

Voting, Success, and Superstars

Principles of Complex Systems | @pocsvox
CSYS/MATH 300, Fall, 2016 | #FallPoCS2016

Winning: it's not
for everyone

Superstars
Musiclub

References

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Outline

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Where do superstars come from?



"The economics of superstars" 

S. Rosen,




Am. Econ. Rev., **71**, 845–858, 1981. [5]


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References

Examples:

-  Full-time Comedians (≈ 200)
-  Soloists in Classical Music
-  Economic Textbooks (the usual myopic example)

-  Highly skewed distributions again...



Rosen's theory:

- Individual quality q maps to reward $R(q)$.
- $R(q)$ is 'convex' ($d^2 R/dq^2 > 0$).
- Two reasons:
 1. **Imperfect substitution:**
A very good surgeon is worth many mediocre ones
 2. **Technology:**
Media spreads & technology reduces cost of reproduction of books, songs, etc.
- Joint consumption versus public good.
- No social element—success follows 'inherent quality'.

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"Stardom and Talent"

Moshe Adler,
American Economic Review, **75**, 208–212,
1985. ^[1]

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References

-  "Consumption capital": "Appreciation [of music] increases with knowledge. But how does one know about music? By listening to it, *and discussing it with other persons who know about it.*"
-  Assumes extreme case of equal 'inherent quality'
-  Argues desire for coordination in knowledge and culture leads to differential success
-  Success can be purely a social construction
-  (How can we measure 'inherent quality'?)





Evidence from the web suggestions (Huberman et al.)

1. Easy decisions (yes/no) lead to bandwagoning

 e.g. jyte.com

2. More costly evaluations lead to oppositional votes

 e.g. amazon.com

 **Self-selection:** Costly voting may lower incentives for those who agree with the current assessment and increase incentives for those who disagree.

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References

Score-based voting versus rank-based voting:



"A theory of measuring, electing, and
ranking" 

Balinski and Laraki,
Proc. Natl. Acad. Sci., **104**, 8720–8725,
2007. [2]





“Aggregating partial, local evaluations to achieve global ranking” ↗

Laureti, Moret, and Zhang,
Physica A, **345**, 705–712, 2004. [4]

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- Model: participants rank n objects based on underlying quality q
- Assume evaluation of object i is a random variable with mean q_i
- Choose objects based on votes:

$$p_i(t) \propto v_i(t)^\alpha \text{ or } p_i(t) \propto q_i v_i(t)^\alpha.$$

- If $\alpha < 1$, correct quality ordering is uncovered
- If $\alpha > 1$, some objects are never evaluated and mistakes are made...
- Related to Adler's approach



Dominance hierarchies

Individual differences versus social dynamics in the formation of animal dominance hierarchies

Chase et al.,
Proc. Natl. Acad. Sci., 99, 5744-5749, 2002. [3]

“Individual differences versus social dynamics in the formation of animal dominance hierarchies” ↗

Chase et al.,
Proc. Natl. Acad. Sci., **99**, 5744-5749, 2002. [3]

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🧩 The aggressive female *Metriacrima zebra*:



Dominance hierarchies

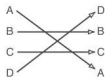
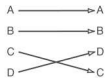
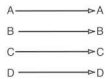
Fish forget—changing of dominance hierarchies:

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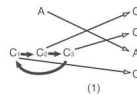
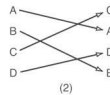
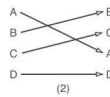
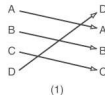
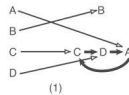
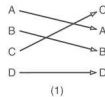
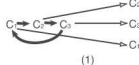
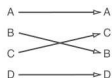
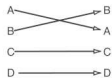
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References

1st Hierarchy \Rightarrow 2nd Hierarchy



1st Hierarchy \Rightarrow 2nd Hierarchy



22 observations: about 3/4 of the time, hierarchy changed



Dominance hierarchies

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Methods of Forming Hierarchies																					
Size of set	Group assembly Round-robin competition																				
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Group versus isolated interactions produce different hierarchies



Music Lab Experiment



BAND NAME

SONG TITLE

NUMBER OF DOWNLOADS

[Help]	[Log off]	# of down loads
GROWTH PEOPLE:	"Inamed"	86
ACCEPT THAT:	"for the people"	52
LISTFORPEOPLE:	"no way out"	45

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References

48 songs

30,000 participants

multiple 'worlds'

Inter-world variability

- How probable is the world?
- Can we estimate variability?
- Superstars dominate but are unpredictable. Why?



