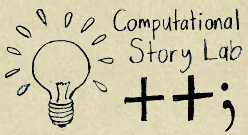
# Why is global success so unpredictable? Making sense of influence, social contagion, marketing, and stories.

## 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



Superstars
Superspreading
References

# These slides brought to you by:

Superstars
Superspreading
References

# Outline

Why is global success so unpredictable?

Superstars

Superspreading

References

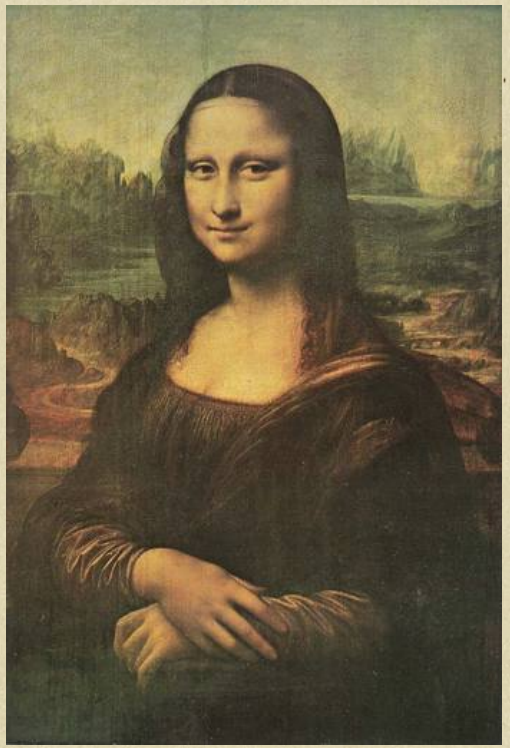
## Superstars

## Superspreading

## References

# The most famous painting in the world:





# The dismal predictive powers of editors . . . ...



Superstars
Superspreading
References

Twelve . . .

# The completely unpredicted fall of Eastern Europe:



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Superspreading
References

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

# We understand bushfire stories:

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

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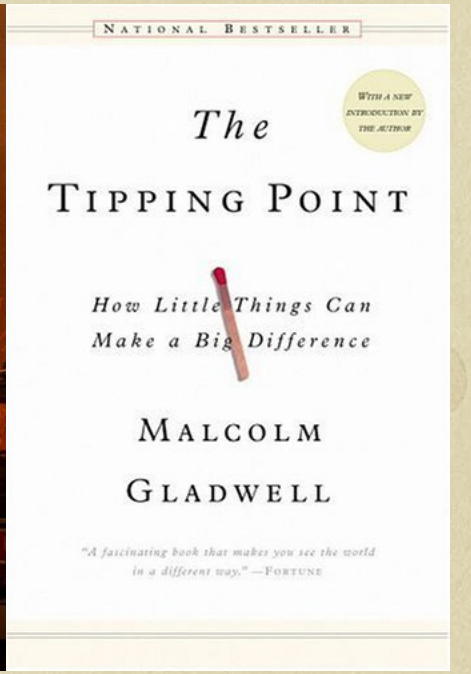


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# How we want to understand:

