

Scott Carey

From: James R. Lowell <james.lowell@diplomail.ch>
Sent: Wednesday, November 2, 2022 9:12 PM
To: Scott Carey
Subject: Public Commentary for November 3rd 2022 NTRPA Governing Board Meeting
Attachments: Up-Yours Seminar.pdf; The-Wealthiest-Zip-Codes-in-America.pdf; Teshara—12-30-2020 _Letter_to_City.pdf; Res 2021-003 Budget Amendment Short Term Economic Recovery Task Force.pdf; Teshara's PAC—FPPC Form 460 01 04 2022.pdf; Talent vs Luck—the role of randomness in sucess and failure.pdf; If You're So Smart, Why Aren't You Rich Turns Out It's Just Chance..pdf

WARNING - This email originated from outside the State of Nevada. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Dear Nevada Tahoe Regional Planning Agency Governing Board,

We need you to completely **divest** from the TPC\Tahoe Chamber\LTVA **NOW!** We should not be [giving them more of OUR money](#)! The City just begged us all for how much we needed to raise taxes and then turned around and [agreed](#) to approve [sending \\$75,000 from our treasury to Nevada](#). That money could have gone to two of those "much needed" City vehicle purchases! What the fuck is wrong with you? You have let the Tahoe Chamber host **our** City Council debates and now you are giving those disgusting corporate **bastard** toadies "[Statesmanship Status](#)."



I'll tell you what's going on: **Tamara Wallace** [wants to climb](#) onto the [Board of Directors](#) of the Tahoe Chamber (*cf.*, GOV. §§ [87407](#), [1090](#), & [1097](#); CIV. § [1549](#); PEN. § [86](#); 2 CCR §§ [18747](#), & [18371](#)). The shameless Nevada-based Tahoe Chamber—which nakedly serves corporate rather than City interests—is much wealthier and more affluent than **our** City's [South Tahoe Chamber](#). Douglas County does not want to raise taxes. Nevada does not want an income tax. Tahoe Chamber's **Political Action Committee (PAC)** lobbies to keep Stateline taxes low, and [the minimum wage even lower](#). The east shore has some of the wealthiest zip codes in the entire Country. Then [Teshara has the effrontery to turn around and ask us for money](#). If anything, **they should be giving money to us!** A large portion of the \$75,000 will be spent in Nevada.

Oh [Wallace](#), if a business model can't survive by paying a **living wage**, then let your "[invisible hand](#)" find the business model that can. No business should be allowed to stand, if it can't find a way to adequately pay its employees. No "[hands](#)" of any kind can physically lift up the Tahoe Rim and move it all into Nevada. Commercial rent control is an option to help essential non-profits and some types of small businesses. This City is like an airport terminal capturing the tourists in town, even if they are on route to their "higher" purists. As the gasoline price equalization across the interstate border proves, despite vastly different taxing, these unethical shits will charge whatever the hell they want. It is because the "[invisible hand](#)" is an just an anthropomorphic representation that you puppeteer for your convenient fearmongering, that all the new virtual office tech jobs in the "post-COVID economy" will apocryphally move to Tahoe rather than foreseeably to **India** where—thanks to a [century of English imperialism](#)—everyone speaks English and tech labor is comparably cheap. [Karma](#) is a bitch, and will work by wire!

The perverse irony with the Wallace's **living wage** opposition is that their Evangelical Bible, and their beloved Tucker Carlson & Sean Hannity's [voodoo economic](#) polices are actually incompatible. [Mathew's Law](#) (Matthew 25:29 & 13:11–12) is actually a mathematical truth well understood by academic economists. Income inequality saliently obeys the [Pareto Distribution](#), because of [the strong feedback loops pulling people away from the middle](#). [Once you are near zero dollars, you statistically don't leave](#). There are a tremendous amount of tax-sheltering lakefront property owners in Douglass and Washoe Counties that make almost their entire earnings off of **capital gains**—a.k.a. the [doctrine of shareholder primacy](#). The working poor can't even afford to pay rent let alone invest in one tiny, aging, poorly-insulated house in which to live. This leaves the middle-class subsidizing wealthy corporations—CEO's **lobby lawmakers** to allow them to not adequately compensate their own employees—resulting in the middle-class paying for **perpetual** low-income housing for the poor, from which there is no escape from their poverty. This tax payment to compensate underpaid employees cumulatively passes the middle class' wealth to the 1%. Corporate tycoons like [Rob Katz](#) make millions a year, while creating a **humanitarian crisis that forces your taxes to effectively compensate his employees**. As for Sean Hannity, he is preying off naive, well-meaning, religious suburban residents, to keep him rich—he makes millions himself **off people like you** in this deliberately rigged system. If you still don't believe me, [read this](#).

We should not be collateral damage in the [Wallace's personal ambitions](#).

James R. Lowell

We've Upped Our Ambitions.
Now...



UP YOURS!

Are You Ready?



TAHOE PROSPERITY CENTER



TAHOE CHAMBER



**Brainwashing sessions for just \$10 a
meeting!**

The Wealthiest ZIP Codes in America

Ever wonder where the richest of the rich live? Here's a map of the United States, broken down by region and state, that reveals the ZIP codes of the fabulously wealthy. Each ZIP code is labeled with its city, the number of tax returns filed within the ZIP code, and the average income per return in dollars (unless otherwise noted). Furthermore, we've indicated which ZIP codes have the highest average incomes in their states and regions!

Study closely - these are the cities on the hilltop, so to speak.

WEST NORTH CENTRAL

Nebraska	North Dakota	Iowa	Minnesota
68520 Lincoln \$172,626	58108 Fargo \$119,741	50305 Des Moines \$728,600	55440 Minneapolis \$728,084
68118 Omaha \$104,478	58104 Fargo \$44,818	50309 Des Moines \$180,422	55415 Minneapolis \$372,311
68925 Aurora \$104,882	58047 Horace \$60,361	50304 Des Moines \$156,263	55402 Minneapolis \$359,827
Kansas	South Dakota	Missouri	
66211 Leawood \$202,868	57049 North Sioux City \$149,844	63045 Earth City \$245,800	
67202 Wichita \$193,152	57041 Lyons \$88,934	63124 Saint Louis \$326,640	
66283 Overland Park \$117,037	57108 Sioux Falls \$85,404	63073 Saint Albans \$313,665	

EAST NORTH CENTRAL

Michigan	Wisconsin	Ohio	Indiana
48304 Bloomfield Hills \$227,059	53122 Elm Grove \$146,499	45423 Dayton \$94,674	46846 Fort Wayne \$347,880
48302 Bloomfield Hills \$208,196	54912 Appleton \$121,211	44040 Gates Mills \$200,232	46282 Indianapolis \$332,833
48025 Franklin \$195,151	54307 Green Bay \$112,540	43444 Middle Bass \$203,147	46857 Fort Wayne \$318,938
Illinois			
60065 Northbrook \$725,971			
60604 Chicago \$479,396			
60606 Chicago \$452,781			

NORTH EAST - NEW ENGLAND

Vermont	New Hampshire	Maine	Massachusetts
05251 Dorset \$127,260	03817 Chocoma \$172,650	04110 Cumberland \$172,650	02110 Boston \$374,215
05445 Charlotte \$62,856	03871 Rye Beach \$198,122	04078 South \$189,019	02205 Boston \$374,597
05407 South \$81,922	03854 New Castle \$171,723	04442 Harborside \$140,873	01115 Springfield \$362,480
Connecticut			
06831 Greenwich \$416,680			
06156 Hartford \$358,050			
06840 New Canaan \$285,795			
Rhode Island			
02818 East \$307,260			
02806 Barrington \$87,342			
02906 Providence \$79,536			

WEST PACIFIC

Washington	Oregon	California	Alaska	Hawaii
98033 Medina \$340,770	97076 Beaverton \$360,039	93778 Fresno \$195,345	99519 Anchorage \$170,032	96802 Honolulu \$170,218
98154 Seattle \$278,525	97291 Portland \$341,660	91608 Universal City \$908,418	99734 Prudhoe Bay \$47,973	96811 Honolulu \$100,788
98009 Bellevue \$264,499	97204 Portland \$210,892	90067 Los Angeles \$546,672	99516 Anchorage \$66,058	96850 Honolulu \$79,167

WEST MOUNTAIN

Idaho	Montana	Utah	Nevada	Arizona
83354 Sun Valley \$120,054	59719 Bozeman \$74,146	84133 Salt Lake City \$170,700	89011 Henderson \$365,559	85253 Paradise Valley \$117,438
83353 Sun Valley \$107,091	59106 Billings \$65,211	84145 Salt Lake City \$374,188	89451 Teton Village \$529,403	85045 Phoenix \$105,090
83340 Ketchum \$80,492	59633 Canyon Creek \$63,919	84171 Salt Lake City \$177,073	89413 Glenbrook \$507,318	85255 Scottsdale \$97,675
Colorado	Wyoming	New Mexico		
80290 Denver \$282,456	83014 Wilson \$372,598	87122 Albuquerque \$397,508		
80293 Denver \$231,047	83025 Teton Village \$219,488	87043 Placitas \$69,425		
80202 Denver \$162,135	83115 Daniel \$216,663	87197 Albuquerque \$66,421		

WEST SOUTH CENTRAL

Louisiana	Texas	Oklahoma	Arkansas
70719 New Orleans \$191,644	77010 Houston \$194,126	74121 Tulsa \$360,259	72203 Little Rock \$208,449
71240 Fairbanks \$270,063	75247 Dallas \$548,640	73154 Oklahoma City \$332,544	72906 Fort Smith \$192,313
70139 New Orleans \$270,167	75270 Dallas \$382,037	74103 Tulsa \$229,516	72212 Little Rock \$97,766

EAST SOUTH CENTRAL

Kentucky	Tennessee	Mississippi	Alabama
40580 Lexington \$174,750	37180 Chattanooga \$265,579	39272 Byram \$174,216	36564 Point Clear \$172,500
40025 Glenview \$347,022	38157 Memphis \$758,000	39298 Jackson \$190,100	35223 Birmingham \$145,200
40583 Lexington \$346,640	38124 Memphis \$454,929	39803 Tupelo \$125,821	35238 Birmingham \$150,826

NORTH EAST - MIDDLE ATLANTIC

Pennsylvania	New York	New Jersey	Delaware
15257 Pittsburgh \$289,273	10104 New York \$1,950,729	07399 Jersey City \$809,817	19898 Wilmington \$1,950,192
19035 Gladwyne \$322,586	10112 New York \$2,239,881	07976 New Vernon \$497,928	19716 Montclair \$243,710
19484 Valley Forge \$315,050	10004 New York \$2,118,766	07962 Morristown \$465,648	19716 Newark \$311,133

THE DISTRICT OF COLUMBIA

The District of Columbia
20510 Washington D.C. \$191,818
20004 Washington D.C. \$137,470
20015 Washington D.C. \$120,438

North Carolina

North Carolina
27624 Raleigh \$262,400
28281 Charlotte \$245,500
27420 Greensboro \$226,981

Florida

Florida
33109 Miami Beach \$180,105
33027 Tallahassee \$749,566
33394 Fort Lauderdale \$565,314

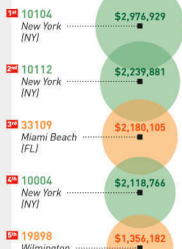
Georgia

Georgia
31561 Sea Island \$351,178
30327 Atlanta \$235,375
30023 Alpharetta \$181,815

South Carolina

South Carolina
29402 Charleston \$227,808
29603 Greenville \$149,851
29211 Columbia \$124,347

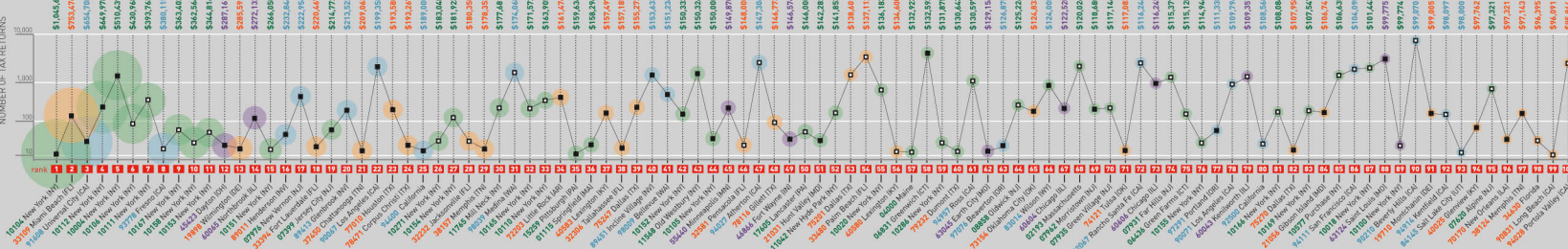
Top 5 ZIP Codes in America with the Highest Average Income



100 Highest Tax-Paying ZIP Codes in America

Average tax paid per return in dollars, crossed with the number of tax returns filed within the listed ZIP code (all data from wealth.mongabay.com).

■ also on the map □ not included on the map



**Recipient Committee
Campaign Statement
Cover Page**

(Government Code Sections 84200-84216.5)

COVER PAGE

RECEIVED FEB 4 2022 City of South Lake Tahoe Office of the City Clerk	CALIFORNIA FORM 460
	Page <u>1</u> of <u>8</u>
	For Official Use Only

SEE INSTRUCTIONS ON REVERSE

Statement covers period from <u>07/01/2021</u> through <u>12/31/2021</u>	Date of election if applicable: (Month, Day, Year) _____
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1. Type of Recipient Committee: All Committees - Complete Parts 1, 2, 3, and 4.

