MASSIVE MANY-TO-MANY CONNECTIVITY CHANGES EVERYTHING

Our society is being rewired, and public policy doesn't recognize that.

Massive Many-to-Many Connectivity (MM2MC) creates new *society-scale phenomena* that overturn our conventional assumptions about how societies work.

1/

You'll see four examples here:
1. Economic Inequity
2. A grow-or-die Imperative in Large Public Corporations
3. Threats to Sustainability
4. Threats to Political Stability

Public policy has not accounted well for the adverse consequences of any of these.

2/

I'll write about 1,2, and 3 here and summarize some outside writing for 4.

Then I'll end with a Recommendation.
* * *
Here is our basic problem:

3/

This new level of interconnectivity, introduced by large markets in the last century and recently aggravated by universal adoption of the Web, smartphone apps, and social media, has created new society-scale phenomena that are redirecting population behaviors.

4/

Our standard ethics training teaches us that the sources of these new phenomena are behaviors that need to be regulated.

👉🏾 Mathematical analysis tells me that the new sources are primarily *structural* and only perhaps secondarily regulatable behavior.

5/

We individuals are embedded in social systems whose new levels of interconnectivity amplify our interactions in new ways, manifesting new gross behaviors.

This is a new and permanent structural problem, and we have no traditional coping mechanisms. That’s our challenge.

6/

What I'm offering here is not any solution but a structural view that I believe can lead to new approaches to analysis, which then can lead us to new solutions.

7/

But first I want to state two distinctions. I'm going to be citing an issue with the financing of public corporations, that is, with "Capitalism". Many people see this word and the reaction is: "Burn it down". That's not the approach I'll take here.

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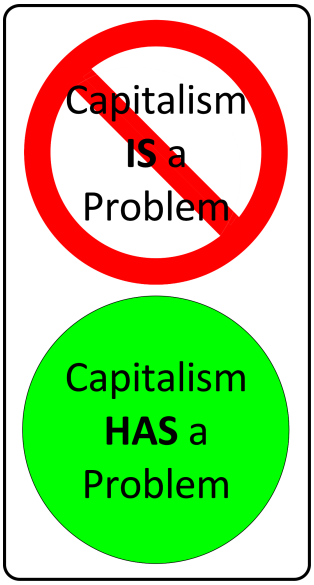
So the first distinction is between "Capitalism IS a problem" and "Capitalism HAS a problem". I'm going with "HAS".



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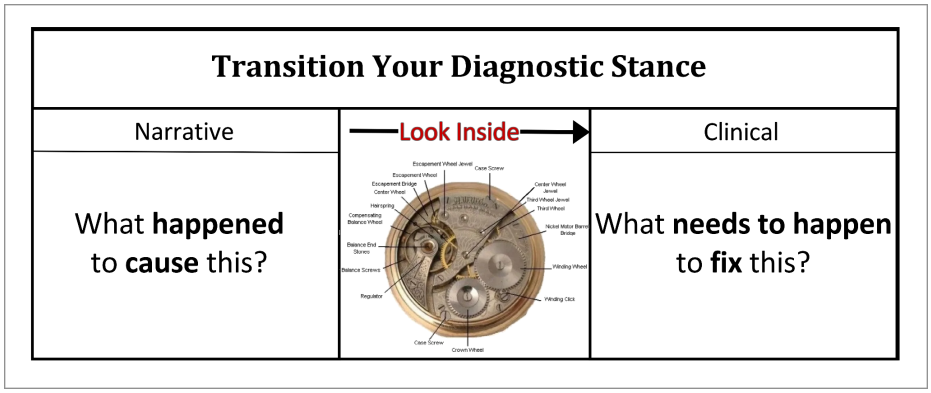
The reason is practical, not ideological: We choose to FIX it, not burn it down. That's the second distinction, which I call your "diagnostic stance". Do you just want to describe how it happened or do you want to fix it?

Diagnostic Stance	
Narrative	Clinical
What **happened** to **cause** this?	What **needs to happen** to **fix** this?

10/

I choose FIX, and the answer we'll follow here is: to fix it you have to open it up and look inside.

It's the "looking inside" that I'll be stressing here. In general, models that permit us to look inside are more helpful for fixing than merely externally descriptive models.



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Example 1. Economic Inequity

Where there is MM2MC *Adam Smith's Invisible Hand doesn't scale up*. Instead, Zipf's Law applies.

Zipf's Law is an empirical observation that applies in a remarkable number of cases.
https://en.wikipedia.org/wiki/Zipf%27s_law

12/

One case that might be familiar to you is the “Pareto 80/20 rule”: you get 80% of your effects from 20% of your causes.

13/

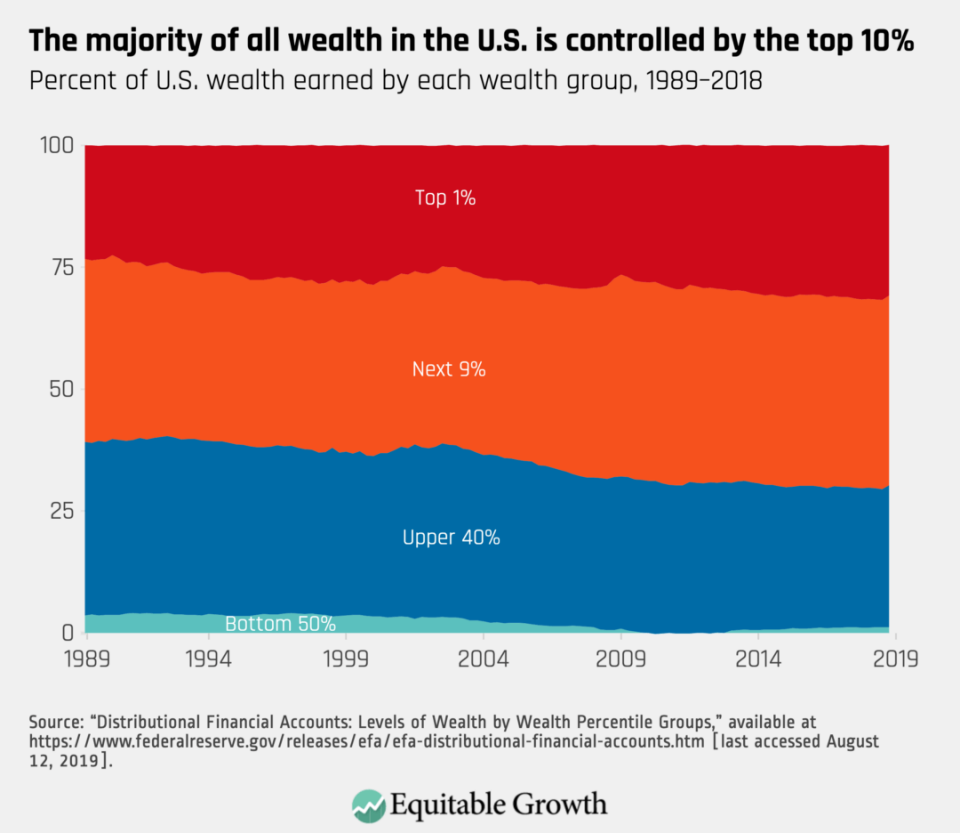
I’m going to develop this different case:

