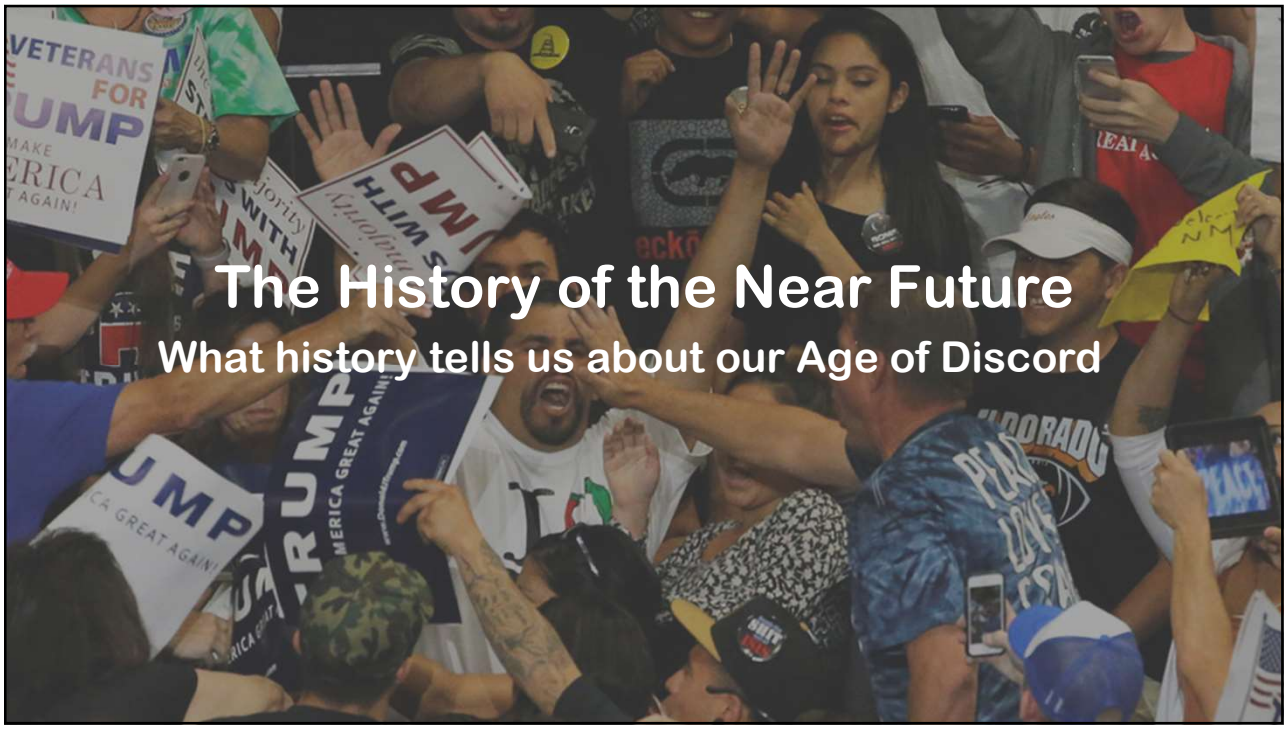


The History of the Near Future

What history tells us about our Age of Discord

1

Forecast: growing political instability to the 2020s

OPINION NATURE|Vol 463|4 February 2010

CORRESPONDENCE

Our decadal research predictions ('2020 visions' *Nature* **463,** 26–32; 2010) provoked ideas — and ire.

Political instability may be a contributor in the coming decade

The next decade is likely to be a period of growing instability in the United States and western Europe, which could undermine the sort of scientific progress you describe in the Opinion collection of '2020 visions'.

Quantitative historical analysis reveals that complex human societies are affected by recurrent — and predictable — waves of political instability (P. Turchin burgeoning public debt, can be addressed by making tax rates more progressive. And we should not expand our system of higher education beyond the ability of the economy to absorb university graduates. An excess of young people with advanced degrees has been one of the chief causes of instability in the past.

Peter Turchin Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, Connecticut 06269, USA
e-mail: peter.turchin@uconn.edu

Expanded view of universities would be more realistic

Tertiary education is poised for greater changes during the next decade than John Hennessey's vision implies (*Nature* **463,** 28–29; therefore support development of as many technologies as possible.

Dietrich Leibfried National Institute of Standards and Technology, Boulder, Colorado 80305, USA
e-mail: dil@boulder.nist.gov

for better representation.

Diversity among thought leaders is there if you look for it. You no longer have to look far among academics. Today, for example, women of vision are heads of the Massachusetts Institute of Technology; Harvard, Princeton and Brown universities; and the universities of Michigan, Pennsylvania and Cambridge.

Consider the Nobel prize. In 2009, it was awarded to five women (three of them scientists) and eight men, the narrowest gender gap since its inception.

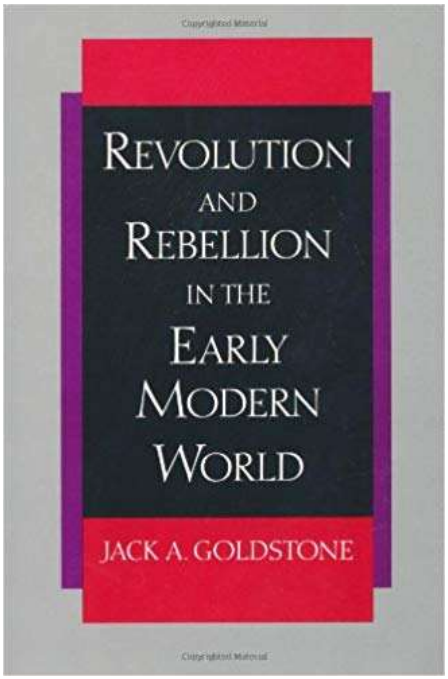
The scientific community in

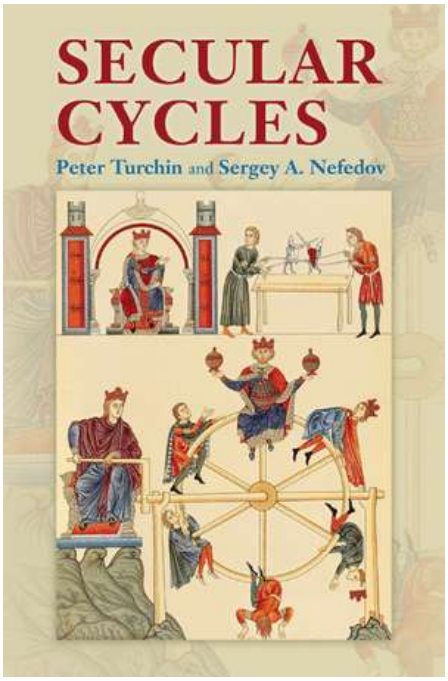
2

Three major themes

- What are the deep structural forces that drive social instability and political violence?
  - United States from the 1970s to the present
- All complex human societies experience periodic waves of political instability
  - a historical database of past societies falling into crisis – and emerging from it
- Work in progress and future research
  - massively expanding the historical database of crises/recovery
  - building country-specific models connecting macro- to micro-dynamics