- | | |
|--|--|
| <input type="checkbox"/> Officeholder, Candidate Controlled Committee
<input type="radio"/> State Candidate Election Committee
<input type="radio"/> Recall
<small>(Also Complete Part 5)</small> | <input type="checkbox"/> Primarily Formed Ballot Measure Committee
<input type="radio"/> Controlled
<input type="radio"/> Sponsored
<small>(Also Complete Part 6)</small> |
| <input checked="" type="checkbox"/> General Purpose Committee
<input type="radio"/> Sponsored
<input type="radio"/> Small Contributor Committee
<input type="radio"/> Political Party/Central Committee | <input type="checkbox"/> Primarily Formed Candidate/Officeholder Committee
<small>(Also Complete Part 7)</small> |

2. Type of Statement:

- | | |
|--|---|
| <input type="checkbox"/> Preelection Statement | <input type="checkbox"/> Quarterly Statement |
| <input checked="" type="checkbox"/> Semi-annual Statement | <input type="checkbox"/> Special Odd-Year Report |
| <input type="checkbox"/> Termination Statement
(Also file a Form 410 Termination) | <input type="checkbox"/> Supplemental Preelection Statement - Attach Form 495 |
| <input type="checkbox"/> Amendment (Explain below)

_____ | |

3. Committee Information

I.D. NUMBER
1367096

COMMITTEE NAME (OR CANDIDATE'S NAME IF NO COMMITTEE)
Tahoe Chamber Independent Expenditure Committee

STREET ADDRESS (NO P.O. BOX)
3066 Lake Tahoe Boulevard

CITY	STATE	ZIP CODE	AREA CODE/PHONE
<u>South Lake Tahoe</u>	<u>CA</u>	<u>96150</u>	<u>(530) 541-7797</u>

MAILING ADDRESS (IF DIFFERENT) NO. AND STREET OR P.O. BOX

455 Capitol Mall, Suite 600

CITY	STATE	ZIP CODE	AREA CODE/PHONE
<u>Sacramento</u>	<u>CA</u>	<u>95814</u>	

OPTIONAL: FAX / E-MAIL ADDRESS

fppc@bmhlaw.com

Treasurer(s)

NAME OF TREASURER

Brian T. Hildreth

MAILING ADDRESS

455 Capitol Mall, Suite 600

CITY	STATE	ZIP CODE	AREA CODE/PHONE
<u>Sacramento</u>	<u>CA</u>	<u>95814</u>	<u>(916) 442-7757</u>

NAME OF ASSISTANT TREASURER, IF ANY

Peter Leoni

MAILING ADDRESS

455 Capitol Mall, Suite 600

CITY	STATE	ZIP CODE	AREA CODE/PHONE
<u>Sacramento</u>	<u>CA</u>	<u>95814</u>	<u>(916) 442-7757</u>

OPTIONAL: FAX / E-MAIL ADDRESS

4. Verification

I have used all reasonable diligence in preparing and reviewing this statement and to the best of my knowledge the information contained herein and in the attached schedules is true and complete. I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on 01/18/2022
Date

By [Signature]
Signature of Treasurer or Assistant Treasurer

Executed on _____
Date

By _____
Signature of Controlling Officeholder, Candidate, State Measure Proponent or Responsible Officer of Sponsor

Executed on _____
Date

By _____
Signature of Controlling Officeholder, Candidate, State Measure Proponent

Executed on _____
Date

By _____
Signature of Controlling Officeholder, Candidate, State Measure Proponent

Recipient Committee
Campaign Statement
Cover Page — Part 2

COVER PAGE - PART 2

CALIFORNIA
FORM **460**

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5. Officeholder or Candidate Controlled Committee

NAME OF OFFICEHOLDER OR CANDIDATE

OFFICE SOUGHT OR HELD (INCLUDE LOCATION AND DISTRICT NUMBER IF APPLICABLE)

RESIDENTIAL/BUSINESS ADDRESS (NO. AND STREET) CITY STATE ZIP

Related Committees Not Included in this Statement: *List any committees not included in this statement that are controlled by you or are primarily formed to receive contributions or make expenditures on behalf of your candidacy.*

COMMITTEE NAME

I.D. NUMBER

NAME OF TREASURER

CONTROLLED COMMITTEE?

☐ YES ☐ NO

COMMITTEE ADDRESS STREET ADDRESS (NO P.O. BOX)

CITY STATE ZIP CODE AREA CODE/PHONE

COMMITTEE NAME

I.D. NUMBER

NAME OF TREASURER

CONTROLLED COMMITTEE?

☐ YES ☐ NO

COMMITTEE ADDRESS STREET ADDRESS (NO P.O. BOX)

CITY STATE ZIP CODE AREA CODE/PHONE

6. Primarily Formed Ballot Measure Committee

NAME OF BALLOT MEASURE

BALLOT NO. OR LETTER

JURISDICTION

☐ SUPPORT
☐ OPPOSE

Identify the controlling officeholder, candidate, or state measure proponent, if any.

NAME OF OFFICEHOLDER, CANDIDATE, OR PROPONENT

OFFICE SOUGHT OR HELD

DISTRICT NO. IF ANY

7. Primarily Formed Candidate/Officeholder Committee *List names of officeholder(s) or candidate(s) for which this committee is primarily formed.*

NAME OF OFFICEHOLDER OR CANDIDATE

OFFICE SOUGHT OR HELD

☐ SUPPORT
☐ OPPOSE

NAME OF OFFICEHOLDER OR CANDIDATE

OFFICE SOUGHT OR HELD

☐ SUPPORT
☐ OPPOSE

NAME OF OFFICEHOLDER OR CANDIDATE

OFFICE SOUGHT OR HELD

☐ SUPPORT
☐ OPPOSE

NAME OF OFFICEHOLDER OR CANDIDATE

OFFICE SOUGHT OR HELD

☐ SUPPORT
☐ OPPOSE

Attach continuation sheets if necessary

Campaign Disclosure Statement Summary Page

Amounts may be rounded
to whole dollars.

SUMMARY PAGE

Statement covers period from 07/01/2021 through 12/31/2021	CALIFORNIA FORM 460 Page 3 of 8 I.D. NUMBER 1367096
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SEE INSTRUCTIONS ON REVERSE

NAME OF FILER

Tahoe Chamber Independent Expenditure Committee

Contributions Received

		Column A TOTAL THIS PERIOD (FROM ATTACHED SCHEDULES)	Column B CALENDAR YEAR TOTAL TO DATE
1. Monetary Contributions	Schedule A, Line 3	\$ 0.00	\$ 0.00
2. Loans Received	Schedule B, Line 3	0.00	0.00
3. SUBTOTAL CASH CONTRIBUTIONS	Add Lines 1 + 2	\$ 0.00	\$ 0.00
4. Nonmonetary Contributions	Schedule C, Line 3	0.00	48.20
5. TOTAL CONTRIBUTIONS RECEIVED	Add Lines 3 + 4	\$ 0.00	\$ 48.20

Calendar Year Summary for Candidates Running in Both the State Primary and General Elections

	1/1 through 6/30	7/1 to Date
20. Contributions Received	\$	\$
21. Expenditures Made	\$	\$

Expenditures Made

6. Payments Made	Schedule E, Line 4	\$ 0.00	\$ 50.00
7. Loans Made	Schedule H, Line 3	0.00	0.00
8. SUBTOTAL CASH PAYMENTS	Add Lines 6 + 7	\$ 0.00	\$ 50.00
9. Accrued Expenses (Unpaid Bills)	Schedule F, Line 3	1,475.63	2,848.54
10. Nonmonetary Adjustment	Schedule C, Line 3	0.00	48.20
11. TOTAL EXPENDITURES MADE	Add Lines 8 + 9 + 10	\$ 1,475.63	\$ 2,946.74

Expenditure Limit Summary for State Candidates

22. Cumulative Expenditures Made* (If Subject to Voluntary Expenditure Limit)	
Date of Election (mm/dd/yy)	Total to Date
/ /	\$
/ /	\$

Current Cash Statement

12. Beginning Cash Balance	Previous Summary Page, Line 16	\$ 1,110.42
13. Cash Receipts	Column A, Line 3 above	0.00
14. Miscellaneous Increases to Cash	Schedule I, Line 4	0.00
15. Cash Payments	Column A, Line 8 above	0.00
16. ENDING CASH BALANCE	Add Lines 12 + 13 + 14, then subtract Line 15	\$ 1,110.42
If this is a termination statement, Line 16 must be zero.		

To calculate Column B, add amounts in Column A to the corresponding amounts from Column B of your last report. Some amounts in Column A may be negative figures that should be subtracted from previous period amounts. If this is the first report being filed for this calendar year, only carry over the amounts from Lines 2, 7, and 9 (if any).

*Amounts in this section may be different from amounts reported in Column B.

17. LOAN GUARANTEES RECEIVED	Schedule B, Part 2	\$ 0.00
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Cash Equivalents and Outstanding Debts

18. Cash Equivalents	See instructions on reverse	\$ 0.00
19. Outstanding Debts	Add Line 2 + Line 9 in Column B above	\$ 2,848.54

Schedule F Accrued Expenses (Unpaid Bills)

Amounts may be rounded
to whole dollars.

SCHEDULE F

Statement covers period from 07/01/2021 through 12/31/2021		CALIFORNIA FORM 460
Page 4 of 8		
NAME OF FILER Tahoe Chamber Independent Expenditure Committee		I.D. NUMBER 1367096

SEE INSTRUCTIONS ON REVERSE

NAME OF FILER

Tahoe Chamber Independent Expenditure Committee

CODES: If one of the following codes accurately describes the payment, you may enter the code. Otherwise, describe the payment.

CMP campaign paraphernalia/misc.	MBR member communications	RAD radio airtime and production costs
CNS campaign consultants	MTG meetings and appearances	RFD returned contributions
CTB contribution (explain nonmonetary)*	OFC office expenses	SAL campaign workers' salaries
CVC civic donations	PET petition circulating	TEL t.v. or cable airtime and production costs
FIL candidate filing/ballot fees	PHO phone banks	TRC candidate travel, lodging, and meals
FND fundraising events	POL polling and survey research	TRS staff/spouse travel, lodging, and meals
IND independent expenditure supporting/opposing others (explain)*	POS postage, delivery and messenger services	TSF transfer between committees of the same candidate/sponsor
LEG legal defense	PRO professional services (legal, accounting)	VOT voter registration
LIT campaign literature and mailings	PRT print ads	WEB information technology costs (internet, e-mail)

NAME AND ADDRESS OF CREDITOR (IF COMMITTEE, ALSO ENTER I.D. NUMBER)	CODE OR DESCRIPTION OF PAYMENT	(a) OUTSTANDING BALANCE BEGINNING OF THIS PERIOD	(b) AMOUNT INCURRED THIS PERIOD	(c) AMOUNT PAID THIS PERIOD (ALSO REPORT ON E)	(d) OUTSTANDING BALANCE AT CLOSE OF THIS PERIOD
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	0.50	0.00	0.00	0.50
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	275.92	0.00	0.00	275.92
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	78.10	0.00	0.00	78.10
* Payments that are contributions or independent expenditures must also be summarized on Schedule D.		SUBTOTALS \$	354.52\$	0.00\$	0.00\$
					354.52

Schedule F Summary

- Total accrued expenses incurred this period. (Include all Schedule F, Column (b) subtotals for accrued expenses of \$100 or more, plus total unitemized accrued expenses under \$100.) **INCURRED TOTALS \$** 1,475.63
- Total accrued expenses paid this period. (Include all Schedule F, Column (c) subtotals for payments on accrued expenses of \$100 or more, plus total unitemized payments on accrued expenses under \$100.) **PAID TOTALS \$** 0.00
- Net change this period. (Subtract Line 2 from Line 1. Enter the difference here and on the Summary Page, Column A, Line 9.) **NET \$** 1,475.63
May be a negative number

Schedule F
(Continuation Sheet)
Accrued Expenses (Unpaid Bills)

Amounts may be rounded
to whole dollars.

SCHEDULE F (CONT.)

Statement covers period from 07/01/2021 through 12/31/2021		CALIFORNIA FORM 460
Page 5 of 8		
NAME OF FILER Tahoe Chamber Independent Expenditure Committee		I.D. NUMBER 1367096

CODES: If one of the following codes accurately describes the payment, you may enter the code. Otherwise, describe the payment.

CMP campaign paraphernalia/misc.	MBR member communications	RAD radio airtime and production costs
CNS campaign consultants	MTG meetings and appearances	RFD returned contributions
CTB contribution (explain nonmonetary)*	OFC office expenses	SAL campaign workers' salaries
CVC civic donations	PET petition circulating	TEL t.v. or cable airtime and production costs
FIL candidate filing/ballot fees	PHO phone banks	TRC candidate travel, lodging, and meals
FND fundraising events	POL polling and survey research	TRS staff/spouse travel, lodging, and meals
IND independent expenditure supporting/opposing others (explain)*	POS postage, delivery and messenger services	TSF transfer between committees of the same candidate/sponsor
LEG legal defense	PRO professional services (legal, accounting)	VOT voter registration
LIT campaign literature and mailings	PRT print ads	WEB information technology costs (internet, e-mail)

* Payments that are contributions or independent expenditures must also be summarized on Schedule D.

NAME AND ADDRESS OF CREDITOR (IF COMMITTEE, ALSO ENTER I.D. NUMBER)	CODE OR DESCRIPTION OF PAYMENT	(a) OUTSTANDING BALANCE BEGINNING OF THIS PERIOD	(b) AMOUNT INCURRED THIS PERIOD	(c) AMOUNT PAID THIS PERIOD (ALSO REPORT ON E)	(d) OUTSTANDING BALANCE AT CLOSE OF THIS PERIOD
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	75.70	0.00	0.00	75.70
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	78.45	0.00	0.00	78.45
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	76.10	0.00	0.00	76.10
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	60.00	0.00	0.00	60.00
SUBTOTALS \$		290.25\$	0.00\$	0.00\$	290.25

Schedule F
(Continuation Sheet)
Accrued Expenses (Unpaid Bills)

Amounts may be rounded
to whole dollars.

SCHEDULE F (CONT.)

Statement covers period from 07/01/2021 through 12/31/2021		CALIFORNIA FORM 460
Page 6 of 8		
NAME OF FILER Tahoe Chamber Independent Expenditure Committee		I.D. NUMBER 1367096

CODES: If one of the following codes accurately describes the payment, you may enter the code. Otherwise, describe the payment.

CMP	campaign paraphernalia/misc.	MBR	member communications	RAD	radio airtime and production costs
CNS	campaign consultants	MTG	meetings and appearances	RFD	returned contributions
CTB	contribution (explain nonmonetary)*	OFC	office expenses	SAL	campaign workers' salaries
CVC	civic donations	PET	petition circulating	TEL	t.v. or cable airtime and production costs
FIL	candidate filing/ballot fees	PHO	phone banks	TRC	candidate travel, lodging, and meals
FND	fundraising events	POL	polling and survey research	TRS	staff/spouse travel, lodging, and meals
IND	independent expenditure supporting/opposing others (explain)*	POS	postage, delivery and messenger services	TSF	transfer between committees of the same candidate/sponsor
LEG	legal defense	PRO	professional services (legal, accounting)	VOT	voter registration
LIT	campaign literature and mailings	PRT	print ads	WEB	information technology costs (internet, e-mail)

* Payments that are contributions or independent expenditures must also be summarized on Schedule D.