Music Lab Experiment

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	# of down loads	[Help] [Log off]	# of down loads	# of down loads	
HARTSFIELD: "enough is enough"	20	GO MORECAL: "to does what its told"	12	UNDO: "while the world passes"	24
DEEP ENOUGH TO DIE: "for the sky"	17	PARKER THEORY: "she said"	47	UP FOR NOTHING: "in sight of"	13
THE THRIFT SYNDICATE: "2003 a tragedy"	20	MESS OCTOBER: "pink aggression"	27	SILVERFOX: "glow"	17
THE BROKEN PROMISE: "the end in hand"	19	POST BREAK TRAGEDY: "silence"	14	STRANGER: "love deep"	10
THIS NEW DAWN: "the heli above the answer"	12	FORTHFADING: "leaf"	24	FAR FROM KNOWN: "outsy?"	18
HOOMER AT NINE: "walk away"	6	THE CALEFACTION: "trapped in an orange peel"	20	STUNT MONKEY: "inside out"	46
MORAL HAZARD: "waste of my life"	8	SIMETRO: "lockdown"	17	DANTE: "Bles mystery"	14
NOT FOR SCHOLARS: "as seasons change"	27	SIMPLY WAITING: "meet with the count"	16	FADING THROUGH: "wish me luck"	10
SECRETARY: "three parties on the balcony"	5	STAR CLIMBER: "hell no"	38	UNKNOWN CITIZENS: "falling over"	34
ART OF KAMILY: "redneck 400, melodic breakdown"	10	THE FACTLANE: "if death do us part 9 dont"	31	BY NOVEMBER: "I could take you"	20
HYDRAULIC SANDWICH: "separation anxiety"	20	A BLINDING SILENCE: "pieces and meeces"	17	DRAWN IN THE SKY: "top the ride"	12
EMBER SKY: "the upcoming winter"	25	SUMRAMA: "the bobbevik boogie"	15	SELSAUS: "stars of the city"	22
SALUTE THE DAWN: "I am emor"	13	CAPE RENEWAL: "baseball workout v1"	12	SIBRIAN: "eye patch"	14
RYAN ESMARKER: "demon, the still"	14	UP FALLS DOWN: "a bright burning star"	11	EVAN GOLD: "what doneya j"	10
BEESBING: "father to son"	12	SUMMERSWASTED: "a plan behind destruction"	17	BENEFIT OF A DOUBT: "run away"	38
HALL OF FAME: "best mistakes"	19	SILENT FILM: "all i have to say"	61	SHIPWRECK UNKN: "out of the woods"	16

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References



"An experimental study of inequality and unpredictability in an artificial cultural market" ↗

Salganik, Dodds, and Watts,
Science, **311**, 854-856, 2006. [6]



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Experiment 1

Rank	Artist	Song Title	Popularity
1	WINTERFELLS	Through a Veil	24
2	CEYLAN	From the Heart	24
3	DEEP	From the Heart	24
4	DEEP	From the Heart	24
5	DEEP	From the Heart	24
6	DEEP	From the Heart	24
7	DEEP	From the Heart	24
8	DEEP	From the Heart	24
9	DEEP	From the Heart	24
10	DEEP	From the Heart	24
11	DEEP	From the Heart	24
12	DEEP	From the Heart	24
13	DEEP	From the Heart	24
14	DEEP	From the Heart	24
15	DEEP	From the Heart	24
16	DEEP	From the Heart	24
17	DEEP	From the Heart	24
18	DEEP	From the Heart	24
19	DEEP	From the Heart	24
20	DEEP	From the Heart	24
21	DEEP	From the Heart	24
22	DEEP	From the Heart	24
23	DEEP	From the Heart	24
24	DEEP	From the Heart	24
25	DEEP	From the Heart	24
26	DEEP	From the Heart	24
27	DEEP	From the Heart	24
28	DEEP	From the Heart	24
29	DEEP	From the Heart	24
30	DEEP	From the Heart	24

Experiments 2-4

Rank	Artist	Song Title	Popularity
1	WINTERFELLS	Through a Veil	24
2	CEYLAN	From the Heart	24
3	DEEP	From the Heart	24
4	DEEP	From the Heart	24
5	DEEP	From the Heart	24
6	DEEP	From the Heart	24
7	DEEP	From the Heart	24
8	DEEP	From the Heart	24
9	DEEP	From the Heart	24
10	DEEP	From the Heart	24
11	DEEP	From the Heart	24
12	DEEP	From the Heart	24
13	DEEP	From the Heart	24
14	DEEP	From the Heart	24
15	DEEP	From the Heart	24
16	DEEP	From the Heart	24
17	DEEP	From the Heart	24
18	DEEP	From the Heart	24
19	DEEP	From the Heart	24
20	DEEP	From the Heart	24
21	DEEP	From the Heart	24
22	DEEP	From the Heart	24
23	DEEP	From the Heart	24
24	DEEP	From the Heart	24
25	DEEP	From the Heart	24
26	DEEP	From the Heart	24
27	DEEP	From the Heart	24
28	DEEP	From the Heart	24
29	DEEP	From the Heart	24
30	DEEP	From the Heart	24



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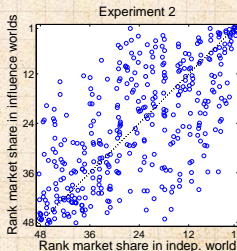
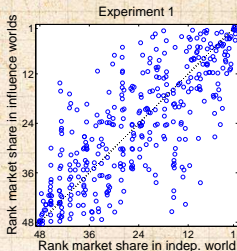
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Variability in final rank.