Connected markets in which consumers express choice are inherently unfair. (I first got this idea from an article by Clay Shirky. http://extremedemocracy.com/chapters/Chapter%20Three-Shirky.pdf)

But first let’s look at some data from the United States.

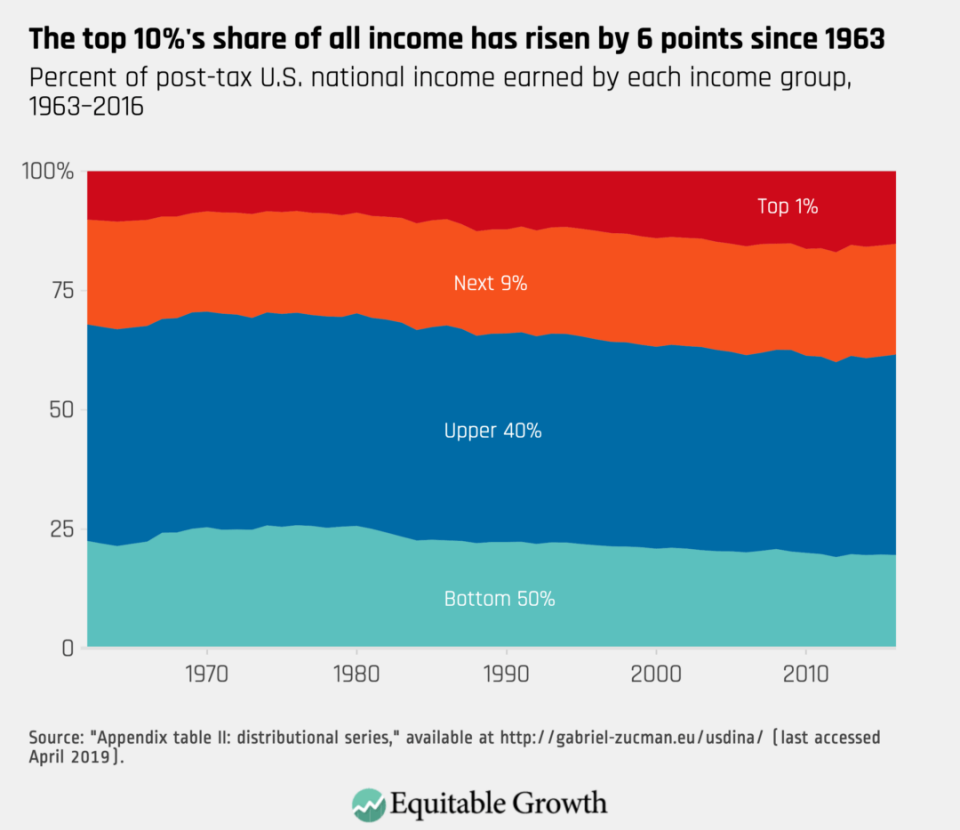
14/

This figure shows that extreme asset inequality is happening in America, and the effect is increasing. Note in particular the absence of any financial reserves of the bottom half of the population.



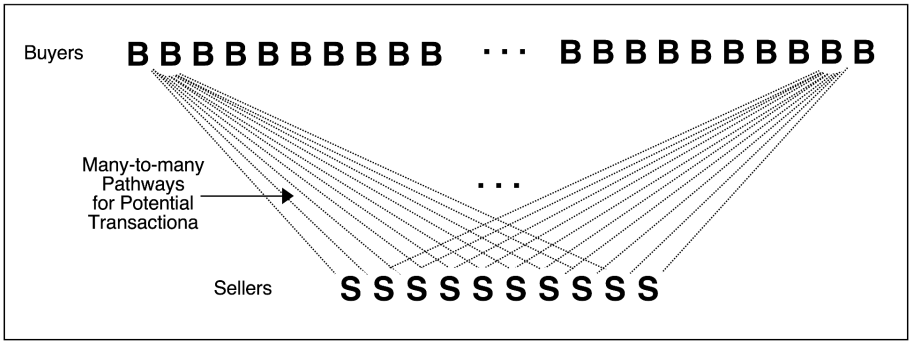
15/

This figure from the same source shows that it's true for income inequality also, but less so. (Income inequality is somewhat mitigated by compensations in tax law.)
https://equitablegrowth.org/eight-graphs-that-tell-the-story-of-u-s-economic-inequality/



16/

Here‘s a thought experiment showing how it works. Assume a really simple model of ten sellers (S) and a larger number of buyers (B). Every buyer is *potentially* connected to every seller in a market. This is shown here; the lines indicate some of the possible transaction pathways.

