Using Simulation to explain …

Why is there such a large and growing WEALTH GAP in the world?

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Goldratt RESEARCH LABS

THE AnyLogic COMPANY

HOW BIG IS THE WEALTH GAP?

Why is there such a LARGE and GROWING Gap between the richest people and the rest?

NET WORTH
USD 150 b

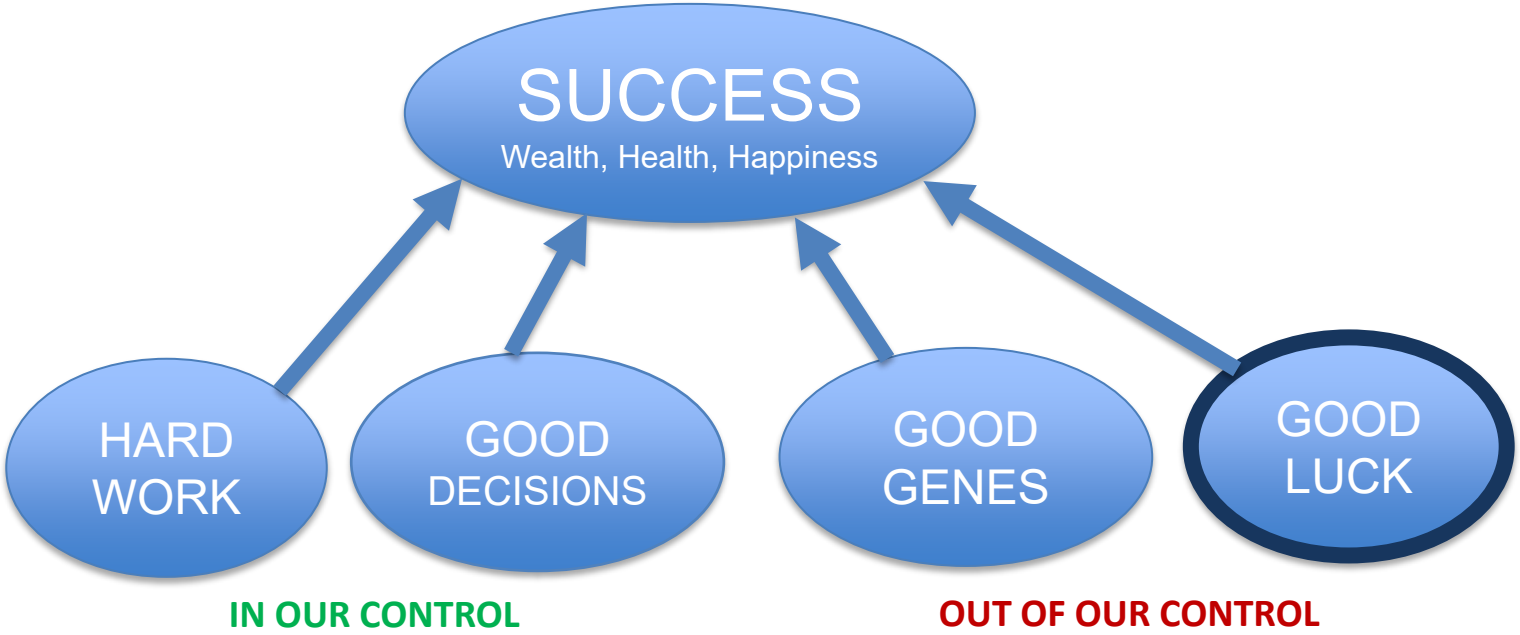
Wealth Gap:
1,000,000 x

NET WORTH
USD 150 k

What could explain such a HUGE gap?

Harder work **Better Decisions** **Inequality** **???**

WHAT ARE THE SUCCESS CONDITIONS?



Can we use simulation to check how much of the WEALTH GAP can be explained by

GOOD vs. BAD luck?

Why Simulation?

- Can consider all the **critical system interdependencies, constraints, complexities and variability**
- Can provide a range of **likely outcomes** for single scenarios, do **sensitivity analysis** and direct **scenario comparisons**
- Can provide a **low risk, low-cost** way to test hypothesis of the consequences, causes and/or cures to real-life problems

Why AnyLogic?

