

The bad and the ugly: Online firestorms and hate propagation in social media networks

Jürgen Pfeffer

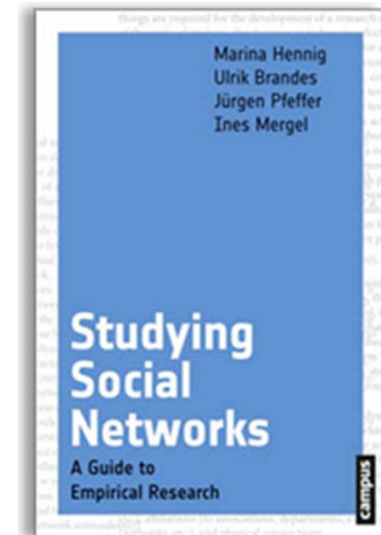
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Social and Organizational Systems

Jürgen Pfeffer

- Computational analysis of social and organizational systems:
 - Social Network Analysis
 - Metrics for large systems
 - Identify and evaluate structural change
 - Modeling structure and dynamics of real world interpersonal networks
 - Social media analytics
- Vienna University of Technology:
 - BA: Software and Information Engineering
 - PhD: Business Informatics
- 10 years industry, consulting, and non-university research



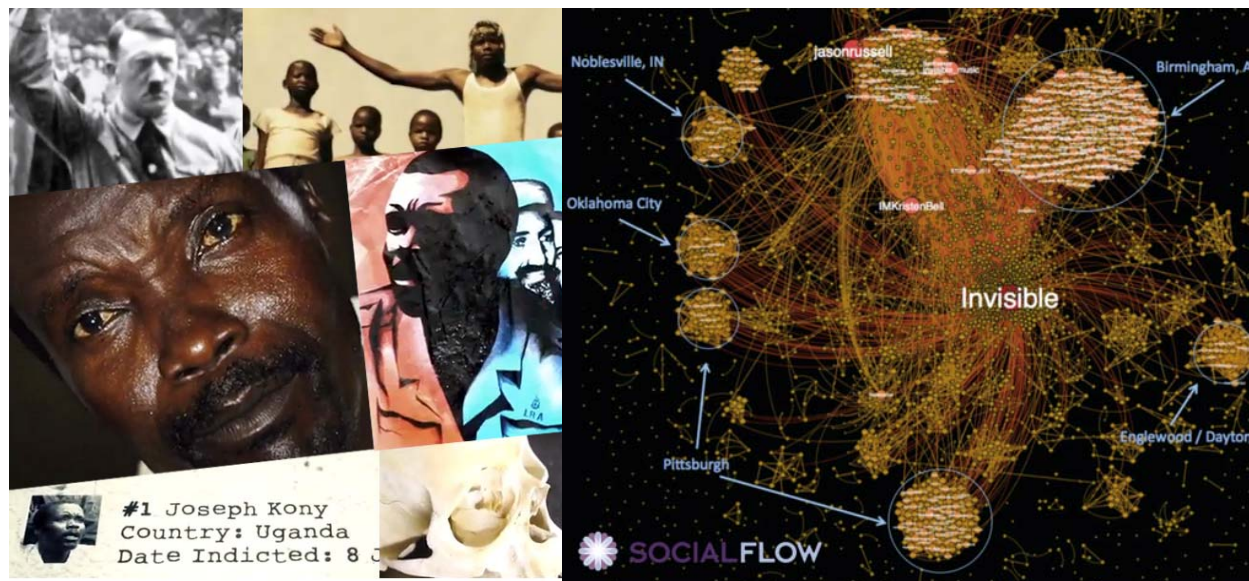
Agenda

Online Firestorms and hate propagation in social media:

- What is it?
- How does it work?
- What can we do?

Massive Negative Online Dynamics

- Qu'ran burning
- Joseph Kony (Invisible Children)
- Politics: 'Weinergate' (Petri, 2011)
- Popular culture (Barker, 2011).



Example: McDonalds



McDonald's
@McDonalds

Folgen

Meet some of the hard-working people dedicated to providing McDs with quality food every day
[#McDStories](#) mcd.to/zEckNn

27
RETWEET

6
FAVORITEN



9:30 PM - 18 Jan 12 via web · Diesen Tweet integrieren

← Antwort ↻ Retweeten ★ Favorisieren



♥ **MICHAELAlouise:)**
@kaytheloverr

Folgen

My brother finding a fake finger nail in his fries.
[#McDStories](#)

4
RETWEET



10:56 PM - 18 Jan 12 via Mobile Web · Diesen Tweet integrieren

← Antwort ↻ Retweeten ★ Favorisieren



Skip Sullivan
@SkipSullivan

Folgen

One time I walked into McDonalds and I could smell Type 2 diabetes floating in the air and I threw up. [#McDStories](#)

50+
RETWEET

23
FAVORITEN



9:30 PM - 18 Jan 12 via Twitter for iPhone · Diesen Tweet integrieren

← Antwort ↻ Retweeten ★ Favorisieren



SKChgo @SKChgo
@SkipSullivan Haha. your [#McDStories](#) was my favorite
huffingtonpost.com/2012/01/23/mcd...

