

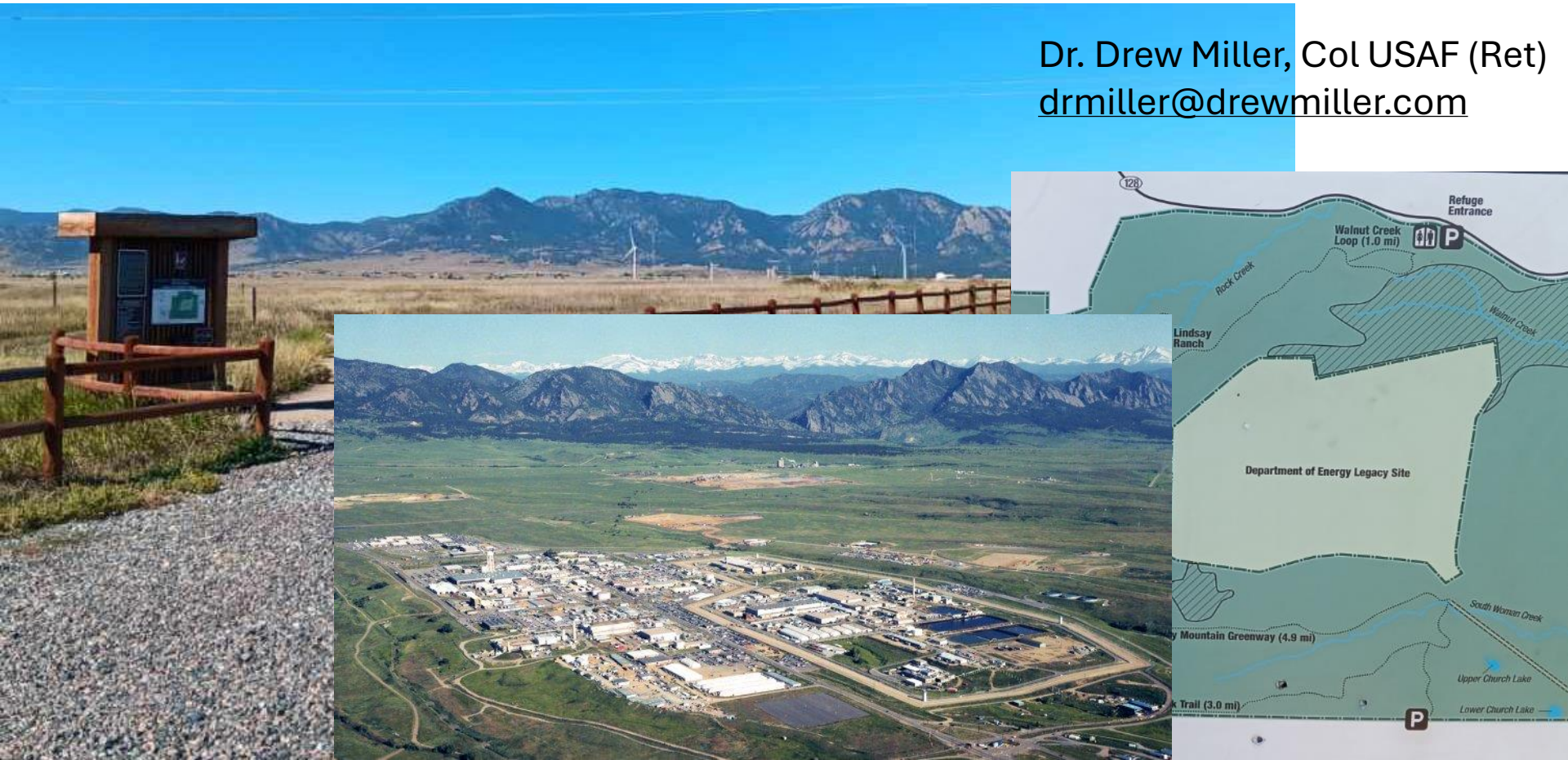


Probability of Nuclear War, a Bioengineered H5N1 Pandemic, Civil War have all increased Latest Probability of Collapse Model calculations now estimate a 16 to 57% annual likelihood of a Collapse

Press Conference at Rocky Flats former nuclear weapons plant, Denver CO, Oct 3, 2024

- Information embargoed until 11AM, Oct 3, 2024

Dr. Drew Miller, Col USAF (Ret)
drmiller@drewmiller.com





Bulletin of the Atomic Scientists rates likelihood of nuclear war very high

Bulletin of the Atomic Scientists

Doomsday Clock | Nuclear Risk | Climate Change | Disruptive Technologies | Biosecurity | Support Our Work



The authoritative guide to ensuring science and technology make life on Earth better, not worse.

[Overview](#) [Current Time](#) [The Clock Setters](#) [FAQ](#) [Timeline](#)

A moment of historic danger: It is *still* 90 seconds to midnight

2024 Doomsday Clock Statement



An undiminished nuclear threat and a new arms race

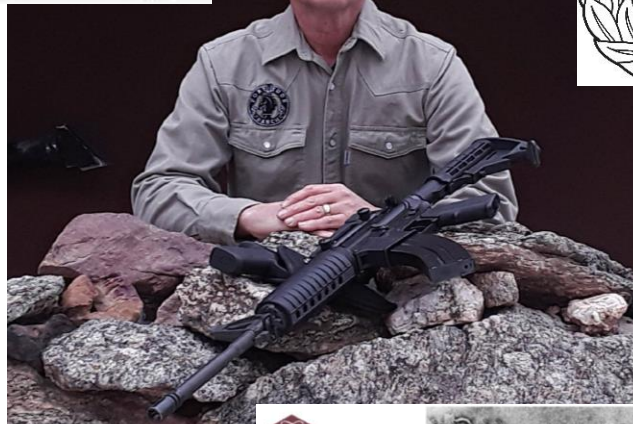
The last year was characterized by fraught relations among the world's great powers, who were engaged in vigorous nuclear modernization programs as the nuclear arms control regime continued to collapse. Within this general context, the contours of a peaceful and sustainable ending of Russia's war against Ukraine are difficult to discern, and concerns remain about Russia's possible use of nuclear weapons in this conflict.

Last year, we expressed our heightened concern by moving the Clock to 90 seconds to midnight—the closest to global catastrophe it has ever been—in large part because of Russian threats to use nuclear weapons in the war in Ukraine.



Qualifications

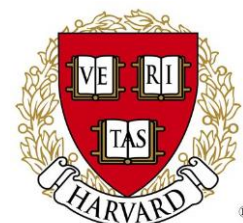
Dr. Drew Miller, Col USAF (Ret)



- USAF Academy honor graduate, intelligence officer, retired Colonel, USAF
- Masters Degree and PhD Operations Research, Harvard University
- Senior Executive Service, Dept of Defense
- Research Staff at Institute for Defense Analyses (DoD FFRDC, Think Tank)
- Founder, CEO Fortitude Ranch, Disaster Preparedness LLC,
- Survival Expert for Collapse Survivor App
- Manager, Corporate Planning and Development ConAgra Inc
- Vice Pres Business Development, Securities America
- County Commissioner, University of Nebraska Regent
- Author of article on bioengineered viral pandemics in The American Interest journal
- Certified M&A Advisor, Certified Management Accountant, Certified Due Diligence Professional



Relative Vulnerability to Disruption	
Communication Infrastructure	High
Energy Infrastructure	High
Transportation Infrastructure	High
Water Infrastructure	High
Financial Infrastructure	High
Government Infrastructure	High
Healthcare Infrastructure	High
Manufacturing Infrastructure	High
Information Infrastructure	High
Other Infrastructure	High
Human Capital	High
Physical Capital	High
Financial Capital	High
Information Capital	High
Human Capital	High
Physical Capital	High
Financial Capital	High
Information Capital	High



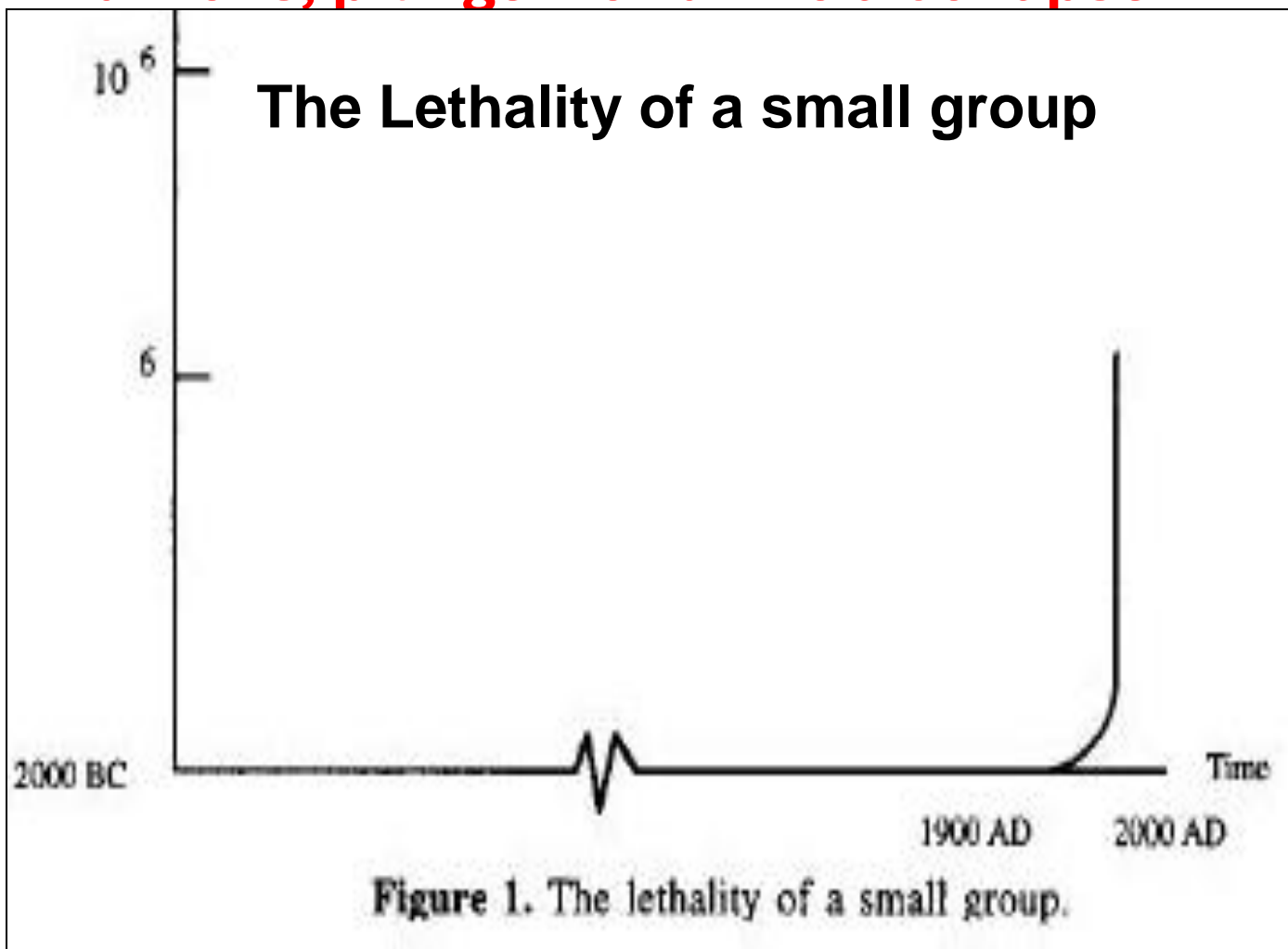
Modeling Risk in National Security Analysis:
Estimating the Probability of Collapse; Alternatives for DoD to Improve our Capacity to Recover

IDA INSTITUTE FOR DEFENSE ANALYSES
NSD-5335
The Age of Bioengineered Viral Pandemics and Collapse
Drew Miller





The Destructive power of technology is growing exponentially, has already reached point where a small group or even one dedicated individual can kill billions, plunge world into a collapse



Source: Yale professor Martin Shubik



Artificial Intelligence is being used by bad people/nations/terrorist groups now to develop better ways to kill people



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Exclusive: 42% of CEOs say AI could destroy humanity in five to ten years



By Matt Egan, CNN Business

🕒 4 minute read · Published 1:38 PM EDT, Wed June 14, 2023

Before AI reaches “Artificial General Intelligence” stage of evil computers and robots attacking people—AI will be used by bad people and nations to develop more effective ways to kill

Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.

