

The important thing is to establish a political climate of opinion which will make it politically profitable for the wrong people to do the right thing.”

— Milton Friedman

# Bitcoin Hivemind

TAB Conf, Atlanta, GA

Paul Sztorc

1/27/2018

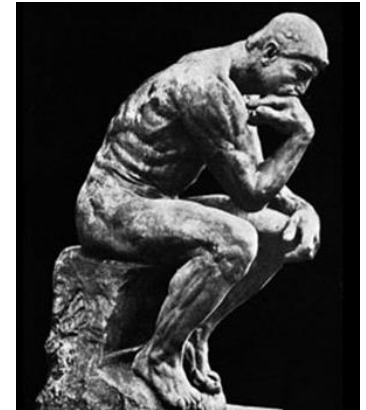
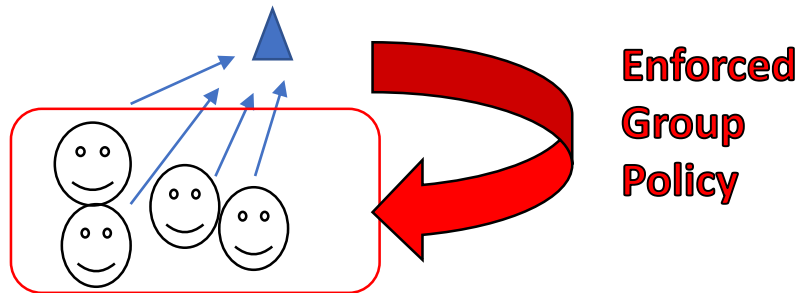
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Version 1.1  
2/13/2018

# Overview

- This talk is about **the problem** which Hivemind solves,
- it is **not** about how Hivemind works .
- [www.BitcoinHivemind.com](http://www.BitcoinHivemind.com)
- Hivemind is about “Governance”, defined as **group decision-making**.

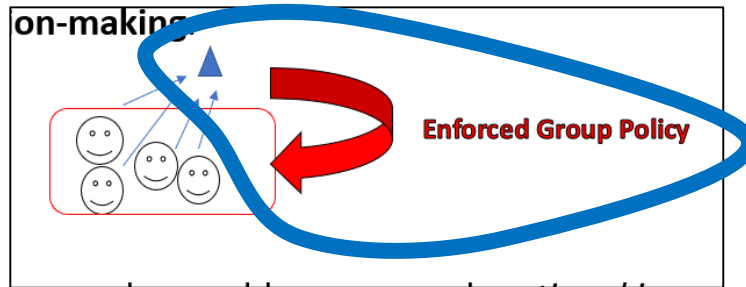


- **Governance** has problems – namely rational ignorance and preference aggregation, and these problems can be solved with conditional prediction markets.
- This is a passion project of mine, I hope you enjoy!

# Agenda

1. Moral Objections to Governance (Speech)
2. How Society Reacts to Problems (An Analogy)
3. Why Governance is Hard (A Diagnosis)
4. What Prediction Markets Are (An Institution)
5. Blockchain *Conditional Prediction Markets* – Solution to Governance
6. Getting Practical

# Moral Objection to Governance



- **Observation:** Undesirable to have a decision forced on you. (Might be one you dislike.)

↙ extreme

“all contracts are coercive”, naïve anarchy

- **Policy:** Individual should always have a pure veto (even on pre-agreed rules); or rather: consent can/should never be estimated.

“social contract”

- I don't agree with the Policy:
  1. Efficient cooperation → better life
  2. Ad hominem fallacy
  3. “consent of the governed”

# 1 – Efficiency / Wasting Resources

- Some things are much easier to buy/maintain as a group. Marginal utility of “individualism” rapidly diminishes as we approach “100% individualism”.
- “One Person Ruins it for Everyone” ( de facto Entangled )
  - Outcome is an “OR” aggregation process, already
  - Ozone Layer / The Montreal Protocol (no competing Earths)
  - (Hypothetical) Grey Goo – self replicating nanotechnology that kills us all
  - Pollution / Externalities
  - Overfishing / Species Extinction
  - Extremely ‘contagious’ spread of fire / disease / looting.
- Efficient “re-use” of goods/services.
  - The roads (infamous) and highways; National parks
  - Walls/Castles -- ( $4x$  vs  $x^2$ ), strangers vs friends/family, trust issues
  - The Erie Canal, Louisiana Purchase, Interstate Highway System,
  - Basic science research (ie, its hard for Newton to patent “Gravity”)
- Excessive market transaction costs – too hard to charge “per time per individual”
  - Ronald Coase – Theory of the Firm; organizations vs markets – too difficult to rehire people every day for every job, costs: search, contract, negotiation etc. Long term contracts are better.
  - Roads again (excl bridges, trains);
  - Long time horizon, not enough ink

“However attractive anarchy may be as a philosophy, it is not feasible in a world of imperfect men.” – Milton Friedman

# L.P.D.: LIBERTARIAN POLICE DEPARTMENT

By Tom O'Donnell March 31, 2014

I was shooting heroin and reading "The

Fountainhead" in

privately own

came in. I pu

it. It was the

"Bad news, c

"What? Is t

"Worse. Som

worth of bit

The heroin



"Home Depot™ Presents the Police!®" I said, flashing my badge and my gun and a small picture of Ron Paul. "Nobody move unless you want to!" They didn't.

"Now, which one of you *punks* is going to *pay me* to investigate this crime?" No one spoke up.

"Come on," I said. "Don't you all understand that the protection of private property is the foundation of all personal liberty?"

It didn't seem like they did.

"Seriously, guys. Without a strong economic motivator, I'm just going to stand here and not solve this case. Cash is fine, but I prefer being paid in gold bullion or autographed Penn Jillette posters."

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## Excessive ma

- Ronald Co every day better.
- Roads again (e
- Long time horizon, not enough ink

individual"  
e people  
acts are

"However attractive anarchy may be as a philosophy, it is not feasible in a world of imperfect men." – Milton Friedman

## 2 – Ad Hominem

- All of the –isms, including Anarchism, are ad hominem fallacies.
- Karl Popper “Open society and its enemies”
  - The **wrong question** (Who should rule?)
  - What **process** moves us from bad policies to better ones at the cheapest cost. What is ‘most profitable’ process dBenefit/Cost/time. (Not “who is most trustworthy?” –error, temporary, manipulable).
- Image: people → policy → result
- **The important thing is the policy**, not who put it there.
- You order / spouse orders / lucky guess → grilled chicken sandwich ordered for \$10 → you eat the sandwich and pay \$10. It is fungible – identical in every sense. In fact, if you give your order to the waitress, she’s going to pass it on to the chef anyway.
- Obviously, if you are in control, policies will always be good for you. But remember the “Or” scenarios on the previous slide.
- Merely finding the best policies is useless. NEED a **Meta-Policy** to know how to **get to** the best policies from here, and ensure we don’t go **backwards** once we get there. Without it, anarchism is as impractical as pacifism.

## 3 – Consent of the Governed

- Voluntarism = interactions should be voluntary
- Declaration of Independence // Post-Enlightenment governments
  - “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. — That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed”
- So, USA is 100% voluntarist ...at least in intent.
- AnCaps – you can hire security guards (if you explicitly agree), but “taxation is theft”. Need to ask, can’t assume.



# 3 – All Knowledge is Imperfect (incl. Consent)

- Worst case -- no direct knowledge -- House MD example
- Best case – still can never be 100% certain of consent
  - Are they under mysterious duress that we've failed to detect?
    - Hiring security guard = racketeering?
  - Was the consent informed? To what extent?
  - Can 'consent' be revoked at any time?
  - Misunderstandings / miscommunications?
- So, it isn't always as simple as "asking" ...
  - Unable to speak / perform computation – unconscious
  - No time to ask (object would *prefer* that we didn't wait) – choking to death, imminent cataclysm
  - Ruins "the experience" – Surprise party!
- ...or even as "listening".
  - Multiple selves *across time* – ("I don't want to practice the piano") – alarm clock, going to the gym, going to school, saving money, severe drug addiction – self as group.
  - Brainwashed / preferences hacked – ("I love going to church") – peer pressure, too young (0-10 yrs old), outright deception.
  - Ruins "the experience" – roller coaster, S&M club – thrill is inability to escape.
  - (is a nation state a roller coaster, sometimes it feels like one.. sometimes it feels like an S&M club)
- My view: **consent is always conjectured** (imperfectly estimated). So the fact that we have to estimate "group consent" is not logical a deal-breaker.

# The “Public” Sector

- **Fractal** nature of the “public / private” distinction:
  - “Public” refrigerator for 30<sup>th</sup> floor East of NYC Goldman Sach’s building – “etiquette”
  - “public roads”, “public schools” in Cleveland and Connecticut
  - Competing nation-states; states as “laboratories of democracy”
  - anarchist brain cancer.
- Only the individual experiences **pain, pleasure, creativity,** and **will.** But this says nothing about **how** to maximize *individual* well-being.

“There are some problems that can’t be solved outside of the political arena” – Peter Thiel

## Where we are

- Past Slides

- Governance: group decision-making.
- **Governance = important**, some problems can only be solved with governance.
- Even on the extreme, if we *know* that “X-ism is the best”, we need a tool for taking us from here to X-ism, and for keeping us at X-ism in a dynamic improving world.
- Governance can be ethical – question is: does government have the consent of the governed? Can we improve tools for measuring/alerting us to consent-errors.

- Coming Up

- Ignoring, Tolerating, and Solving Problems – A rain metaphor
- Governance is hard. Why?
- What are prediction markets?
- What are conditional prediction markets?