23 Jan

Unsettledness in Politics and Business

“Let’s better not say anything. Otherwise, we’ll have an online firestorm tomorrow!”



Definition

“A Virtual Shitstorm is an Online phenomenon that describes the sudden discharge of large quantities of negative word of mouth and complaint behavior against a person, company, or group in social media networks, often paired with intense indignation that has shifted its focus from an actual point of criticism.”

Put social media phenomenon
into the context of
“traditional” social science
What factors drive online firestorm?



*Pfeffer, J. & Zorbach, T. & Carley, K.M. (2013).
Understanding online firestorms: Negative word of
mouth dynamics in social media networks. Journal of
Marketing Communications*

Online Firestorm = Shitstorm

01-May-2012

Dear Dr Pfeffer:

Your above referenced manuscript, entitled "Understanding virtual shitstorms: Negative word of mouth dynamics in social media networks" has been unsubmitted to Journal of Marketing Communications. It has been unsubmitted as the title is not appropriate. If this is for the special issue edited by myself and Professor Allan Kimmel, please submit direct to either of us.

Please visit the instructions to authors to complete your submission and re-submit the manuscript for consideration of publication. You may contact the Editorial Office if you have further questions.

Sincerely,

Empirical Observations/Factors

Constant flow of information, short information half-life

- Real-time messages in social media create a constant flow of communication
- Many people can be reached within a short period of time
- Result: Temporal dominance of a single topic
- Communication/reaction cycle
 - Traditional newspaper: 1 day
 - Social media: hours or minutes
- Half-Life (Burton and Kebler, 1960) of social media information:
 - Hours or even minutes (Fang, 2007).
- Twitter: Critical role in the propagation of all online firestorms

→ *Speed and volume*

Empirical Observations/Factors

No gradualist opinions, absence of discursive interactions

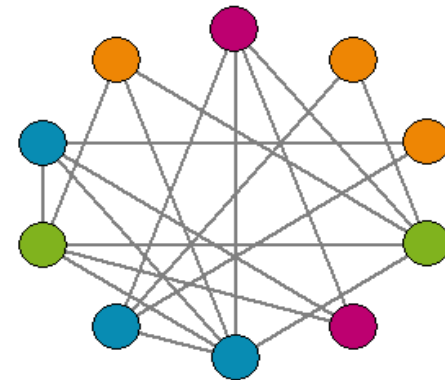
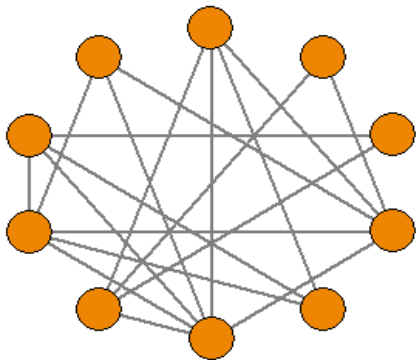
- Opinion-forming systems without sophisticated or gradualist opinions
- Re-tweet, 'like', or '+1'
- Decision-making process as *binary choices* (Schelling, 1973)
- "either-or situations"

→ *Binary choices*

Empirical Observations/Factors

Friends act as information source and as filter

- Connections tend to be based on homophily (McPherson et al., 2001)
 - similar in age, gender, and socio-economic status
- Plus: Technology filters information based on interests
- Filter bubble (Pariser, 2011) is a concept which refers to over-emphasizing the importance of single topics or opinions