Signatories:



AI Scientists



Other Notable Figures

Geoffrey Hinton

Emeritus Professor of Computer Science, University of Toronto

Yoshua Bengio

Professor of Computer Science, U. Montreal / Mila



With growing threats from lethal new technologies, increasing economic and social vulnerabilities, the probability of a collapse is high and rising rapidly

Definition of “collapse”

1. Economic and normal activity largely ceases
2. Widespread loss of law and order

Risk of collapse rising rapidly, driven by 6 very bad trends

1. New Technologies: DNA manipulation and bioengineering, new means to manufacture nuclear materials, nanotechnology, cyber attacks, AI
2. Rising overpopulation
3. Increased economic interdependence, just in time inventories, overseas sourcing
4. Dangerous dependence on long-distance food shipments, inadequate local water, extremely vulnerable electric system
5. Less personal resilience
6. More bad people, gangs, with means to raise hell

Combined Effect: More lethal threats against an increasingly unstable economy and vulnerable population



Economic collapse of our interdependent, fragile “just in time” long-distance delivery economy, societal breakdown, loss of law and order could happen quickly

Nassim Taleb:

“Our connected world appears to be more efficient. . . But when there is a disturbance, the setback is much harder to handle. Not only are we building riskier systems, but also the risks involved in failure are a lot larger. . . . We are incapable scientifically of measuring the risk of rare events. We tend to underestimate both the probabilities and the damage.” (quoted in *Fortune Magazine*, April 11, 2011)

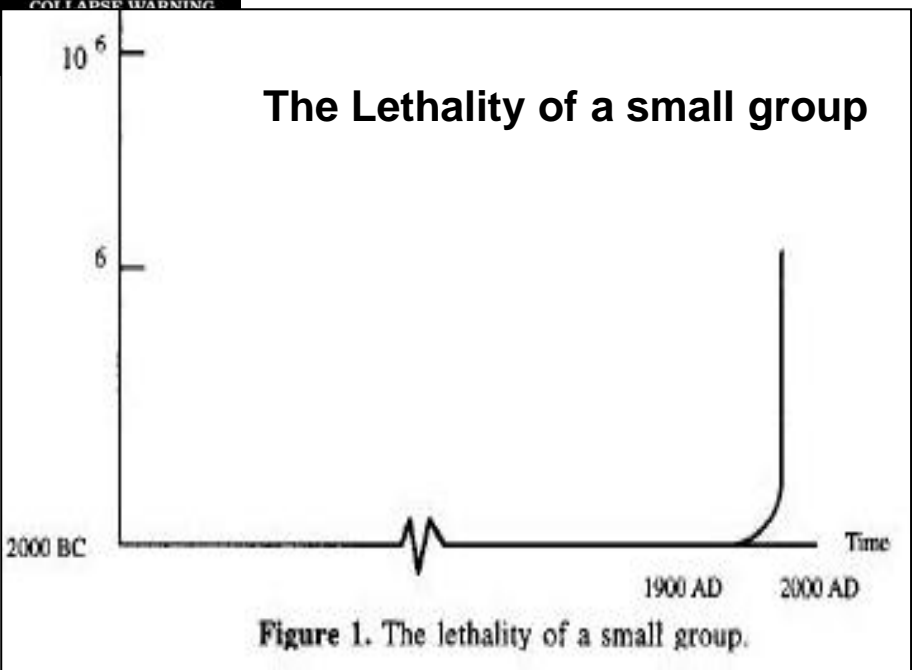
- Unlike old, simple agricultural economies; we are dependent on daily shipments (“just in time delivery” JIT) of food and materials, highly interdependent, very vulnerable to disruptions
- Whatever disaster triggers a collapse, the loss of law and order will lead people to avoid going to work because of threats enroute, and concern about attacks on family at home

Relative Vulnerability to Disruptions

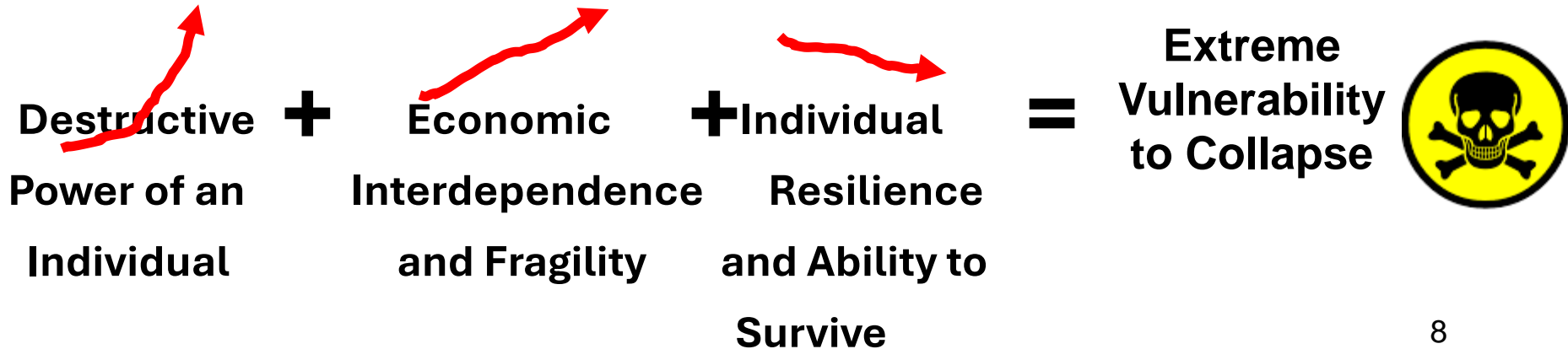
	<u>1800s</u>	<u>2020s</u>
% population farming	>80%	<2%
Food travel distance	few miles	1,000s
Food on hand	months	days
Water supply	well	municipal
Electronic dependence	none	heavy
Production sourcing	local	int'l
Inventory levels	large	tiny (JIT)
resilience of people	Pioneers	Dependent
Overall vulnerability	low	high



The Destructive power of Individuals and economic fragility is growing, while resilience of society and individuals is falling—yielding high likelihood of a disastrous collapse



Relative Vulnerability to Disruptions		
	1800s	2020s
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Probability of Collapse Model estimates the annual likelihood of a collapse

Presented at Military Operations Research Society Symposium



** - No statistically valid way to estimate most model parameters. Probability could be much higher!!*



INSTITUTE FOR DEFENSE ANALYSES

Link to "Age of Collapse" study by Dr Drew Miller:
<https://www.ida.org/-/media/feature/publications/t/th/the-age-of-bioengineered-viral-pandemics-and-collapse/d-5335.ashx>

NSD-5335

The Age of Bioengineered Viral Pandemics and Collapse

Drew Miller



More critical than probability of a disastrous event occurring is whether the effects spread, how people react, does the violence escalate into a collapse?



- In 1977 New York City suffered a lightning strike
 - A power failure resulted for one night
 - Over 3,000 arrests for looting, 400 policemen were injured, 500 fires were started
 - More than 25,000 emergency calls were placed, with four times the usual number of hospital emergency cases admitted
- In Katrina, Looting quickly spread throughout the city, often in broad daylight and in the presence of police officers; "The looting is out of control"
- Some storeowners tried to defend their property, gangs of armed gunmen, also reports of sniper fire, some police officers looting
- One third of New Orleans police officers deserted the city in the days before the storm, many of them escaping in their department-owned patrol cars





Summer 2024—Model updated based on ratings from 23 intelligence officers, scientists, biologists, threat experts

Probability of a Collapse much higher

- 2012 original model: 1 – 23% annual likelihood of collapse
- 2024 update: 16 – 57% annual likelihood of a collapse



Spreadsheets with survey results available for review

“Probability of Collapse” model now estimates 16 – 57% annual chance of a collapse



Review of 49 Collapse Threats

		Adjusted Avg Probability of Event	Avg Likelihood Escalation to Collapse Rating	2025 LOW Probability of Collapse
	total			
	DC adjust			
	0.0001	0.0120	5.2	0.0062
	0.0001	0.0080	4.0	0.0032
	0.0001	0.0100	3.4	0.0035
	0.0001	0.0093	3.5	0.0033
	0.0003	0.0230	3.9	0.0089
	0.0000	0.0015	0.8	0.0001
	0.0001	0.0099	2.1	0.0021

- For low estimates of likelihood of a collapse:
 - 55% chance of a trigger event happening during the year
 - 16% likelihood of a collapse occurring
- For high estimates of likelihood of a collapse:
 - 100% annual chance of a trigger event happening
 - 57% likelihood of a collapse occurring

000	0.0000		0.0000	0.0012	2.4	0.0003
000	0.0000		0.0000	0.0013	2.9	0.0004
000	0.0000		0.0000	0.0021	3.8	0.0008
001	0.0002		0.0001	0.0124	3.1	0.0039
			-			
			-			
			-			
000	0.0000		0.0000	0.0005	3.8	0.0002
000	0.0000		0.0000	0.0032	2.8	0.0009
	0.0001		0.0001	0.0091	3.6	0.0033
001			0.0001	0.0119	4.8	0.0057
Combined Probability of a Collapse						
			Avg Low Probability:	55%		16%



Likelihood of Collapse High Now, Rising in most of the 49 collapse disaster trigger categories

Domestic civil war triggered collapse highest individual risk of collapse today -- 2% likelihood

Probability of trigger disaster occurring rising in most categories due to technology advances, increasing overpopulation, urbanization, economic dependence and instability

2.0%	Domestic civil war over political disagreements, secession
1.0%	Societal breakdown over other causes, violence escalates
0.9%	nation state Computer Network Attack destroys grid
0.9%	nation state biowarfare
0.9%	Immigration/loss of border control/violence/breakdown
0.6%	EMP attack destroys electric grid
0.6%	Natural Pandemic
0.6%	Physical attacks on key nodes destroys electric grid
0.6%	hackers/terrorist Computer Network Attack destroys electric grid
0.5%	China/Russia Nuclear War
0.5%	Flash mobs, looting escalates out of control
0.4%	Climate Change/food supply disruption
0.4%	Others from new technology or unimaginable now technologies
0.4%	Computer Network Attacks destroy other vital infrastructure
0.3%	bioengineered viral pandemic via lone wolf terrorist
0.3%	Economic collapse looting/violence/breakdown
0.3%	Conventional World War
0.3%	bioengineered viral pandemic via biohackers
0.3%	accidental lab release or a deadly bioengineered virus
0.3%	Massive Earthquakes
0.3%	Drug wars/Organized Crime/Violence breakdown
0.3%	Solar flare Electro-Magnetic Pulse (EMP) destroys electric grid
0.3%	Crop failure/food supply disruption looting/violence/breakdown
0.2%	Severe water shortages

0.2%	"runaway" Genetically Engineered Organism disaster
0.2%	Global warming
0.2%	Natural disaster sparked looting/violence/breakdown
0.2%	Non-Human plant/animal/insect
0.1%	Major Hurricanes overwhelm responders, looting takes off
0.1%	Peak oil/Economic Collapse/Food production decline
0.1%	Overpopulation (resource wars)
0.1%	Nuclear attack via Rogue state (Iran)
0.1%	Nuclear attack via terrorist group
0.1%	Other bioengineered lifeforms as weapons
0.1%	Widespread IEDs/SAMs/ATGM* terrorist attacks in U.S.
0.1%	Environmental damage
0.1%	Mega Tsunami
0.1%	Invader from space
0.1%	Artificial intelligence--bad AI and robots
0.1%	Major Asteroid
0.1%	antibiotic resistance, super bacteria
0.1%	Super-volcano explosion
0.0%	Nuclear power accidents
0.0%	Gulfstream shutdown
0.0%	Nanotechnology disaster
0.0%	High energy physics experiment disaster
0.0%	Military invasion of U.S.
0.0%	Meteor born or space travel virus or bio contamination
0.0%	Polar magnetic shift