- Can replicate the **real-world complexity** through both **Agent-based** and **Discrete Event** simulation methods.
- Can use our in-house developed **Material Design library to create models that look like APPS** with great UI/UX
- Ability to export model as **Stand-alone Java app**

THE WEALTH GAP CHALLENGE SIMULATION

Welcome to the Wealth Gap Challenge

Learn why there is a large and growing wealth gap in most economies...
And what strategies can help close it.

What would happen if 100 people, each with a personal wealth of $100 traded with each other over 100 days.

On every day, every person has a 50:50 probability of winning or losing each trade. A win means gaining 20% of their wealth on that day. A loss means losing 20% of their wealth.

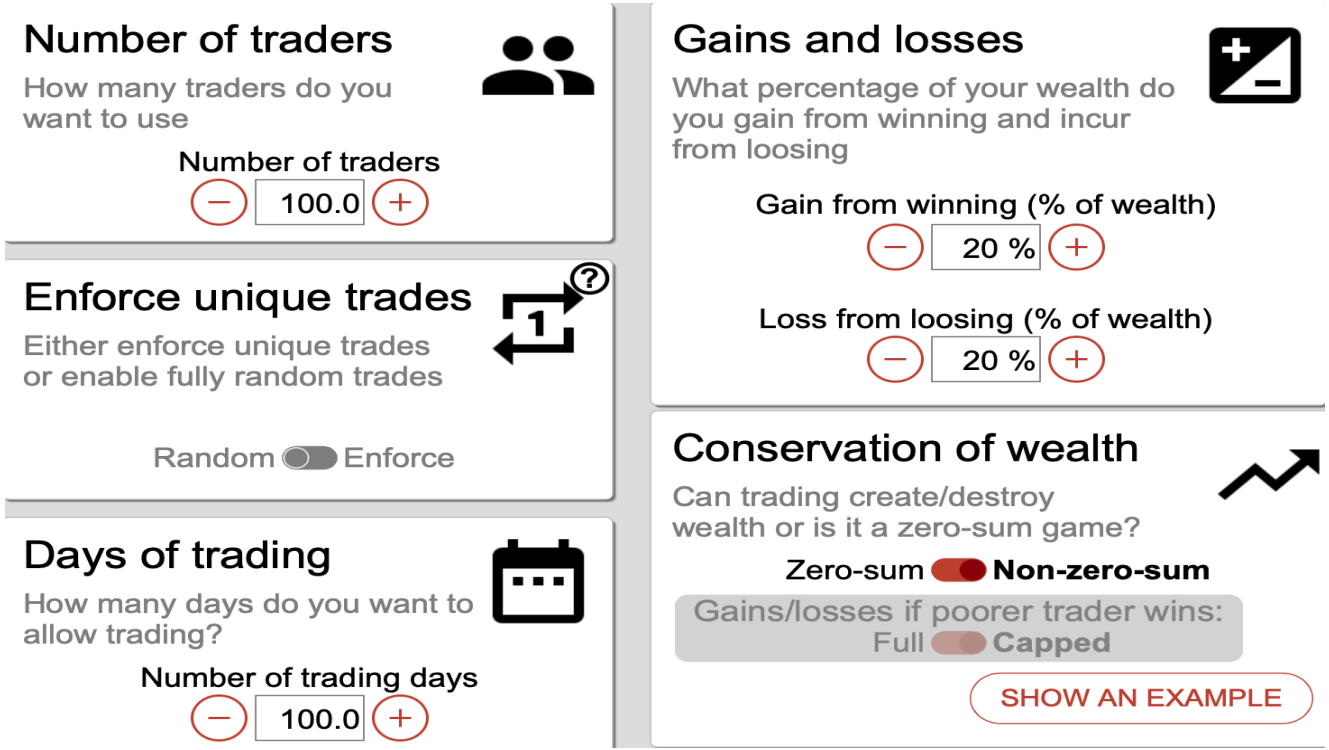
What do you think will be the outcome … and how could it explain the large and growing wealth gap in the world?

