



# **WHERE IS RISK NOW?**

**HOW TO THINK ABOUT AND UNDERSTAND RISK IN  
AN AGE OF UNPRECEDENTED CHANGE**

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**TO UNDERSTAND RISK  
BE ANALYTICAL,  
NOT POLEMICAL OR  
POLITICAL**

# **I. CATEGORIES OF RISK**

## **A. RISK IS...**

- **EXOGENOUS**
- **ENDOGENOUS**
- **SYSTEMIC**
- **LONG-TAILED**
- **FAT-TAILED**
- **MULTIPLICATIVE**
- **INTERCONNECTED & INTERACTING**
- **CASCADING**
- **GLOBAL**

## II. DRIVERS OF RISK

### B. MORE CHANGE = MORE RISK

- CHANGE IS ACCELERATING
- BECOMING MORE NON-LINEAR, WITH MORE UNPREDICTABLE EFFECTS AND OUTCOMES
- BECOMING MORE *RADICAL*, IN THAT:

IT REPRESENTS DEPARTURES FURTHER AND FURTHER AWAY FROM WHAT WE HAVE KNOWN IN THE VERY RECENT PAST, AND WHAT WE HAVE ASSUMED WILL EXIST IN THE NEAR FUTURE.

## II. DRIVERS OF RISK

### C. MORE COMPLEXITY = MORE RISK

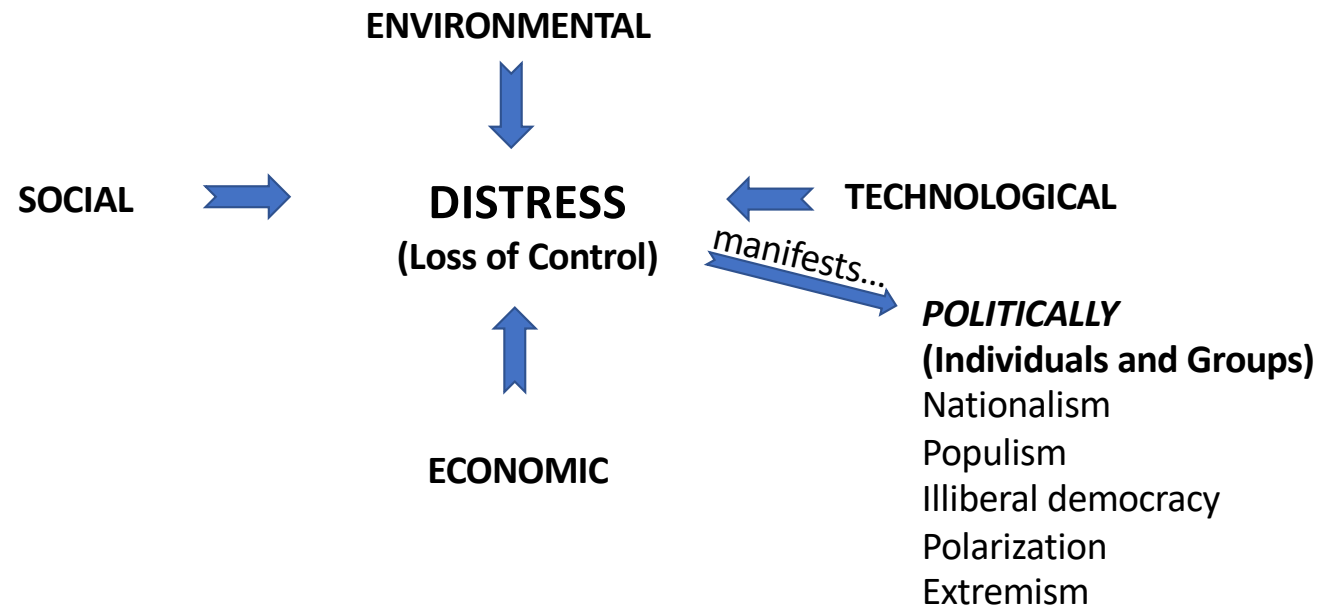
- “TIGHT-COUPLING” OF EXTREMELY COMPLEX, REAL-TIME SYSTEMS
- INCREASINGLY THROWS OUT MANIFESTATIONS THAT ARE VERY DIFFICULT TO PREDICT . . .
- . . . BUT THAT HAVE ENORMOUS DIRECT AND 2ND, 3RD, AND 4TH++ ORDER (“N-ORDER” OR KNOCK-ON) EFFECTS.
- HIGHLY COMPLEX SYSTEMS ARE INHERENTLY UNSTABLE AND FRAGILE
- THERE IS AN INVERSE RELATIONSHIP BETWEEN EFFICIENCY AND ROBUSTNESS (E.G. “JUST-IN-TIME” INVENTORY DOES NOT WORK IF THERE ARE SUPPLY DISRUPTIONS)
- COMPLEX SYSTEMS CAN CHANGE ABRUPTLY

**PART OF WHAT IS DRIVING OBSERVED  
PHENOMENA NOW ARE OUR EMOTIONAL  
REACTIONS TO THEM:**

**CHANGE, PARTICULARLY RADICAL  
AND CONTINUOUS CHANGE, IS  
EXTREMELY THREATENING TO  
MANY IF NOT MOST PEOPLE**

# III. OUR PERFECT STORM OF RISK

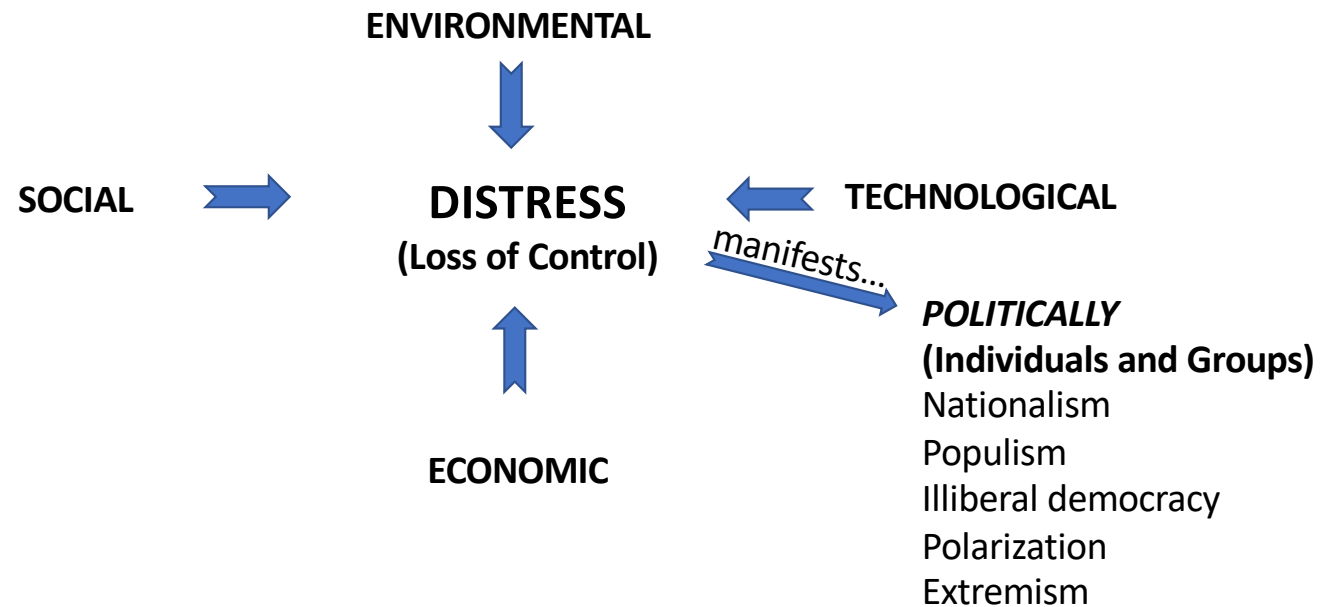
## A. RISING CHAOS: DISRUPTION AND UNCERTAINTY