NAME AND ADDRESS OF CREDITOR (IF COMMITTEE, ALSO ENTER I.D. NUMBER)	CODE OR DESCRIPTION OF PAYMENT	(a) OUTSTANDING BALANCE BEGINNING OF THIS PERIOD	(b) AMOUNT INCURRED THIS PERIOD	(c) AMOUNT PAID THIS PERIOD (ALSO REPORT ON E)	(d) OUTSTANDING BALANCE AT CLOSE OF THIS PERIOD
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	324.52	0.00	0.00	324.52
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	125.30	0.00	0.00	125.30
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	78.40	0.00	0.00	78.40
J. Richard Eichman, CPA 1127-11th Street Suite 300 Sacramento, CA 95814	PRO	113.40	0.00	0.00	113.40
SUBTOTALS \$		641.62 \$	0.00 \$	0.00 \$	641.62

Schedule F
(Continuation Sheet)
Accrued Expenses (Unpaid Bills)

Amounts may be rounded
to whole dollars.

SCHEDULE F (CONT.)

Statement covers period		CALIFORNIA FORM 460
from	07/01/2021	
through	12/31/2021	Page 7 of 8
NAME OF FILER		I.D. NUMBER
Tahoe Chamber Independent Expenditure Committee		1367096

CODES: If one of the following codes accurately describes the payment, you may enter the code. Otherwise, describe the payment.

CMP campaign paraphernalia/misc.	MBR member communications	RAD radio airtime and production costs
CNS campaign consultants	MTG meetings and appearances	RFD returned contributions
CTB contribution (explain nonmonetary)*	OFC office expenses	SAL campaign workers' salaries
CVC civic donations	PET petition circulating	TEL t.v. or cable airtime and production costs
FIL candidate filing/ballot fees	PHO phone banks	TRC candidate travel, lodging, and meals
FND fundraising events	POL polling and survey research	TRS staff/spouse travel, lodging, and meals
IND independent expenditure supporting/opposing others (explain)*	POS postage, delivery and messenger services	TSF transfer between committees of the same candidate/sponsor
LEG legal defense	PRO professional services (legal, accounting)	VOT voter registration
LIT campaign literature and mailings	PRT print ads	WEB information technology costs (internet, e-mail)

* Payments that are contributions or independent expenditures must also be summarized on Schedule D.

NAME AND ADDRESS OF CREDITOR (IF COMMITTEE, ALSO ENTER I.D. NUMBER)	CODE OR DESCRIPTION OF PAYMENT	(a) OUTSTANDING BALANCE BEGINNING OF THIS PERIOD	(b) AMOUNT INCURRED THIS PERIOD	(c) AMOUNT PAID THIS PERIOD (ALSO REPORT ON E)	(d) OUTSTANDING BALANCE AT CLOSE OF THIS PERIOD
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	86.52	0.00	0.00	86.52
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	86.52	0.00	86.52
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	331.83	0.00	331.83
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	200.76	0.00	200.76
SUBTOTALS \$		86.52\$	619.11\$	0.00 \$	705.63

**Schedule F
(Continuation Sheet)
Accrued Expenses (Unpaid Bills)**

Amounts may be rounded
to whole dollars.

SCHEDULE F (CONT.)

Statement covers period from <u>07/01/2021</u> through <u>12/31/2021</u>		CALIFORNIA FORM 460
Page <u>8</u> of <u>8</u>		
NAME OF FILER Tahoe Chamber Independent Expenditure Committee		I.D. NUMBER 1367096

CODES: If one of the following codes accurately describes the payment, you may enter the code. Otherwise, describe the payment.

CMP	campaign paraphernalia/misc.	MBR	member communications	RAD	radio airtime and production costs
CNS	campaign consultants	MTG	meetings and appearances	RFD	returned contributions
CTB	contribution (explain nonmonetary)*	OFC	office expenses	SAL	campaign workers' salaries
CVC	civic donations	PET	petition circulating	TEL	t.v. or cable airline and production costs
FIL	candidate filing/ballot fees	PHO	phone banks	TRC	candidate travel, lodging, and meals
FND	fundraising events	POL	polling and survey research	TRS	staff/spouse travel, lodging, and meals
IND	independent expenditure supporting/opposing others (explain)*	POS	postage, delivery and messenger services	TSF	transfer between committees of the same candidate/sponsor
LEG	legal defense	PRO	professional services (legal, accounting)	VOT	voter registration
LIT	campaign literature and mailings	PRT	print ads	WEB	information technology costs (internet, e-mail)

* Payments that are contributions or independent expenditures must also be summarized on Schedule D.

NAME AND ADDRESS OF CREDITOR (IF COMMITTEE, ALSO ENTER I.D. NUMBER)	CODE OR DESCRIPTION OF PAYMENT	(a) OUTSTANDING BALANCE BEGINNING OF THIS PERIOD	(b) AMOUNT INCURRED THIS PERIOD	(c) AMOUNT PAID THIS PERIOD (ALSO REPORT ON E)	(d) OUTSTANDING BALANCE AT CLOSE OF THIS PERIOD
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	187.50	0.00	187.50
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	200.76	0.00	200.76
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	127.50	0.00	127.50
Bell, McAndrews & Hiltachk 455 Capitol Mall, Suite 600 Sacramento, CA 95814	PRO	0.00	340.76	0.00	340.76
SUBTOTALS \$		0.00 \$	856.52 \$	0.00 \$	856.52



December 30, 2020

Mr. Joe Irvin
City Manager
City of South Lake Tahoe
1901 Airport Road
South Lake Tahoe, CA. 96150

Dear Mr. Irvin,

The Tahoe Chamber has recently launched a gift card program that aims to put money directly in the hands of small businesses. The Chamber launched the program over Christmas week with a bonus offer to any one that purchased a gift card. The purchaser received an extra \$10 from the chamber for every \$25 they spent on the purchase of gift cards. This bonus offer sold out in just four days. That money from the purchase of the gift cards and the bonus offer can only be spent at local businesses and they are beginning to be redeemed throughout the community.

The \$75,000 requested from the city's Short Term Economic Recovery committee would be used to support this bonus offer program giving purchasers more money to spend at small businesses in the South Lake Tahoe. The money would pay for things like bonus gift cards for purchasers, certain transaction fees related to the gift card program, and marketing/advertising expenses to ensure the program's success in helping our small businesses thrive during this pandemic. With the city's help, the Chamber would like to expand this program to include any business that has been effected by the current regional Stay at Home Order.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Emily Abernathy". The signature is fluid and cursive, with a prominent loop at the end.

Emily Abernathy
Director of Operations

A handwritten signature in black ink, appearing to read "Steve Teshara". The signature is cursive and somewhat stylized, with a long horizontal line extending from the end.

Steve Teshara
Chief Executive Officer

Talent vs Luck: the role of randomness in success and failure

A. Pluchino*, A. E. Biondo†, A. Rapisarda‡

Abstract

The largely dominant meritocratic paradigm of highly competitive Western cultures is rooted on the belief that success is due mainly, if not exclusively, to personal qualities such as talent, intelligence, skills, smartness, efforts, willfulness, hard work or risk taking. Sometimes, we are willing to admit that a certain degree of luck could also play a role in achieving significant material success. But, as a matter of fact, it is rather common to underestimate the importance of external forces in individual successful stories. It is very well known that intelligence (or, more in general, *talent* and personal qualities) exhibits a Gaussian distribution among the population, whereas the distribution of wealth - often considered a proxy of success - follows typically a power law (Pareto law), with a large majority of poor people and a very small number of billionaires. Such a discrepancy between a Normal distribution of inputs, with a typical scale (the average talent or intelligence), and the scale invariant distribution of outputs, suggests that some hidden ingredient is at work behind the scenes. In this paper, with the help of a very simple agent-based toy model, we suggest that such an ingredient is just randomness. In particular, we show that, if it is true that some degree of talent is necessary to be successful in life, almost never the most talented people reach the highest peaks of success, being overtaken by mediocre but sensibly luckier individuals. As to our knowledge, this counterintuitive result - although implicitly suggested between the lines in a vast literature - is quantified here for the first time. It sheds new light on the effectiveness of assessing merit on the basis of the reached level of success and underlines the risks of distributing excessive honors or resources to people who, at the end of the day, could have been simply luckier than others. With the help of this model, several policy hypotheses are also addressed and compared to show the most efficient strategies for public funding of research in order to improve meritocracy, diversity and innovation.

Keywords: Success, Talent, Luck, Randomness, Serendipity, Funding strategies.

1 Introduction

The ubiquity of power-law distributions in many physical, biological or socio-economical complex systems can be seen as a sort of mathematical signature of their strongly correlated dynamic behavior and their scale invariant topological structure [1, 2, 3, 4]. In socio-economic context,

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after Pareto’s work [5, 6, 7, 8, 9], it is well known that the wealth distribution follows a power-law, whose typical long tailed shape reflects the deep existing gap between the rich and the poor in our society. A very recent report [10] shows that today this gap is far greater than it had been feared: eight men own the same wealth as the 3.6 billion people constituting the poorest half of humanity. In the last 20 years, several theoretical models have been developed to derive the wealth distribution in the context of statistical physics and probability theory, often adopting a multi-agent perspective with a simple underlying dynamics [11, 12, 13, 14, 15, 16, 17].

Moving along this line, if one considers the individual wealth as a proxy of success, one could argue that its deeply asymmetric and unequal distribution among people is either a consequence of their natural differences in talent, skill, competence, intelligence, ability or a measure of their willfulness, hard work or determination. Such an assumption is, indirectly, at the basis of the so-called *meritocratic paradigm*: it affects not only the way our society grants work opportunities, fame and honors, but also the strategies adopted by Governments in assigning resources and funds to those who are considered the most deserving individuals.

However, the previous conclusion appears to be in strict contrast with the accepted evidence that human features and qualities cited above are normally distributed among the population, i.e. follow a symmetric Gaussian distribution around a given mean. For example, intelligence, as measured by IQ tests, follows this pattern: average IQ is 100, but nobody has an IQ of 1,000 or 10,000. The same holds for efforts, as measured by hours worked: someone works more hours than the average and someone less, but nobody works a billion times more hours than anybody else.

On the other hand, there is nowadays an ever greater evidence about the fundamental role of chance, luck or, more in general, random factors, in determining successes or failures in our personal and professional lives. In particular, it has been shown that scientists have the same chance along their career of publishing their biggest hit [18]; that those with earlier surname initials are significantly more likely to receive tenure at top departments [19]; that the distributions of bibliometric indicators collected by a scholar might be the result of chance and noise related to multiplicative phenomena connected to a *publish or perish* inflationary mechanism [20]; that one’s position in an alphabetically sorted list may be important in determining access to over-subscribed public services [21]; that middle name initials enhance evaluations of intellectual performance [22]; that people with easy-to-pronounce names are judged more positively than those with difficult-to-pronounce names [23]; that individuals with noble-sounding surnames are found to work more often as managers than as employees [24]; that females with masculine monikers are more successful in legal careers [25]; that roughly half of the variance in incomes across persons worldwide is explained only by their country of residence and by the income distribution within that country [26]; that the probability of becoming a CEO is strongly influenced by your name or by your month of birth [27, 28, 29]; that the innovative ideas are the results of a random walk in our brain network [30]; and that even the probability of developing a cancer, maybe cutting a brilliant career, is mainly due to simple bad luck [31, 32]. Recent studies on lifetime reproductive success further corroborate these statements showing that, if trait variation may influence the fate of populations, luck often governs the lives of individuals [33, 34].

In recent years many authors, among whom the statistician and risk analyst Nassim N. Taleb [35, 36], the investment strategist Michael Mauboussin [37] and the economist Robert H. Frank [38], have explored in several successful books the relationship between luck and skill in financial trading, business, sports, art, music, literature, science and in many other fields. They

reach the conclusion that chance events play a much larger role in life than many people once imagined. Actually, they do not suggest that success is independent of talent and efforts, since in highly competitive arenas or 'winner-takes-all' markets, like those where we live and work today, people performing well are almost always extremely talented and hard-working. Simply, they conclude that talent and efforts are not enough: you have to be also in the right place at the right time. In short: luck also matters, even if its role is almost always underestimated by successful people. This happens because randomness often plays out in subtle ways, therefore it is easy to construct narratives that portray success as having been inevitable. Taleb calls this tendency "narrative fallacy" [36], while the sociologist Paul Lazarsfeld adopts the terminology "hindsight bias". In his recent book "Everything Is Obvious: Once You Know the Answer" [39], the sociologist and network science pioneer Duncan J. Watts, suggests that both narrative fallacy and hindsight bias operate with particular force when people observe unusually successful outcomes and consider them as the necessary product of hard work and talent, while they mainly emerge from a complex and interwoven sequence of steps, each depending on precedent ones: if any of them had been different, an entire career or life trajectory would almost surely differ too. This argument is also based on the results of a seminal experimental study, performed some years before by Watts himself in collaboration with other authors [40], where the success of previously unknown songs in an artificial music market was shown not to be correlated with the quality of the song itself. And this clearly makes very difficult any kind of prediction, as also shown in another more recent study [41].

In this paper, by adopting an agent-based statistical approach, we try to realistically quantify the role of luck and talent in successful careers. In section 2, building on a minimal number of assumptions, i.e. a Gaussian distribution of talent [42] and a multiplicative dynamics for both successes and failures [43], we present a simple model, that we call "Talent vs Luck" (TvL) model, which mimics the evolution of careers of a group of people over a working period of 40 years. The model shows that, actually, randomness plays a fundamental role in selecting the most successful individuals. It is true that, as one could expect, talented people are more likely to become rich, famous or important during their life with respect to poorly equipped ones. But - and this is a less intuitive rationale - ordinary people with an average level of talent are statistically destined to be successful (i.e. to be placed along the tail of some power law distribution of success) much more than the most talented ones, provided that they are more blessed by fortune along their life. This fact is commonly experienced, as pointed in refs.[35, 36, 38], but, to our knowledge, it is modeled and quantified here for the first time.

