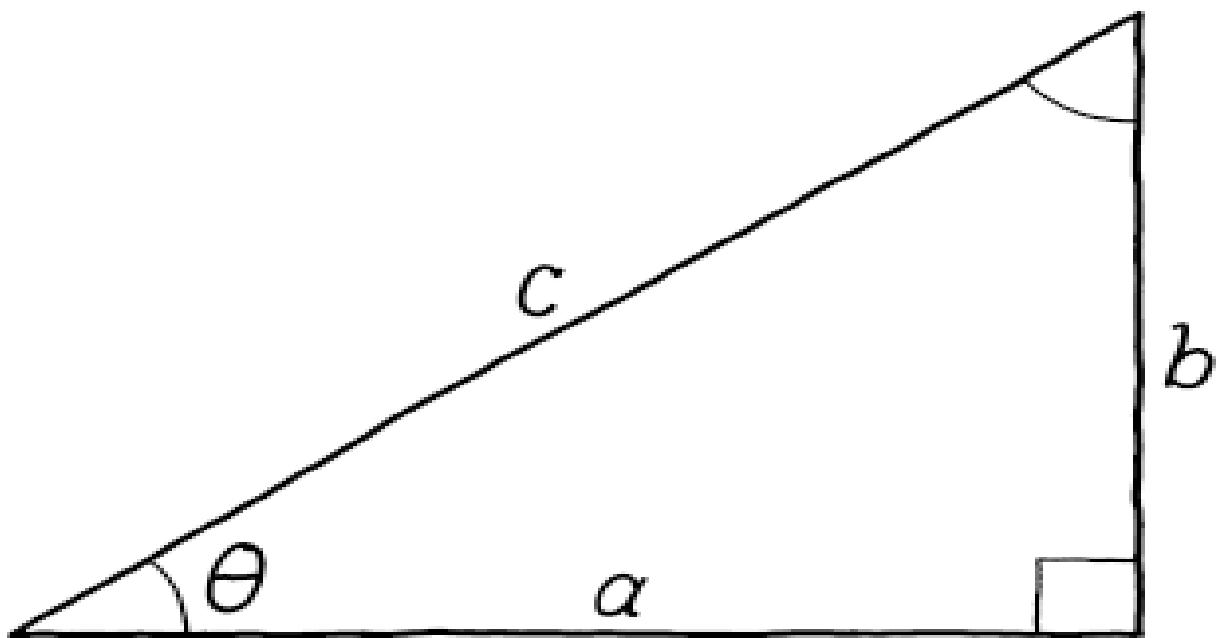
ENGINEERING TIP:
WHEN YOU DO A TASK BY HAND,
YOU CAN TECHNICALLY SAY YOU
TRAINED A NEURAL NET TO DO IT.



THIS PHOTO OF THE TRANSIT OF MERCURY
FRIED MY TELESCOPE'S IMAGING SENSOR 😞
#NOFILTER



IM PLANNING A TRASH-COMPACTOR-THEMED
PARTY FOR WHEN THIS IS ALL OVER SO WE CAN
GET USED TO STANDING NEAR EACH OTHER AGAIN.



$$\sin \theta = \frac{b}{c} \quad \cos \theta = \frac{a}{c} \quad \tan \theta = \frac{b}{a}$$

$$\cot \theta = \frac{a}{b} \quad \sec \theta = \frac{c}{a} \quad \csc \theta = \frac{c}{b}$$

$$\operatorname{cin} \theta = \frac{b}{s} \quad \operatorname{cas} \theta = \frac{o}{c} \quad \operatorname{tab} \theta = \frac{b^2}{na}$$

$$\operatorname{bot} \theta = \frac{a}{c} \rightarrow \operatorname{boat} \theta = \frac{a^2}{c} \rightarrow \operatorname{stoat} \theta = \frac{a^2}{c} \cdot \frac{st}{b}$$

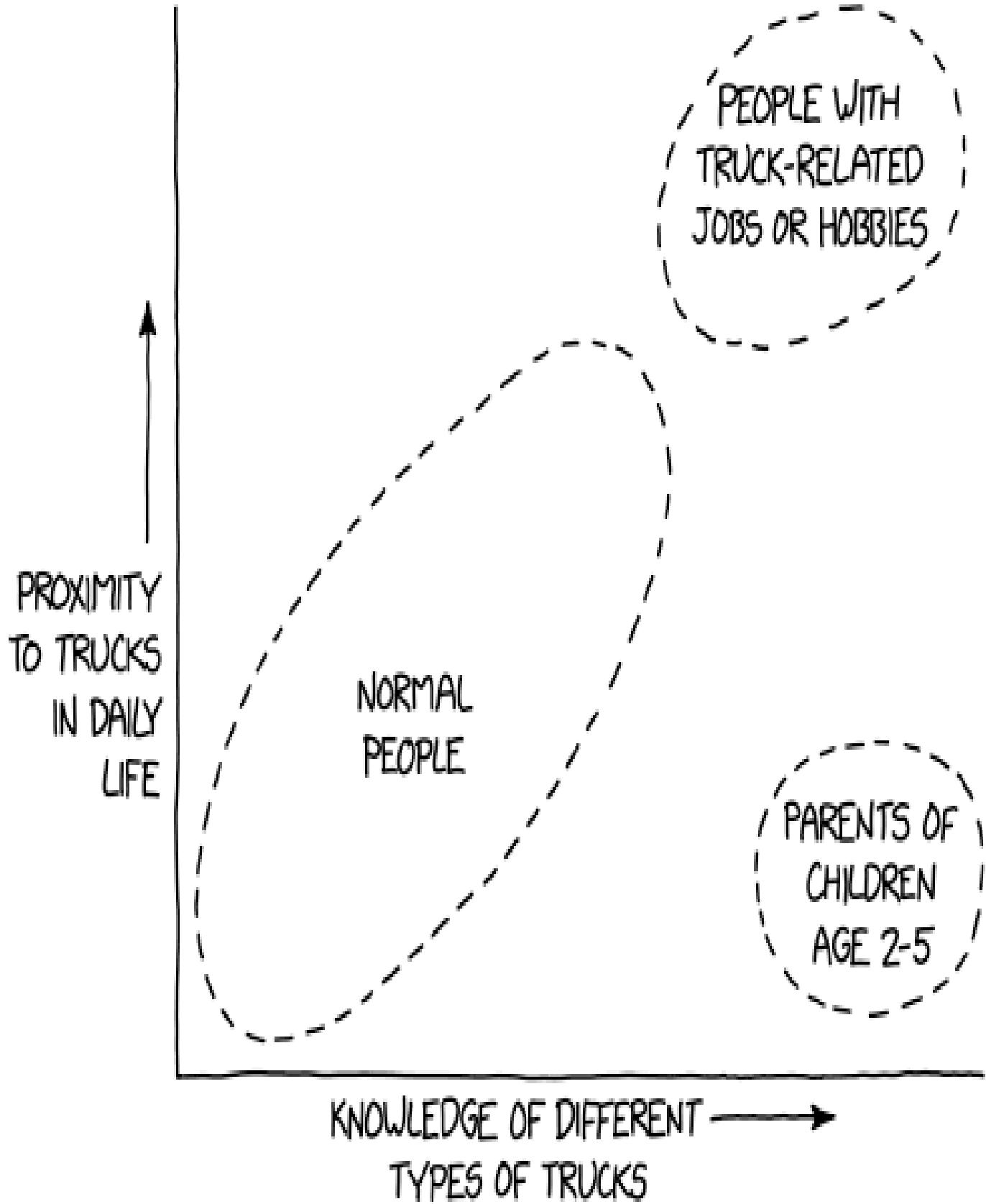
$$\tan \theta = \frac{b}{a} = \frac{b}{a} \cdot \frac{c}{c} = \frac{b}{c} \cdot \frac{c}{a} = \sin \theta \sec \theta = \operatorname{insect} \theta^2$$

$$(\tan \theta)^2 = \frac{b^2}{a^2} \rightarrow \operatorname{tn}^2 a^4 = \frac{b^2}{\theta^2} \rightarrow \operatorname{at}^2 b a(na)^2 = \frac{b^3}{\theta^2}$$

FROM PHYSICS

$$\text{distance} = \frac{1}{2} at^2 \rightarrow \text{distance 2 banana} = \frac{b^3}{\theta^2}$$

KEY TRIGONOMETRIC IDENTITIES



COOKING TIPS: TSP VS TBSP

TSP

TERASPOON

TBSP

BINARY TSP

1,000,000,000,000

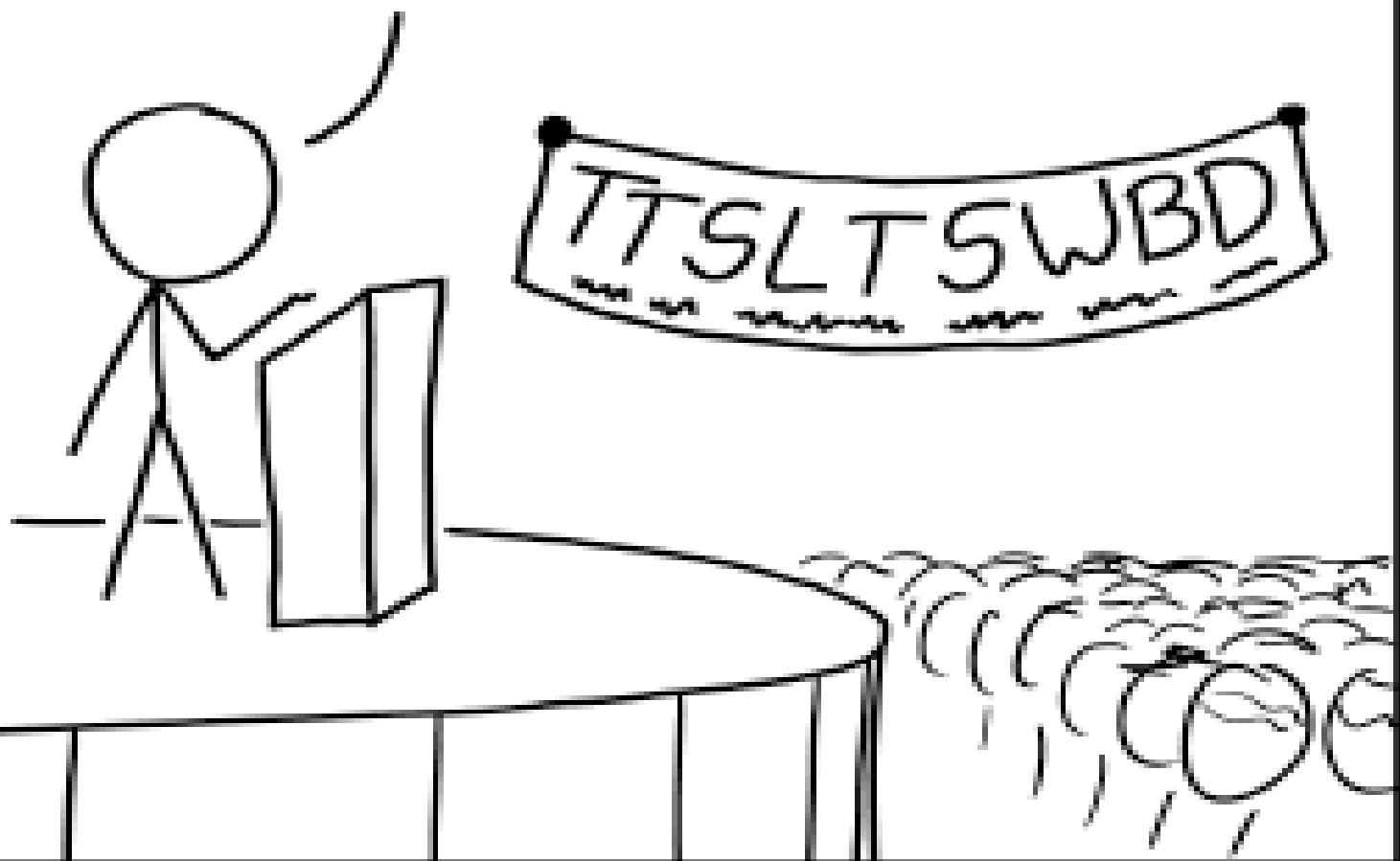
(10^{12}) SPOONS

,099,51,62,776

(1024^4) SPOONS

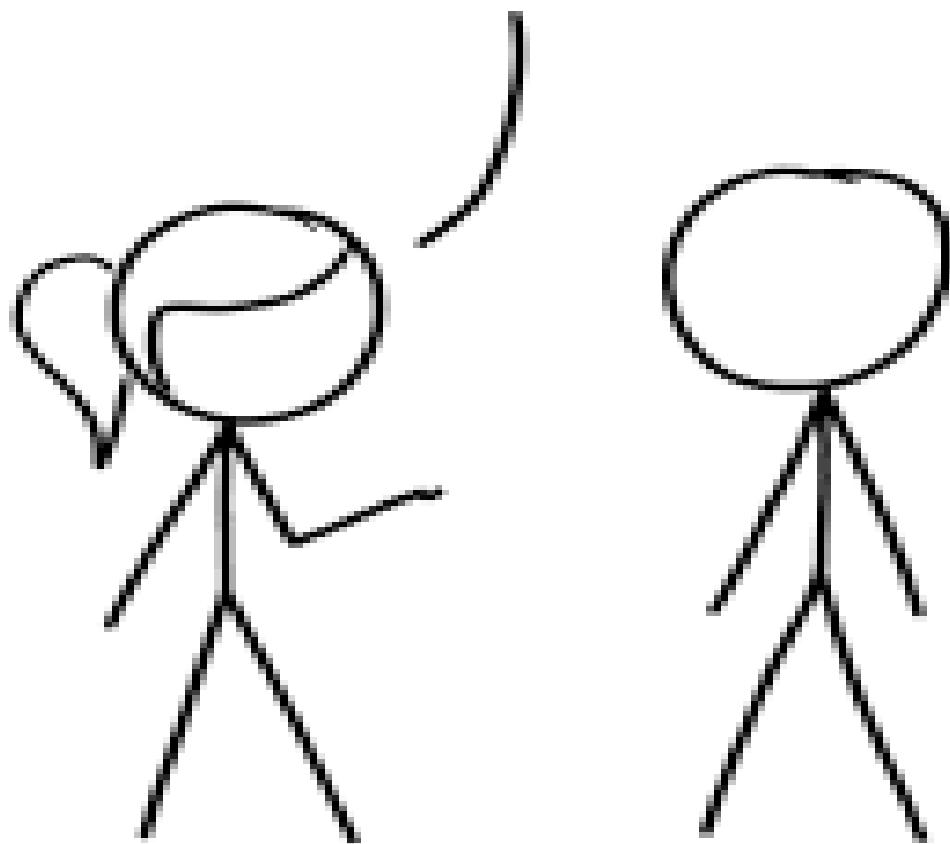
NEXT WE HAVE A SESSION
ON ORGAN TRANSPLANTS
AND ANOTHER ON AIRSHIPS.

THEN LUNCH, THEN WE'LL
HAVE ONE ON GYROSCOPES
AND ONE ON BUTTERFLIES.

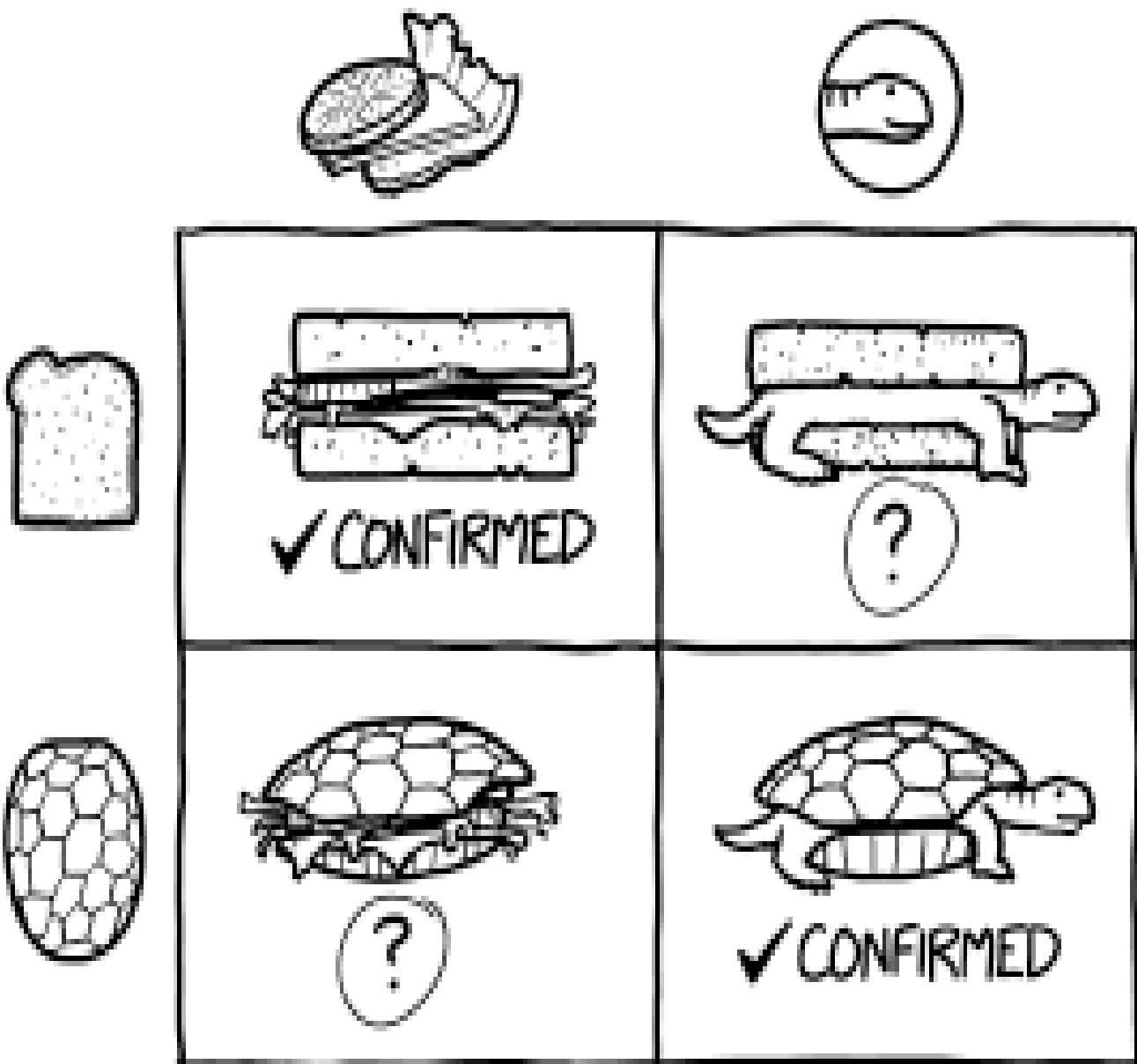


THE FIRST ANNUAL CONFERENCE ON
THINGS THAT SEEM LIKE THEY
SHOULDN'T WORK BUT DO

...NOW, IT TURNS OUT
THIS IS ACTUALLY
TURING-COMPLETE...



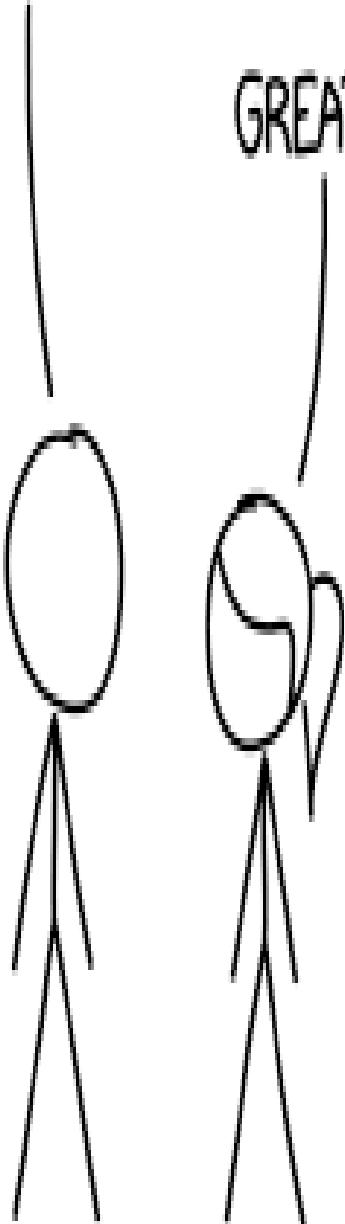
THIS PHRASE EITHER MEANS
SOMEONE SPENT SIX MONTHS
GETTING A DISHWASHER TO
PLAY MARIO OR YOU'RE UNDER
ATTACK BY A NATION-STATE.



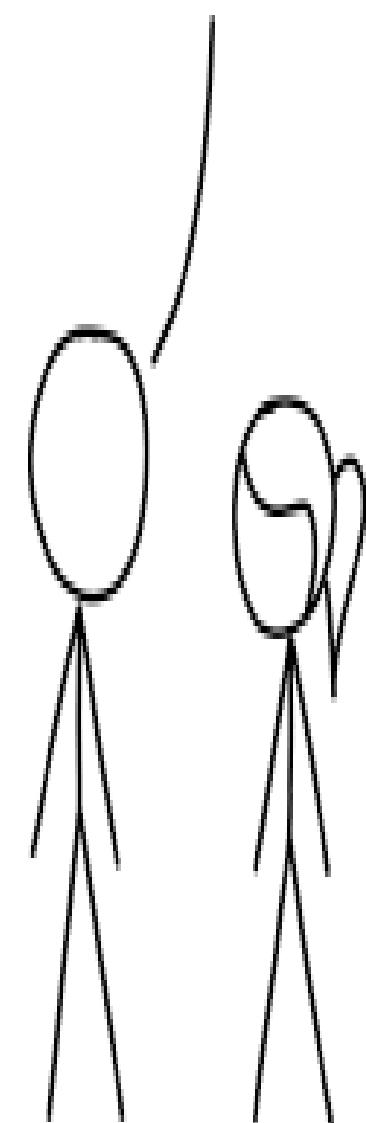
OUR LAB IS WORKING TO DETECT
THE TWO MISSING PIECES OF THE
TURTLE-SANDWICH STANDARD MODEL.