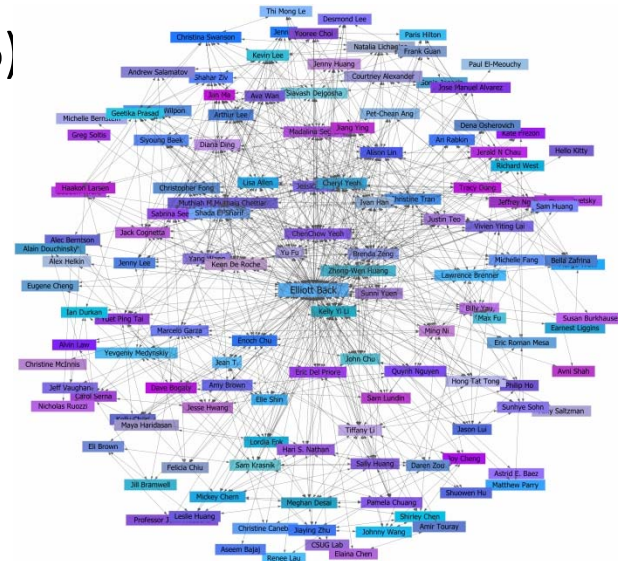
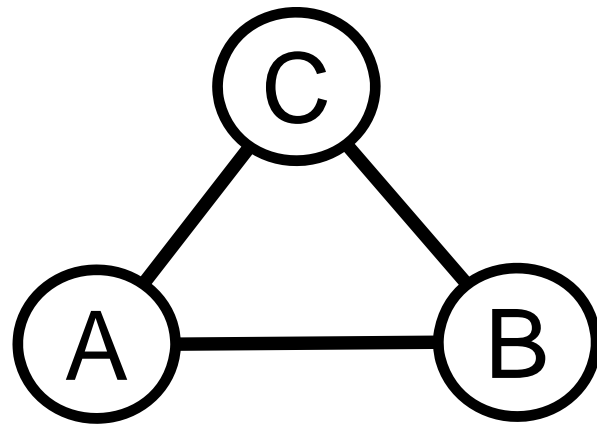


→ *Lack of diversity*

Empirical Observations/Factors

Amplified epidemic spreading, network clusters

- Interpersonal communication networks have significant local clustering (Pfeffer and Carley, 2011)
- Transitive link creations (Heider, 1946)

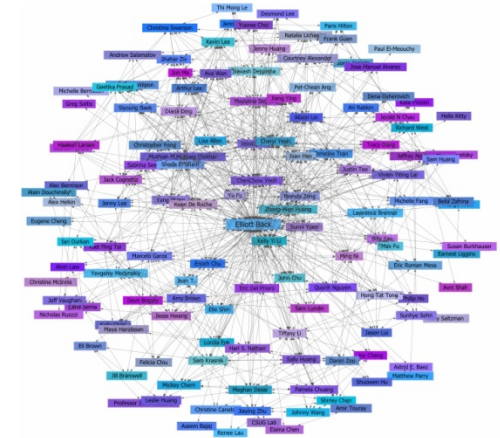


- Social media systems intensify this effect with link suggestions

Empirical Observations/Factors

Amplified epidemic spreading, network clusters

- Average Facebook user Ann: 130 friends
- Ben posts a very interesting piece of information
- Ben's friends like what Ben says (Homophily)
- Ben's friends are also friends with Ann (Transitivity)
- Ann receive a large amount of posts to one topic
- Amplifying effects of opinion-forming: echo chambers (Key, 1966)



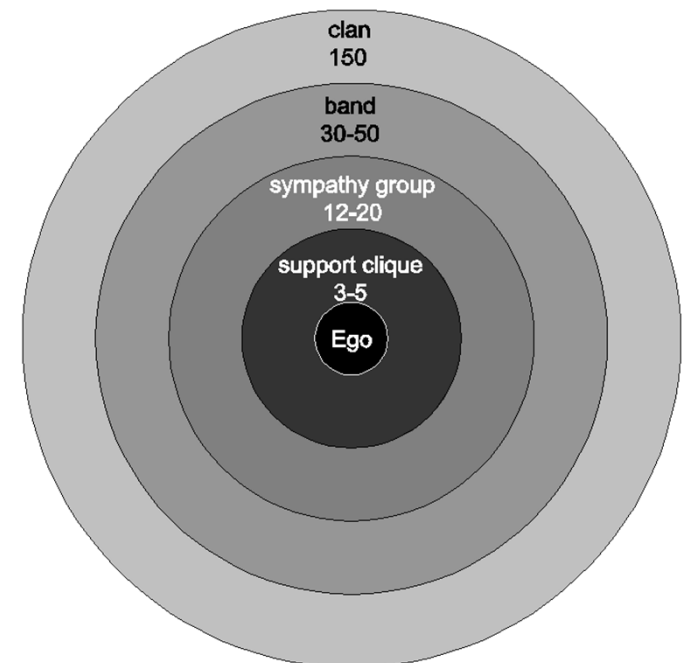
→ *Network clusters & echo chambers*

Empirical Observations/Factors

Hundreds of “friends” create many information

- Offline: Hierarchical groups of alters (Zhou et al., 2005)
- Strength of ties
 - amount of time, the emotional intensity, the intimacy, and the reciprocal service
- In social media, every connection gets the same amount of attention

