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Social Networks, Privacy, and Information Flow

Clarissa Littler

June 20, 2016

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- Outlining problems with privacy and content control

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- A fully implementable design
- How to make our proposal performant

What we're not covering

- A fully implementable design
- How to make our proposal performant
  - Premature optimization $= \sqrt{evil}$

What we're not covering

- A fully implementable design
- How to make our proposal performant
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- How to solve all privacy and content control problems

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- Sharing

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My position

Everyone should have the right to participate in the public internet without fear of harassment either online or off

What should privacy mean in social media?

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Information flow as generalized privacy

Having control over your content: both who can see it, how they can interact with it, and what happens when its shared

What privacy features we want

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- . . . and over allowed interaction

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- . . . and over allowed interaction
- Sharing respects your preferences

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- Choose when you become viral
- Choose when you want comments
- Choose who can share
- ...

What social media gives us

- Limited control over visibility

What social media gives us

- Limited control over visibility
- No revocation

What social media gives us

- Limited control over visibility
- No revocation
- Little control over interactions

What social media gives us

- Limited control over visibility
- No revocation
- Little control over interactions
- Sharing changes ownership

What social media gives us

- Limited control over visibility
- No revocation
- Little control over interactions
- Sharing changes ownership
  - Possession is 9/10 of the law

Review of social networks

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  - Facebook

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  - Tumblr

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Privacy on Facebook

- Most flexible

Privacy on Facebook

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- Most flexible
- Can choose who can see (or can't see) posts

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- Most flexible
- Can choose who can see (or can't see) posts
- Can lock down personal information selectively

Privacy on Tumblr

- Blocking

Privacy on Tumblr

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- Blocking
- Being visible only to logged in users
- Can declare blanket no-replies

Privacy on Tumblr

- Blocking
- Being visible only to logged in users
- Can declare blanket no-replies
- Being unsearchable

Privacy on Twitter

- Blocking

Privacy on Twitter

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- Blocking
- Locking down

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Revocation and Blocking

- Blocking
- Locking down
- ...

Privacy on Twitter

- Blocking
- Locking down
- ...
- No, really, that's it

Why it's not enough

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- Can control who *sees* posts

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- . . . but not how they interact with it

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- No revocation

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- . . . but not how they interact with it
- No revocation
  - "The Internet is Forever"

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- Can control who *sees* posts
- . . . but not how they interact with it
- No revocation
  - "The Internet is Forever"
- No general flow control

Privacy offline

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- Offline privacy is subtle and nuanced

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  - "Don't tell Clarissa but..."
  - "Well it's not official yet..."

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- Offline privacy is subtle and nuanced
- Social graph is more controlled
  - "Don't tell Clarissa but..."
  - "Well it's not official yet..."
- Social expectation

In a restaurant

Hackathons

Interrupting strangers

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Revocation and

Lectures

Public but inaccessible

You can witness conversations without having expectation of being able to participate or interact with them.

Public but inaccessible

You can witness conversations without having expectation of being able to participate or interact with them.

There's no expectation that all participants are on even footing.

Fine grained social permissions

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- Public but inaccessible
- Expectation of how information will flow

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- Many nuanced situations offline
- Public but inaccessible
- Expectation of how information will flow
- How is this enforced?

Social contracts and enforcement

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- Social not legal consequences

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- Social not legal consequences
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- How do we stop poor behavior?
- Social not legal consequences
- Being cut off from friends is meaningful
- Public humiliation is a powerful force

What's different about social media?

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Why isn't social media like older forms of communication?

Anonymity

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Scaling and rapidity

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POPULAR TEXT POSTS SUPPORT GROUP

RSS
ARCHIVE

11 MONTHS AGO
16283 NOTES

frenchfrycoolguy:

> every single person who has ever made a text post that got 100k+ (or even just like 10k+) notes knows that there is no benefit to making a popular text post at all beyond it being sort of flattering for the first like 10 minutes
>
> - nobody follows u for making it. ever.
> - the notification blocker doesn't really work because theres just too much shit going on
> - people make SUPER annoying commentary on the post that is rly repetitive ("has anyone else pointed out that-" **yes**. i have seen this exact text eight times today. i know you mean well but you are hurting me)
> - it makes it impossible to see notifications for posts ur actually looking for notifications on
> - it causes u to regret being funny
>
> like all u get in return is absolute hellfire for like a week straight followed by 0 benefits and every time somebody revives it so it starts circulating again u rly just want to close ur laptop and punt it into a tree

i'm sorry about your ironically popular text post.