The success of the averagely-talented people strongly challenges the "meritocratic" paradigm and all those strategies and mechanisms, which give more rewards, opportunities, honors, fame and resources to people considered the best in their field [44, 45]. The point is that, in the vast majority of cases, all evaluations of someone's talent are carried out *a posteriori*, just by looking at his/her performances - or at reached results - in some specific area of our society like sport, business, finance, art, science, etc. This kind of misleading evaluation ends up switching cause and effect, rating as the most talented people those who are, simply, the luckiest ones [46, 47]. In line with this perspective, in previous works, it was advanced a warning against such a kind of "naive meritocracy" and it was shown the effectiveness of alternative strategies based on random choices in many different contexts, such as management, politics and finance [48, 49, 50, 51, 52, 53, 54, 55]. In section 3 we provide an application of our approach and sketch a comparison of possible public funds attribution schemes in the scientific research context. We study the effects of several distributive strategies, among which the "naively" meritocratic one,

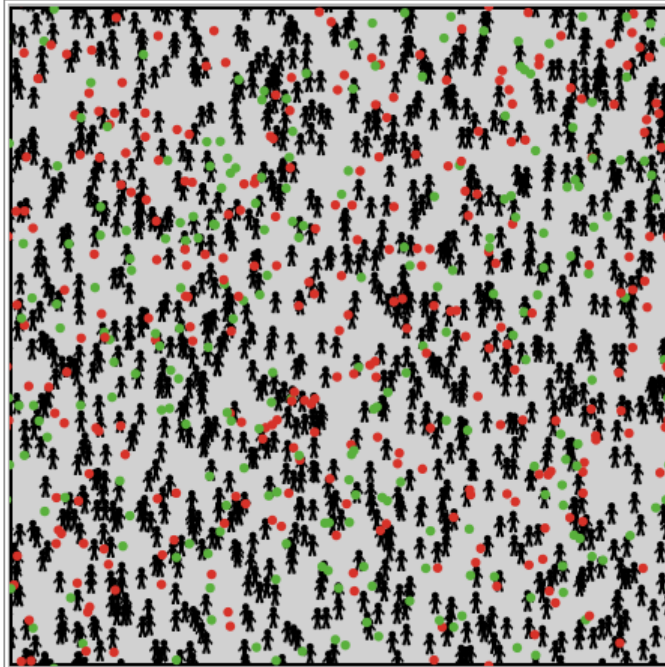


Figure 1: An example of initial setup for our simulations. All the simulations presented in this paper were realized within the NetLogo agent-based model environment [56]. $N = 1000$ individuals (agents), with different degrees of talent (intelligence, skills, etc.), are randomly located in their fixed positions within a square world of 201×201 patches with periodic boundary conditions. During each simulation, which covers several dozens of years, they are exposed to a certain number N_E of lucky (green circles) and unlucky (red circles) events, which move across the world following random trajectories (random walks). In this example $N_E = 500$.

with the aim of exploring new ways to increase both the minimum level of success of the most talented people in a community and the resulting efficiency of the public expenditure. We also explore, in general, how opportunities offered by the environment, as the education and income levels (i.e., external factors depending on the country and the social context where individuals come from), do matter in increasing probability of success. Final conclusive remarks close the paper.

2 The Model

In what follows we propose an agent-based model, called "Talent vs Luck" (TvL) model, which builds on a small set of very simple assumptions, aiming to describe the evolution of careers of a group of people influenced by lucky or unlucky random events.

We consider N individuals, with talent T_i (intelligence, skills, ability, etc.) normally distributed in the interval $[0, 1]$ around a given mean m_T with a standard deviation σ_T , randomly placed in fixed positions within a square world (see Figure 1) with periodic boundary conditions (i.e. with a toroidal topology) and surrounded by a certain number N_E of "moving" events (indicated by dots), someone lucky, someone else unlucky (neutral events are not considered in the model, since they have not relevant effects on the individual life). In Figure 1 we report

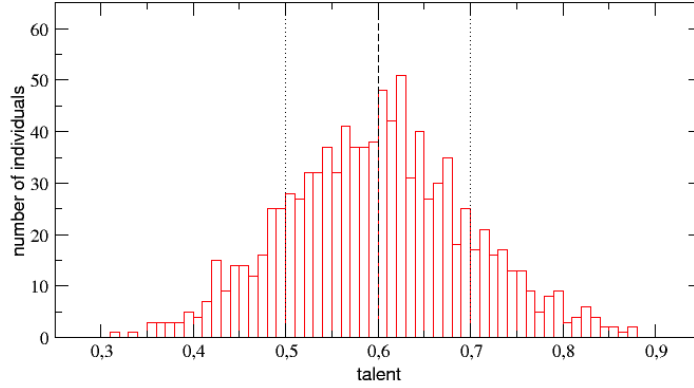


Figure 2: Normal distribution of talent among the the population (with mean $m_T = 0.6$, indicated by a dashed vertical line, and standard deviation $\sigma_T = 0.1$ - the values $m_T \pm \sigma_T$ are indicated by two dotted vertical lines). This distribution is truncated in the interval $[0, 1]$ and does not change during the simulation.

these events as colored points: lucky ones, in green and with relative percentage p_L , and unlucky ones, in red and with percentage $(100 - p_L)$. The total number of event-points N_E are uniformly distributed, but of course such a distribution would be perfectly uniform only for $N_E \rightarrow \infty$. In our simulations, typically will be $N_E \sim N/2$: thus, at the beginning of each simulation, there will be a greater random concentration of lucky or unlucky event-points in different areas of the world, while other areas will be more neutral. The further random movement of the points inside the square lattice, the world, does not change this fundamental features of the model, which exposes different individuals to different amount of lucky or unlucky events during their life, regardless of their own talent.

For a single simulation run, a working life period P of 40 years (from the age of twenty to the age of sixty) is considered, with a time step δ_t equal to six months. At the beginning of the simulation, all agents are endowed with the same amount $C_i = C(0) \forall i = 1, \dots, N$ of capital, representing their starting level of success/wealth. This choice has the evident purpose of not offering any initial advantage to anyone. While the agents' talent is time-independent, agents' capital changes in time. During the time evolution of the model, i.e. during the considered agents' life period, all event-points move randomly around the world and, in doing so, they possibly intersect the position of some agent. More in detail, at each time each event-point covers a distance of 2 patches in a random direction. We say that an intersection does occur for an individual when an event-point is present inside a circle of radius 1 patch centered on the agent (the event-point does not disappear after the intersection). Depending on such an occurrence, at a given time step t (i.e. every six months), there are three different possible actions for a given agent A_k :

1. No event-point intercepts the position of agent A_k : this means that no relevant facts have happened during the last six months; agent A_k does not perform any action.
2. A lucky event intercepts the position of agent A_k : this means that a lucky event has occurred during the last six month (notice that, in line with ref.[30], also the production of an innovative idea is here considered as a lucky event occurring in the agent's brain);

as a consequence, agent A_k doubles her capital/success with a probability proportional to her talent T_k . It will be $C_k(t) = 2C_k(t-1)$ only if $\text{rand}[0, 1] < T_k$, i.e. if the agent is smart enough to profit from his/her luck.

3. An unlucky event intercepts the position of agent A_k : this means that an unlucky event has occurred during the last six month; as a consequence, agent A_k halves her capital/success, i.e. $C_k(t) = C_k(t-1)/2$.

The previous agents' rules (including the choice of dividing by a factor of 2 the initial capital in case of unlucky events and doubling it in case of lucky ones, proportionally to the agent's talent), are intentionally simple and can be considered widely shareable, since they are based on the common sense evidence that success, in everyone life, has the property to both grow or decrease very rapidly. Furthermore, these rules gives a significant advantage to highly talented people, since they can make much better use of the opportunities offered by luck (including the ability to exploit a good idea born in their brains). On the other hand, a car accident or a sudden disease, for example, are always unlucky events where talent plays no role. In this respect, we could more effectively generalise the definition of "talent" by identifying it with "any personal quality which enhances the chance to grab an opportunity". In other words, by the term "talent" we broadly mean intelligence, skill, smartness, stubbornness, determination, hard work, risk taking and so on. What we will see in the following is that the advantage of having a great talent is a *necessary, but not a sufficient*, condition to reach a very high degree of success.

2.1 Single run results

In this subsection we present the results of a typical single run simulation. Actually, such results are very robust so, as we will show later, they can be considered largely representative of the general framework emerging from our model.

Let us consider $N = 1000$ agents, with a starting equal amount of capital $C(0) = 10$ (in dimensionless units) and with a fixed talent $T_i \in [0, 1]$, which follows a normal distribution with mean $m_T = 0.6$ and standard deviation $\sigma_T = 0.1$ (see Figure 2). As previously written, the simulation spans a realistic time period of $P = 40$ years, evolving through time steps of six months each, for a total of $I = 80$ iterations. In this simulation we consider $N_E = 500$ event-points, with a percentage $p_L = 50\%$ of lucky events.

At the end of the simulation, as shown in panel (a) of Figure 3, we find that the simple dynamical rules of the model are able to produce an unequal distribution of capital/success, with a large amount of poor (unsuccessful) agents and a small number of very rich (successful) ones. Plotting the same distribution in log-log scale in panel (b) of the same Figure, a Pareto-like power-law distribution is observed, whose tail is well fitted by the function $y(C) \sim C^{-1.27}$. Therefore, despite the normal distribution of talent, the TvL model seems able to capture the first important feature observed in the comparison with real data: the deep existing gap between rich and poor and its scale invariant nature. In particular, in our simulation, only 4 individuals have more than 500 units of capital and the 20 most successful individuals hold the 44% of the total amount of capital, while almost half of the population stay under 10 units. Globally, the Pareto's "80-20" rule is respected, since the 80% of the population owns only the 20% of the total capital, while the remaining 20% owns the 80% of the same capital. Although this disparity surely seems unfair, it would be to some extent acceptable if the most successful people

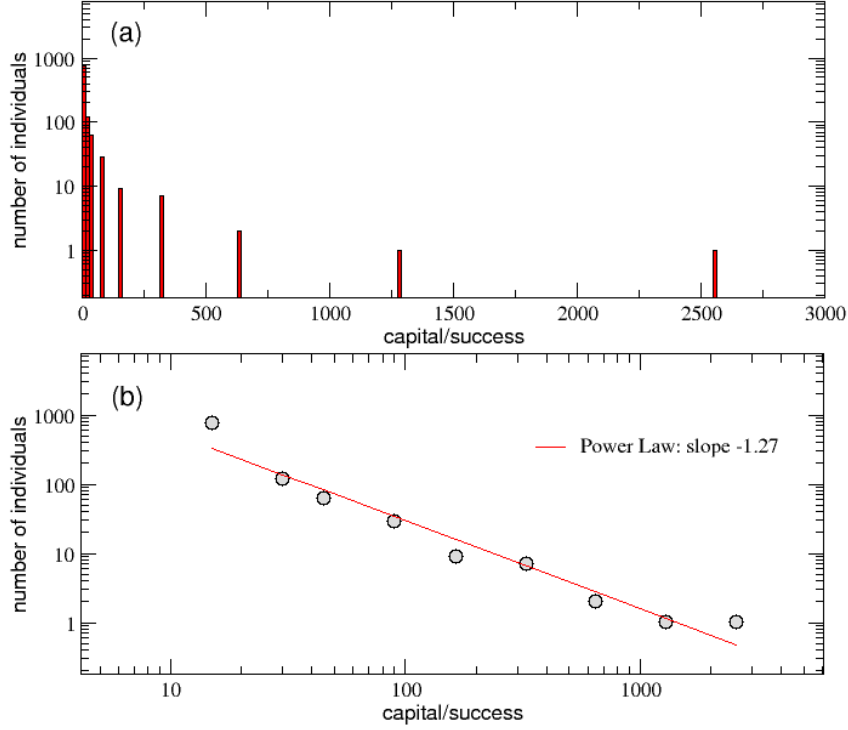


Figure 3: Final distribution of capital/success among the population, both in log-lin (a) and in log-log (b) scale. Despite the normal distribution of talent, the tail of distribution of success - as visible in panel (b) - can be well fitted with a power-law curve with slope -1.27 . We also verified that the capital/success distribution follows the Pareto's "80-20" rule, since 20% of the population owns 80% of the total capital, while the remaining 80% owns the 20% of the capital.

were the most talented one, so deserving to have accumulated more capital/success with respect to the others. But are things really like that?

In panels (a) and (b) of Figure 4, respectively, talent is plotted as function of the final capital/success and vice-versa (notice that, in panel (a), the capital/success takes only discontinuous values: this is due to the choice of having used an integer initial capital equal for all the agents). Looking at both panels, it is evident that, on one hand, the most successful individuals are not the most talented ones and, on the other hand, the most talented individuals are not the most successful ones. In particular, the most successful individual, with $C_{max} = 2560$, has a talent $T^* = 0.61$, only slightly greater than the mean value $m_T = 0.6$, while the most talented one ($T_{max} = 0.89$) has a capital/success lower than 1 unit ($C = 0.625$).

As we will see more in detail in the next subsection, such a result is not a special case, but it is rather the rule for this kind of system: the maximum success never coincides with the maximum talent, and vice-versa. Moreover, such a misalignment between success and talent is disproportionate and highly nonlinear. In fact, the average capital of all people with talent $T > T^*$ is $C \sim 20$: in other words, the capital/success of the most successful individual, who is moderately gifted, is 128 times greater than the average capital/success of people who are more talented than him. We can conclude that, if there is not an exceptional talent behind the enormous success of some people, another factor is probably at work. Our simulation clearly

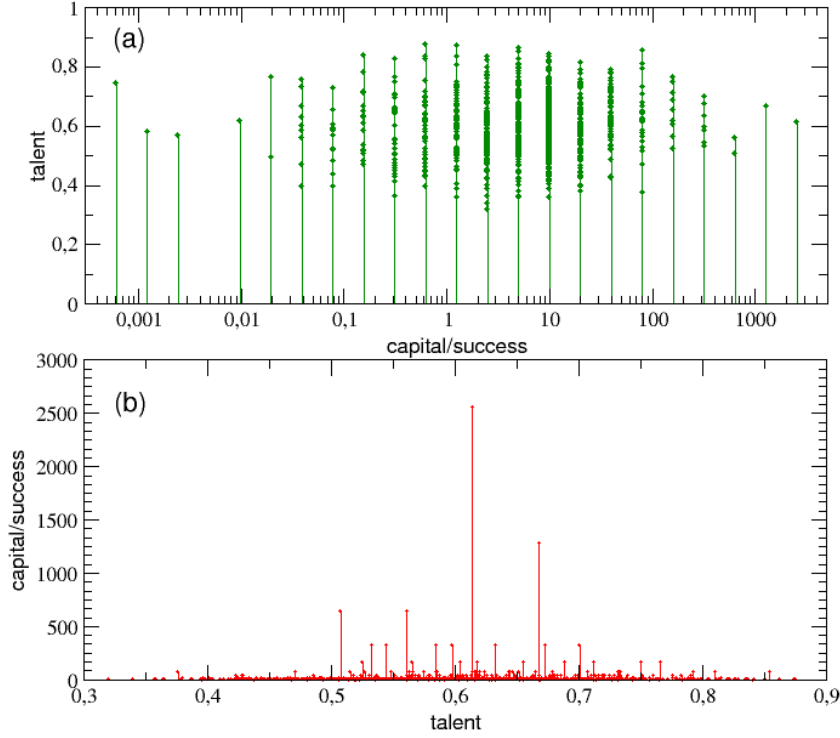


Figure 4: In panel (a) talent is plotted as function of capital/success (in logarithmic scale for a better visualization): it is evident that the most successful individuals are not the most talented ones. In panel (b), vice-versa, capital/success is plotted as function of talent: here, it can be further appreciated the fact that the most successful agent, with $C_{max} = 2560$, has a talent only slightly greater than the mean value $m_T = 0.6$, while the most talented one has a capital/success lower than $C = 1$ unit, much less of the initial capital $C(0)$. See text for further details.

shows that such a factor is just pure luck.