Some collapse disasters have multiple “trigger events”

Biggest collapse risks are electric grid destruction, pandemics, domestic civil war, societal breakdown over other causes, nuclear attacks

Some collapse disasters, like a pandemic, grid down, nuclear attack have many possible trigger events

3.0%	combined risk of a grid down attack/event				
2.6%	combined risk of a bioengineered or natural pandemic				
2.0%	domestic civil war				
1.0%	Societal breakdown over other causes, violence escalates				
0.7%	combined risk of a nuclear attack				



U.S. Electric system highly vulnerable— could be taken down for years--a collapse leading to death of 90% of population

Threats to the fragile electrical system, dealing with a long term blackout and resultant loss of law and order

Terrorism and the Electric Power Delivery System

U.S. Electric Grid Vulnerabilities

1. An unstable, old system that spreads problems across the grid
2. Cyber attack
3. Solar Flares, electro-magnetic disturbance from the sun
4. EMP from nuclear weapons
5. Coordinated physical attacks on the system
6. Electric system damage from other disasters, cascading effects

The New Blackout

The History of
That Led to Looting and Arson
Across the Big Apple

Charles River Editors

POWER GRID
THREATS



National EMP Commission, former CIA Director, have warned that the aftermath of an EMP attack could be 90% of Americans killed during prolonged loss of electric power and collapse

- 2008 report by National Commission on EMP Threat warned of North Korean HEMP attack potential
 - Report and Threat Ignored
- In 2017, former CIA Director R. James Woolsey wrote that **“a single warhead delivered by North Korean satellite could blackout the national electric grid and other life-sustaining critical infrastructures for over a year—killing 9 of 10 Americans by starvation and societal collapse”**

Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack

Critical National Infrastructures

Ex-CIA chief warns against underestimating N. Korea's nuclear arsenal

2017



WASHINGTON, Feb. 28 (Yonhap) -- North Korea's nuclear arsenal is believed to be more advanced and dangerous than many experts think, a former CIA director warned Tuesday, calling for more attention to the threats.

James Woolsey, who served as CIA chief from 1993-95, made the point in an article in the Street Journal, saying the communist nation is taking the same path that the U.S. and other powers took, including Israel, South Africa, India and Pakistan.

"History suggests North Korea already has nuclear-missile warheads and a sophisticated nuclear weapons," he said in the joint article with Peter Vincent Pry, executive director of the Task Force on National and Homeland Security.

The North built its first atomic weapon by 1994, more than a decade before testing, though yield of North Korean nuclear tests isn't known, Woolsey said, adding that estimating yields from seismic signals is inexact.



To learn more about U.S. electric grid vulnerabilities watch this documentary:

GRID DOWN
POWER UP

griddownpowerup.com





Irresponsible U.S. Government funded “Gain of Function” research (read: creating more transmissible, deadly virus) has raised likelihood of a bioengineered viral pandemic catastrophe

- Researchers developed a mammal–transmissible avian flu virus in the lab -- with an estimated 60% lethality!
- Then they published details on how to do it

US: Don't publish lab-bred bird flu recipe

By LAURAN NEERGAARD

AP Associated Press

updated 12/20/2011 1:48:15 PM ET

WASHINGTON — The U.S. government asked scientists Tuesday not to reveal all the details of how to make a version of the deadly bird flu that they created in labs in the U.S. and Europe.

The lab-bred virus, being kept under high security, appears to spread more easily among mammals. That's fueled worry that publishing a blueprint could aid terrorists in creating a biological weapon, the National Institutes of Health said.



A human transmissible H5N1 Virus could kill Billions

OVER THE PAST 8 YEARS, H5N1 avian influenza has sickened 571 people, killing 59% of them. To give some perspective, the fatality rate of the virus that caused the 1918 Great Pandemic was 2%, and that pandemic killed on the order of 50 million people. Like all influenza strains, H5N1 is constantly evolving in nature. But thankfully, this deadly virus does not now spread readily through the air from person to person. If it evolves to become as transmissible as normal flu and results in a pandemic, it could cause billions of illnesses and deaths around the world—the proportion of the global population affected by past pandemics.

THE RISK OF ENGINEERING A HIGHLY TRANSMISSIBLE H5N1
VIRUS

Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science
Volume 10, Number 1, 2012 © Mary Ann Liebert, Inc.
DOI: 10.1089/bsp.2011.1214



H5N1 no longer just “bird flu”— spreading in mammal populations, will become a human transmissible virus, worst disaster in human history

- Could be a natural mutation that yields human-to-human transmissible H5N1
- Might be deliberately bioengineered to be human
- The “Collapse Survivor” App issued a threat alert on H5N1 in April 2024 →



Ongoing avian influenza outbreaks in animals pose risk to humans

Threats Alerts

Threat Alert: Threat Alert: The H5N1 virus, previously known as Avian or Bird Flu, is spreading into more mammal populations. A recent human case in the U.S. is not from human-to-human transmission, but the risk is increasing. H5N1, historically about 60% lethal to humans, underwent a major mutation last year, enabling it to spread in many mammal populations globally. With H5N1 now found in 50 mammal populations, including humans, these hosts serve as "mixing vessels," facilitating the virus's spread to new species. In March, the U.S. reported its first cases of goats with H5N1, and the virus infected dairy cattle in Kansas and Texas. Contrary to CDC reassurances, H5N1 poses a significant threat: it's mutating, adapting, spreading, and could become transmissible between humans at any time. While not a call for isolation, panic or going into collapse survival mode, this is a warning to prepare for a potentially severe pandemic and collapse. For more details on the H5N1 threat a report is available at: <https://collapsesurvivor.com/report.php>



Our violent, divided society could experience some form of “Civil War” following 2024 election



Collapse Survivor App ran a Civil War scenario exercise simulation in March 2024

BUSINESS INSIDER

Ray Dalio predicts there's a 30% chance the US will break out into civil war in the next 10 years

TIME

--Ray Dalio

S3 S37

EXERCISE, EXERCISE, EXERCISE

Yesterday was a record day of campaign violence, with clashes in 29 states, at least 500 people injured, and dozens killed. Looting and home break-ins occurred in most of the 'campaign violence' events as more gang members and opportunistic bad people exploit the widespread political strife and draw down in

2024 Is a Pivotal Year on the Brink This highly polarized, antagonistic mindset will be carried into the 2024 U.S. elections so it is difficult to imagine that either side will accept losing and subjugate themselves to the policies and values of the other side. Those policies and values are too abhorrent to those



Ray Dalio now estimates a greater than 50% likelihood of some form of U.S. civil war

TIME

IDEAS • BOOKS

The Coming Great Conflict

BY RAY DALIO JUNE 25, 2024 2:13 PM EDT

IDEAS

Dalio is an investor and the founder of Bridgewater Associates. He is the author of *Principles: Life and Work*, *Principles for Dealing with the Changing World Order*, and *Principles for Navigating Big Debt Crises*. The views expressed below are his own, not Bridgewater's.

When I wrote the book in 2020, I saw the writing on the wall but had hoped for the possibility that we would not cross the brink into a type of civil war, so I estimated the chance of that as about 1 in 3. At the time, this was considered a crazy high estimate (this was before the 2020 election being contested and the January 6th incident). Now I think the risk of some form of civil war is uncomfortably more than 50 percent, and I am confident that in the next year we will know the answer to whether we will cross the brink.

I believe we are approaching the point in the internal order-disorder cycle when you will have to choose between picking a side and fighting for it, keeping your head down, or fleeing.



Pick a Side and Fight for It, Keep Your Head Down, or Flee



Many organizations, experts rate risks of particular collapse disaster threats as high

Disaster Preparedness Threat Watch and Collapse Warning System's Probability of Collapse model only one to cover all, adjusted for likelihood of generating a collapse, with total estimate of collapse probability



Combating Terrorism Center
AT WEST POINT

THE RISK OF ENGINEERING A HIGHLY TRANSMISSIBLE H5N1 VIRUS

Thomas V. Inglesby, Anita Cicero, and D. A. Henderson

THE BLACK SWAN



The Impact of the
HIGHLY IMPROBABLE

Future
of Humanity
Institute
UNIVERSITY OF OXFORD

[See Backup Slides for Examples](#)

“The history of epidemics, narrowly studied, does not suggest the risks of the great plague to come that will dominate the planet.” -- Nassim Taleb

World at risk the report of the Commission on the Prevention of WMD Proliferation and Terrorism

Report of the Commission on the Prevention of WMD Proliferation and Terrorism / Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Center for
Health Security

Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack



We may also experience an “existential” collapse

“Existential” collapse

1. Vast majority of the population dies (over 90%)
2. Civilization, pre-collapse normal life does not return for generations

“Existential risks are those that threaten the entire future of humanity. Many theories of value imply that even relatively small reductions in net existential risk have enormous expected value. Despite their importance, issues surrounding human-extinction risks and related hazards remain poorly understood.”

-- Dr. Nick Bostrom, Director, Future of Humanity Institute, Oxford University

Existential Risks and Artificial Intelligence

Nick Bostrom

Director, Future of Humanity Institute
Oxford University





UK riots in Aug 2011 showed law & order can breakdown and violence spread without an underlying disaster

UK Prime Minister called it “pure criminality”; others said it was inevitable violence from youth fed up with unemployment, cutbacks in social services, family breakdown

- Attacks on police and looting started in London, spread quickly to cities across the UK
- Rioters coordinated their activities
- Looting and violence grew as more people took advantage of opportunity, “marauding gangs” formed
- Police “lost control” of many areas, innocent people shot dead in cars and robbed on streets
- Violence repeated in London for four nights until extra 16,000 police officers were moved in to restore order.

Main lesson of London: don't need a real disaster to spark looting, murders, violence that spreads:

- Thugs in Birmingham killed three men trying to protect their businesses
- 100s of youths in Manchester looted shop and set fires to cars and buildings
- Five police stations attacked with fire bombs in Nottingham





Collapse could occur without a trigger event—
looting starts and spreads

Baltimore rioters target stores, beat photographer

Donna Leinwand Leger USA TODAY

Published 10:33 p.m. ET April 27, 2015 | Updated 5:47 p.m. ET April 28, 2015





Collapse could occur without a trigger event—
looting starts and spreads

LIVE



BREAKING NEWS

PROTESTORS LOOTING STORES

DOWNTOWN PORTLAND

NATIONAL

VIC



Domestic Unrest



Police Overwhelmed



Looting, Marauding



Daily Mail

HOME DEPOT

Los Angeles Times



CALIFORNIA

LAPD focused on peaceful protesters while ignoring looting, business owners say



March 2024: NY Army Guard mobilized to help subway police in NYC

Even prior to a collapse—police so overwhelmed in NYC that National Guard mobilized to assist

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NEW YORK News Weather Sports Video New York Shows ...

LOCAL NEWS >

Hochul deploys National Guard troops to New York City subway amid rising crime numbers





Gangs will accelerate break down in law & order and magnify marauder threats

- Millions of gang members around the world; probably most in the U.S. and Latin America
- U.S. has 33,000 gangs, over one million gang members
- In a collapse—gangs likely to be marauding, killing from the start
- In addition to local drug and mafia gangs, foreign gangs are present across U.S.
 - MS-13 a Latino gang with tens of thousands of members in most U.S. States
 - Gang known for brutal murders
 - Probably far more gang members now due to open borders
 - When collapse starts, border patrols will likely end, allowing many more gangs and marauders into the U.S.