(via belinsky)

Source: shacklefunk

Incentives and social contracts

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- Being blocked isn't a disincentive

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- Being blocked isn't a disincentive
- Groups are rapid forming and loose knit

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- Being blocked isn't a disincentive
- Groups are rapid forming and loose knit
- Humiliation, where is thy sting?

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- Being blocked isn't a disincentive
- Groups are rapid forming and loose knit
- Humiliation, where is thy sting?
- "Stop whinging. It's the internet!"

My thesis

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There should not be a fundamental difference between online and offline interactions in terms of expectations of privacy and information control.

Current social media

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- Mostly all or nothing

Current social media

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- Mostly all or nothing
- No equivalent of public but inaccessible

Current social media

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- Mostly all or nothing
- No equivalent of public but inaccessible
- All possible ways of interacting are lumped together

How do we get there?

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- Control interaction and flow not just visibility

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- Control interaction and flow not just visibility
- Social expectation must be set in policy

Permissions in social media

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  - Sharing with commentary

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  - Sharing with commentary
  - Sharing and changing tags

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  - Sharing with commentary
  - Sharing and changing tags
- Conversing on a post

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- Sharing a post
  - Sharing with commentary
  - Sharing and changing tags
- Conversing on a post
- Replying to a post

Who gets these permission?

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- How do we set policy

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- Policy controls permissions
- How do we set policy
- How do policy and sharing interact?

Role based access control

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- Control access by assigning roles

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- Groups in Linux

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- Databases
- Permissions-by-job

Role based in social media

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- Facebook's custom groups

Role based in social media

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- Facebook's custom groups
- Google+'s circles

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- Facebook's custom groups
- Google+'s circles
- Dreamwidth/LJ custom groups

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Revocation and

- Facebook's custom groups
- Google+'s circles
- Dreamwidth/LJ custom groups
- Still no disentangling of permissions

Role based + fine-grained permissions

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- Massive improvement

Role based + fine-grained permissions

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- Massive improvement
- Make it easier to protect data

Role based + fine-grained permissions

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- Massive improvement
- Make it easier to protect data
- Not the best though

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- Massive improvement
- Make it easier to protect data
- Not the best though
  - When I share I "own" it

What are capabilities?

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- Unforgeable pointers to resources
- A pointer with permissions

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- A pointer with permissions
- Both a way to access...

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- Unforgeable pointers to resources
- A pointer with permissions
- Both a way to access...
- And a way to control access

Capabilities in operating systems

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Revocation and

- Example: pointer to a file

Capabilities in operating systems

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  - Read

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- Example: pointer to a file
  - Read
  - Write

Capabilities in operating systems

- Example: pointer to a file
  - Read
  - Write
  - Execute

Capabilities in operating systems

- Example: pointer to a file
  - Read
  - Write
  - Execute
  - *Share*

Capabilities in operating systems

- Example: pointer to a file
  - Read
  - Write
  - Execute
  - *Share*
  - *Change permissions*

Capabilities aren't policy

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Assigning permissions in operating systems and social networks

Revocation and

Capabilities are issued in *accordance* with policy. The agents must share responsibly.

Principle of least privilege

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Revocation and

Only give the privilege necessary to get the job done

Focusing on Posts

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- What if we focused on permissions attached to the post

Focusing on Posts

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- What if we focused on permissions attached to the post
- Better enforceable policies

Focusing on Posts

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- What if we focused on permissions attached to the post
- Better enforceable policies
- Principle of least privilege

Posts with metadata

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- A post is *already* content and metadata

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- A post is *already* content and metadata
- Who retweeted it from whom

Posts with metadata

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Revocation and

- A post is *already* content and metadata
- Who retweeted it from whom
- Reblogs and commentary of reblogs

Posts with metadata

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Revocation and

- A post is *already* content and metadata
- Who retweeted it from whom
- Reblogs and commentary of reblogs
- Proposal: add permissions as metadata on posts

Posts as capabilities

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Revocation and

The basic idea

Posts with permissions attached should be thought of as capabilities

Timelines as working sets

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Revocation and

- To view a post is to be allowed to "get" the capability

Timelines as working sets

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Revocation and

- To view a post is to be allowed to "get" the capability
- Your timeline becomes the "working set"

Permissions and sharing

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Revocation and

- Users "get" a post with certain permissions

Permissions and sharing

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Revocation and

- Users "get" a post with certain permissions
- Sharing gives your followers copies of posts

Permissions and sharing

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Revocation and

- Users "get" a post with certain permissions
- Sharing gives your followers copies of posts
- ...with what permissions?

