Voting, Success, and Superstars
Principles of Complex Systems | @pocsvox
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Outline

Winning; it’s not for everyone
Superstars
Musiclab

References

Where do superstars come from?

“The economics of superstars”
S. Rosen,

Examples:
- Full-time Comedians (≈ 200)
- Soloists in Classical Music
- Economic Textbooks (the usual myopic example)
- Highly skewed distributions again...

Superstars

Rosen’s theory:
- Individual quality q maps to reward R(q).
- R(q) is ‘convex’ (d²R/dq² > 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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Superstars

“Stardom and Talent”
Moshe Adler,
American Economic Review, 75, 208–212, 1985.[1]

“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’?)

Electioneering

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.

Voting

Score-based voting versus rank-based voting:

“A theory of measuring, electing, and ranking”
Michel Balinski and Laraki,

Model: participants rank n objects based on underlying quality q

Assume evaluation of object i is a random variable with mean \( \mu_i \)

Choose objects based on votes:

\[ p_i(t) \propto v_i(t)^a \text{ or } p_i(t) \propto q_i v_i(t)^a. \]

If \( a < 1 \), correct quality ordering is uncovered

If \( a > 1 \), 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”
Châse et al.,

The aggressive female Metriaclima zebra:

Pecking orders for fish...

Fish forget—changing of dominance hierarchies:

22 observations: about 3/4 of the time, hierarchy changed
Group versus isolated interactions produce different hierarchies

Music Lab Experiment

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

References

“An experimental study of inequality and unpredictability in an artificial cultural market”
Inequality as measured by Gini coefficient:

\[
G = \frac{1}{(2N_k - 1)} \sum_{i=1}^{N_k} \sum_{j=1}^{N_k} |m_i - m_j|
\]

Unpredictability

\[
U = \frac{1}{N_k N_w} \sum_{i=1}^{N_k} \sum_{j=1}^{N_k} \sum_{k=j+1}^{N_k} |m_{i,j} - m_{i,k}|
\]

Sensible result:

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

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])

References

References III

Leading the herd astray: An experimental study of self-fulfilling prophecies in an artificial cultural market. 

Infotopia: How many minds produce knowledge. 

The Black Swan. 