7 linked to MS-13 accused of Houston murders

DANE SCHILLER

, HOUSTON CHRONICLE

Published 05:30 a.m., Thursday, August 11, 2011

Seven alleged members and associates of the MS-13 street gang are charged with three slayings and committing other mayhem as part of a racketeering operation that killed, robbed and dealt drugs in Houston, officials

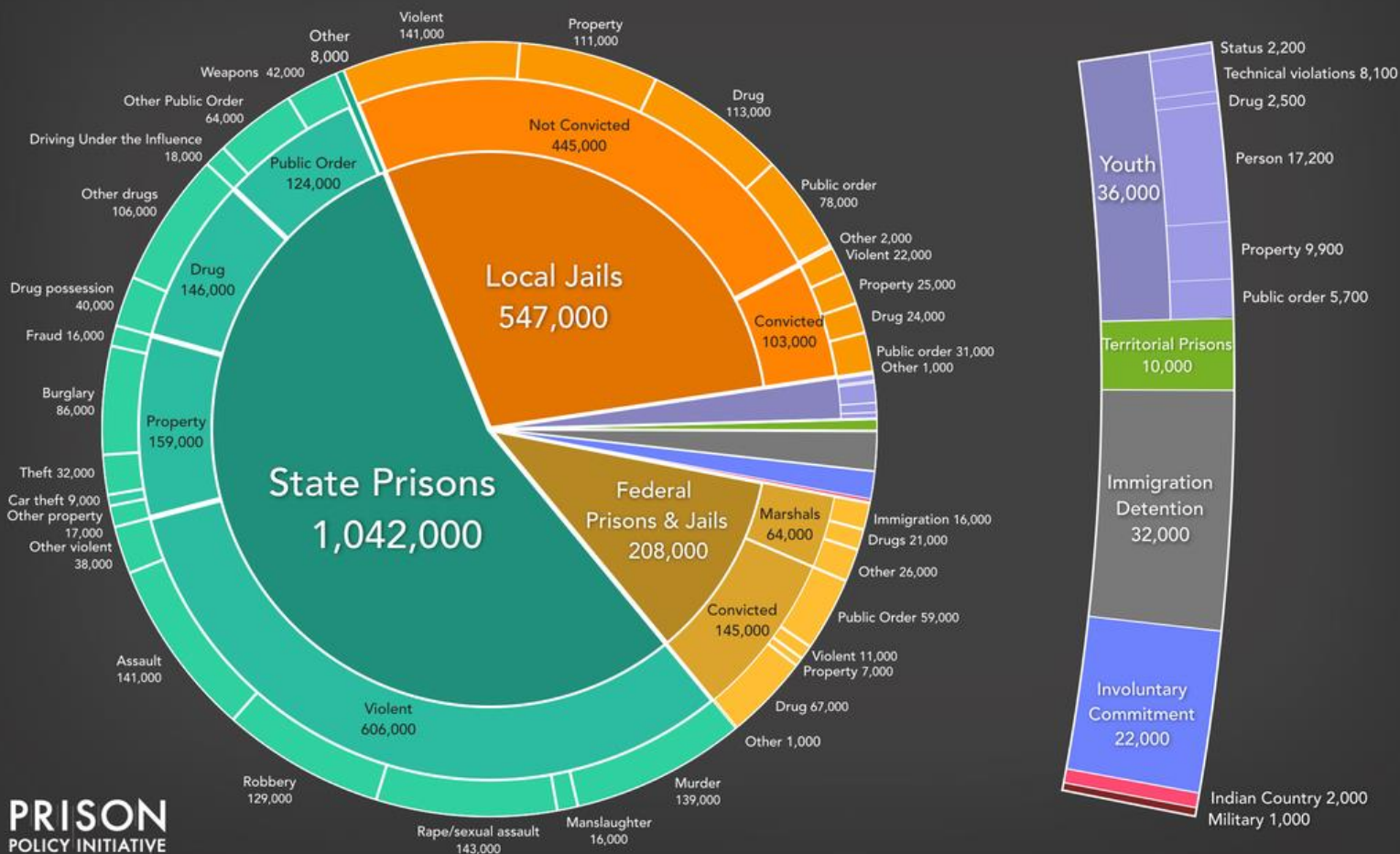




Almost 2 million American are in jail—but will be released or escape in a collapse, unprepared, but well trained to steal, maraud, kill

How many people are locked up in the United States?

The U.S. locks up more people per capita than any other nation, at the staggering rate of 573 per 100,000 residents. But to end mass incarceration, we must first consider *where* and *why* 1.9 million people are confined nationwide.



PRISON
POLICY INITIATIVE

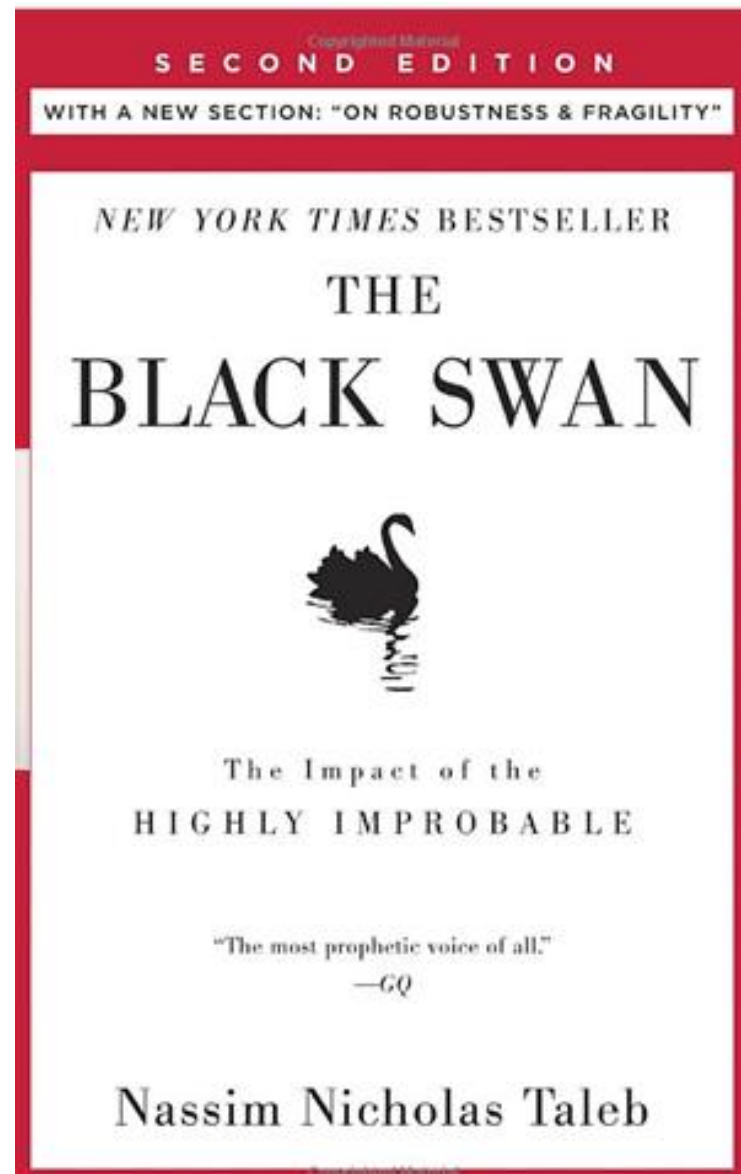
Sources and data notes: See <https://www.prisonpolicy.org/reports/pie2022.html>



Nassim Taleb's book "Black Swan" explains why we consistently ignore or underestimate risk of foreseeable new forms of disaster

A Black Swan event is one that is: an outlier, something outside the realm of regular expectations, nothing in the past can convincingly point to its possibility has an extreme impact

- Covers our extremely bad habits of thinking about and preparing for very rare/bad events
 - We are by nature programmed to ignore the highly improbable
 - We grossly misapply "normal distribution" statistics, risk management techniques
 - Schools and organizations teach and use risk management techniques that are grossly inappropriate to deal with "Black Swan" events
- Do not focus on the known and normal; think of the possible, however improbable, extremes and unknowns: "use the extreme event as a starting point and not treat it as an exception to be pushed under the rug."
- Essential to avoid the very common, very costly mistakes we make in our vulnerability to Black Swan events
- "It is much easier to deal with the Black Swan problem if we **focus on robustness to errors rather than improving predictions.**"

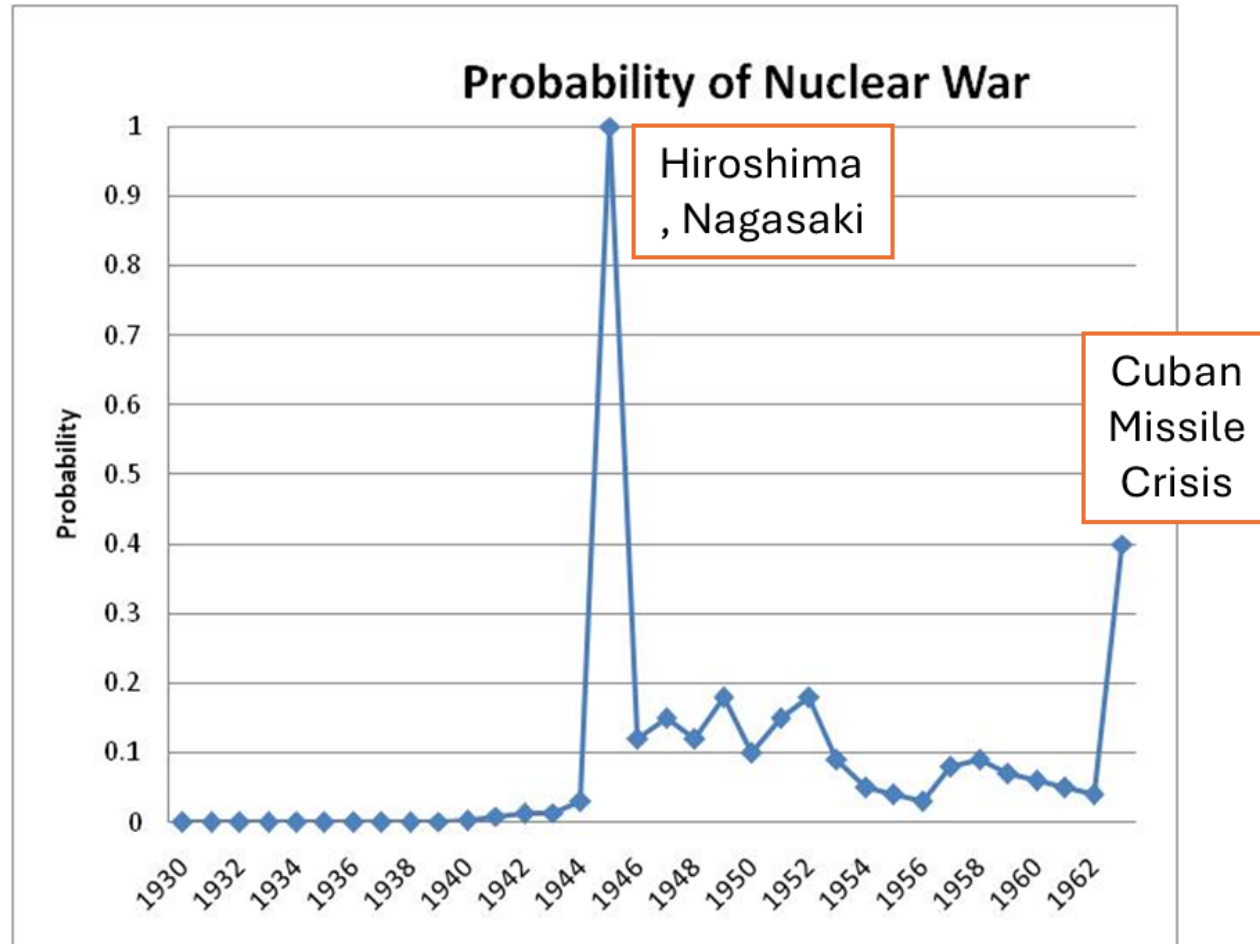




We tend to wrongly assume that low probability disasters won't happen

This is what rare events look like in retrospective

- Up until Aug 1945, the probability of a nuclear explosion was rated as 0
- Impossible to calculate a probability of nuclear war then, and today—but it is not a low probability because you cannot calculate it
- During the Cuban Missile Crisis the probability of nuclear war was 33-50%

