THE IMPACT OF
SOCIAL MODELS

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IDEA2009 TORONTO, CANADA
“Behavior is a function of social context.”
“Nobody smokes in church – no matter how addicted.” – Richard Farson

The Power of Context

Small features of context can produce huge differences in behavior.

So what is the impact of specific social models on people’s online behavior?
Social Relationships (modeled) Online

<table>
<thead>
<tr>
<th>No Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
</tr>
<tr>
<td>Groups</td>
</tr>
<tr>
<td>• Public, Semi-public, Private</td>
</tr>
<tr>
<td>Symmetrical/2-way</td>
</tr>
<tr>
<td>Asymmetrical/1-way</td>
</tr>
<tr>
<td>• Permissioned, Blocked</td>
</tr>
</tbody>
</table>
Do Social Models Affect Contribution?

- 480% increase in contribution when number of relationships increased by 20

No Relationship
No Relationship (but both on the Web)

**Location**
- GPS: 10m (outdoors only)
- WiFi: 50m (now with geolocation api)
- Cell tower: 100-400m (triangulated)

**Technology**
- Device: palm, lap, desk, wall
- Operating System
- Browser: capabilities available
- Settings

**Browser History**
THE WEB

A COMMUNITY

A Community
A Community (1 to many relationship)

- Are users on the same site
- Can interact with each other
- Messaging and/or collaboration
- Leave visible traces of behavior
- Can manage identity (profile)

Source: Questioning Yahoo! Answers, 2007 ACM
A Community (1 to many relationship)

- 1.8% of all users write more than 70% of all Wikipedia articles
- 0.003% of Digg’s users are responsible for 56% of the stories on the site’s home page
- 0.064% creator to consumer ration on YouTube
- 90% of eBay’s users are not being monetized according to estimates

• 1% Creators
• 10% Curators
• 100% Consumers

A Group

- A set of people within a community
- Clearly defined relationship
- Topic, relationship, or collaboration based
- Can be long-lived or temporary
- Convenient communication: one to many
A Group (1 to many relationship)

**Relationship-based**
- Support existing offline & personal relationships
- Communication is more personal in nature
- Coordinating events, meetings, etc.
- Lighter posting volume but more interest

**Topical**
- Provides information about specific topics
- Allows members to stay aware/up to date
- Archives information
- Higher posting volume, but high noise to signal ratio

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A Group (1 to many relationship)

**Listed & Unlisted**
- Listed: can be found through search or browse
- Unlisted: discovered through an invitation or posted URL

**Open, Restricted, or Closed**
- Open: non-members may read and post messages
- Restricted: only members can view/post, but membership is automatically granted
- Closed: only members can view/post, moderator must approve membership

Source: Preferential Behavior in Online Groups, 2007 ACM
A Group (1 to many relationship)

Public
• Anyone can view & post

Semi-public
• Anyone can join, only members can view & post

Private
• Only members can join & post

THE WEB

A COMMUNITY

A GROUP

A PERSONAL RELATIONSHIP

Source: Preferential Behavior in Online Groups, 2007 ACM
A Personal Relationship

Symmetrical/2-way/connection

- Confirmed & controlled by both sides
- Sharing enabled as part of handshake
- When either side severs, relationship is gone
- Often no notification when severed
- Can be used to mirror real world relationships
Symmetrical/2-way/connection

- 10% of users account for 30% of production
- 12% of Facebook users update their status daily
- 40% of Facebook users have updated status in past 7 days
- 1.89% of page views are contribution (photos, content, videos, events)

Asymmetrical/1-way/fan/follow

- Declared by one-side
- Easy to establish (no reciprocal action required)
- Can maintain privacy control through permissions
- Supports multiple relationship structures
- Often more public than 2-way relationships
Asymmetrical/1-way/fan/follow

1-way follow
- A follows B (one direction)
- B follows A (other direction)
- A follows B, B follows A (mutual)
- A nor B follow each other

Blocking
- A blocks B (can’t follow)

Private accounts
- A has private account, allows B (permissioned follow)

Asymmetrical/1-way/fan/follow

Categorized 1-way
- Flickr example
- A can follow B
- A can optionally mark B as friend, family, or both
- Friend and family categories enable permissions (restricted photo sharing)
- B does not have to reciprocate relationship to see permissioned content (unlike a 2-way)
Asymetrical/1-way/fan/follow

Permissioned 1-way
- Y! Messenger example
- A sends B a request
- B accepts, then A has to accept
- Once permission is given, there is no way to revoke it (unlike 2-way)
- Can only appear offline or ignore/block them
- The two 1-way relationships are independent
- But may be perceived by users as 2-way

<table>
<thead>
<tr>
<th>Is Following</th>
<th>Has a Private Account</th>
<th>Has Blocked</th>
<th>Marked as Family</th>
<th>Marked as Friend</th>
</tr>
</thead>
<tbody>
<tr>
<td>User A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>User B</td>
<td>Yes</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>User C</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>User D</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
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Asymmetrical/1-way/fan/follow

Twitter Users
- 10% of users account for 90% of production
- 50% have not updated status in past 7 days
- 55% are not following anyone
- 52% have no followers

Social Relationships (modeled) Online

No Relationship
Community
Groups
- Public, Semi-public, Private
Symmetrical/2-way
Asymmetrical/1-way
- Permissioned, Blocked
### Do Social Models Affect Contribution?

2-way vs. 1-way

- **12%** of all Facebook users update their status at least once a day (2-way model)
- **40.5%** of Facebook users have updated status in past 7 days (2-way model)

- **14.7%** of all Twitter users post an update at least once a day (1-way model)
- **49.6%** of all Twitter users posted an update in past 7 days (1-way model)

Inside Twitter study: Sysomos June 2009
Facebook app data for friend updates (300+ users)

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### Do Social Models Affect Contribution?