Permissions and sharing

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Revocation and

- Permissions are on the post
- Changing permissions

Permissions and sharing

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- Permissions are on the post
- Changing permissions
- Permission to change permissions

Permissions and sharing

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- Permissions are on the post
- Changing permissions
- Permission to change permissions
- Downgrading permissions

Logged out users

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Revocation and

- Logged out users shouldn't see anything

Logged out users

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Revocation and

- Logged out users shouldn't see anything
- The most respectful choice

Logged out users

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Revocation and

- Logged out users shouldn't see anything
- The most respectful choice
- But what does this do to indexing?

Logged out users

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Revocation and

- Logged out users shouldn't see anything
- The most respectful choice
- But what does this do to indexing?
- Should we care?

Revocation

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Revocation and Blocking

- Sharing forms a tree

Revocation

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Revocation and Blocking

- Sharing forms a tree
- Sharing information is already tracked

Revocation

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Revocation and Blocking

- Sharing forms a tree
- Sharing information is already tracked
- The tree should be prunable at specific points

Traditional blocking

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Revocation and Blocking

- A user blocks another users

Traditional blocking

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- A user blocks another users
- Global block from interaction

Traditional blocking

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Revocation and Blocking

- A user blocks another users
- Global block from interaction
- Doesn't have clear sharing semantics

Per-post block lists

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Revocation and Blocking

- Per post blocking

Per-post block lists

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Revocation and Blocking

- Per post blocking
- Posts accumulate blocks as they're shared

Per-post block lists

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- Per post blocking
- Posts accumulate blocks as they're shared
- Different sharing paths accumulate different blocks

Per-post block lists

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Revocation and Blocking

- Per post blocking
- Posts accumulate blocks as they're shared
- Different sharing paths accumulate different blocks
- ...but is that bad?

New kinds of control

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Revocation and Blocking

Post-centered thinking leads to new kinds of control over your posts.

Tagging control

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Revocation and Blocking

- Preventing the adding or removing of tags

Tagging control

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Assigning permissions in operating systems and social networks

Revocation and Blocking

- Preventing the adding or removing of tags
- Preventing the ability to toggle searchability