In Figure 5 the number of lucky and unlucky events occurred to all people during their working lives is reported as a function of their final capital/success. Looking at panel (a), it is evident that the most successful individuals are also the luckiest ones (notice that it in this panel are reported all the lucky events occurred to the agents and not just those that they took advantage of, proportionally to their talent). On the contrary, looking at panel (b), it results that the less successful individuals are also the unluckiest ones. In other words, although there is an absence of correlation between success and talent coming out of the simulations, there is also a very strong correlation between success and luck. Analyzing the details of the frequency distributions of the number of lucky or unlucky events occurred to individuals, we found - as shown in panels (c) and (d) - that both of them are exponential, with exponents 0.64 and 0.48, and averages 1.35 and 1.66, respectively, and that the maximum numbers of lucky or unlucky events occurred were, respectively, 10 and 15. Moreover about 16% of people had a "neutral" life, without lucky or unlucky events at all, while about 40% of individuals exclusively experienced only one type of events (lucky or unlucky).

It is also interesting to look at the time evolution of the success/capital of both the most successful individual and the less successful one, compared with the corresponding sequence of

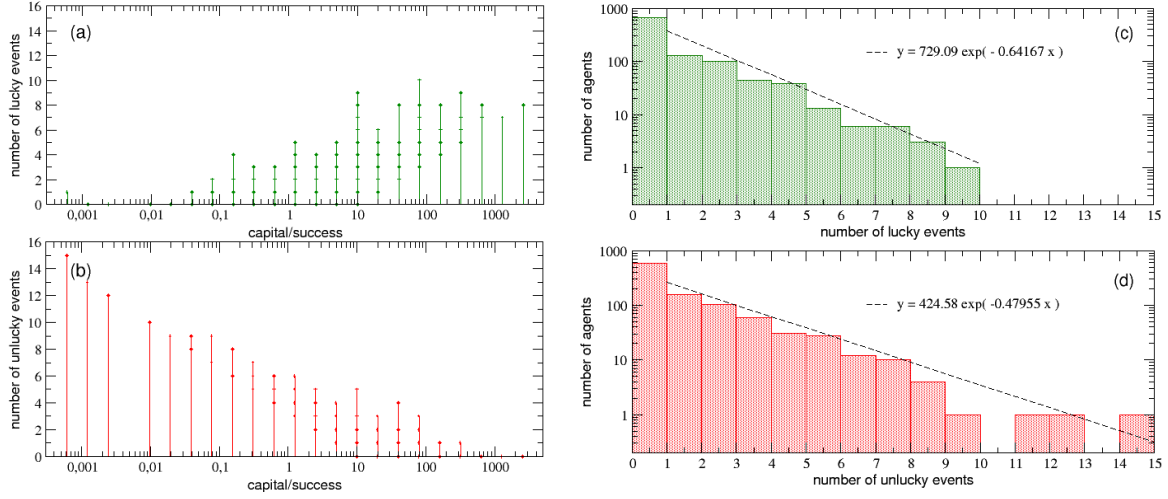


Figure 5: Total number of lucky events (a) or unlucky events (b) as function of the capital/success of the agents. The plot shows the existence of a strong correlation between success and luck: the most successful individuals are also the luckiest ones, while the less successful are also the unluckiest ones. Again, having used an initial capital equal for all the agents, it follows that several events are grouped in discontinuous values of the capital/success. In panels (c) and (d) the frequency distributions of, respectively, the number of lucky and unlucky events are reported in log-linear scale. As visible, both the distributions can be well fitted by exponential distributions with similar negative exponents.

lucky or unlucky events occurred during the 40 years (80 time steps, one every 6 months) of their working life. This can be observed, respectively, in the left and the right part of Figure 6. Differently from the panel (a) of Figure 5, in the bottom panels of this figure only lucky events that agents have taken advantage of thanks to their talent, are shown.

In panels (a), concerning the moderately talented but most successful individual, it clearly appears that, after about a first half of his working life with a low occurrence of lucky events (bottom panel), and then with a low level of capital (top panel), a sudden concentration of favorable events between 30 and 40 time steps (i.e. just before the age of 40 of the agent) produces a rapid increase in capital, which becomes exponential in the last 10 time steps (i.e. the last 5 years of the agent's career), going from $C = 320$ to $C_{max} = 2560$.

On the other hand, looking at (top and bottom) panels (b), concerning the less successful individual, it is evident that a particularly unlucky second half of his working life, with a dozen of unfavorable events, progressively reduces the capital/success bringing it at its final value of $C = 0.00061$. It is interesting to notice that this poor agent had, however, a talent $T = 0.74$ which was greater than that of the most successful agent. Clearly, good luck made the difference. And, if it is true that the most successful agent has had the merit of taking advantage of all the opportunities presented to him (in spite of his average talent), it is also true that if your life is as unlucky and poor of opportunities as that of the other agent, even a great talent becomes useless against the fury of misfortune.

All the results shown in this subsection for a single simulation run¹ are very robust and, as

¹A demo version of the NetLogo code of the TvL model used for the single run simulations can be found on the Open ABM repository - <https://www.comses.net/codebases/>

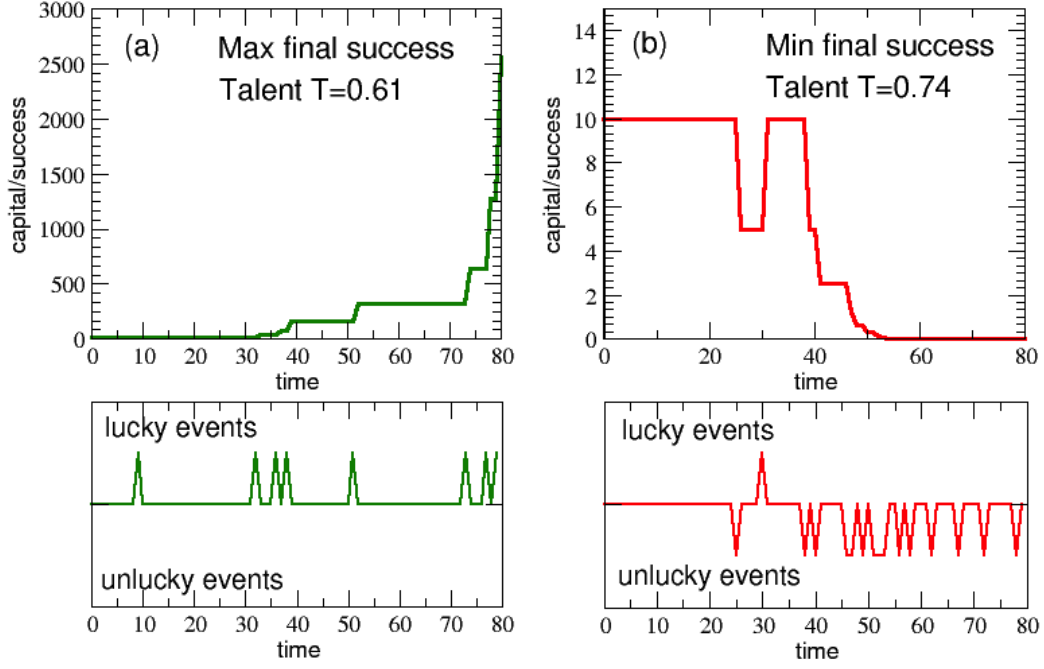


Figure 6: (a) Time evolution of success/capital for the most successful individual and (b) for the less successful one, compared with the corresponding sequences of lucky or unlucky events occurred during their working lives (80 semesters, i.e. 40 years). The time occurrence of these events is indicated, in the bottom panels, with upwards or downwards spikes.

we will see in the next subsection, they persist, with small differences, if we repeat many times the simulations starting with the same talent distribution, but with a different random positions of the individuals.

2.2 Multiple runs results

In this subsection we present the global results of a simulation averaging over 100 runs, each starting with different random initial conditions. The values of the control parameters are the same of those used in the previous subsection: $N = 1000$ individuals, $m_T = 0.6$ and $\sigma_T = 0.1$ for the normal talent distribution, $I = 80$ iteration (each one representing $\delta_t = 6$ months of working life), $C(0) = 10$ units of initial capital, $N_E = 500$ event-points and a percentage $p_L = 50\%$ of lucky events.

In panel (a) of Figure 7, the global distribution of the final capital/success for all the agents collected over the 100 runs is shown in log-log scale and it is well fitted by a power law curve with slope -1.33 . The scale invariant behavior of capital and the consequent strong inequality among individuals, together with the Pareto's "80-20" rule observed in the single run simulation, are therefore conserved also in the case of multiple runs. Indeed, the gap between rich (successful) and poor (unsuccessful) agents has even increased, since the capital of the most successful people surpass now the 40000 units.

This last result can be better appreciated looking at panel (b), where the final capital C_{max}

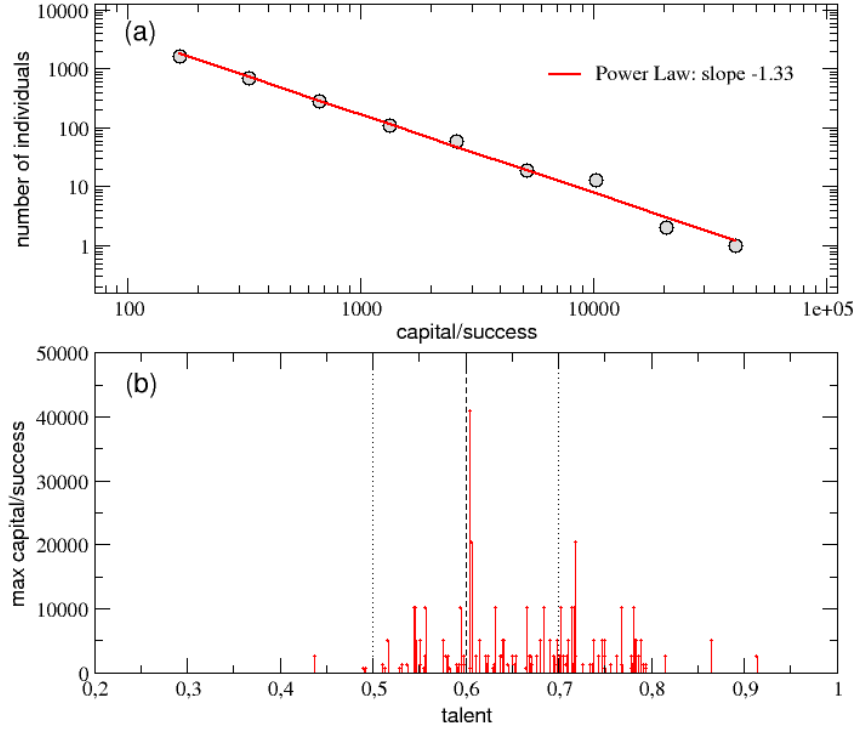


Figure 7: Panel (a): Distribution of the final capital/success calculated over 100 runs for a population with different random initial conditions. The distribution can be well fitted with a power-law curve with a slope -1.33 . Panel (b): The final capital C_{max} of the most successful individual in each of the 100 runs is reported as function of their talent. People with a medium-high talent result to be, on average, more successful than people with low or medium-low talent, but very often the most successful individual is a moderately gifted agent and only rarely the most talented one. The m_T value, together with the values $m_T \pm \sigma_T$, are also reported as vertical dashed and dot lines respectively.

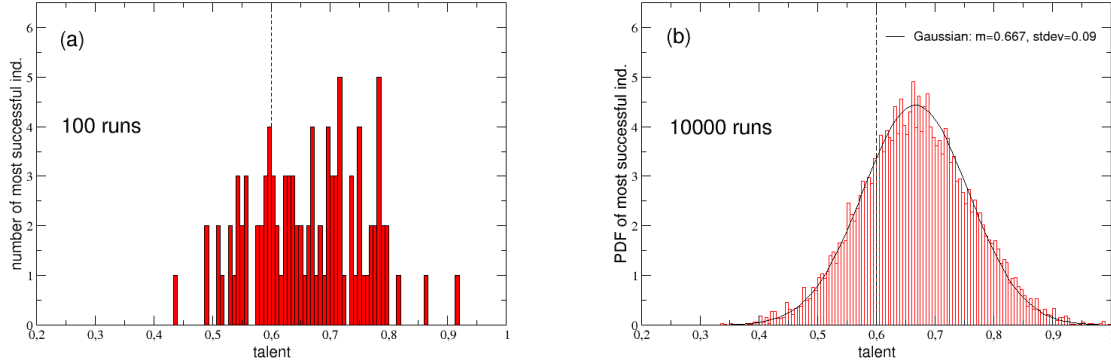


Figure 8: (a) Talent distribution of the most successful individuals (best performers) in each of the 100 runs. (b) Probability distribution function of talent of the most successful individuals calculated over 10000 runs: it is well fitted by a normal distribution with mean 0.667 and standard deviation 0.09 (solid line). The mean $m_T = 0.6$ of the original normal distribution of talent in the population is reported for comparison as a vertical dashed line in both panels.

of the most successful individuals only, i.e. of the best performers for each one of the 100 runs, is reported as function of their talent. The best score was realized by an agent with a talent $T_{best} = 0.6048$, practically coinciding with the mean of the talent distribution ($m_T = 0.6$), who reached a peak of capital $C_{best} = 40960$. On the other hand, the most talented among the most successful individuals, with a talent $T_{max} = 0.91$, accumulated a capital $C_{max} = 2560$, equal to only 6% of C_{best} .

To address this point in more detail, in Figure 8 (a) we plot the talent distribution of the best performers calculated over 100 runs. The distribution seems to be shifted to the right of the talent axis, with a mean value $T_{av} = 0.66 > m_T$: this confirms, on one hand, that a medium-high talent is often necessary to reach a great success; but, on the other hand, it also indicates that it is almost never sufficient, since agents with the highest talent (e.g. with $T > m_T + 2\sigma_T$, i.e. with $T > 0.8$) result to be the best performers only in 3% of cases, and their capital/success never exceeds the 13% of C_{best} .