3





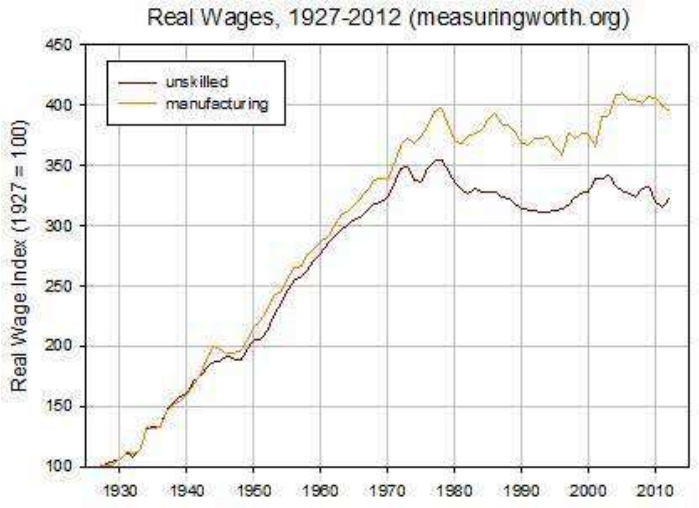
4

Structural Forces Driving Social Instability and Political Violence

Mechanism	*Brief explanation*
Mass mobilization potential	When the supply of labor exceeds its demand, the price of labor decreases, depressing the living standards for the majority of population, thus leading to popular immiseration and growing **mass-mobilization potential**, but creating favorable economic conditions for the elites.
Intraelite competition	Favorable economic conjuncture for the elites results in increasing numbers of elites and elite aspirants, as well as runaway growth of elite consumption levels. Elite overproduction results when elite numbers and appetites exceed the ability of the society to sustain them, leading to spiraling **intraelite competition** and conflict.
State fragility	A **fiscal crisis** reduces the state's control of the coercive apparatus (police and army). The state's **legitimacy crisis** undermines the willingness of the elites and the population to defend state institutions against the assault by radical groups.
International environment	Whereas the first three mechanisms are internal, societal stability is also affected by external factors: **geopolitical** (e.g., foreign support for the opposition), **geo-economic** (shifting prices of international commodities), and **geo-cultural** (a successful revolution in a culturally similar country).

5

Well-being/Immiseration I: Why did real wages stop growing?



$$W_{t+\tau} = a\left(\frac{G_t}{N_t}\right)^{\alpha}\left(\frac{D_t}{S_t}\right)^{\beta} C_t^{\gamma}$$

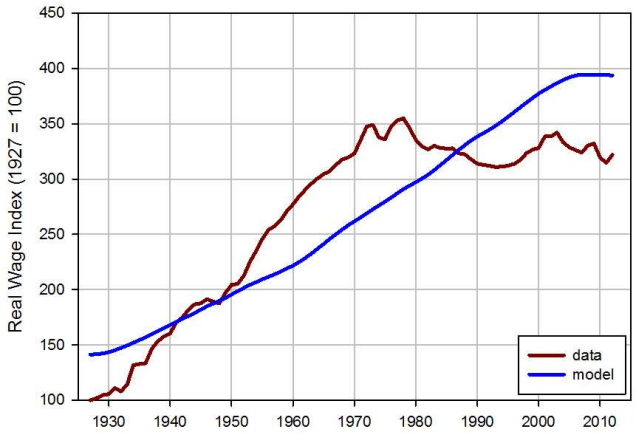
Real wage, W_t, as a function of:
- **GDP per capita**
- **Labor demand/supply ratio**
- **Extra-economic factors:**
  - **norms and institutions**

Regression model:

$$\log W_{t+\tau} = A + \alpha \log\left(\frac{G_t}{N_t}\right) + \beta \log\left(\frac{D_t}{S_t}\right) + \gamma \log C_t + \varepsilon_t$$

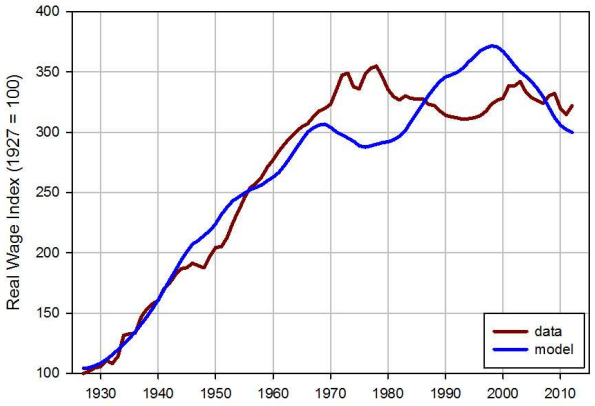
6

Model: GDP per capita



$$\log W_{t+\tau} = A + \alpha \log\left(\frac{G_t}{N_t}\right) + \varepsilon_t$$

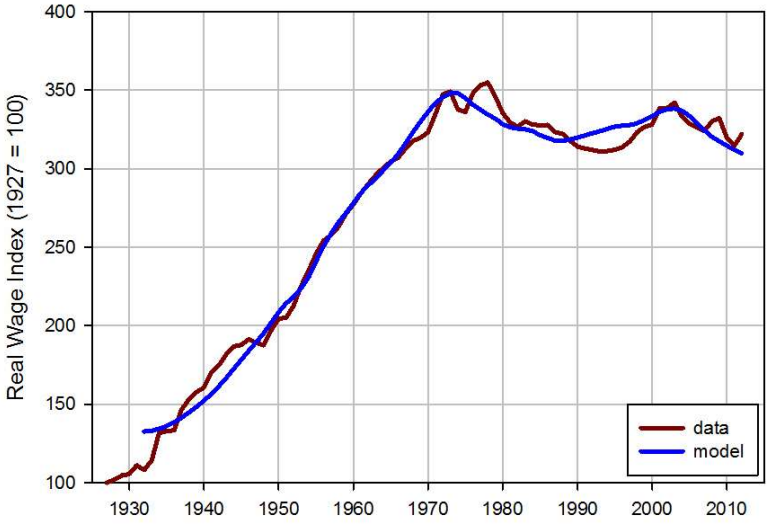
Model: GDP and Demand/Supply ratio



$$\log W_{t+\tau} = A + \alpha \log\left(\frac{G_t}{N_t}\right) + \beta \log\left(\frac{D_t}{S_t}\right) + \varepsilon_t$$