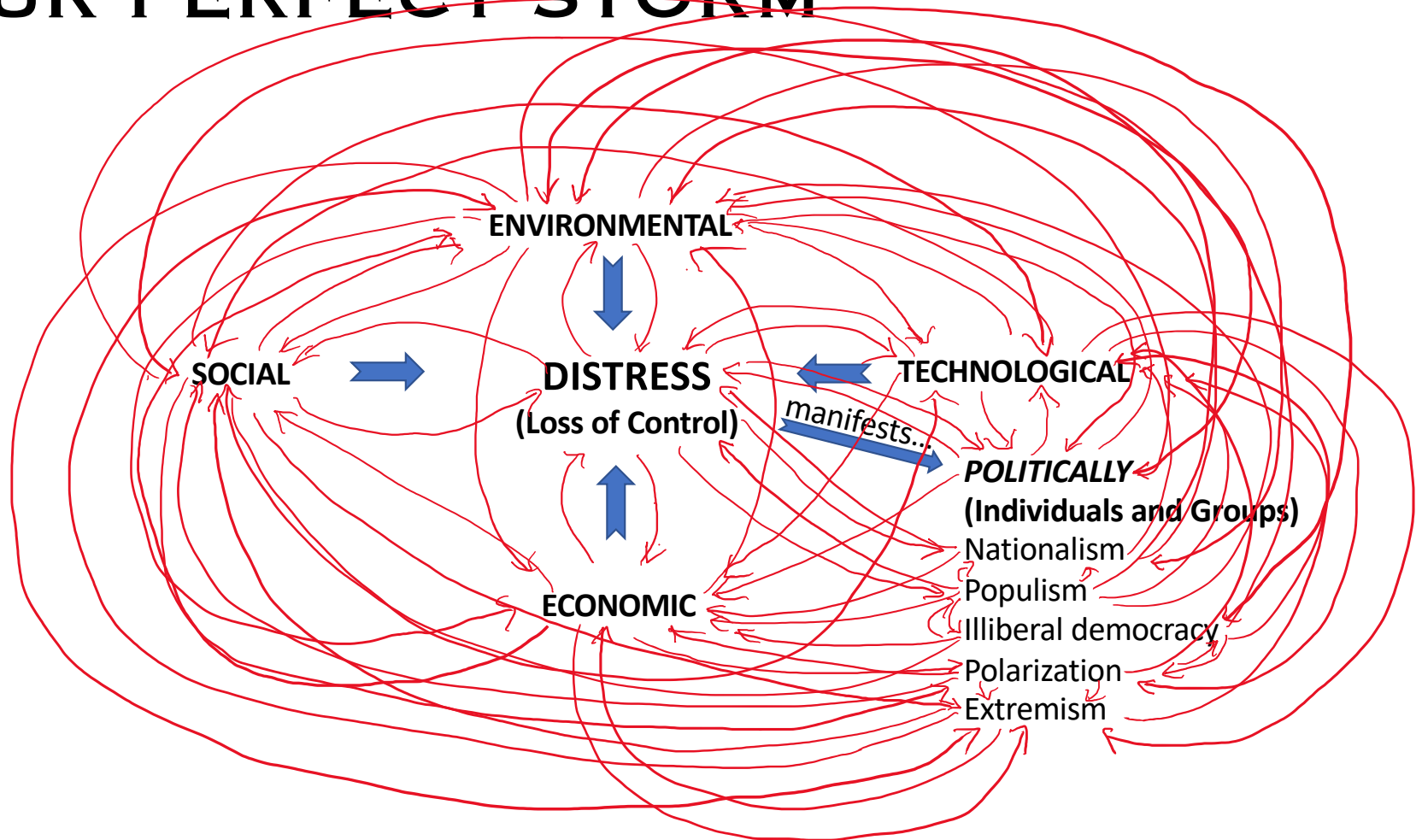


# III. OUR PERFECT STORM OF RISK

WHAT ACTUALLY HAPPENS . . .



# I. OUR PERFECT STORM



# III. OUR PERFECT STORM OF RISK

## B. HYPEROBJECTS

- MASSIVELY-CONNECTED RELATIONAL AGGLOMERATIONS, EXCEEDING THE GRASP OF HUMAN CONCEPTION OR CONTROL
- NON-LOCAL: CREATED THROUGH RELATIONS AMONG MANY THINGS IN MORE THAN THE IMMEDIATE PRESENT (ACROSS TIME)
- HYPEROBJECTS ARE DISTRIBUTED SO MASSIVELY IN SPACE AND TIME THAT THEY TRANSCEND SPECIFIC DEFINITION OR IDENTITY: E.G., STYROFOAM, RADIOACTIVE PLUTONIUM, CLIMATE CHANGE, CIVILIZATION

# **III. OUR PERFECT STORM OF RISK**

## **B. HYPEROBJECTS**

**2 CURRENT EXAMPLES:**

- **SOVEREIGN DEBT**
- **SUEZ CANAL BLOCKAGE**

**“HYPEROBJECTS WITHIN HYPEROBJECTS”**

# III. OUR PERFECT STORM OF RISK

## C. WICKED PROBLEMS



Based upon Rittel and Webber (1973)

# **IV. DRIVERS OF RISK**

## **SOME EXPLANATIONS . . .**

- A. COLLAPSE OF BELIEF IN INSTITUTIONS (GOVERNMENT, MEDIA) EXEMPLIFIED BY RECENT FAILURES (COVID, 2008 CRISIS)**
- B. TECHNOLOGY (ESP. INFORMATION/COMMUNICATIONS LEADING TO ALGORITHM-MEDIATED HYPERCONNECTIVITY, & AI/AUTOMATION)**
- C. CULTURE CLASHES/VALUES CLASHES/CULTURAL MIXING**
- D. INEQUALITY**
- E. DECLINE OF EDUCATION/CRITICAL THINKING**

## **V. KEY SPECIFIC RISKS TO THE U.S.**

### **A. THE NUMBER ONE RISK IS ENDOGENOUS:**

***OUR SOCIAL/POLITICAL DIVISION & DISFUNCTION***

**WHY HAS THIS HAPPENED, AND HOW IT IS RELATED TO  
OTHER FACTORS?**

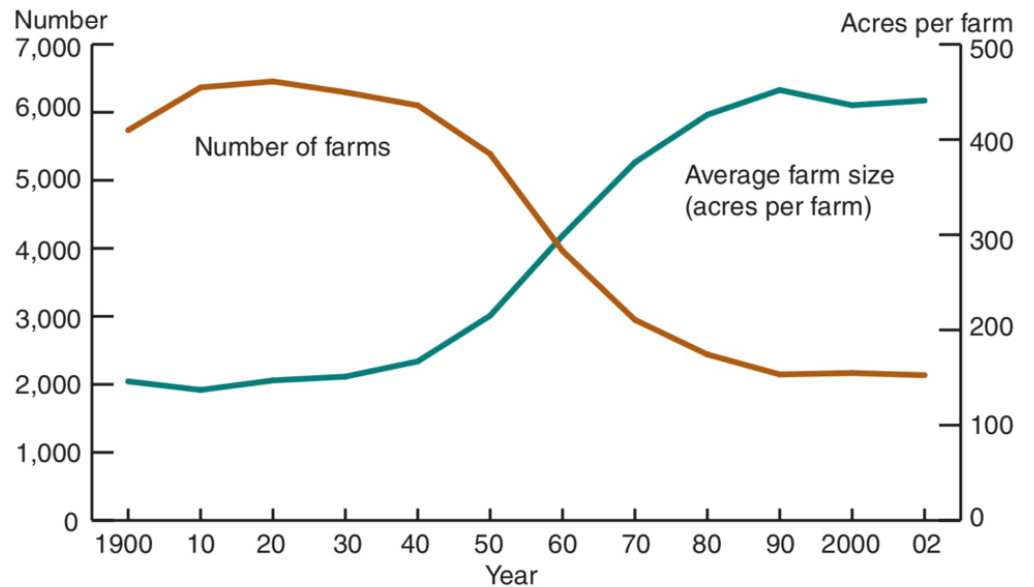
**MULTIPLE INPUTS . . . A PERFECT EXAMPLE OF N-ORDER  
EFFECTS AND HYPEROBJECTS . . .**

## V. KEY SPECIFIC RISKS TO THE U.S.

ONE EXPLANATORY  
TRAJECTORY:

RURAL TO URBAN

**As the number of farms declined, their average size increased**



Source: Compiled by Economic Research Service, USDA, using data from *Census of Agriculture*, *Census of Population*, and *Census of the United States*.

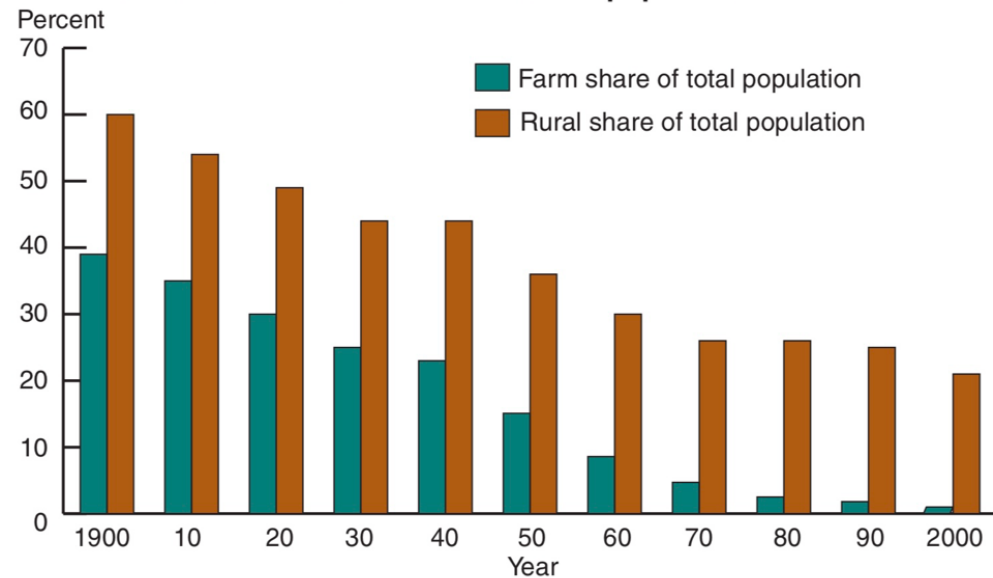


## V. KEY SPECIFIC RISKS TO THE U.S.

ONE EXPLANATORY  
TRAJECTORY:

RURAL TO URBAN

**Both the U.S. farm population and rural population have dwindled as a share of the Nation's overall population**



Sources: Share calculated by Economic Research Service, USDA using data from *Census of Agriculture*, *Census of Population*, and *Census of the United States*.