In Figure 8 (b) the same distribution (normalized to unitary area in order to obtain a PDF) is calculated over 10000 runs, in order to appreciate its true shape: it appears to be well fitted by a Gaussian $G(T)$ with average $T_{av} = 0.667$ and standard deviation 0.09 (solid line). This definitely confirms that the talent distribution of the best performers is shifted to the right of the talent axis with respect to the original distribution of talent. More precisely, this means that the conditional probability $P(C_{max}|T) = G(T)dT$ to find among the best performers an individual with talent in the interval $[T, T+dT]$ increases with the talent T , reaches a maximum around a medium-high talent $T_{av} = 0.66$, then rapidly decreases for higher values of talent. In other words, the probability to find a moderately talented individual at the top of success is higher than that of finding there a very talented one. Notice that, in a ideal world in which talent were the main cause of success, one expects $P(C_{max}|T)$ to be an increasing function of T . Therefore, we can conclude that the observed Gaussian shape of $P(C_{max}|T)$ is the proof that

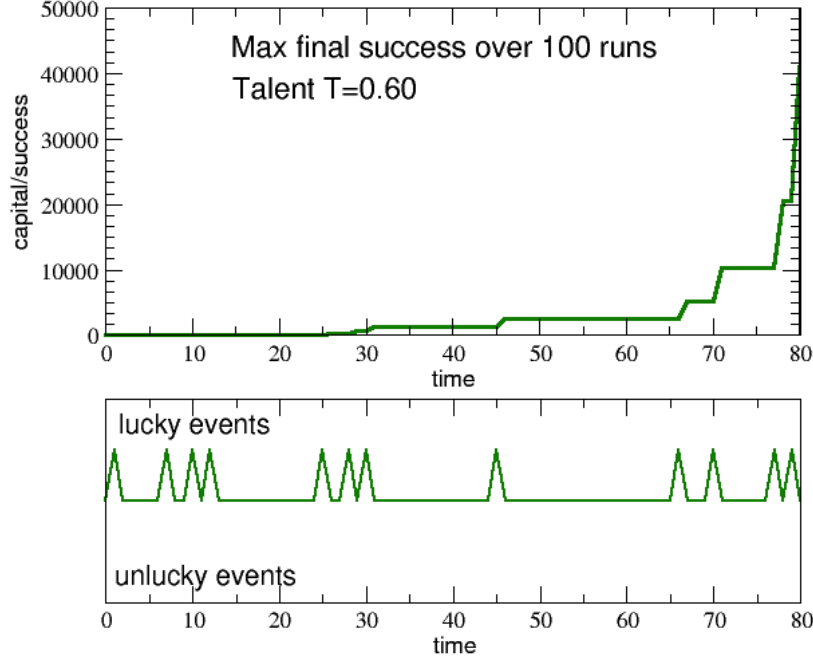


Figure 9: Time evolution of success/capital for the most successful (but moderately gifted) individual over the 100 simulation runs, compared with the corresponding unusual sequence of lucky events occurred during her working life.

luck matters more than talent in reaching very high levels of success.

It is also interesting to compare the average capital/success $C_{mt} \sim 63$, over 100 runs, of the most talented people and the corresponding average capital/success $C_{at} \sim 33$ of people with talent very close to the mean m_T . We found in both cases quite small values (although greater than the initial capital $C(0) = 10$), but the fact that $C_{mt} > C_{at}$ indicates that, even if the probability to find a moderately talented individual at the top of success is higher than that of finding there a very talented one, the most talented individuals of each run have, on average, more success than moderately gifted people. On the other hand, looking at the average percentage, over the 100 runs, of individuals with talent $T > 0.7$ (i.e. greater than one standard deviation from the average) and with a final success/capital $C_{end} > 10$, calculated with respect to all the agents with talent $T > 0.7$ (who are, on average for each run, ~ 160), we found that this percentage is equal to 32%: this means that the aggregate performance of the most talented people in our population remains, on average, relatively small since only one third of them reaches a final capital greater than the initial one.

In any case, it is a fact that the absolute best performer over the 100 simulation runs is an agent with talent $T_{best} = 0.6$, perfectly aligned with the average, but with a final success $C_{best} = 40960$ which is 650 times greater than C_{mt} and more than 4000 times greater than the success $C_{end} < 10$ of 2/3 of the most talented people. This occurs just because, at the end of the story, she was just luckier than the others. Indeed, very lucky, as it is shown in Figure 9, where the increase of her capital/success during her working life is shown, together with the impressive sequence of lucky (and only lucky) events of which, despite the lack of particular talent, she was

able to take advantage of during her career.

Summarizing, what has been found up to now is that, in spite of its simplicity, the TvL model seems able to account for many of the features characterizing, as discussed in the introduction, the largely unequal distribution of richness and success in our society, in evident contrast with the Gaussian distribution of talent among human beings. At the same time, the model shows, in quantitative terms, that a great talent is not sufficient to guarantee a successful career and that, instead, less talented people are very often able to reach the top of success - another "stylised fact" frequently observed real life [35, 36, 38].

The key point, which intuitively explains how it may happen that moderately gifted individuals achieve (so often) far greater honors and success than much more talented ones, is the hidden and often underestimated role of luck, as resulting from our simulations. But to understand the real meaning of our findings it is important to distinguish the *macro* from the *micro* point of view.

In fact, from the *micro* point of view, following the dynamical rules of the TvL model, a talented individual has a greater *a priori* probability to reach a high level of success than a moderately gifted one, since she has a greater ability to grasp any opportunity will come. Of course, luck has to help her in yielding those opportunities. Therefore, from the point of view of a single individual, we should therefore conclude that, being impossible (by definition) to control the occurrence of lucky events, the best strategy to increase the probability of success (at any talent level) is to broaden the personal activity, the production of ideas, the communication with other people, seeking for diversity and mutual enrichment. In other words, to be an open-minded person, ready to be in contact with others, exposes to the highest probability of lucky events (to be exploited by means of the personal talent).

On the other hand, from the *macro* point of view of the entire society, the probability to find moderately gifted individuals at the top levels of success is greater than that of finding there very talented ones, because moderately gifted people are much more numerous and, with the help of luck, have - globally - a statistical advantage to reach a great success, in spite of their lower individual *a priori* probability.

In the next section we will address such a *macro* point of view, by exploring the possibilities offered by our model to investigate in detail new and more efficient strategies and policies to improve the average performance of the most talented people in a population, implementing more efficient ways of distributing prizes and resources. In fact, being the most talented individuals the engine of progress and innovation in our society, we expect that any policy able to improve their level of success will have a beneficial effect on the collectivity.

3 Effective strategies to counterbalance luck

The results presented in the previous section are strongly consistent with largely documented empirical evidences, discussed in the introduction, which firmly question the naively meritocratic assumption claiming that the natural differences in talent, skill, competence, intelligence, hard work or determination are the only causes of success. As we have shown, luck also matters and it can play a very important role. The interpretative point is that, being individual qualities difficult to be measured (in many cases hardly defined in rigorous terms), the meritocratic strategies used to assign honors, funds or rewards are often based on individual performances, valued in terms of personal wealth or success. Eventually, such strategies exert a further reinforcing action

and pump up the wealth/success of the luckiest individuals through a positive feedback mechanism, which resembles the famous "rich get richer" process (also known as "Matthew effect" [57, 58, 59]), with an unfair final result.

Let us consider, for instance, a publicly-funded research granting council with a fixed amount of money at its disposal. In order to increase the average impact of research, is it more effective to give large grants to a few apparently excellent researchers, or small grants to many more apparently ordinary researchers? A recent study [44], based on the analysis of four indices of scientific impact involving publications, found that impact is positively, but only weakly, related to funding. In particular, impact per dollar was lower for large grant-holders and the impact of researchers who received increases in funding did not increase in a significant way. The authors of the study conclude that scientific impact (as reflected by publications) is only weakly limited by funding and suggest that funding strategies targeting diversification of ideas, rather than "excellence", are likely to be more productive. A more recent contribution [60] showed that, both in terms of the quantity of papers produced and of their scientific impact, the concentration of research funding generally produces diminishing marginal returns and also that the most funded researchers do not stand out in terms of output and scientific impact. Actually, such conclusions should not be a surprise in the light of the other recent finding [18] that impact, as measured by influential publications, is randomly distributed within a scientist's temporal sequence of publications. In other words, if luck matters, and if it matters more than we are willing to admit, it is not strange that meritocratic strategies reveal less effective than expected, in particular if we try to evaluate merit *ex-post*. In previous studies [48, 49, 50, 51, 52, 53, 54, 55], there was already a warning against this sort of "naive meritocracy", showing the effectiveness of alternative strategies based on random choices in management, politics and finance. Consistently with such a perspective, the TvL model shows how the minimum level of success of the most talented people can be increased, in a world where luck is important and serendipity is often the cause of important discoveries.

3.1 Serendipity, innovation and efficient funding strategies

The term "serendipity" is commonly used in the literature to refer to the historical evidence that very often researchers make unexpected and beneficial discoveries by chance, while they are looking for something else [61, 62]. There is a long anecdotal list of discoveries made just by lucky opportunities: from penicillin by Alexander Fleming to radioactivity by Marie Curie, from cosmic microwave background radiation by radio astronomers Arno Penzias and Robert Woodrow Wilson to the graphene by Andre Geim and Kostya Novoselov. Just to give a very recent example, a network of fluid-filled channels in the human body, that may be a previously-unknown organ and that seems to help transport cancer cells around the body, was discovered by chance, from routine endoscopies [63]. Therefore, many people think that curiosity-driven research should always be funded, because nobody can really know or predict where it can lead to [64].

Is it possible to quantify the role of serendipity? Which are the most efficient ways to stimulate serendipity? Serendipity can take on many forms, and it is difficult to constrain and quantify. That is why, so far, academic research has focused on serendipity in science mainly as a philosophical idea. But things are changing. The European Research Council has recently given to the biochemist Ohid Yaqub a 1.7 million US dollars grant to quantify the role of serendipity in science [65]. Yaqub found that it is possible to classify serendipity into four basic types [66]

and that there may be important factors affecting its occurrence. His conclusions seem to agree with ideas developed in earlier works [67, 68, 69, 70, 71, 72] which argues that the commonly adopted - apparently meritocratic - strategies, which pursuit excellence and drive out variety, seem destined to be losing and inefficient. The reason is that they cut out *a priori* researches that initially appear less promising but that, thanks also to serendipity, could be extremely innovative *a posteriori*.

From this perspective, we want to use the TvL model, which naturally incorporates luck (and therefore also serendipity) as a quantitative tool for policy, in order to explore, in this subsection, the effectiveness of different funding scenarios. In particular, in contexts where, as above discussed, averagely-talented-but-lucky people are often more successful than more-gifted-but-unlucky individuals, it is important to evaluate the efficiency of funding strategies in preserving a minimum level of success also for the most talented people, who are expected to produce the most progressive and innovative ideas.

Starting from the same parameters setup used in subsection 2.2, i.e. $N = 1000$, $m_T = 0.6$, $\sigma_T = 0.1$, $I = 80$, $\delta_t = 6$, $C(0) = 10$, $N_E = 500$, $p_L = 50\%$ and 100 simulation runs, let us imagine that a given total funding capital F_T is periodically distributed among individuals following different criteria. For example, funds could be assigned:

1. in equal measure to all (*egalitarian criterion*), in order to foster research diversification;
2. only to a given percentage of the most successful ("best") individuals (*elitarian criterion*), which has been previously referred to "naively" meritocratic, for it distributes funds to people according to their past performance;
3. by distributing a "premium" to a given percentage of the most successful individuals and the remaining amount in smaller equal parts to all the others (*mixed criterion*);
4. only to a given percentage individuals, randomly selected (*selective random criterion*);

We realistically assume that the total capital F_T will be distributed every 5 years, during the 40 years spanned by each simulation run, so that $F_T/8$ units of capital will be allocated from time to time. Thanks to the periodic injection of these funds, we intend to maintain a minimum level of resources for the most talented agents. Therefore, a good indicator, for the effectiveness of the adopted funding strategy, could be the percentage P_T , averaged over the 100 simulation runs, of individuals with talent $T > m_T + \sigma_T$ whose final success/capital is greater than the initial one, i.e. $C_{end} > C(0)$.

This percentage has already been calculated, in the multiple runs simulation presented in section 2.2. There, we have shown that, in absence of funding, the best performance was scored by very lucky agents with a talent close to the mean, while the capital/success of the most talented people always remained very low. In particular, only a percentage $P_{T0} \sim 32\%$ of the total number of agents with $T > 0.7$ reached, at the end of the simulation, a capital/success greater than the initial one. Hence, in order to compare the efficiency of different funding strategies, the increment in the average percentage P_T of talented people which, during their career, increase their initial capital/success should be calculated with respect to P_{T0} . Let us define this increment as $P_T^* = P_T - P_{T0}$. The latter quantity is a very robust indicator: we have checked that repeating the set of 100 simulations, the variation in the value of P_T^* remains under 2%. Finally, if one considers the ratio between P_T^* and the total capital F_T distributed among

FUNDING-TARGET	E_{norm}	P_T	$P_T^* = P_T - P_{T0}$	F_T
ALL EQUAL 1u	1,00	69,48	37,43	8000
10% RANDOM 5u	0,85	49,83	17,78	4000
25% RANDOM 5u	0,79	68,00	35,95	10000
ALL EQUAL 2u	0,74	84,02	51,97	16000
50% RANDOM 5u	0,58	82,91	50,86	20000
25% BEST 5u, OTHERS 1u	0,55	70,83	38,78	16000
25% BEST 10u, OTHERS 1u	0,37	73,44	41,39	26000
ALL EQUAL 5u	0,37	94,40	62,35	40000
25% RANDOM 20u	0,31	84,74	52,69	40000
50% BEST 5u	0,25	54,26	22,21	20000
25% BEST 10u, OTHERS 5u	0,21	94,82	62,77	70000
25% BEST 5u	0,20	41,08	9,03	10000
25% BEST 10u	0,12	42,33	10,28	20000
10% BEST 5u	0,10	34,14	2,09	4000
25% BEST 15u	0,09	43,51	11,46	30000
25% BEST 20u	0,07	44,26	12,21	40000
10% BEST 10u	0,06	34,41	2,36	8000
10% BEST 20u	0,04	34,98	2,93	16000
NO FUNDING	0,00	32,05	0,00	0

Figure 10: Funding strategies Table. The outcomes of the normalized efficiency index E_{norm} are reported (2nd column) in decreasing order, from top to bottom, for several funding distribution strategies with different targets (1st column). The corresponding values of both the percentage P_T of successful talented people and its net increase P_T^* with respect to the "no funding" case, averaged over the 100 simulation runs, are also reported in the third and fourth columns respectively. Finally, the total capital F_T invested in each run, is visible in the last column.

all the agents during the 40 years, it is possible to obtain an *efficiency index* E , which quantifies the increment of sufficiently successful talented people per unit of invested capital, defined as $E = P_T^*/F_T$.