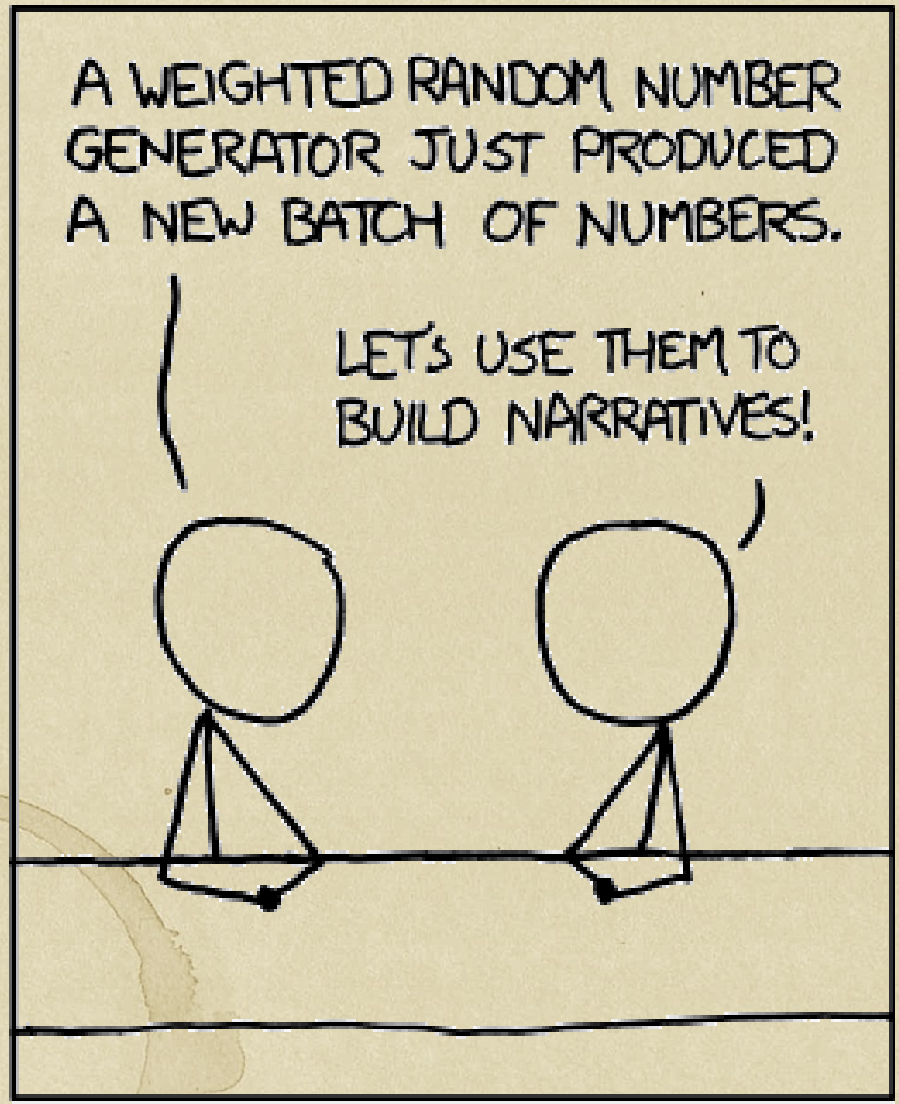


‘Tattooed Guy’ Was Pivotal in Armstrong Case [nytimes] (⊞)

- “... Leogrande’s doping sparked a series of events ...”

# Reason 1—We are Homo Narrativus:






http://xkcd.com/904/ (⊞)

# Reason 2—“We are all individuals”:



Superstars

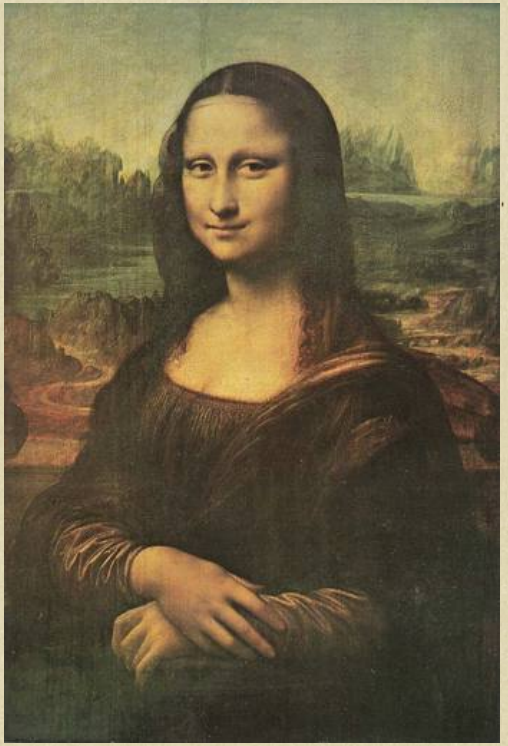
Superspreading

References

# Reason 3—We are spectacular imitators:

BBC/David Attenborough.

# Mistake 1:
# Success is due to intrinsic properties



See “Becoming Mona Lisa” by David Sassoon (⊞)

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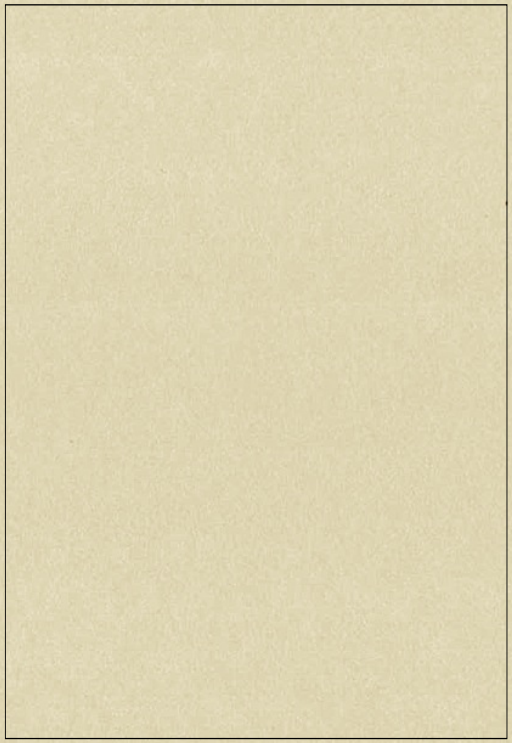

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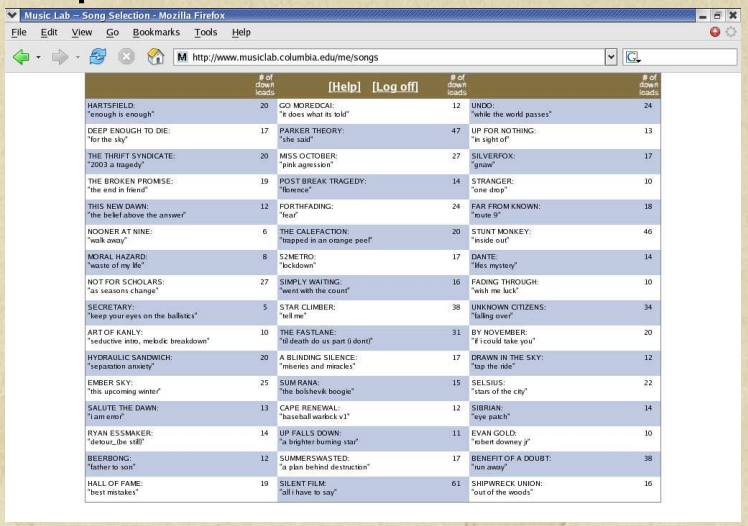
it's disappointingly small