# Problems – Rejecting, Tolerating, and Solving

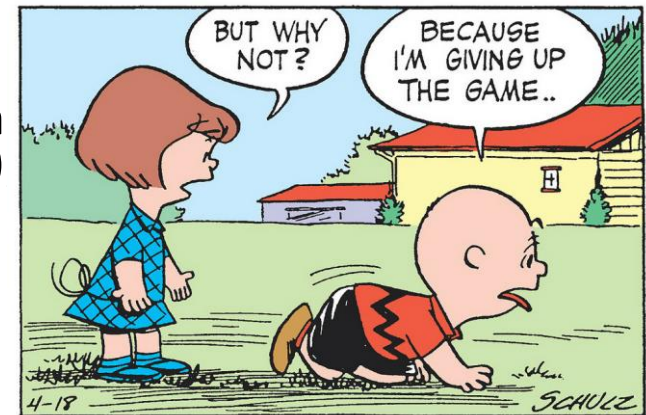
- **Rejecting** a Problem
  - Misunderstanding/misrecognizing the problem.
  - Ceremonial use of problem as backdrop, for social reasons.
- **Tolerating** a Problem
  - You know there is a problem, you know there is currently no solution. Problem may seem unsolvable.
  - Problem is accepted an unalterable fact of life.
- **Solving** a Problem
  - You know the problem, and the solution.
  - You will have obtained more knowledge and better technology, and the problem will depart, never to return.

# Ex: No Rain, Bad Harvest

- **Pray more** – [do nothing to get more rain]
  - Try to reject the problem, or erroneously respond – the critical thing is prayer, not water.
  - Use false solution as opportunity for socialization (ie ‘signaling’ or ‘loud complaining done to make friends’).
  - Culture may eventually *rely* on these false solutions, for stability.
- **Settle for Failure** – [accept that “rain is unreliable” is unalterably true]
  - Accept reality and make the best of it.
  - Other options: ration more; have fewer children / livestock; **give up** on agriculture (hunt instead) plant many more seeds to overcompensate for the eventual loss (work harder).



Allen, *Praying for Rain* (1938)



Schulz, *Peanuts* (1954)

- **Irrigation Technology** – [solve the problem]
  - ...using *more knowledge*, and *better technology*.

# Ex: No Rain, Bad Harvest



- **Irrigation Technology** – [solve the problem]
  - ...using *more knowledge*, and *better technology*.



Schulz, Peanuts (1954)

# Problems – Rejecting, Tolerating, and Solving

- **Rejecting** a Problem

- Misunderstanding/mis
- Ceremonial use of problem for social reasons.

Anarchism / Voluntarism /  
Voting Ron Paul

- **Tolerating** a Problem

- Recognizing that a problem exists and that there is currently no solution, and that the problem is unsolvable.
- You will grit your teeth and accept this as an unalterable fact of life -- reaching an equilibrium with the problem.

The Cypherpunks /  
Encryption / Bitcoin

- **Solving** a Problem

- Understanding the problem
- You will have obtained more information than you need. The problem will depart, never to return.

Blockchain Conditional  
Prediction Markets

# Governance is Hard. Why?

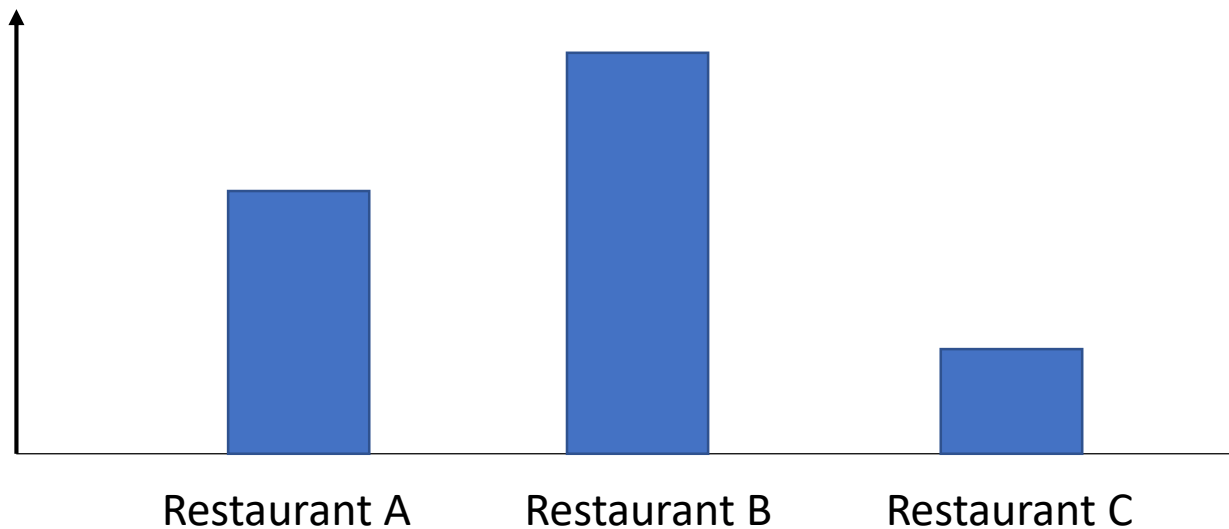
- If everyone is doing the wrong thing, why can't we just get everyone to stop doing that, and do something else?
- Answer: **Multi-Factor Competition**
  - Costly Negotiation
  - Too many 'other things' to do
  - High cost of miscoordination



# Single-Factor Competition

- You want to spend up to \$20 on dinner.
- You are choosing (and dining) alone.

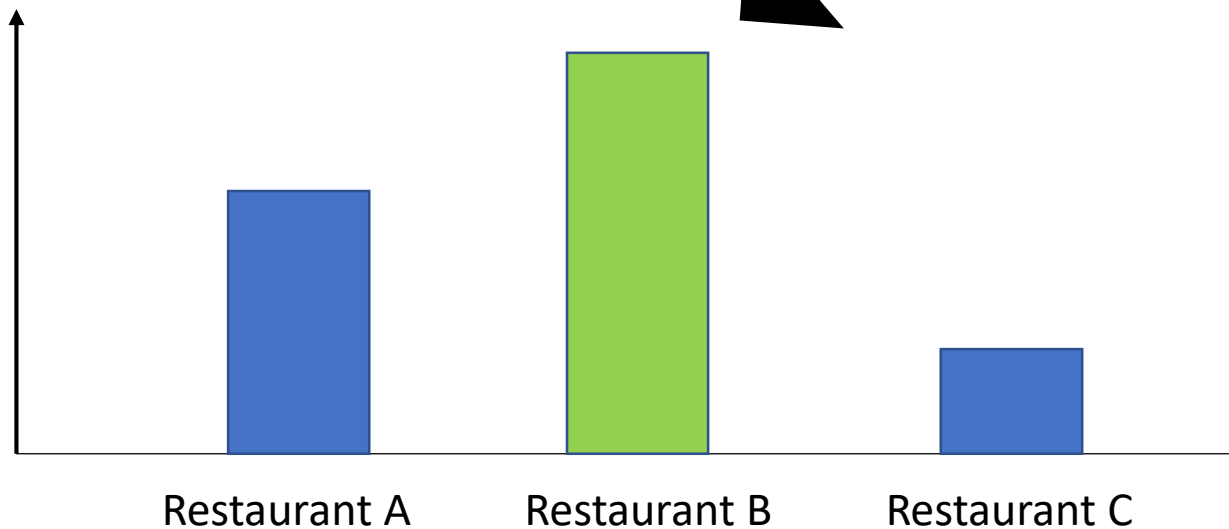
Expected satisfaction  
by spending  $\leq \$20$  at  
the given restaurant



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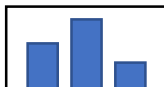


- You get the highest satisfaction possible.
- Restaurants induced to compete on (satisfaction / \$).

# Multi-Factor Competition

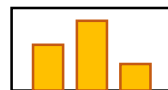
- Many people are choosing a restaurant
- **You all prefer to meet at the same place.**
- Harder!– your decision now depends on:

1. What you prefer,



2. and where other people might go. Which is itself a function of:

1. ...what they might prefer.



2. ...where they think other people might go. Which is itself a function of:

1. Everyone's collective best guess on where most people currently plan on going (ie, the status quo), and,



2. ... (since time/attention/communication are not free) how open to communication / negotiation everyone is.



- You have four criteria, but you ultimately must make one selection. Forced aggregation.

# Multi-Factor Competition

- Many people are choosing a restaurant
- **You all prefer to meet at the same place.**

**Self-fulfilling prophecy** – Those who believe that “negotiating to pick a better restaurant is a lost cause”, will be less open to negotiation. Circular truth.

Negotiation is especially hard when there are [1] many people, and [2] many alternatives. In USA there are ~250 Million adults, and a near-infinite number of potential policies. In these cases the prophecy is likely to self-fulfill (lost cause).

function of:

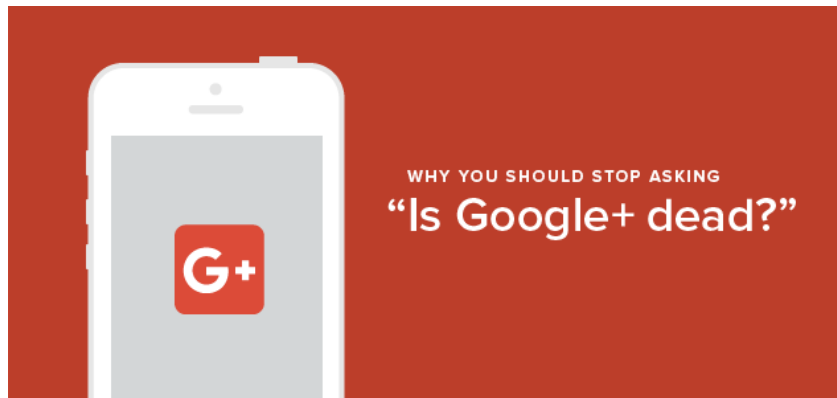
1. Everyone’s collective best guess on where most people currently plan on going (ie, the **status quo**), and,
2. ... (since time/attention/communication are not free) how **open to communication / negotiation** everyone is.