LEARN MORE GET STARTED

Developed by Goldratt RESEARCH LABS

www.wealthgapsimulation.com

THE WEALTH GAP CHALLENGE SIMULATION



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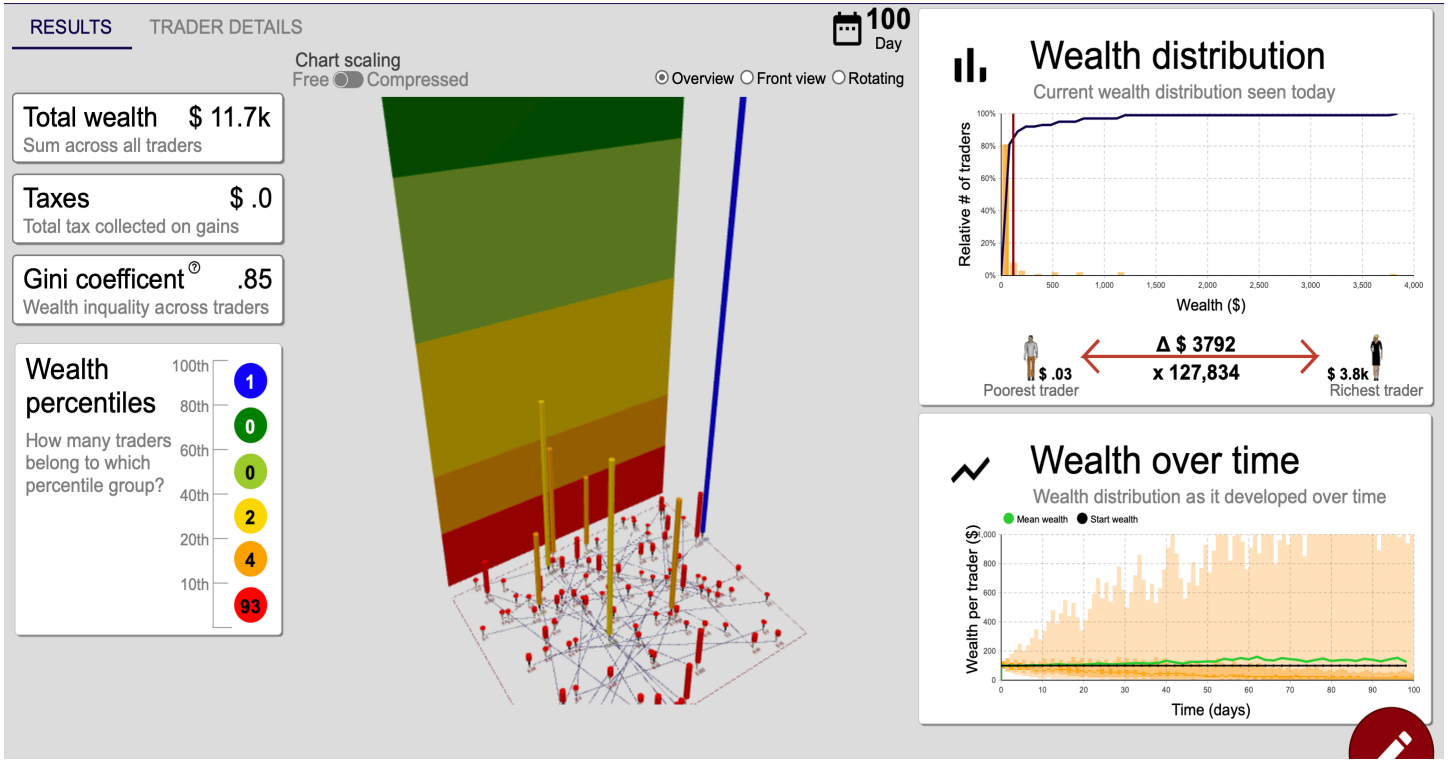