7

Full Model



Full model: GDP, Labor Supply/Demand, Social Norms*

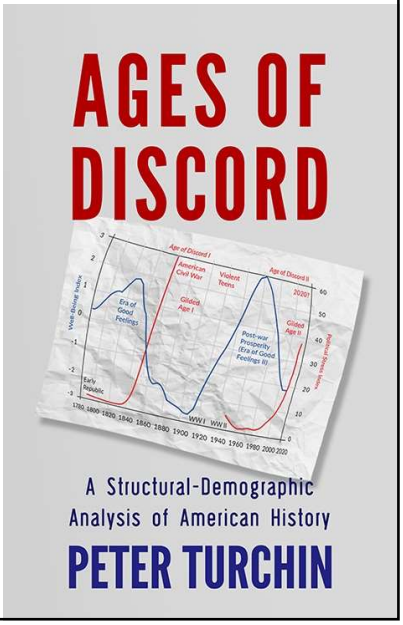
*proxied by real minimum wage

$$\log W_{t+\tau} = A + \alpha \log\left(\frac{G_t}{N_t}\right) + \beta \log\left(\frac{D_t}{S_t}\right) + \gamma \log C_t + \varepsilon_t$$

8

Well-Being II: Additional Proxies

- Biological well-being
  - average expectation of life
  - population stature (average heights)
- (for other proxies see *Ages of Discord*)



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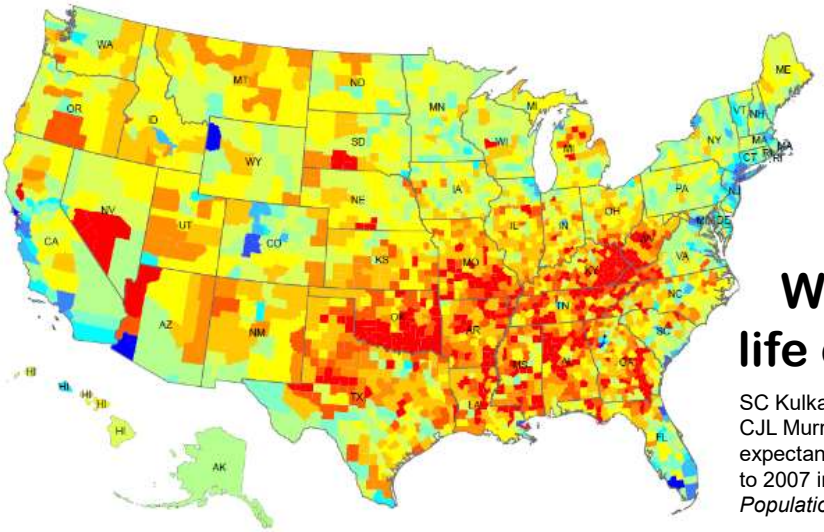
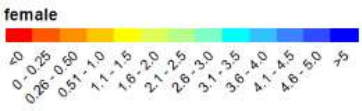


Change in years of life expectancy in US counties from 1987 to 2007

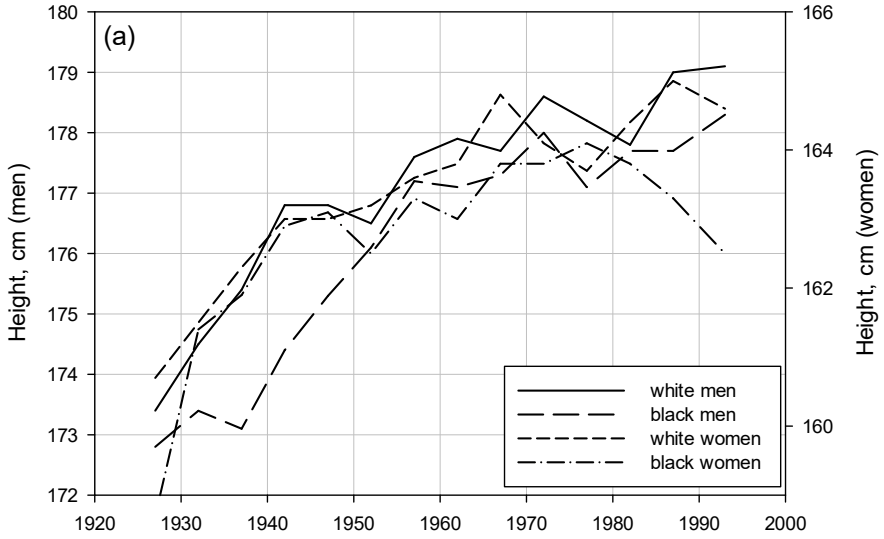


Well-Being: life expectancy

SC Kulkarni, A Levin-Rector, M Ezzati, CJL Murray (2011). Falling behind: life expectancy in US counties from 2000 to 2007 in an international context. *Population Health Metrics* 9:16

10

Well-Being: Average Stature



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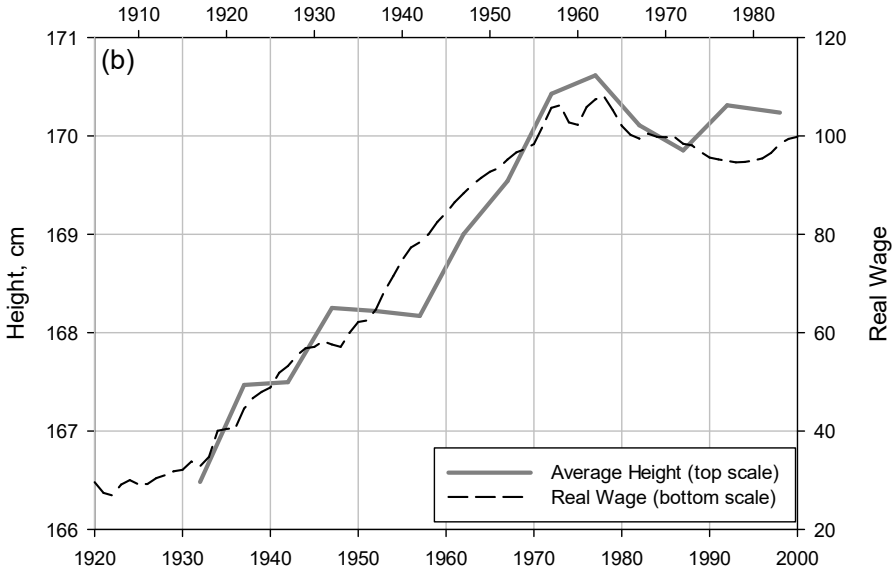
Well-Being: Average Stature and Real Wage



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The Effect on the Elites

- **Elites:** small percent of the population who concentrate social power in their hands
- Declining relative wages means not only immiseration of large segments of population, but also enrichment of those who consume labor – the elites and elite aspirants
  - elite numbers (and appetites) grow
  - high rate of upward social mobility

13

Proportion of multimillionaires in relation to the total population, 1983–2007 (Wolff 2010: Table 3) in constant 1995 dollars.

