




# twine

## Accessible Semantic Tagging

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Coalition for Networked Information  
Spring Task Force Meeting  
Minneapolis, Minnesota  
April 8, 2008




## Introduction

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- The goal of the semantic Web is the utilization of metadata to apply meaning to content. (Davies, 3)
- In the current Web environment, metadata only describes format.

I started out looking for a definition, but I think goal is a better term for it. From my perspective, computer scientists and companies are converging on the same end result using a variety of techniques.



## The early years

- Semantic File System project
  - MIT (1991-1992) (Tonkin)
- Placeless Documents project
  - Xerox PARC (1999) (Tonkin)
- The research of Susan Dumais
  - Microsoft Research
  - Personal Information Collections (Bruce)

In the process of my research, I found several papers that reflected on the origins of this area of research. By no means is the list exhaustive, nor do I claim to tell you who the person to dream up the Semantic Web is. I just want to contextualize that people have been working on this idea for years.


In her research of plain-text tagging, Emma Tonkin of UKOLN outlines the first two projects.

At MIT, the Semantic File System project worked to extract attributes from files and provide access via query based virtual directories.

The Placeless Documents project of Xerox PARC

“Document attributes capture the multiple different roles that a single document might play, and allow users to rapidly reorganise their document space for the task at hand.” As Emma says, the intention of this project was to deal with the problem of “single inheritance” – the idea that a file can only reside in one place in a file system.

Susan Dumais- If I was going to drop everything and start over again, I want to study what she does. Originally came across her in the paper, “Keeping Found Things Found.” She has studied user reactions to semantically categorized search results and what people do with information after they’ve located it. Written in conjunction with Hao Chen, the paper, “Bringing Order to the Web: Automatically Categorizing Search Results,” highlights the use of metadata in search. This paper exemplifies to me the transition from the semantic organization of information on the desktop to that which users find on the web.




## Current Research

- P-TAG: Large Scale Automatic Generation of Personalized Annotation TAGs for the Web
  - “The automatic generation of annotation tags for Web pages...by aligning keyword candidates for a given Web page with keywords representing the personal Desktop documents and thus the subject’s/ author’s personal interest.”  
(Chirita, 846)

L3S Research Center at the University of Hannover and the National University of Ireland (IDA business park)

In this study, researchers indexed all emails, Web Cache documents, and files of the participating users. Simply put, the authors extracted a generic set of keywords from the Web page being annotated. To personalize this annotation, these keywords are then aligned with related terms from the personal desktop. At this point I feel that it is important to note that, according to the authors, the algorithms in this paper generate keywords that do not necessarily appear on the Web page, but are in its context.

Results: User satisfaction was generally found to be above 70%. The authors would like to see their research applied to personalized Web searches, Web recommendations for desktop tasks, and ontology learning.



## Current Research


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- Improved Annotation of the Blogosphere via Autotagging and Hierarchical Clustering
  - “We show that automatically extracting words deemed to be highly relevant can produce a more focused categorization of articles...We also show that clustering algorithms can be used to reconstruct a topical hierarchy among tags.” (Brooks, 625)

Computer Science Department, University of San Francisco. Brooks and Montanez.

This paper focuses on analyzing blog entries indexed by Technorati. They explore the similarity of articles that share tags to determine whether articles that have similar tags actually contain similar content. They also used agglomerative clustering to record the order in which tag clusters are grouped into progressively more abstract clusters (every time I read the article I understand what they are saying a little better, but please recognize I'm not an expert on this hierarchical method).

Results: Keywords were extracted from articles, and then those that fell in the top 3 of the TFIDF score range were used to compare similarities. This resulted in significantly more similar articles sharing tags and smaller clusters indicating a more tightly focused topical grouping of articles.




## Current Research

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- SweetWiki: A semantic Wiki
  - "A state-of-the-art of semantic wikis" (Buffa)
  - RDF, RDFS, OWL

A collaborative project between the KEWI Group at the University of Nice in France and the Edelweiss Group, also of France.