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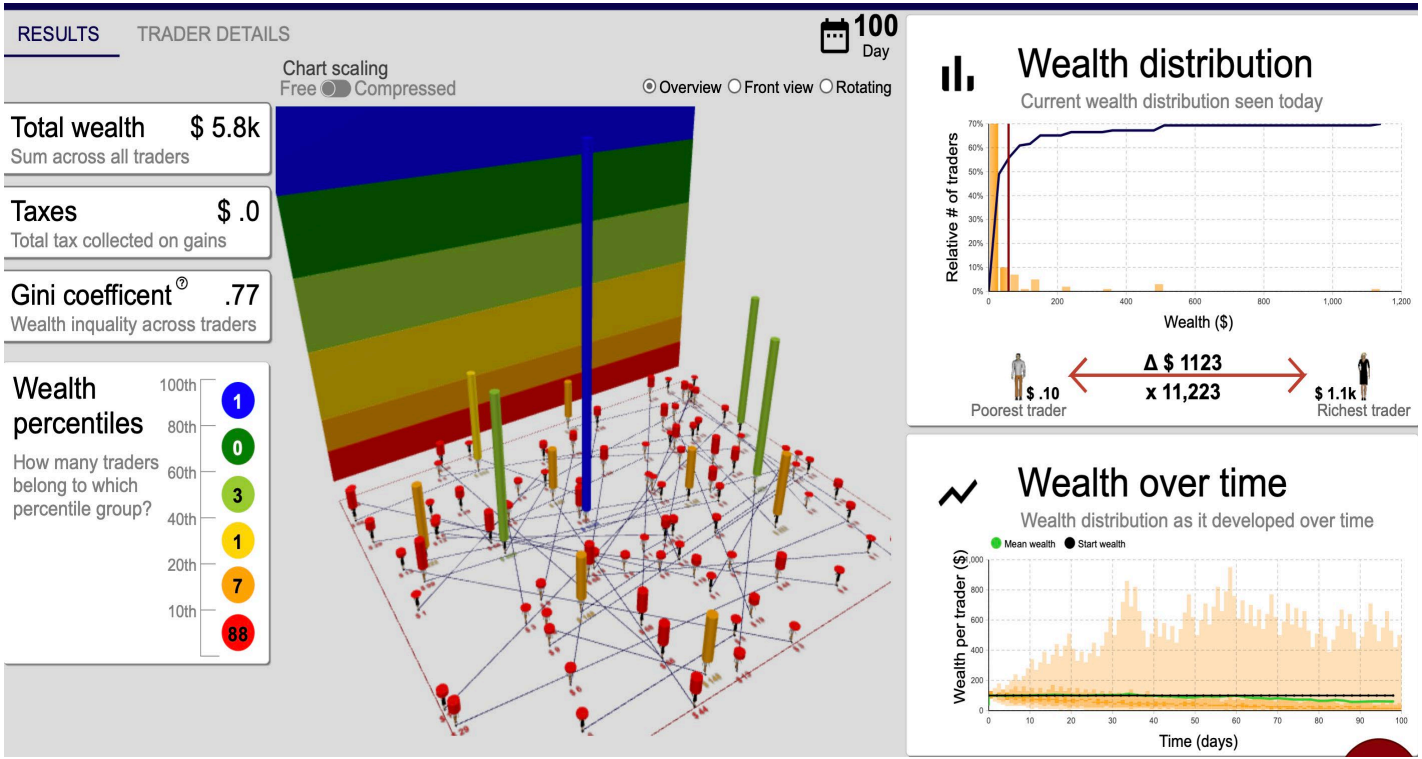