year	Percent of households with net worth exceeding:		
	1 mln	5 mln	**10 mln**
1983	2.9	0.29	**0.08**
1986	3.3	0.32	**0.07**
1992	3.3	0.29	**0.04**
1995	3.0	0.48	**0.19**
1998	4.7	0.74	**0.23**
2001	5.5	1.00	**0.32**
2004	5.8	1.00	**0.31**
2007	**6.3**	**1.26**	**0.40**

14

"Elite Overproduction"

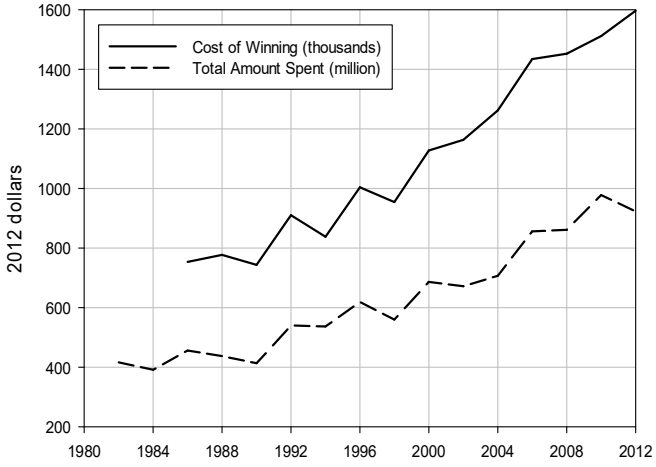
- Growing elite numbers and consumption levels eventually overshoot the productive base
  - large segments of the elites find themselves lacking resources to maintain status
- Since the number of power positions is limited, segments of elites/elite aspirants must be denied access to them
- Rise of the counter-elites: "surplus" elites who challenge the established elites, even by violent means
- As a result, elite overproduction drives up intra-elite competition and sociopolitical instability

15

Year	House	Senate	Both chambers	Millionaires
2000	1233	191	1424	no data
2002	1299	146	1445	32
2004	1212	189	1401	30
2006	1317	166	1483	42
2008	1377	168	1545	51
2010	1897	308	2205	58
2012	1711	251	1962	48

Numbers of candidates (including the primaries) that ran for House and Senate seats: 2000–2012. (Source: Center for Responsive Politics, OpenSecrets.org)

The average cost of winning an election to the House, 1986–2012 (in thousands of inflation-adjusted 2012 dollars) and the total amount (in millions of 2012 dollars) spent by major party candidates.
Data source: The Campaign Finance Institute



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Part I: conclusions

- Two major structural trends are undermining social and political stability of the US
- Declining well-being of large segments of the American population drives mass-mobilization potential
- Elite overproduction drives intra-elite competition and conflict

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Three major themes

- What are the deep structural forces that drive social instability and political violence?
  - United States from the 1970s to the present
- All complex human societies experience periodic waves of political instability
  - a historical database of past societies falling into crisis – and emerging from it
- Work in progress and future research
  - massively expanding the historical database of crises/recovery
  - building country-specific models connecting macro- to micro-dynamics

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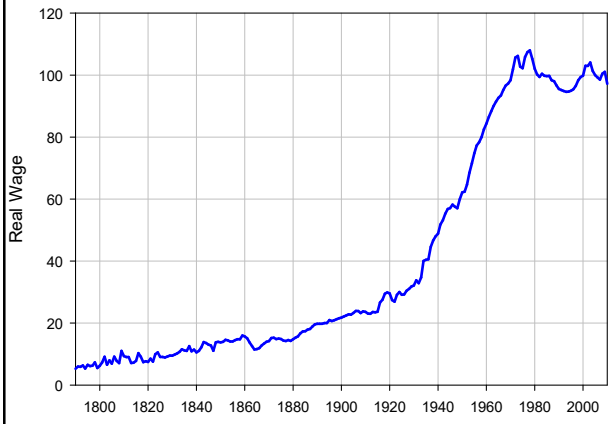
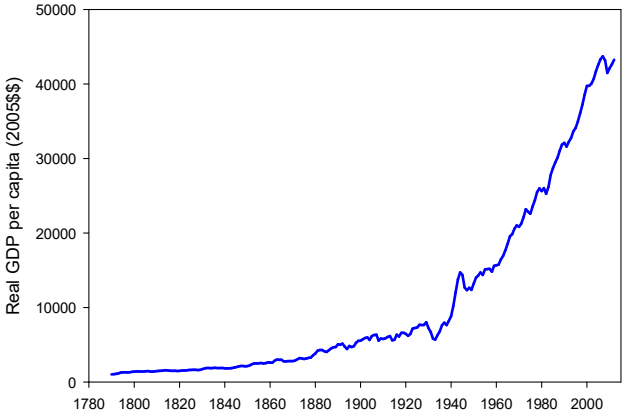
Where do waves come from?



Real wages
(source: MeasuringWorth)

GDP per capita
(source: MeasuringWorth)