I GOT ONE OF THOSE
TWO-FACTOR SECURITY
KEYS YOU'VE BEEN
BUGGING ME ABOUT.

GREAT!



IT TOOK A LOT OF
WORK, FIDDLING WITH
CONFIGURATIONS,
ANNOYING SETBACKS,
AND GENERAL PAIN,



...BUT I FINALLY GOT
IT ONTO THE METAL
RING OF MY KEYCHAIN.

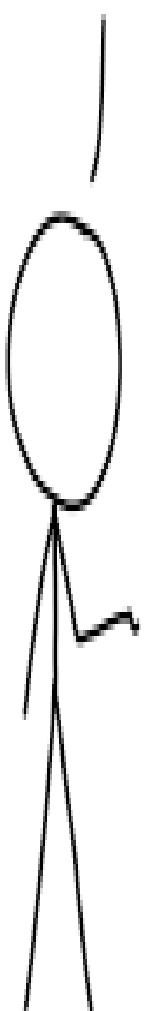
AT LEAST NOW
IT'S SECURE.

YEAH, THIS THING IS
NOT COMING OFF.



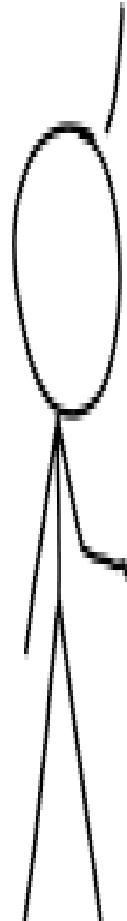
ALL SOFTWARE DEVELOPMENT, EVENTUALLY

WE'VE INSTALLED A
TWO-KEY SYSTEM TO
PREVENT ACCIDENTAL
MISSILE LAUNCHES.



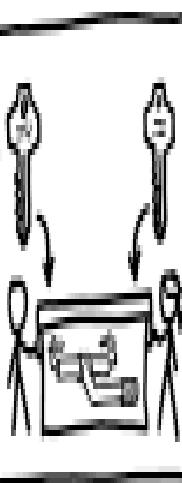
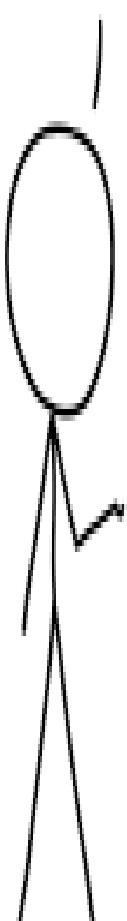
SOON

WE'VE DEVELOPED A
DUAL-TURNER DEVICE
TO ALLOW A USER
TO EFFICIENTLY TURN
MULTIPLE KEYS.



SOON

WE'VE INSTALLED A
TWO-KEY LOCK ON
THE DUAL TURNER
DEVICE TO PREVENT
ACCIDENTAL USE.



PHYSICIST

ENGINEER

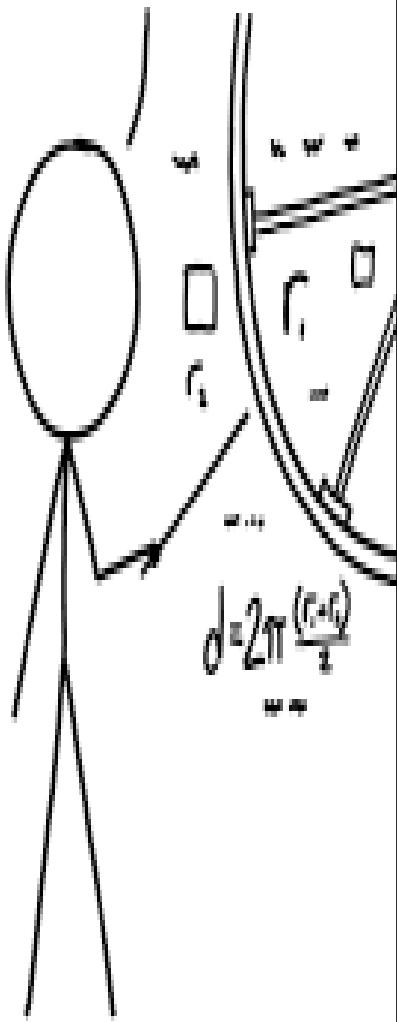
COSMOLOGIST

APPROXIMATIONS

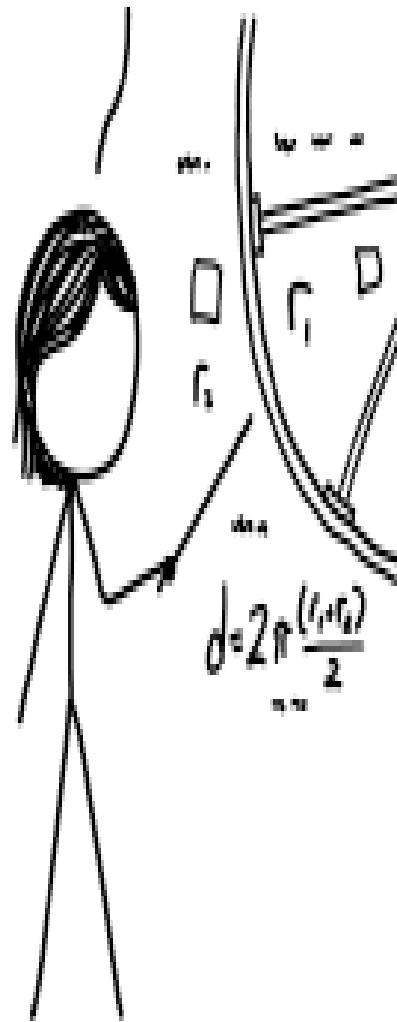
APPROXIMATIONS

APPROXIMATIONS

WE'LL ASSUME THE
CURVE OF THIS RAIL
IS A CIRCULAR ARC
WITH RADIUS R .

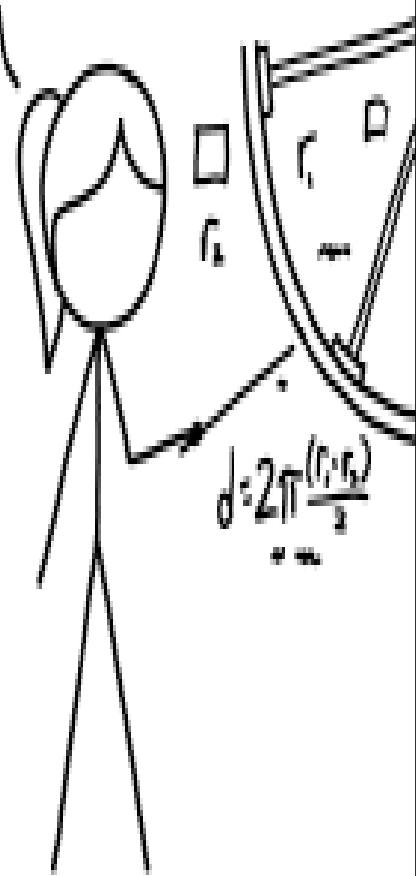


LET'S ASSUME THIS
CURVE DEVIATES FROM
A CIRCLE BY NO MORE
THAN 1 PART IN 1,000.



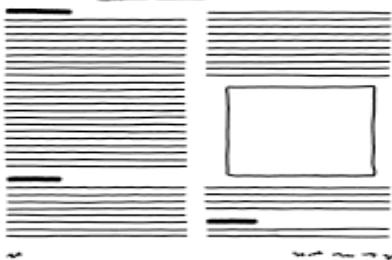
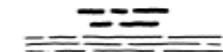
ASSUME PI IS ONE.

PRETTY SURE IT'S
BIGGER THAN THAT.
OK, WE CAN MAKE
IT TEN. WHATEVER.



TYPES OF SCIENTIFIC PAPER

WE PUT A CAMERA
SOMEWHERE NEW



HEY, I FOUND A TROVE
OF OLD RECORDS! THEY
DON'T TURN OUT TO BE
PARTICULARLY USEFUL,
BUT STILL, COOL!



MY COLLEAGUE IS
WRONG AND I CAN
FINALLY PROVE IT



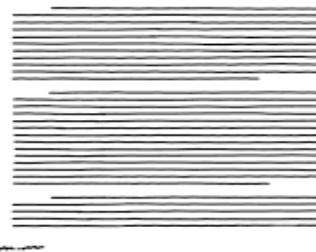
THE IMMUNE SYSTEM
IS AT IT AGAIN



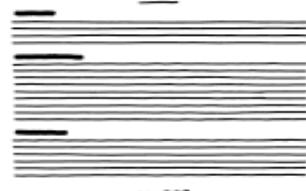
WE FIGURED OUT HOW
TO MAKE THIS EXOTIC
MATERIAL, SO EMAIL
US IF YOU NEED SOME



WHAT ARE FISH EVEN
DOING DOWN THERE



THIS TASK I HAD TO DO
ANYWAY TURNED OUT
TO BE HARD ENOUGH
FOR ITS OWN PAPER



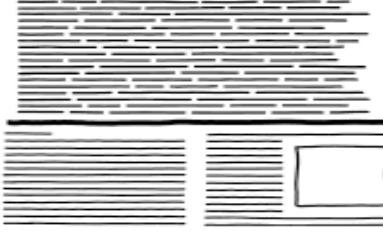
HEY, AT LEAST WE
SHOWED THAT THIS
METHOD CAN PRODUCE
RESULTS! THAT'S NOT
NOTHING, RIGHT?



CHECK OUT THIS WEIRD
THING ONE OF US SAW
WHILE OUT FOR A WALK



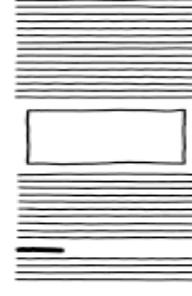
WE ARE 500 SCIENTISTS
AND HERE'S WHAT WE'VE
BEEN UP TO FOR THE
LAST 10 YEARS



SOME THOUGHTS ON
HOW EVERYONE ELSE
IS BAD AT RESEARCH



WE SCANNED SOME
UNDERGRADUATES



REGULAR
SCOPE

ELECTRON
SCOPE

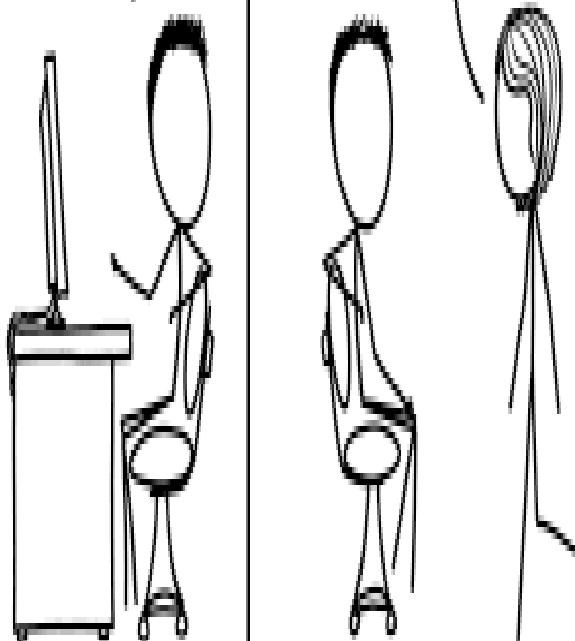
RADIO
SCOPE

MICRO	LOOK AT SMALL STUFF	LOOK AT REALLY SMALL STUFF	FIGURE OUT WHY YOUR RADIO BROKE
TELE	LOOK AT STUFF THAT'S FAR AWAY	DETECT COSMIC RAYS	LOOK AT DISTANT HIGH-ENERGY STUFF
PERI	LOOK FOR ENEMY SHIPS	EXAMINE THE HULL OF AN ENEMY SHIP FOR STRUCTURAL FLAWS	LET THE CREW OF YOUR SUBMARINE LISTEN TO NPR
STETHO	LISTEN TO A PATIENT'S CHEST	BURN A PATIENT'S SKIN	PLAY THE NOISES FROM A PATIENT'S CHEST ON NPR
KALEIDO	SEE COOL SHAPES AND COLORS	SEE COOL BREMSSTRAHLUNG	ANOTHER WORD FOR THE "SCAN" BUTTON
GYRO	BALANCE BY SPINNING	ANOTHER WORD FOR ELECTROMAGNET	ANOTHER WORD FOR TURNTABLE
HORO	GET RANDOM LIFE ADVICE	PREDICT A PARTICLE'S QUANTUM STATE	GET RANDOM LIFE ADVICE FROM EXPLODING GALAXIES

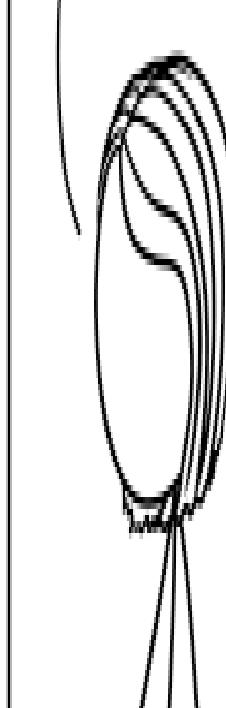
HEY SCULLY, HAVE YOU SEEN THESE NAVY UFO VIDEOS?

OH, THE HISTORY CHANNEL THING?

I DON'T KNOW ABOUT THE OTHER TWO VIDEOS, BUT IN ONE OF THEM, IF YOU TAKE THE ANGLES AND RANGES ON THE HUD AND DO A LITTLE GEOMETRY, IT KIND OF SUGGESTS THE OBJECT ISN'T REALLY MOVING. IT JUST LOOKS LIKE IT BECAUSE THE PLANE'S CAMERA IS PANNING.

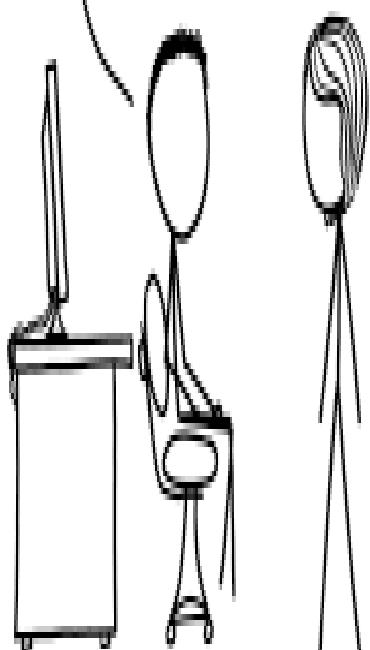


THE PILOTS GOT EXCITED FOR THE SAME REASON WE DID. THEN THE MEDIA GOT INTO IT.
BUT I THINK WHAT THEY SAW WAS A ROUND, WHITE OBJECT FLOATING AT 13,000 FEET.



SO YOUR THEORY IS THAT THE MILITARY CLAIMS TO HAVE FOOTAGE OF ALIENS, BUT YOU THINK IT'S A GIANT COVER-UP TO HIDE THAT IT'S A WEATHER BALLOON?

SOME KIND OF BALLOON, YES.
PRETTY WEIRD CONSPIRACY.
MAYBE THE SHADY FORCES THAT CONTROL THE WORLD JUST WANT TO BELIEVE, TOO.



DESIGNER WHAT THEY ARE RESPONSIBLE FOR

UI

ELEMENTS OF THE INTERFACE
THAT THE USER ENCOUNTERS

UX

THE USER'S EXPERIENCE OF USING
THE INTERFACE TO ACHIEVE GOALS

U2

THE PSYCHOLOGICAL ROOTS OF THE
USER'S MOTIVATION FOR SEEKING
OUT THE INTERACTION

Uα

THE USER'S SELF-ACTUALIZATION

UΩ

THE ARC OF THE USER'S LIFE

U∞

LIFE'S EXPERIENCE OF TIME

U○

THE ARC OF THE MORAL UNIVERSE

UNIVERSAL RATING SCALE

0

1

STRONGLY DISAGREE

F

★

EXTINCT

TALL

2

G

CRITICAL

:(

3

ENDANGERED

★★

PG

DISAGREE

VG

4

GRANDE

5

PG-13

:)

6

FOR TEEN

7

★★★

AGREE

VENTI

8

LEAST CONCERN

:D

A

STRONGLY AGREE

CATEGORY 5

EF-5

NC-17

UNIC

AA

★★★★

A+

S

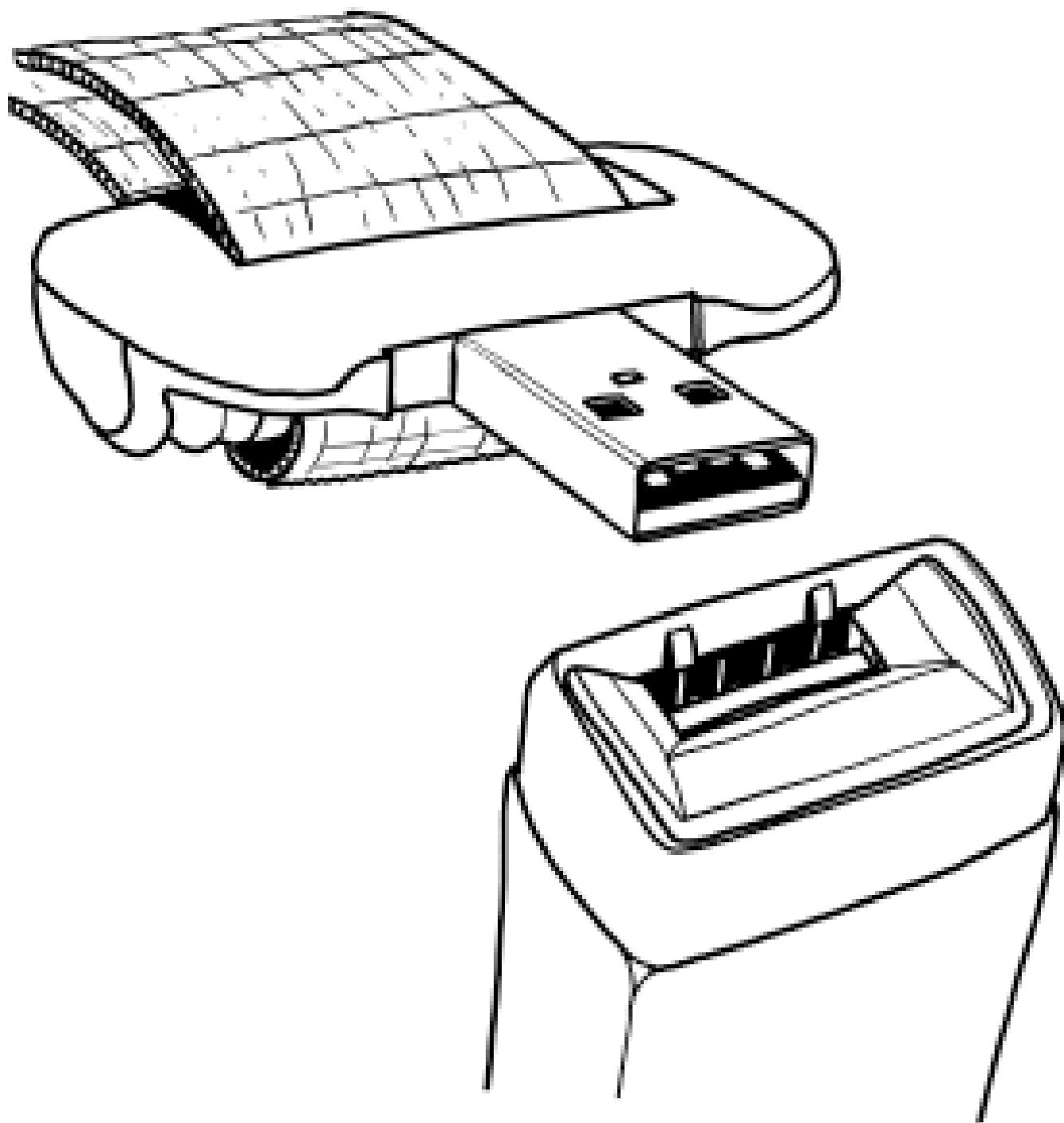
AAA

IO

IO.O

II

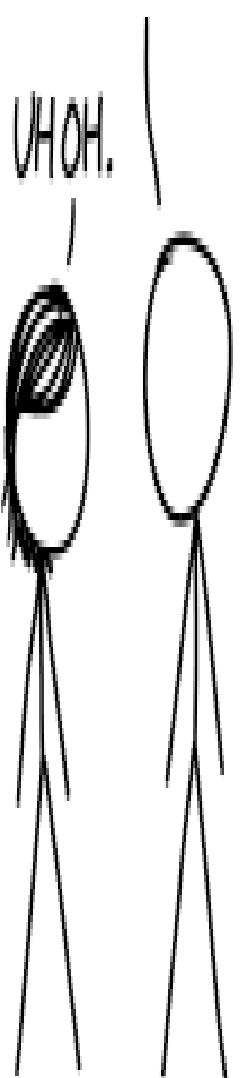
CURSED CONNECTORS #65



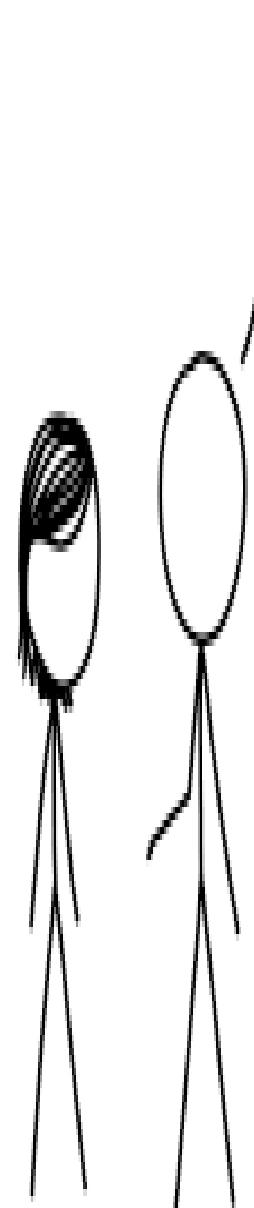
THE UNIVERSAL SEAT BELT

	UNIVERSE LITE™	UNIVERSE STANDARD®	UNIVERSE PRO®™
PRICE	FREE	\$14.95/MONTH	\$49.95/MONTH
ADS	YES	YES	NO
NUMBER OF ANGELS THAT CAN DANCE ON THE HEAD OF A PIN	4	64	4,096
FREE WILL OR DETERMINISM	DETERMINISM	FREE WILL	FREE WILL
COSMIC SPEED LIMIT	65 MPH	300,000 KM/s	UNLIMITED
IF A TREE FALLS IN A FOREST AND THERE'S NO ONE THERE TO HEAR...	NO SOUND	SIMPLE BEEP	FULL SOUND
MEANING OF LIFE	UNKNOWNABLE	UNCERTAIN	CLEARLY EXPLAINED
SOUND OF ONE HAND CLAPPING	[NONE]	[NONE]	KAZZAP!
AGING AND DEATH	MANDATORY	MANDATORY	OPT-IN
DOES GOD PLAY DICE WITH THE UNIVERSE?	YES, AND HE CHEATS	YES	NO
BAD THINGS...	HAPPEN TO GOOD PEOPLE ONLY	HAPPEN TO GOOD AND BAD PEOPLE	DON'T HAPPEN
WHAT HAPPENS TO THOSE WHO SOW THE WIND	REAP THE WHIRLWIND	REAP THE WHIRLWIND	LOTS OF CROPS EVERYWHERE

APPARENTLY SOME
UNIVERSITY REOPENED
BASED ON A COVID
MODEL DEVELOPED
BY TWO PHYSICISTS.