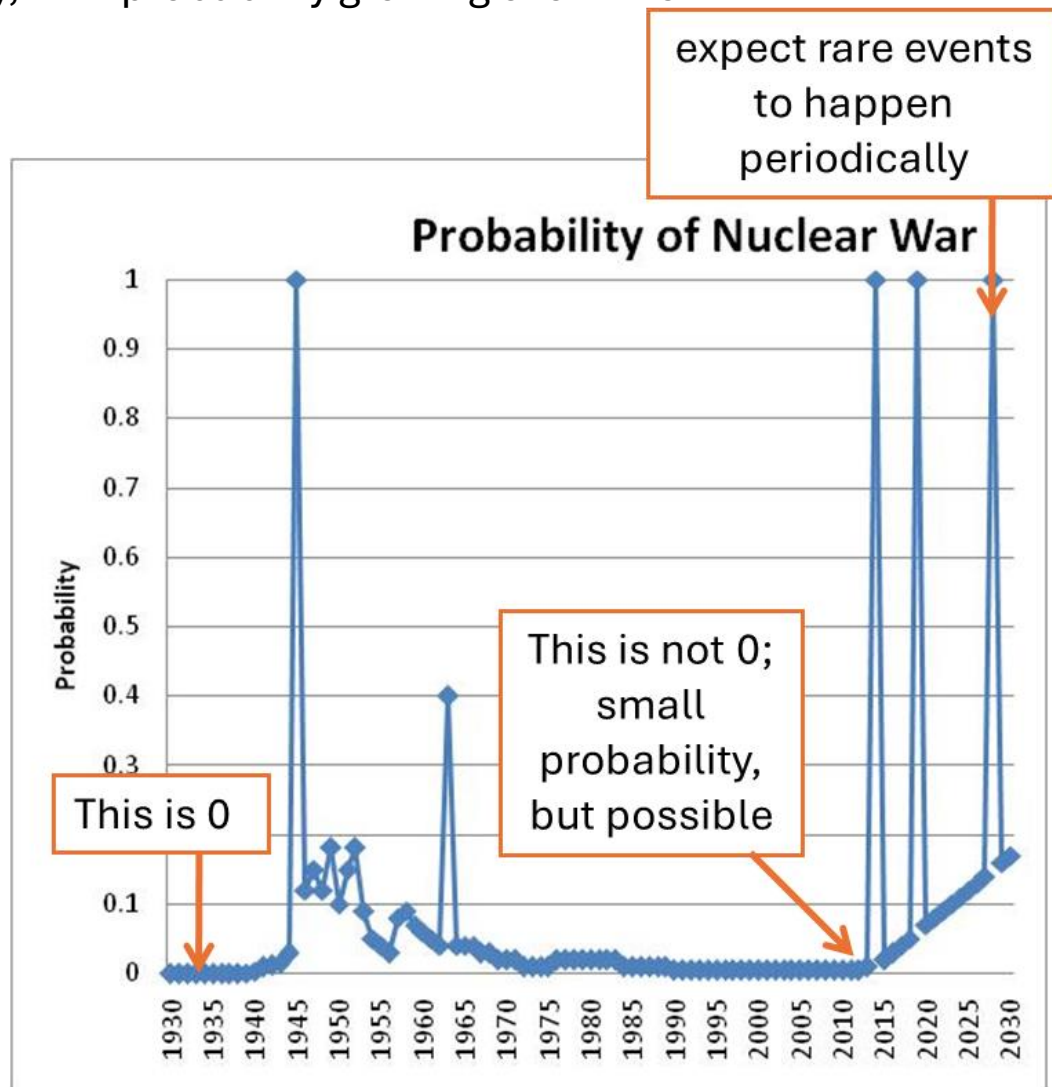




The misperceived threat of nuclear war illustrates how we tend to underestimate collapse risks

Popular conception is that risk of nuclear war is extremely small is wrong—nuclear weapons use is likely, with probability growing over time

- The likelihood of nuclear weapons use is high—and increasing in probability as U.S. arsenal declines and ages, and willingness to use nuclear weapons fades
- Russia never abandoned tactical nuclear weapons, retains nuclear force that could defeat us—especially with U.S. constrained by politicians
- Best means of defeating the better technology of U.S. military is to attack with HEMP (High altitude EMP strike) or battlefield nuclear weapons use against U.S. troops
- A determined enemy like China could defeat U.S.
 - HEMP attack (which would disable U.S. military as well as U.S. economy)
 - Bioterrorism (easy to do without attribution)
 - Inoculations for China's VIPs
 - Loss of huge portion of China's population may not deter ruthless leadership





Most experts rated probability of nuclear war as much higher than recent past, up due to Ukraine-Russia war, China's determination to retake Taiwan, North Korea threat, likelihood of Iran having nuclear capability soon, risk that any major conflict could have irrational or unintended escalation to nuclear weapons use

- Low estimate of annual likelihood of nuclear weapons use:
 - 2.6%
- Low estimate of annual likelihood of nuclear weapons use that leads to a collapse:
 - 0.7%
- High estimate of annual likelihood of nuclear weapons use:
 - 17%
- High estimate of annual likelihood of nuclear weapons use that leads to a collapse:
 - 5%

**Former Secretary of Defense Donald Rumsfeld:
“The only surprise is that we’re surprised
when we’re surprised”**



Some good news:

Global Warming Problem alleviated

Unfortunately, alleviated because with deaths of billions of people, months or years of little factory production, pollution and global warming will be drastically reduced, unlikely to return to pre-collapse levels for years or decades

Which is why we face a considerable risk of a biologist, environmentalist, developing and releasing a deadly virus that kills most humans to “save the planet”

Global Warming

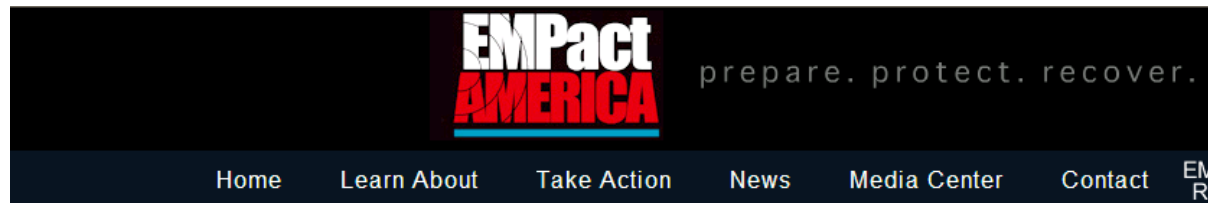


Congressional reaction to EMP threat illustrates irresponsible government failure to address risks, warn public, or prepare citizens to survive a collapse

- Congressional Committee that documented grave EMP threat to U.S. infrastructure failed to achieve any funding or programs to fix vulnerabilities

- Executive Chair of Committee formed “EMPact America” to try to generate public support
- Threat of Electro Magnetic Pulse (EMP) from solar flares or high altitude nuclear weapon detonation could destroy electronic systems across the country
- **EMP Committee warned that grid is very vulnerable and 90% of Americans could be killed**
- **After receiving report, U.S. Congress did nothing**
- **Decade plus later: still no government program to harden fragile electric grid**
- Panel discussion of EMP Threat:

<http://www.c-spanvideo.org/program/301046-1>

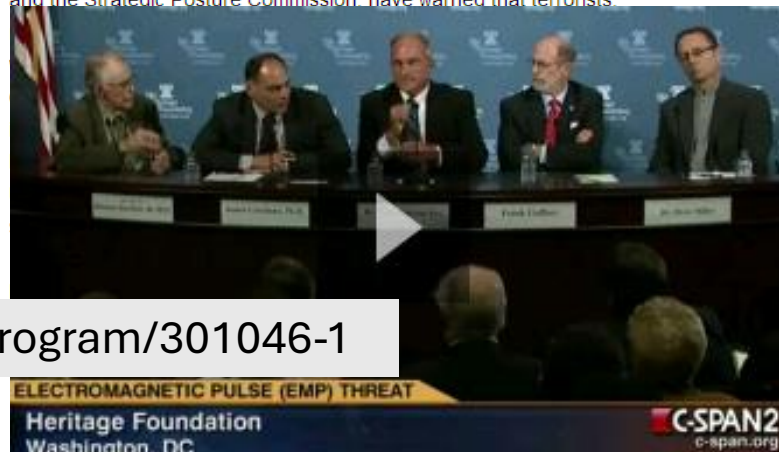


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About EMPACT America, Inc.

EMPACT America is a bipartisan, non-profit (with IRS 501(c)4 status) organization for citizens concerned about protecting the American People from a nuclear or natural electromagnetic pulse (EMP) catastrophe. Two Congressional Commissions, the EMP Commission and the Strategic Posture Commission, have warned that terrorists



...would cause the collapse of critical civilian infrastructures - such as infrastructures for electric power, telecommunications, transportation, banking



Why isn't the Government warning of us of these collapse threats or addressing them?

1. Career politicians are focused on re-election not your survival prospects
 - Utility and corporate and big university lobbyists own career politicians (we need term limits!)
 - No reelection votes, special interests and lobbyists pushing for preparedness
 - If they vote for preparations and attack doesn't come—might lose votes for “wasting money” or “crying wolf”
2. Government officials want a dependent public that follows their direction and trusts them to know what's best, will protect them
 - Don't want to panic the public
 - Don't want to look ineffective
 - Prefer a dependent, docile citizenry to well prepared citizens
3. Preparedness requires weapons—Democratic Party champions gun control and wants to outlaw “military capable” weapons that are vital to fend off marauder groups in a collapse
4. Government officials will be protected in a collapse at Mount Weather, Raven Rock, other FEMA and military survival facilities
5. Dept of Defense focused on external threats, Dept of Homeland Security is lead on domestic protection and recovery
 - DHS doesn't have budget or capability to deal with home land defense
6. Improving security requires getting rid of thousands of government regulations banning wood stoves, stockpiling antibiotics, zoning and building codes that block survival facilities
7. Most Congressmen are lawyers or professional politicians with no foreign policy or national security experience, expertise or interest in security



The Center For Disease Control is irresponsibly lying to American People with calming assurances that H5N1 is “low risk”

Via natural mutations or human manipulation and bioengineering H5N1 will very likely yield the worst disaster in human history

A former CDC Director, not under political constraints, gave the honest warning about H5N1:

Former CDC director predicts bird flu pandemic

BY LAUREN IRWIN - 06/15/24 9:43 AM ET



Former Centers for Disease Control and Prevention (CDC) Director Robert Redfield said an H5N1, “bird flu” pandemic will happen, it’s just a matter of when. The virus continues to mutate and spread in dozens of mammal species, expanding now in cattle across the country, recently killing a human in Mexico. Redfield said the lethality of the virus in humans is “probably somewhere between 25 and 50 percent mortality.” Redfield said he knows exactly what has to happen for the virus to get to the point of human to human transmissibility because he’s done lab research on it.

Former CDC Director also called for ban on gain of function research



Bottom Line Conclusions:

- 1) probability of disaster events is high and rising
- 2) initial disaster may be less likely to kill you than starvation and marauder attacks
- 3) irresponsible government is not preparing for a collapse, will not help citizens survive
- 4) you need to prepare for a collapse!

- Many threats could kill you directly or lead to economic shut down, looting, violence that escalates in unpredictable manner and results in marauders
 - 1) New Technologies: DNA manipulation and bioengineering, easier means to make nuclear materials, nanotechnology, Artificial Intelligence
 - 2) Rising overpopulation
 - 3) Increased economic interdependence, just in time inventories, long-distance sourcing
 - 4) Very high dependence on long-distance food shipments, inadequate local water
 - 5) Less personal resilience
 - 6) More bad people, gangs, prisoners ready to maraud
- Probability of collapse high now and will keep increasing



We have entered “The Age of Collapse”

- AI will raise the likelihood and severity of many existing collapse threats
 - AI being used to develop new medicines and in bioengineering will be misused to develop deadly new viruses
 - Develop easier/faster means to enrich uranium for nuclear weapons
 - Exploit nanotechnology, new poisons for water systems, other ways to kill people

Link to “Age of Collapse” study by Dr Drew Miller:

<https://www.ida.org/-/media/feature/publications/t/th/the-age-of-bioengineered-viral-pandemics-and-collapse/d-5335.ashx>

Link to Video on Age of Collapse:

<https://www.youtube.com/watch?v=kaQ1tAERPH4&t=215s>

Dr/Col Drew Miller

The Age of Collapse

IDA INSTITUTE FOR DEFENSE ANALYSES

NSD-5335

The Age of Bioengineered Viral Pandemics and Collapse

Drew Miller

Time to Get Prepared!