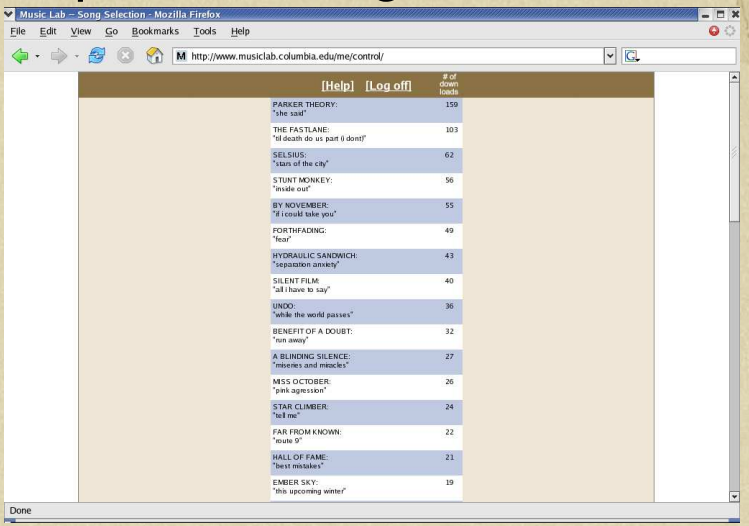
See "Becoming Mona Lisa" by David Sassoon (⊞)