THE WEALTH GAP CHALLENGE SIMULATION

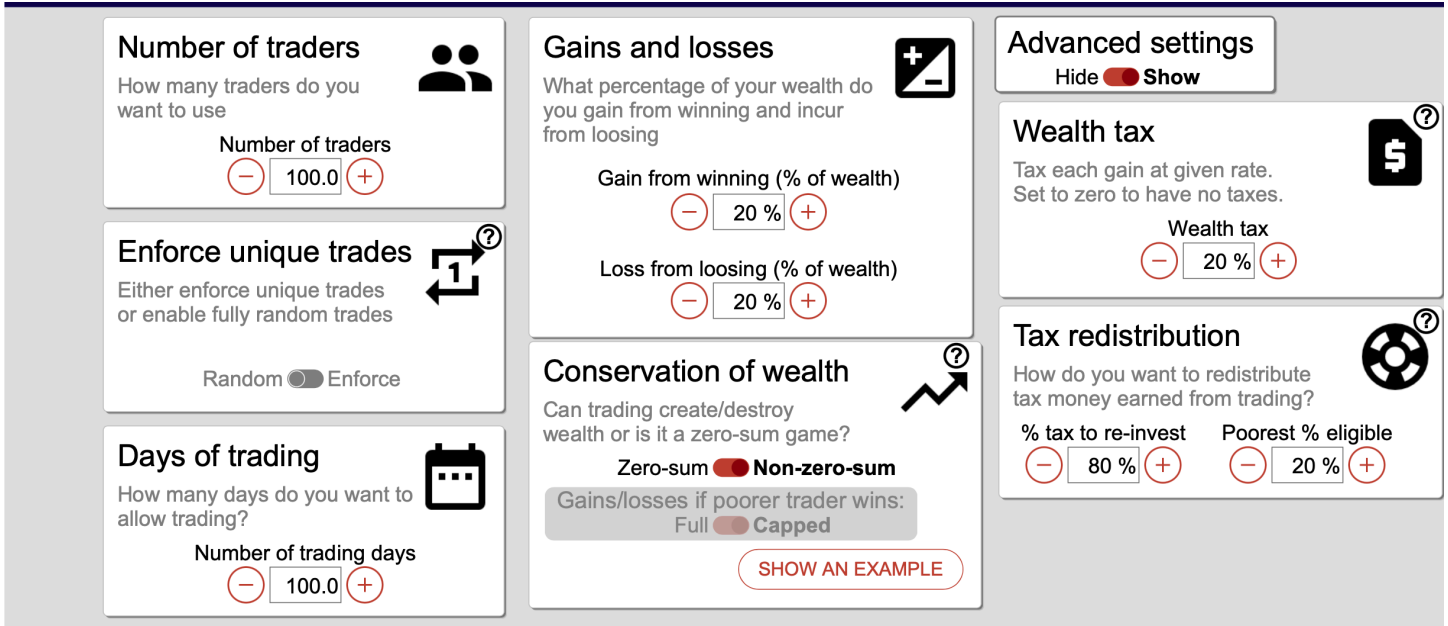
TRADER DETAILS

	Trader ID	# trades	% won	% lost	Initial wealth	Final wealth	% Wealth change	% of total wealth
RICHEST	29	100	61%	39%	$ 100	$ 1123	1023%	19.45%
	86	100	59%	41%	$ 100	$ 499	399%	8.64%
	8	100	59%	41%	$ 100	$ 499	399%	8.64%
	30	100	59%	41%	$ 100	$ 499	399%	8.64%
	42	100	58%	42%	$ 100	$ 333	233%	5.76%
	21	100	57%	43%	$ 100	$ 222	122%	3.84%
	78	100	57%	43%	$ 100	$ 222	122%	3.84%
	33	100	56%	44%	$ 100	$ 148	48%	2.56%
	48	100	56%	44%	$ 100	$ 148	48%	2.56%
	41	100	56%	44%	$ 100	$ 148	48%	2.56%
	19	100	56%	44%	$ 100	$ 148	48%	2.56%
	64	100	56%	44%	$ 100	$ 148	48%	2.56%
	36	100	55%	45%	$ 100	$ 99	-1%	1.71%
	90	100	54%	46%	$ 100	$ 66	-34%	1.14%
	3	100	54%	46%	$ 100	$ 66	-34%	1.14%
	57	100	54%	46%	$ 100	$ 66	-34%	1.14%
	1	100	54%	46%	$ 100	$ 66	-34%	1.14%
	14	100	54%	46%	$ 100	$ 66	-34%	1.14%
MIDDLE CLASS	5	100	50%	50%	$ 100	$ 13	-87%	.22%
	28	100	50%	50%	$ 100	$ 13	-87%	.22%
	7	100	50%	50%	$ 100	$ 13	-87%	.22%
	89	100	50%	50%	$ 100	$ 13	-87%	.22%
	12	100	50%	50%	$ 100	$ 13	-87%	.22%
	16	100	50%	50%	$ 100	$ 13	-87%	.22%
	45	100	50%	50%	$ 100	$ 13	-87%	.22%
	51	100	50%	50%	$ 100	$ 13	-87%	.22%
	26	100	50%	50%	$ 100	$ 13	-87%	.22%
	71	100	50%	50%	$ 100	$ 13	-87%	.22%
	69	100	50%	50%	$ 100	$ 13	-87%	.22%
	93	100	50%	50%	$ 100	$ 13	-87%	.22%
	40	100	46%	54%	$ 100	$ 3	-97%	.04%
	87	100	46%	54%	$ 100	$ 3	-97%	.04%
	6	100	46%	54%	$ 100	$ 3	-97%	.04%
	68	100	46%	54%	$ 100	$ 3	-97%	.04%
	34	100	46%	54%	$ 100	$ 3	-97%	.04%
	77	100	45%	55%	$ 100	$ 2	-98%	.03%
	53	100	45%	55%	$ 100	$ 2	-98%	.03%
	85	100	45%	55%	$ 100	$ 2	-98%	.03%
	18	100	44%	56%	$ 100	$ 1	-99%	.02%
	39	100	44%	56%	$ 100	$ 1	-99%	.02%
	67	100	44%	56%	$ 100	$ 1	-99%	.02%
	38	100	44%	56%	$ 100	$ 1	-99%	.02%
	54	100	44%	56%	$ 100	$ 1	-99%	.02%
	44	100	43%	57%	$ 100	$ 1	-99%	.01%
	25	100	43%	57%	$ 100	$ 1	-99%	.01%
	59	100	42%	58%	$ 100	$ 1	-99%	.01%
POOREST	23	100	38%	62%	$ 100	$ 0	-100%	.00%