Dr. Drew Miller
Col USAF (Ret)



Key Changes needed for Collapse Survival

Nassim Taleb: “Black Swans being unpredictable, we need to adjust to their existence (rather than naively try to predict them). . . . **focus on robustness to errors rather than improving predictions.**”

- Government Civil Defense Food Stockpile Program
- Individual food/water stockpile, survival preparedness
- Plant Jerusalem Artichoke, garden
- Guns and ammo to protect supplies (including “military capable” weapons)
- Hardening the electric grid, micro grids
- Army Guard create a “Civil Ground Patrol” to mobilize volunteer help for disaster recovery operations
- Expand size of Army National Guard
- All Guard and Reserve and Active Retired personnel should have small arms
- Insist on Natural Right to Survive, use private property—refuse zoning, codes, regulations that endanger your survival plans without causing harm to others
 - For more information see <https://constall.org>

Difficult, unpopular, but likely necessary changes:

- No densely populated big urban areas
- Mandatory quarantine/hold (for days) for all international travel
- Local sourcing of food and water



Collapse Survivor mobile App

Warnings of collapse threats

App also offers preparedness education, simulation training exercises, other features



Col Drew Miller created this App and is an owner.



Collapsesurvivor.com



Scientists and Warren Buffet agree: Prepare your family and organization to survive the worst possible threats

Professor Nick Bostrom, Oxford University:

“the balance of evidence is such that it would appear unreasonable not to assign a substantial probability to the hypothesis that an existential disaster will do us in. My subjective opinion is that setting this probability lower than 25% would be misguided, and the best estimate may be considerably higher.”

Warren Buffet:

“The CEO should regard his position #1 as the Chief Risk Officer. Now you have a lot of other functions too, but you should wake up every morning and think about ‘is this place built to take everything’?”

Nassim Taleb, “The Black Swan” author, professor of risk engineering at NYU-Poly:

“Our connected world appears to be more efficient. . . But when there is a disturbance, the setback is much harder to handle. Not only are we building riskier systems, but also the risks involved in failure are a lot larger. . . . We are incapable scientifically of measuring the risk of rare events. We tend to underestimate both the probabilities and the damage.”



BACKUP SLIDES

1. Probability of Collapse Model Calculations
2. New technologies, growing risks and likelihood of a collapse disaster
3. Organizations, Experts warning of Collapse Disaster Risks



Probability of Collapse Model Calculations

- Surveyed experts estimate low/high likelihood of 49 major disaster “trigger events” occurring
- Some estimate all threats, others only in their area of expertise
- Contact Dr/Col Miller to see actual spreadsheets

	LD	DM	CJ	BW	HG	CM	DE
<u>Viral Pandemics</u>							
1	Natural Pandemic	0.0100	0.0300	0.0100	0.0100	0.0300	0.0100
	Bioengineered:						
2	A accidental lab release	0.0200	0.0400		0.0025	0.0100	0.0100
3	B lone wolf terrorist	0.0050	0.0200		0.0025		0.0500
4	C biohackers	0.0050	0.0100		0.0025		0.0500
5	D nation state biowarfare	0.0100	0.0500		0.0025	0.0100	0.1000
6	Meteor born or space travel virus or bio contamination	0.0010	0.0001		-		0.0100
7	Non-Human plant/animal/insect	0.0600	0.0300		0.0100		0.0100
	viral pandemics/species collapse						
	Other: (describe):						
<u>Natural threats</u>							
8	Major Asteroid	0.0120	0.00000	0.00000	0.0050		0.0100
9	Super-volcano explosion	0.0001	0.00001	0.00001	0.0050		0.0100
10	Massive Earthquakes	0.0250	0.0010		0.0050	0.0300	0.1000
11	Mega Tsunami	0.0150	0.0005		0.0050	0.0100	0.0100
12	Major Hurricanes overwhelm responders, looting takes off	0.0500	0.0010		0.0025	0.0200	0.0500
13	Solar flare Electro-Magnetic Pulse (EMP) destroys electric grid	0.0150	0.0100		0.0050	0.0100	0.0667
14	Polar magnetic shift	0.0001	0.00001	-	0.0001		0.0080
	Other: (describe):						
<u>Other Medical/Environmental</u>							
15	Other bioengineered lifeforms as weapons	0.0150	0.0001		0.0025	0.0100	0.0100
16	"runaway" Genetically Engineered Organism disaster		0.0001		0.0025		0.0100
17	antibiotic resistance, super bacteria		0.0010		0.0001		0.0300
18	Overpopulation (resource wars)	0.0500	0.0005		0.0001		0.0100
19	Severe water shortages	0.0150	-		0.0001		0.0500
20	Environmental damage	0.0045	0.0001	0.0400	0.0001		
21	Global warming	0.0050	-	0.0500	0.0025		0.0900
22	Climate Change/food supply disruption		-	0.0300	0.0001		0.0900
23	Gulfstream shutdown		0.0000		0.0001		0.0900
	Other: (describe):						
<u>Nuclear</u>							
	Nuclear Weapons use by:						
24	A terrorist group		0.0001		0.0025	0.0001	0.05
25	B Rogue state (Iran)		0.0001		0.0025	0.0002	0.05
26	C China/Russia		0.0500		0.001	0.05	0.07
27	EMP attack destroys electric grid		0.0100		0.0050	0.0400	0.1
28	Nuclear power accidents	0.0010	0.0010	0.0200	-		0.0100
	Other: (describe):						
<u>Economic/Societal/Law&Order Breakdown</u>							
29	Economic collapse looting/violence/breakdown		0.0030		0.0001		0.01
30	Natural disaster sparked looting/violence/breakdown		0.0050		0.0001		0.09
31	Crop failure/food supply disruption looting/violence/breakdown		0.0001		0.0001		0.09
32	Domestic civil war over political disagreements, secession		0.0200		0.001		0.09
33	Peak oil/Economic Collapse/Food production decline		0.0001		0.0001		0.09
34	Drug wars/Organized Crime/Violence breakdown		0.0005		0.0025		0.09
35	Immigration/loss of border control/violence/breakdown		0.0050		0.0025		0.09
36	Flash mobs, looting escalates out of control		0.0050		0.0001		0.1
37	Societal breakdown over other causes, violence escalates		0.0080		0.0001		0.1
	Other: (describe):						
<u>Cyber/Computer/Robot</u>							
38	hackers/terrorist Computer Network Attack destroys electric grid	0.01	0.0005	0.0100	0.0050		0.0100 0.0300
39	nation state Computer Network Attack destroys grid	0.05	0.005	0.0200	0.0050		0.0200 0.0300
40	Computer Network Attacks destroy other vital infrastructure		0.005	0.0100	0.0050		0.0050 0.0500
41	Artificial intelligence--bad AI and robots	0.001	0.00001	-	0.0001		0.00001 0.01
	Other: (describe):						
<u>Black Swan events</u>							
42	High energy physics experiment disaster		0.00001		0.0001		0.01
43	Nanotechnology disaster		0.00001		0.0001		0.01
44	Invader from space		0.00001	-	0.0001		0.01
45	Others from new technology or unimaginable now technologies		0.00010		0.0001		
	Other: (describe):						
<u>Other events</u>							
46	Military invasion of U.S.	0.00001	0.00010	-	0		0.005
47	Widespread IEDs/SAMs/ATGM* terrorist attacks in U.S.		0.00100		0.0001		0.005
48	Conventional World War		0.00500		0.01		0.01
49	Physical attacks on key nodes destroys electric grid	0.01	0.00500		0.0001		0.04



Probability of Collapse Model Calculations

- Probability estimates averaged, adjusted for double counting (could be multiple collapse events year)
- Contact Dr/Col Miller to see actual spreadsheets

Table with columns: Double Count Adjustments, Total DC adjust, and Adjusted Avg Probability of Event. The table contains a large grid of numerical values representing probability calculations.



Probability of Collapse Model Calculations

Probability Escalation	LD	DM	CJ	BW	HG	CM	DE	DG	JH	CP	RW	RS	TP	AP	DT	LH	MS	HD	DW	BG	SR	GR	BF	Count	Total	Avg	
7.0000	8.0000	9.0000	5.0000	6.0000		8.0000	5.0000	9.0000		8.0000	9.0000	-	-	-	5.0000	3.0000	8.0000		7.0000	9.0000	-	8.0000	-		22	114	5
5.0000	8.0000		5.0000	6.0000		8.0000	5.0000	8.0000	8.0000	8.0000	9.0000	-	-	-	5.0000		-	-	-	9.0000	-	-	-		20	76	4
3.0000	8.0000		5.0000			8.0000	5.0000	7.0000	8.0000	9.0000	-	-	-	-	5.0000		-	-	-	9.0000	-	-	-		18	62	3
3.0000	8.0000		5.0000			8.0000	5.0000	8.0000	8.0000	9.0000	-	-	-	-	5.0000		-	-	-	9.0000	-	-	-		18	63	4
4.0000	8.0000		5.0000	6.0000		8.0000	5.0000	9.0000	8.0000	9.0000	-	-	-	-	5.0000		-	-	-	9.0000	-	-	-		21	81	4
1.0000	2.0000					4.0000						-	-	-		5.0000	-	-	-	5.0000	-	-	-		16	12	1
4.0000	5.0000		2.0000			4.0000	5.0000	2.0000		6.0000	5.0000	-	-	-			0	0	0	0	0	0	0		18	38	2
												-	-	-			0	0	0	0	0	0	0				
												-	-	-			0	0	0	0	0	0	0				
												-	-	-			0	0	0	0	0	0	0				
6.0000	5.0000	8.0000	5.0000			8.0000		7.0000			9.0000	-	3.0000	-		5.0000	-	-	-	-	7.0000	-	-		19	63	3
7.0000	5.0000	8.0000	2.5000			6.0000		5.0000			9.0000	-	3.0000	-		6.0000	-	-	-	-	8.0000	-	-		19	60	3
5.0000	2.0000		2.5000		4.0000	6.0000		4.0000			7.0000	-	3.0000	-		4.0000	-	-	-	-	5.0000	-	-		19	43	2
4.0000	2.0000		2.5000		4.0000	9.0000		4.0000			7.0000	-	3.0000	-		2.0000	-	-	-	-	5.0000	-	-		19	43	2
5.0000	2.0000		1.0000		4.0000	7.0000		3.0000			5.0000	-	1.0000	-		1.0000	-	-	-	-	5.0000	-	-		19	34	2
8.0000	5.0000		5.0000		4.0000	10.0000		8.0000			9.0000	-	3.0000	-		5.0000	-	-	-	-	8.0000	-	-		19	65	3
9.0000	2.0000		2.0000			9.0000						-	3.0000	-			-	-	-	-	-	-	-		17	25	1
												-	-	-			0	0	0	0	0	0	0				
												-	-	-			0	0	0	0	0	0	0				
8.0000	5.0000		5.0000	6.0000		5.0000						-	9.0000	-	-		5.0000	-	-	5.0000	-	-	-		17	48	3
	5.0000		5.0000			5.0000		7.0000			9.0000	-	-	-			5.0000	-	-	5.0000	-	-	-		16	41	3
	2.0000		0.5000			4.0000		9.0000			3.0000	-	-	-			1.0000	-	-	5.0000	-	-	-		16	30	2
7.0000	3.0000		1.0000			10.0000		5.0000			5.0000	-	-	-			5.0000	-	-	-	-	-	-		17	41	2
8.0000	3.0000		0.5000			10.0000		5.0000			5.0000	-	-	-			5.0000	-	-	-	-	-	-		17	42	2
7.0000	2.0000		0.5000			5.0000		5.0000			5.0000	-	-	-			5.0000	-	-	-	-	-	-		16	25	2
7.0000	2.0000		4.0000	1.0000		7.0000		2.0000			3.0000	-	-	-			5.0000	-	-	-	-	-	-		18	36	2
8.0000	2.0000		4.0000	1.0000		6.0000		2.0000			3.0000	-	-	-			5.0000	-	-	-	-	-	-		18	36	2
1.0000			1.0000			7.5000						-	-	-			5.0000	-	-	-	-	-	-		15	10	1
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												-	-	-			0	0	0	0							