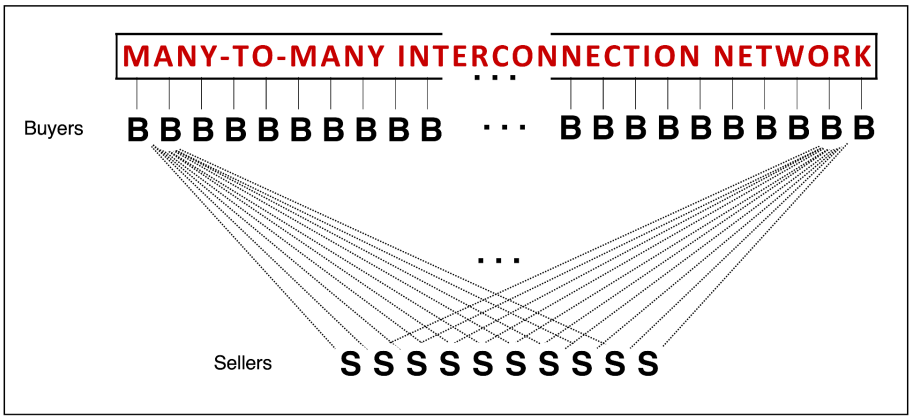


17/

The transactions in this case are independent events, so we would expect, using probability arguments, that each seller would get roughly the same number of transactions. (We’re just counting transactions, not valuing them, in our simple model; I’ll call it “popularity”.)

18/

Now let’s add a many-to-many interconnection network in which the buyers *potentially* communicate with each other, something like a restaurant rating website.



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Let’s also make the reasonable assumption that some of the buyers express opinions about some sellers, say using a common five-star rating scale, and that some buyers are susceptible to these suggestions. What happens?

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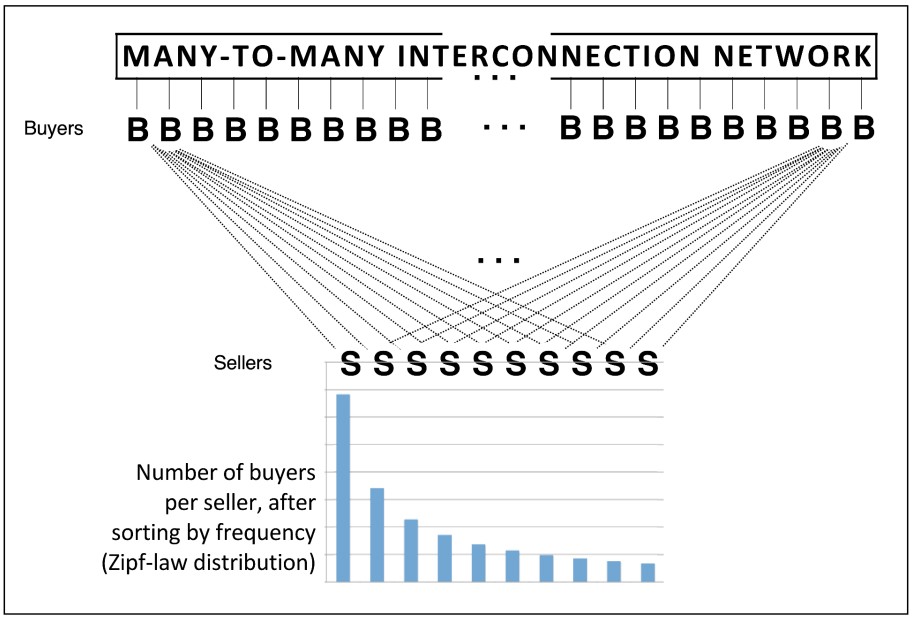
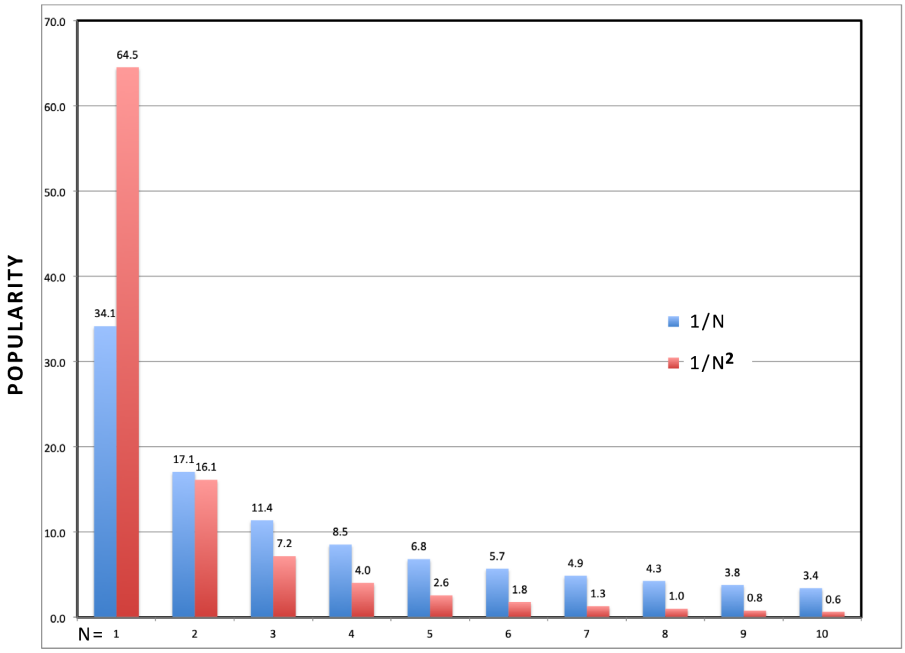
Favorites happen, inequality sets in, and it propagates through the network. After it settles down you'll see this Zipf distribution, after you've reordered the sellers for purposes of display from most to least popular.



21/

What is a Zipf distribution? Where the sellers are numbered N=1,2, etc., their popularity is some variation of 1/N, in this figure, 1/N (blue) and 1/N squared (red). The popularities of each color add up to 100. The red distribution approximates the 80/20 rule.