For the highly-technical audience member, I recommend this article. If you understand it, please get in touch, I'd like to have it explained to me. I included it for several reasons, one being that I think it's important to recognize that wikis are rich data sources and I'm glad that someone (not me) is trying to figure out how to weave them into the semantic Web. Two, it's full of acronyms. RDF, RDFS, and OWL are all acronyms I've heard come out of Nova Spivack's mouth, head of Radar Networks, creator of Twine. Can you see where I'm going with this? Also, it's in the Journal of Web Semantics. All semantics, all the time.



## Technology You Can Touch

- Twine
- “Powered by semantic understanding, Twine automatically organizes information, learns about interests and makes recommendations. The more you use Twine, the better it gets to know you and the more useful it becomes.”

Doesn't that sound so simple? I thought in all fairness I would quote Twine's documentation in much the same way that I did the other projects.




## Quick Facts

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- Twine is a product of Radar Networks
- Founded by Nova Spivack
- Currently there are 40,000+ people on the waiting list





## Information + Me = Twine?

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- How it all started...
  - TechCrunch (October 19, 2007).
- In person, via email, over the phone
- Susan Mayo, Boris Aleksandrovsky, and Chris Jones

My husband and I wanted a place to store information we find on the web about teaching and learning. We dreamt of a product that does auto-tagging.


Low and behold, just a few days later I read about Twine on the blog TechCrunch.

I emailed Nova Spivack directly to get an account on the premise that I was looking for a new job (my current position is temporary) and wouldn't it be great to go into an interview and say I already had an account.

Visited Radar Networks in December while attending the American Geophysical Union Conference. Great session for my husband and I to give them feedback. We also shared products like LibraryThing for Libraries and LibGuides with them.

In January, I was interviewed by Anne Eisenberg for the New York Times. Twine recommended me to her as one of their users.

Susan, Boris, and Chris have been my main contact points at Radar Networks.



## Input

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- Statistical Analysis
- Other semantic networks and gazetteer lists
  - WordNet
    - Princeton University Cognitive Science Lab (1985-present)
  - Baby name lists, Wikipedia

This slide is the reason I started out with a goal to describe the semantic Web rather than a definition. There are still many different means to an end. Twine, like all of the other projects in this field, utilizes algorithms. This helps deal with CamelCase and Multi-word phrases.


It also based on Princeton's handcrafted WordNet Project. This is taken from their website.

"Nouns, verbs, adjectives and adverbs are grouped into sets of cognitive synonyms (synsets), each expressing a distinct concept. Synsets are interlinked by means of conceptual-semantic and lexical relations. The resulting network of meaningfully related words and concepts can be navigated with the [browser](#)."

Explanatory quote from Boris via email.

"Extractor based on the WordNet is the component which is looking for those concepts - people, organization, places and others. WordNet-like component describes relationships between types (or classes) of things, not between particular instances of those classes. For instance it might know that "basketball player" is a kind of PERSON, but it does not know any particular basketball player. This is where the wikipedia-based gazeteers come into play - by uploading the list of basketball players into the net, it would immediately know that Michael Jordan is one. "

This helps to deal with situations of polysemy and other lexical semantic constructs. Boris acknowledges that this method can be somewhat brittle and sensitive to human error. In the future Twine will move further towards the statistical analysis of the words in the information input by its users.



## Output

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- RDF- Resource Description Framework
- OWL- Web Ontology Language
- URI- Uniform Resource Identifiers

The information output of Twine is intended for situations where information needs to be processed by applications. There are two places I would encourage everyone to go for further information. The first is Twine's Website and the second is the W3C website. By utilizing these languages, the information in Twine is being formatted in a manner that will make it easy to share with other applications.



[Edit](#) [View](#) [History](#) [Bookmarks](#) [Tools](#) [Help](#)  
[Forward](#) [Reload](#) [Stop](#) [Home](#) [Print](#)

<http://www.amazon.com/Tipping-Point-Little-Things-Difference/dp/03163>

[The Tipping Point Amazon](#)

[RefGrab-It](#) [Ames Library](#) [RDF-Gravity](#) [Twine This](#) [Twine This+](#) [Library Catalog S...](#) [IWU Ask a Librarian](#) [IWU Journals We Own](#)

[Amazon.com: The Tipping Point: ...](#) [Gmail - CII Twine Handout - smill...](#) [RDF-Gravity](#) [Cool members - Twine](#)