2-way vs. 1-way

- **30%** of production comes from 10% of users on a typical (2-way model) social network
- **90%** of production comes from 10% of users on Twitter (1-way model)

Source: Harvard Business Review research by Bill Heif and Mikolaj Piskorski, June 2009
Do Social Models Affect Contribution?

Community vs. 2-way

- .0032% page views vs. video uploads on YouTube worldwide
- 1.89% page views vs. content contribution (not counting status updates & comments) on Facebook worldwide
- 58,000% more contribution?

Source: Facebook & YouTube site stats and ComScore PS vs August 2009

Do Social Models Affect Contribution?

- Top 10% of Twitter users account for 90% of content
- Top 15% or Wikipedia users account for 90% of content
- Top 30% of typical social network users users account for 90% of content

Source: Harvard Business Review research by Bill Heil and Mikolaj Piskorski, June 2009
Do Social Models Affect Contribution?

Yes, but there’s more to it...
1. Relationship limits exist in all models
2. Tight knit circles flourish in all models
3. Communication activity can reveal tight knit circles that matter
4. The more attention you get, the more you contribute – to a point
5. 1-way relationships are optimized for broad reach
6. But real relationships drive more production
7. Creation can be encouraged in other ways

Relationship limits exist

- **120** average number of friends per user on Facebook in Feb 2009
- **144** average on Facebook 2004- March 2006
- **92.4%** of people on Twitter follow less than 100 people
- **148** size of stable social networks the human brain can manage at its current size (Robin Dunbar)
Relationship limits exist

<table>
<thead>
<tr>
<th>NUMBER OF USERS</th>
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<th>NUMBER FRIENDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10M</td>
<td>1k</td>
<td>10k</td>
</tr>
<tr>
<td>1k</td>
<td>5k</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
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</tbody>
</table>

100 people or less followed by 92.4% of users

120 avg. number of friends per user

Tight knit circles flourish

- 2–3 average “clique” size on Y! Answers before social relationships were added
- 4 average people a man messages on Facebook
- 6 average people a woman messages on Facebook
- 7 average friends’s walls a man on Facebook posts to
- 10 average friends’s walls a woman on Facebook posts to
- 13 average “friends” for 92% of Twitter users

Source: Rhythms of social interaction, HP Labs
State of the Twittersphere, Hubspot, June 2009

Source: Social Networks that Matter: Twitter under the Microscope, January 2009
Primates on Facebook, Economist, Feb 2009
Tight knit circles flourish

- 90% of a user’s “friends” reciprocate attention by being friends as well.

Communication reveals relationships

- 90% reciprocal relationships on Twitter when two sides exchanged at least two “@” messages
- 15.1% of Facebook friends exchange direct messages
- 95% accuracy for detecting real friends using mobile call logs & location
Communication reveals relationships

- 65 million active Facebook mobile users
- 12 mobile platforms with Facebook applications
- 23 minutes of use per day spent by Facebook mobile users

Source: Facebook Blog, Sept 2009
ComScore Mobile Matrix, July 2009
More attention, more contribution

- 3 to 6 change in average daily Twitter updates when get 1,000 followers
- 10 average daily Twitter updates with 1,750 followers
- 480% increase in questions answered on Y! Answers when relationships increased by 20

Source: Inside Twitter study, Sysomos June 2009

Less attention, less contribution

- As contributors approach their last video upload, the average previous views exhibited a marked linear decrease

Source: Crowdsourcing, Attention, and Productivity September 2008
• When relationships increased by 20, contribution increased by 480%
• When relationships increased by 20 again, contribution dropped by 35%

More contribution to a point...

• Though number of posts increases as followers increase, it eventually saturates

Source: Social Networks that Matter: Twitter under the Microscope, January 2009
1-way relationships optimize for reach

- Like topic-based groups, 1-way allows people to stay connected with interests
- Only a lightweight “subscribe” action is required
- Having followers encourages contribution (see who likes you!) & builds audience
- Though a broadcast format, still enables conversation
- Allows for asymmetrical relationships (5,000 followers, 150 following)
- Public updates allow information & messages to “amplify”
- Better aligned with celebrities, brands, companies: quantity indicates popularity, or authority

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1-way relationships optimize for reach

- 90% of a Facebook page’s fans can be a part of a single connected group
- 15% of all fans arrived independently and started their own chain
- These patterns hold for pages with few thousand fans and those with more than 50,000
Real relationships drive production

- **0-1-2 effect**: probability of joining an activity when two friends have done it is significantly more than twice the probability of doing it when only one has done so.


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Real relationships drive production

- Total number of posts increases with friends without saturating up to 3,200 posts.

Source: Social Networks that Matter: Twitter under the Microscope, January 2009
Tight knit circles flourish

- Contribution as friends increase does not saturate like it does for followers

Source: Social Networks that Matter: Twitter under the Microscope, January 2009

It's not just relationships...
It’s not just relationships...

“Most user-created content is crappy. As we create better tools, we’ll increase the value of the output of those tools.” - Will Wright

The Impact of Social Models

1. Context shapes behavior
2. How we model social relationships in software creates context
   1. No relationship, Communities, Groups, 2-way & 1-way personal relationships
3. Social models do affect contribution
4. But core behaviors exist across all models
   1. Attention limits
   2. Tight knit circles
   3. Activity signals
   4. Contribution drivers
5. Social relationships alone do not drive contribution
Thank You!

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