BUT EVEN THEIR WORST-CASE
MODEL UNDERESTIMATED THE
NUMBER OF STUDENT PARTIES
AND THEY HAD TO SHUT DOWN.



CAN'T UNDERSTAND WHY SOMEONE
WITH A PHYSICS DEGREE WOULD BE
BAD AT JUDGING HOW OFTEN COLLEGE
STUDENTS GET INVITED TO PARTIES.



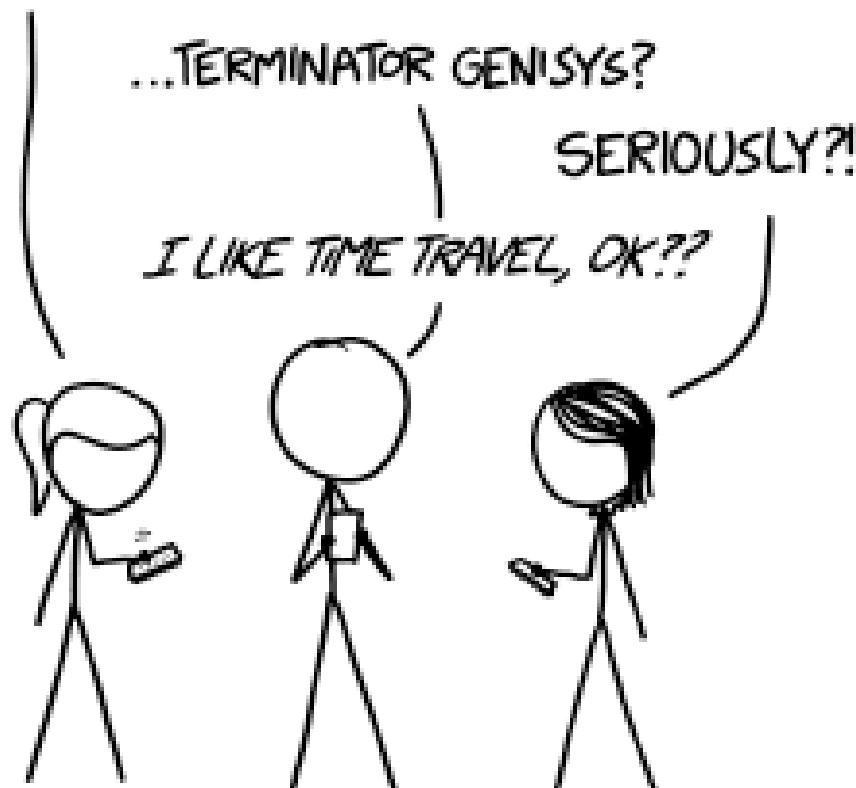
EXCUSE ME, I
WAS INVITED TO
MULTIPLE PARTIES,
AND ATTENDED
BOTH OF THEM!

UNPOPULAR POSITIVE OPINION CHALLENGE:

NAME A MOVIE THAT...

- (1) YOU GENUINELY LIKE (NOT "SO BAD IT'S GOOD")
- (2) CAME OUT IN YOUR ADULT LIFE POST-2000, AND
- (3) IS RATED BELOW 50% ON ROTTEN TOMATOES.

WOW, THIS IS HARDER
THAN I THOUGHT.



WHEN PEOPLE TALK ABOUT THEIR "UNPOPULAR OPINIONS" ABOUT MOVIES, THEY USUALLY MEAN HATING SOMETHING EVERYONE LIKES, BUT LIKING SOMETHING EVERYONE HATES IS MUCH HARDER.

⚠ ERROR

IF YOU'RE SEEING THIS, THE CODE IS IN WHAT I THOUGHT WAS AN UNREACHABLE STATE.

I COULD GIVE YOU ADVICE FOR WHAT TO DO. BUT HONESTLY, WHY SHOULD YOU TRUST ME? I CLEARLY SCREWED THIS UP. I'M WRITING A MESSAGE THAT SHOULD NEVER APPEAR, YET I KNOW IT WILL PROBABLY APPEAR SOMEDAY.

ON A DEEP LEVEL, I KNOW I'M NOT UP TO THIS TASK. I'M SO SORRY.

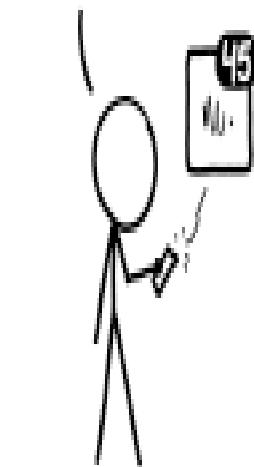
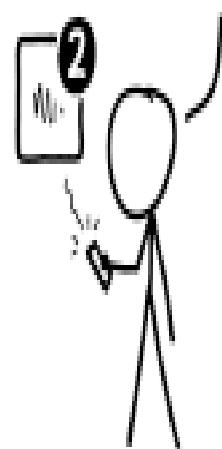


NEVER WRITE ERROR MESSAGES TIRED.

↑ PERCENTAGE OF RECEIVED
MESSAGES IN THE SERVICE
THAT ARE MARKED UNREAD

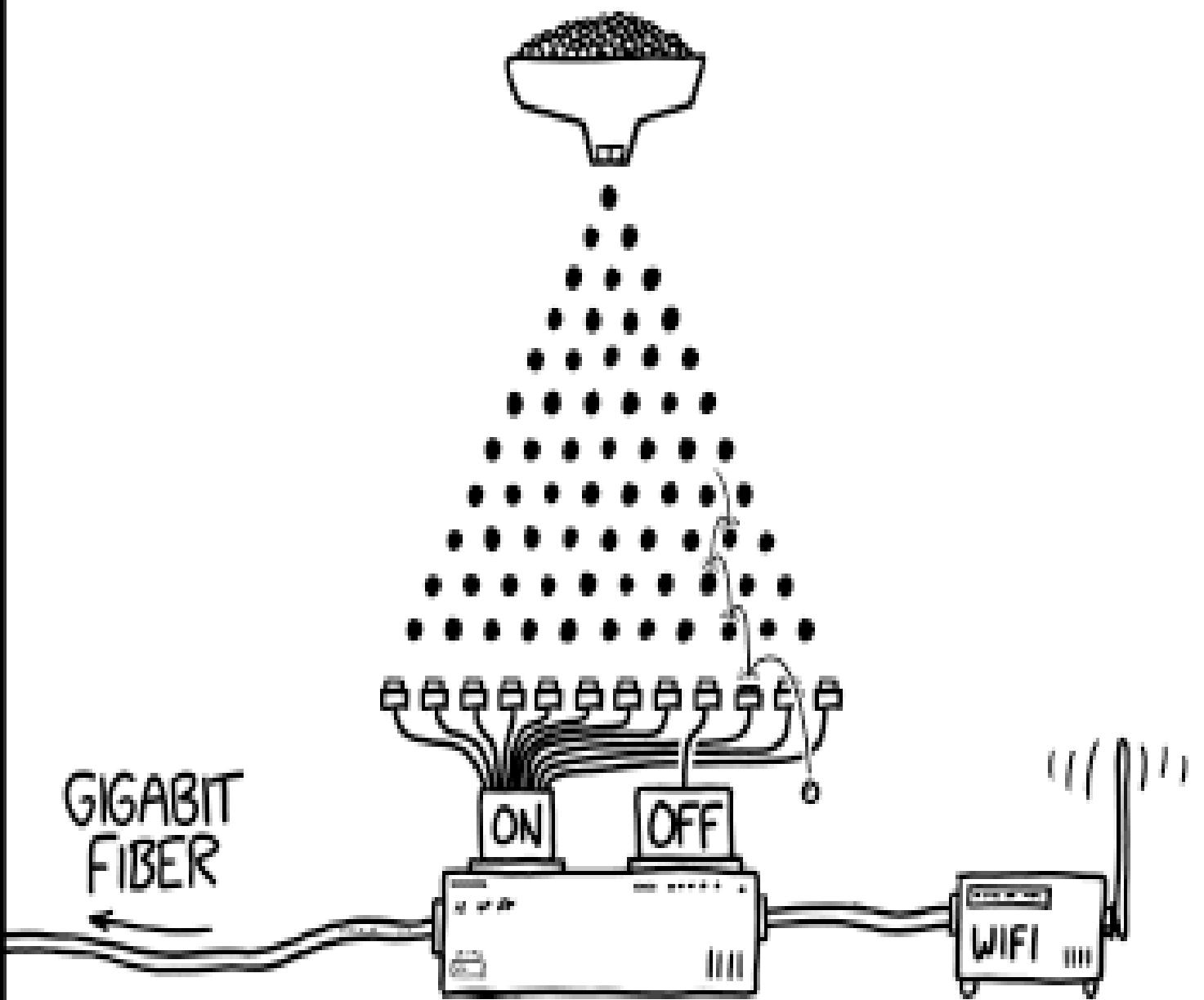
OH HEY,
TWO NEW
MESSAGES!

UGH, GOTTA TAKE
SOME TIME TO GO
THROUGH THESE.



TIME →

ANOTHER WAY EVERY SYSTEM EVENTUALLY BECOMES EMAIL



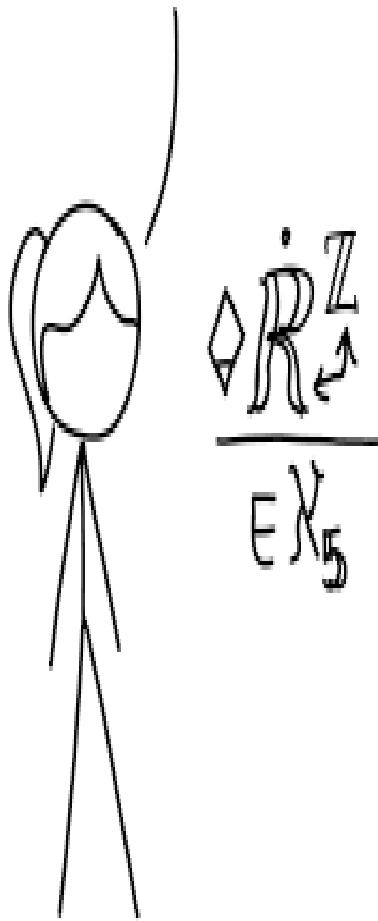
MY NEW VACATION SPOT HAS VERY FAST INTERNET
THAT TURNS OFF RANDOMLY EVERY NOW AND THEN,
JUST SO YOU CAN TELL PEOPLE YOU'LL BE STAYING
SOMEWHERE WITHOUT A RELIABLE CONNECTION.

THE THREE TYPES OF UNSOLVED MATH PROBLEM

WEIRDLY ABSTRACT

IS THE EULER FIELD MANIFOLD HYPERGROUP ISOMORPHIC TO A GÖDEL-KLEIN META-ALGEBRAIC E \in O QUASIMONOID CONJECTURE UNDER SONDHEIM CALCULUS?

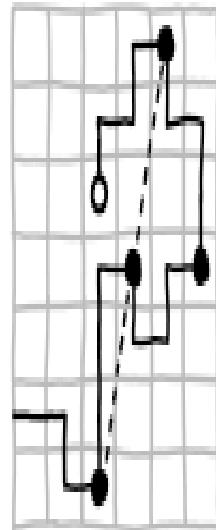
OR IS THE QUESTION ILL-FORMED?



WEIRDLY CONCRETE

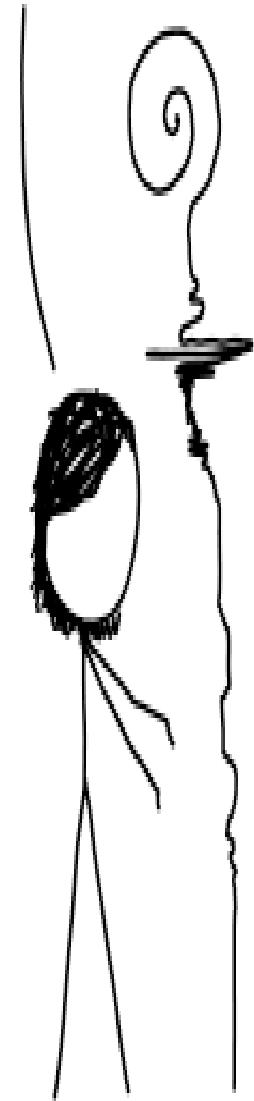
IF I WALK RANDOMLY ON A GRID, NEVER VISITING ANY SQUARE TWICE, PLACING A MARBLE EVERY N STEPS, ON AVERAGE HOW MANY MARBLES WILL BE IN THE LONGEST LINE AFTER $N \times K$ STEPS?

SOMEHOW THE ANSWER IS IMPORTANT
IN LIKE THREE UNRELATED FIELDS.



CURSED

WHAT IN GOD'S NAME IS GOING ON WITH THIS CURVE? IS IT EVEN MATH?



CHOOSING THE RIGHT EMOTIONAL TONE FOR YOUR UNSUBSCRIBE MESSAGE

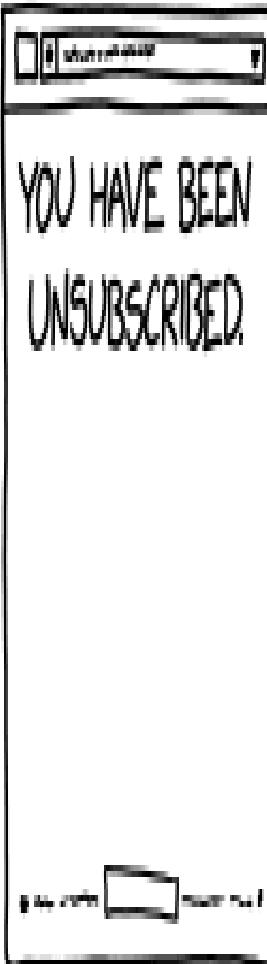
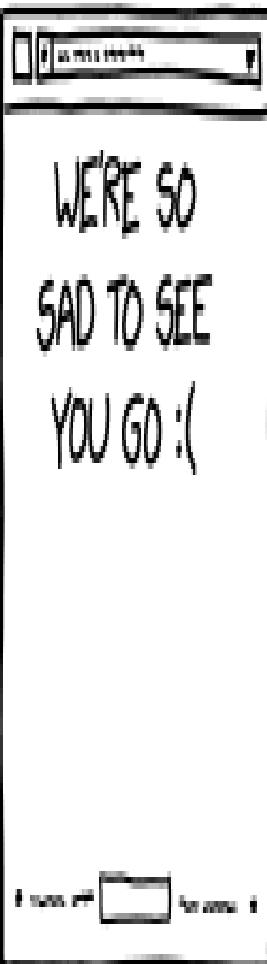
VERY NEGATIVE

NEGATIVE

NEUTRAL

POSITIVE

VERY POSITIVE



XXX

VERY BAD

X

NOT GREAT

✓

PERFECT

✓

A LITTLE WEIRD

XXX

VERY BAD

DO YOU STILL LIVE
AT 342 RIVER ST?

NO, I MOVED
LAST YEAR.

IS 21 ASH TREE LANE
STILL A GOOD ADDRESS?

WHAT? THAT'S MY
CHILDHOOD HOME.
HOW IS THAT EVEN
IN YOUR SYSTEM?

THE ADDRESS WE HAVE
IS 205 SECOND ST #2.

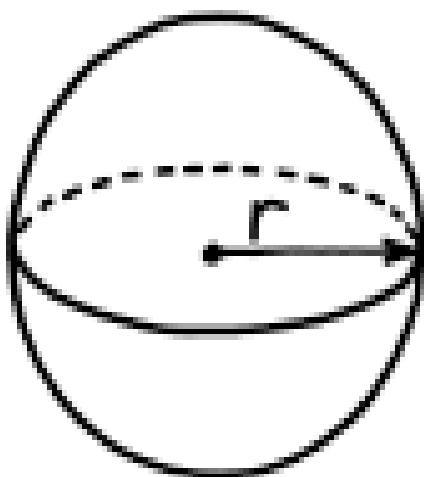
I...THINK THAT'S WHERE
MY PARENTS LIVED
BEFORE I WAS BORN!?

ARE YOU STILL LIVING IN "THE
AUSTRO-HUNGARIAN EMPIRE?"

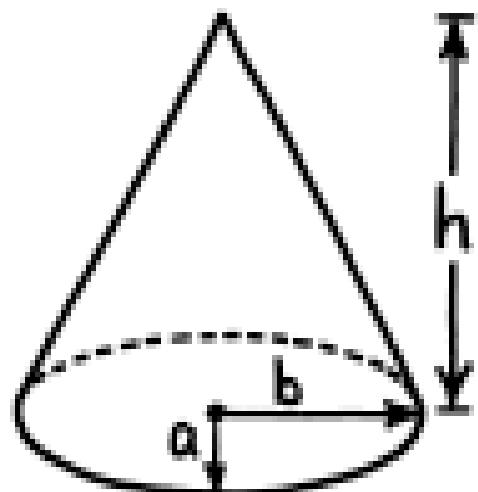
YOU KNOW WHAT, SURE.
AUSTRIA-HUNGARY
DISSOLVED IN 1918.

WELL, I COME FROM A
LONG LINE OF PEOPLE WHO
HATE UPDATING STUFF.

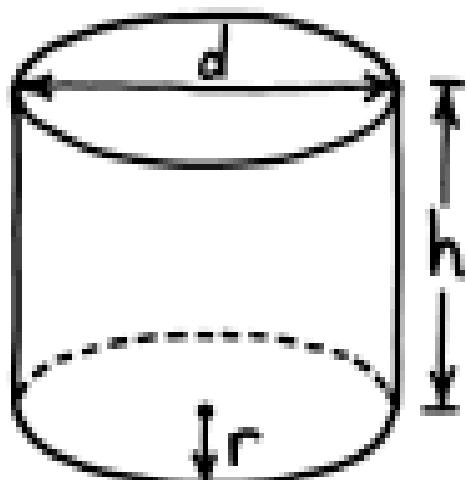
USEFUL GEOMETRY FORMULAS



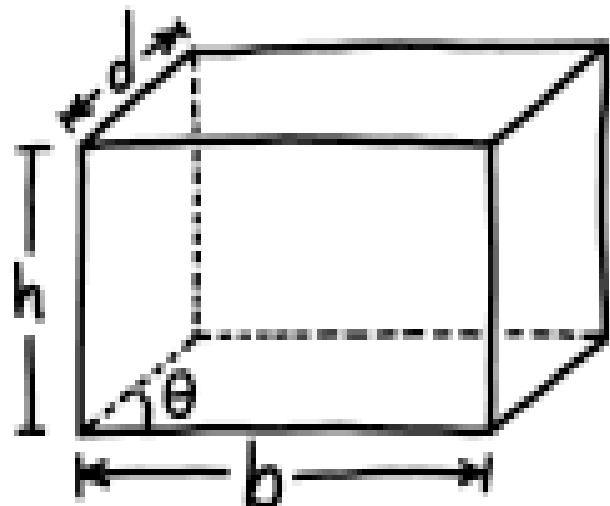
$$A = \pi r^2$$



$$A = \frac{1}{2}\pi ab + bh$$



$$A = d\left(\frac{\pi r}{2} + h\right)$$



$$A = bh + d(b \sin \theta + h \cos \theta)$$

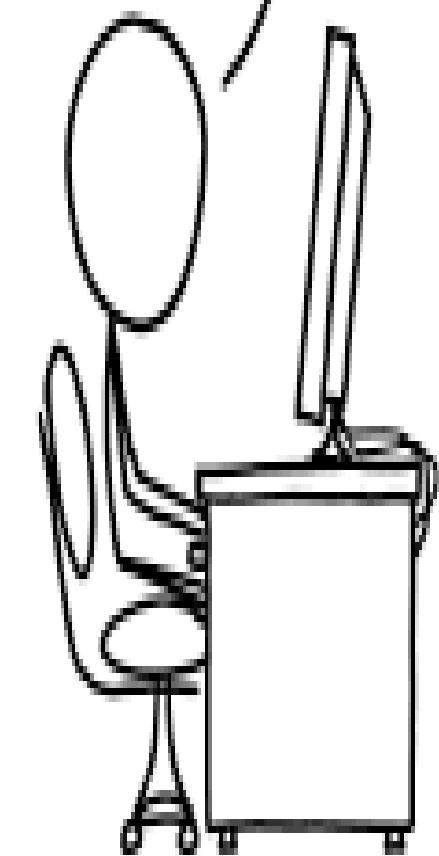
THESE EMERGENCY
FLARE GUNS ARE
ABOUT TO EXPIRE.

I FORGOT WE
HAD THOSE



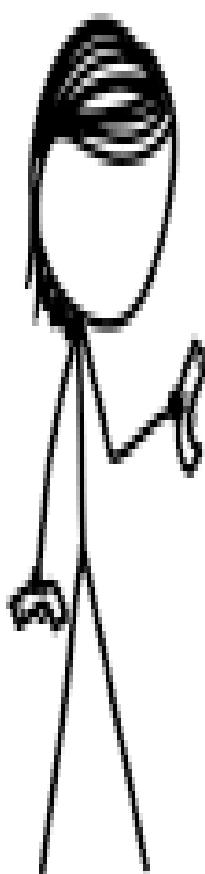
THIS ONE SAYS
"USE OR DISCARD
BY APR 25 2020."