Probability of Collapse Model Calculations

		Adjusted Avg Probability of Event	Avg Likelihood Escalation to Collapse Rating	2025 LOW Probability of Collapse
	total			
	DC adjust			
	0.0001	0.0120	5.2	0.0062
	0.0001	0.0080	4.0	0.0032
	0.0001	0.0100	3.4	0.0035
	0.0001	0.0093	3.5	0.0033
	0.0003	0.0230	3.9	0.0089
	0.0000	0.0015	0.8	0.0001
	0.0001	0.0099	2.1	0.0021

- Model calculates low and high estimates of likelihood of a collapse:
 - annual chance of a trigger event happening
 - likelihood of a collapse occurring
- For low estimate of collapse risks:
 - 55% chance of a trigger event happening during the year
 - 16% likelihood of a collapse occurring
- Contact Dr/Col Miller to see actual spreadsheets

000	0.0000		0.0000	0.0012	2.4	0.0003
000	0.0000		0.0000	0.0013	2.9	0.0004
000	0.0000		0.0000	0.0021	3.8	0.0008
001	0.0002		0.0001	0.0124	3.1	0.0039
			-			
			-			
			-			
000	0.0000		0.0000	0.0005	3.8	0.0002
000	0.0000		0.0000	0.0032	2.8	0.0009
	0.0001		0.0001	0.0091	3.6	0.0033
001			0.0001	0.0119	4.8	0.0057
Combined Probability of a Collapse						
			Avg Low Probability:	55%		16%



BACKUP SLIDES

2. New technologies, growing risks and likelihood of a collapse disaster



CRISPR technology is enabling fantastic genetic engineering—but also fabulous bioweapons and designer viruses

WIRED

Easy DNA Editing Will Remake the World. Buckle Up.

The Genesis Engine.

We now have the power to quickly and easily alter DNA. It could eliminate disease. It could solve world hunger. It could provide unlimited clean energy.

It could really get out of hand.
by Amy Maxmen

- “a gene-editing technique called Crispr . . . could at last allow genetics researchers to conjure everything anyone has ever worried they would—designer babies, invasive mutants, species-specific bioweapons, and a dozen other apocalyptic sci-fi tropes.”
- “a tool for genome engineering. It was elegant and cheap. A grad student could do it.”
- “When I ask Church for his most nightmarish Crispr scenario, he mutters something about weapons and then stops short.”



Genetically modified Mosquito Pupae created at Virginia Tech using CRISPR

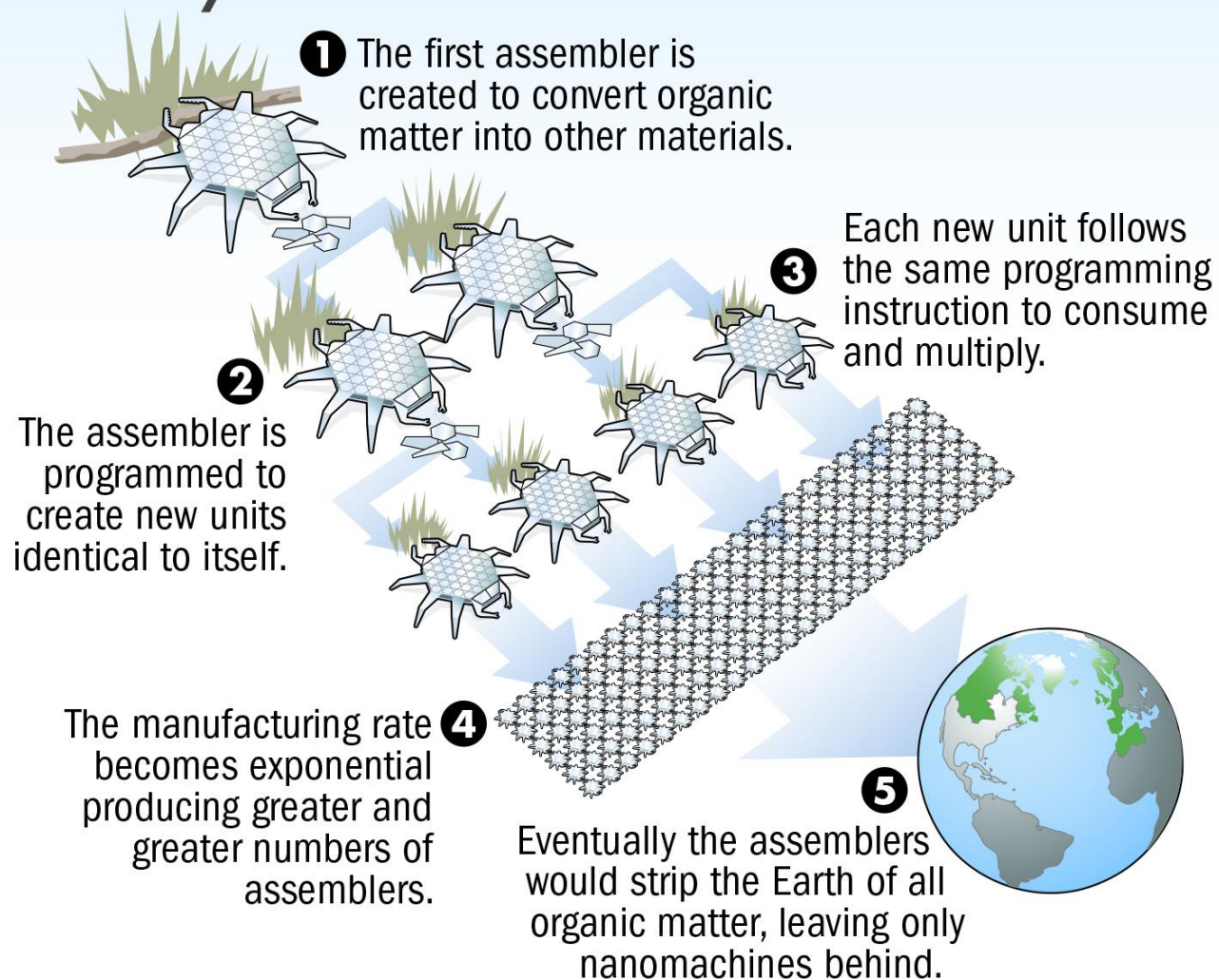


Many other new technologies raising ability of rogue nation, terrorist group, or individual to kill off much or most of humanity

- Nanotechnology

The Gray Goo Scenario

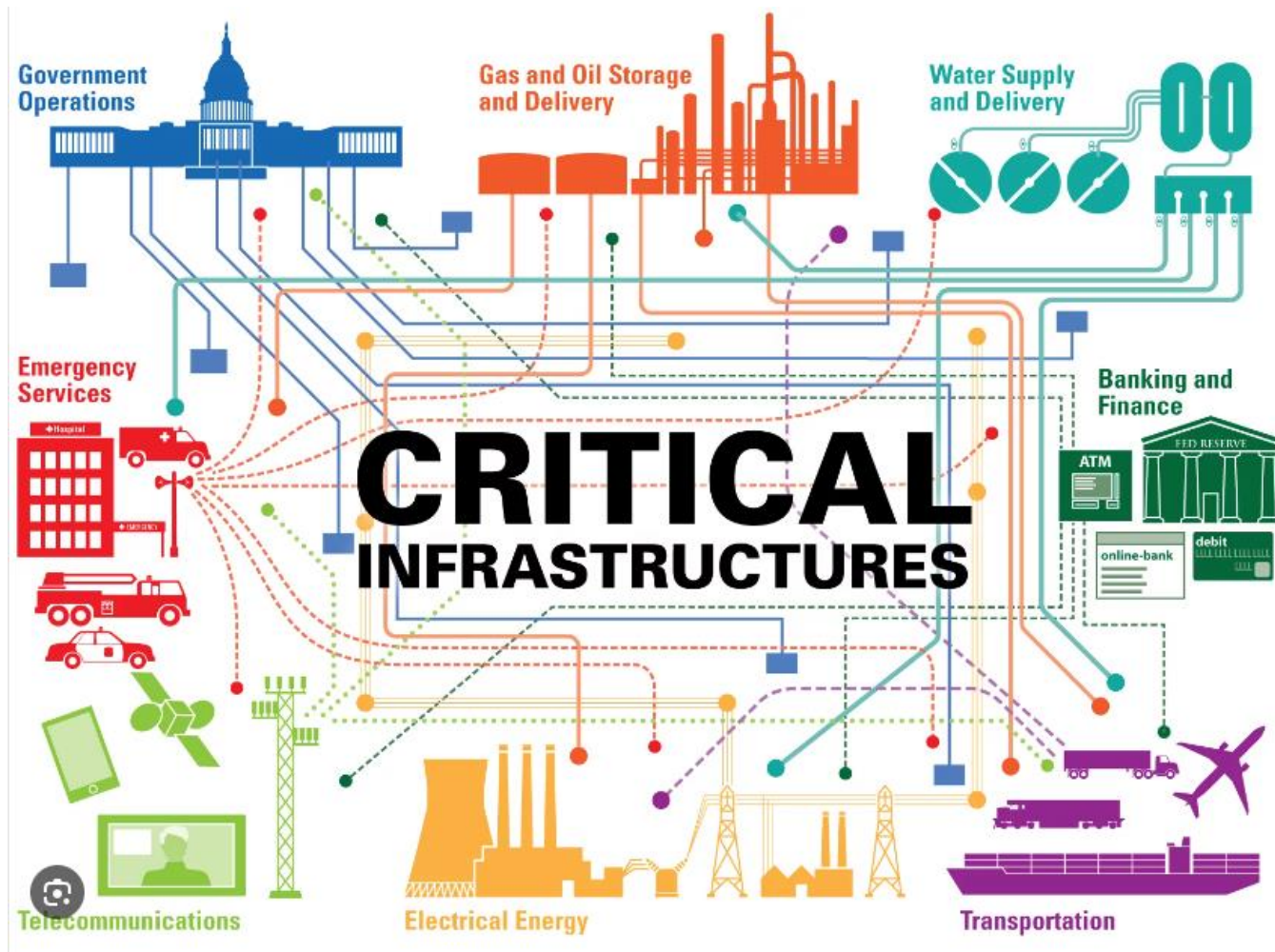
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Many other new technologies raising ability of rogue nation, terrorist group, or individual to kill off much or most of humanity

- Nanotechnology
- Cyber attacks



<https://www.linkedin.com/pulse/cyber-attacks-critical-infrastructure-your-prepared-brett-gallant-h5bne/>



Many other new technologies raising ability of rogue nation, terrorist group, or individual to kill off much or most of humanity

- Nanotechnology
- Cyber attacks
- New means to enrich uranium for nuclear weapons

Evolution of Enrichment Technology

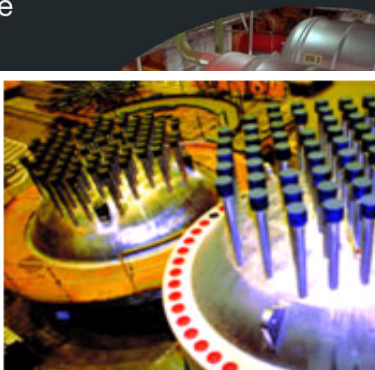
1st Generation Technology

Gaseous Diffusion

Very low efficiency

High cost

Obsolete



2nd Generation Technology

Centrifuge

Modest efficiency

Lower cost

Current technology



3rd Generation Technology

SILEX Laser

High efficiency

Anticipated to be lowest cost

The future of uranium enrichment



General Electric says it has successfully tested a faster, cheaper way to produce nuclear reactor fuel, and is planning to commercialize the technology by building a facility in Wilmington, N.C. While the prospect of saving resources to generate energy at a lower price sounds like a breakthrough, scientists are concerned that the top-secret method of enrichment that GE is using will indirectly elevate proliferation risks around the world, thus inspiring

rogue states to develop their own laser enrichment facilities for nuclear weapons.