Self-destructing messages

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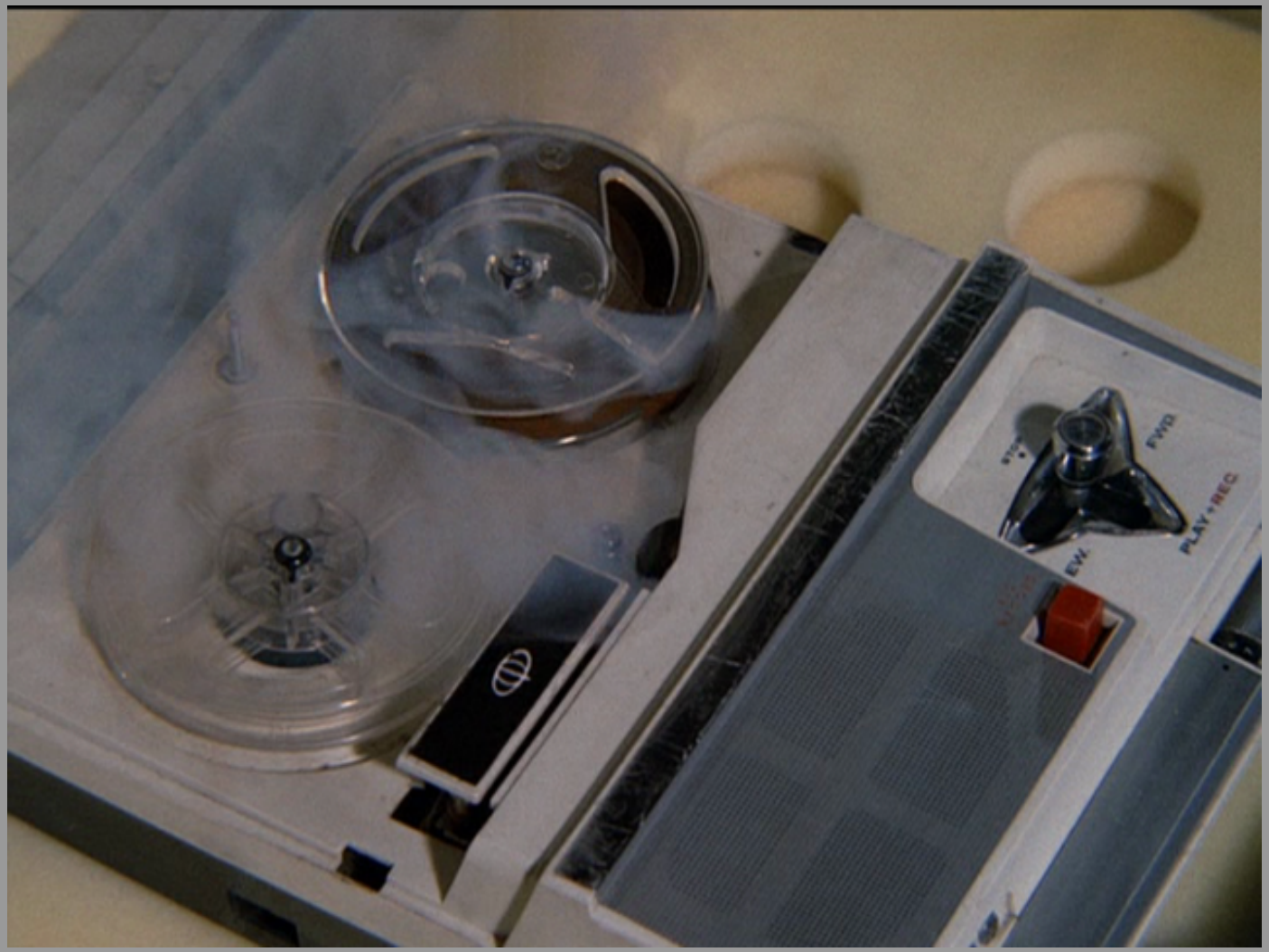

Message depth

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Controlling the depth of the sharing tree: beyond a certain point no more sharing can happen

Making policy

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Assigning permissions in operating systems and social networks

Revocation and Blocking

With this fine-grained customization, we need a good user interface and sensible defaults

Making policy

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- Role-based defaults for assigning permissions

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- Role-based defaults for assigning permissions
- Can override roles whenever needed

Making policy

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- Role-based defaults for assigning permissions
- Can override roles whenever needed
- Setting permissions defaults by tag

Making policy

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Assigning permissions in operating systems and social networks

Revocation and

- Role-based defaults for assigning permissions
- Can override roles whenever needed
- Setting permissions defaults by tag
- Most uses are simple

Announcements

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Social Media and Permissions

Assigning permissions in operating systems and social networks

Revocation and Blocking

You have a professional account for your business, and you want to make an announcement that can be shared but don't want anyone to comment or reply to it.

Preventing pile-on

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Revocation and Blocking

Someone says something that you think was inappropriate, and you want to comment but I don't want to encourage your followers to pile on

Preventing harassment

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Revocation and Blocking

You want to talk about a topic that has been targeted for harassment and you still want to be able to use relevant tags

What we've covered

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- Problems with privacy in social media

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- Problems with privacy in social media
- The differences between social media and real life

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- Problems with privacy in social media
- The differences between social media and real life
- Why social pressure isn't good enough

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- The differences between social media and real life
- Why social pressure isn't good enough
- Posts should have permissions attached

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Revocation and Blocking

- Problems with privacy in social media
- The differences between social media and real life
- Why social pressure isn't good enough
- Posts should have permissions attached
- Capabilities provide good intuition

Next steps

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Social Contracts and Offline Conversations

Why Is The Internet Different?

Social Media and Permissions

Assigning permissions in operating systems and social networks

Revocation and Blocking

- A proof of concept

Next steps

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Revocation and Blocking

- A proof of concept
- Formalizing interactions in social media

Next steps

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- A proof of concept
- Formalizing interactions in social media
- Understanding incentives to change behavior

Analyzing incentives

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- Analyzing social media game theoretically

Analyzing incentives

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Revocation and

- Analyzing social media game theoretically
- Devise systems that disincentivize poor behavior

Analyzing incentives

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Revocation and Blocking

- Analyzing social media game theoretically
- Devise systems that disincentivize poor behavior
- A long way off

Questions?
Any questions?

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