OKAY...

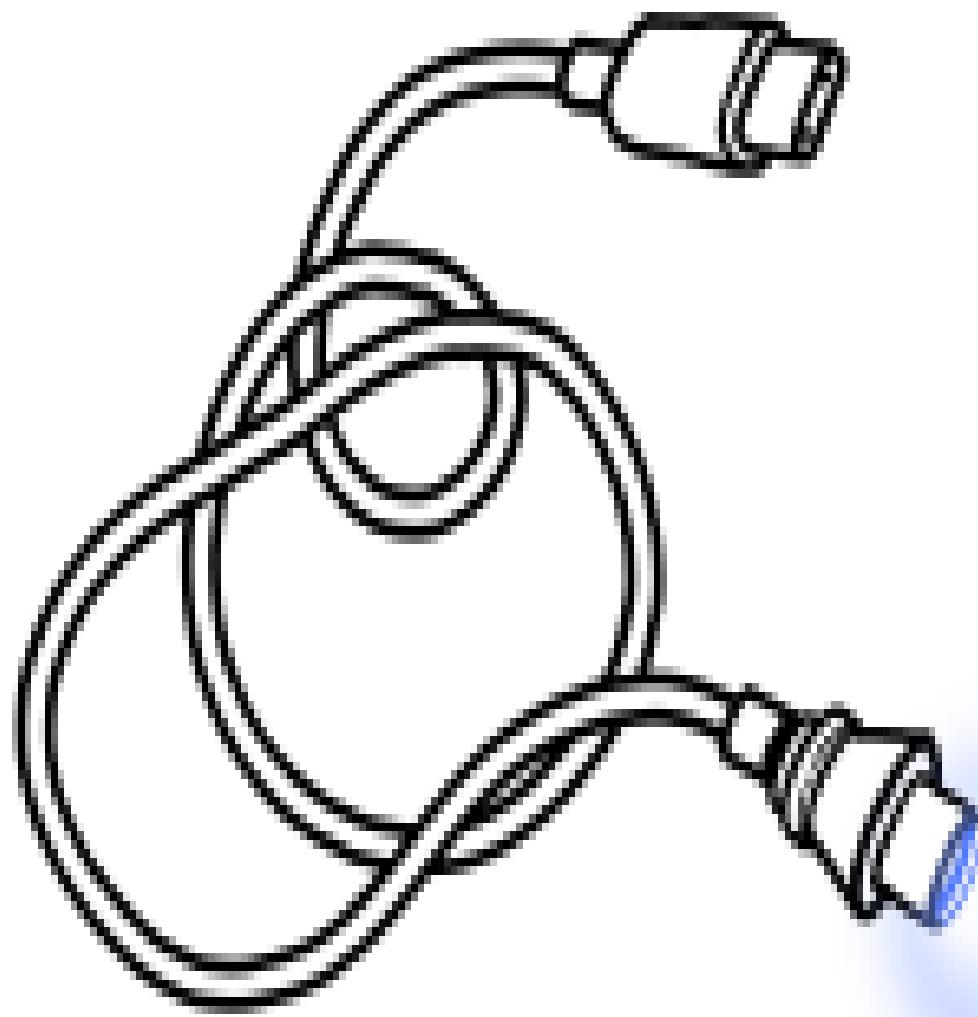


BUT THIS ONE
JUST SAYS
"USE BY"...

NO.



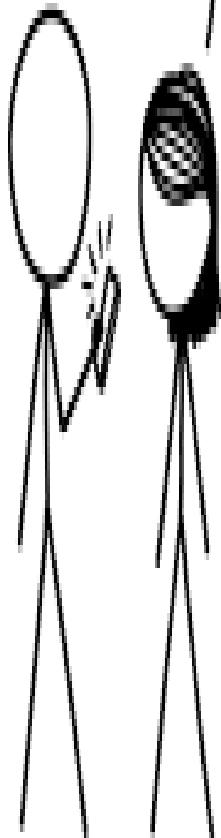
CURSED CONNECTORS #280



USB-C TO UV-C

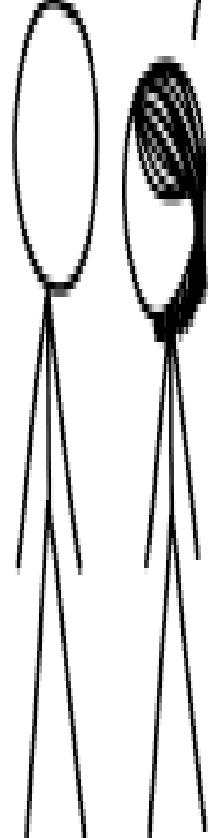
IT'S OFFICIAL:
WE'RE FULLY
VACCINATED.

IT DOESN'T
FEEL REAL.



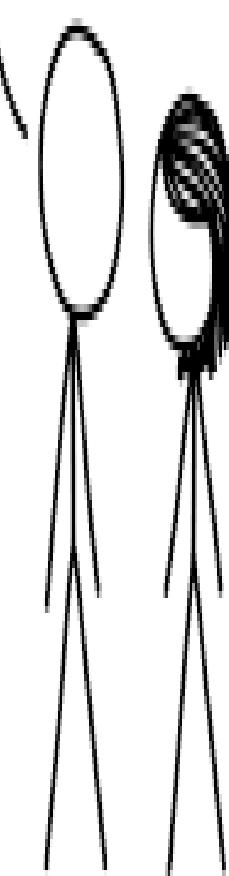
I CAN'T WAIT TO
HANG OUT WITH
FRIENDS AGAIN.

SERIOUSLY.



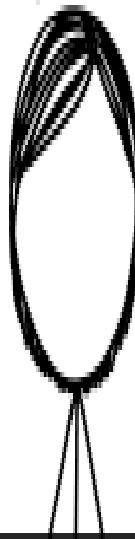
SO, OH... HOW DO WE...

I WAS HOPING YOU KNEW.
I'M REALIZING NOW,
I WAS HAZY ON THIS
BEFORE THE PANDEMIC.



OUR NEW GUIDANCE:
FULLY VACCINATED
PEOPLE CAN GATHER
PRIVATELY WITH NO
MASKS OR DISTANCING,
AND CAN VISIT WITH
UNVACCINATED LOW-
RISK PEOPLE IN ONE
HOUSEHOLD.

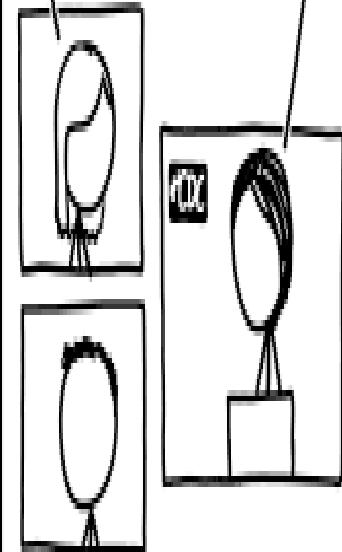
ANY QUESTIONS?



IF MY NEIGHBORS AND I
ARE ALL VACCINATED,
CAN I VISIT THEM
UNMASKED AND DRINK
MILK DIRECTLY FROM THE
JUG IN THEIR FRIDGE?

I... YOU CAN VISIT, YES.
AND THE JUG THING?

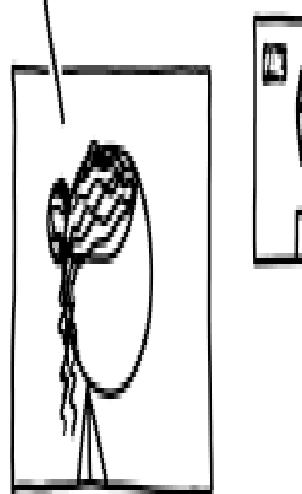
...NEXT QUESTION?



IM FULLY VACCINATED.
CAN I RIDE MY BIKE IN MY
SISTER-IN-LAW'S HOUSE?
IN HER HOUSE?
LIKE, DOWN THE STAIRS.

I GUESS? YOU SHOULD AT
LEAST WEAR A HELMET.
EVEN IF SHE'S
NOT HIGH-RISK?

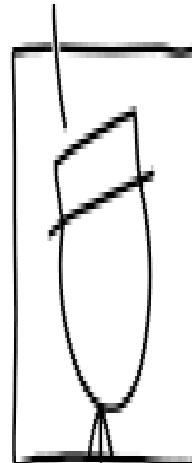
ANY OTHER QUESTIONS?



IM TWO WEEKS PAST
MY SECOND DOSE.
CAN I GET A HORSE?

THANK YOU ALL
FOR COMING.

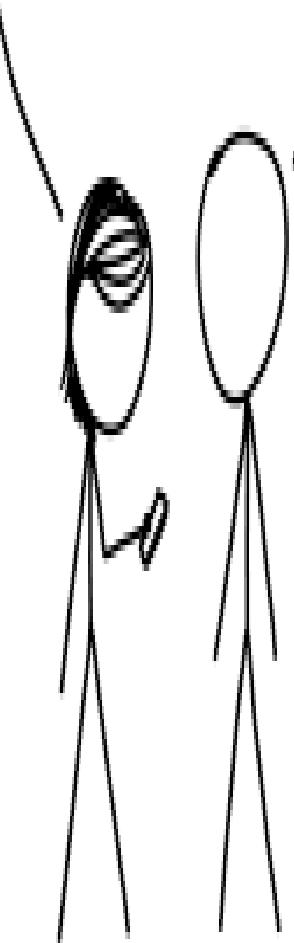
WHAT IF I
WEAR A MASK?
WHAT IF THE
HORSE DOES?



MEETING ENDED
BY HOST

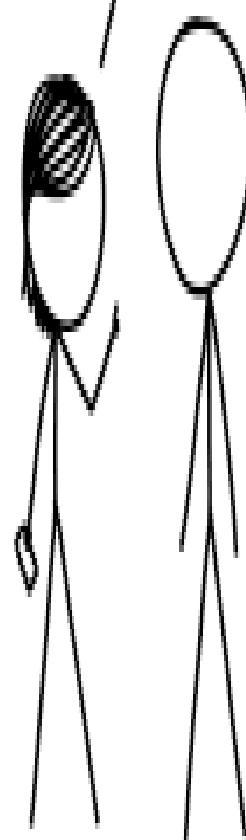
THE CDC SAYS IT'S OKAY TO MIX
AND MATCH THE mRNA VACCINES
FOR DOSES 1 AND 2, BUT ONLY IN
"EXCEPTIONAL SITUATIONS."

I WONDER WHICH ORDER
WORKS BETTER, IF EITHER.



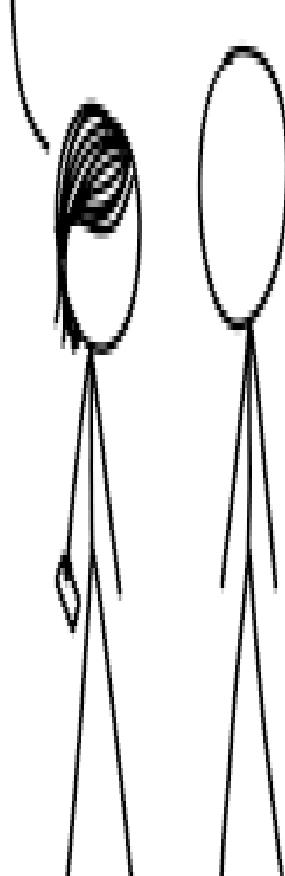
WELL, YOU KNOW
WHAT THEY SAY.

MODERNA BEFORE
PFIZER, YOU'LL BE
NONE THE WISER.



PFIZER BEFORE MODERNA, THEN
YOU'LL... RULE ANCIENT SMYRNA.

WERD SIDE EFFECT.
A LOT OF HARD-
TO-RHYME DRUGS
HAVE THOSE.



I'VE BEEN HEARING
ABOUT VACCINES.

BUT I DECIDED TO DO
MY OWN RESEARCH.

SO I SPENT MONTHS ON
THE INTERNET READING
HUNDREDS OF STUDIES.

AND WOW,
I GOTTA SAY,
THESE
VACCINES ARE
PRETTY GOOD.

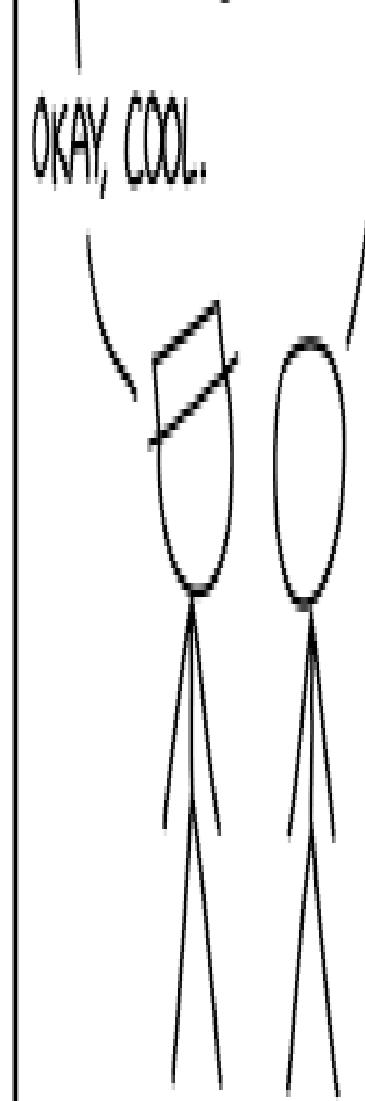
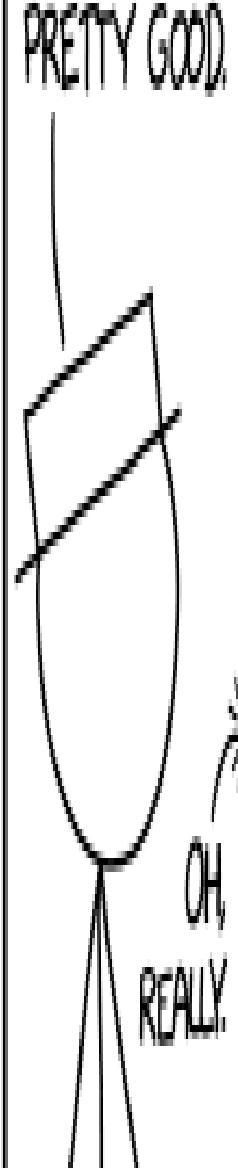
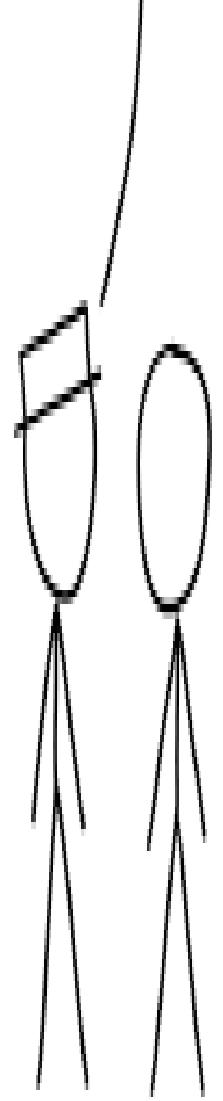
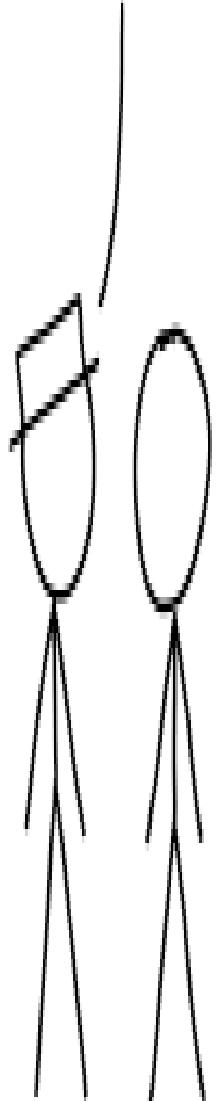
YEAH, SEEMS LIKE IT'D BE GREAT
IF LOTS OF PEOPLE GOT THEM.

IS ANYONE WORKING ON THAT?

THERE'S BEEN SOME EFFORT.

OKAY, COOL.

OH
REALLY



WHAT ARE YOU UP TO?

YOU KNOW HOW WHEN I HAVE A PACKAGE COMING, I SIT HERE REFRESHING THE PACKAGE TRACKER?

IS THAT THE STATE VACCINE WEBSITE?

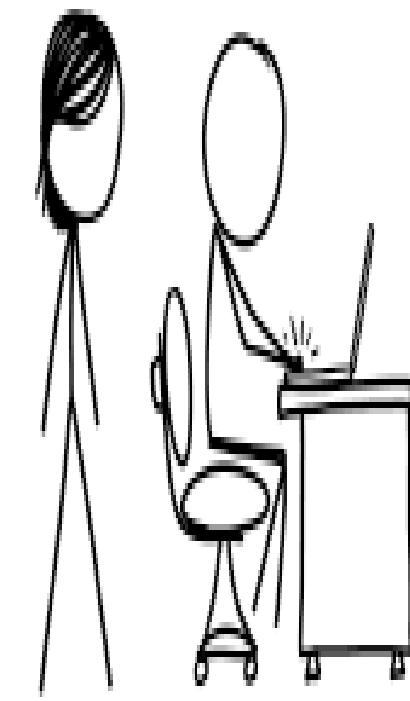


YOU KNOW IT WILL BE A WHILE BEFORE YOU CAN-

REFRESH

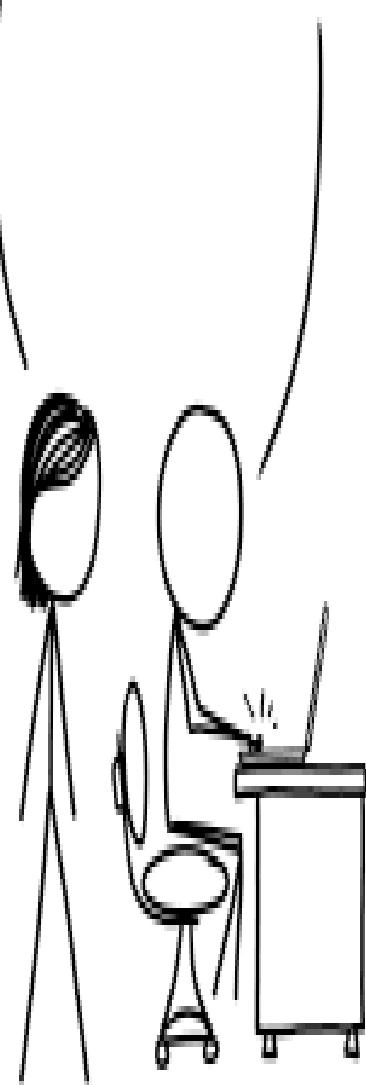
THEY HAVEN'T EVEN ANNOUNCED WHEN-

REFRESH



ARE YOU GOING TO SIT THERE CLICKING REFRESH FOR SEVERAL MONTHS?

I AM READY FOR THE PANDEMIC TO BE DONE.



KRAMER

KRAMER

FORD

FERRARI

THE PEOPLE

LARRY FLYNT

JOE

THE VOLCANO

KING KONG

GODZILLA

FREDDY

JASON

DRACULA

FRANKENSTEIN

ALIEN

PREDATOR

MARVEL

CAPCOM

MARGE

THE MONORAIL

JUSTICE LEAGUE

TEEN TITANS

ASTERIX

CAESAR

BATMAN

SUPERMAN

SCOTT PILGRIM

THE WORLD

MEGA SHARK

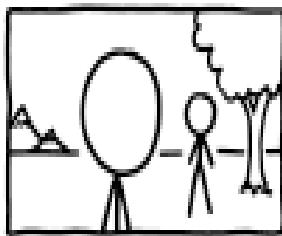
GIANT OCTOPUS

PLANTS

ZOMBIES

VIDEO ORIENTATION

HORIZONTAL



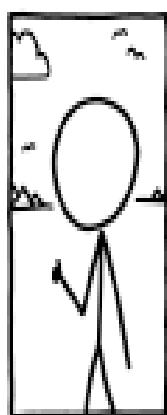
PROS

- LOOKS NORMAL TO OLD PEOPLE
- FORMAT USED BY A CENTURY OF CINEMA

CONS

- HUMANS ARE TALLER THAN THEY ARE WIDE
- I'M NOT TURNING MY PHONE SIDEWAYS

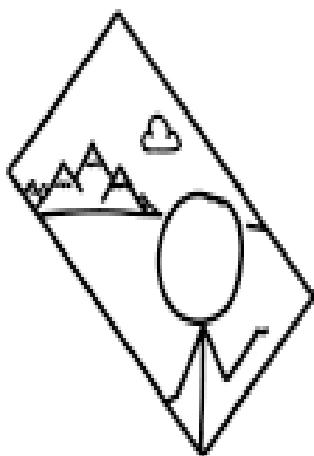
VERTICAL



- HOW MOST NORMAL PEOPLE SHOOT AND WATCH VIDEO NOW SO WE MAY AS WELL ACCEPT IT

- HUMAN WORLD IS MOSTLY A HORIZONTAL PLANE

DIAGONAL



- BOLD AND DYNAMIC
- EQUALLY ANNOYING TO ALL VIEWERS
- GOOD COMPROMISE

- NONE

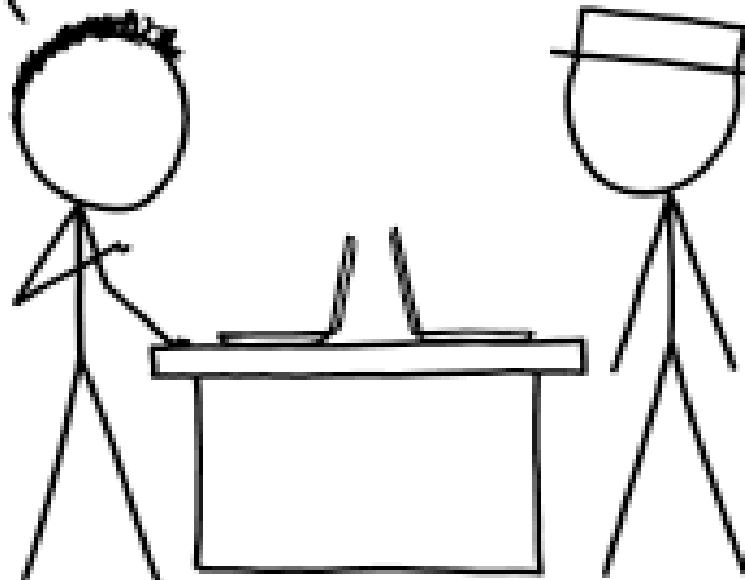
HERE'S MY PLAN: WE START A VIRAL QUIZ
TO TRICK PEOPLE INTO POSTING THE NAME
OF THE STREET THEY LIVED ON AS A KID.
THEN WE USE IT TO STEAL THEIR IDENTITY!

