Why is global success so unpredictable?

Making sense of influence, social contagion, marketing, and stories.

Principles of Complex Systems
CSYS/MATH 300, Spring, 2013 | #SpringPoCS2013

Prof. Peter Dodds

@peterdodds

Department of Mathematics & Statistics | Center for Complex Systems | Vermont Advanced Computing Center | University of Vermont

















Why is global success so unpredictable?

Superstars

Superspreading







These slides brought to you by:



Why is global success so unpredictable?

Superstars

Superspreading





Outline

Why is global success so unpredictable?

Superstars

Superstars

Superspreading

Superspreading







The most famous painting in the world:



Why is global success so unpredictable?

Superstars

Superspreading References







The dismal predictive powers of editors

Why is global success so unpredictable?

Superstars

Superspreadin

References





Twelve ...



The completely unpredicted fall of Eastern Europe:



Timur Kuran: [2] "Now Out of Never: The Element of Surprise in the East European Revolution of 1989"

Why is global success so unpredictable?

Superstars







We understand bushfire stories:

Why is global success so unpredictable?

Superstars

- 1. Sparks start fires.
- 2. System properties control a fire's spread.
- 3. But we make two mistakes about Social Fires...





How we want to understand:

'Tattooed Guy' Was Pivotal in Armstrong Case [nytimes] (⊞)



Why is global success so unpredictable?

Superstars

Superspreading

References

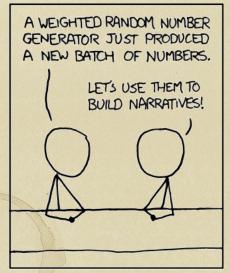


"... Leogrande's doping sparked a series of events ..."



29 @ 8 of 25

Reason 1—We are Homo Narrativus:



ALL SPORTS COMMENTARY

Why is global success so unpredictable?







Reason 2—"We are all individuals":



Why is global success so unpredictable?

Superstars
Superspreading





Reason 3—We are spectacular imitators:



BBC/David Attenborough.

Why is global success so unpredictable?







Mistake 1: Success is due to intrinsic properties Why is global success so unpredictable?

Superstars







See "Becoming Mona Lisa" by David Sassoon (⊞)





48 songs 30k participants Why is global success so unpredictable?

Superstars

Superspreading

FREE MUSIC DOWNLOADS

Exp 1— weak social

il Yen Ço Boshnaks Tadis Help					
· · 🚱 🖸 🚮 M Hep. Sw		Crossicials columbia edylme; songs			
	£	[Help] [Logaff]	1		ř.
SARTSPELO. Servição a microphi	20 0	o montance. I done what to talk	11	proportion and purport	H
DEEP ENGUES TO DE: "Sor for oby"	IT S	ARIER THEORY:	•	SF FOR BOTHURO. To agreed	п
THE THRIFT EPHOLON'S. "2000 a magnety"	20 10	es octobre on aprover	27	SEASON CO.	v
THE BROKEN PROMISE: "the end in hand"	10 10	OST BREIK TRACEDY:	14	SWANGER: "sinc dep"	×
"the behild stove the server."	12 5	543-040KG 687	34	ENR FROM ENGINE THURS TO	
SCORER AT SINE:		NE CALEFACTION: Mapped than unange peed	20	STATISCHIEV Seeds out	- 4
MORE HICHO	* 5	MITO uklear	17	BACE. The space	н
NOT FOR SCHOLARS		MPLY BATING series with the count'	ж	FRONG THROUGH "WITH THE BEST"	26
SECRETARY	5 5	TAX CLAMICA:	36	Talling over	ж
WATER RANGY: "SERVICES BIRD, WHILE SHARESHIP"	10 10	BE ENSTRAINE: Education des ser part tratem?	31	BY NOVEMBER: "If local time and"	26
NYTRINGER SANDAROK "Impanishe anners"	30	ELRONO SILENCE:	17	DRAME IN THE SKY	11
SHEEK SEY.		CALGOO. In Indonesi Imagir'	11	SECTION STREET	33
CALLYTE THE CAMB	11 9	APE RENEWAL.	13	Colonial September	н
Front Estate Etc.	14 10	P TALLS DOME Linguistaning you'	- 11	ENALGOLD 'abort downer y'	×
SUBJECTED SOR"	11 2	CAMEROWASTED	19	BENEFIT OF A DOUBT	э
NALL OF PARE: "Service labour"	11 8	CENTRUM d Cours to see"	41	SHIPMASON EHRON.	31

Exp. 2—strong social

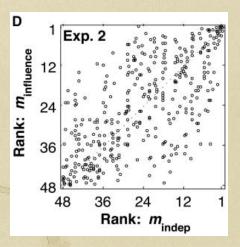
de gdt Yew Ga Bookwals	Tools Help			0	
4 - 4 - 8 🛭 🚳 🗷	http://www.musiclab.columbia.edu/mc/comins)		F 10.		
	(Help) (Log.of	. #			
	PRINCE THEORY:	209			
	THE PASTLANE: "Midwark do un year 5 does?"	301			
	COLUMN OF THE CRY	10			
	Clarif MONEY "mode out"	94			
	on neverage: "Front the on"	95			
	POSTWARE.				
	HOBALIC SADNOL	40			
	SAERST PAGE "All have to very"	-			
	Vector National secret posses?	×			
	SEMEST OF A SOURT.	M			
	A BURDING SKENCE Selection and relation	27			
	METR DISCUSSING	26			
	Ethel CLIMEER	34			
	FAR FROM CHOIMS	20			
	Test retains	21			
	EMBER SKY.				