48 songs
30k participants

## Exp 1— weak social



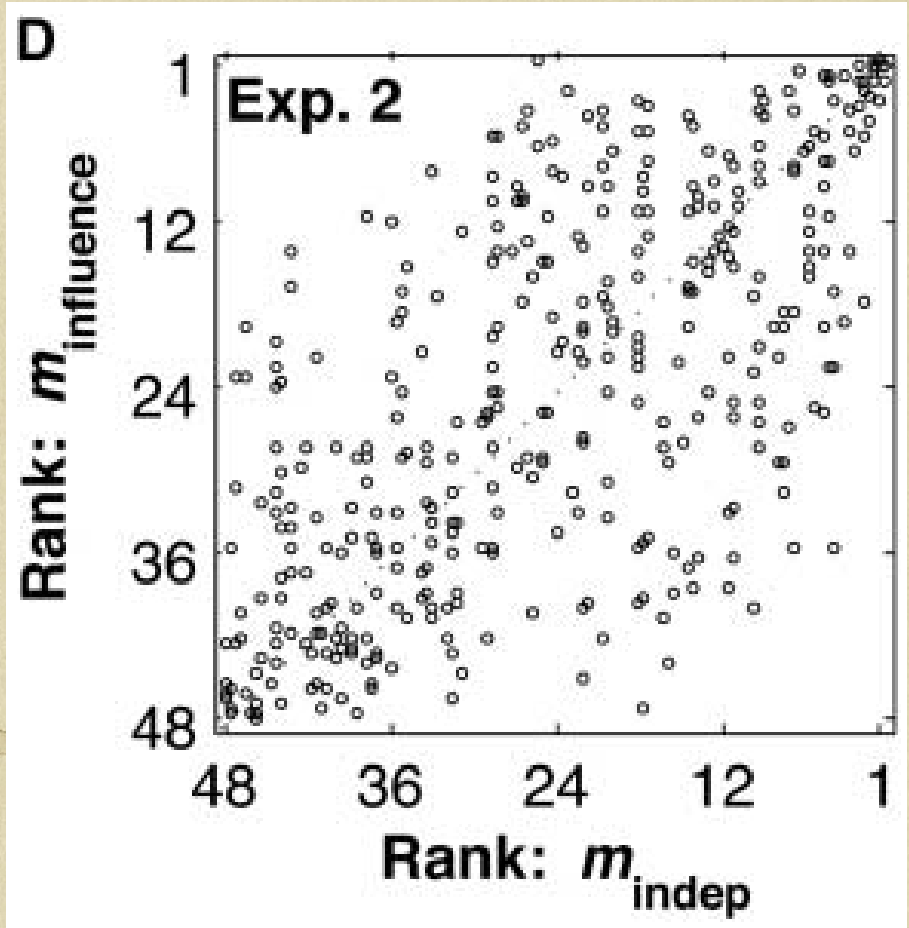

## Exp. 2—strong social



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