OKAY.

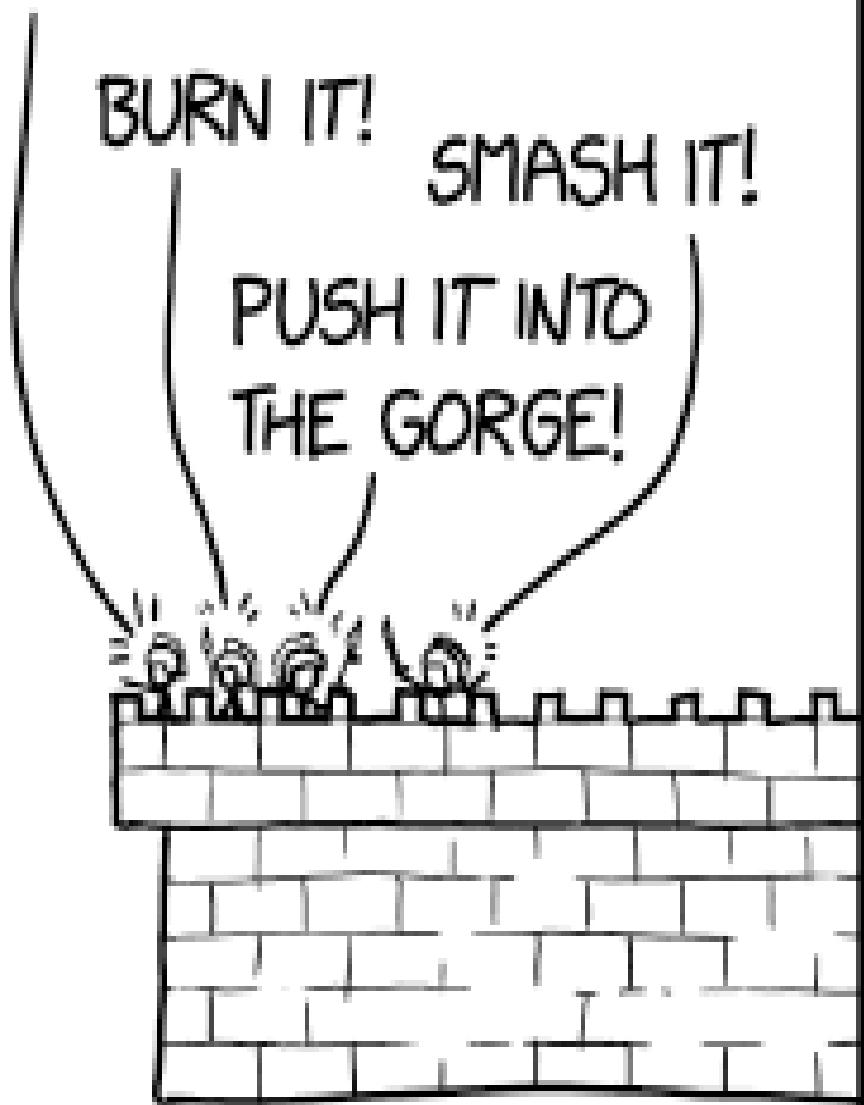
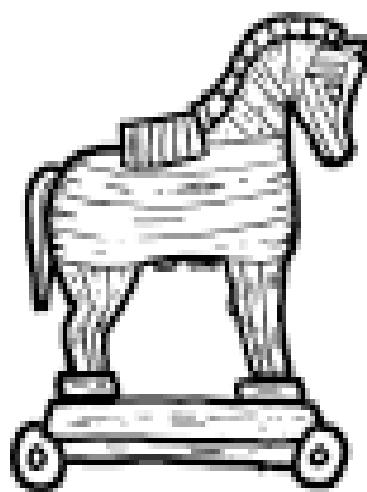
JUST CHECKING, YOU KNOW VOTER
FILES AND MORTGAGES AND STUFF
ARE MOSTLY PUBLIC RECORDS, RIGHT?

HUH? WHAT ARE YOU TALKING ABOUT?

...NOTHING. WE CAN DO YOUR THING.



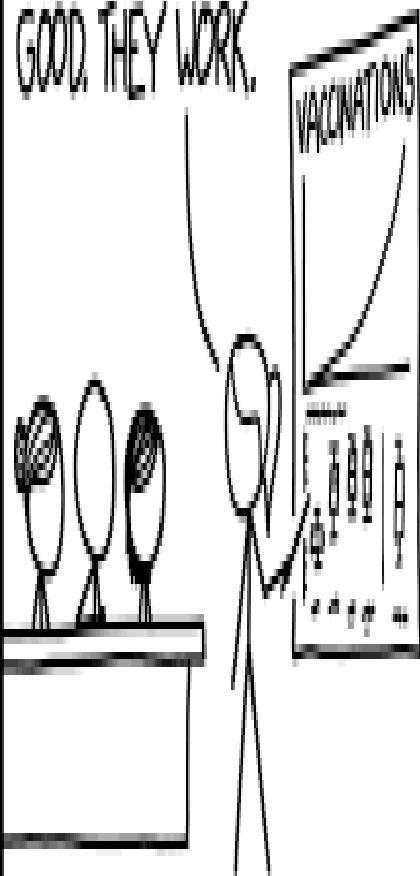
LOOK! IT'S A STATUE OF
THAT HORRIBLE ANIMAL
THAT TRAMPLED STEVE!



HOW VACCINE FAILURE DUE TO VIRAL VECTOR IMMUNITY WORKS

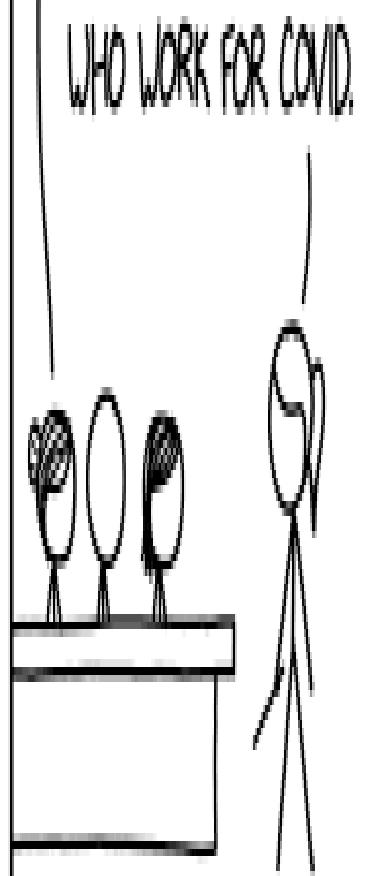
NOW, I KNOW YOU'RE WORRIED
ABOUT THE VARIANTS, BUT THIS
GRAPH SHOULD BE ENCOURAGING.

YOUR ROLLOUT IS GOING
WELL. THE VACCINES ARE
GOOD. THEY WORK.



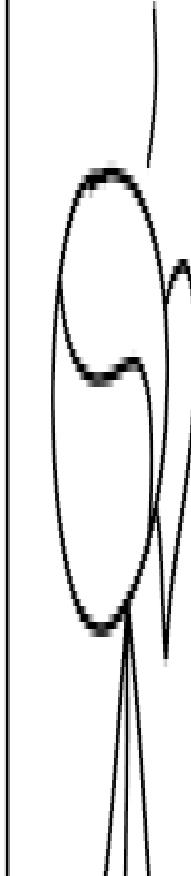
YOU'RE JUST TELLING US
WHAT WE WANT TO HEAR.

IF YOU THINK THAT, YOU
SHOULD SEE THE REPORTS
FROM MY COLLEAGUES
WHO WORK FOR COVID.



THEY WORK
FOR WHO?

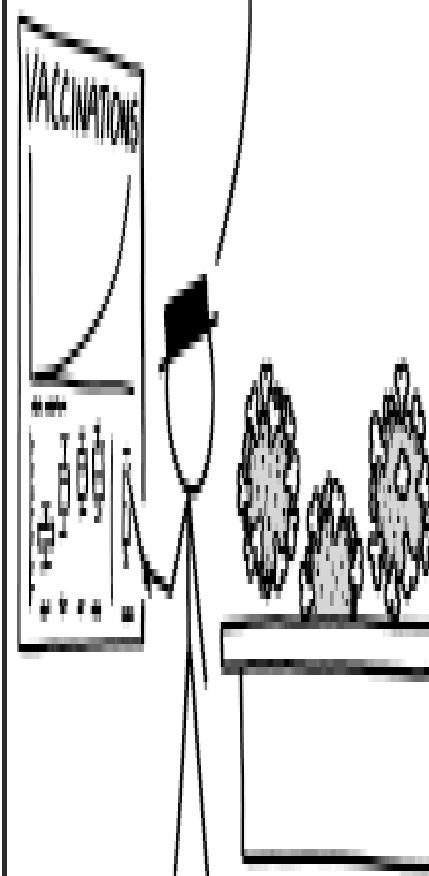
OUR FIRM
HAS LOTS
OF CLIENTS.



MEANWHILE...

NOW, I KNOW YOU'RE EXCITED
ABOUT THE VARIANTS, BUT THIS
GRAPH SHOULD BE TERRIFYING.

WE'RE IN REAL TROUBLE HERE.

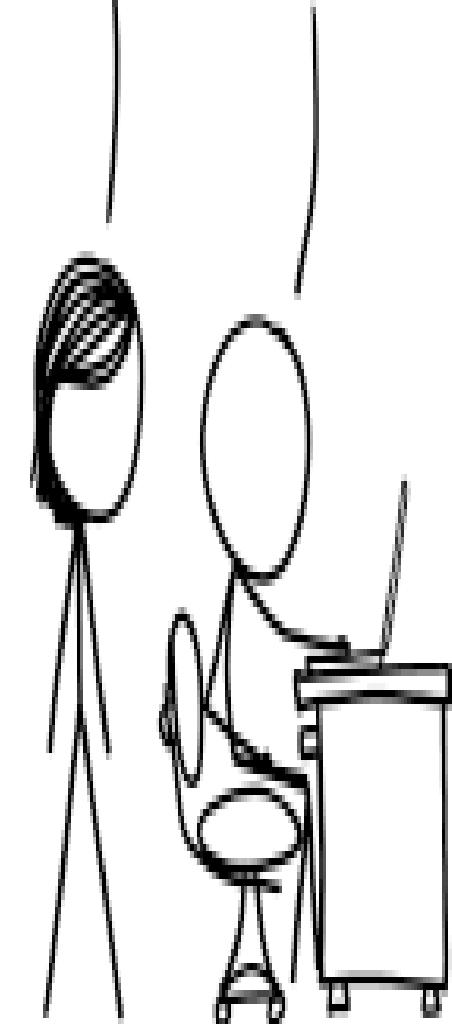


OH COOL, THEY JUST
FOUND A DINOSAUR
THAT WAS BURIED BY A
VOLCANIC ERUPTION 125
MILLION YEARS AGO.



WAS IT OKAY?

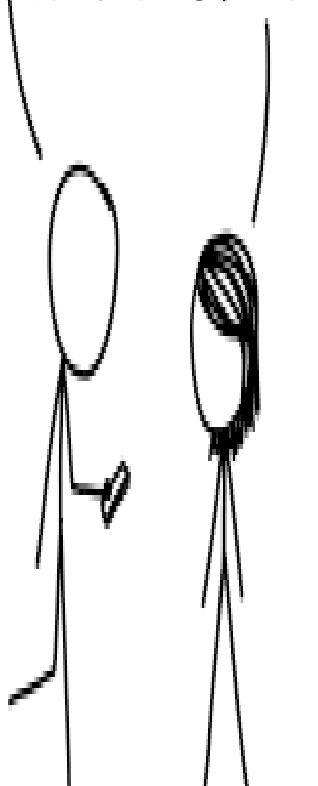
HMM, IT
DOESN'T SAY.



I WILL CRAWL ACROSS
BROKEN GLASS TO VOTE
THIS YEAR IF I HAVE TO.

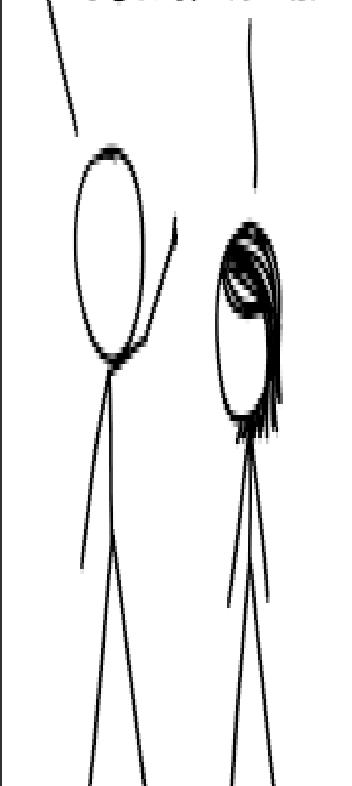
...WHY WOULD THERE
BE BROKEN GLASS?

THERE AREN'T EVEN
ANY BIG WINDOWS AT
OUR POLLING PLACE.



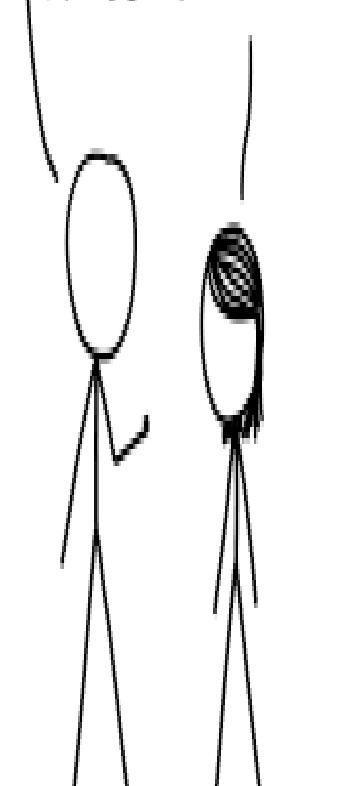
I WILL WAIT IN LINE TILL
THE SUN BURNS OUT.

OK, SOME PLACES HAVE
LINES, WHICH IS AWFUL,
BUT IT'S USUALLY
PRETTY QUICK HERE?
DEFINITELY NOT
5 BILLION YEARS.



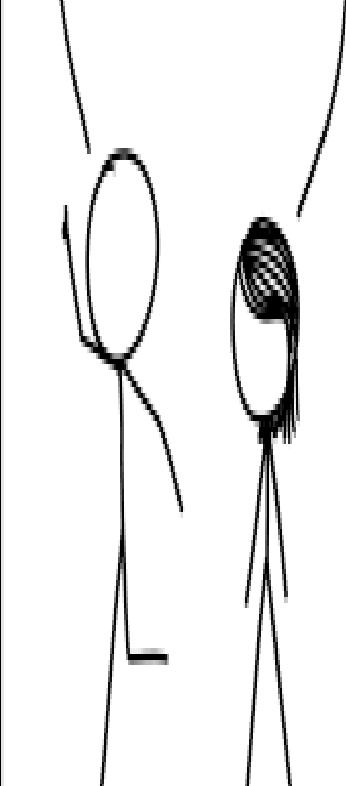
I WILL WALK BAREFOOT
ACROSS HOT COALS TO
CAST MY BALLOT!

WHERE WOULD YOU
EVEN FIND COALS?
YOU CAN WEAR SHOES
TO VOTE. THIS SCENARIO
MAKES NO SENSE.



I WILL SWIM ACROSS A
SHARK-FILLED CHANNEL!

THAT'LL TAKE YOU WAY
OUTSIDE OUR PRECINCT.
THEN I'LL SWIM BACK!
CAN YOU DO ALL THIS
STUFF AFTER VOTING?



WHICH VOTING SYSTEM SHOULD WE USE?

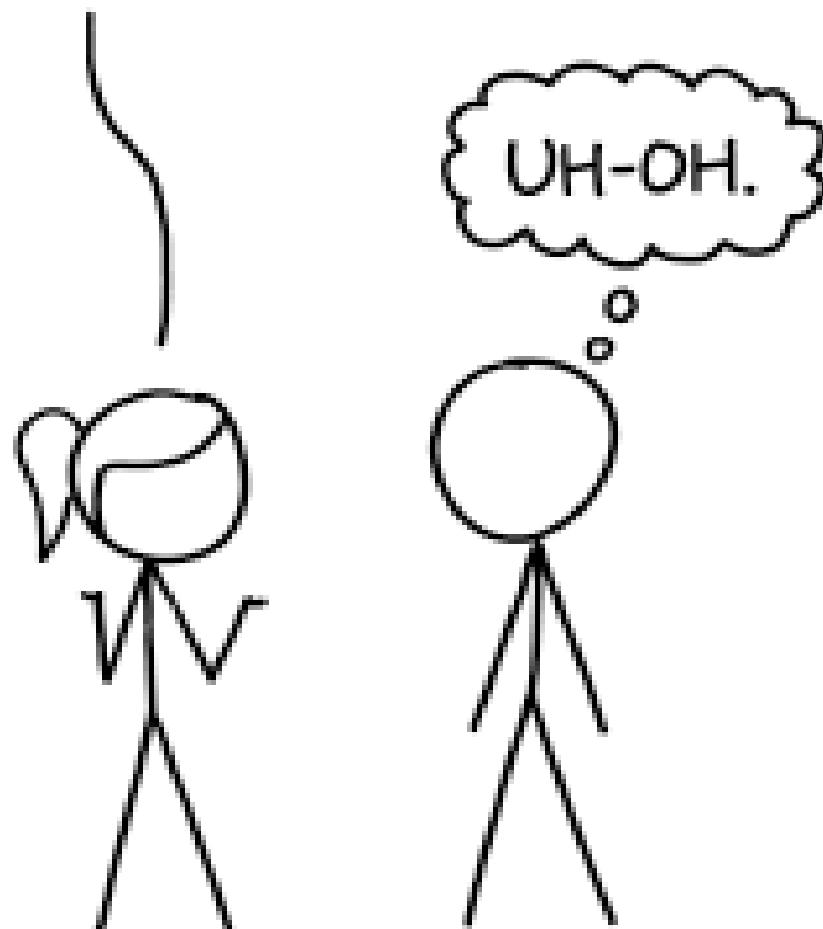
- FIRST PAST THE POST
- TOP-TWO PRIMARY
- LOUISIANA PRIMARY
- CUMULATIVE VOTING
- APPROVAL VOTING
- MULTIPLE NON-TRANSFERRABLE VOTE
- [3] INSTANT RUNOFF VOTING
- [1] SINGLE TRANSFERRABLE VOTE
- [2] BORDA COUNT
-, RANGE VOTING

THE REFERENDUM WENT WELL, BUT WE CAN'T
FIGURE OUT HOW TO COUNT THE BALLOTS.



SAD NEWS: DUE TO HIGH COPPER PRICES AND BUDGET CONSTRAINTS,
NASA MAY FINALLY HAVE TO CUT THE WIRES THAT THEY'VE BEEN
SPOOLING OUT TO COMMUNICATE WITH VOYAGER 1 AND 2.

LISTEN, I'M ALL IN FAVOR OF REDUCING CAR ACCIDENTS, I THINK ARSON IS A SERIOUS CRIME, AND I'M A BIG FAN OF THOSE "NO ANIMALS WERE HARMED" DISCLAIMERS AT THE END OF MOVIES...

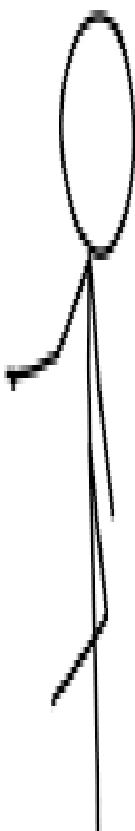


THE LONGER YOU HAVE TO WAIT FOR THE "BUT," THE WORSE WHATEVER COMES AFTER IT IS GOING TO BE.

I WROTE A SCRIPT TO
AUTOMATE THAT THING.

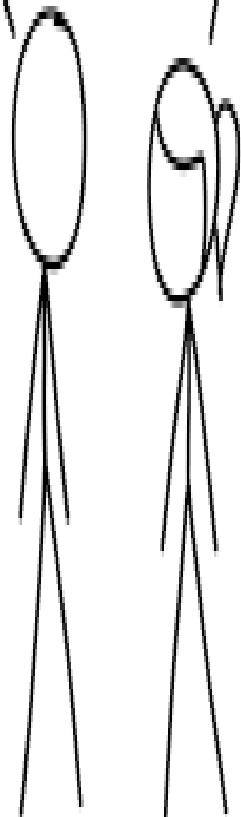
OH, COOL!
... WAIT, YOU
WROTE IT?

OH NO.



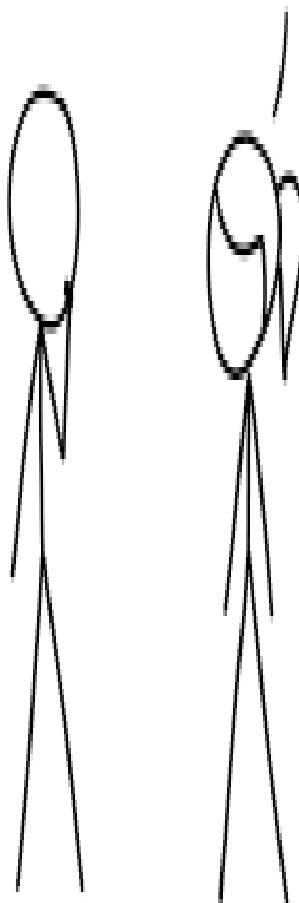
WANNA SEE THE CODE?