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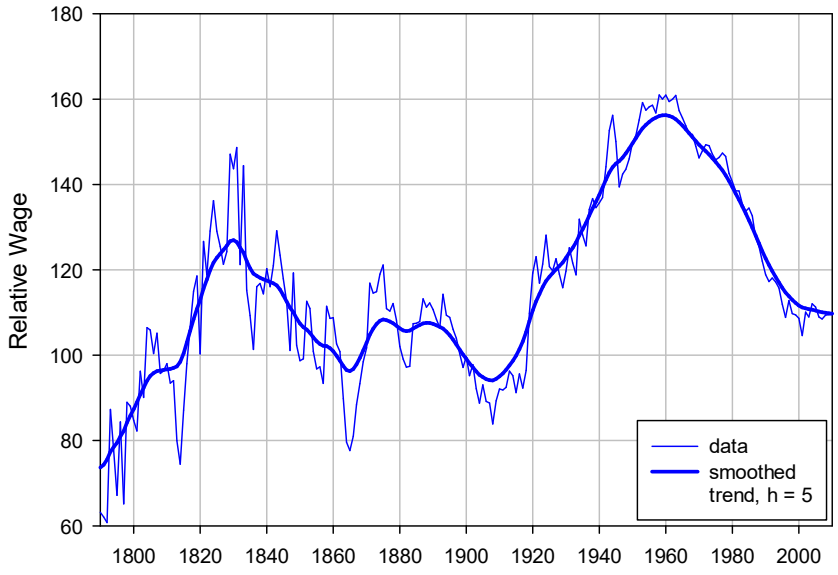
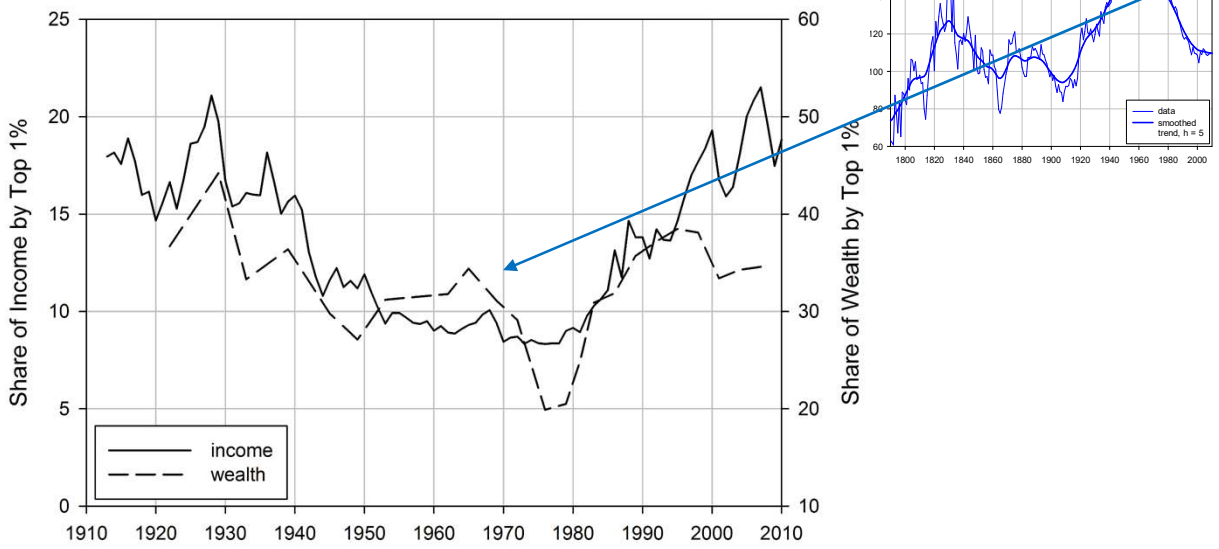
Relative Wage: Scaling Wage by GDPpc



20

Economic inequality as a "proxy" (indirect indicator) of structural pressures for instability



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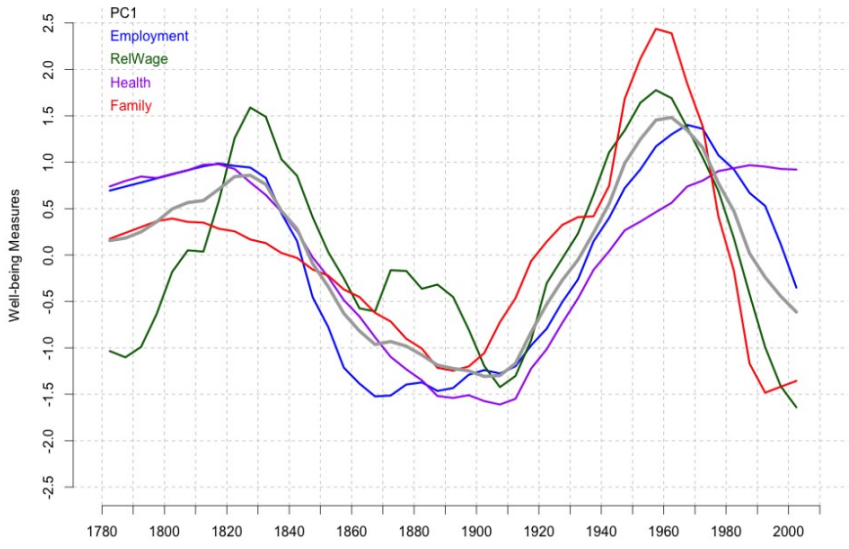
Summary of well-being indicators



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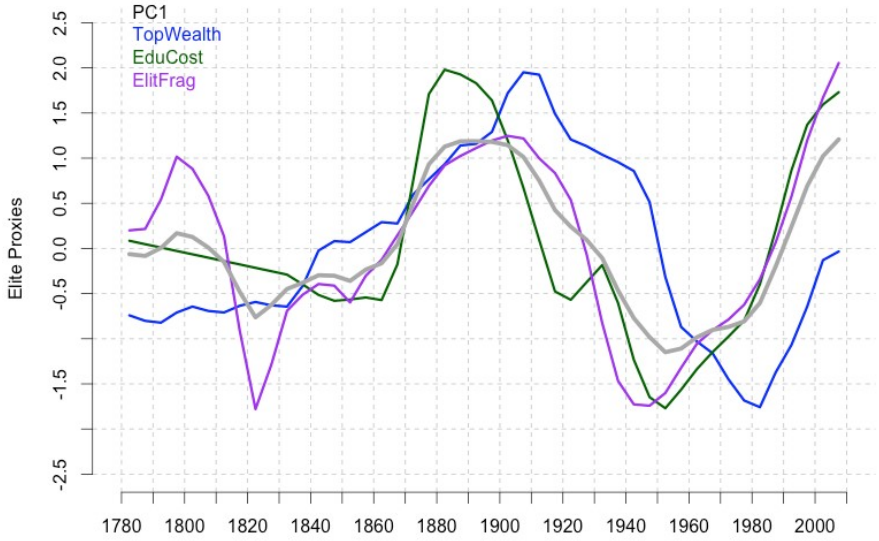
Elite overproduction/competition indicators



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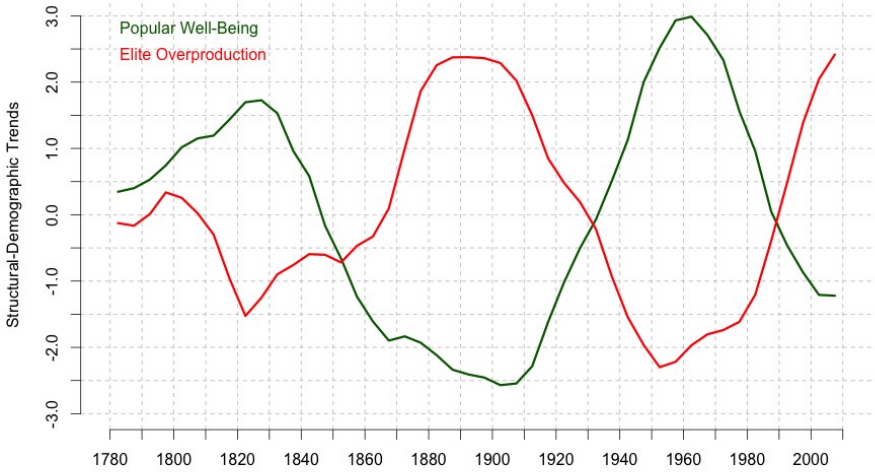
The "double spiral" of well-being and elite overproduction