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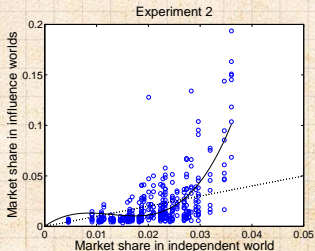
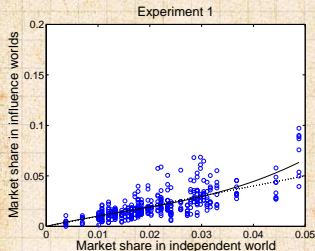
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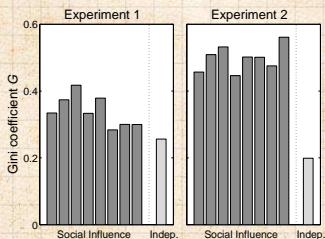
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References



Variability in final number of downloads.





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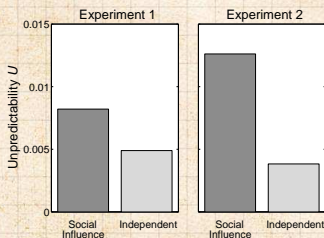
References



Inequality as measured by Gini coefficient:

$$G = \frac{1}{(2N_s - 1)} \sum_{i=1}^{N_s} \sum_{j=1}^{N_s} |m_i - m_j|$$





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Unpredictability

$$U = \frac{1}{N_s \binom{N_w}{2}} \sum_{i=1}^{N_s} \sum_{j=1}^{N_w} \sum_{k=j+1}^{N_w} |m_{i,j} - m_{i,k}|$$



Music Lab Experiment

Sensible result:

- Stronger social signal leads to **greater following** and **greater inequality**.

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Peculiar result:

- Stronger social signal leads to greater **unpredictability**.

Very peculiar observation:

- The most unequal distributions would suggest the greatest variation in underlying 'quality.'
- But success may be due to social construction through **following**. (so let's tell a story... [8, 9])



Music Lab Experiment—Sneakiness [7]

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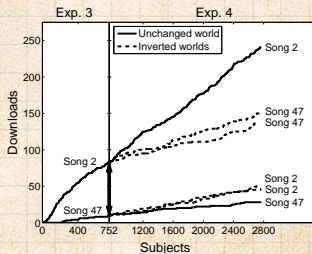
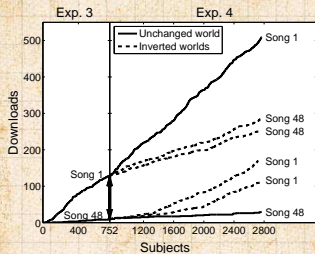
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References



- 🧱 Inversion of download count
- 🧱 The pretend rich get richer ...
- 🧱 ... but at a slower rate



References I

- [1] M. Adler.
Stardom and talent.
[American Economic Review](#), pages 208–212, 1985.
[pdf](#) 
- [2] M. Balinski and R. Laraki.
A theory of measuring, electing, and ranking.
[Proc. Natl. Acad. Sci.](#), 104(21):8720–8725, 2007.
[pdf](#) 
- [3] I. D. Chase, C. Tovey, D. Spangler-Martin, and
M. Manfredonia.
Individual differences versus social dynamics in the
formation of animal dominance hierarchies.
[Proc. Natl. Acad. Sci.](#), 99(8):5744–5749, 2002. [pdf](#) 

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References



- [4] P. Laureti, L. Moret, and Y.-C. Zhang.
Aggregating partial, local evaluations to achieve
global ranking.

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References

Physica A, 345(3-4):705-712, 2004. pdf ↗

- [5] S. Rosen.
The economics of superstars.

Am. Econ. Rev., 71:845-858, 1981. pdf ↗

- [6] M. J. Salganik, P. S. Dodds, and D. J. Watts.
An experimental study of inequality and
unpredictability in an artificial cultural market.

Science, 311:854-856, 2006. pdf ↗



- [7] M. J. Salganik and D. J. Watts.
Leading the herd astray: An experimental study of
self-fulfilling prophecies in an artificial cultural
market.

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for everyone

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References

[Social Psychology Quarterly, 71:338–355, 2008.](#)

[pdf](#) 

- [8] C. R. Sunstein.
Infotopia: How many minds produce knowledge.
Oxford University Press, New York, 2006.

- [9] N. N. Taleb.
The Black Swan.
Random House, New York, 2007.