I WOULD, IF YOU HADN'T
SAID THAT IN THE TONE
OF VOICE OF "WANNA
SEE A DEAD BODY?"



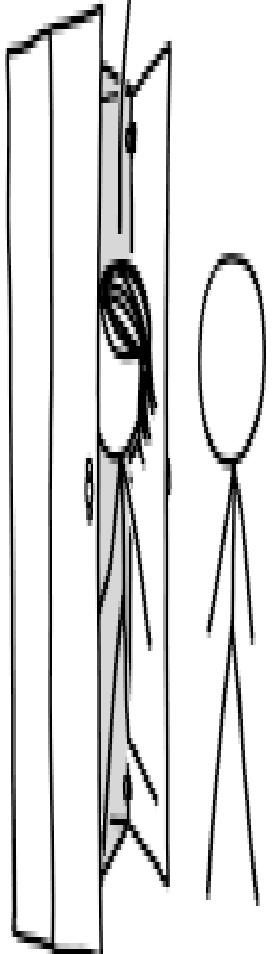
MY CODE IS SORT OF SIMILAR TO A DEAD BODY, IN
THAT YOU CAN EITHER COME LOOK AT IT NOW, OR
WAIT A FEW WEEKS UNTIL IT BECOMES A PROBLEM.

AND BECAUSE YOU'RE LUCKY THAT THE
PEOPLE AROUND YOU UNDERSTAND THAT THEY
CREATE MORE PROBLEMS THAN THEY SOLVE.



I'LL GO ASK.

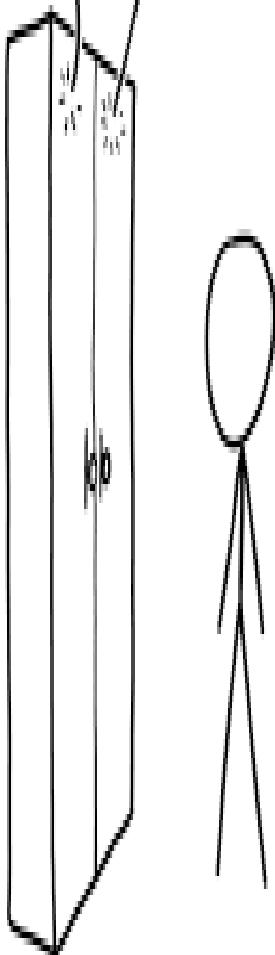
YOU WAIT HERE.



HALT! WHO
GOES THERE?

HEY TUMNUS.
QUICK QUESTION.

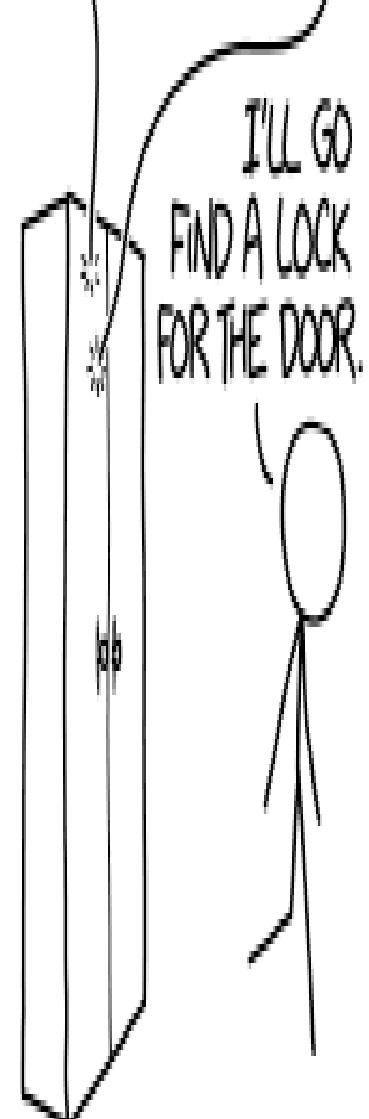
YES?



IS NARNIA IN THE EU?

YES, WE JOINED
AFTER YOU DID.

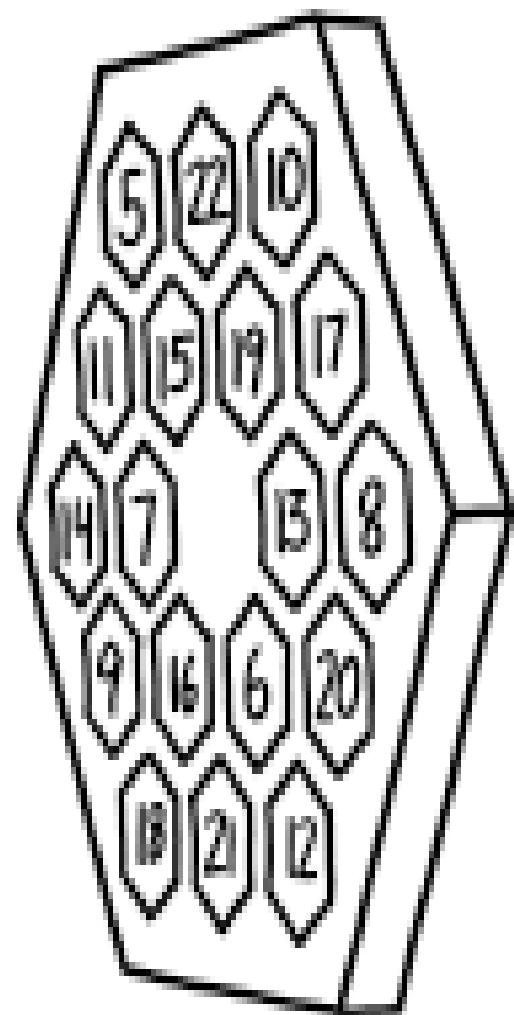
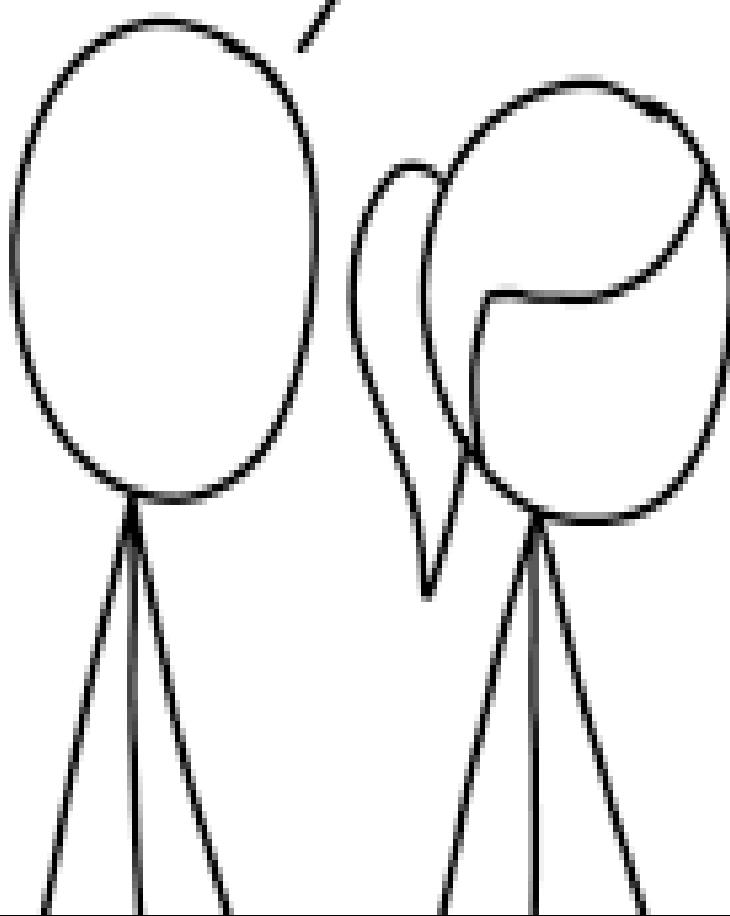
OH GREAT, ANOTHER
BORDER TO DEAL WITH.



I'LL GO
FIND A LOCK
FOR THE DOOR.

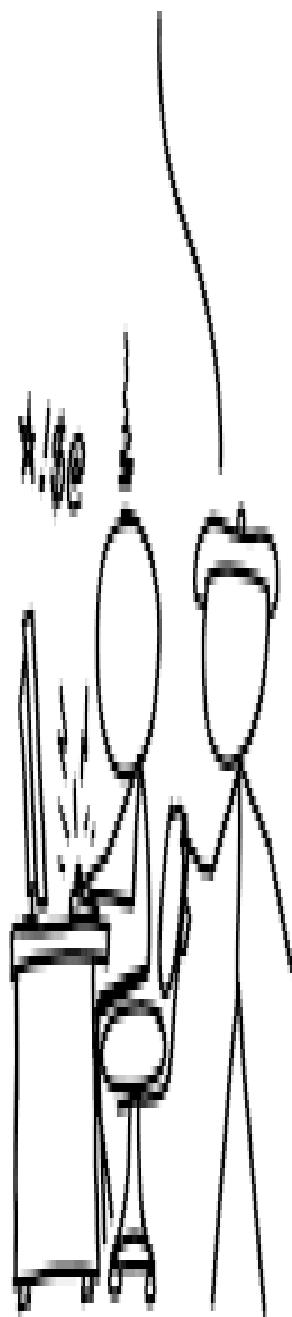
THE HEXAGONS ARE NICE.

BUT WHY DOES IT END AT 22?

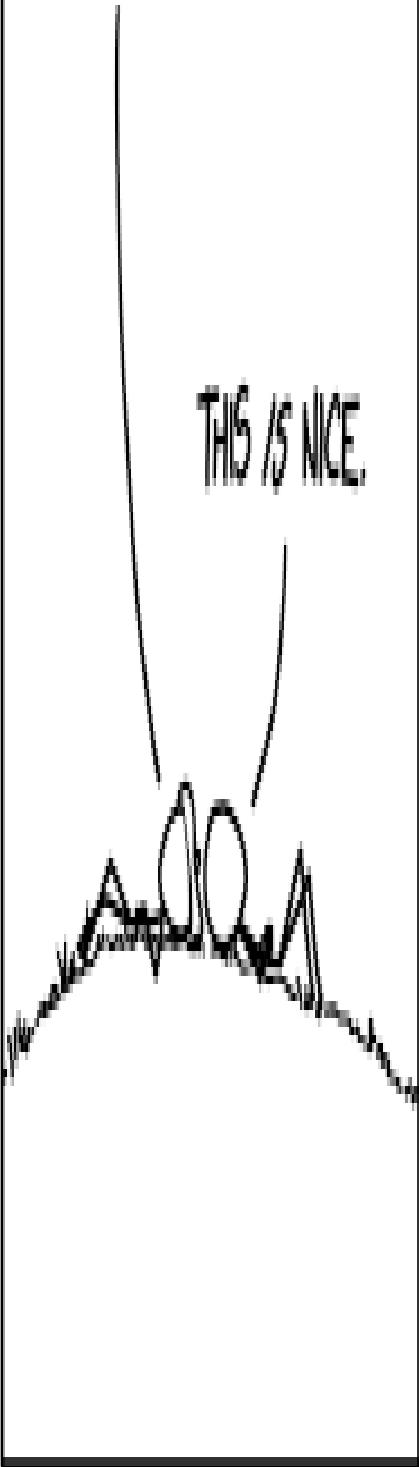


ASTRONOMER ADVENT CALENDAR

WHY PICK A WEIRD
HILL TO DIE ON...



...WHEN YOU COULD PICK
A SOFT HILL TO LIE ON?



WEIRD UNICODE MATH SYMBOLS AND THEIR MEANINGS

U+29CD	△	SHARK
U+23E7	✖	TRAFFIC CIRCLE
U+2A33	✖✖	WAGGING
U+2A7C	›	CONFUSED ALLIGATOR
U+299E	⟨s	SNACK
U+2A04	⊕	DRINK REFILL
U+2B48	≈	SNAKES OVER THERE
U+225D	def	DEFINITELY, FOR SURE
U+237C	฿	LARRY POTTER
U+2A50	TJ	SPIDER CAUGHT WITH A CUP AND INDEX CARD
U+2A69	#	HASH#TAG
U+2368	∴	::
U+2118	蛇	SNAKE
U+2AC1	☒	EXAMINE
U+232D	抟	ROLLING DOUGH BETWEEN YOUR HANDS TO SHAPE IT INTO A BALL
U+2A13	∫	INTEGRAL THAT AVOIDS A BEE ON THE WHITEBOARD

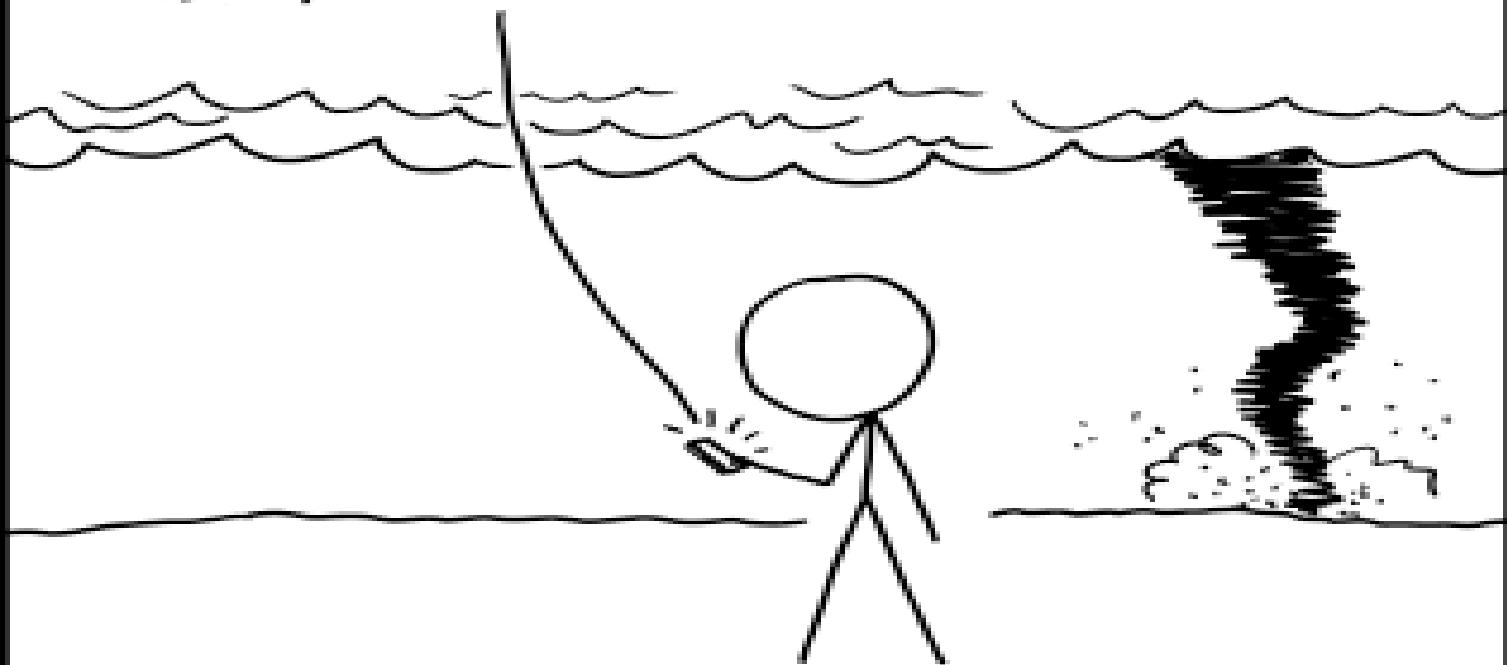
HII! THE TORNADOGUARD™ TEAM
IS PROUD TO ANNOUNCE A BIG
UPDATE! WE'VE ADDED—

OKAY

NOTE TO USERS OF SENTINEL MODE:
WE'VE HEARD YOUR FEEDBACK,
AND THE CONTROLS ARE NOW—

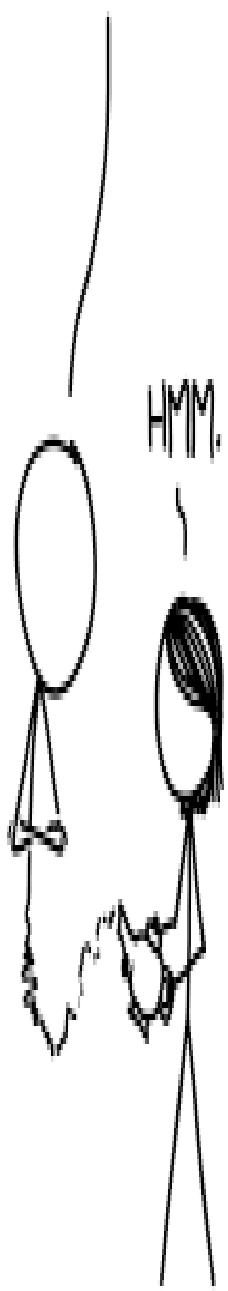
GOT IT

THE TORNADOGUARD™ TEAM SAW
THIS COOL LEAF SHAPED LIKE A
SPIDER; DO YOU WANT TO SEE...



WHEN YOU OPEN AN APP FOR THE FIRST
TIME IN A WHILE, YOU HAVE TO WAIT
AROUND WHILE IT TELLS YOU ABOUT
ALL THE COOL ADVENTURES IT'S HAD.

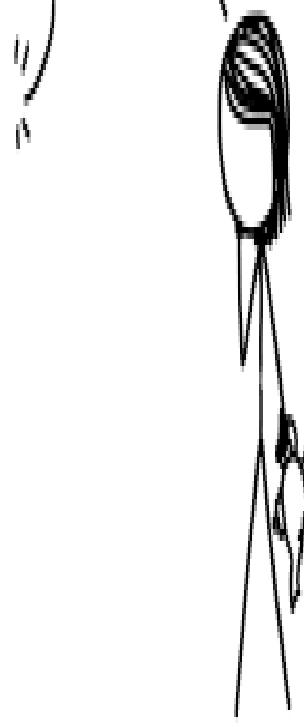
GREETINGS, MORTAL.
YOU HAVE FREED
ME. I WILL GRANT
YOU ONE WISH.



IT'S BEEN OVER 30 YEARS
SINCE BACK TO THE FUTURE
CAME OUT. SINCE THEN,
PROBABLY HUNDREDS OF
THOUSANDS OF PEOPLE HAVE
TRYED TO DRESS AS MARTY
MCFLY FOR HALLOWEEN.

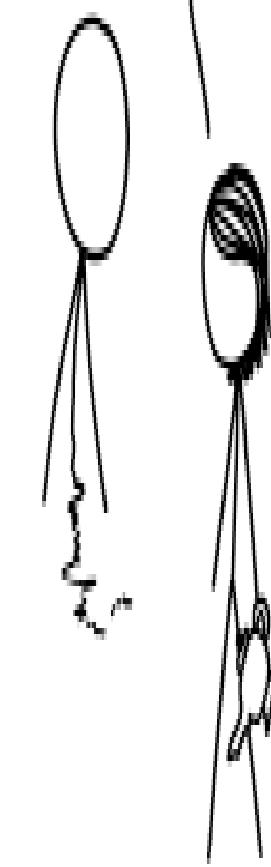
OK, AND?

!!



OF THOSE PEOPLE, ONE
OF THEM MUST HAVE
DONE THE WORST JOB.

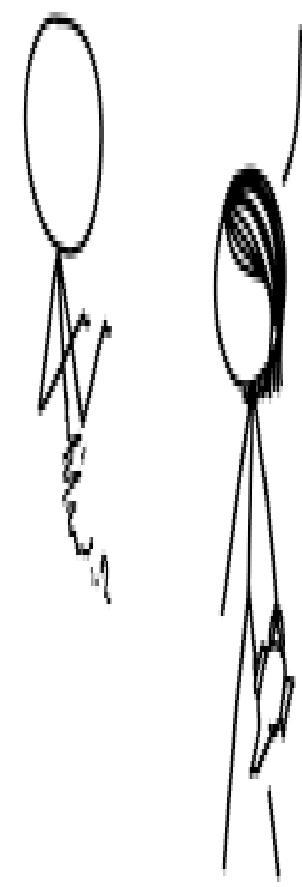
MY WISH IS TO SEE
THEIR COSTUME.



NOT A BILLION DOLLARS?
FLIGHT? INFINITE WISHES?

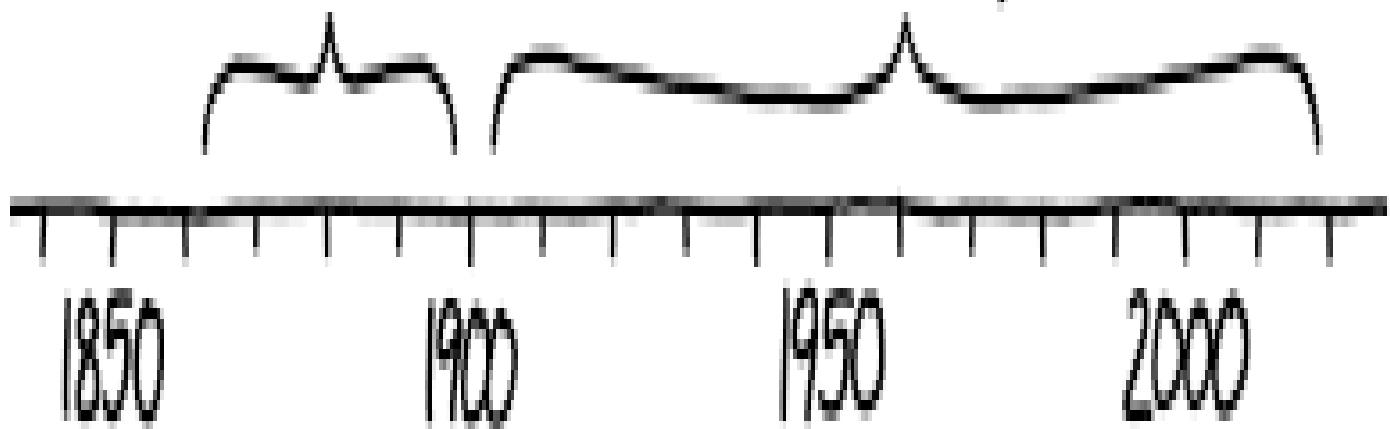
THESE WISH THINGS
ARE ALWAYS TRAPS.