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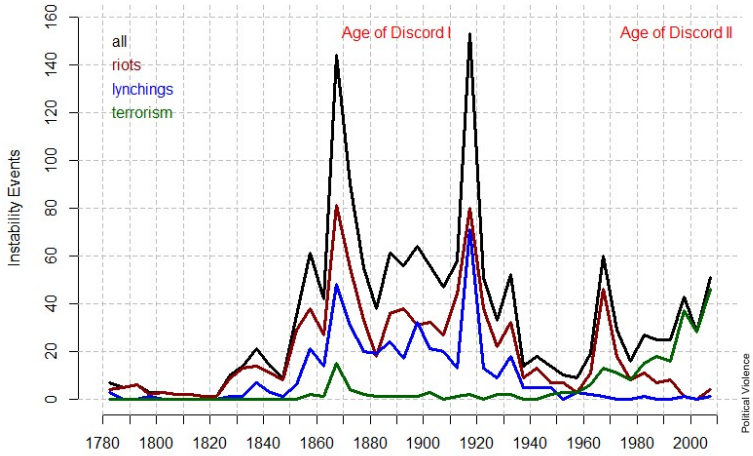
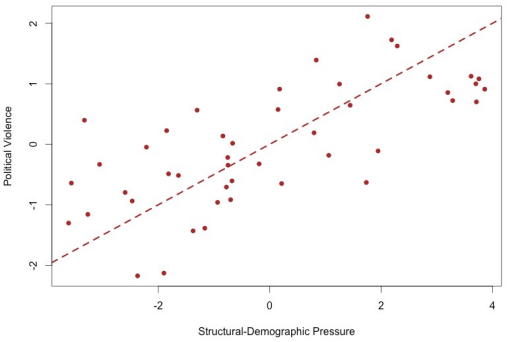
Social and political instability in the US



Effect of structural pressures on instability/political violence



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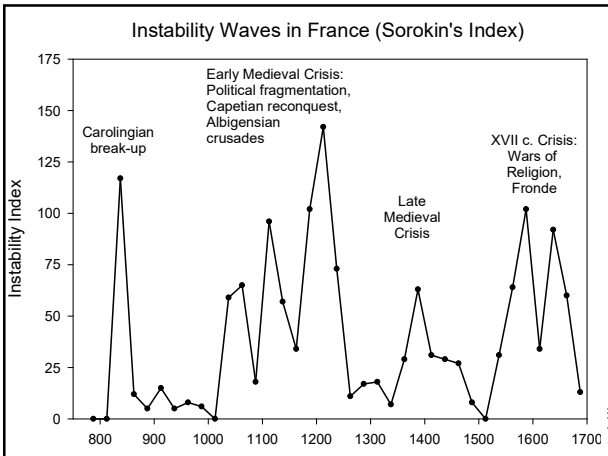
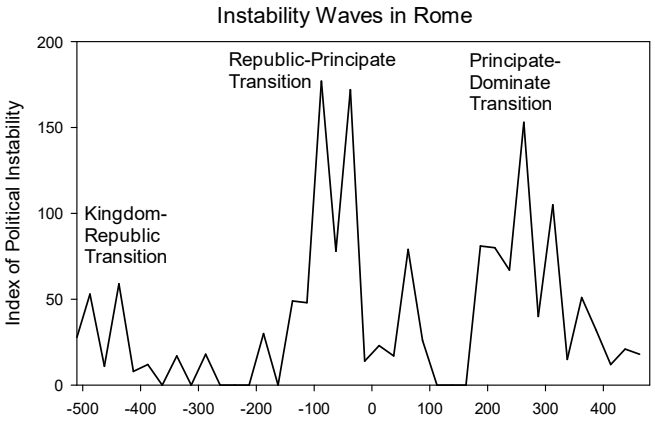
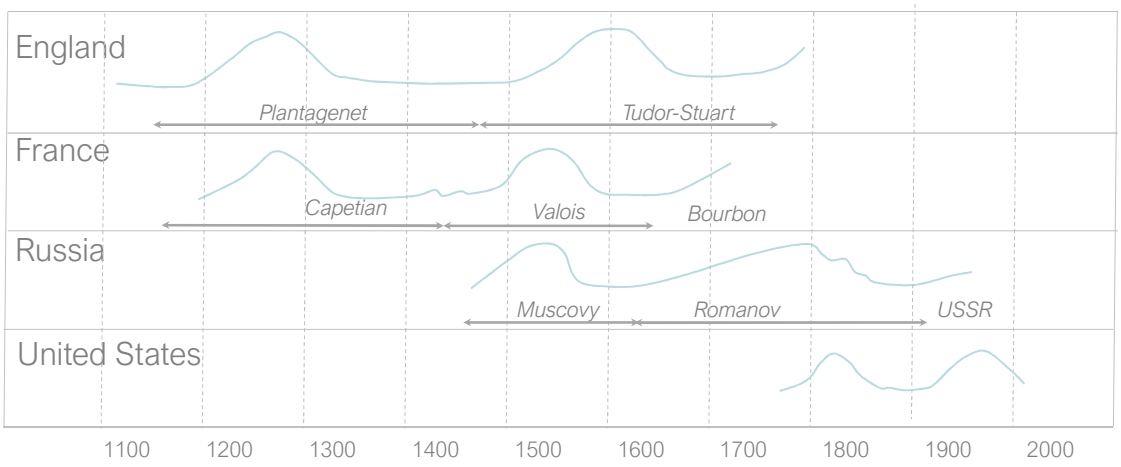


Delving deeper into the past



26

Cycles of well-being/low inequality – immiseration/high inequality



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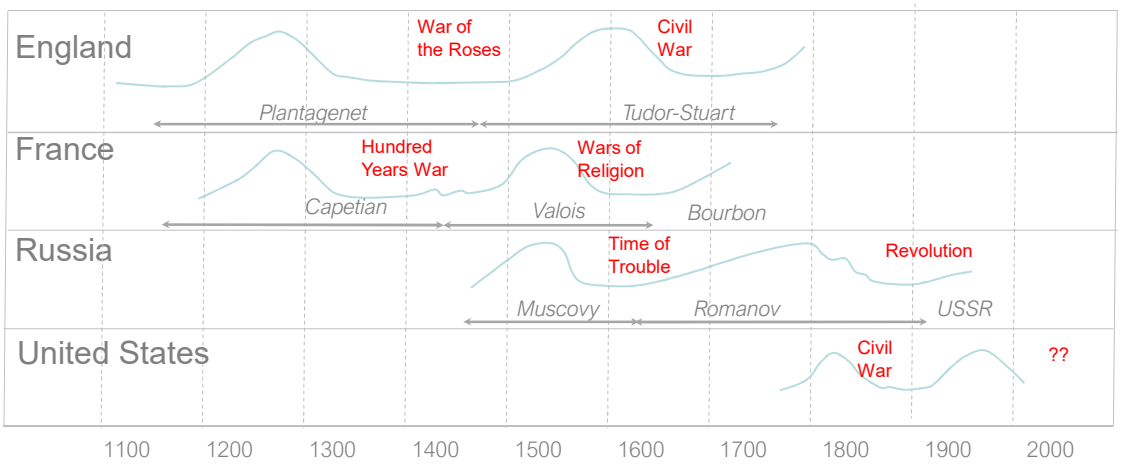
Cycles of well-being/low inequality – immiseration/high inequality