- You have four criteria, but you ultimately must make one selection. Forced aggregation.

# Multi-Factor Competition

- The root cause in the restaurant example, “wanting to stay in sync with others” is a common desire.
  - Coordination reduces ambiguity / conflict.
  - Network effects / economies of scale.
- Competing w/ Facebook or Craigslist ...vs w/ local barber shop.



# Multi-Factor Competition

The problem is real, and it has nothing to do with “coercion” and can’t be explained with moral arguments.

Most people will put up with Facebook, even though FB is “evil”. Because the alternatives are :

[1] no Facebook (and social isolation), or  
[2] and endless (and ultimately futile) negotiation with unmotivated friends/family to switch to one particular alternative (among many). They would then need to convince their own friends, who would need to convince their own friends, and so on and so forth...

In the same way, we put up with governments, even though they are incompetent. The alternatives are:

[1] no government and no property rights (a disaster), or  
[2] an uncertain, potentially endless, potentially violent transition period, leading to an ambiguous final outcome.

# Pumping up that second factor, with a **CRISIS!!**



“...while these crises [Great Depression, WW2] were *transitory*, the increase in the scope of government was *permanent*.”

Bad policies following crises:

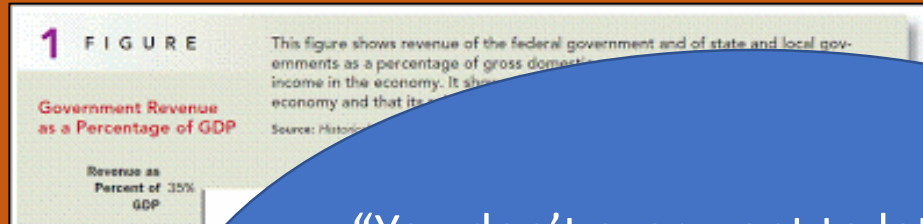
1929 Crash → Taxes/tariffs, labor cartels

WW2 → Japanese Internment Camps

9/11/2001 → Iraq War / PATRIOT Act

2008 Crash → Bailouts, Retroactive Bonus Financing

# Pumping up that second factor, with a **CRISIS!!**



“You don’t ever want to let a crisis go to waste: It’s an opportunity to do important things you would otherwise avoid.”

- Rahm Emanuel (WH Chief of Staff under Barack Obama), speaking in 2008

“...which  
scope

t Dep  
permanent

in the

Bad policies:

1929 Crash → taxes/tariffs, labor cartels

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# Pumping up that second factor, with a **CRISIS**!!

## 1 FIGURE

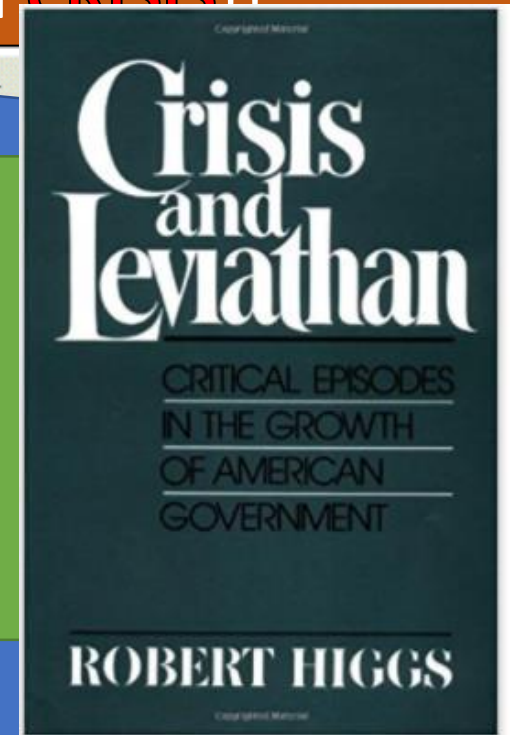
This figure shows revenue of the federal government and of state and local governments as a percentage of gross domestic income in the economy. It shows...

Government Revenue

## Crisis Logic

In times of crisis:

- Mis-coordination costs RISE !
- Anyone interfering with coordination is dangerous!
- Thus, the **defenses of the Status Quo** greatly increase.



- people currently plan on going (ie, the **status quo**), and,
2. ... (since time/attention/communication are not free) how **open to communication / negotiation** everyone is.



ave four criteria, but you ultimately must make

# Voting – Your Civic Duty

- Knowledge Cost – too high
  - existing option , the challenger, both plans, likelihood of follow-through, and effect of these plans on you.
- **Effect** is a complex topic. For some policies, only ultra-specialists know.
- 71% of Americans can't even name their Congressional Representative (Delli-Carpini and Keeter (1997)),
  - let alone the challenger or any proposed policies or voting records (or any State Senators, etc).
- Story: Lobbyists on a Plane

# Voting – Multifactor-ness of “Electability”

- Arrow impossibility result: voting = paradox
  - While you have more than one voter, and a deterministic aggregation process (technicalities), you can only have one of the following two:
    - **Pareto efficiency** – you can’t hurt an option when *everyone* ranks it higher
    - **Irrelevant alternatives** really are irrelevant – you can’t hurt an option by re-ranking the set of options below or above it. Stalin vs Hitler.
- Arrow’s result leads to **strategic voting**
  - If Jeb Bush had run, would have **split the vote**
  - When vote is split, **votes cast for a ‘lost cause’ do not contribute** at all to *The Battle* that really matters.
  - Electability – knowledge that *other people* believe that this choice is not a lost cause. (Same as the restaurant example.)
  - Hence political parties / media have great influence.

# To Solve Governance, We Need:

1. A cheap, **reliable source of information** on who to vote for.
2. A way of **crunching** the multi-factoriness, specifically electability, back into a single factor.
3. A way of **preventing capture** of the above processes by lobbyists/cronies.

# Bitcoin Hivemind

## Sidechain for P2P Prediction Markets

### Intrade's Conditional Prediction Markets

By [Hal Finney](#) · July 29, 2008 7:14 pm · [Comments \(24\)](#) · [« Prev](#) · [Next »](#)

We have often discussed the possible benefits of prediction markets for reducing bias. One key element that could be particularly useful is a conditional prediction market, where betting claims are based on outcomes conditional on some factor we want to evaluate. Robin recently mentioned the possible benefit from [market claims on longevity or health conditional on various interventions](#).

Unfortunately, there are few prediction markets in the world, and fewer conditional ones, so it is hard to know how practical this institution may become. Thanks to an initiative by OB contributor [Peter McCluskey](#), Intrade – the large, real-money prediction market – has added conditional claims

“There are only a few people alive today worth listening to. Robin Hanson is one of them.”

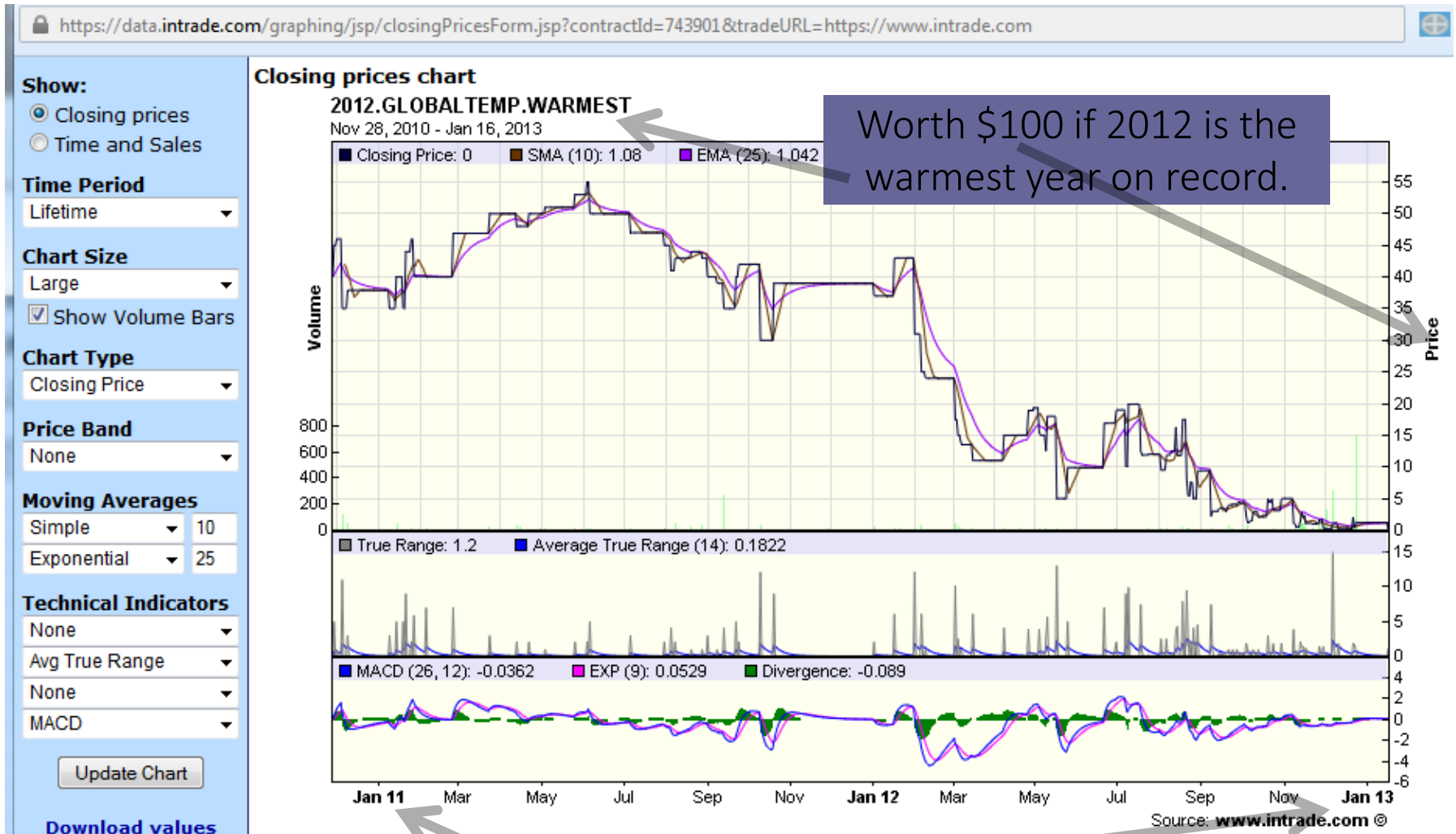
– Ralph Merkle, co-inventor of asymmetric (public/private) key cryptography, inventor of cryptographic hashing, and of the Merkle tree.