# Rural vs. Urban

## RURAL Environments (Incl. small cities)

- Self-reliant communities
- Autonomous
- Tight, homogeneous social groups  
*(almost everyone you deal with is similar to you—and you know almost everyone you meet)*
- Place-based identity
- ‘Smallness’
- *More like the ‘original’ environment of humans*

## URBAN Environments (larger cities)

- **Interconnected**
- **Interdependent**
- **Cosmopolitan/diverse social groups**  
***(you meet many very different people you don’t know every day: you almost never know who you will deal with)***
- **Affinity-based identity**
- **‘Bigness’**
- **A newer human environment**

# Differing qualities of urban and rural environments **naturally** lead to different outlooks and approaches:

## RURAL Environments (Incl. small cities)

- Generally...
  - Simpler environment
  - Inward-looking
  - Anti-globalist & non-cosmopolitan
  - Interactions and resource allocation mediated by social relationships
- 'Character' produced emphasizes:
  - **Duty**
  - **Self-discipline**
  - **Self-reliance/non-institutional focus**
  - **Means over ends**
  - **'Conservatism'**

## URBAN Environments (larger cities)

- Generally...
  - More complex environment
  - Outward-looking
  - Pro-globalization & cosmopolitan
  - Interactions and resource allocation mediated by 'contractual' relationships
- 'Character' produced emphasizes:
  - **Utility**
  - **Self-development**
  - **Reliance on government & institutions**
  - **Ends over means**
  - **'Liberalism/Progressivism'**

These differing qualities are not innately 'good' or 'evil'—they are simply different adaptive responses to the differing environments!

## **V. KEY SPECIFIC RISKS TO THE U.S.**

### **RURAL TO URBAN**

**AS RURAL POPULATIONS MOVED TO URBAN ENVIRONMENTS, THEY INCREASINGLY BROUGHT AND MAINTAINED THEIR OWN VALUES TO MAINTAIN IDENTITY AND MEANING IN THE ANONYMOUS MASS OF BIG CITIES  
AS A RESULT THERE ARE TWO (ACTUALLY MANY) VALUE SETS WHICH CLASH WITHIN MANY LARGE CITIES**

**THIS RELATES TO THE HUMAN NEED FOR IDENTITY, FOR RELATIONSHIPS, AND FOR A PLACE WITHIN A DEFINED GROUP, LEADING TO . . .**

## **V. KEY SPECIFIC RISKS TO THE U.S.**

### **“IDENTITY POLITICS”**

**HUMANS NEED A SENSE OF BELONGING TO A LARGER GROUP**

**THE LARGER AND MORE ALIENATING AN ENVIRONMENT,  
THE MORE THEY NEED TO BELONG TO A GROUP THAT  
GIVES MEANING AND PURPOSE**

**“The brutal fact is this: The average person living in a Western country increasingly has nothing to live for. He has little family, few friends, no neighborhood, no community . . . He exists mostly as a ritual of economic activity, a number on a balance sheet”**

**—Ciaran Murchada**

**THIS INTERACTS WITH AND IS EMPOWERED BY  
TECHNOLOGY . . .**

## **V. KEY SPECIFIC RISKS TO THE U.S.**

**“HYPERCONNECTIVITY”: THE TECHNOLOGY OF THE INTERNET AND ALGORITHM-MEDIATED SOCIAL MEDIA THESE PROVIDE WAYS TO INTERACT AND CONNECT NEVER BEFORE EXPERIENCED**

**. . . BUT THAT ARE PARTICULARLY SUITED TO ALIENATED INDIVIDUALS LIVING IN LARGE URBAN ENVIRONMENTS, NEEDING TO BELONG AND TO HAVE MEANING IN THEIR LIVES, EVEN IF IT IS OUTSIDE SOCIAL NORMS**

**LEADING TO DIVISION, EXTREMISM, CONSPIRACY THEORIES, FAR-LEFT AND FAR-RIGHT POLITICS, ETC.**

## **V. KEY SPECIFIC RISKS TO THE U.S.**

**THERE ARE OTHER EXPLANATORY THREADS, FOR  
EXAMPLE:**

**THE RISE OF CHEAP AIR TRAVEL FOLLOWING AIRLINE  
DEREGULATION → CONGRESSIONAL CAUCUS GOING  
TO THEIR HOME DISTRICTS EVERY WEEKEND INSTEAD  
OF STAYING IN D.C. → ELIMINATION OF THE “LEISURE”  
TIME BOTH SIDES OF THE AISLE SPENT TOGETHER →  
BREAKING DOWN OF PERSONAL RELATIONSHIPS BUILT  
OVER TIME → COLLAPSE OF BI-PARTISANSHIP →**

**EXTREME POLITICAL DIVISION AND DISFUNCTION**

## V. KEY SPECIFIC RISKS TO THE U.S.

ALL OF THESE (AND OTHER THREADS) TOGETHER  
CONSTITUTE A HYPEROBJECT

SO, OUR NUMBER ONE, ENDOGENOUS RISK . . .

*OUR SOCIAL/POLITICAL DIVISION & DISFUNCTION*

. . . IS UNFORTUNATELY A “WICKED PROBLEM” WITH NO  
OBVIOUS IMMEDIATE SOLUTION

THE CAUSES ARE MULTIPLE, SYSTEMIC,  
INTERCONNECTED, AND CASCADING

. . . AND ARE NOBODY’S “FAULT”



## **V. KEY SPECIFIC RISKS TO THE U.S.**

### **B. CYBER VULNERABILITY**

**LOW-MEDIUM LEVEL ATTACKS ARE CONSTANT  
ATTACKS CAN BE TO STEAL INFORMATION OR TO  
DISRUPT OR DESTROY (SOMETIMES MUCH LATER)**

**MAJOR ATTACK BY EXTERNAL OR INTERNAL ENEMIES,  
INCLUDING NON-STATE ACTORS COULD BE  
DEVASTATING**

**U.S. MILITARY CALLS CYBERSPACE “GROUND-ZERO” OF  
THE NEXT WORLD WAR**

# **V. KEY SPECIFIC RISKS TO THE U.S.**

## **CRITICAL INFRASTRUCTURE SECTORS (DHS CISA):**

**CHEMICAL SECTOR**

**COMMERCIAL FACILITIES SECTOR**

**COMMUNICATIONS SECTOR**

**CRITICAL MANUFACTURING SECTOR**

**DAMS SECTOR**

**DEFENSE INDUSTRIAL BASE SECTOR**

**EMERGENCY SERVICES SECTOR**

**ENERGY SECTOR**

**FINANCIAL SERVICES SECTOR**

**FOOD AND AGRICULTURE SECTOR**

**GOVERNMENT FACILITIES SECTOR**

**HEALTHCARE AND PUBLIC HEALTH SECTOR**

**INFORMATION TECHNOLOGY SECTOR**

**NUCLEAR REACTORS, MATERIALS, AND WASTE SECTOR**

**TRANSPORTATION SYSTEMS SECTOR**

**WATER AND WASTEWATER SYSTEMS SECTOR**

## **V. KEY SPECIFIC RISKS TO THE U.S. CRITICAL INFRASTRUCTURE SECTORS**

- ALL 16 VULNERABLE TO CYBER ATTACK AND ARE ATTACKED CONSTANTLY**
- ALL ARE INTERCONNECTED AND “TIGHTLY COUPLED”**
- ALL ARE DEPENDENT ON ELECTRICAL POWER**
- THE POWER GRID EXHIBITS “SINGLE POINT OF FAILURE” CHARACTERISTICS**