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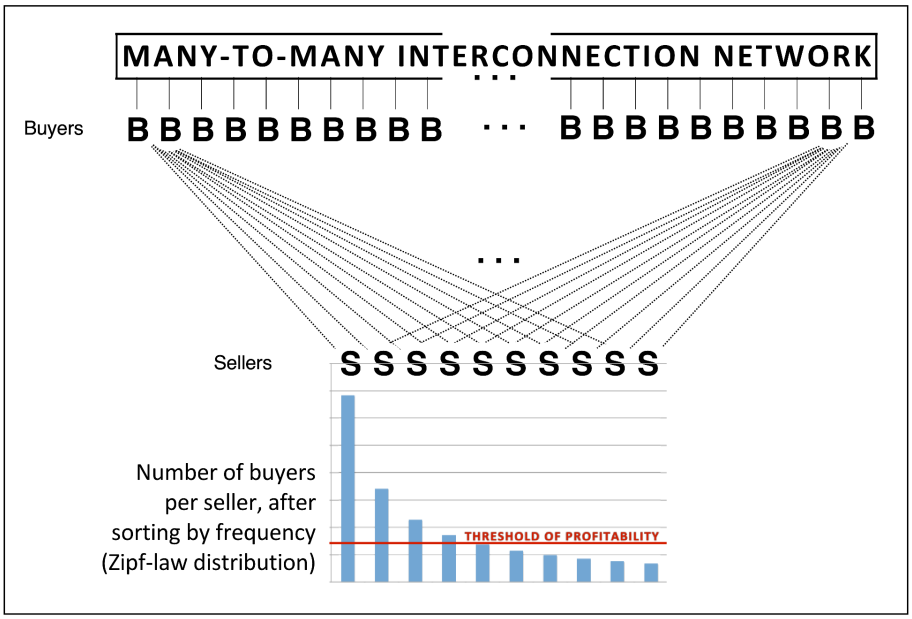
In large capital-intensive interconnected markets (think autos, petroleum, and cloud hosting, for example) there are large fixed costs and profitability is strongly volume-dependent. There is then a profitability threshold, shown here in red.



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(I once read a national-market competition study whose bottom-line takeaway for me was:

You might survive, but you really don't want to be number three.

Think about the large national markets you know whose occupants try to avoid being number three.)

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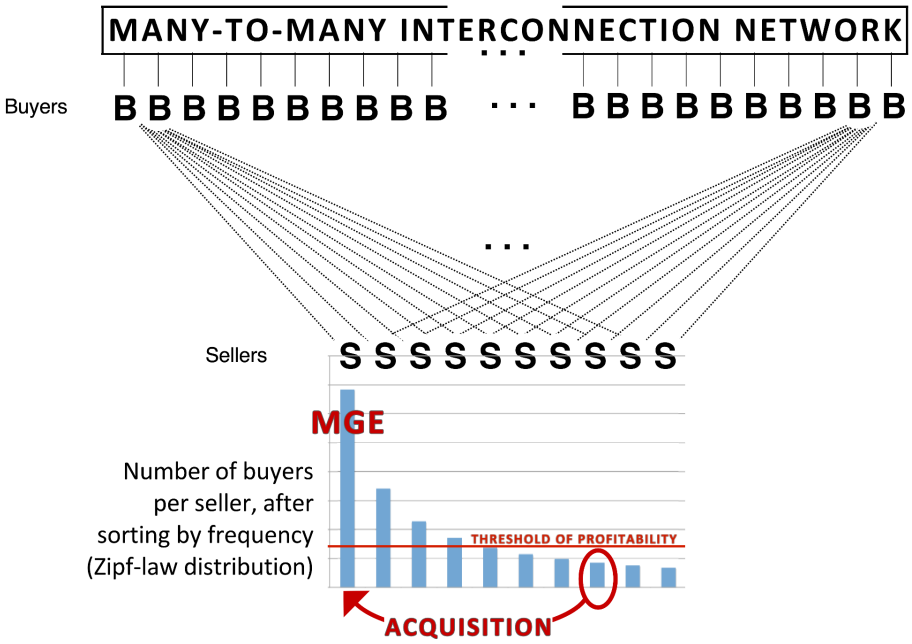
The natural outcome: the biggest companies (Mega Global Enterprises here) swallow up the also-rans, and you end up with an oligopoly.



25/

You don’t need predatory behavior for this to happen; Zipf’s Law and normal business incentives do it for you. The problem is structural.

That’s why the public debate over how to fix Facebook by regulating its behavior using antitrust reasoning is misguided.

26/

Example 2. A grow-or-die Imperative in Large Public Corporations

How does MGE swallow up the also-rans? The cheapest possible way: with cheap (cheap to it, that is, using low-shareholder-dilution, i.e., high-priced) stock.

How does MGE goose the price of its stock?

27/

By growing faster than the competition. That works because investors see higher returns from more growth and therefore prefer MGE stock, raising its price. How does MGE grow? The simplest and cheapest way: through acquisition.

There’s your positive feedback loop.

28/

Those stock-choosing decisions are being made in another market, the equities market, where MGE's stock is sold.

That's also a highly connected market subject to Zipf's Law, just like the industrial markets in which MGE sells its products.

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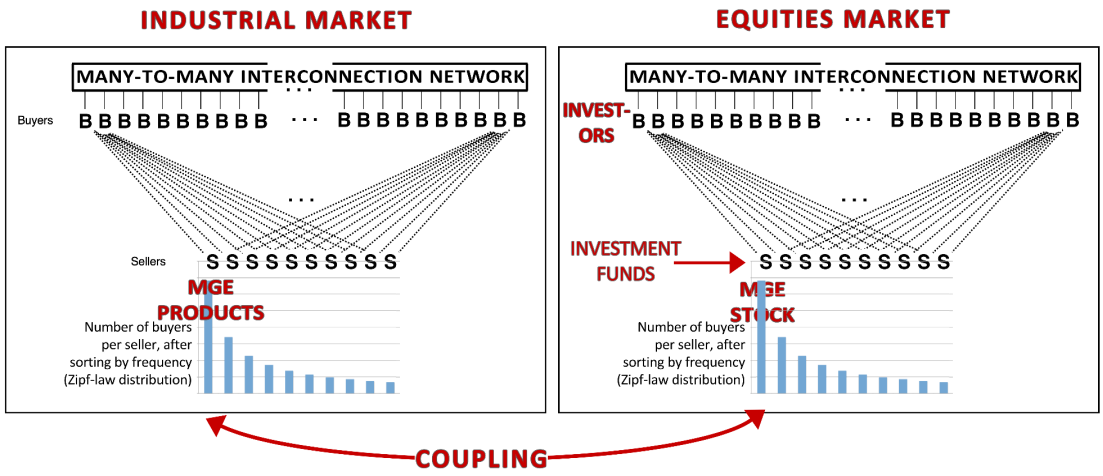
So you have Zipf's Law operating in two markets reinforcing each other's tendencies. It's a positive feedback loop combining two markets that we assumed are independent but are actually coupled.