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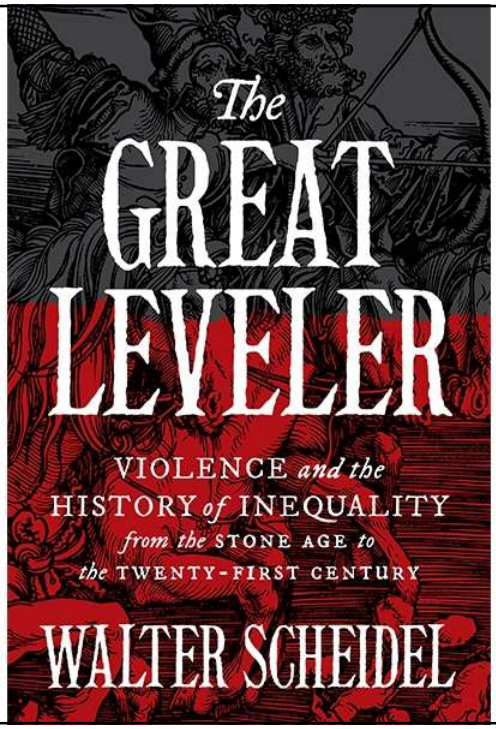
The pessimistic view:
"Death is the Great Leveler"

Inequality can decrease only by major, violent shocks:

- **Mass-mobilization warfare**
- **Transformative revolution**
- **State failure/collapse**
- **Lethal pandemic**

Note: I see inequality as a "proxy" (indicator) of social pressures undermining stability, rather than a direct cause of it



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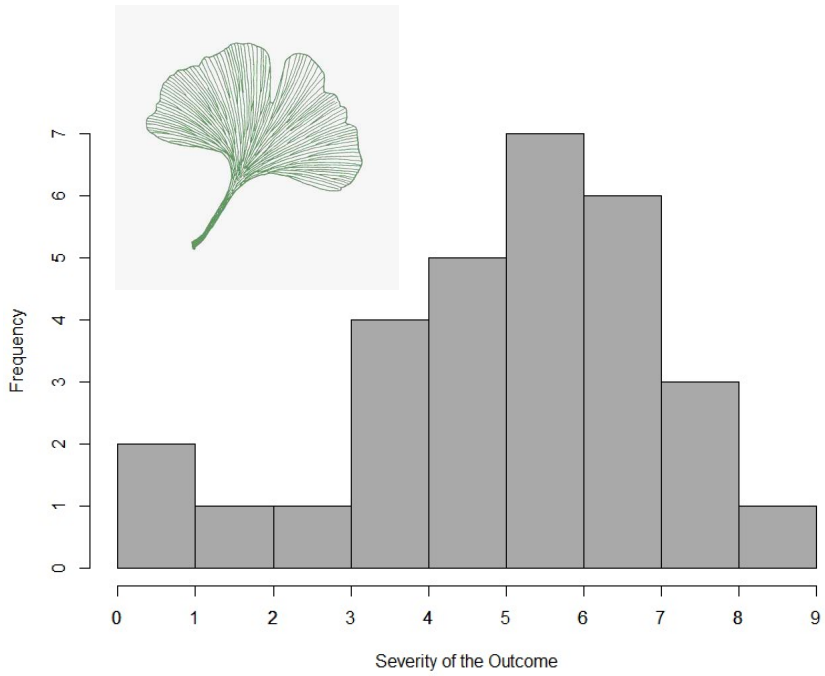
My take: a bit more optimistic

- **Entry into crisis ("revolutionary situation") is relatively stereotypical**
  - **mass-mobilization, intra-elite conflict, state fragility**
- **The exit from the crisis is hugely contingent**
  - **a "fan" of possible outcomes: from relatively mild to catastrophic**

30



Sample:
30 societies experiencing revolutionary situations (Europe, Russia, Middle East, India, China, US)

Severity components of the outcome:
Population decline
Population decline > 50%
Lethal epidemic
Elite: massive downward mobility
Elite: dispossession or extermination
Ruler executed or assassinated
Transformative revolution
Civil war
Prolonged civil wars (>100 years)
Territorial fragmentation
External conquest

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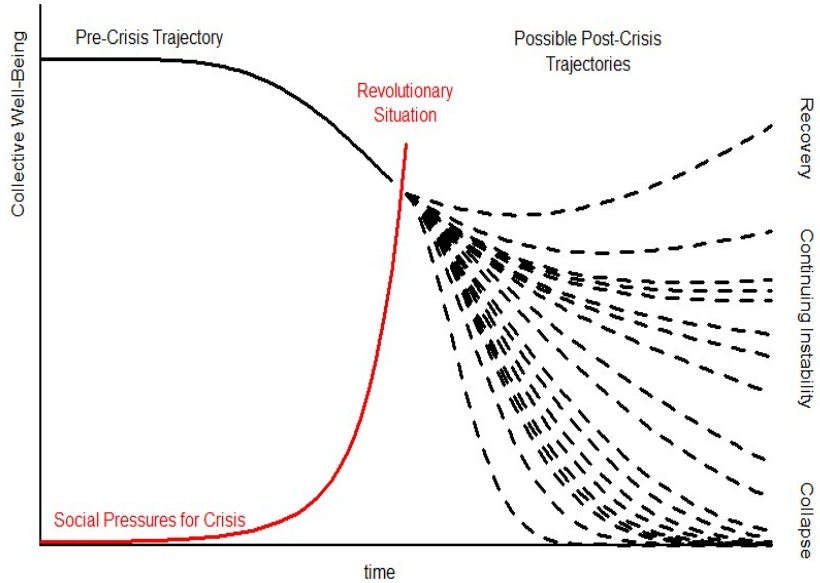

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- **Work in progress and future research**
  - **massively expanding the historical database of crisis/recovery**
  - **building country-specific models that integrate macro- to micro-dynamics**

33

Predicting social unrest/political violence is difficult

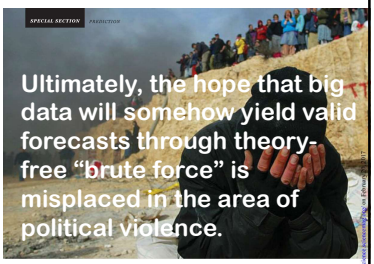
"The Soviet Union would not break apart because Soviet generals would never permit the dissolution of the state they were sworn to defend"

- **Jerry Hough, a prominent Soviet expert; October 1991**

	Tunisia	Egypt	Libya	Syria
Failed States Index	122, 122, 121, 118*	36, 40, 43, 49	115, 111, 112, 111	40, 35, 39, 48
State Fragility Index	97, 89, 100, --	53, 50, 48, --	82, 75, 100, --	72, 75, 75, --
Economist Intelligence Unit	67, --, 134, --	75, --, 106, --	133, --, 137, --	65, --, 94, --
Index of State Weakness	--, 112, --, --	--, 78, --, --	--, 86, --, --	--, 59, --, --

*Rankings listed by year: 2007, 2008, 2009, 2010, respectively. Each ranking number indicates that there were n countries at greater risk of instability or failure than the listed country that year.