In the table shown in Figure 10, we report the efficiency index (2nd column) obtained for several funding distribution strategies, each one with a different funding target (1st column), together with the corresponding values of P_T (3rd column) and P_T^* (4th column). The total capital F_T invested in each run is also reported in the last column. The efficiency index E has been normalized to its maximum value E_{max} and the various records (rows) have been ordered for decreasing values of $E_{norm} = E/E_{max}$. For the no funding case, by definition, $E_{norm} = 0$. The same scores for E_{norm} are also reported in the form of a histogram in Figure 11, as a function of the adopted funding strategies. Thanks to the statistical robustness of P_T , which shows fluctuations smaller than 2%, the results reported for the efficiency index E_{norm} are particularly stable.

Looking at the table and at the relative histogram of Figure 11, it is evident that, if the goal is to reward the most talented persons (thus increasing their final level of success), it is much more convenient to distribute periodically (even small) equal amounts of capital to all

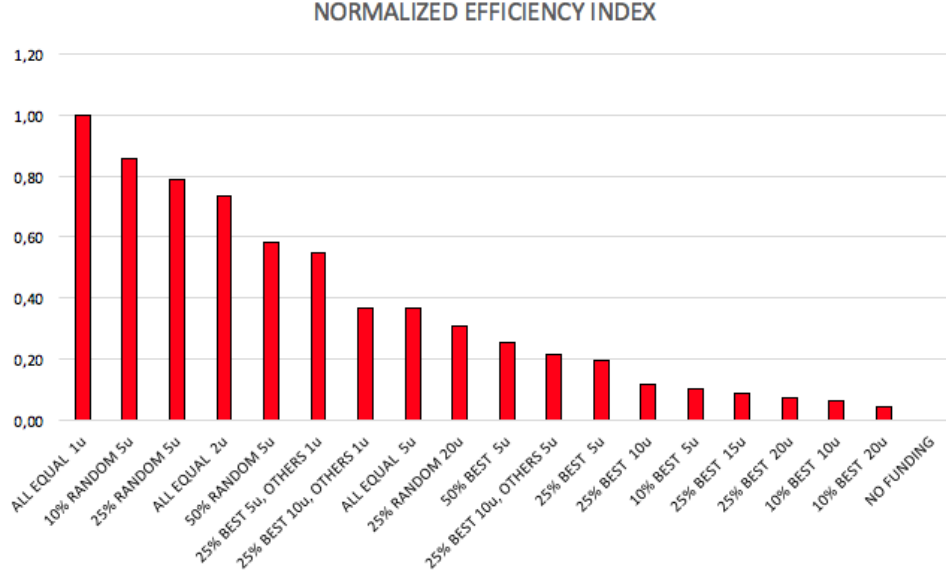


Figure 11: Normalized Efficiency index for several funding strategies. The values of the normalized efficiency index E_{norm} are reported as function of the different funding strategies. The figure shows that for increasing the success of a larger number of talented people with $C_{end} > C(0)$, it is much more efficient to give a small amount of funds to many individuals instead of giving funds in other more selective ways.

individuals rather than to give a greater capital only to a small percentage of them, selected through their level of success - already reached - at the moment of the distribution.

On one hand, the histogram shows that the "egalitarian" criterion, which assigns 1 unit of capital every 5 years to all the individuals is the most efficient way to distribute funds, being $E_{norm} = 1$ (i.e. $E = E_{max}$): with a relatively small investment F_T of 8000 units, it is possible to double the percentage of successful talented people with respect to the "no funding" case, bringing it from $P_{T0} = 32.05\%$ to $P_T = 69.48\%$, with a net increase $P_T^* = 37.43\%$. Considering an increase of the total invested capital (for example, setting the egalitarian quotas to 2 or 5 units), this strategy also ensures a further increment in the final percentage of successful talented people P_T (from 69.48% to 84.02% and to 94.40%), even if the normalized efficiency progressively decreases from $E_{norm} = 1$ to $E_{norm} = 0.74$ and to $E_{norm} = 0.37$.

On the other hand, the "elitarian" strategies which assign every 5 years more funds (5, 10, 15 or 20 units) only to the best 50%, 25% or even 10% of the already successful individuals, are all at the bottom of the ranking, with $E_{norm} < 0.25$: in all of these cases, the net increase P_T^* in the final number of successful talented people with respect to the "no funding" case remains very small (in almost all the cases smaller than 20%), often against a much larger invested capital if compared to that of the egalitarian strategy. These results do reinforce the thesis that this kind of approach is only apparently - i.e. naively - meritocratic.

It is worth noticing that the adoption of a "mixed" criterion, i.e. assigning a "meritocratic" funding share to a certain percentage of the most successful individuals, for instance 25%, and distributing the remaining funds in equal measure to the rest of people, gives back better scores for the efficiency index values with respect to the "naively meritocratic" approach. However, the performance of this strategy is not able to overtake the "egalitarian" criterion. As it clearly

FUNDING-TARGET	E_{norm}	P_T	$P_T^* = P_T - P_{T0}$	F_T
ALL EQUAL	1,00	98,14	67,68	80000
50% RANDOM	0,98	97,12	66,66	80000
HALF 25% BEST, HALF TO OTHERS	0,97	96,13	65,67	80000
25% RANDOM	0,85	87,67	57,21	80000
10% RANDOM	0,54	66,73	36,27	80000
50% BEST	0,45	61,19	30,73	80000
25% BEST	0,22	45,31	14,85	80000
10% BEST	0,06	34,83	4,37	80000
NO FUNDING	0,00	30,46	0,00	0

Figure 12: Funding strategies Table with fixed funds. The outcomes of the normalized efficiency index E_{norm} are reported again in decreasing order, from top to bottom, for several funding distribution strategies with different targets (1st column). At variance with Fig. 10, now the total capital invested in each run was fixed to $F_T = 80000$. The egalitarian strategy is, again, at the top of the ranking.

appears - for example - by the comparison between the sixth and the fourth rows of the funding table, in spite of the same overall investment of 16000 units, the value of P_T obtained with the mixed criterion stays well below the one obtained with the egalitarian approach (70.83% against 84.02%), as also confirmed by the values of the corresponding efficiency index E_{norm} (0.55 against 0.74).

If one considers psychological factors (not modeled in this study), a mixed strategy could be revalued with respect to the egalitarian one. Indeed, the premium reward - assigned to the more successful individuals - could induce all agents towards a greater commitment, while the equally distributed part would play a twofold role: at the individual level, it would act in fostering variety and providing unlucky talented people with new chances to express their potential, while feeding serendipity at the aggregate level, thus contributing to the progress of research and of the whole society.

Looking again at the funding strategy table, it is also worthwhile to stress the surprising high efficiency of the random strategies, which occupy two out of the three best scores in the general ranking. It results that, for example, a periodic reward of 5 units for only the 10% of randomly selected individuals, with a total investment of just 4000 units, gives a net increase $P_T^* = 17,78\%$, which is greater than almost all those obtained with the elitarian strategies. Furthermore, increasing to 25% the percentage of randomly funded people and doubling the overall investment (bringing it to 10000 units), the net increase $P_T^* = 35.95\%$ becomes comparable to that obtained with the best egalitarian strategy, first in the efficiency ranking. It is striking to notice that this latter score for P_T^* is approximately four times greater than the value ($P_T^* = 9.03\%$) obtained with the elitarian approach (see 12th row in the table), distributing exactly the same capital (10000 units) to exactly the same number of individuals (25% of the total). The latter is a further confirmation that, in complex social and economical contexts where chance plays a relevant role, the efficiency of alternative strategies based on random choices can easily overtake that of standard strategies based on the "naively meritocratic" approach. Such a counterintuitive phenomenon, already observed in management, politics and finance ([48, 49, 50, 51, 52, 53, 54, 55]), finds therefore new evidence also in the research funding context.

To further corroborate these findings, in Figure 12, the results of another set of simulations

are presented. At variance with the previous simulations, the total capital invested in each one of the 100 runs is now fixed to $F_T = 80000$, so that $F_T/8 = 10000$ units are distributed every 5 years among the agents following the main funding strategies already considered. Looking at the table, the egalitarian strategy results again the most efficient in rewarding the most talented people, with a percentage P_T close to 100%, immediately followed by the random strategy (with 50% of randomly funded individuals) and by the mixed one, with half of the capital distributed to the 25% of the most successful individuals and the other half in equal measure to the remaining people. On the contrary, all the elitarian strategies are placed again at the bottom of the ranking, thus further confirming the inefficiency of the "naively meritocratic" approach in rewarding real talent.

The results of the TvL model simulations presented in this subsection, have focused on the importance of external factors (as, indeed, efficient funding policies) in increasing the opportunities of success for the most talented individuals, too often penalized by unlucky events. In the next subsection we investigate to what extent new opportunities can be originated by changes in the environment as for example the level of education or other stimuli received by the social context where people live or come from.

3.2 The importance of the environment

First, let us estimate the role of the average level of education among the population. Within the TvL model, the latter could be obtained by changing the parameters of the normal distribution of talent. Actually, assuming that talent and skills of individuals, if stimulated, could be more effective in exploiting new opportunities, an increase in either the mean m_T or the standard deviation σ_T of the talent distribution could be interpreted as the effect of policies targeted, respectively, either at raising the average level of education or at reinforcing the training of the most gifted people.

In the two panels of Figure 13 we report the final capital/success accumulated by the best performers in each of the 100 runs, as function of their talent. The parameters setup is the same than in subsection 2.2 ($N = 1000$, $I = 80$, $\delta_t = 6$, $C(0) = 10$, $N_E = 500$ and $p_L = 50\%$) but with different moments for the talent distributions. In particular, in panel (a) we left unchanged $m_T = 0.6$ but increased $\sigma_T = 0.2$, while in panel (b) we made the opposite, leaving $\sigma_T = 0.1$ but increasing $m_T = 0.7$. In both cases, a shift on the right of the maximum success peaks can be appreciated, but with different details.

Actually, it results that increasing σ_T without changing m_T , as shown in panel (a), enhances the chances for more talented people to get a very high success: the best performer is, now, a very talented agent with $T = 0.97$, who reaches an incredible level of capital/success $C_{best} = 655360$. This, on one hand, could be considered positive but, on the other hand, it is an isolated case and it has, as a counterpart, an increase in the gap between unsuccessful and successful people.

Looking now at panel (b), it results that increasing m_T without changing σ_T produces a best performer, with $C_{best} = 327680$ and a talent $T = 0.8$, followed by other two with $C = 163840$ and, respectively, $T = 0.85$ and $T = 0.92$. This means that also in this case the chances for more talented people to get a very high success are enhanced, while the gap between unsuccessful and successful people is lower than before.

Finally, in both considered examples, the average value of the capital/success for the most talented people over the 100 runs is increased with respect to the value $C_{mt} \sim 63$ found in subsection 2.2. In particular, we found $C_{mt} \sim 319$ for panel (a) and $C_{mt} \sim 122$ for panel (b), but

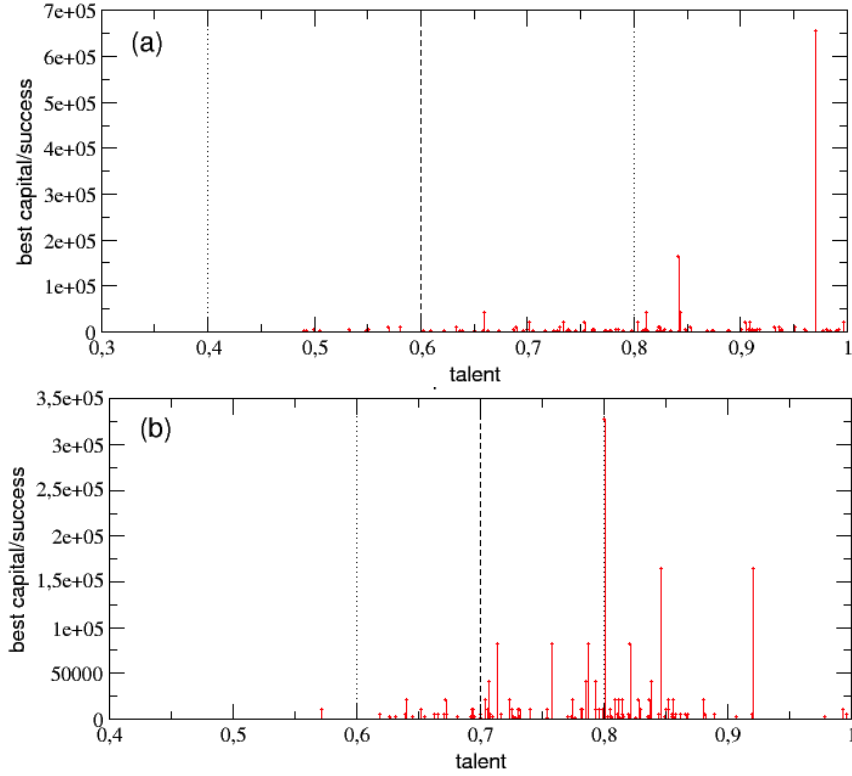


Figure 13: The final capital of the most successful individuals in each of the 100 runs is reported as function of their talent for populations with different talent distributions parameters: (a) $m_T = 0.6$ and $\sigma_T = 0.2$ (which represent a training reinforcement for the most gifted people); (b) $m_T = 0.7$ and $\sigma_T = 0.1$ (which represents an increase in the average level of education). The corresponding m_T and $m_T \pm \sigma_T$ values are also indicated as, respectively, vertical dashed and dot lines.

these values are quite sensitive to the specific set of simulation runs. A more reliable parameter in order to quantify the effectiveness of the social policies investigated here is, again, the indicator P_T introduced in the previous subsection, i.e. the average percentage of individuals with talent $T > m_T + \sigma_T$ and with final success/capital $C_{end} > 10$, over the total number of individuals with talent $T > m_T + \sigma_T$ (notice that now, in both the cases considered, $m_T + \sigma_T = 0.8$). In particular, we found $P_T = 38\%$ for panel (a) and $P_T = 37.5\%$ for panel (b), with a slight net increment with respect to the reference value $P_{T0} = 32\%$ (obtained for a talent distribution with $m_T = 0.6$ and $\sigma_T = 0.1$).

Summarizing, our results indicate that strengthening the training of the most gifted people or increasing the average level of education produce, as one could expect, some beneficial effects on the social system, since both these policies raise the probability, for talented individuals, to grasp the opportunities that luck presents to them. On the other hand, the enhancement in the average percentage of highly talented people who are able to reach a good level of success, seems to be not particularly remarkable in both the cases analyzed, therefore the result of the corresponding educational policies appears mainly restricted to the emergence of isolated extreme successful cases.