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A 'prediction market' is a special kind of derivative.

Below: event derivative (InTrade.com) on [2012 global warming](#)





# Event Derivatives

Finance Thing	Interpretation
	<p>"I, Paul Sztorc, owe \$20 to whoever is holding this bond certificate on 03/02/2015."</p>
	<p>"I, the CEO of <b>SztorcCorp</b>, owe 1/100<sup>th</sup> of SztorcCorp's profits to whoever is holding this stock certificate on 03/02/2015."</p>
	<p>"I, Paul Sztorc, owe \$20 to whoever is holding this Option on 03/02/2015, <u>only if</u> the stock price of <b>SztorcCorp is above 40 \$/share</b> on that date."</p>
<p>...(others)...</p>	<p>...(others)...</p>
	<p>"I, Paul Sztorc, owe \$20 to whoever is holding this derivative on 12/01/2016, <u>only if</u> <b>Hillary Clinton is elected US President in 2016</b>. Otherwise I owe \$0."</p>
<p>...(others)...</p>	<p>www.BitcoinHivemind.com      ...(others)...</p>



# A Kind of "Future Wikipedia"

	Wikipedia 	Truthcoin 
Focus	Outcomes of <b>past</b> events. Consensus on <b>known</b> facts.	Outcomes of <b>future</b> events. <b>Future</b> consensus on <i>knowable</i> facts.
Cost	Free to read <b>and edit</b> .	Free to read, <u>easy to understand</u> (check prices), but <b>edits can cost or earn you money</b> .



WIKIPEDIA The Free Encyclopedia

United States elections, 2012

From Wikipedia, the free encyclopedia  
(Redirected from United States Election 2012)

This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. (November 2012)

Elections were held in the United States throughout 2012. These included many federal elections on Election Day, November 6, 2012, most prominently the 57th presidential election, Senate elections (where 33 seats were decided), and House of Representatives elections (to elect all 435 members of the House for the 113th United States Congress). It also featured 13 state and territorial governors' races, state and territorial legislature races, special elections, and various other state, territorial, and local races and referenda on votes held in November as well as throughout the year.

Little overall change occurred on the Federal level. Incumbent President Barack Obama was elected to a second term, with the national popular vote percentage being 51.1% to 47.2%, and the Electoral College vote being 332 to 206, for Obama and challenger Mitt Romney, respectively. The Democratic Party held control of the Senate and the Republican Party

2012 United States elections

Presidential election year

Election day November 6

Presidential election

Electoral vote

Barack Obama (D) 332

Mitt Romney (R) 206



www.BitcoinHivemind.com



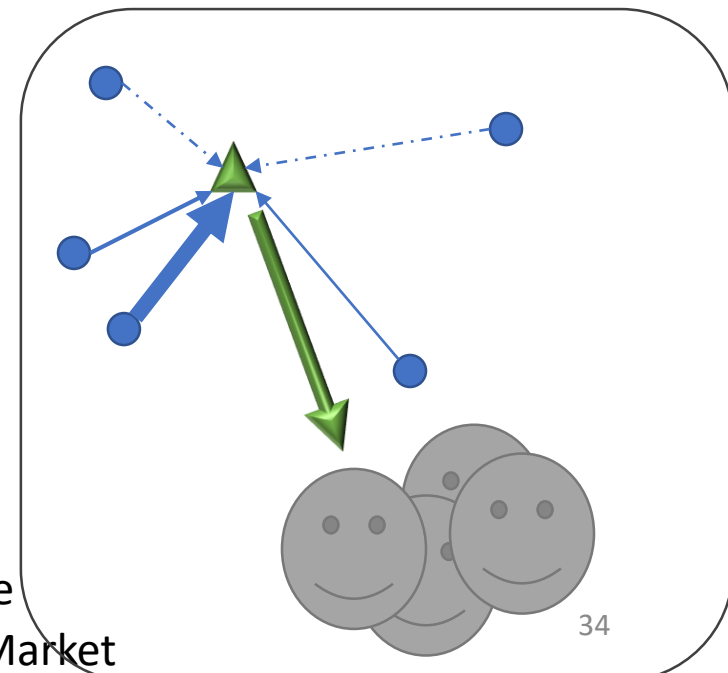
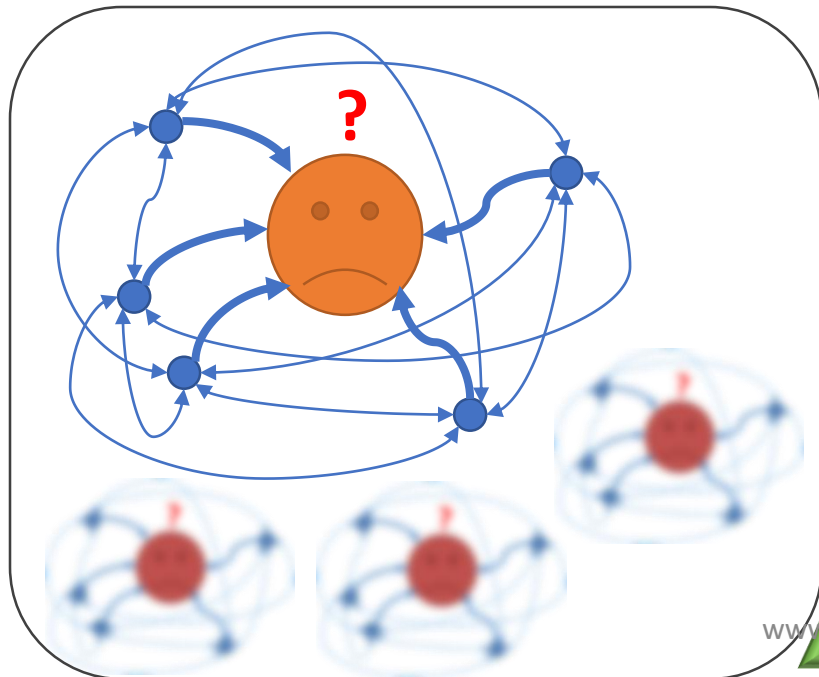
# Markets Aggregate Information

- For the Public: **Reliable** and **Common** Information

It's right.

It's broadcast to everyone (and everyone knows that everyone got it).

Does all of the **Research** for us, and the **Persuading!**



● = Info Source  
▲ = Prediction Market  
[www.BitcoinHivemind.com](http://www.BitcoinHivemind.com)

# Benefits of PMs (Over Talking)

- Talk: Why even bother becoming informed?
  - Hard to learn this stuff (and I only have so much time)
  - How am I supposed to convince others?
  - Info-processing is difficult (why résumés *must* be short).
  - Minimal-info strategies (join a tribe/“political party”).
- PM forces a clear definition.
- Prices are **constantly** and **unanimously** acceptable. At all times, everyone agrees with the price (if not, they can profitably trade).
- Note: Suppose climate change were false. The “reliability” and “broadcast” problems are much worse.

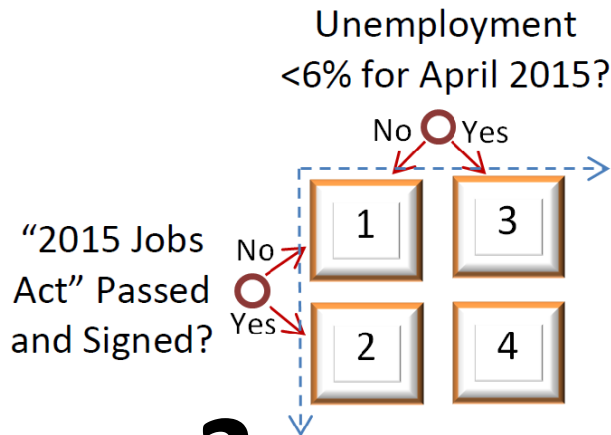
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# Conditional Forecasts: More Than One Dimension