# V. KEY SPECIFIC RISKS TO THE U.S.

## C. BROKEN PROMISES: “SOCIAL CONTRACT” ISSUES . . . THINGS PROMISED VS. ACTUAL CONDITIONS:

- GLOBALIZATION VS. JOB LOSS
- AUTOMATION / AI / ADDITIVE MANUFACTURING VS. JOB LOSS
- EQUALITY VS. INEQUALITY
- SAFETY & SECURITY
- WELL-BEING
- FREEDOM VS. SECURITY
- PRIVACY VS. SECURITY

**“surveillance exceptionalism has meant that the United States and many other liberal democracies chose surveillance over democracy as the guiding principle of social order. With this forfeit, democratic governments crippled their ability to sustain the trust of their people, intensifying the rationale for surveillance.”**

**—Shoshana Zuboff**

## **V. KEY SPECIFIC RISKS TO THE U.S.**

### **D. “TRUTH DECAY”**

**POPULARIZATION OF “POSTMODERNIST” THOUGHT**

**QUESTIONING OF OBJECTIVE KNOWLEDGE: OF “TRUTH-WITH-A-CAPITAL-T”**

**FOCUS ON PERCEPTION, BIAS, NARRATIVE, RELATIVISM, INTERPRETATION . . . NO “SHARED TRUTH”—NO SINGLE, DOMINANT ACCOUNT OF THE WORLD . . . AND THEN:**

**THE RISE OF ECHO CHAMBERS & EMPOWERMENT OF CONFIRMATION BIAS VIA DIGITAL, HYPERCONNECTED, MASSIVE, SEARCHABLE INFORMATION & ALGORITHMIC RECOMMENDATION**

# V. KEY SPECIFIC RISKS TO THE U.S.

## E. TRANSPARENCY & EXPOSURE

NO MORE ILLUSIONS OR “SAVING THE APPEARANCES” . . .

WE ALL SEE IT ALL NOW:

“When I started out, we got to work with legends, and the reason they were bigger than life is that nobody knew what they did after school.”  
—Hollywood actor Bruce Dern (late in the day of cinema’s “Golden Age”)

THIS PRODUCES DECLINE IN THE FAITH AND BELIEF IN  
INSTITUTIONS AND LEADERS, AS PEOPLE SEE MORE  
THOROUGHLY INTO HOW THOSE ACTUALLY OPERATE AND BEHAVE

# **VI. KEY SPECIFIC RISKS TO INVESTORS**

## **A. SENTIMENT**

- **FEAR**
- **CONFIDENCE**
- **SOCIAL MOOD**
- **BEHAVIORAL PATTERNS**
- **GROUP-THINK**

**SENTIMENT PROPAGATES THROUGH GROUPS, SELF-REINFORCES,  
AND DRIVES DECISION-MAKING AND HUGE MARKET SWINGS . . .**

**MARKETS ARE HUMAN CONSTRUCTS!**

# **VI. KEY SPECIFIC RISKS TO INVESTORS**

## **A. SENTIMENT**

**AN EXAMPLE IS THE RAPIDLY RISING SENTIMENT FOR ESG (ENVIRONMENTAL-SOCIAL-GOVERNANCE) INVESTING, CHANGING FROM “SHAREHOLDER” TO “STAKEHOLDER” FRAMEWORK, ETC.**

**DRIVEN BY FEAR OF THE UNKNOWN & OF CHANGE**

**WILL CREATE HUGE TAIL WINDS FOR SOME CATEGORIES OF INVESTMENT, BUT DRAG (OR STRANDED ASSETS) FOR OTHERS**

**IT DOES NOT MATTER WHETHER THE SENTIMENT IS CORRECT, IT MATTERS HOW WIDESPREAD IT IS AND HOW IT IS TRENDING!**



# **VI. KEY SPECIFIC RISKS TO INVESTORS**

## **B. FEAR OF CHANGE AND THE UNKNOWN**

**A MOUNTING FEELING OF DREAD IN THE BACK OF PEOPLE'S MINDS . . .**

**INCORPORATING FEAR OF:**

- **SOCIAL DISINTEGRATION**
- **DISEASE**
- **FINANCIAL COLLAPSE**
- **RISE OF MACHINES**
- **PERSONAL INSECURITY**
- **CLIMATE CHANGE**
- **ENVIRONMENTAL EXHAUSTION & COLLAPSE**

**. . . WILL DRIVE MARKETS; WILL REVERSE, & REVERSE, & REVERSE AGAIN**

# **VI. KEY SPECIFIC RISKS TO INVESTORS**

**EXTREME ANXIETY . . . A KIND OF COLLECTIVE MADNESS?**

**FAILURE OF IMAGINATION: “THIS CAN’T BE HAPPENING”**

**GRASPING FOR EXPLANATIONS**

**MOVING TO EXTREMES BECAUSE THEY OFFER SIMPLER EXPLANATIONS & SIMPLER RATIONALES FOR ACTION, FOR EXAMPLE:**

**RISE OF CONSPIRACY THEORIES ON THE RIGHT**

- **RATHER BELIEVE ENEMIES ARE IN CONTROL THAN NOBODY IS**
- **SIMPLE EXPLANATIONS**
- **MAKES YOU FEEL SPECIAL BECAUSE YOU ARE “IN THE KNOW”**

**RISE OF “IDENTITY POLITICS” ON THE LEFT:**

- **“CANCEL CULTURE”**
- **DEMANDS FOR REPARATIONS/ABASEMENT FOR PAST SINS ON THE LEFT**

**RISE OF ANGER EVERYWHERE, AND INCREASE NEED TO “DO SOMETHING”**

# **VI. KEY SPECIFIC RISKS TO INVESTORS**

## **C. FINANCIAL, MONETARY & FISCAL RISK**

**DEBT: SOVEREIGN, CORPORATE, PERSONAL**

**HYPERBOLIC MARKETS**

**GOVERNMENT SPENDING VS AUSTERITY**

**DISRUPTIVE CHANGE (E.G. BLOCKCHAIN)**

**EMOTIONAL DECISION-MAKING**

**THE NEED TO BLAME**

# **VI. KEY SPECIFIC RISKS TO INVESTORS**

## **C. FOR INVESTORS, RISKS ARE ALSO OPPORTUNITIES**

**ESG INVESTING**

**SMALLER, INNOVATIVE COMPANIES**

**SUPPLY-CHAIN SHORTENING AND RE-SHORING**

**RISING ECONOMIES (E.G. INDIA)**

**THERE ARE MANY OPPORTUNITIES, THEY JUST DON'T FIT THE  
“CONVENTIONAL WISDOM” OF RECENT PATTERNS OF THINKING**

**THINK OUTSIDE THE PROVERBIAL BOX!**

**INVESTMENT ADVICE THAT LOOKS THE SAME AS YESTERDAY'S HAS A  
RISING POTENTIAL TO BE WRONG**

# **V. GLOBAL RISKS**

## **A. GLOBAL SPLINTERING & DE-GLOBALIZATION**

**DRIVEN MOSTLY BY SECURITY CONCERNS, FOR EXAMPLE:**

- HIGH-TECH PRODUCTS (SEMICONDUCTORS, FLAT SCREENS)**
- CRITICAL MINERALS INCLUDING RARE EARTHS**
- RISKS OF SUPPLY-CHAIN PROBLEMS AND DISRUPTION**
- FOOD AND WATER INSECURITY**
- RISE OF AUTARCHIC “SPHERES OF INFLUENCE” AND GREAT-POWER RIVALRY**

# **V. GLOBAL RISKS**

## **B. CHINA – U.S. RIVALRY**

- **“THUCYDIDES TRAP”**
- **CHINESE INSECURITY:**
  - **FOOD**
  - **ENERGY**
  - **SEMICONDUCTORS**
- **“ONE HUNDRED YEARS OF SHAME”**
- **DEMOGRAPHIC ISSUES**
- **DEBT ISSUES**
- **TAIWAN**

**AFFECTS MANY SURROUNDING COUNTRIES . . .**

**. . . THE “SENTIMENT” HAS CHANGED!**

# V. GLOBAL RISKS

## C. MULTIPLE CONFLICTS

- RUSSIA-UKRAINE
- ISRAEL-IRAN
- NORTH KOREA
- INDIA-CHINA
- EGYPT-SUDAN-ETHIOPIA
- NORTHERN IRELAND
- INTERNAL CRISES: SUCH AS VENEZUELA, CENTRAL AMERICA/NORTHERN TRIANGLE, BANGLADESH (DRIVING MIGRATION, ENABLING ORGANIZED CRIMINAL ACTIVITY)

“TOO MUCH ALL AT ONCE”