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In simple models like this,
Positive feedback loop -> exponential growth.
That's the source of the

Grow-Or-Die Imperative

driving public corporations to manage their stock prices. (This imperative is internally incentivized by tying compensation to stock price.)

31/

Case study:

Consider two industrial leaders of 20th-century America, autos and petroleum.

When I was a graduate student in the 1950's I still saw some oil pumps scattered around Los Angeles, evidence of LA's old love affair with Big Oil.
https://www.theatlantic.com/photo/2014/08/the-urban-oil-fields-of-los-angeles/100799/

32/

That is, until LA became choked with smog and California radicalized itself, assuming leadership of the national fight against auto pollution. By that time the economics of public transportation had failed and sprawling LA was overrun with freeways and automobiles.

33/

That's another story, told here.
https://la.curbed.com/2017/9/20/16340038/los-angeles-streetcar-conspiracy-theory-general-motors

34/

Example 3. Threats to Sustainability

What are some consequences of an unstoppable growth compulsion on a finite planet?

a. Resource exhaustion
b. Toxic pollution
c. Climate change, and
d. Worldwide political disruption.

We're seeing them all.

35/

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a. Resource exhaustion. There was a time when the prediction was that a human “population bomb” would explode and we would starve. In my view, the Ehrlichs saw the basic problem--intensive human civilization--but they missed the process.
https://www.smithsonianmag.com/innovation/book-incited-worldwide-fear-overpopulation-180967499/

36/

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b. Toxic Pollution
Instead, the “Green Revolution” happened and we were saved.

Well, not quite; we kicked the can down the road. Now we're beginning to see larger consequences of uncontrolled growth; some are calling it an extinction event.
https://en.wikipedia.org/wiki/The_Sixth_Extinction:_An_Unnatural_History

37/

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c. We understand well the connections of Big Auto and Big Oil to global warming.

d. We also notice how global warming is causing political disruption, the leading edges of which we're now beginning to see in new society-scale phenomena: migration patterns.
https://www.nytimes.com/interactive/2020/07/23/magazine/climate-migration.html

38/

Example 4. Threats to Political Stability

Here are some of the growing manifestations of political destabilization we're seeing in America.

a. Anti-vaccine/anti-science violence
b. Mass shootings
c. Violent insurrection
d. Increasing self-harm (particularly in young people)

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e. Rising threats of violence to politicians, civil servants, and doctors
f. Public violence based on magical conspiracy theories

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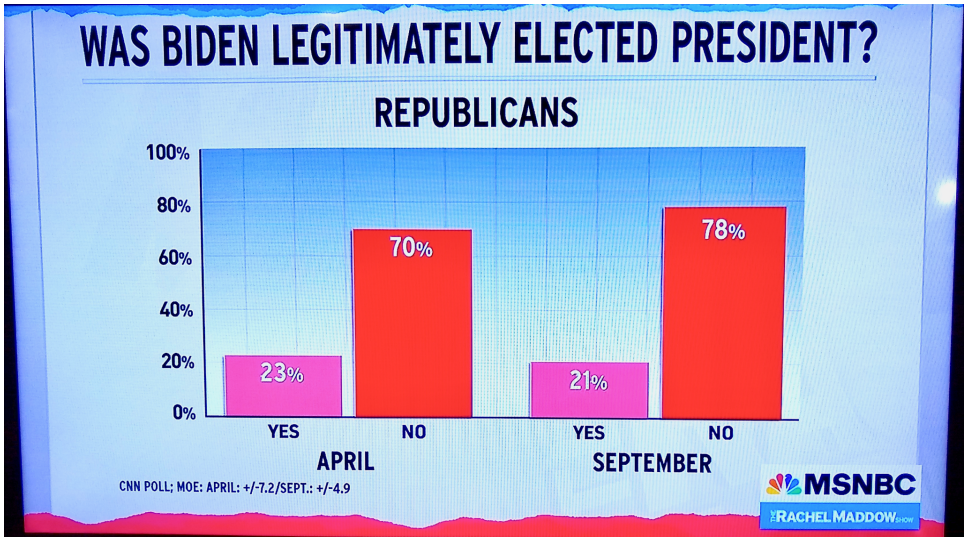
g. In the American Right, power has reversed direction and now flows upward from the voter base and dark donors to the leadership, leading to the confounding social phenomenon that 2/3 of Republicans believe that the 2020 Presidential election was somehow corrupted.



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Note that in the five-month interval of the survey, the discrepancy is increasing. Given that such impressions tend to decay if unattended, this is prima facie evidence to me that there are active agents injecting energy to perpetuate the phenomenon.
https://www.newyorker.com/magazine/2021/08/09/the-big-money-behind-the-big-lie

42/

In the preceding examples we've gotten a lot out of our simple Zipf-law thought experiment, but politics requires a much more complicated

model. I've been developing such a model for a while. The most recent and concise version is here:
https://melconway.com/Home/pdf/politics-emergence.pdf

43/

Now I'll summarize my current views.