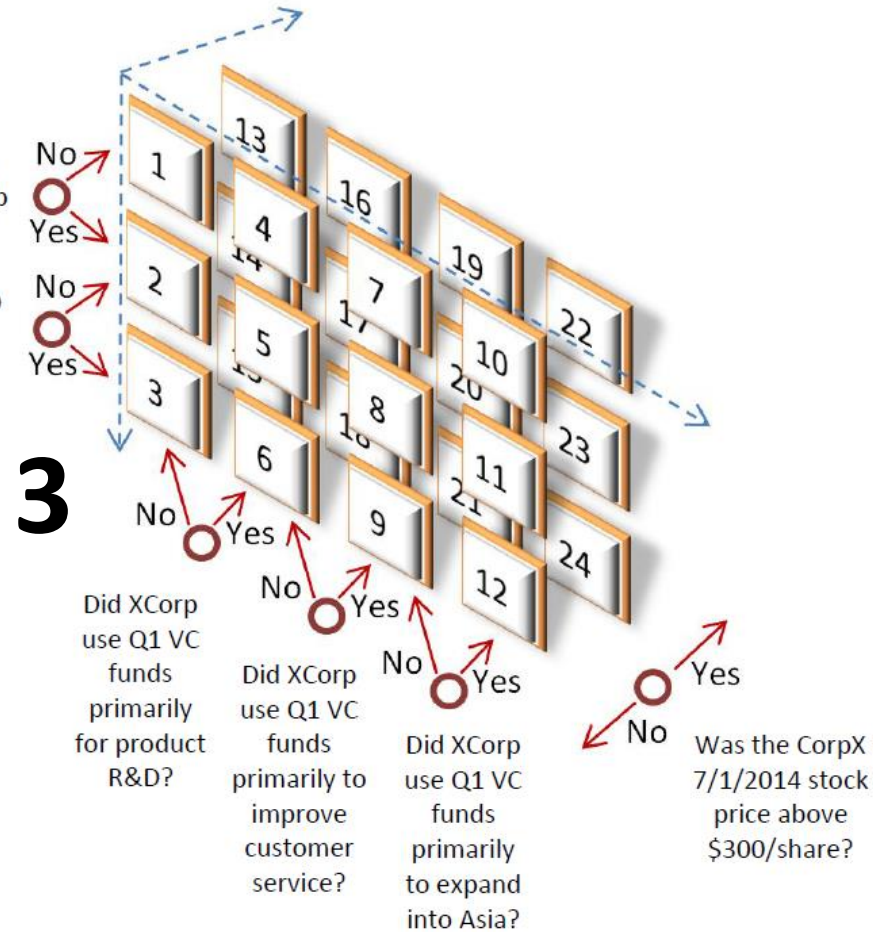
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2

Did XCorp replace CEO Adam with Bob during 2014 Q1?

Did XCorp replace CEO Adam with Charlie during 2014 Q1?



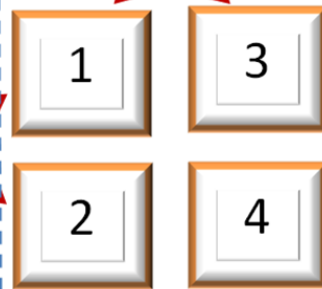
# More Dimensions: More Forecasts, AND More Relationships

2016 Warmest Year  
on Record?

No  Yes

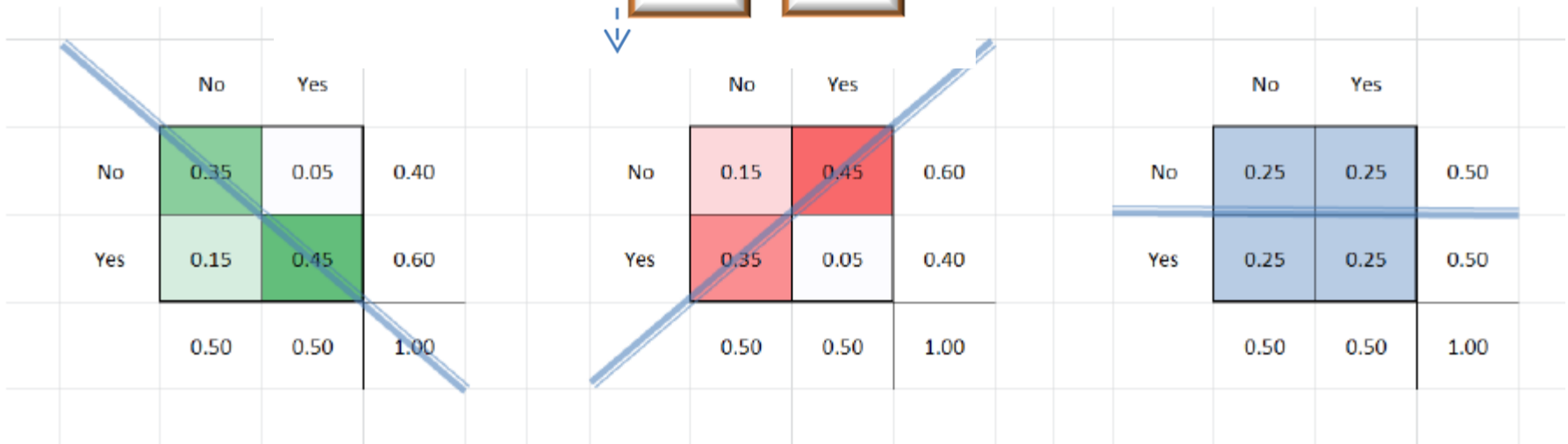
“2015 Climate  
Act” Passed  
and Signed?

No   
Yes



Joint, Marginal, and  
Conditional Probabilities

MSRs  
Bayesian Net




**The Point:** Probabilities are not only: “Will X happen?”...  
...they are also: “Would Y influence X?”

# Example – Which CEOs aren't pulling their weight?

General Electric / CEO

**John L. Flannery**  
Aug 1, 2017–



John L. Flannery is an American business executive. He is currently the CEO and chairman of General Electric, appointed in August 2017. [Wikipedia](#)

How do we tell??  
Problem of **Agency Cost**

# Two Individual Markets...

Mirroring  
(superfluous data)

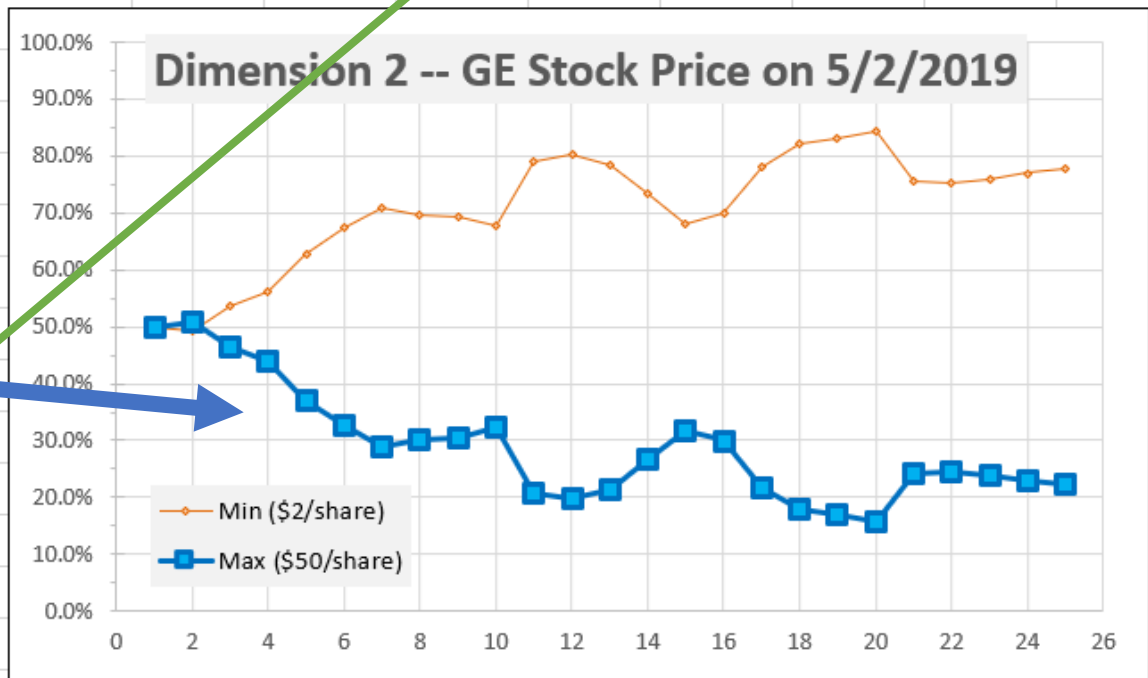
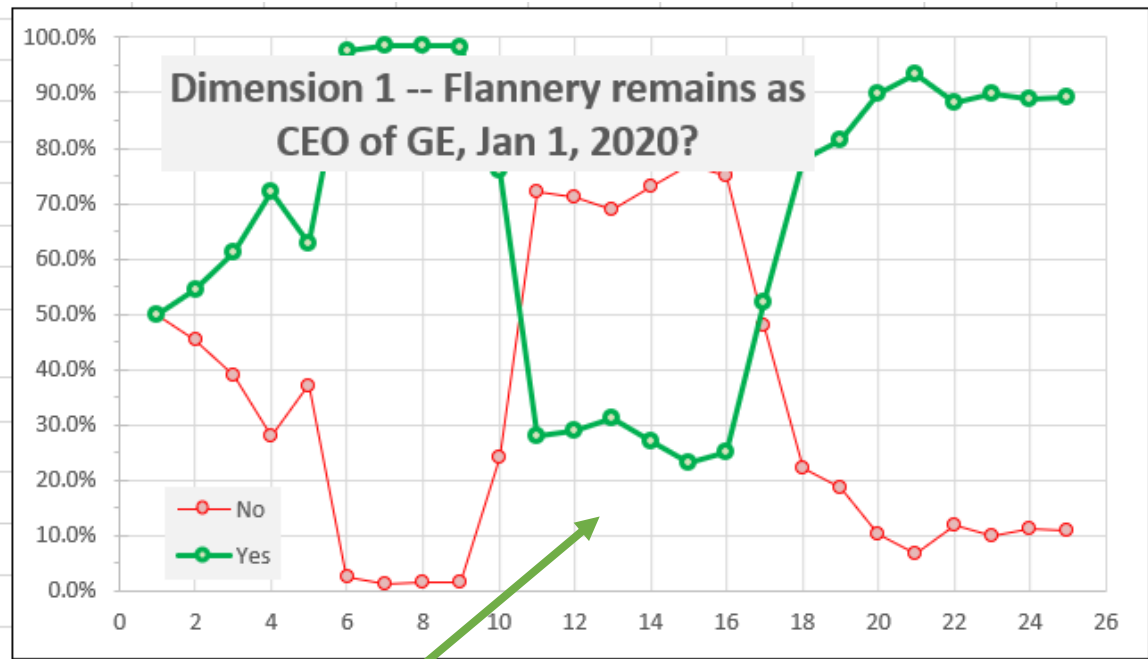
Because  $\Pr(\text{Yes}) = 1 - \Pr(\text{No})$

But not for long...