# Resolving the paradox:

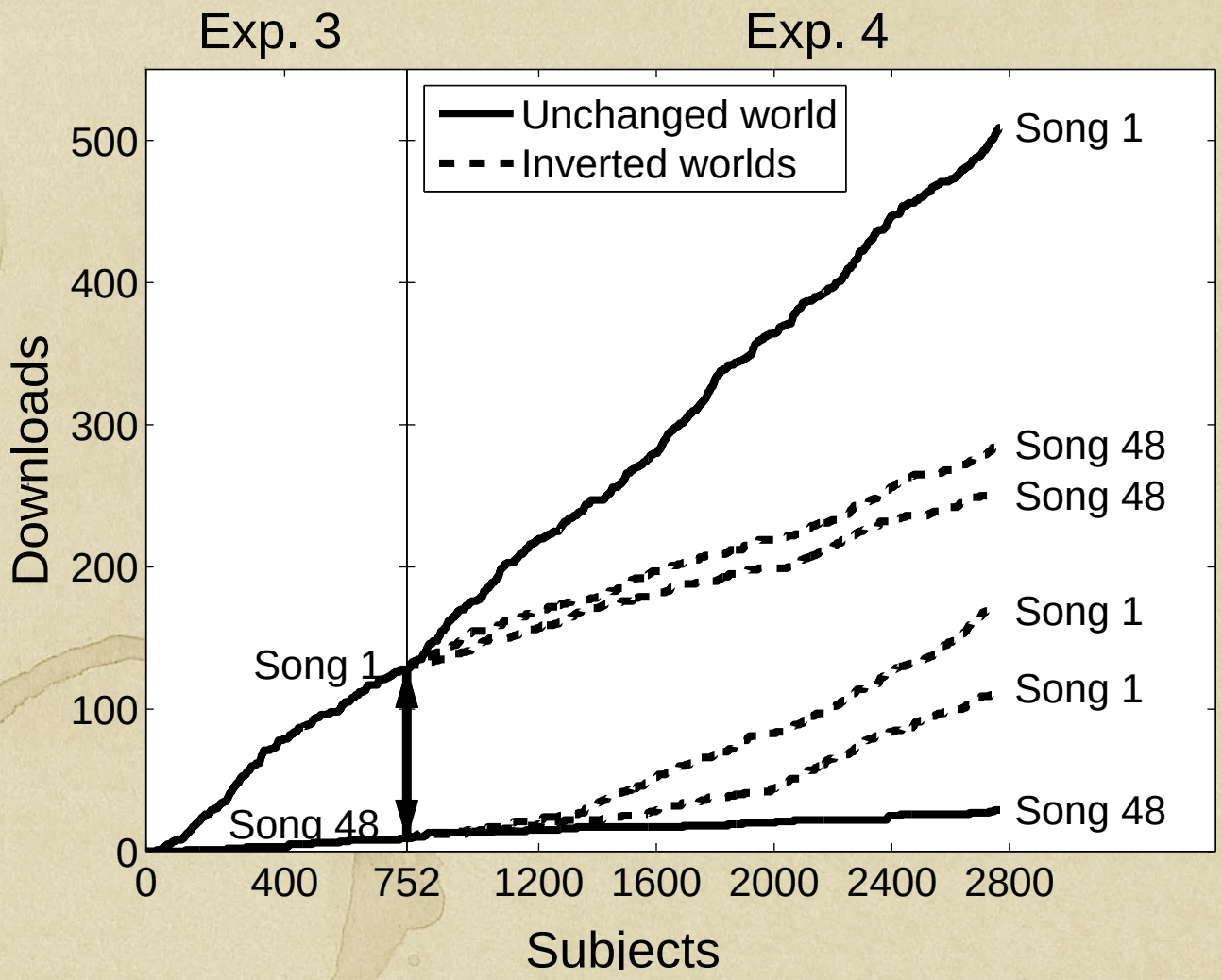





Increased social awareness:
Stronger inequality + Less predictability.

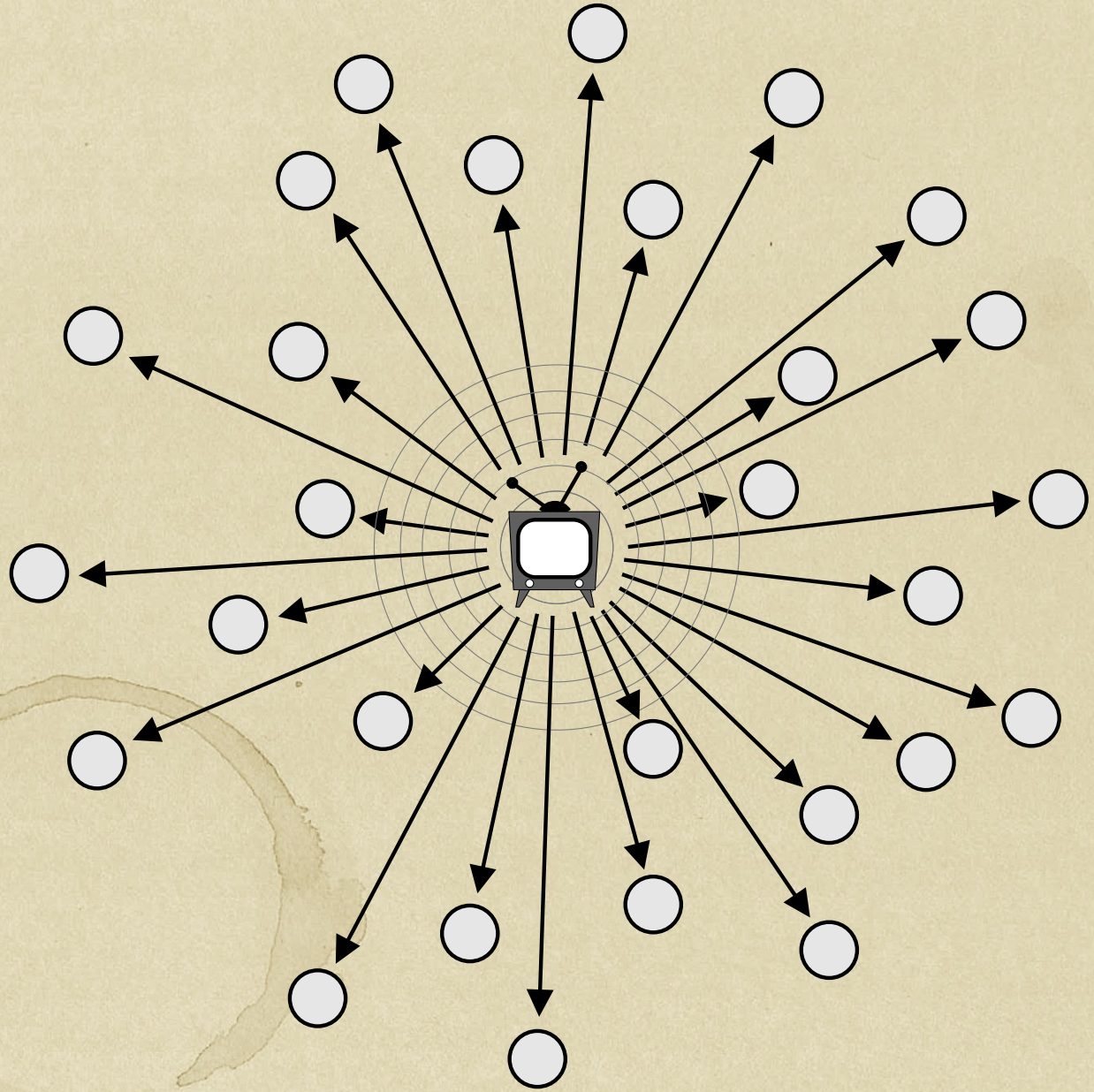
# Payola/Deceptive advertising hurts us all:



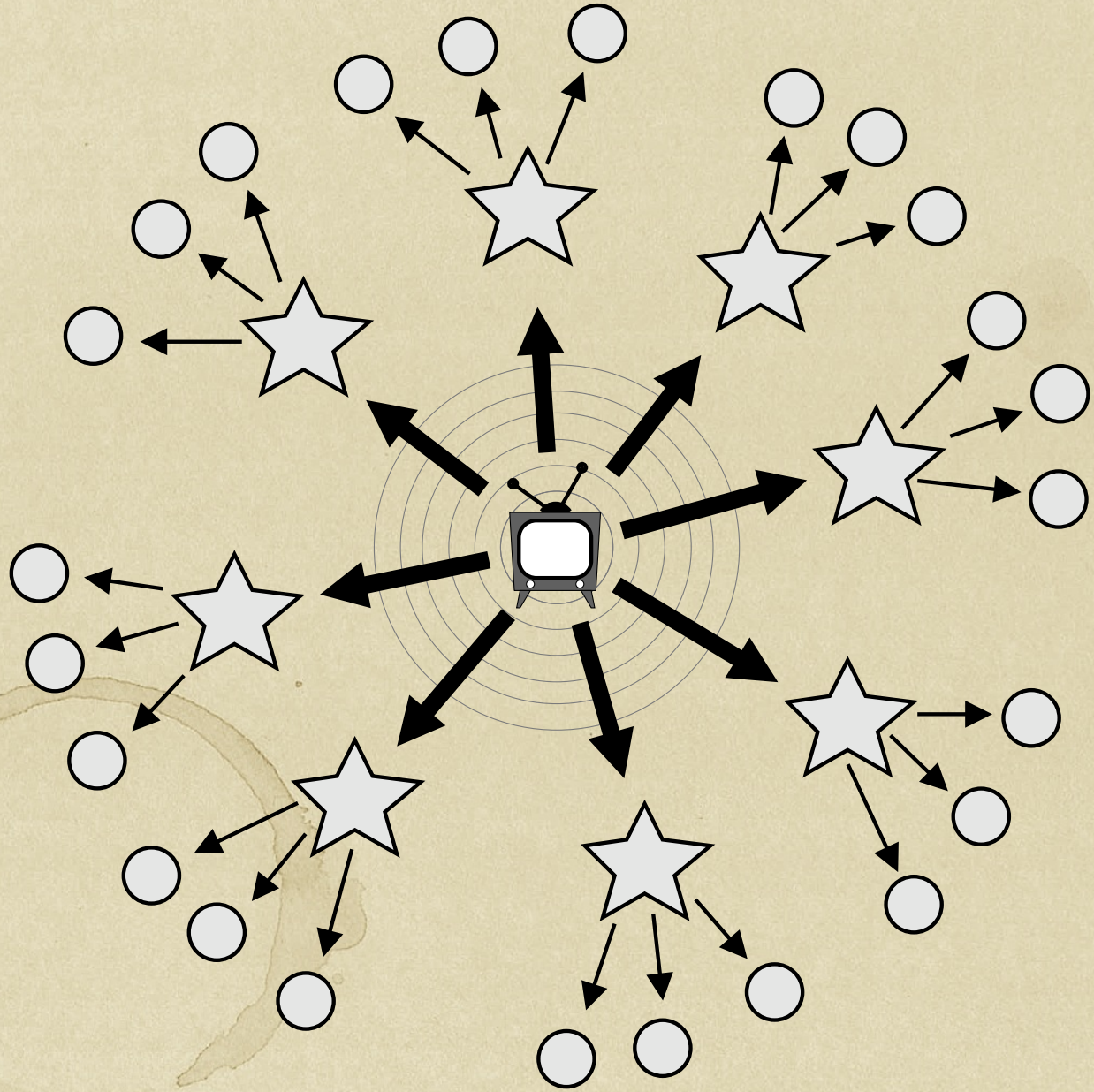


# Mistake 2:
# Seeing success is ‘due to social’ and wanting to say ‘all your interactions are belong to us’

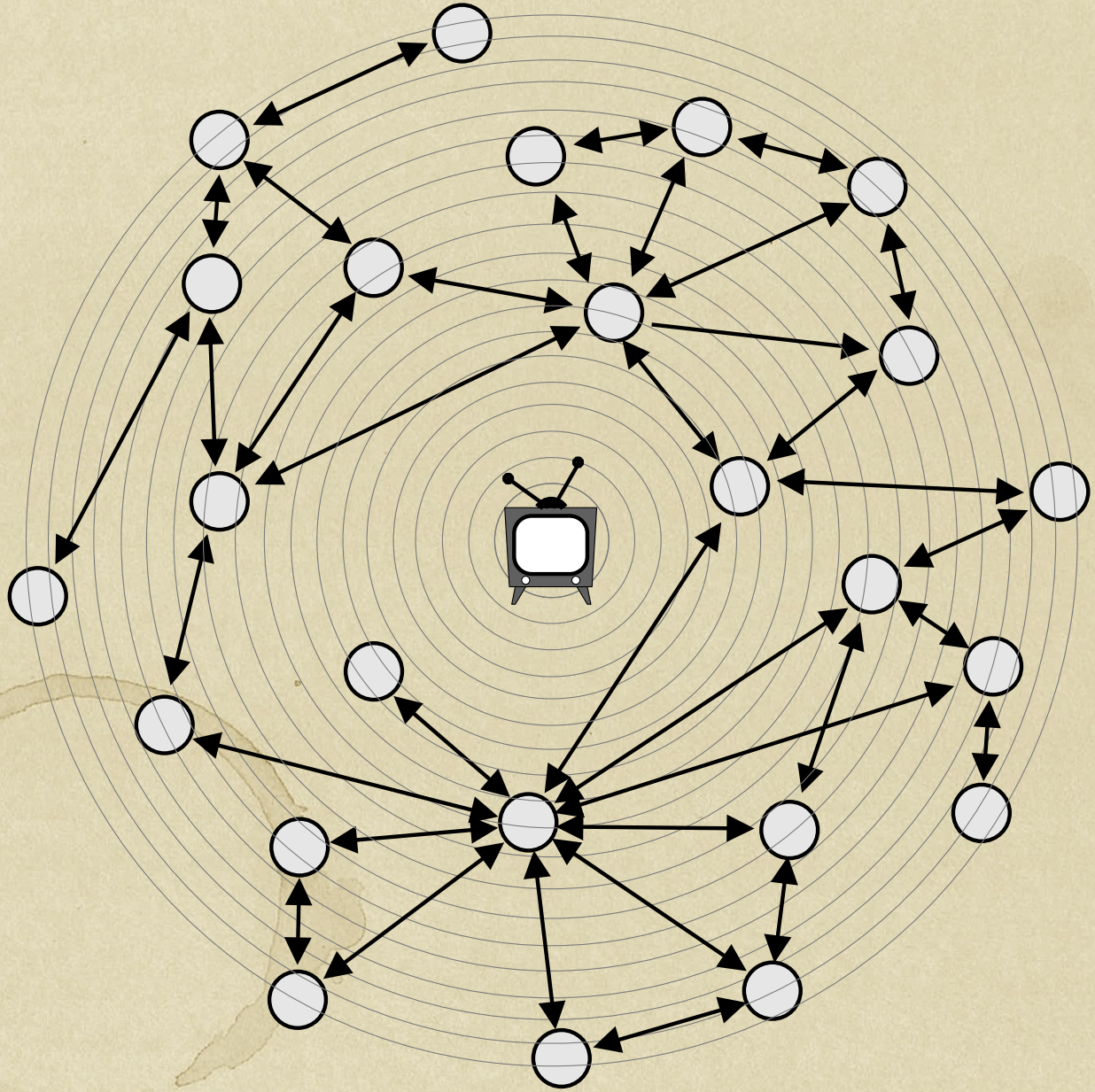
# The hypodermic model of influence:



# The two step model of influence: [1]



# The network model of influence:



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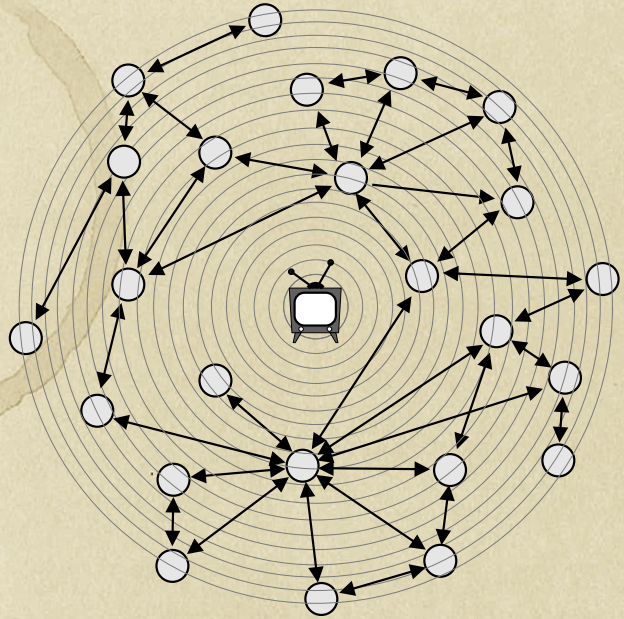


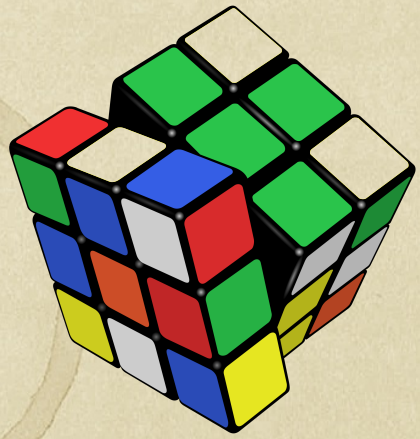
## How superspreading works:

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:

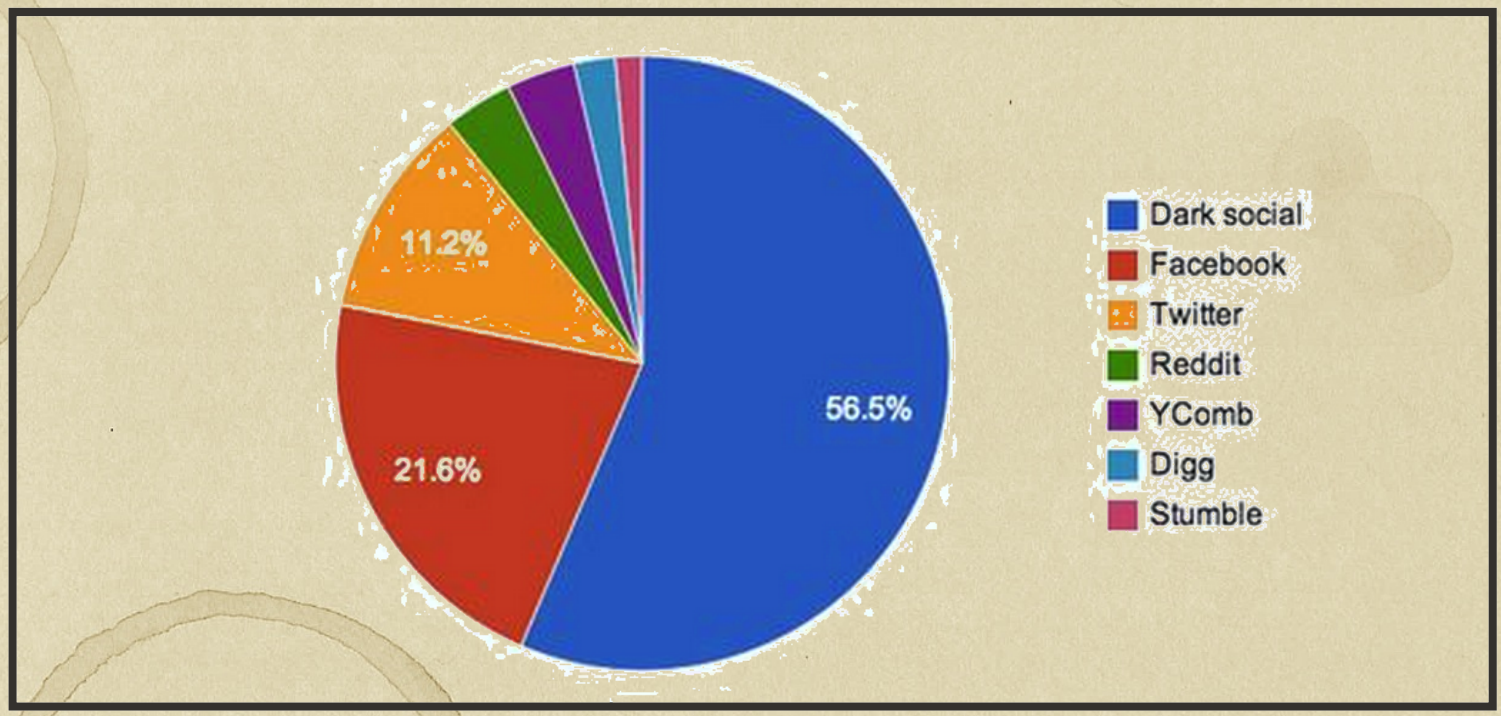




+ News ...

buzzfeed.com (⊞):