**amazon.com** Hello. Sign in to get personalized recommendations. New customer? [Start here.](#)

[Your Amazon.com](#) [Today's Deals](#) [Gifts & Wish Lists](#) [Gift Cards](#)

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**Search** Books

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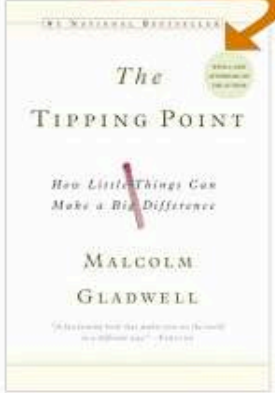
To get this item by **Thursday**, April 10 order within 19hr 19min.

**Get Free Shipping for a full month with a Free Trial of Amazon Prime** [learn more](#)

**FREE Upgrade to Two-Day Shipping on this item with Amazon Prime**

**The Tipping Point** and over 100,000 other books are available for **Amazon Kindle** - Amazon's new wireless

**SEARCH INSIDE!™**



**The Tipping Point: How Little Things Can Make a Big Difference (Paperback)**  
 by [Malcolm Gladwell](#) (Author) "In the mid-1990s, the city of Baltimore was attacked by an epidemic of syphilis..." [\(more\)](#)  
**Key Phrases:** [social epidemics](#), [tipping point](#), [transactive memory](#), [Sesame Street](#), [New York](#), [Paul Revere](#) [\(more...\)](#)

★★★★★ (903 customer reviews)

List Price: ~~\$14.95~~  
 Price: **\$8.97** & eligible for **FREE Super Saver Shipping** on orders over \$25. [Details](#)  
 You Save: **\$5.98 (40%)**

**In Stock.**  
 Ships from and sold by **Amazon.com**. Gift-wrap available.

**Want it delivered Wednesday, April 9?** Order it in the next 19 hours and 19 minutes, and choose **One-Day Shipping** at checkout. [See details](#)

**293 used & new** available from **\$4.00**

[See 1 customer image](#)  
[Share your own customer images](#)  
[Search inside this book](#)

**Twine It** [Save](#)

Type of item: Book

Add To multi-select: My Items

Tags: separate tags with commas  
 0316346624, Advertising & Promotion, Back Bay Books, Causation, Contagion (Social psychology), Context effects (Psychology), Malcolm Gladwell, Marketing - General, Psychology, Psychology & Psychiatry / Social Psychology, Social Psychology, Sociology, Sociology - General, The Tipping Point, How Little Things Can

Comment: [Sign in to turn on 1-Click](#)

Title: *The Tipping Point: How Little Things Can Make a Big Difference*  
 Author: **293 used & new** from [Malcolm Gladwell](#)  
 Summary: Have one to sell? [Sell yours here](#)  
 "The best way to understand the drama..."  
 Publisher: [Add to Wish List](#) [Back Bay Books](#)  
 Price: \$5.98 (40%) [Add to Shopping List](#)  
 Image: [Add to Wedding Registry](#) [Add to Baby Registry](#)


3.986s

Adding an item to Twine from Amazon



[Edit](#) [View](#) [History](#) [Bookmarks](#) [Tools](#) [Help](#)


Gmail: Email from Google × RDF-Gravity × Twine - Organize, Share, Discover... ×

ONLY 
sarahmiller | [Logout](#) | [Account](#) | [Help](#) | [Feedback](#) | [\(0\)](#)

[Home](#) | [My Items](#) ▾ | [My Twines](#) ▾ | [My Connections](#) | [Explore](#) | [Start a Twine](#)

---

**Welcome sarahmiller**


**sarahmiller** [\[edit\]](#) ?  
When did this feature show ...  
Items: 245 Connections: 27

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[Start a Twine](#)

[Find a Twine](#)

[Connect with People](#)

[Get the Bookmarklet](#)

[Post to Twine by Email](#)

[Invite People to Twine](#)

**Your Interest Feed**

**Today, April 07, 2008**

No Image Available

**2 comments on Comments on Items in Multiple Twines**

"Thanks for the suggestions. I'll forward to the team."

Comment by Nova Spivack on April 07, 2008 in Twine Feedback, Suggestions, Questions, Comments

"Yes, I'd like to see this function added too. Thanks Mark."