Binary: Yes vs No  
Scaled: Min vs Max

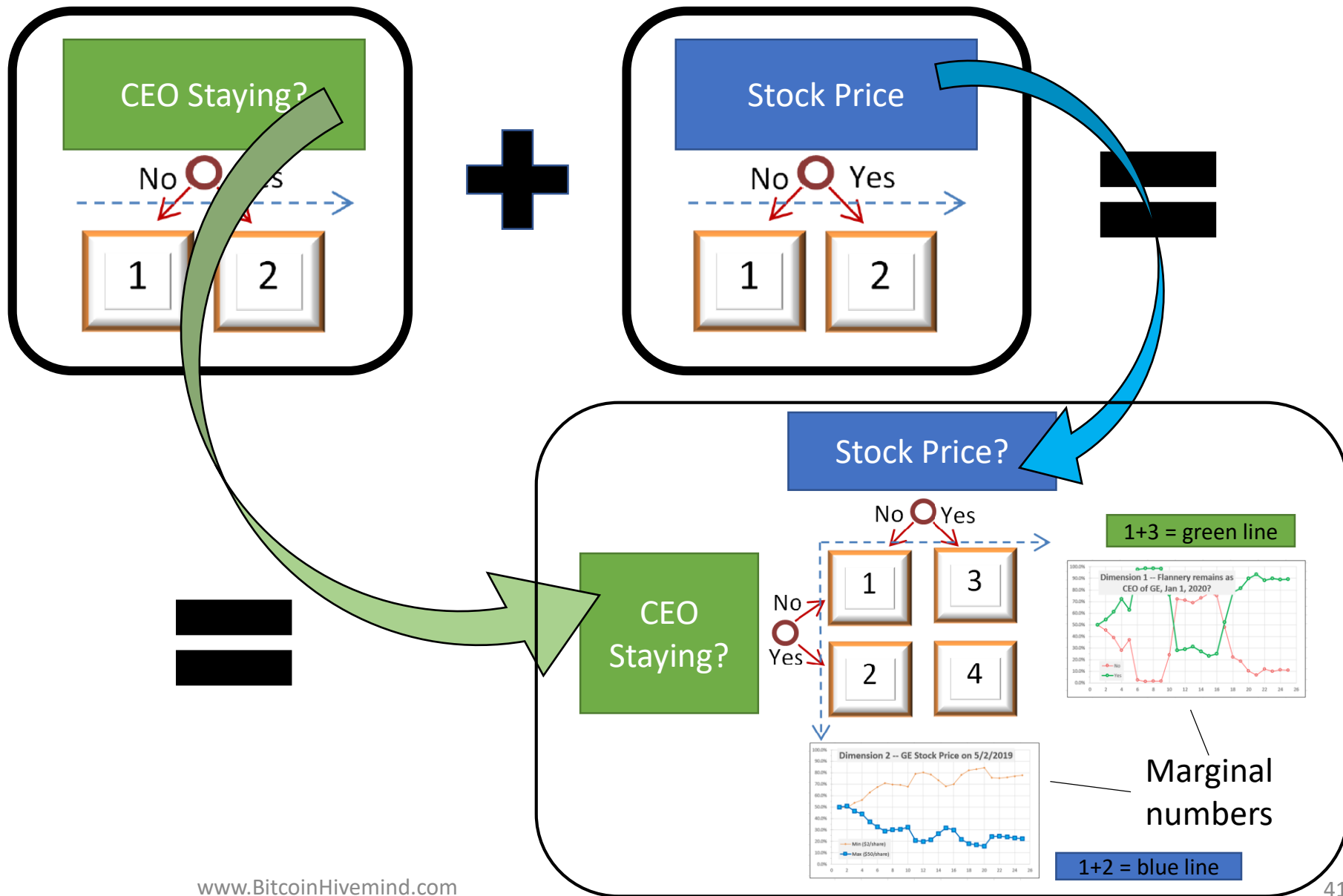
GE is having a rough year!

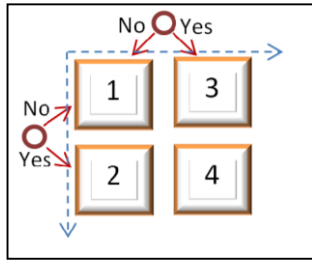
Is the CEO departing? Will he be fired? Should he be?





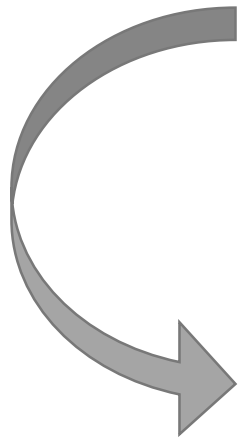
# Exact same data...





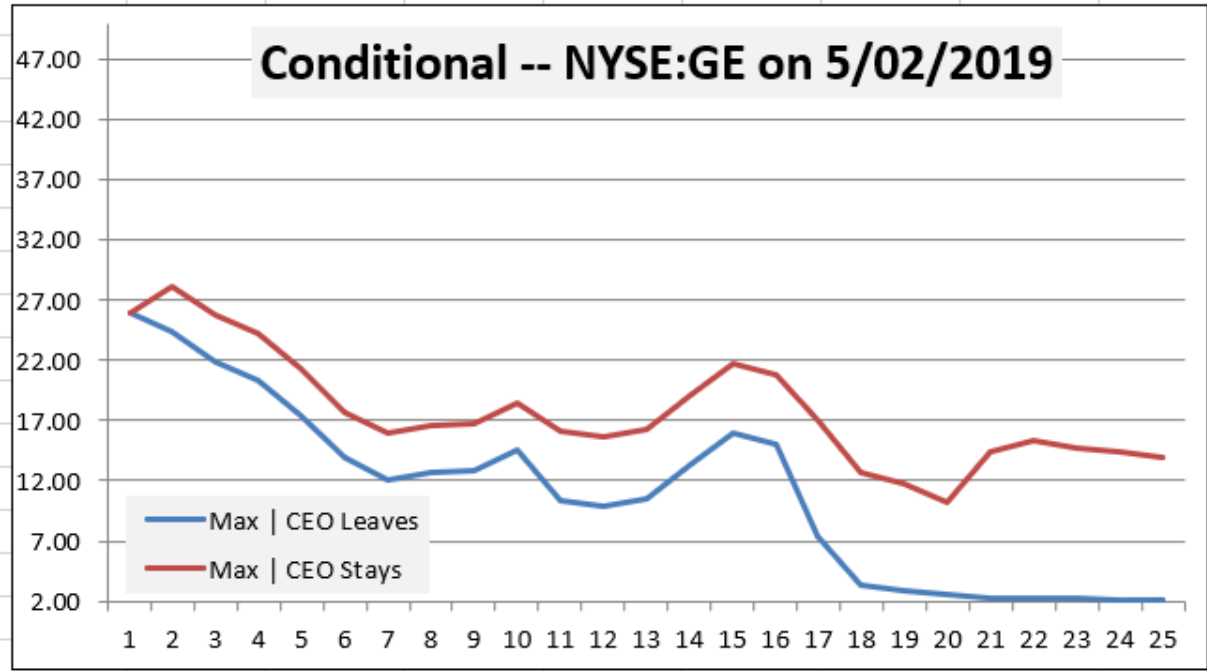
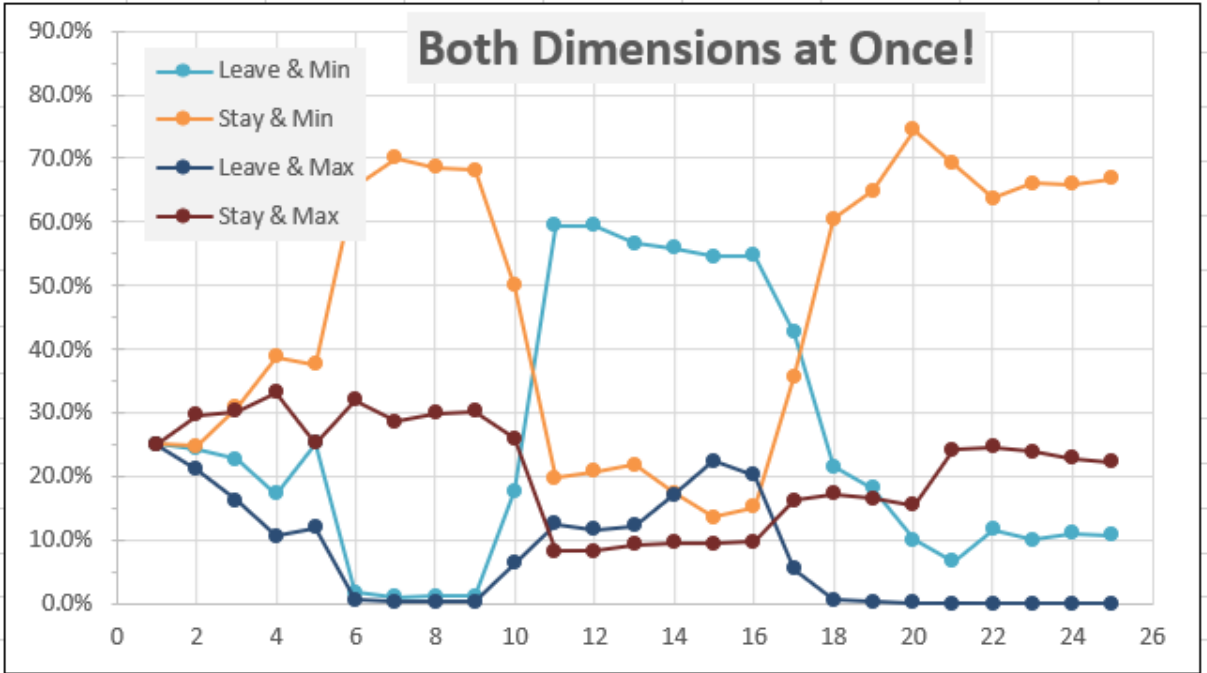
Four Dimensions at once,  
different "mirroring"