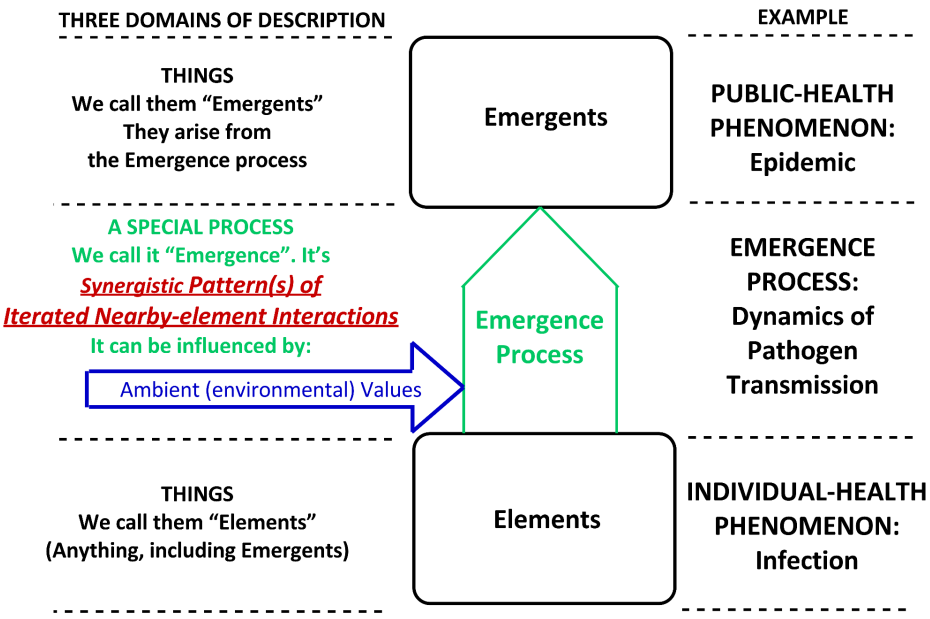
The first thing we have to do is generalize the narrow notion of "many-to-many connectivity" to "emergence", which suggests the appearance of society-scale phenomena arising from individual interactions.

44/

A figure showing the emergence model is at prototweet 18 of the above "policy-emergence" paper. The emergence model has three distinct "domains of description". This gives us a way of "looking inside" the middle domain, where the interactions occur.

45/

Here is a copy of that emergence-model figure, with an example of current interest added at the right end.



46/

The top and bottom domains are simply things or phenomena, so we can hook up these models together into emergence networks. This additional complication is required for social systems, in which there are many moving parts.

47/

A vital factor in social emergence is the set of environmental conditions surrounding individuals, shown in blue in the figure as "ambient values". These affect individuals' responses to their stimuli, which in turn affect their neighbors. Public policy is an example.

48/

Returning to our history of the recent half-century, the 1970's was a turning point, when Capital decisively beat back Labor and an increasing stress burden began to bear down on American workers.
https://melconway.com/CBH/Historical_Overview.pdf

49/

It has been argued that this change of state was actually the result of a strategy enunciated in 1971 by Lewis F. Powell, Jr., then a corporate lawyer but shortly thereafter a Supreme Court Justice.
https://www.greenpeace.org/usa/democracy/the-lewis-powell-memo-a-corporate-blueprint-to-dominate-democracy/

50/

I'm going to pursue this history briefly in order to make this larger point below:

👉🏿 We'll need to deepen our approach to modeling if we're going to understand what's going on well enough to make more enlightened policy interventions.

51/

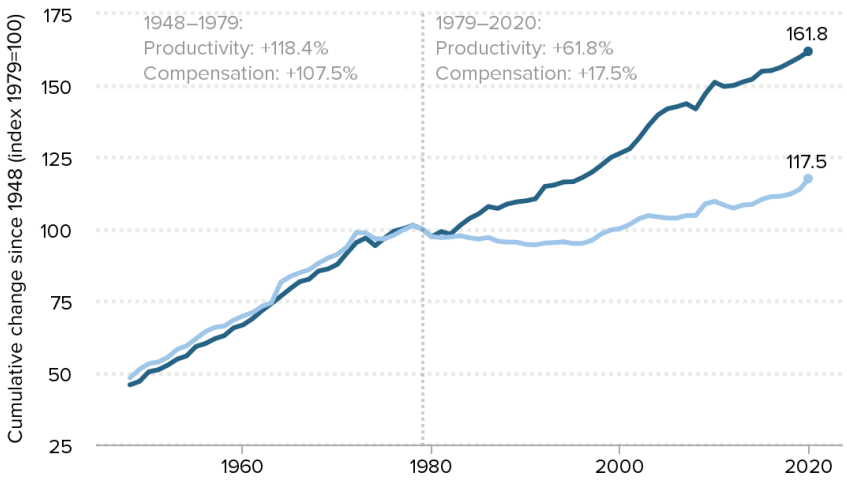
Another major event in the history was the deregulation of the airline industry in 1978.

52/

Now look at this figure. Around 1980 financial returns from the continuing gains in worker productivity abruptly stopped going to workers and began to go elsewhere; they've never returned. https://www.epi.org/productivity-pay-gap/

The gap between productivity and a typical worker's compensation has increased dramatically since 1979

Productivity growth and hourly compensation growth, 1948–2020



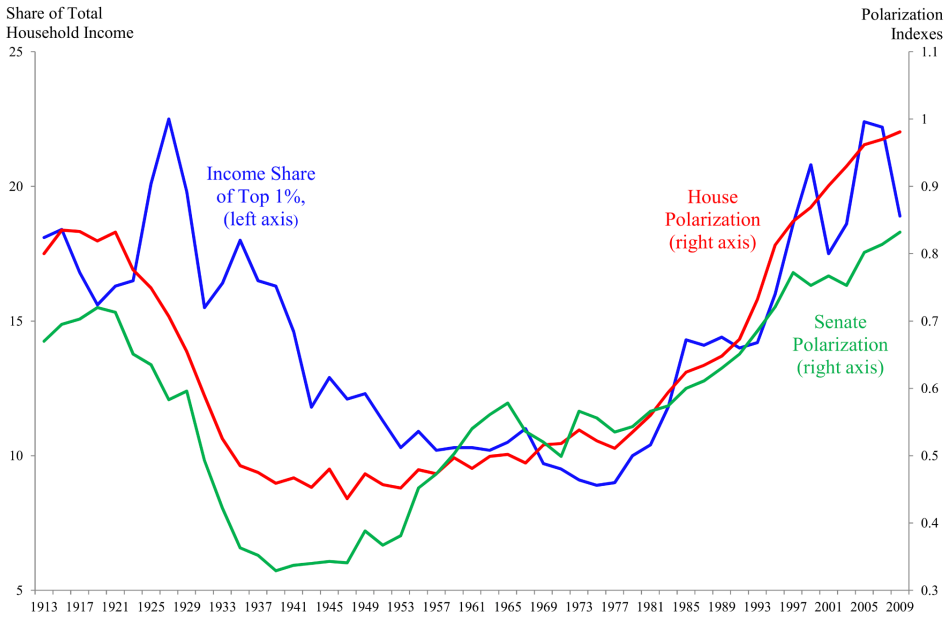
Notes: Data are for compensation (wages and benefits) of production/nonsupervisory workers in the private sector and net productivity of the total economy. "Net productivity" is the growth of output of goods and services less depreciation per hour worked.

