

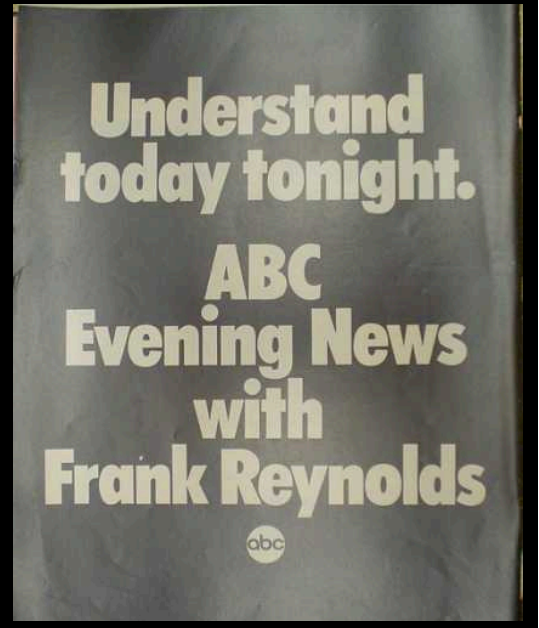
# Building and Breaking Bubbles

Designing Systems  
that Select & Present News

Sean Munson | [smunson@uw.edu](mailto:smunson@uw.edu) | [@smunson](https://twitter.com/smunson)

**HCDE** Human  
Centered  
Design &  
Engineering

**dub**



**50%** of adults watched one of three broadcasts in 1970.

by 2007, this had dropped to just

**10%**

Prior 2007, Bennett & Iyengar 2008



**NBC  
NIGHTLY  
NEWS**  
JOHN CHANCELLOR

Understand  
today tonight.  
**ABC  
Evening News  
with  
Frank Reynolds**



ALJAZEERA



TIME WARNER CABLE 3:15pm TV GUIDE

That '70s Show 3:30-4p 60 FX  
Repeat, "Baby Don't You Do It", (TV-14, L, D), (2004), Donna and...

Today	3:30p	4:00p	4:30p
60 FX	That '70s Show	That '70s Show	Constantine
61 TBS	King of Queens	Seinfeld	Seinfeld
62 CNN	Situation Room		
63 KQCW	What I Like About You	Reba	Reba



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**LZ: Mississippi's abortion end run**

Rep. Jesse Jackson, Sr., in a bid to avert a possible veto by the Mississippi Legislature, has introduced a bill to make abortion legal unless having to travel 60 miles. LZ: Granddaddy vetoed for a mood disorder, according to the official press release.

**Abesent congressman being treated for "mood disorder"**

Rep. Jesse Jackson, Sr., in a bid to avert a possible veto by the Mississippi Legislature, has introduced a bill to make abortion legal unless having to travel 60 miles. LZ: Granddaddy vetoed for a mood disorder, according to the official press release.

**ING & DIRECT**

Weather: 72° Cloudy

Markets: Dow 11,600.33, S&P 1,341.48

**abc NEWS** Home U.S. World Politics Video Investigative Health Entertainment Money Tech Travel

**Conservatives look beyond 'Obamacare' even if Romney loses**

SCIP members, policy experts say even if Obama's re-election, Republicans will have Congress to return the House votes again to repeal 'Obamacare'.

**Friends: Jesse Jackson, Jr. in treatment in Arizona**

Tsunami debris adding to 'Great Pacific Garbage Patch'

**Nearly Half of Newborns at Hospital Drug-Dependent**

Full Story | Related: ABA: Admitted Prescriptions Increased 750 Percent in 9 Years

**LATEST HEADLINES**

- Children Supercup Tied to 8 Million At-Risk Women
- Team USA Gets Uniform From China
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- London Olympic Security Shows Checks

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Full Story | Related: ABA: Admitted Prescriptions Increased 750 Percent in 9 Years

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- London Olympic Security Shows Checks

**ABC News App for iPad!**

View the news like never before, now and when you want it.

**Digg** Top News Newsletters Newsrooms

**22. Toward achieving one million times increase in computing efficiency?**

Researcher has created an entirely new family of logic circuits based on magnetic semiconductor devices. The advance could lead to logic circuits 100 times as fast as silicon.

**47. Violent Pitbull**

11-year-old dog in Florida killed a child in a dog park.

**15. Anything can happen when you bring commands.**

Just ask the dog who brought down the plane on his hip.