THE WEALTH GAP CHALLENGE SIMULATION

Is there a simple way to dramatically reduce the Wealth GAP….without discouraging the entrepreneurs willing to take the risk and make the sacrifices?

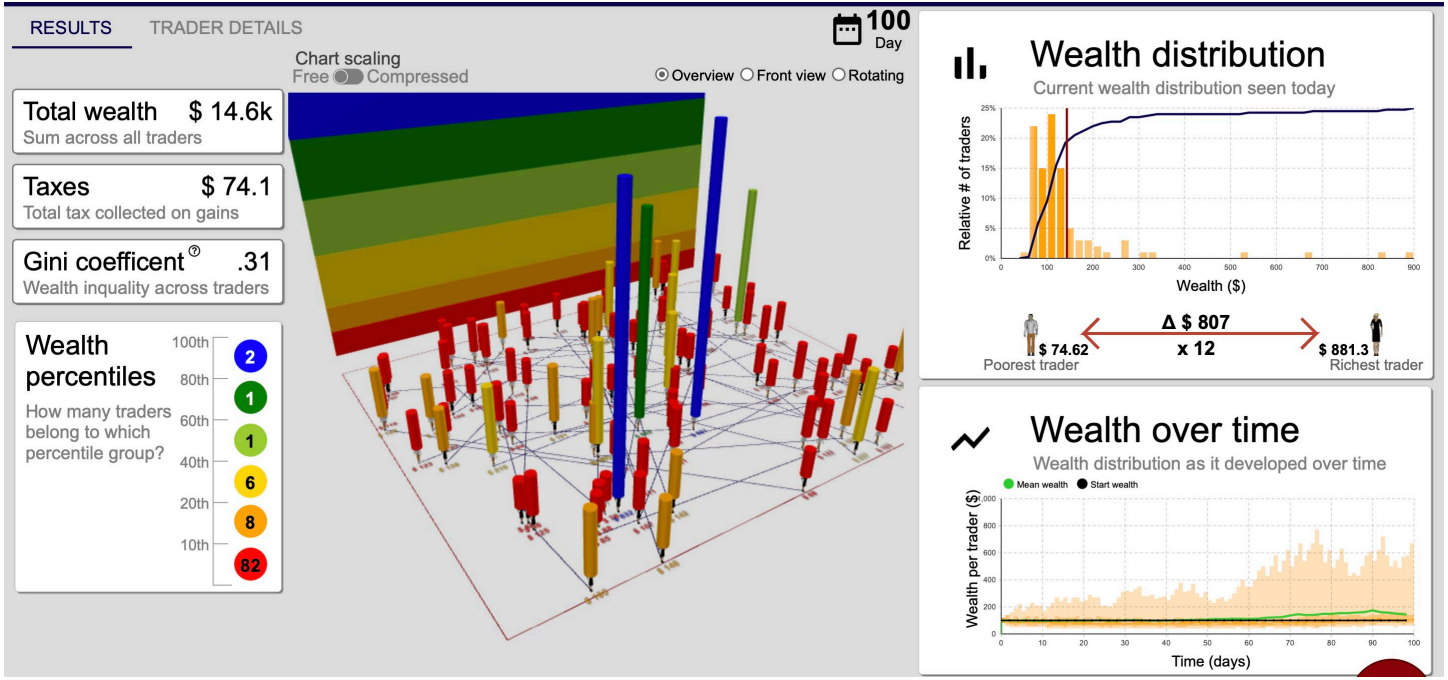
Let's try a 20% wealth tax on the winnings of each trade, and distribute 80% of the wealth taxes collected to support the 20% of the poorest from losing everything



THE WEALTH GAP CHALLENGE SIMULATION

Look at the HUGE difference in Wealth Gap a "small" wealth tax can make

The wealth gap decreased from over 10,000x to less just more than 10x



ADDITIONAL INSIGHTS FROM SIMULATION…

Yes, but … How much "good luck" do you need to grow WEALTH?