Comment by Murray Peat on April 07, 2008 in Twine Feedback, Suggestions, Questions, Comments

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No Image Available

**3 comments on My Conversations**


"Puuuhleeeeeeasse, Please, Please, Please, Nova - I'm wasting more time looking around on twine than reading right now ..."

Comment by Kurt Laitner on April 07, 2008 in Twine Feedback, Suggestions, Questions, Comments


"Thanks for chiming in on this, Kurt. Looking around for new comments can certainly be a pain. I use my dashboard ..."

Comment by David Scott Lewis on April 07, 2008 in Twine Feedback, Suggestions, Questions, Comments


**Recommended Members**




**tom**  
Twines: 17 | Items: 4  
[Connect](#)




**Susan Mayo**  
h20 | San Francisco  
Twines: 35 | Items: 38  
[Connect](#)



**amyvickers**  
Boston + New York  
Twines: 10 | Items: 2  
[Connect](#)




**jerrymichalski**  
San Francisco, CA  
Twines: 19 | Items: 6  
[Connect](#)




**joe rockmore**  
mento park, california  
Twines: 9 | Items: 0  
[Connect](#)

**Recommended Twines**




**social network analysis**  
Items: 12 | Members: 3


**Recently Viewed**




**Cool**  
This is a twine for sharing really cool ...




**Hydrogen Car: FCX Clarity**  
in Futures Twine




**Sarah Miller's Feed ...**  
The stuff I find, read, and like. Also, ...




**Chicago Trib article**  
in AmesChat Twine




**Solitary sex : a cultural ...**



**tag collection**  
in Twine Feedback, Suggestions,



**Twine Technologies**

52.605s 

What you see when you log-in.

Edit View History Bookmarks Tools Help

Gmail: Email from Google x RDF-Gravity x My Items - Twine x

ONLY twine Home My Items My Twines My Connections Explore Start a Twine Search Twine Search

sarahmiller Logout Account Help Feedback (0)

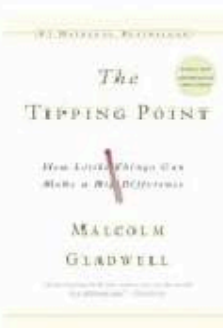
## My Items

Items I Added (245) Shared with You (3) Shared by You (5) Collected Items (2) All Items Add Item

Filter Sort by Most Recent 1 of 25 < >

Search...

- Types
- Twines
- Created By
- Tags
- People
- Places
- Organizations




**The Tipping Point: How Little Things Can Make a Big Difference**

"The best way to understand the dramatic transformation of unknown books into bestsellers, or the rise of teenage smoking, or the phenomena of word of mouth or any number of the other mysterious changes that mark everyday life," writes Malcolm Gladwell, "is to think of them as epidemics. Ideas ..."

Public Book by you to ScienceEducationLibraryIdeas on Apr 07, 2008  
shared with 1 twine by you

Share Remove 0 Views | 0 Comments

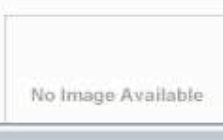


**Getting real: Libraries are missing books**

Sent to you by Sarah via Google Reader: Getting real: Libraries are missing books via Thingology (LibraryThing's ideas blog) by Tim on 3/27/08 Back in March 2006, Jason Fried and his company 37Signals released the book *Getting Real: The smarter, faster, easier way to build a ...*

Public Note added by you on Apr 01, 2008 via email

Share Remove 2 Views | 1 Comments



**EMI Suffers A Setback In Case Against MP3Tunes**

Sent to you by Sarah via Google Reader: EMI Suffers A Setback In Case Against MP3Tunes via TechCrunch by Erick Schonfeld on 3/28/08 The record labels love to sue Michael Robertson, the founder of MP3.com (sold to Vivendi in 2001 for \$372 million) who now incubates a number of ...