"An experimental study of inequality and unpredictability in an artificial cultural market," [3] Salganik et al., Science, 2006.





Resolving the paradox:



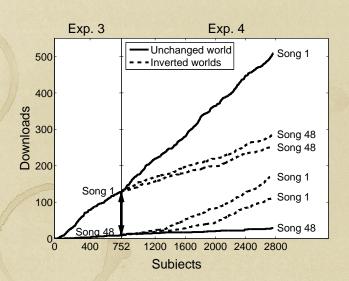
Increased social awareness: Stronger inequality + Less predictability. Why is global success so unpredictable?

Superstars





Payola/Deceptive advertising hurts us all:



Why is global success so unpredictable?

Superstars

Superspreadin

eferences





少 Q № 15 of 25

Mistake 2:

Seeing success is 'due to social' and wanting to say 'all your interactions are belong to us'

Why is global success so unpredictable?

Superstars

Superspreading

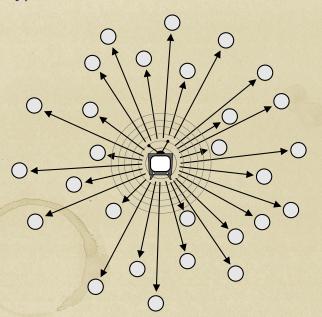






9 a @ 16 of 25

The hypodermic model of influence:



Why is global success so unpredictable?

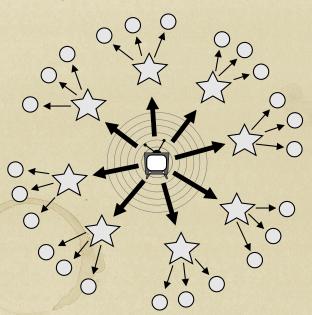
Superstars







The two step model of influence: [1]



Why is global success so unpredictable?

Superstars

Superspreading

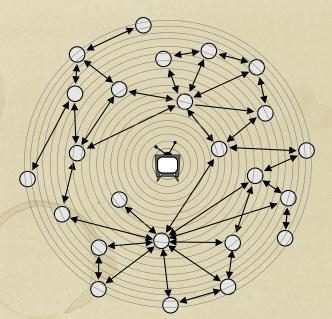






9 a @ 18 of 25

The network model of influence:



Why is global success so unpredictable?

Superstars







The network model of influence:

Why is global unpredictable?

Superspreading



How superspreading works:

Many interconnected, average, trusting people must benefit from both receiving and sharing a message far from its source.

"Influentials, Networks, and Public Opinion Formation" [4] Watts and Dodds, J. Cons. Res., 2007.







Things that spread quickly:







Why is global success so unpredictable?

Superstars

Superspreading

















+ News ...

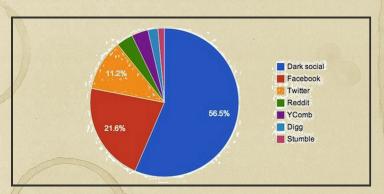
buzzfeed.com (⊞):





9 a @ 21 of 25

The Dark Social Web



Dark Social: We Have the Whole History of the Web Wrong (⊞) [The Atlantic]

Why is global success so unpredictable?

Superstars

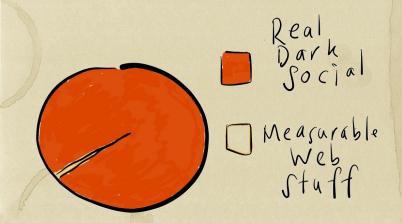
Superspreading







A completely made up pie chart:



Why is global success so unpredictable?

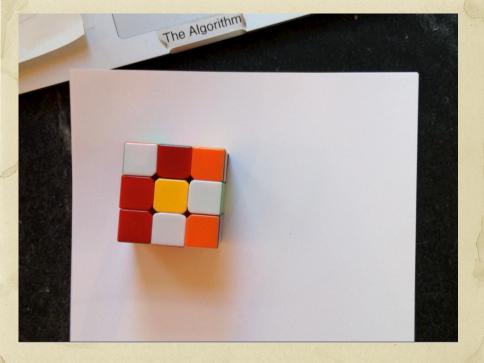
Superstars

Superspreading









References I

[1] E. Katz and P. F. Lazarsfeld.

Personal Influence.

The Free Press, New York, 1955.

[2] T. Kuran.

Now out of never: The element of surprise in the east european revolution of 1989.

World Politics, 44:7–48, 1991. pdf (⊞)

[3] 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 (H)

[4] D. J. Watts and P. S. Dodds.
Influentials, networks, and public opinion formation.

Journal of Consumer Research, 34:441–458, 2007.
pdf (H)

Why is global success so unpredictable?

Superstars

Superspreading