JUST SHOW ME THE
WORST MCFLY AND
WE'LL CALL IT EVEN.



THE WILD
WEST ERA

WESTERN FILMS, BOOKS,
VIDEO GAMES, ETC



IT'S WEIRD TO REALIZE THAT THE WESTERN
GENRE HAS NOW EXISTED FOR THREE TIMES
LONGER THAN THE TIME PERIOD IT'S BASED ON.

ANNOUNCEMENT:
I'M PUBLISHING A
WHAT IF? SEQUEL!



IN STORES 9/13,
AVAILABLE FOR
PREORDER NOW:
xkcd.com/whatif2

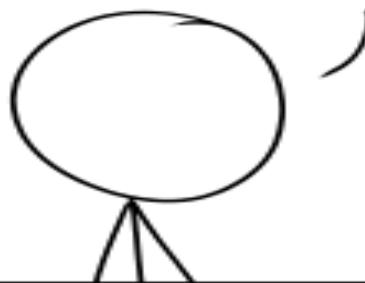
EVER SINCE I WROTE **WHAT IF?**,
I'VE BEEN FLOODED WITH QUESTIONS.
AND NOT JUST FROM READERS—
MY FRIENDS AND FAMILY STARTED
TEXTING THEM TO ME, TOO.



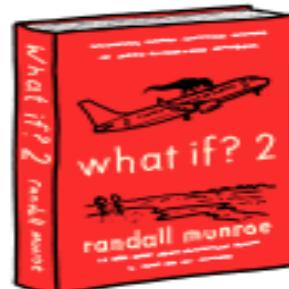
THE QUESTIONS ARE SO GOOD. PEOPLE HAVE ASKED ABOUT
TOUCHING EXOTIC MATERIALS, TRAVELING ACROSS SPACE AND
TIME, EATING THINGS THEY SHOULDN'T, AND SMASHING LARGE
OBJECTS INTO THE EARTH. THERE ARE QUESTIONS ABOUT
LASERS, EXPLOSIONS, SWINGSETS, CANDY, AND SOUP. SEVERAL
PLANETS ARE DESTROYED—ONE OF THEM BY THE SOUP.



LIKE THE FIRST BOOK, **WHAT IF? 2**
ALSO FEATURES COLLECTIONS OF
SHORT ANSWERS, NEW LISTS OF
WEIRD AND WORRYING QUESTIONS,
AND SOME OF MY FAVORITE
ANSWERS FROM THE **WHAT IF** SITE.



IF YOU WANT TO GET IT
WHEN IT'S RELEASED, YOU
CAN PREORDER A COPY
AT xkcd.com/whatif2

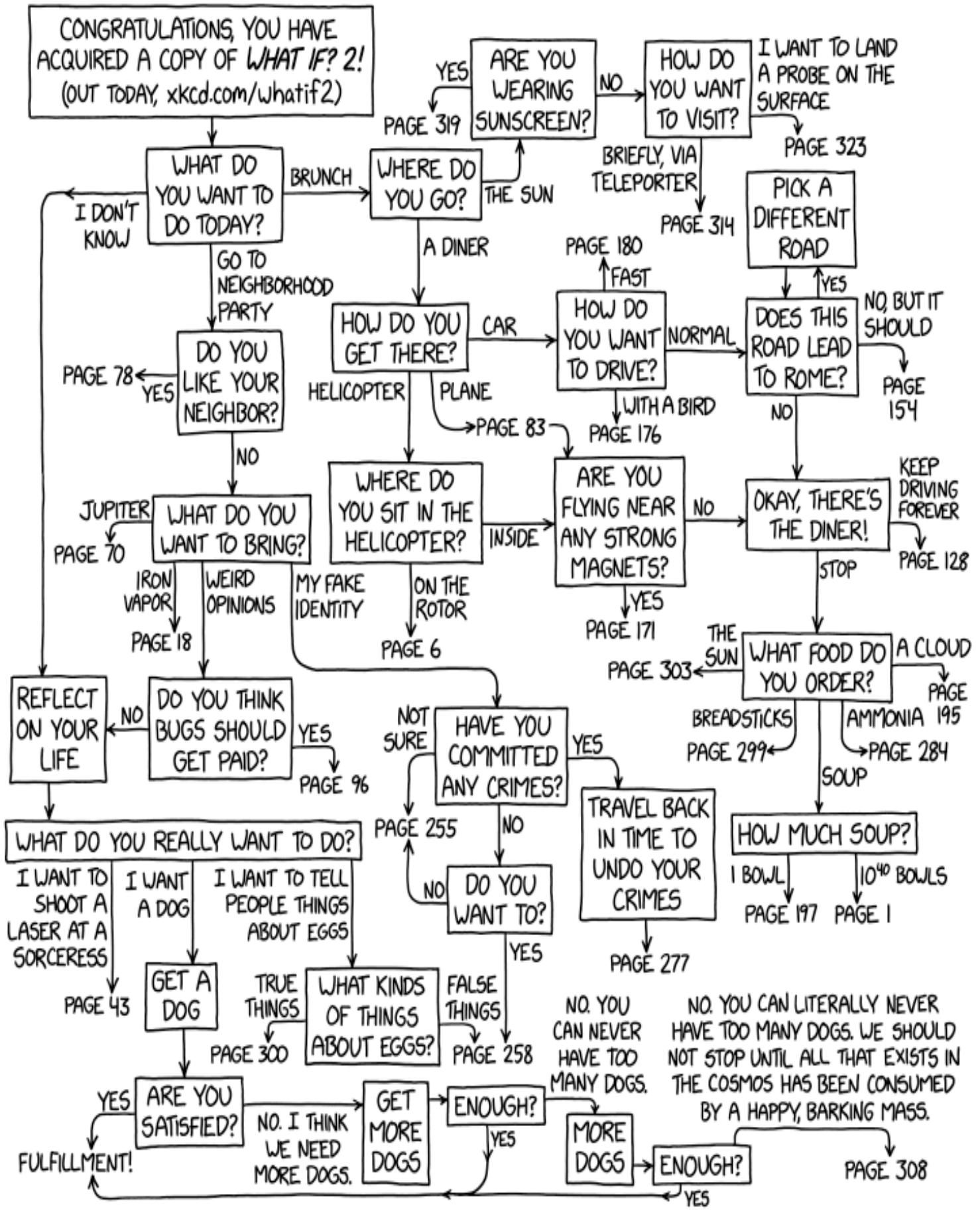


AVAILABLE SEP 13, 2022

COUNTDOWN TO WHAT IF? 2

(PREORDER AT xkcd.com/whatif2 TO GET IT AT THE END OF THE COUNTDOWN)

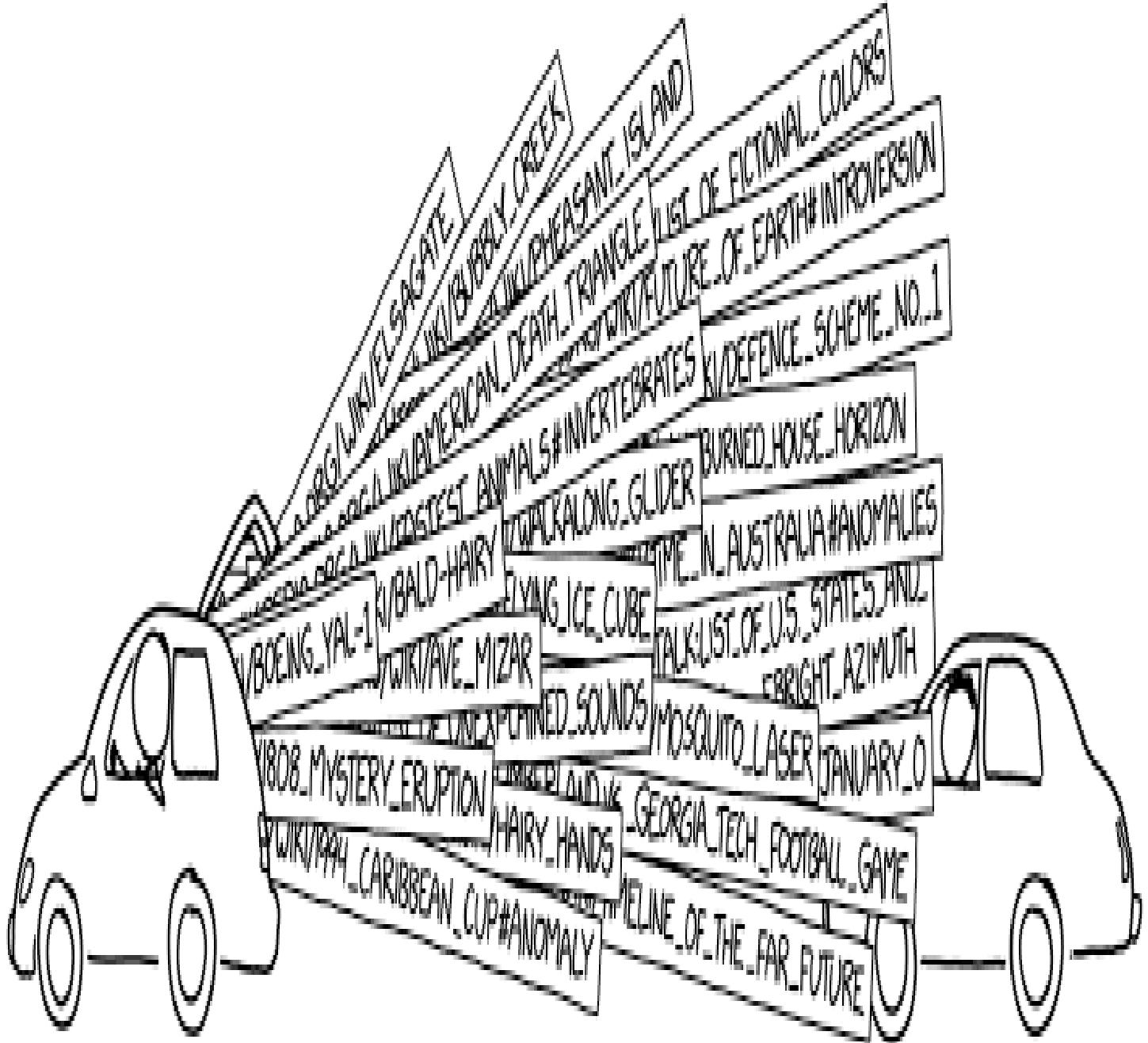
			JUN 22	π^e MILLIDECADES	23	7 MEGASECONDS	24	e LUNAR MONTHS	25	60 ROTATIONS OF FOUCAULT'S PENDULUM IN PARIS	
26	8 MILLI- GENERATIONS	27	7!	EPISODES OF JEOPARDY! (SKIPPING ADS)	28	5,000 REPEATS OF 99 BOTTLES OF BEER	29	5 BAKER'S FORTNIGHTS (15 DAYS)	30	JUL 1 $\sqrt{2}$ DOG YEARS	
3	42 DRIVES FROM NYC TO LA (GOOGLE MAPS ESTIMATE)	4	1,000 VIEWINGS OF GROUNDHOG DAY	5	100,000 MINUTES	6	$1/10^{th}$ OF A MARTIAN YEAR	7	$1,234,567$ SOUND- MILES	8	$2\pi^e$ SECONDS
10	1,000 ISS ORBITS	11	FIVE HUNDRED TWENTY-FIVE THOUSAND (BASE SEVEN) MINUTES	12	10^{50} PLANCK TIMES	13	4,000 EPISODES OF THE OFFICE (SKIPPING ADS)	14	FOUR SCORE AND SEVEN KILOMINUTES	15	JUL 1 HALF A DAY ON VENUS
17	5 MEGASECONDS	18	30 MICROLITS ($1/1,000,000^{th}$ OF THE TIME SINCE THE INVENTION OF WRITING)	19	1,000 VIEWINGS OF RUN LOLA RUN	20	ONE MILLION SOUND- MILES	21	30 IONIAN MONTHS	22	ONE DOG YEAR
24	$1/100,000,000,000^{th}$ OF THE UNIVERSE'S AGE	25	5 MILLI- GENERATIONS	26	10,000 GAMES OF 7 MINUTES IN HEAVEN OR 7 GAMES OF 10,000 MINUTES IN HEAVEN	27	ϕ^{π^e} MINUTES	28	4 MEGASECONDS	29	2^{16} MINUTES
31	π^e FORTNIGHTS	AUG 1	ONE DEVIL'S SPACEWALK (666 ORBITS OF THE ISS)	2	1 KILOWATT- HOUR PER WATT	3	e^{π^e} IONIAN MONTHS	4	30 ROTATIONS OF FOUCAULT'S PENDULUM IN PARIS	5	π^{π^e} SECONDS
7	ONE DECIYEAR	8	7! MILLIWEEKS	9	100,000 PLAYS OF THE JEOPARDY! "THINK" MUSIC	10	1,000 BASKETBALL GAMES (GAME TIME)	11	777 HOURS	12	ONE MILLILINCOLN ($1/1,000^{th}$ OF FOURSCORE AND SEVEN YEARS)
14	ALL OF STAR TREK, CONSECUTIVELY	15	777,777 NANO- CENTURIES	16	ONE SIDEREAL LUNAR MONTH	17	6 DOG MONTHS	18	$\pi^{\pi^{\pi^e}}$ KILOMINUTES	19	7 GAMES OF 7! MINUTES IN HEAVEN
A DRIVE FROM NYC TO LA WHERE YOU KEEP REMEMBERING NEW THINGS YOU FORGOT AND HAVE TO GO BACK 6 TIMES	IT'S A SMALL WORLD SUNG AT $1/10,000^{th}$ SPEED	23	500 HOURS	24	$\sqrt{2}$ FORTNIGHTS	25	TIME IT WOULD TAKE VANESSA CARLTON TO WALK 1,000 MILES	26	100,000 BREATHS	27	$\sqrt{2}$ MEGASECONDS
28	$\pi^{\pi^{\pi^{\pi^e}}}$ TTCSECONDS	29	ONE BAKER'S FORTNIGHT (15 DAYS)	30	ONE BAKER'S DOZEN (13) BAKER'S DAYS (25 HOURS)	31	300 HOURS	SEP 1	ONE MILLION SECONDS	2	ONE NONSTOP BIKE RIDE FROM NYC TO LA
14	777,777 SECONDS	15	100 VIEWINGS OF GROUNDHOG DAY	16	100 GAMES OF LINCOLN KISSING (FOURSCORE AND SEVEN MINUTES IN HEAVEN)	17	ONE PICO- UNIVERSE- LIFETIME	18	THE BABY SHARK CHORUS FOR A FAMILY OF 50,000 SHARKS	19	ONE CENTIYEAR
SPEED (1994) PLAYED AT ONE FRAME PER SECOND	F(99) WHERE F(N) MEANS SING ALL THE VERSES OF N BOTTLES OF BEER ON THE WALL FOLLOWED BY F(N-1)	13	★ WHAT IF? 2. RELEASE ★ DAY ★							10 CYNDI LAUPER'S TIME AFTER TIME PLAYED 1,000 TIMES	



SURE, I CAN REPLY ONCE
I'M BACK AT A KEYBOARD
AND CAN TYPE MORE EASILY.

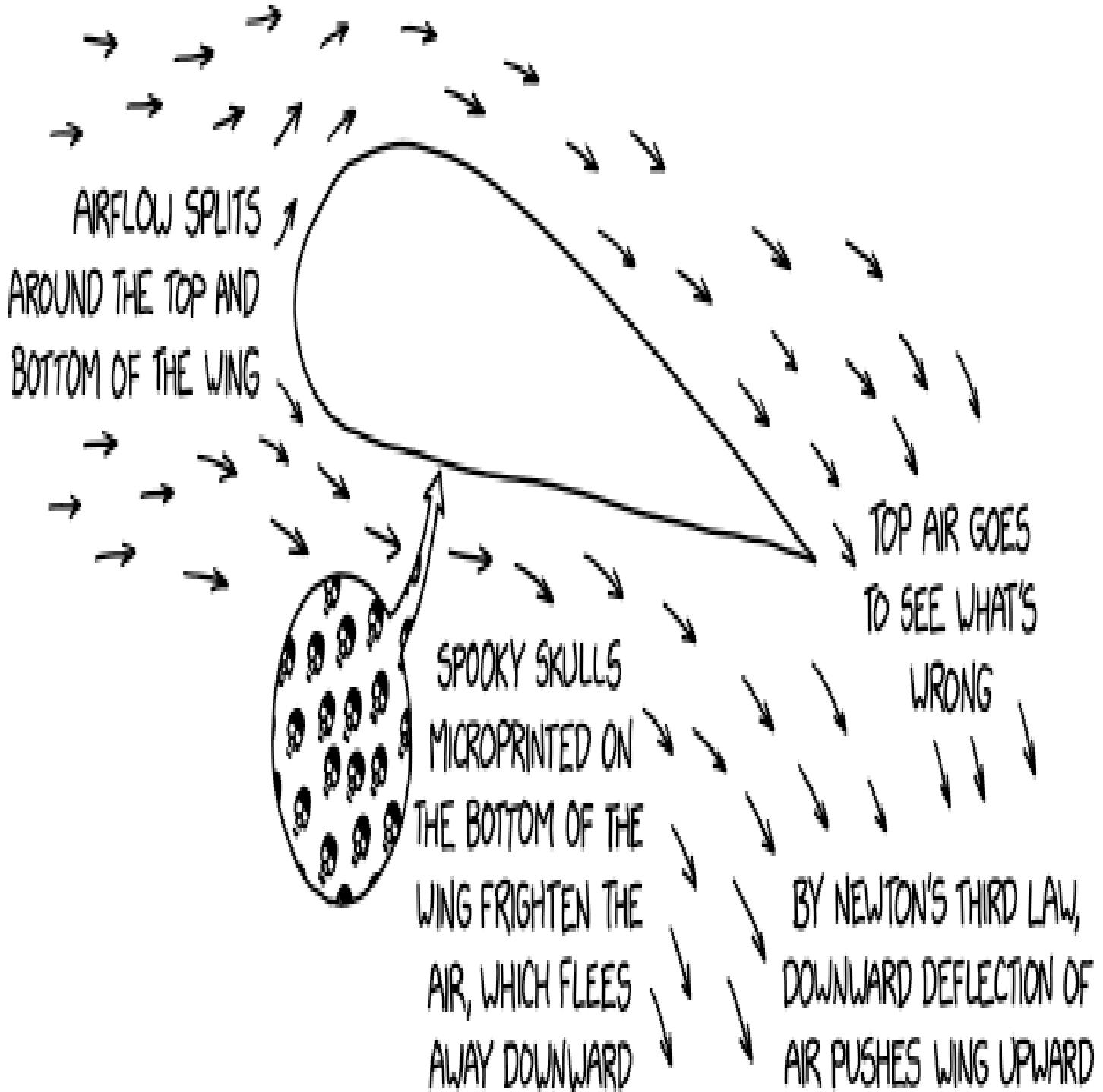


I SAY THIS A LOT FOR SOMEONE WHO
ROUTINELY TYPES THOUSANDS OF WORDS
IN TEXT MESSAGE CONVERSATIONS WHEN
SOMEONE BRINGS UP JURASSIC PARK.



I HAVE A COLLECTION OF WIKIPEDIA LINKS TO THROW BEHIND MY CAR IF I'M EVER BEING CHASED BY SOMEONE AS EASILY DISTRACTED AS ME.