6.730s GP

Items I've added to Twine

Edit View History Bookmarks Tools Help

Gmail - Inbox (1038) - sarahmiller... x RDF-Gravity x The Tipping Point: How Little Thin... x

## My Items

Items I Added (245) Shared with You (3) Shared by You (5) Collected Items (2) All Items Add Item ▼

Share Collect Add Detail Remove this item

### The Tipping Point: How Little Things Can Make a Big Difference

Book added by you on Apr 07, 2008  
Public | 1 View

<b>Original URL</b>	<a href="http://www.amazon.com/Tipping-Point-Little-Things-Difference/dp/0316346624">http://www.amazon.com/Tipping-Point-Little-Things-Difference/dp/0316346624</a>
<b>Author</b>	Malcolm Gladwell
<b>Publisher</b>	Back Bay Books
<b>Release Date</b>	Jan 07, 2002 (6 years ago)
<b>Price</b>	\$14.95

**Description**  
 "The best way to understand the dramatic transformation of unknown books into bestsellers, or the rise of teenage smoking, or the phenomena of word of mouth or any number of the other mysterious changes that mark everyday life," writes Malcolm Gladwell, "is to think of them as epidemics. Ideas and products and messages and behaviors spread just like viruses do." Although anyone familiar with the theory of memetics will recognize this concept, Gladwell's *The Tipping Point* has quite a few

**Places**

- Beantown x
- Sesame street x
- Add places

**People**

- Kevin Bacon x
- Malcolm Gladwell x
- Paul Revere x
- Rod Steiger x
- Add people

**Organizations**

**Other tags**

- 0316346624 x
- Advertising & Promotion x
- Back Bay Books x
- Blue x
- British x
- Causation x
- Contagion (Social psychology) x
- Context effects (Psychology) x
- How Little Things Can Make a Big Difference x
- Marketing - General x
- Psychology x
- Psychology & Psychiatry / Social Psychology x

1 of 24 - Clipboard Item collected.

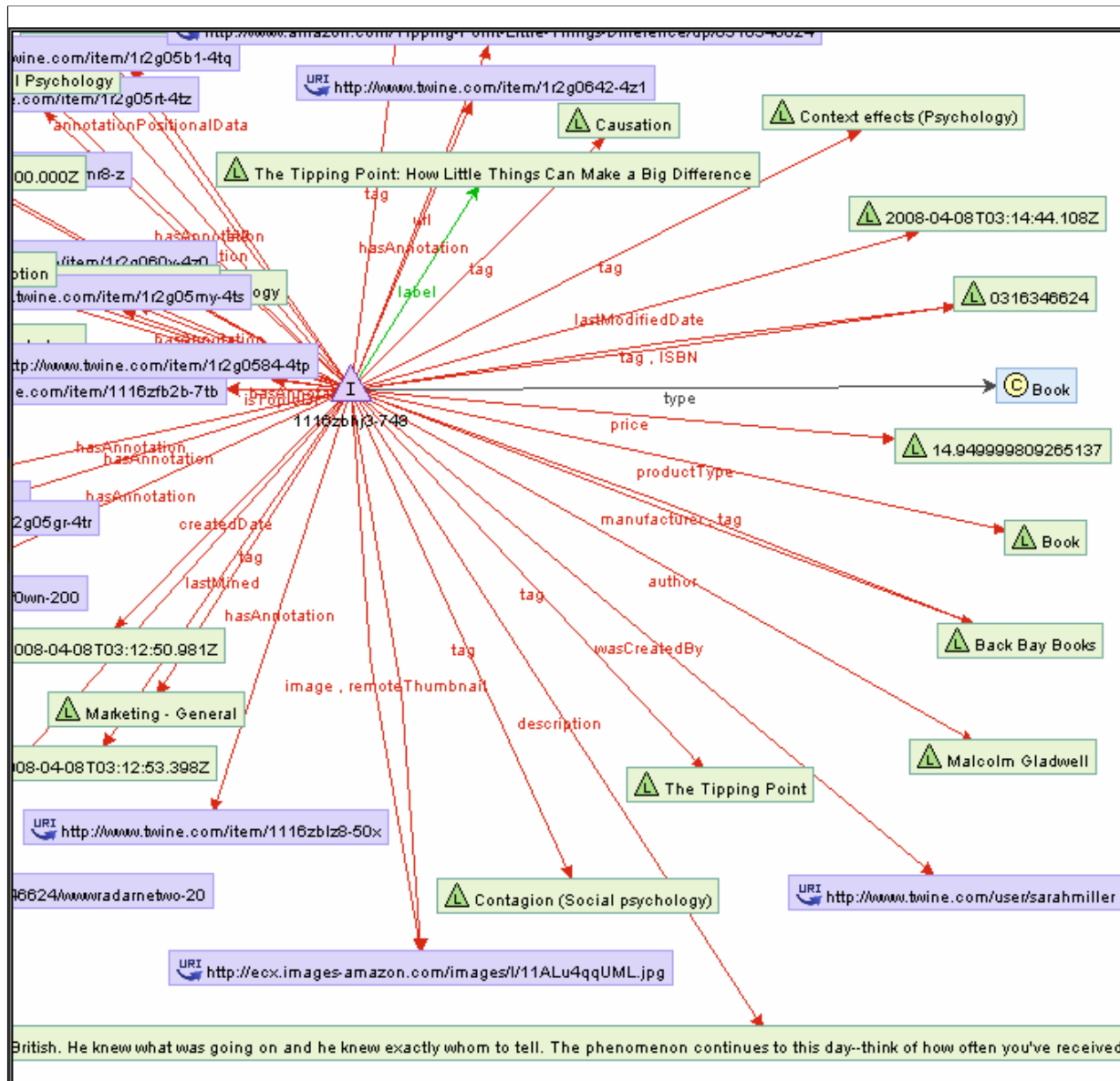
//www.twine.com/item/1116zbhj3-748/the-tipping-point-how-little-things-can-make-a-big-difference#Organizations