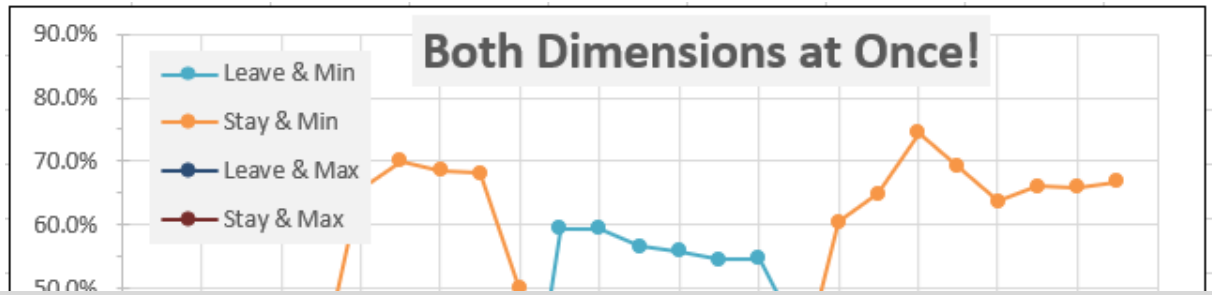
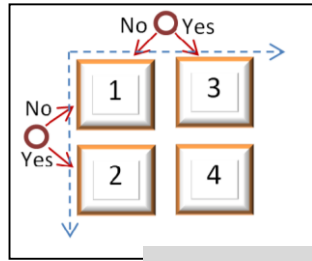
Same Data



- Deleted 2 lines (of 4).
- (Stay & Max) / Stay
- (Leave & Max) / Leave
- Scaled y-axis to \$/share.

Now: only measures  
GE's Stock Price

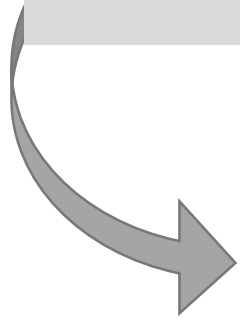




Four Dimension  
different "mirro

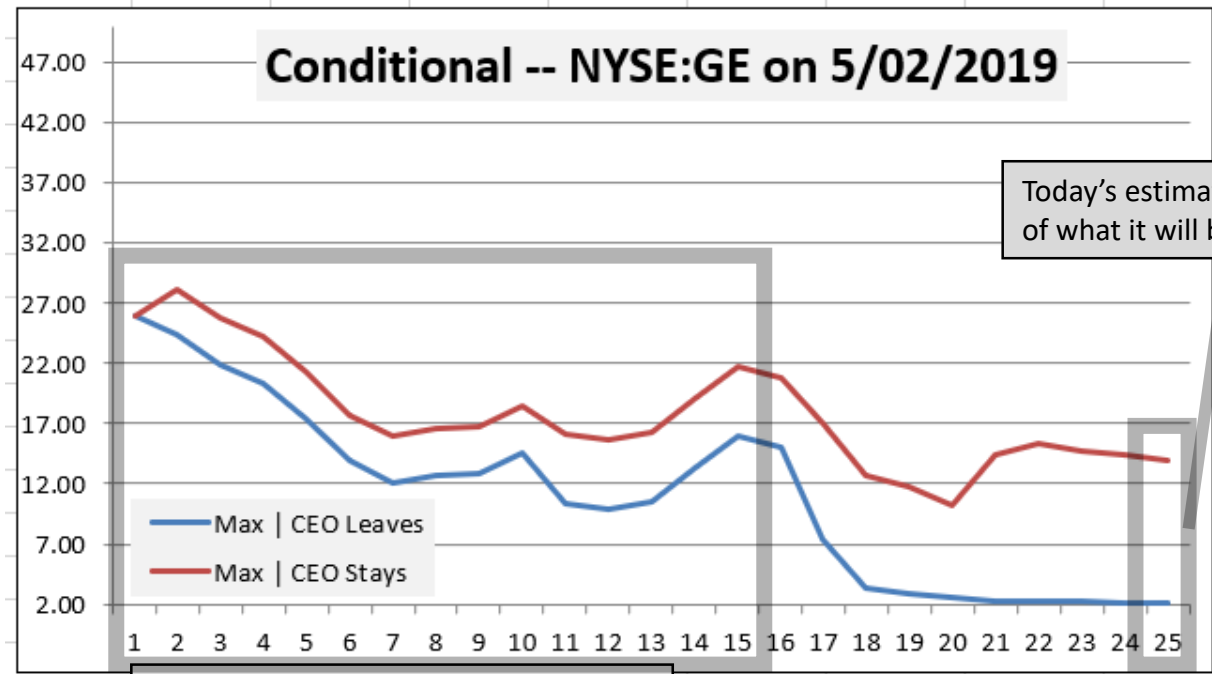
# Forecasting the future stock price...

Same Data



- Deleted 2 lines (of 4).
- (Stay & Max) / Stay
- (Leave & Max) / Leave
- Scaled y-axis to \$/share.

Now: only measures  
GE's Stock Price



Past estimates of what it would be.

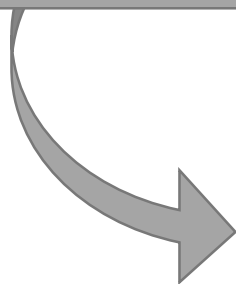
Today's estimate  
of what it will be.

# Important Questions:

Four  
diffe

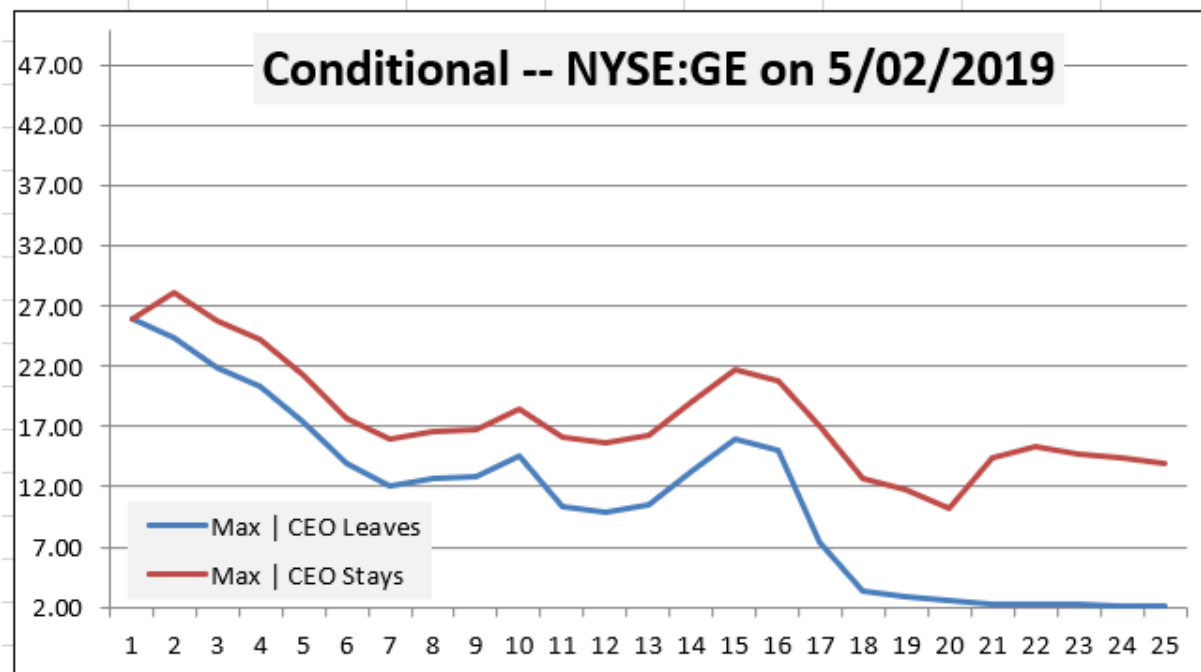
1. Should the CEO be fired, or get a raise?
2. Why are both forecasts of “the future stock price” going down?
3. [extra credit] If I had instead graphed “ CEO Leaves | Max ” and “ CEO Stays | Min ”, what would those lines represent?