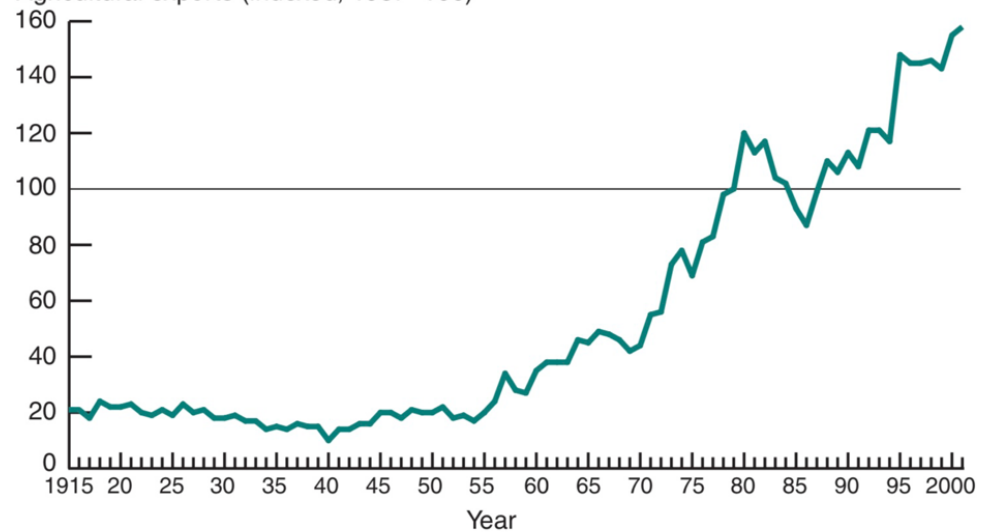
# V. GLOBAL RISKS

## D. EXOGENOUS CLIMATE INSECURITY

### RELATION BETWEEN FOOD AND CLIMATE

#### U.S. exports grew dramatically in the last half of the century

Agricultural exports (indexed, 1987=100)



Note: Standard techniques were used to combine four series of data for quantity of goods exported.

Source: Compiled by Economic Research Service, USDA, using data from *Agricultural Statistics*.

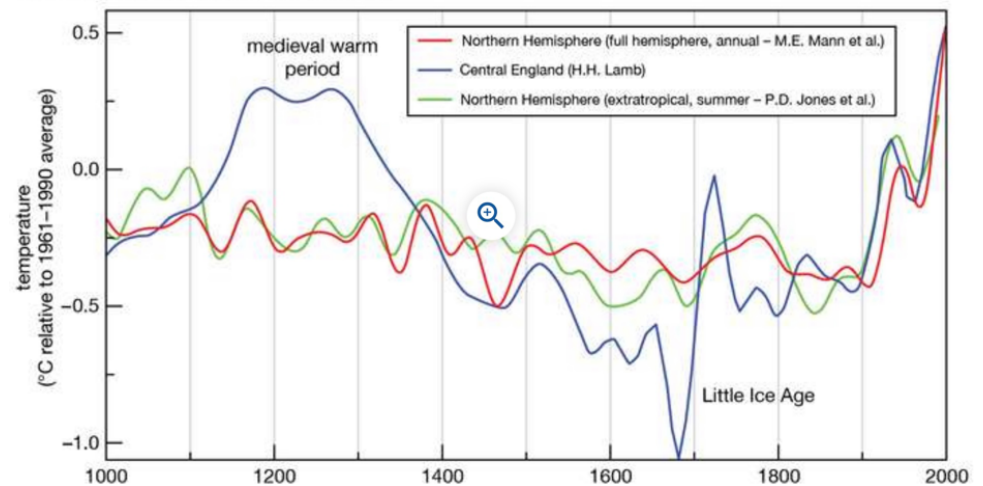


# V. GLOBAL RISKS

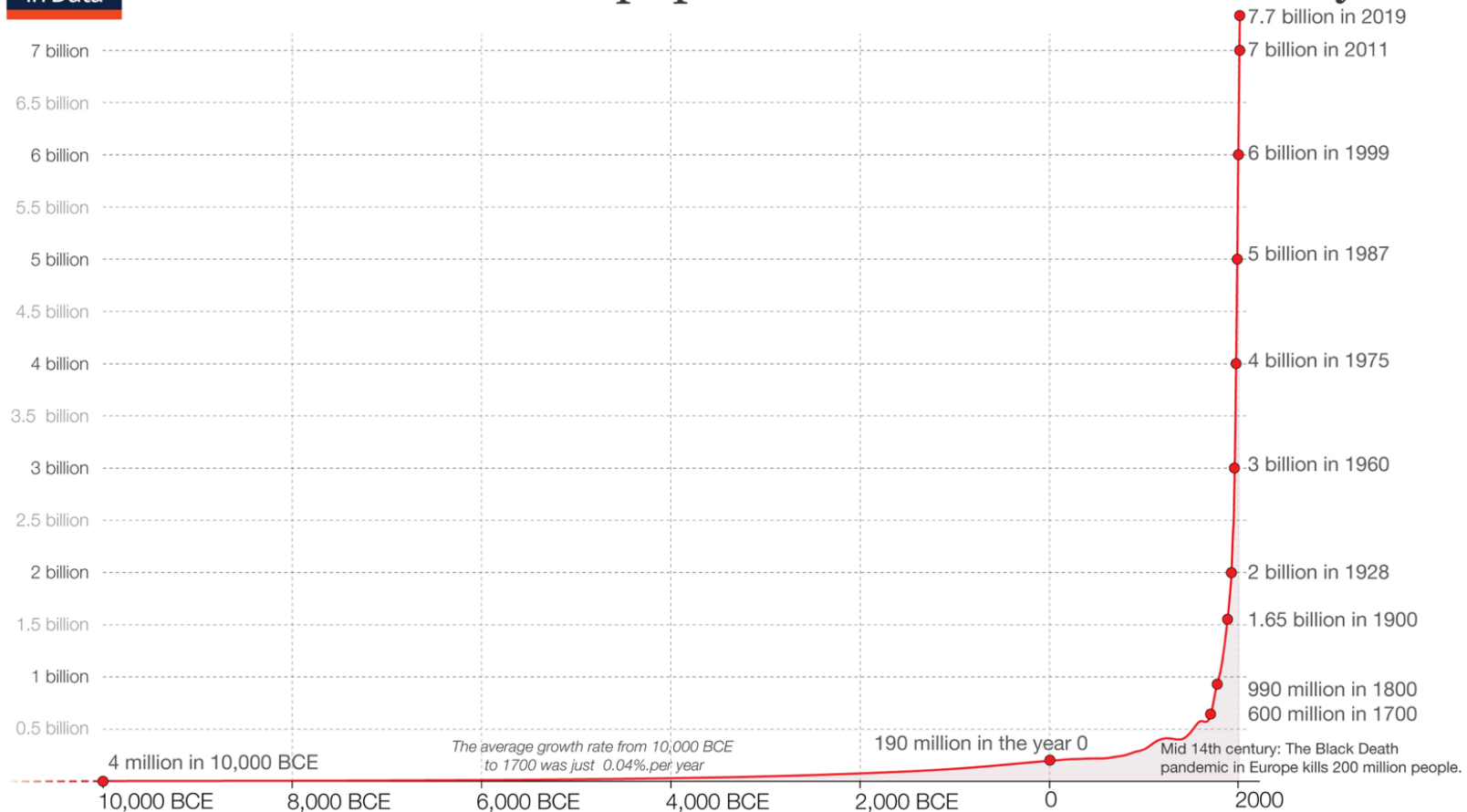
## D. EXOGENOUS CLIMATE INSECURITY

RELATION BETWEEN  
FOOD AND CLIMATE =  
RELATIONSHIP BETWEEN  
POPULATION AND  
CLIMATE

Estimated temperature variations for the Northern Hemisphere and central England (1000–2000 CE)



## The size of the world population over the last 12,000 years

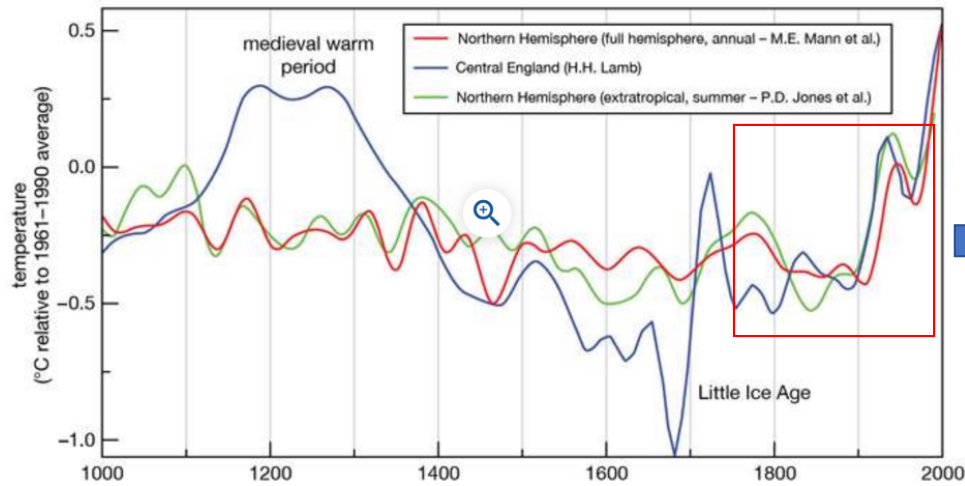


Based on estimates by the *History Database of the Global Environment* (HYDE) and the United Nations. On [OurWorldinData.org](https://OurWorldinData.org) you can download the annual data.