HOW A WING PRODUCES LIFT

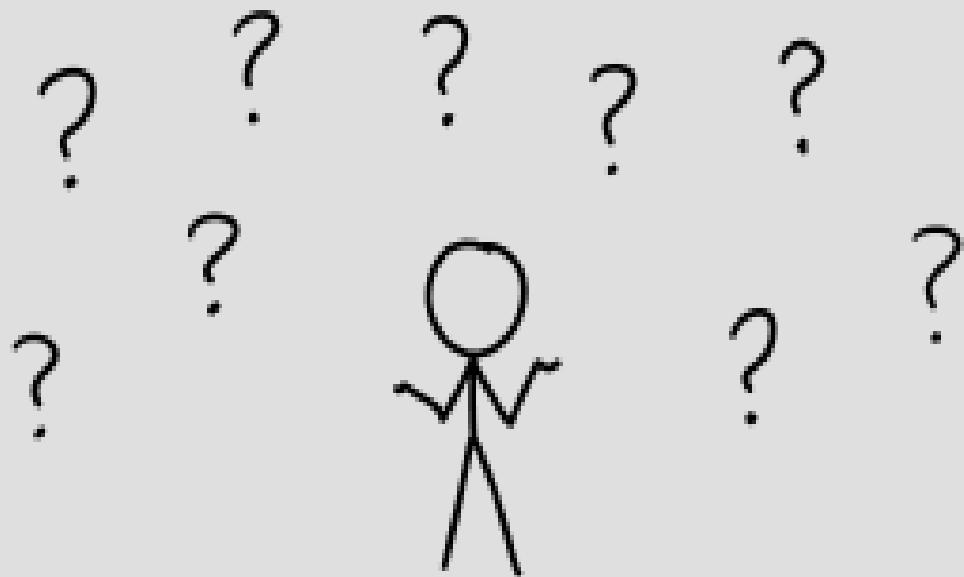




THE BEST RELIGION

By [WIRECUTTER STAFF](#) on [September 1, 2015](#)

V F E P



CONTINUE

READ MORE

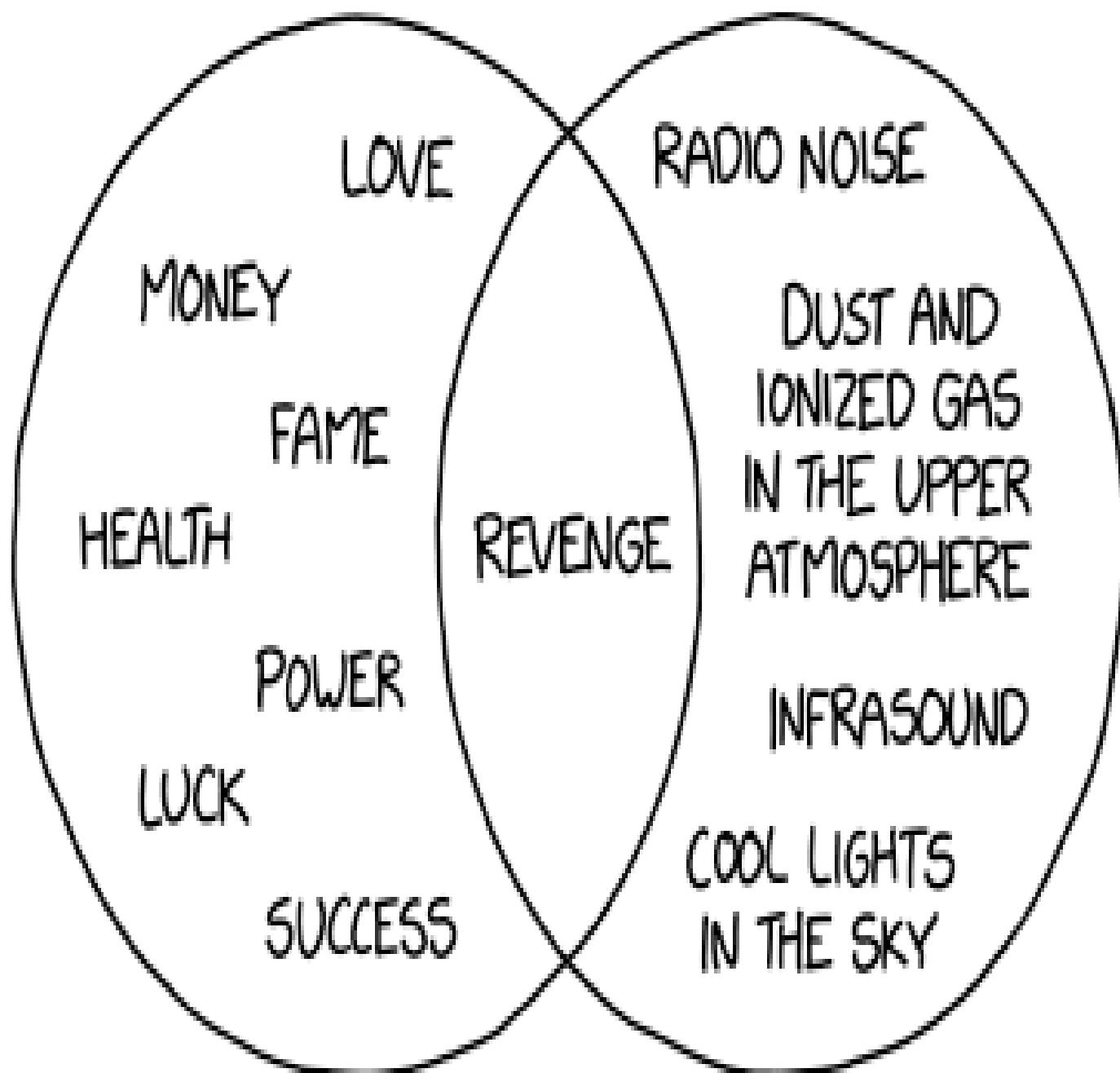
WHAT DOES IT ALL MEAN? OUR REVIEWERS TRIED OUT OVER 70 OF THE MOST POPULAR BELIEF SYSTEMS. HERE'S WHAT THEY FOUND...

- MARIO/LUIGI HYBRID
- THE SKIFREE MONSTER
- SIRI
- ELLIE FROM UP
- ZORDON
- CLIPPY
- THE SARLAAC
- THE INSTALLSHIELD WIZARD
- MR. CLEAN
- COMET CURSOR
- BETO O'ROURKE
- THE MONOPOLY BOOT
- LOT'S WIFE
- D.B. COOPER
- THE BLAIR WITCH
- MAVIS BEACON

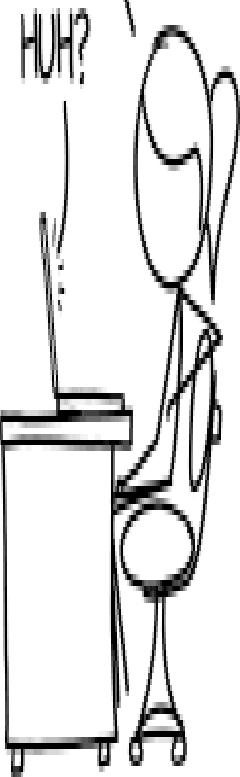
SUPER SMASH BROTHERS
NEVER DID END UP ADDING
ANYONE FROM MY WISHLIST.

THINGS
PEOPLE
WISH FOR

THINGS
SHOOTING STARS
CAN CAUSE



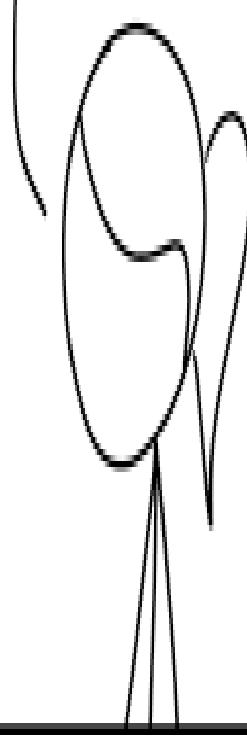
JUST TWO WEEKS UNTIL I
SEE WONDER WOMAN 1984,
LEARN WHO THE DEMOCRATIC
NOMINEE WAS, AND FIND OUT
HOW THE ELECTION WENT.



TO AVOID SPOILERS, I BLOCKED
ALL NEWS SITES AHEAD OF
THE NOVEMBER 2019 RELEASE.

BUT THEN THEY BUMPED THE
DATE ON MY TICKET TO JUNE
2020, AND NOW DECEMBER 25TH.

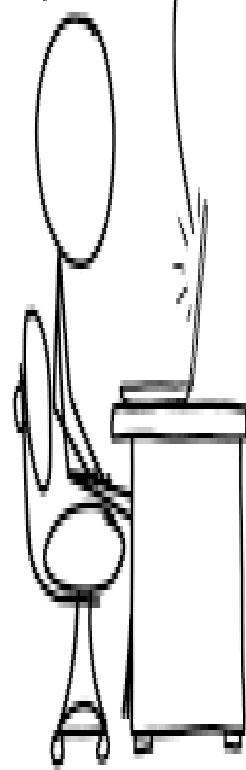
IT ALSO MOVED TO A
DRIVE-IN THEATER? SOME
RETRO PROMOTION, MAYBE.



WAIT, YOU HAVEN'T
SEEN ANY NEWS?

NOPE!

SO YOU DON'T
KNOW ABOUT-
NO SPOILERS!



OKAY. JUST...
BRING A MASK IN
CASE YOU NEED TO
GET OUT OF THE CAR.

OH, I'LL HAVE A FULL
COSTUME! BUT IT'S A
TIARA, NOT A MASK.

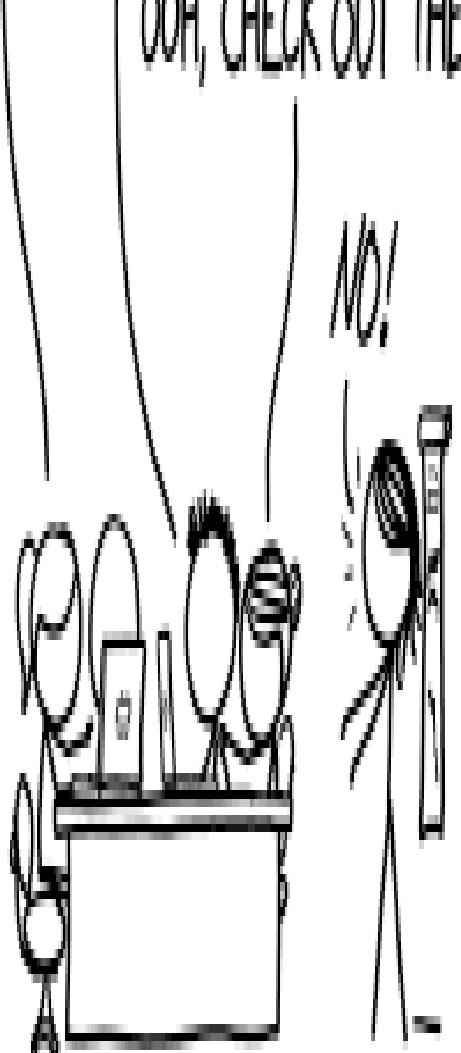
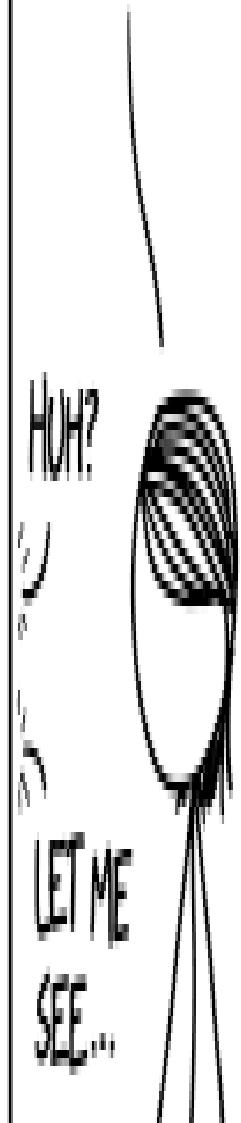
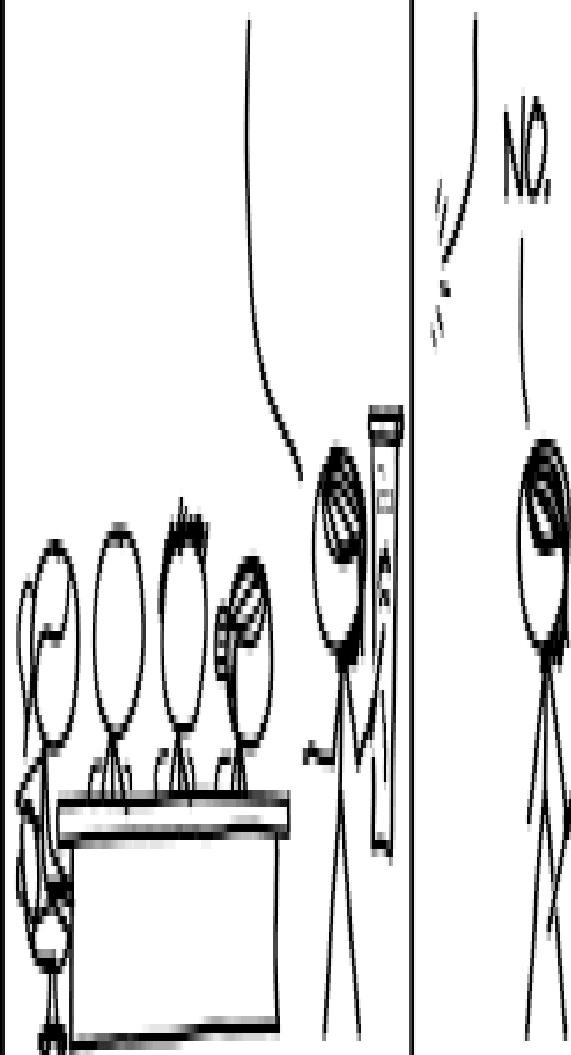


OUR ENTERTAINMENT
DIVISION IS FAILING.
WE CAN'T COMPETE
WITH FREE CONTENT.

WHERE ARE
THEY GOING?
YOUTUBE?
TIKTOK?

THE GOOGLE
IMAGE SEARCH
RESULTS FOR
WORST LADDER.

YIKES, LOOK AT THIS ONE! THE
STEPLADDER IS BALANCED ON-
WOW, THEY TIED A LADDER TO-
OOH, CHECK OUT THE-

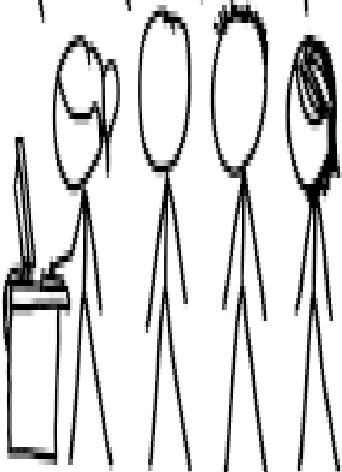


WE SHOULD UPGRADE
WHAT'S THE WORST
THAT COULD HAPPEN?

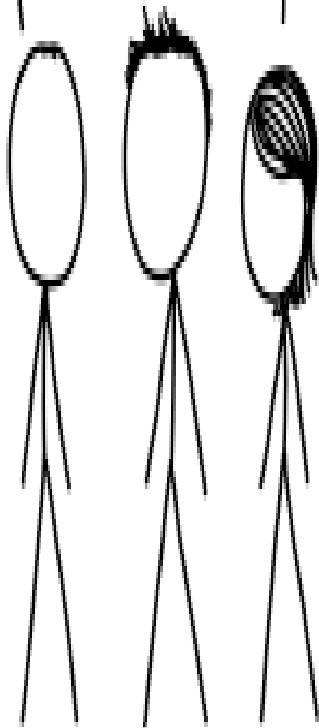
SUPERVOLCANO.

ROBOT UPRISE.

EVERYONE
FALLS DOWN A
WELL AT ONCE.



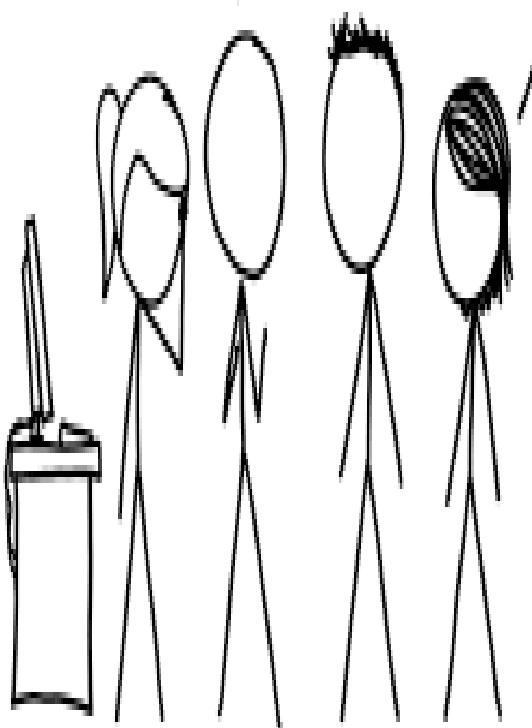
INSTEAD OF HITTING THE
TALLEST THING AROUND,
LIGHTNING STARTS
HITTING THE NICEST.
SEAGULLS ALL
GET HANDGUNS.
A REALLY SLOW
NUCLEAR WAR.



WE HAVE TO GO ON A GAME SHOW WHERE
THEY SHOW YOU PHOTOS OF PEOPLE YOU'VE
MET ONCE AND ASK YOU THEIR NAMES, AND
IF YOU GET ONE WRONG A TRAPDOOR OPENS
AND YOU FALL INTO A GARBAGE DISPOSAL.

OOH, THAT'S A GOOD ONE.

YEAH, LET'S PUT
OFF THE UPGRADE.



COOL! I GOT THE ENTIRE UNIVERSE
AND EVERY OBJECT WITHIN IT
EXCEPT FOR A PAIR OF HEADPHONES!



PRESENTS GET A LOT MORE IMPRESSIVE IF
YOU TURN THE WRAPPING PAPER INSIDE OUT

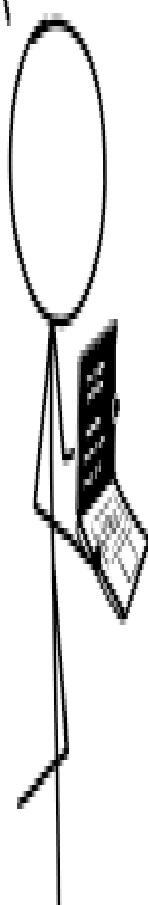
WRONG TIMES TABLE

THE INCORRECT ANSWERS THAT
FEEL MOST RIGHT TO ME

	1	2	3	4	5	6	7	8	9	10
1	0	½	4	5	6	7	8	9	10	9
2	½	8	5	6	12	14	12	18	19	22
3	4	5	10	16	13	12	24	32	21	33
4	5	6	16	32	25	25	29	36	28	48
5	6	12	13	25	50	24	40	45	40	60
6	7	14	12	25	24	32	48	50	72	72
7	8	12	24	29	40	48	42	54	60	84
8	9	18	32	36	45	50	54	48	74	56
9	10	19	21	28	40	72	60	74	72	81
10	9	22	33	48	60	72	84	56	81	110

I'VE DEVELOPED A
NEW PROGRAMMING
LANGUAGE!

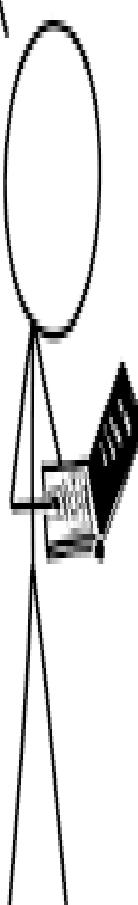
DIDN'T A JUDGE
ORDER YOU TO
STOP DOING THAT?



HIGHER COURT THREW
OUT THE RULING!

IM BACK, SUCKERS!

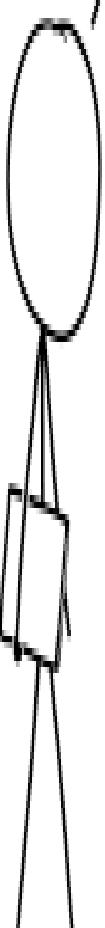
DAMMIT



BUT I PROMISE IT'S
GOOD THIS TIME!

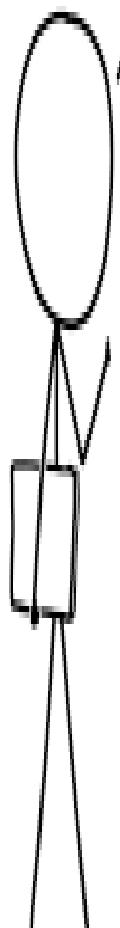
JUST NORMAL CODE.
GOOD CLEAN SYNTAX.
NOTHING WEIRD.

OKAY...

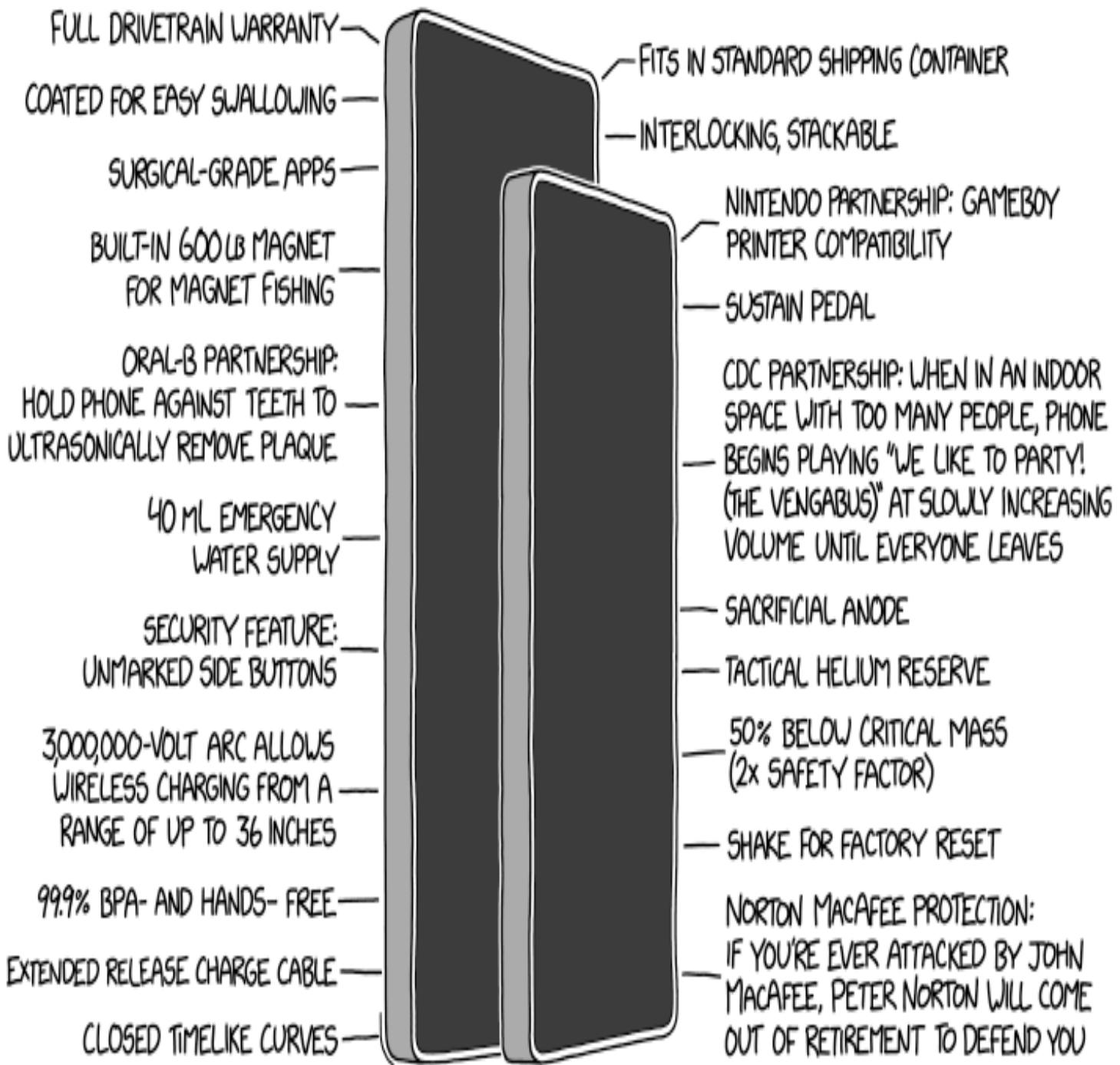


EXCEPT THE ONLY VARIABLE NAME
IS "X" TO REFER TO DIFFERENT
VARIABLES YOU HAVE TO WRITE
"X" IN DIFFERENT FONTS.

I'M CALLING
THE COURT.



MAYBE WE
CAN APPEAL.



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