Source: EPI analysis of unpublished Total Economy Productivity data from Bureau of Labor Statistics (BLS) Labor Productivity and Costs program, wage data from the BLS Current Employment Statistics, BLS Employment Cost Trends, BLS Consumer Price Index, and Bureau of Economic Analysis National Income and Product Accounts.

Economic Policy Institute

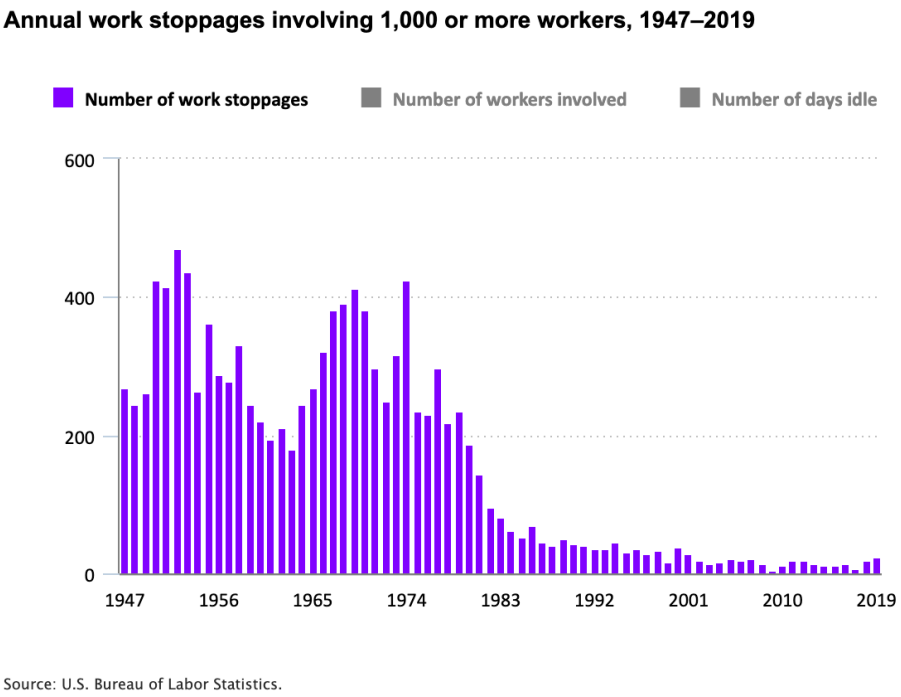
53/

Beginning at about the same time you see evidence of growing income inequality in this graph (in prototweet 47 of the Historical Overview paper) from the Dallas Fed. The blue line, the share of total income of the top 1% of households, is a proxy for income inequality.



54/

Here is evidence that a vital bargaining tool of the Labor movement, the work stoppage, lost its effectiveness around the time that the Air Traffic Controllers strike was broken in 1981:
https://www.bls.gov/wsp/additional-publications/



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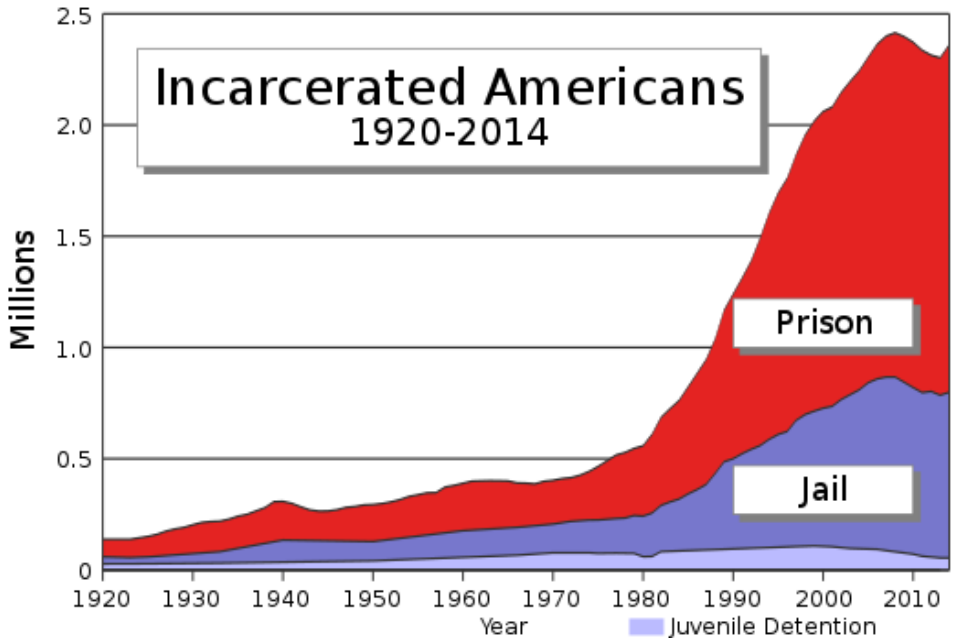
Finally, we view our incarceration statistics as the sum of consequences of individual behaviors, but the timing of the knee of this curve suggests that a larger social phenomenon was emerging around 1980.
https://en.wikipedia.org/wiki/Incarceration_in_the_United_States



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I'm not offering these data as proof of anything but as suggestive of a social theory that necessarily connects society-scale phenomena and citizen behavior in the same emergence network.