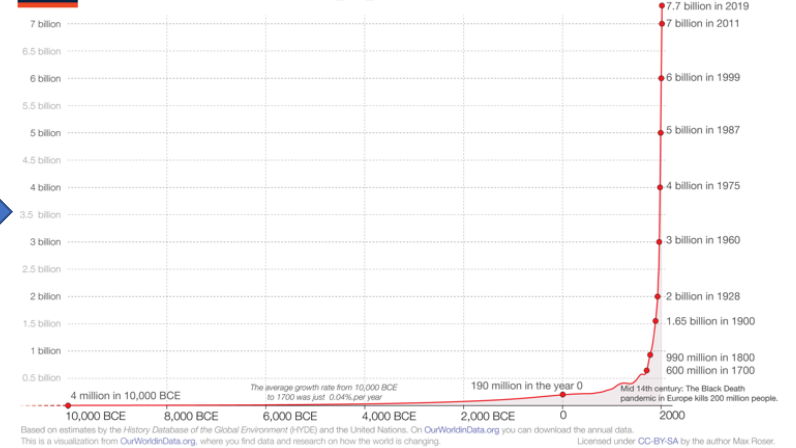
This is a visualization from [OurWorldinData.org](https://OurWorldinData.org), where you find data and research on how the world is changing.

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Estimated temperature variations for the Northern Hemisphere and central England (1000–2000 cē)

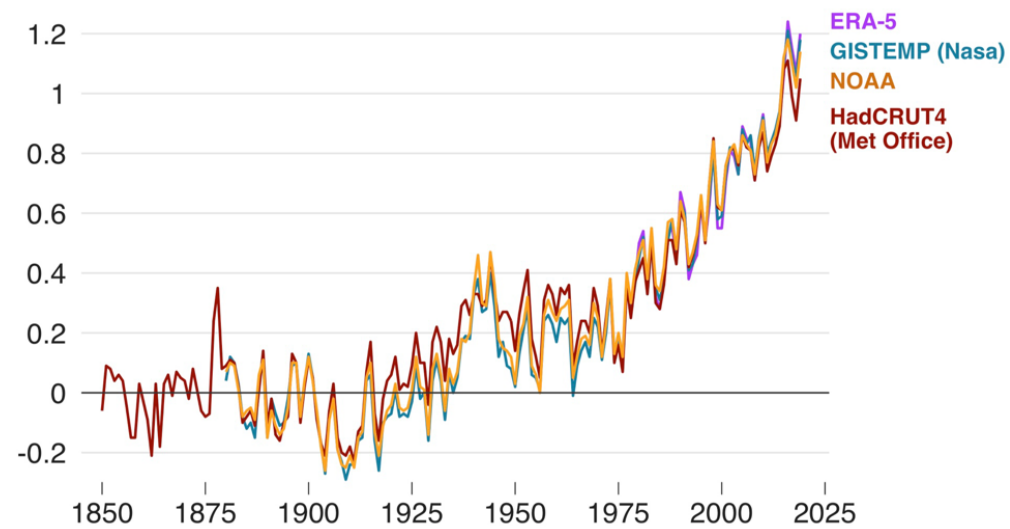


The size of the world population over the last 12,000 years



## Temperature rise since 1850

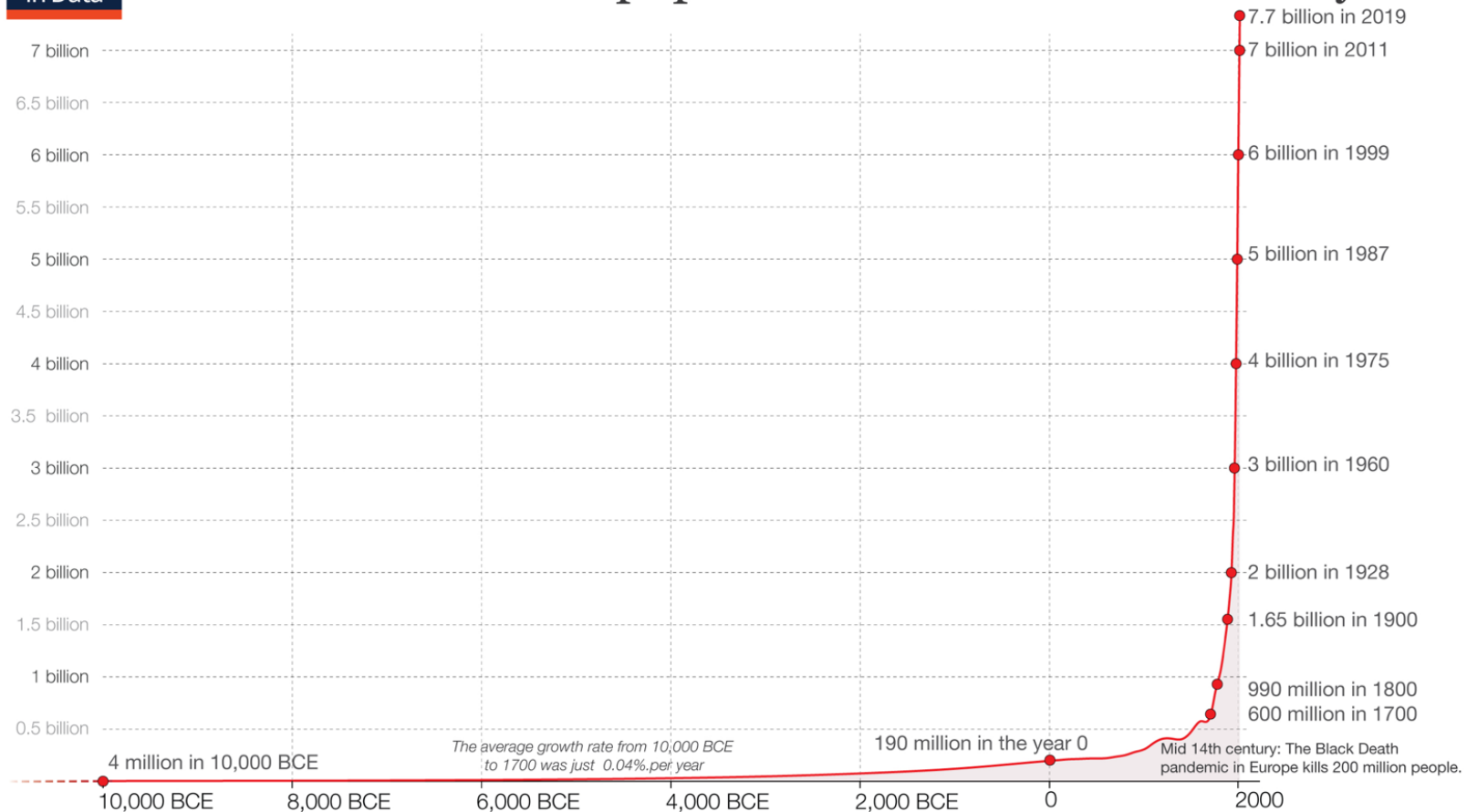
Global mean temperature change from pre-industrial levels, °C