Of course, once a given level of education has been fixed, it is quite obvious that the abun-

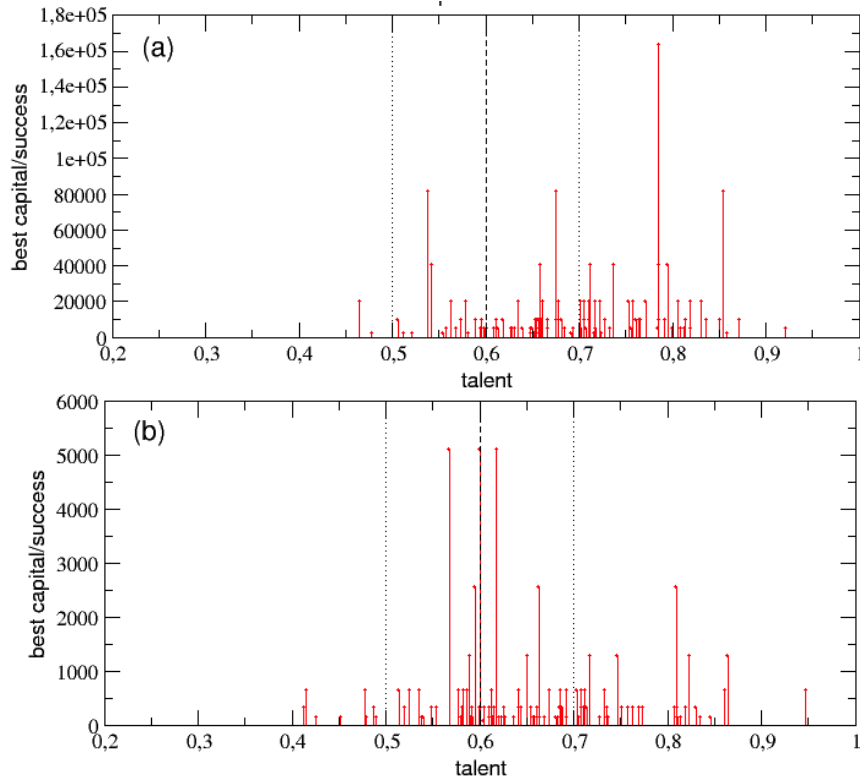


Figure 14: The final capital of the most successful individuals in each of the 100 runs is reported as function of their talent, for populations living in environments with a different percentage p_L of lucky events: (a) $p_L = 80\%$; (b) $p_L = 20\%$. The values of $m_T = 0.6$ and $m_T \pm \sigma_T$, with $\sigma_T = 0.1$ are also indicated as, respectively, vertical dashed and dot lines.

dance of opportunities offered by the social environment, i.e. by the country where someone accidentally is born or where someone choose to live, it is another key ingredient able to influence the global performance of the system.

In Figure 14 we show results analogous to those shown in the previous figure, but for another set of simulations, with 100 runs each, with the same parameters setup as in subsection 2.2 ($N = 1000$, $m_T = 0.6$, $\sigma_T = 0.1$, $I = 80$, $C(0) = 10$, $N_E = 500$) and with different percentages p_L of lucky events (we remind that, in subsection 2.2., this percentage was set to $p_L = 50\%$). In panels (a) we set $p_L = 80\%$, in order to simulate a very stimulating environment, rich of opportunities, like that of rich and industrialized countries such as the U.S. [26]. On the other hand, in panels (b), the value $p_L = 20\%$ reproduces the case of a much less stimulating environment, with very few opportunities, like for instance that of Third World countries.

As visible in both panels, the final success/capital of the most successful individuals as function of their talent strongly depend on p_L .

When $p_L = 80\%$, as in panel (a), several agents with medium-high talent are able to reach higher levels of success compared to the case $p_L = 50\%$, with a peak of $C_{best} = 163840$. On the other hand, the average value of the capital/success for the most talented individuals, $C_{mt} \sim 149$, is quite high and, what is more important, the same holds for the indicator $P_T = 62.18\%$ (about twice with respect to the reference value $P_{T0} = 32\%$), meaning that, as expected, talented people

benefits of the higher percentage of lucky events.

Completely different outcomes are obtained with $p_L = 20\%$. Indeed, as visible in panel (b), the overall level of success is now very low, if compared to that found in the simulations of subsection 2.2, with a peak value C_{best} of only 5120 units: it is a footprint of a reduction in the social inequalities, which is an expected consequence of the flattening of success opportunities. According with these results, also the P_T indicator reaches a minimal value, with an average percentage of only 8.75% of talented individuals able to increase their initial level of success.

In conclusion, in this section we have shown that a stimulating environment, rich of opportunities, associated to an appropriate strategy for the distribution of funds and resources, are important factors in exploiting the potential of the most talented people, giving them more chances of success with respect to the moderately gifted, but luckier, ones. At the macro level, any policy able to influence those factors and to sustain talented individuals, will have the result of ensuring collective progress and innovation.

4 Conclusive remarks

In this paper, starting from few very simple and reasonable assumptions, we have presented an agent-based model which is able to quantify the role of talent and luck in the success of people's careers. The simulations show that although talent has a Gaussian distribution among agents, the resulting distribution of success/capital after a working life of 40 years, follows a power law which respects the "80-20" Pareto law for the distribution of wealth found in the real world. An important result of the simulations is that the most successful agents are almost never the most talented ones, but those around the average of the Gaussian talent distribution - another stylised fact often reported in the literature. The model shows the importance, very frequently underestimated, of lucky events in determining the final level of individual success. Since rewards and resources are usually given to those that have already reached a high level of success, mistakenly considered as a measure of competence/talent, this result is even a more harmful disincentive, causing a lack of opportunities for the most talented ones. Our results highlight the risks of the paradigm that we call "naive meritocracy", which fails to give honors and rewards to the most competent people, because it underestimates the role of randomness among the determinants of success. In this respect, several different scenarios have been investigated in order to discuss more efficient strategies, which are able to counterbalance the unpredictable role of luck and give more opportunities and resources to the most talented ones - a purpose that should be the main aim of a truly meritocratic approach. Such strategies have also been shown to be the most beneficial for the entire society, since they tend to increase the diversity of ideas and perspectives in research, thus fostering also innovation.

Acknowledgments

We would like to thank Robert H. Frank, Pawel Sobkowicz and Constantino Tsallis for fruitful discussions and comments.

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Resolution 2021-003

**Adopted by the City of South Lake Tahoe
City Council**

January 5, 2021

Amending the FY 20-21 Budget and appropriating undesignated, unreserved General Fund balance to support COVID-19 recovery effort recommendations from the City's Short-term Economic Recovery Task Force

BACKGROUND

- A. The City of South Lake Tahoe is current in the Regional Stay at Home Order due to COVID-19 spread.
- B. The City of South Lake Tahoe and the Short-term Economic Recovery Task Force continue to look for ways to support COVID-19 recovery efforts and local businesses.
- C. The Short-term Economic Recovery Task Force met Monday, December 21, 2020 and recommends the following:
 - 1. Appropriate \$75,000 in undesignated, unreserved fund balance to support small businesses in the South Lake Tahoe area through the Lake Tahoe South Shore Chamber of Commerce's gift card program; and
- D. City Council evaluated and determined it is appropriate to recommend the following:
 - 2. Appropriate \$700,000 in undesignated, unreserved fund balance to support the implementation of a small business sustainability loan program.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, BE IT RESOLVED, that the City Council of the City of South Lake Tahoe hereby:

- 1. Amends the 2020-2021 budget to appropriate \$775,000 in undesignated, unreserved fund balance to support COVID-19 recovery efforts within the City of South Lake Tahoe community.

100-01951-44032 \$75,000

100-01951-44028 \$700,000

Adopted by the City of South Lake Tahoe City Council on January 5, 2021 by the following vote:

Yes: Bass, Creegan, Friedrich, Middlebrook and Wallace

DocuSigned by:



Tamara Wallace, Mayor

Date: 1/6/2021

Attest:

DocuSigned by:



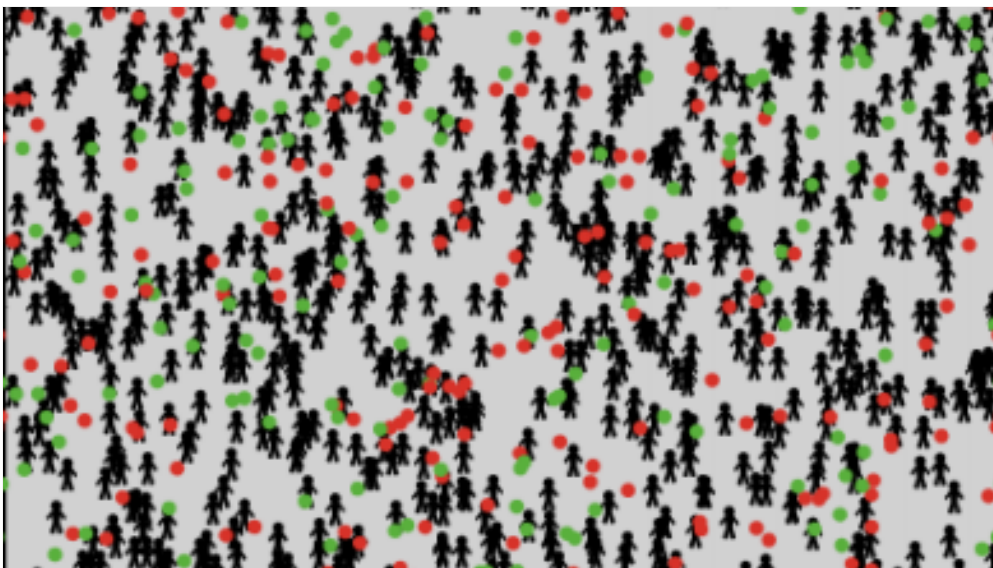
Susan Blankenship, City Clerk

The presence of electronic signature certifies that the foregoing is a true and correct copy as approved by the South Lake Tahoe City Council.

If You're So Smart, Why Aren't You Rich? Turns Out It's Just Chance.

The most successful people are not the most talented, just the luckiest, a new computer model of wealth creation confirms. Taking that into account can maximize return on many kinds of investment.

MIT Technology Review | Emerging Technology From the arXiv



The distribution of wealth follows a well-known pattern sometimes called an 80:20 rule: 80 percent of the wealth is owned by 20 percent of the people. Indeed, a report in 2017 concluded that just eight men had a total wealth equivalent to that of the world's poorest 3.8 billion people.

This seems to occur in all societies at all scales. It is a well-studied pattern called a power law that crops up in a wide range of social phenomena. But the distribution of wealth is among the most controversial because of the issues it raises about fairness and merit. Why should so few people have so

much wealth?

The conventional answer is that we live in a meritocracy in which people are rewarded for their talent, intelligence, effort, and so on. Over time, many people think, this translates into the wealth distribution that we observe, although a healthy dose of luck can play a role.

But there is a problem with this idea: while wealth distribution follows a power law, the distribution of human skills generally follows a normal distribution that is symmetric about an average value. For example, intelligence, as measured by IQ tests, follows this pattern. Average IQ is 100, but nobody has an IQ of 1,000 or 10,000.

The same is true of effort, as measured by hours worked. Some people work more hours than average and some work less, but nobody works a billion times more hours than anybody else.

And yet when it comes to the rewards for this work, some people do have billions of times more wealth than other people. What's more, numerous studies have shown that the wealthiest people are generally not the most talented by other measures.

What factors, then, determine how individuals become wealthy? Could it be that chance plays a bigger role than anybody expected? And how can these factors, whatever they are, be exploited to make the world a better and fairer place?

We finally get an answer thanks to the work of Alessandro Pluchino at the

University of Catania in Italy and a couple of colleagues. These guys have created a computer model of human talent and the way people use it to exploit opportunities in life. The model allows the team to study the role of chance in this process.

The results are something of an eye-opener. Their simulations accurately reproduce the wealth distribution in the real world. But the wealthiest individuals are not the most talented (although they must have a certain level of talent). They are the luckiest. And this has significant implications for the way societies can optimize the returns they get for investments in everything from business to science.

Pluchino and co's model is straightforward. It consists of N people, each with a certain level of talent (skill, intelligence, ability, and so on). This talent is distributed normally around some average level, with some standard deviation. So some people are more talented than average and some are less so, but nobody is orders of magnitude more talented than anybody else.

This is the same kind of distribution seen for various human skills, or even characteristics like height or weight. Some people are taller or smaller than average, but nobody is the size of an ant or a skyscraper. Indeed, we are all quite similar.

The computer model charts each individual through a working life of 40 years. During this time, the individuals experience lucky events that they can exploit to increase their wealth if they are talented enough.

However, they also experience unlucky events that reduce their wealth. These events occur at random.

At the end of the 40 years, Pluchino and co rank the individuals by wealth and study the characteristics of the most successful. They also calculate the wealth distribution. They then repeat the simulation many times to check the robustness of the outcome.

When the team rank individuals by wealth, the distribution is exactly like that seen in real-world societies. “The ‘80-20’ rule is respected, since 80 percent of the population owns only 20 percent of the total capital, while the remaining 20 percent owns 80 percent of the same capital,” report Pluchino and co.

That may not be surprising or unfair if the wealthiest 20 percent turn out to be the most talented. But that isn’t what happens. The wealthiest individuals are typically not the most talented or anywhere near it. “The maximum success never coincides with the maximum talent, and vice-versa,” say the researchers.

So if not talent, what other factor causes this skewed wealth distribution? “Our simulation clearly shows that such a factor is just pure luck,” say Pluchino and co.

The team shows this by ranking individuals according to the number of lucky and unlucky events they experience throughout their 40-year careers. “It is evident that the most successful individuals are also the

luckiest ones,” they say. “And the less successful individuals are also the unluckiest ones.”

That has significant implications for society. What is the most effective strategy for exploiting the role luck plays in success?

Pluchino and co study this from the point of view of science research funding, an issue clearly close to their hearts. Funding agencies the world over are interested in maximizing their return on investment in the scientific world. Indeed, the European Research Council invested \$1.7 million in a program to study serendipity—the role of luck in scientific discovery—and how it can be exploited to improve funding outcomes.

It turns out that Pluchino and co are well set to answer this question. They use their model to explore different kinds of funding models to see which produce the best returns when luck is taken into account.

The team studied three models, in which research funding is distributed equally to all scientists; distributed randomly to a subset of scientists; or given preferentially to those who have been most successful in the past. Which of these is the best strategy?

The strategy that delivers the best returns, it turns out, is to divide the funding equally among all researchers. And the second- and third-best strategies involve distributing it at random to 10 or 20 percent of scientists.

In these cases, the researchers are best able to take advantage of the

serendipitous discoveries they make from time to time. In hindsight, it is obvious that the fact a scientist has made an important chance discovery in the past does not mean he or she is more likely to make one in the future.

A similar approach could also be applied to investment in other kinds of enterprises, such as small or large businesses, tech startups, education that increases talent, or even the creation of random lucky events.

Clearly, more work is needed here. What are we waiting for?

Ref: arxiv.org/abs/1802.07068 : Talent vs. Luck: The Role of Randomness in Success and Failure

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