Be aware that the top of this screen is the same as the homepage.



## RDF Gravity: Graph Visualization Tool

Created by  
Sunil Goyal &  
Rupert Westenthaler



Subject -> Predicate -> Object

A visualization of *The Tipping Point* as one of my items in Twine.

Edit View History Bookmarks Tools Help


Gmail: Email from Google x RDF-Gravity x Sarah Miller's Feed Reader Fave'...

ONLY twine sarahmiller Logout Account Help Feedback (0)

Home My Items My Twines My Connections Explore Start a Twine Search Twine Search

## Sarah Miller's Feed Reader Fave's

Summary Items Members Manage Add Item



The stuff I find, read, and like. Also, anything else I find since I can't figure out how to submit to "my items" and I don't always decide on a Twine at the time of discovery.

Started Feb. 21, 2008 by sarahmiller

84 Items | 20 Members

Post to this twine by email:  
sarahmillerfeedreader@post.twine.com

Public | Open Membership | Comments allowed  
Members may:

- Invite people

**Invite People**

**People**

- Barack Obama
- Chris Collins
- Curtis Wong
- Don Dodge
- Duncan Riley
- Ginger Netvibes
- Jan Chipchase
- Mark Zuckerberg
- Meredith Farkas
- Michael
- Michael Arrington
- Michael Stephens
- Mike Gravel
- Petri Purho

**Sarah**  
Theodore

**Places**

**Organizations**

**Other Tags**

**Types of Items**

**Updates**

Today, Apr 07, 2008

- natebird joined this twine

Apr 04, 2008

- boris joined this twine

Apr 01, 2008

- David Scott Lewis commented on Getting real: Libraries are missing books

Mar 13, 2008

- David Scott Lewis joined this twine

Mar 12, 2008

- jimfahn joined this twine

56.781s GP

I chose to email items from my feed reader into Twine to simulate what it might be like if my feed reader offered auto-tagging. Wouldn't that be an awesome way to track trends across feeds?


Edit View History Bookmarks Tools Help

Gmail - Inbox (1088) - sarahmiller... x RDF-Gravity x Is Facebook Really Censoring Se... x

## Sarah Miller's Feed Reader Fave's

Summary Items Members Manage Add Item v

Share Collect Add Detail Remove this item

 **Is Facebook Really Censoring Search When It Suits Them?**  
 Note added by you on Feb 22, 2008 via email  
 Public | 1 View

**From** you  
**To** Sarah Miller's Feed Reader Fave's  
**Subject** Is Facebook Really Censoring Search When It Suits Them?

**Description**

**Sent to you by Sarah via Google Reader:**

Is Facebook Really Censoring Search When It Suits Them?  
 via TechCrunch by Michael Arrington on 11/22/07

Earlier this month I wrote a blog post showing that a [search](#) for presidential candidate "Ron Paul" in Facebook Groups yields zero results. Facebook blamed the problem on a bug (unofficially, via comments by employees to that post), which was later corrected.