Erroneous Instability Ranking of "Arab Spring" Countries, 2007-2010.
Source: J. Eli Margolis. 2012. Estimating State Instability, *Studies in Intelligence* 56.




ESSAY

Predicting armed conflict: Time to adjust our expectations?

Lars-Erik Cederman[1]* and Nils B. Weidmann[2]*

This Essay provides an introduction to the general challenges of predicting political violence, particularly compared with predicting other types of events (such as earthquakes). What is possible? What is less realistic? We aim to debunk myths about predicting violence, as well as to illustrate the substantial progress in this field.

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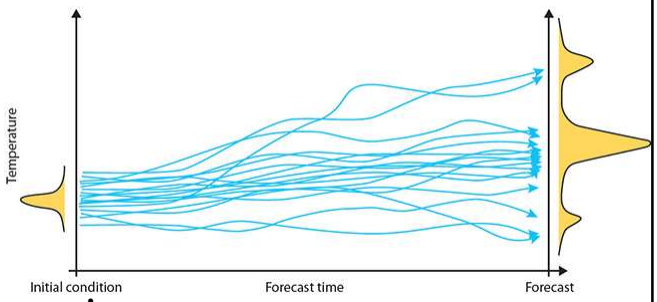
Multipath Forecasting (MPF) Engine

- Empirically grounded in historical analysis of a massive database of past crises/recoveries
- Integrating qualitative ("Thick Data") and quantitative ("Big Data") approaches
- Translating between macro processes (structural pressures) and micro-dynamics
  - contending rival elite groups, state and non-state organizations (including radical ones), and individuals



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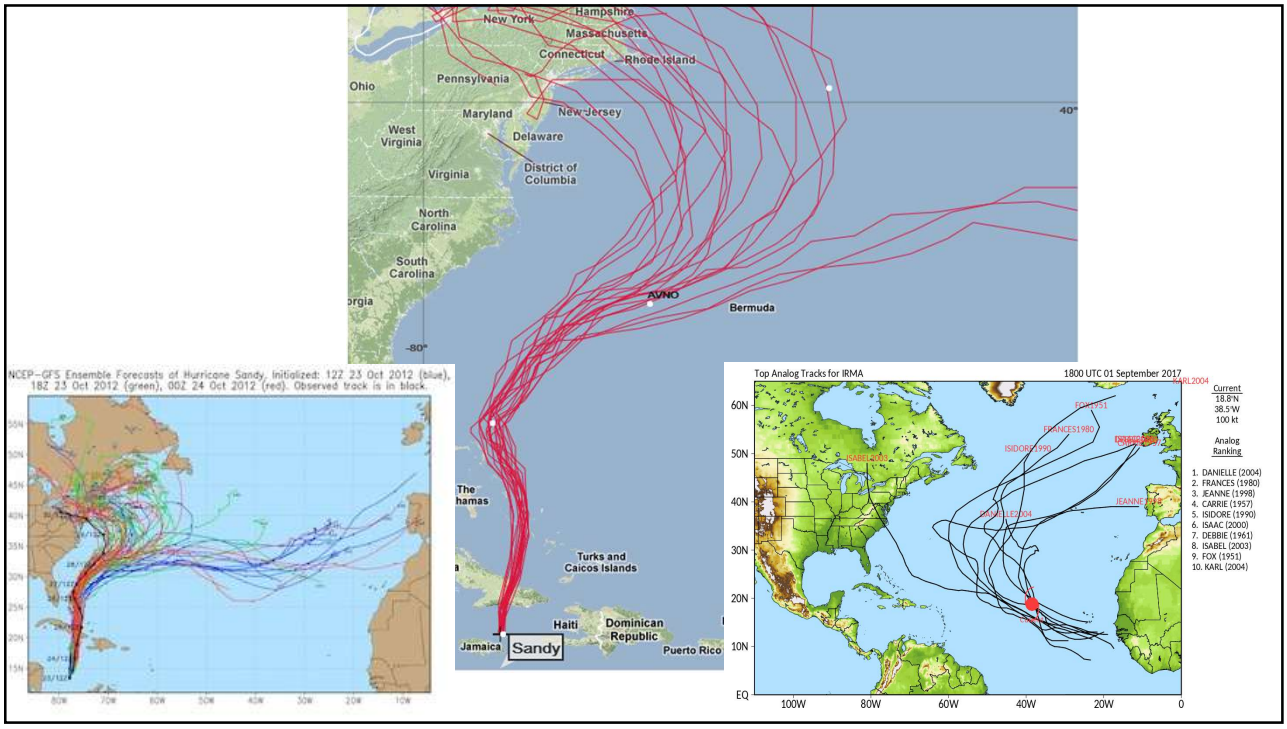

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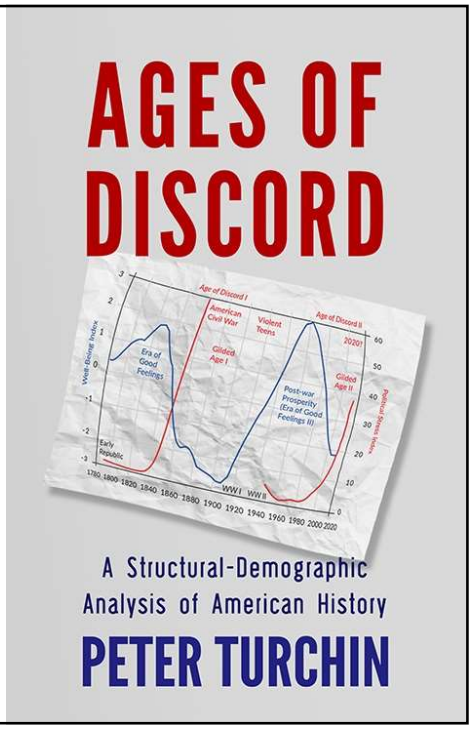
General Conclusions

- Structural causes of Ages of Discord:
  - declining population well-being and growing popular discontent
  - elite overproduction, intra-elite competition and conflict
- In past societies these structural conditions usually end with major outbreaks of political violence—revolutions and civil wars
- We are on track for the predicted instability peak in the 2020s
  - the underlying structural pressures are still building



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