What will happen if you were given these odds.

When you win, you make 30%; When you lose, you lose only 25%....

Trade # 1 : $ 100 + 30% = $ 130	Trade # 11 : $ 88 + 30% = $ 115
Trade # 2 : $ 130 - 25% = $ 98	Trade # 12 : $ 115 - 25% = $ 85
Trade # 3 : $ 98 + 30% = $ 127	Trade # 13 : $ 86 + 30% = $ 112
Trade # 4 : $ 127 - 25% = $ 95	Trade # 14 : $ 112 - 25% = $ 84
Trade # 5 : $ 95 + 30% = $ 124	Trade # 15 : $ 84 + 30% = $ 109
Trade # 6 : $ 124 - 25% = $ 93	Trade # 16 : $ 109 - 25% = $ 82
Trade # 7 : $ 93 + 30% = $ 120	Trade # 17 : $ 82 + 30% = $ 106
Trade # 8 : $ 120 - 25% = $ 90	Trade # 18 : $ 106 - 25% = $ 80
Trade # 9 : $ 90 + 30% = $ 117	Trade # 19 : $ 80 + 30% = $ 104
Trade # 10 : $ 117 - 25% = $ 88	Trade # 20 : $ 104 - 25% = **$ 78**

Lost almost **22%** of your wealth after just **20** "better-than-fair" trades

ADDITIONAL INSIGHTS FROM SIMULATION…

What should be your GAIN %, to at least break even?

$$\text{Gain\%} = \frac{\text{Loss\%}}{(1 - \text{Loss\%})}$$

EXAMPLES:

If Loss% = 10%, then Breakeven Gain % must be = 0.1/(1-0.1) = 11%

If Loss% = 25%, then Breakeven Gain % must be = 0.25/(1-0.25) = **33%**

If Loss% = 50%, then Breakeven Gain % must be = 0.50/(1-0.50) = **100%**

BIG AHA: Avoid any options with BIG DOWNSIDE RISK … The HELL-NOs!

A COMMON CHALLENGE

In all complex systems with uncertainty…

It is very **EASY to MAKE** Bad Decisions.

WHY?

1. Many more ways to fail than succeed
2. Global optima often counter-intuitive
3. Hard to predict “likely” outcomes
4. Status Quo and other biases

AND

It is very **HARD to LEARN** from Bad Decisions

WHY?

1. Large cause-effect time & space gaps
2. Real Cause(s) often counter-intuitive
3. Small Changes can have BIG impacts
4. Confirmation and other Biases

THE OPPORTUNITY

HARDER

It is ~~EASY~~ to MAKE **BAD** Decisions.

HOW?

1. Use **Simulation** to predict the range of impacts considering variability/ randomness and interdependencies

2. Use Simulation to test which strategy is "best" for the system (not just parts of the system) to prevent local or short-term optima in a low cost/low risk way

AND

EASIER

It is ~~HARD~~ to LEARN from BAD Decisions

HOW?

1. Think of every change/decision as an experiment to learn from. What do you want to learn?

2. Use **Simulation** to test hypothesis of consequences, major cause(s) and best cure(s) to improve system performance in a low cost/low risk way

Q&A

CURIOUS TO TRY IT OUT?

Go to…

www.wealthgapsimulation.com

About Dr. Alan Barnard

Dr. Alan Barnard is one of the leading decision scientists and Theory of Constraints' experts in the world. He is the CEO of Goldratt Research Labs and is also a proud father, serial entrepreneur, App developer, Author, Strategy Advisor and Teacher

Alan's research has focused on understanding why good people make and often repeat bad decisions within their personal lives or at work. And based on the research insights, to develop simple methods and apps to help people make better faster decisions when it really matters.

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