But a new issue may be harder to explain. On Tuesday, scores of mainstream press organizations (see [WSJ](#), [NYT](#), [LATimes](#), [CNET](#), [AP](#), etc.) and [bloggers](#) reported on a privacy issue around part of Facebook's new advertising platform.

MoveOn.org was [leading the charge](#), and created a petition to demand Facebook not disclose personal information about a user without their explicit consent.

But now a side story is developing around the issue that relates to search censoring, again, at Facebook. Naturally all the press on the issue led people to go to Facebook to find the [group](#) MoveOn set up to organize their opposition to Facebook's current privacy policy on this issue.

**Places**  
 Add places

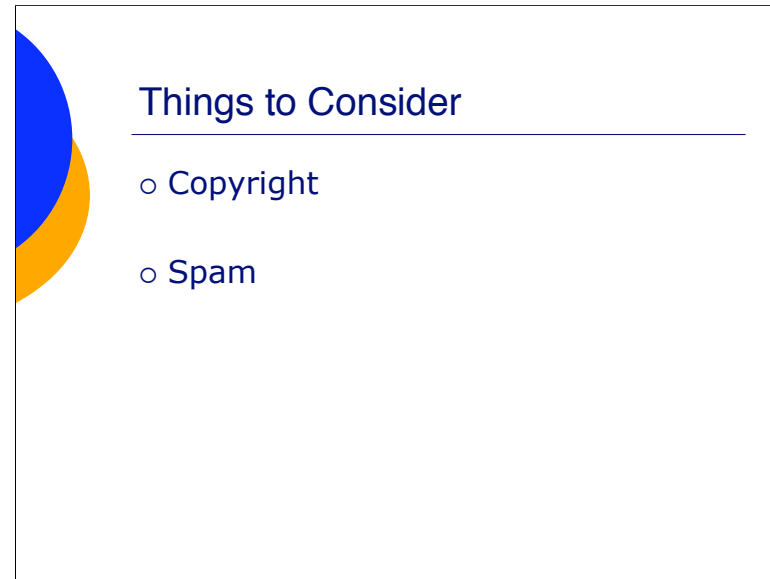
**People**  
 Adam Green x  
 Michael Arrington x  
 Ron Paul x  
 Sarah x  
 Add people

**Organizations**  
 Crunch Network x  
 Facebook x  
 Facebook x  
 MoveOn Group x  
 TechCrunch x  
 Add organizations

**Other tags**  
 AP x  
 blog x  
 CNET x  
 CrunchGear x  
 Google Reader x  
 LATimes x  
 NYT x  
 Wall Street Journal x

31.315s GP

Notice all the orange auto-tags from Twine on this entry. Many aren't perfect, but it will get there.



Because users can upload content, they will be adding a question to “verify” that users own the content they are uploading. PDFs, photos, etc...

As for spam, they haven’t had a problem yet. They will be able to monitor it through individuals who will be “smoke testing” and by watching for data growth anomalies. In the future they plan to add a “report” this button. Although they have asked a user to remove less than desirable content. Not illegal, but considered the content to be offensive and in bad taste. Response to this could be to ask the user to keep the content private.




## The Future of Twine (according to Chris)

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- Organize
  - Bookmarking- Improve mining capabilities for unstructured information (HTML). Mine structured information (micro-formats, Rdfa, etc.)
  - Auto-Tag – Improve language processing. Provide mechanism for user feedback
  - Customization – Customize the layout and look and feel of pages

Response from Chris Jones via email on the future of Twine.




## The Future of Twine (according to Chris)

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- Share
  - Author and Publish – Provide richer types of information. More control and visibility of permissions.
- Discover
  - Interest Feed – Ability to control what is in your interest feed.
  - Recommendations – Integrate recommendations deeper into the experience. Expose why certain things are recommend over others
  - Search – Simplified/easier to use interface. Can't say much publicly here. But some cool things are coming

Response from Chris Jones via email on the future of Twine.



### Sarah's Suggestions

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- Diversify the interface
- Improved entity recognition
- Acknowledge that email is not where it's at

My humble opinion.



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