Many other new technologies raising ability of rogue nation, terrorist group, or individual to kill off much or most of humanity

- **Nanotechnology**
- **Cyber attacks**
- **New means to enrich uranium for nuclear weapons**
- **Hypersonic Cruise Missiles**





A Small Asteroid, Large Volcano Eruption, major Crop Failure could trigger a collapse

- Large asteroid strikes that cause mass extinctions very rare, but smaller ones that level large areas of land or trigger 100+ foot Tsunamis, throw up debris that blocks sunlight and leads to a few years of crop failures more common
 - 200 foot diameter asteroid (size of 1908 “Tunguska” event in Siberia that felled 80 million trees over 830 square miles) occurs about once every 400 years
- Supervolcano eruptions throw up debris that partially blocks sun and causes “volcanic winter”
 - Mount Tambora in 1816 led to “Year Without a Summer”
- Events like these could lead to massive crop failures from direct impact, blocked sunlight, disruption of monsoon/major weather patterns

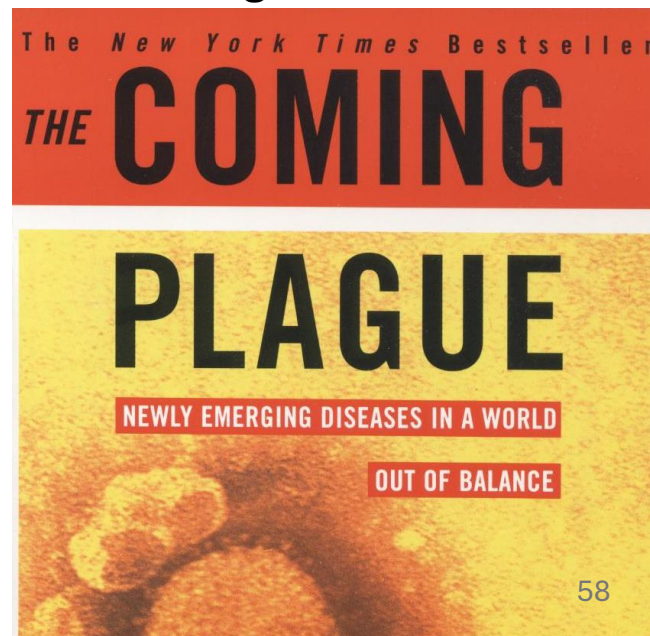
Asteroid /Supervolcano → Sun block/Weather Changes → Massive Crop Failures

- In poor countries, lack of food could trigger resource wars, mass refugee movements
- In wealthier countries, high food prices and shortages, other impacts of the trigger event could lead to looting, criminal violence, breakdown in law and order, and political revolution
 - French Revolution, many past wars and revolutions have been triggered by food shortages and mass discontent/panic



There are existing, regularly recurring disastrous events (probability of occurrence = 1.0) that might combine with others, escalate to trigger a collapse

- There have been about 15 mass extinctions in last 500 million years
 - 5 of these eliminated more than half of all species then inhabiting Earth
- Ireland still has not recovered to pre-Potato famine population levels, 100+ years ago
- We have viruses today like Ug99 that can cause 100% crop losses in most modern varieties, bee colony collapse that threatens Western Honeybee, vital for pollination
- 40% of world's agricultural land is seriously degraded, water shortages bad and getting worse, while populations continue to rise
- 100 days world wheat stocks 10 years ago, 36 days now
- It's not necessarily the initial or "triggering" disaster that you need to worry about, but the "cascading effects", concurrent problems, escalation and spread of economic shut down, loss of law and order, that results in a horribly bad, long lasting collapse





The impact of a disaster will be much greater than the consequences of the initial triggering event as problems spread and bad actors exploit disruptions

1. There are “cascading effects”, for example:

Solar flares → Electrical grid knocked out

→ Economic disruptions

→ Surge in crime and violence (lights out, police less capable)

→ Nuclear Plant shutdown failure (EMP takes out some shutdown systems, key personnel staying home to protect families, etc.)

→ Radiation Release other bad effects

2. There are multiple-risk interactions and amplifications

- The impact of Solar flares/EMP in isolation may be readily resolved, but other disasters happening concurrently may have multiplicative, not additive impact

3. Bad people, gangs, will use disasters as “excuse to loot”, people without food will maraud, violence escalate

4. Enemies will “pile on”

- If China wants to invade Taiwan, best time to do it is when U.S. is clobbered by some domestic disaster
- If China invades Taiwan, excellent time for North Korea to invade South Korea
- etc.



Many organizations, experts rate risks of particular collapse disaster threats as high

Disaster Preparedness Threat Watch and Collapse Warning System's Probability of Collapse model only one to cover all, adjusted for likelihood of generating a collapse, with total estimate of collapse probability



Combating Terrorism Center
AT WEST POINT

THE RISK OF ENGINEERING A HIGHLY TRANSMISSIBLE H5N1 VIRUS

Thomas V. Inglesby, Anita Cicero, and D. A. Henderson

THE BLACK SWAN



The Impact of the
HIGHLY IMPROBABLE



Future
of Humanity
Institute
UNIVERSITY OF OXFORD

Backup Slides Examples on following slides

“The history of epidemics, narrowly studied, does not suggest the risks of the great plague to come that will dominate the planet.” -- Nassim Taleb

World at risk the report of the Commission on the Prevention of WMD Proliferation and Terrorism

Report of the Commission on the Prevention of WMD Proliferation and Terrorism / Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Center for
Health Security

Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack



Biosecurity in the Wake of COVID-19: The Urgent Action Needed

NOVEMBER/DECEMBER 2020, VOLUME 13, ISSUE 11

Authors:

HAMISH DE BRETTON-GORDON

The Combating Terrorism Center at West Point warned in a 2020 report that:

- “the risk of a future destructive biological attack or another devastating global pandemic should no longer be seen as low. From this point forward, there should no higher priority for the international community than biosecurity.”
- Colonel Hamish Stephen de Bretton-Gordon OBE is a chemical weapons expert. He was a British Army officer for 23 years and commanding officer of the UK's Joint Chemical, Biological, Radiological and Nuclear Regiment and NATO's Rapid Reaction CBRN Battalion.

<https://ctc.westpoint.edu/biosecurity-in-the-wake-of-covid-19-the-urgent-action-needed/>



Biological Threats to US National Security



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Center for
Health Security

Witness or presenter:

Tom Inglesby, MD

Testimony date:

November 20, 2019

Event type:

Testimony before the US Senate

In terms of deliberate threats, we continue to face the prospect of biological weapons attacks, both from known very high consequence pathogens, such as the agents that cause anthrax and smallpox, as well as from unknown novel and engineered biological threats. Epidemics could also emanate from pathogens that are released from research labs accidentally, including from laboratories working on non-circulating

Every government with any life science capability can now sequence and synthesize whatever it would like to. Genomes can be engineered to give them new, potentially dangerous characteristics, transforming pathogens that are now benign into pathogens that have the ability to spread or the ability to be lethal.

<https://centerforhealthsecurity.org/our-work/testimonies-briefings/biological-threats-to-us-national-security>



Greatest threat to mankind in history: small terrorist group or one individual can create contagious, highly lethal virus

Dec 2010 Brookings Institution study:

Benjamin Wittes

Innovation's Darker Future: Biosecurity, Technologies of Mass Empowerment, and the Constitution

“Using gene-splicing equipment available online and other common laboratory equipment and materials, a molecular biology graduate student undertakes a secret project to recreate the smallpox virus. Not content merely to bring back an extinct virus to which the general population is now largely naïve, he uses public source material to enhance the virus’s lethality, enabling it to infect even those whom the government rushes to immunize. . . . While time-consuming, the task is not especially difficult. And when he finishes, he infects himself and, just as symptoms begin to emerge, he proceeds to have close contact with as many people from as many possible walks of life as he can in a short time. . . Technologies that put destructive power traditionally confined to states in the hands of small groups and individuals have proliferated remarkably far. That proliferation is accelerating at an awe-inspiring clip across a number of technological platforms. Eventually, it’s going to bite us hard.”



Many experts regard manufactured virus bioterrorism attacks as inevitable

- Interpol (International Criminal Police Organization) Secretary-General has warned of bioweapon threat
- **Smallpox killed 500 million people in 20th century and could do far worse now**
 - Immunity is gone (lasts a decade or two at most); “there is less immunity in the world now than there ever has been in the history of humankind.”
 - 2001 National Security Council exercise “Dark Winter” simulated a small scale smallpox attack that spread to 25 states and killed several million
 - D.A. Henderson, founder of Johns Hopkins Center for Civilian Biodefense Strategies, believes many laboratories inside and outside Russia still have smallpox virus
 - Former members of Soviet bioweapons programs report success in combining smallpox, Marburg, Ebola and other viruses—with far less capable equipment and knowledge than today
- “of the top 50 bioweapon pathogens, only 13 have vaccines or treatments”
- For new, bioengineered viruses, there will likely be no immunity or treatment
 - Dr. Tara O’Toole, director of Johns Hopkins Center for Biodefense Strategies:
 - “all you have to do is click in the new gene, you get a new pathogen, you get a new weapon”
 - “There’s no question in our mind that organized terrorists could mount at least a small bioterrorist attack now”
- **In 2001, Australian researchers attempting to make a contraceptive vaccine for pest control inserted a “good” gene into mousepox virus and accidentally created a lethal new virus**

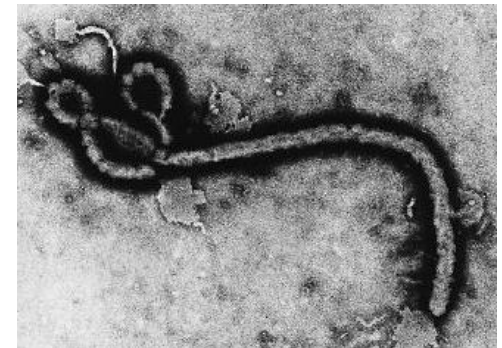


The US Commission on Prevention of Weapons of Mass Destruction warned that a terrorist attack with biological weapons is likely

- The 1918 “Spanish flu” influenza killed 20 million in just one year: more than all the people killed in WW I
- Smallpox virus complete DNA was posted on the web for download by anyone
- The smallpox virus and 1918 Spanish Flu virus have all been synthesized from scratch—you do not need to obtain existing virus to launch it, genetically alter it, develop vaccines
- Develop a vaccine for your new virus before you release it ➡ perfect weapon

"Within the last century we have had four major flu epidemics, along with HIV and SARS. Major pandemics sweep the world every century, and it is inevitable that at least one will occur in the future. . . . We can never be completely prepared for what nature will do: nature is the ultimate bioterrorist."

-- Professor Maria Zambon, head of UK Health Protection Agency's Influenza Laboratory



Ebola virus



Official Gov't-funded Studies have predicted terrorist WMD attacks—to date avoided, likely due to unreported intelligence successes

World at risk the report of the Commission on the Prevention of WMD Proliferation and Terrorism

Report of the Commission on the Prevention of WMD Proliferation and Terrorism / Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism

Summary

The Commission believes that unless the world community acts decisively and with great urgency, it is more likely than not that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013. The Commission further believes that terrorists are more likely to be able to obtain and use a biological weapon than a nuclear weapon. The Commission believes that the U.S. government needs to move more aggressively to limit the proliferation of biological weapons and reduce the prospect of a bioterror attack. Further compounding the nuclear threat is the proliferation of nuclear weapons capabilities to new states and the decision by several existing nuclear states to build up their arsenals. Such proliferation is a concern in its own right because it may increase the prospect of military crises that could lead to war and catastrophic use of these weapons.