Same Data



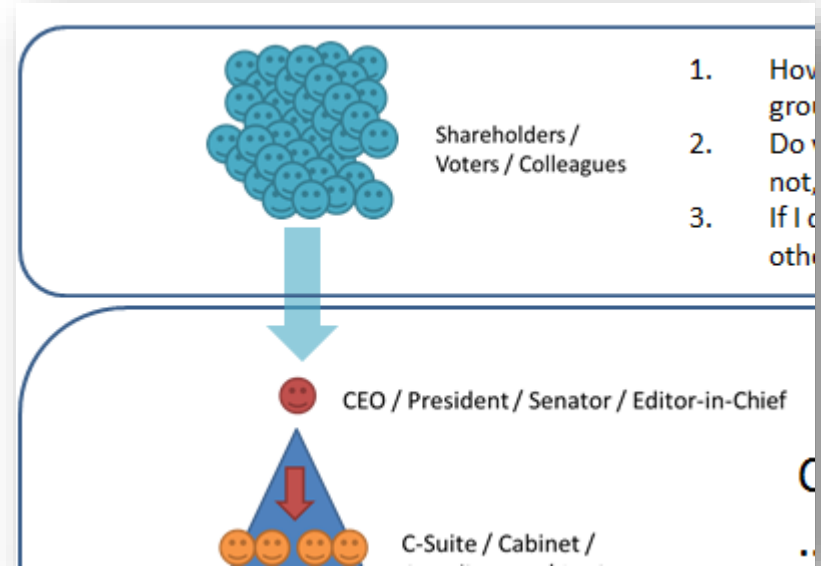
- Deleted 2 lines (of 4).
- (Stay & Max) / Stay
- (Leave & Max) / Leave
- Scaled y-axis to \$/share.

Now: only measures  
GE's Stock Price



# PM Governance

- Applications
  - “Which CEO *would most increase our stock price?*”
  - “Which President *would most decrease unemployment?*”
  - “Which FED Policy *would most increase GDP?*”
  - “Which law *would most decrease violent crime?*”



# We need



- A cheap, **reliable source of information** on who to vote for.

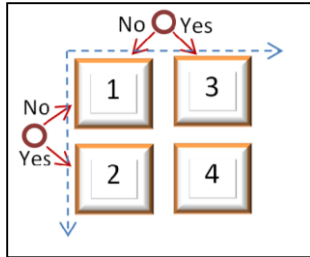


- A way of **crunching** the multi-factoriness, specifically electability, back into a single factor.



- A way of **preventing capture** of the above processes by lobbyists/cronies.

# Multidimensionality can reverse the Multi-factor effects of Electability



**“Good Economy” in 2021  
( <5% Unemployment )?**

**Nov 2020  
Election  
Winner**

	No	Yes	
Someone Else	0.0005	0.0005	0.001
Democrat	.61	.00	.61
Republican	.38	.00	.38
Elon Musk	.00	.009	.009
	.9905	.0095	

**Musk unlikely to win,  
0.9%, “Lost Cause”**

# Multidimensionality can reverse the Multi-factor effects of Electability

		“Good Economy” in 2021 ( <5% Unemployment )?			Conditional Likelihood of Good Economy
		No	Yes		
<b>Nov 2020 Election Winner</b>	Someone Else	0.0005	0.0005	0.001	50%
	Democrat	.61	.00	.61	0%
	Republican	.38	.00	.38	0%
	Elon Musk	.00	.009	.009	100%
		.9905	.0095		



# Multidimensionality can reverse the Multi-factor effects of Electability

Election hasn't happened yet...

Likelihood of Winning

Conditional Likelihood of Good Economy

	Someone Else
<b>Nov 2020 Election Winner</b>	Democrat
	Republican
	Elon Musk

00.1%

61.0%

38.0%

00.9%

50%

0%

0%

100%

And **everyone** knows it...

# Multidimensionality can reverse the Multi-factor effects of Electability

Election hasn't happened yet...

Likelihood of **Conditional** Winning

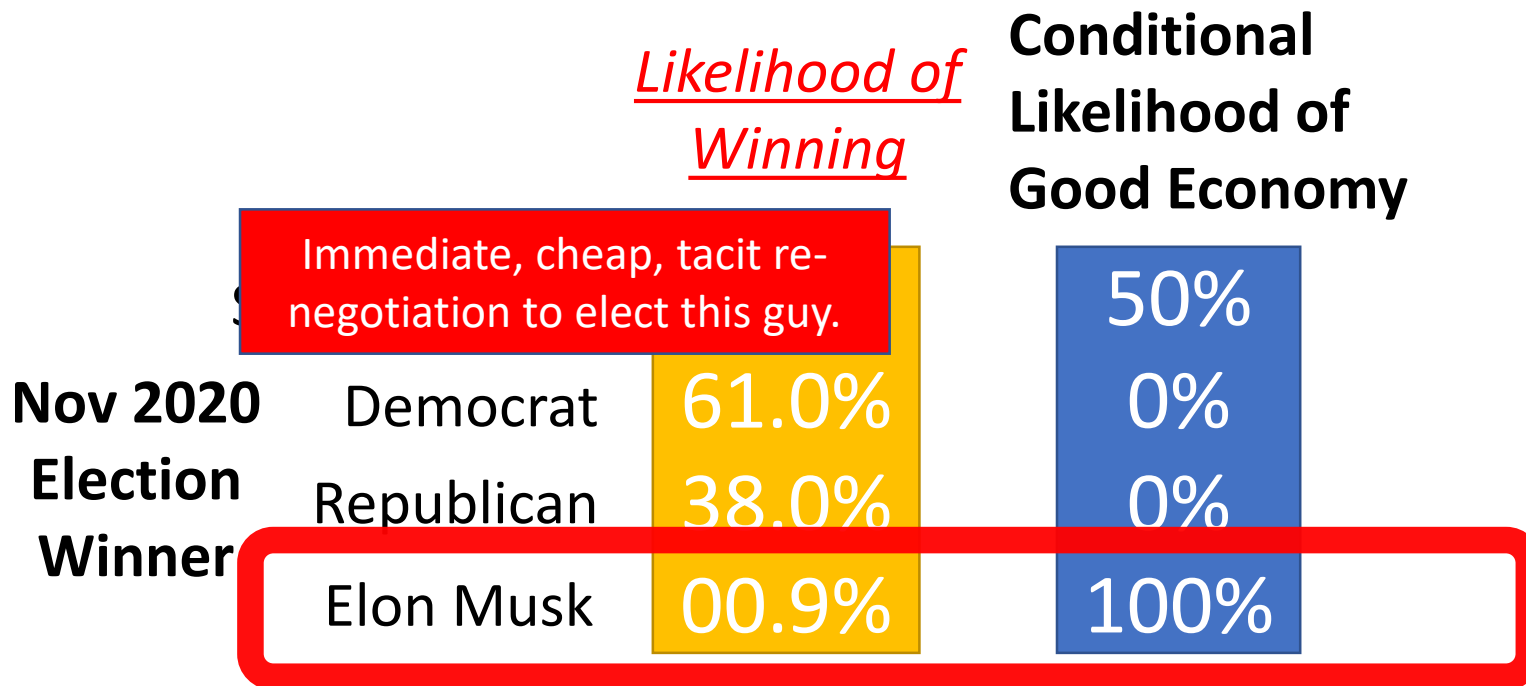
	Someone Else	00.1%
<b>Nov 2020 Election Winner</b>	Democrat	61.0%
	Republican	38.0%
	Elon Musk	00.9%



And **everyone** knows it...

Voter

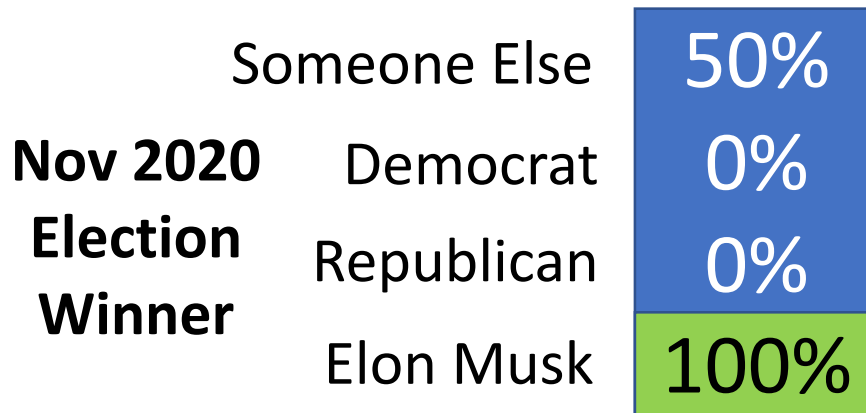
# Multidimensionality can reverse the Multi-factor effects of Electability



***Especially*** for uninformed or angry voters – the ***less*** they know, the better. The ***more*** they are confounded by media/ads, the better!

# We have returned to Single-Factor Competition!

## Conditional Likelihood of Good Economy



# Agenda

1. Moral Objections to Governance (Speech)
2. How Society Reacts to Problems (An Analogy)
3. Why Governance is Hard (A Diagnosis)
4. What Prediction Markets Are (An Institution)
5. Blockchain *Conditional Prediction Markets* – Solution to Governance
6. Getting Practical (2 slides)

# How to convince people that the PM information is reliable and interesting?

- Ramp it up over time – Popular Things – Sports (SuperBowl, March Madness), Arts (Oscars, Tonys)
- Accuracy will remain high, and that people gradually become interested.
- The election process is so broken, and distasteful (ie, attack ads), that people will come around eventually.
- Keep up the pressure each election year. Aim especially for Congressional elections where impact is high, voters least informed.

# The Joy Index – a talk for another time

- What do measure?
- How to measure it safely, without **that** being gamed?
  - Randomness – un-gameable (“Sortition”)
  - Non-attribution, secret ballots

# Thank You!

## Questions?