57/

👉🏿 Here is the hypothesis: This history can be modeled with an emergence network that connects the evolving behaviors of individuals and evolving social-scale phenomena over time.

58/

👉🏿 Here is a description of an abstraction modeled this way:
The time-dependent migration of an evolving family of memes (regarding the power issues that divide us, e.g., property vs. people, individual vs. state), over time, through an evolving population.

59/

This is a giant stretch, but there is a pathway through object modeling. I have written about this elsewhere:
https://twitter.com/conways_law/status/1354871193048932364

60/

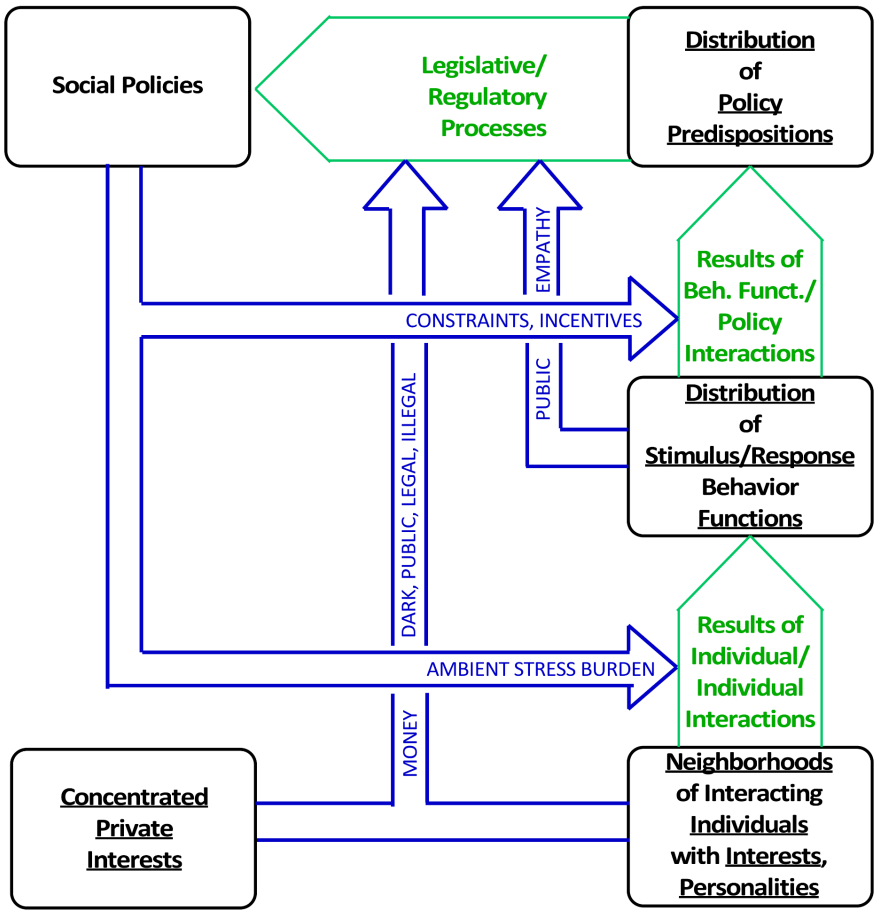
There is a direct path from object modeling to simulation. Here is a current diagram of the architecture of a simulator that incorporates the emergence model in executable form.
https://melconway.com/CBH/Simulator_Pattern.png

61/

There also exists an early form of an object model that incorporates the meme concept and makes it executable.
https://twitter.com/conways_law/status/1371879706656714758

62/

Modeling politics will be a giant task. My best current shot at drawing a model is the diagram in prototweet 62 of https://melconway.com/Home/pdf/politics-emergence.pdf, reproduced here. You see what a tangled mess this is.



63/

We have, in fact, two problems:

1. The problem domain itself is a mess.
2. We have severely crippled our ability to understand it.

We have to address number 2 first, which brings me to my Recommendation.

64/

Recommendation.

Trying to understand such a difficult problem domain such as politics, we don't build models to make predictions. We build models to acquire insight, with the hope that we can make more enlightened policies.

65/

We can do this by running thought experiments using executable object models.

66/

My premise: the political difficulty America is experiencing today is a snapshot of an ongoing timeline that can be modeled and that begins something like this.

67/

1945: The Greatest Generation comes home from a life of Depression and Death to spawn the Boomers. The prevailing meme: "My kids aren't going to have the life I had". Conversion of the wartime manufacturing economy begins.

68/

1950’s: An explosion of consumerism. Shown: 1955 Cadillac

69/

1960’s: Boomers come of age. Social unrest. Newark riots. Watts riots. The 1968 Chicago Democratic National Convention and the Trial of the Chicago Seven. (William Kunstler, the defense attorney, was quoted in Lewis Powell’s memo.)
https://en.wikipedia.org/wiki/Chicago_Seven

70/

1970’s: Capital begins the counterattack, described above. The Milton Friedman OpEd (1970) and the Lewis Powell memo (1971).
https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html

71/

Formation of The Heritage Foundation (1973). (See “Dark Money” by Jane Mayer.)
https://en.wikipedia.org/wiki/The_Heritage_Foundation

72/

1980’s: The takedown of the Labor Movement begins. Ronald Reagan and the courts break the Professional Air-Traffic Controllers Association (1981).
https://www.history.com/this-day-in-history/reagan-fires-11359-air-traffic-controllers

73/

1990’s: The Republican Party makes a clearly differentiating move to the right. Contract With America (1994).
https://en.wikipedia.org/wiki/Contract_with_America

74/

2000’s. Onset of ODD in the Republican Party. The Tea Party Movement (2009).
https://en.wikipedia.org/wiki/Tea_Party_movement

75/

2020's: Confirmation of capture of American politics by Capital. Citizens United decision (2010). https://www.brennancenter.org/our-work/research-reports/citizens-united-explained

76/