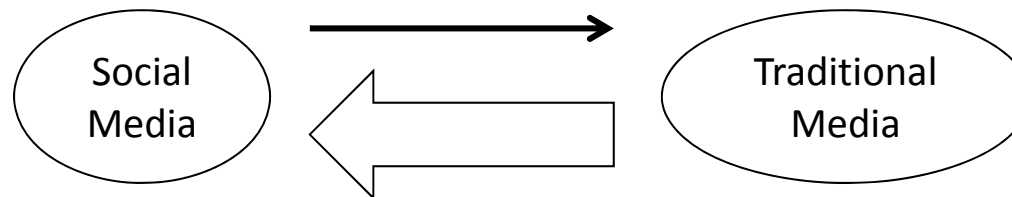
→ *Massive unrestrained information flow*



Empirical Observations/Factors

Offline and online media reinforce one another

- Social media are an important information source for traditional media (Diakopoulos et al., 2012).
- Twitter is used as “radar”
- Social media hooks are connected to the media story



- Significant amount of dynamics are “external events and factors outside the network” (Myers et al., 2012)

→ *Cross media dynamics*

Empirical Observations/Factors

Modified opinion adoption process, dominant network effects

- Diffusion and adoption process (Rogers, 1995; Pfeffer et al., 2013):

- *Knowledge*

Filter Bubble

- The agent gets in contact with a new opinion or belief.

- *Persuasion*

Echo Chamber

- The agent starts to have a positive or negative. Re-infection.

- *Decision*

- The opinion or belief is accepted or rejected.

- *Propagation*

- The agent starts to actively propagate the opinion or belief. Infection.

- *Affirmation*

Echo Chamber

- Positive feedback encourages, negative feedback destabilizes.

→ *Cognitive processes get replaced by network effects!*

Dynamics of Online Firestorms: Factors

- Speed and volume of communication
- Binary choices
- Lack of diversity
- Network clusters
- Unrestrained information flow
- Cross-media dynamics
- Network-triggered decision processes

What to do?

1. Stay calm

- No overreaction
- But also: no ignoring
- Stories have short lives
- Don't overestimate the moment

2. Increase diversity

- Individual: Connect to very different people
- Organizations: Build diverse communities

What to do?

3. Don't forget traditional media

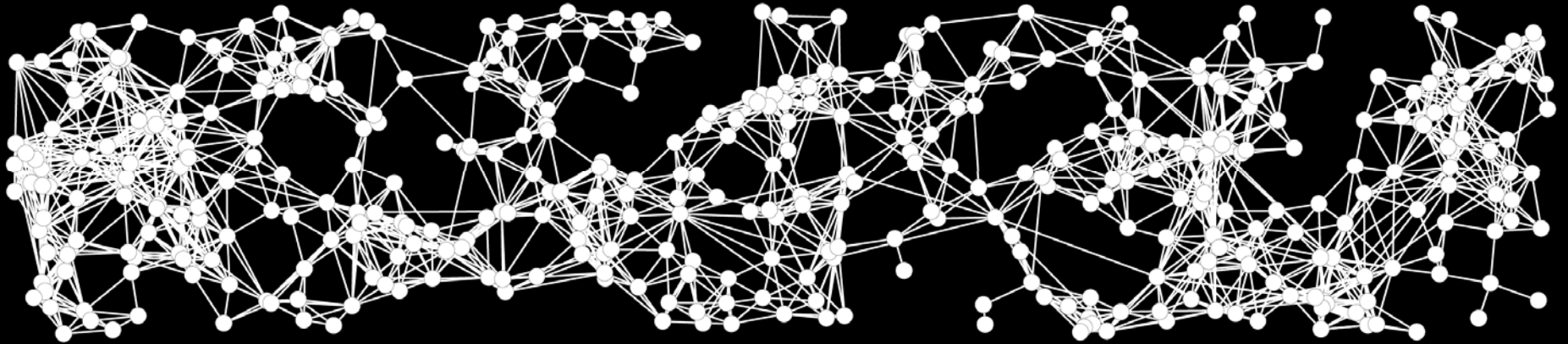
- Specific journalists are key for social media dynamics

4. Tackle network effects

- 'Burst' a person's filter bubble by being connected
- Be the *early* and the *trusted* sources of information (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980)
- Destabilize opinion forming processes
- You need intermediaries: Create fan networks!

*“Our mission is to go forward, and it has only just begun.
There's still much to do, still so much to learn. Engage!”*

Jean-Luc Picard, TNG Season 1 Ep. 26



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