Source: Met Office

BBC

## The size of the world population over the last 12,000 years



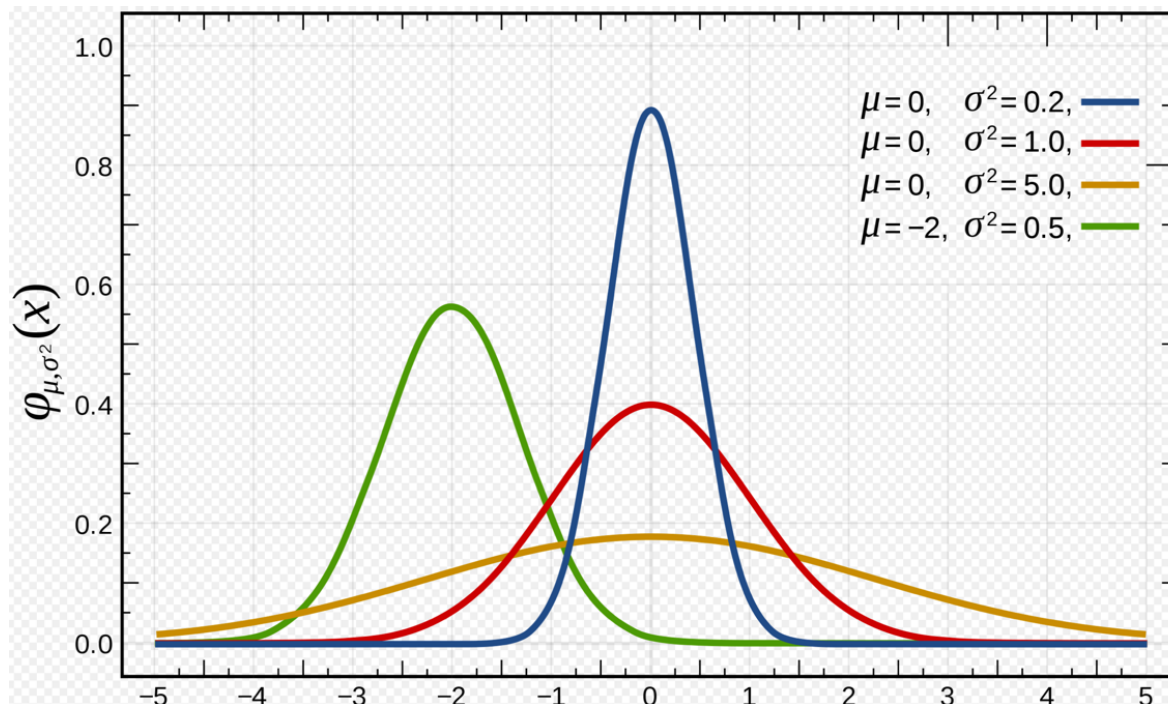
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This is a visualization from [OurWorldinData.org](https://OurWorldinData.org), where you find data and research on how the world is changing.

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# NORMAL DISTRIBUTION: PROBABILITY DENSITY FUNCTION

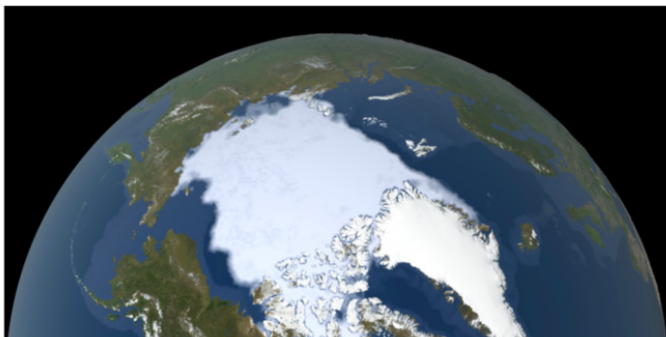
**WE ARE IN A DANGER ZONE!**



TIME SERIES: 1979-2020

Data source: Satellite observations.  
Credit: [NASA Scientific Visualization Studio](#)

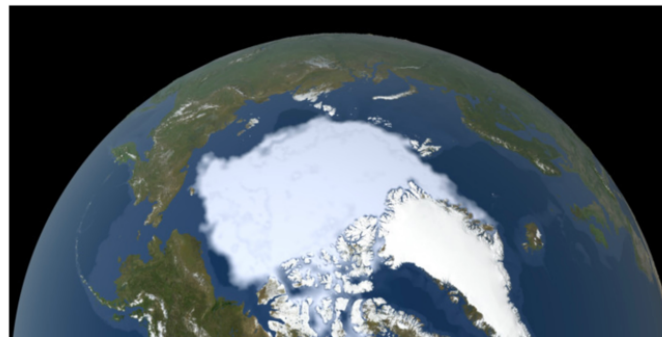
1979



TIME SERIES: 1979-2020

Data source: Satellite observations.  
Credit: [NASA Scientific Visualization Studio](#)

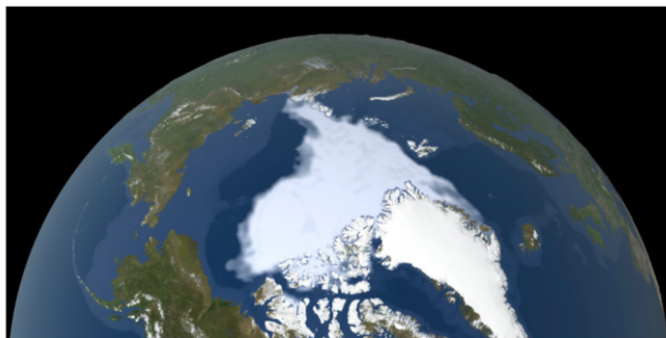
1995



TIME SERIES: 1979-2020

Data source: Satellite observations.  
Credit: [NASA Scientific Visualization Studio](#)

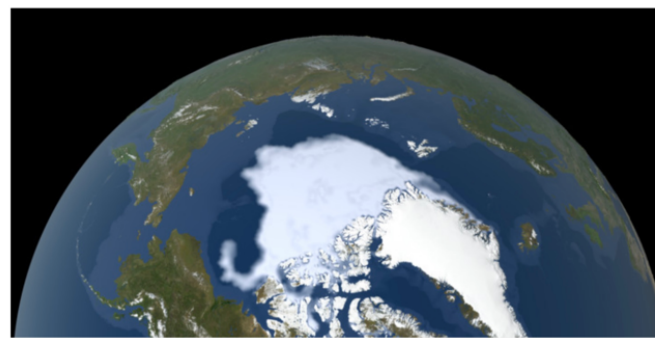
2007



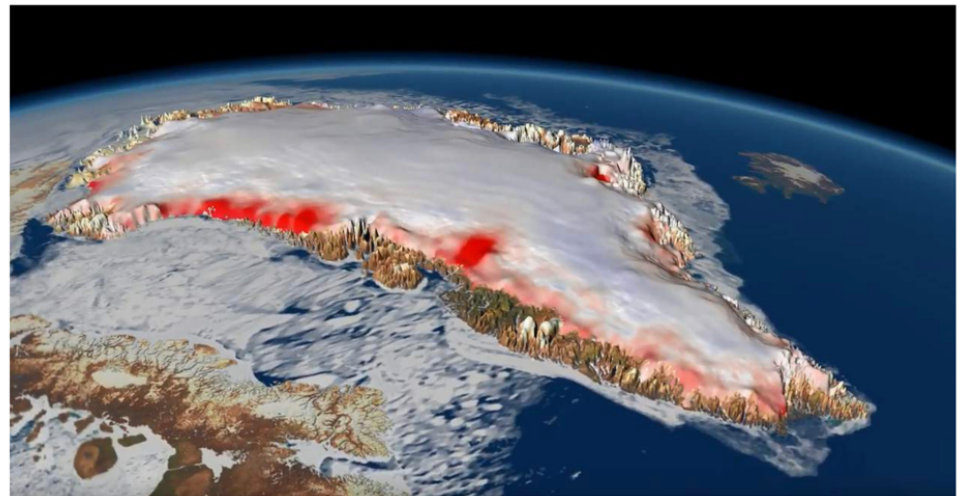
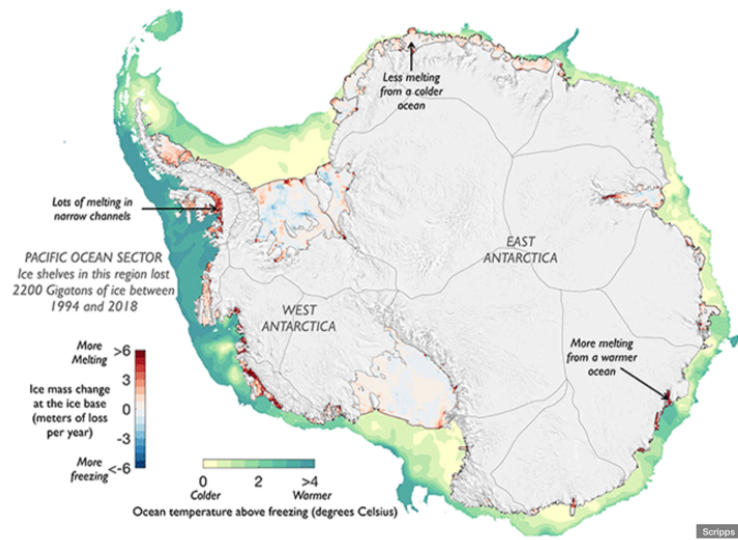
TIME SERIES: 1979-2020

Data source: Satellite observations.  
Credit: [NASA Scientific Visualization Studio](#)

2020







Mass Balance of the Greenland Ice Sheet From 1992 to 2018 (NASA)



## **V. KEY SPECIFIC GLOBAL RISKS**

**LEAVING ASIDE CLIMATE CHANGE CAUSALITY . . .**

**AT THIS POINT, WE MAY BE DEALING WITH MITIGATION,  
NOT PREVENTION . . .**

**40 PERCENT OF WORLD POPULATION LIVES ON  
COASTLINES!**

**INTERNAL DISPLACEMENT AND MIGRATION OF  
HUNDREDS OF MILLIONS**

**FOOD AND WATER DISRUPTION, RISING DISEASE, ETC.**

## **VI. KEY SPECIFIC GLOBAL RISKS**

**WHAT'S MISSING ON THESE LISTS OF KEY FACTORS?**

# VII. WHAT NEXT? WHERE DOES THIS LEAVE US & WHERE DO WE GO?

## A. THE LESSONS OF THE COVID-19 PANDEMIC

### THE SCIENCE WAS AN “A+”

REAL-TIME GENETIC SEQUENCING, OPERATIONALIZING MRNA, MULTIPLE EFFECTIVE VACCINES IN LESS THAN 12 MONTHS . . . THESE WERE “MOON-SHOTS”

SCIENTISTS WORKED TOGETHER GLOBALLY, WITH LITTLE INTERFERENCE IN SHARING DATA AND FINDINGS

### THE POLITICS WERE AN “D-”

INFIGHTING, PROTECTIONISM, RESOURCE HOARDING, UNEVEN APPLICATION OF KNOWN EFFECTIVE POLICIES, EMOTIONAL DECISION-MAKING, FAKE NEWS, POLITICIZATION OF A MICROORGANISM, ETC.