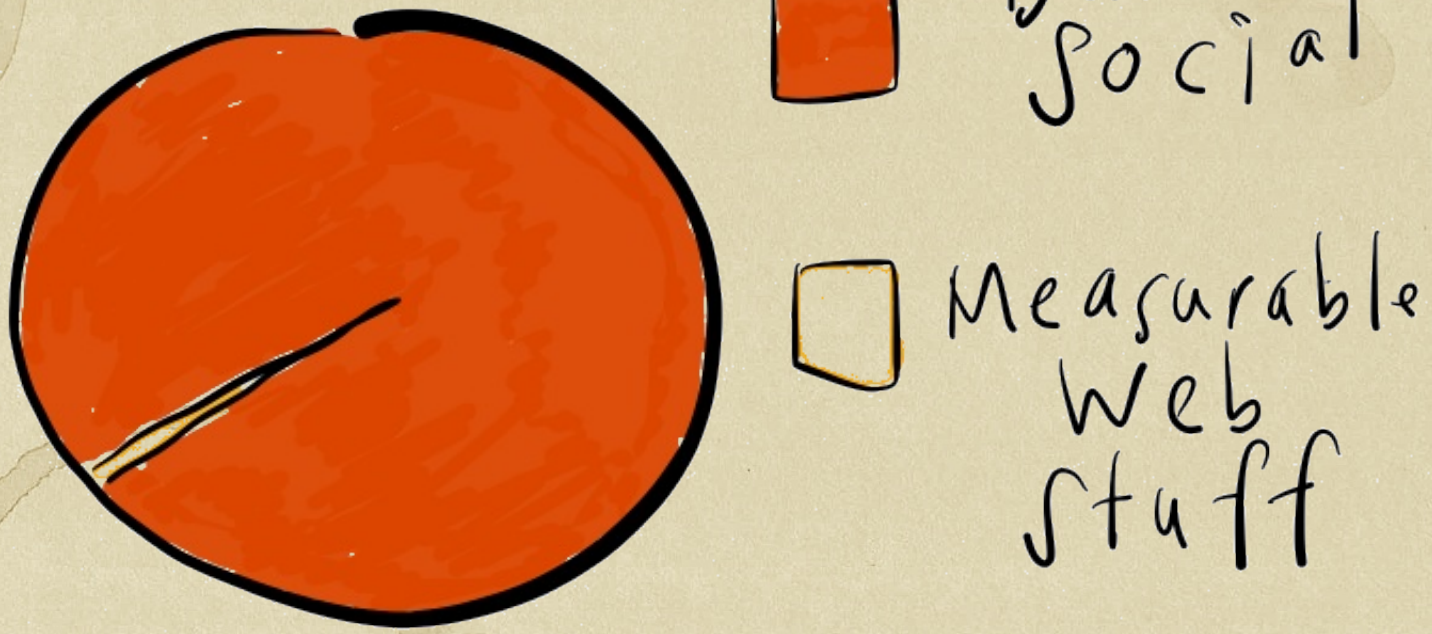
# The Dark Social Web

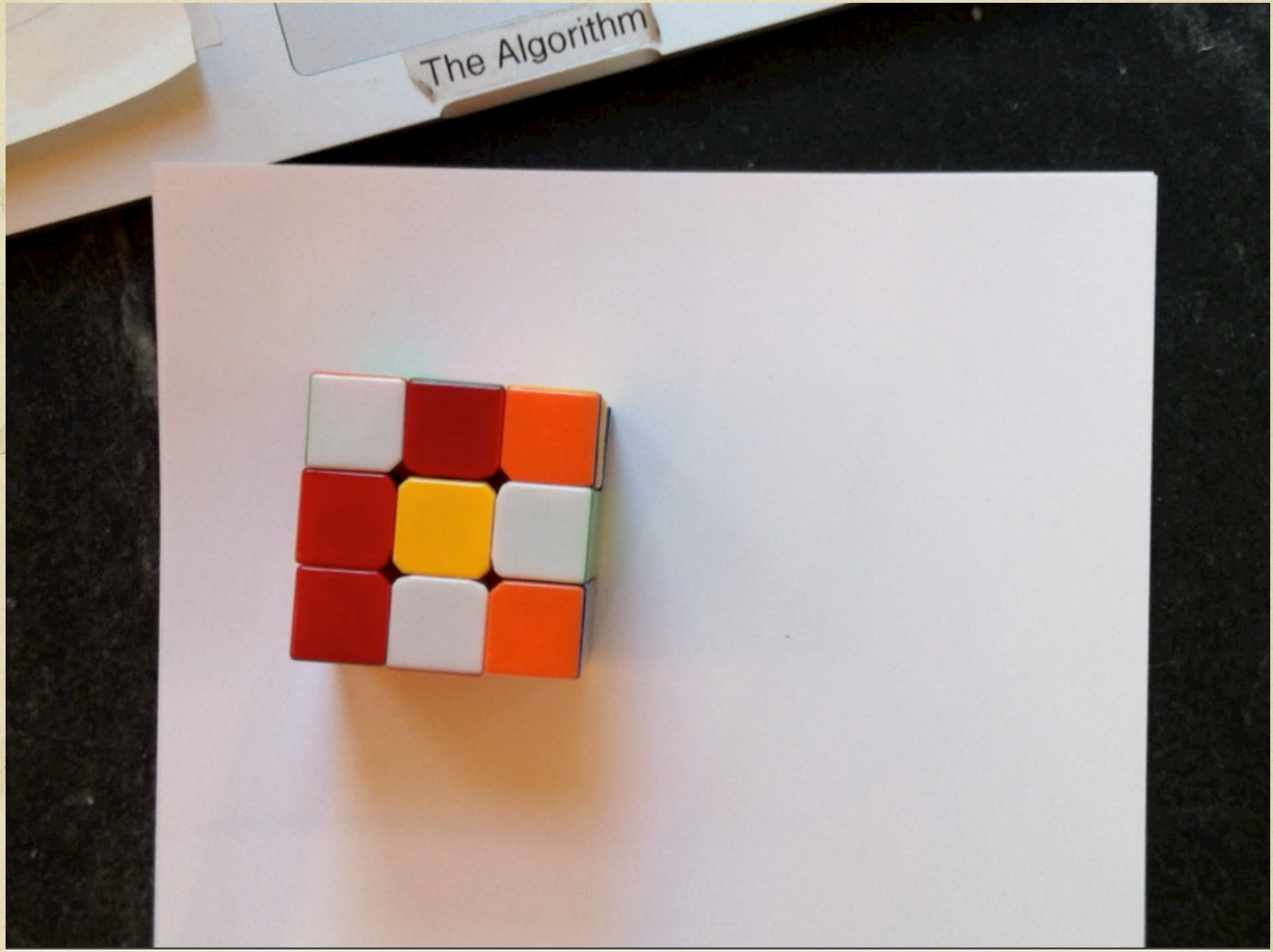



Dark Social: We Have the Whole History of the Web Wrong (⊞) [The Atlantic]

# A completely made up pie chart:






The Algorithm

# 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 (⊞)

[4] D. J. Watts and P. S. Dodds.
Influentials, networks, and public opinion formation.
Journal of Consumer Research, 34:441–458, 2007.
pdf (⊞)