**WE FAIL TO SOLVE SUCH PROBLEMS  
NOT BECAUSE WE CANNOT . . .  
BUT BECAUSE WE WILL NOT**

# VII. WHAT NEXT? WHERE DOES THIS LEAVE US & WHERE DO WE GO?

## B. RETHINKING OUR RESPONSE TO RISK

- BE ANALYTICAL, NOT POLITICAL: CHALLENGE YOUR ASSUMPTIONS & THINK THE UNTHINKABLE
- LEARN TO PROJECT ALL POSSIBLE FUTURES
- ACCEPT THAT CHANGE IS UNAVOIDABLE: THE FUTURE WILL NOT BE LIKE THE PAST
- ACCEPT THAT RISK IS INCREASING AND YOU HAVE TO DEAL WITH IT
- BE READY TO CHANGE EVEN THE MOST CAREFULLY-CONSIDERED PLANS IN LIGHT OF CHANGING CONDITIONS OR NEW EVIDENCE, AND THEN BE READY TO CHANGE THEM AGAIN . . .
- LOOK FOR AND SEE OPPORTUNITY WITHIN RISK

# VII. WHAT NEXT? WHERE DOES THIS LEAVE US & WHERE DO WE GO?

## C. BEWARE OF BIAS

COGNITIVE BIASES UNDERMINE UNDERSTANDING AND DECISIONS

- ANCHORING BIAS
- CONFIRMATION BIAS
- GAMBLER'S FANTASY
- ILLUSION OF CONTROL
- OPTIMISM BIAS / PESSIMISM BIAS
- PROBLEM OF INDUCTION
- SALIENCE BIAS
- SELECTIVE PERCEPTION

“THINKING FAST AND SLOW” (KAHNEMAN): HEURISTICS (RULES OF THUMB)

INTUITION AND EASY VS HARD ANSWERS

# **VII. WHAT NEXT? WHERE DOES THIS LEAVE US & WHERE DO WE GO?**

## **D. THREAT ASSESSMENT**

- RANKING LIKELIHOOD / CREDIBILITY AND POTENTIAL SEVERITY
- BASED ON ANALYSIS OF PAST PATTERNS
- GOAL IS TO DETECT AND UNDERSTAND, AND THEN INTERRUPT OR AVOID
- BUT . . . PROBLEM OF INDUCTION

**NOVEL / EMERGING THREATS ARE NOT NECESSARILY  
DETECTABLE FROM LINEAR UNDERSTANDING OF DETECTABLE  
PAST PATTERNS!**

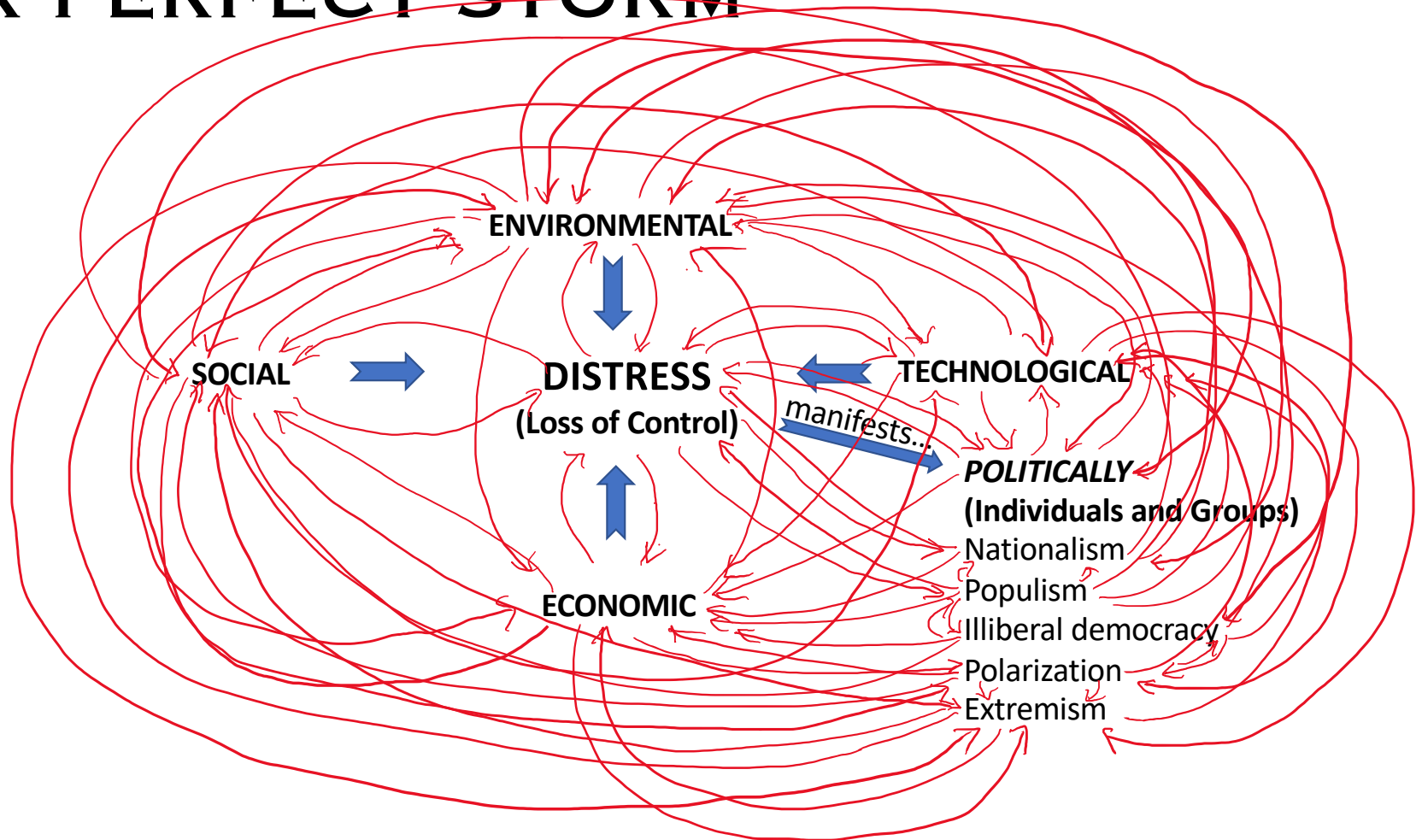
**COMPLEX SYSTEMS THROW OUT UNEXPECTED, NOVEL  
OUTCOMES THAT APPEAR WITHOUT OVERT WARNING. THE MORE  
COMPLEX THEY ARE, THE MORE THEY DO THIS.**

# **VII. WHAT NEXT? WHERE DOES THIS LEAVE US & WHERE DO WE GO?**

## **D. SOME TAKE-AWAYS**

- **THINK ABOUT HOW YOU THINK ABOUT RISK!**
- **DON'T BE LULLED INTO COMFORTABLE ANSWERS THAT FIT YOUR EXPECTATIONS AND "FEEL GOOD"**
- **DON'T THINK YOU REALLY UNDERSTAND A SITUATION: THERE ARE USUALLY HIDDEN ELEMENTS AND SURPRISES IN STORE**
- **"UN-KNOW" WHAT YOU "KNOW" TO BE TRUE**
- **THINK WIDE, NOT NARROW; SLOW, NOT FAST**
- **THINK ABOUT CONNECTIONS AND FEEDBACK LOOPS**
- **"LISTEN" FOR FAINT INDICATORS AND SIGNALS**
- **REMEMBER THE OVERWHELMING IMPORTANCE OF PERCEPTION & SENTIMENT: FEELINGS MATTER!**

# OUR PERFECT STORM







# THANK YOU

## DEE SMITH

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