**57. Brace Yourself: Oya is Bringing Open Source to Console Gaming.**

Microsoft and Sony have dominated the video game industry. With the help of Oya, Sony and Microsoft have dominated the video game industry. With the help of Oya, Sony and Microsoft have dominated the video game industry.

**53. Would you do it at work?**

It's not clear if you should believe in things that are unacceptable, but what if something is actually a paid job in the office? Would you?

**79. Romney faces NAACP, boost for hitting 'Obamacare'**

NAACP says Romney's record on civil rights is a disgrace.

**reddit** hot new controversial top saved self-serve advertising

**Nice to see the city's tax dollars are being put into good use...**

**Meinda Gates pledges \$500,000 for contraception.**

**I don't think my teacher was very impressed...**

**So, a couple of weeks ago I posted a picture of a Zelda screenshot desktop here.**

**These sat in my parent's garage for almost 43 years. My dad thought I might like to read them.**

**The Vatican has sued a German humor magazine which published a satirical article about the "Merkelgate" scandal.**

**My newly adopted daughter and kitten. They're already best buds.**

**Today, a homeless looking man handed me \$50 and this note. Do any of you have any idea what it means?**

**Why do you not see many Simpson's clips on Reddit?**

**Look what I found in a storage container! My gums are gonna be healthier than ever!**

**One thing I hate about summer.**

# SALES TAX IN SPAIN JUMPS TO 21% DRUDGE REPORT

**NAACP: Romney's record on civil rights is a disgrace**

**FLA: Rep. Jesse Jackson, Jr. 'in rehab'**

**Investor on lowest-ever Treasury yields**

**Fed officials push more 'stimulus'**

**Man of looming crisis**

**NY: Fla. Father's Son**

**Chicago police arrests 'tribal' Mexico**

**Comparable to Iraq, Afghanistan**

**Rolling Stones mark 50th Anniversary**

**Don't Move Your**

**Passage Takes Over Civilian Duties and Speech**

**Catholic Moths Date Defies the Vatican over birth control funds**

**FOX NEWS** Home Video Politics U.S. Opinion Entertainment SciTech Health Travel Lifestyle

**Congress Playing Politics on Taxes?**

House Democrats say they will not raise the debt ceiling until the House passes a bill to raise the debt ceiling.

**House Democrats say they will not raise the debt ceiling until the House passes a bill to raise the debt ceiling.**

**House Democrats say they will not raise the debt ceiling until the House passes a bill to raise the debt ceiling.**

**House Democrats say they will not raise the debt ceiling until the House passes a bill to raise the debt ceiling.**

**AOL** Home Entertainment Finance Tech Lifestyle Shop Services Games Audio Maps Local Radio More

**Spears Impale Car With Women Inside**

**Watch: Chilling Text From Missing Woman's Phone**

**Accident Leaves Kinship Chiropractic Hospitalized**

**Accident Leaves Kinship Chiropractic Hospitalized**

**Accident Leaves Kinship Chiropractic Hospitalized**

**Hot Air** Home Entertainment Finance Tech Lifestyle Shop Services Games Audio Maps Local Radio More

**Rep. Jackson under treatment for mood disorder, staff says**

**House Republicans Show Doubt of Health Law in 3rd Repeat Vote**

**US Always seizes due to fees, amenities**

**Romney faces NAACP, boost for hitting 'Obamacare'**

**Esquire** Home Women Style Food & Drink

**THE POLITICS BLOG**

**With Charles P. Pierce**

**Your Evening Jimmy**

**Wank On, Wank Off: Your House-of-Nothing Box Score**

**Arabic News** Home Entertainment Finance Tech Lifestyle Shop Services Games Audio Maps Local Radio More

**Arabic News**

**Arabic News**

**Arabic News**

**HUFFPOST POLITICS** THE INTERNET'S NEWSPAPER. NEW BLOGS. VIDEO. COMMENTARY.

**GET TO WORK, GRANDMA**

**Where is Steve Jobs' Greener Apple?**

**Is the Travel Channel's Programming Insulting?**

**Print Publications - Extinction May Be Imminent**

**Technorati** Home Today's Paper Video Most Popular U.S. Edition

**Where is Steve Jobs' Greener Apple?**

**Is the Travel Channel's Programming Insulting?**

**Print Publications - Extinction May Be Imminent**

**The New York Times** Thursday, July 12, 2012 Last Updated: 1:18 AM ET

**TRY A TIMES DIGITAL SUBSCRIPTION: 4 WEEKS FOR 99¢**

**Preventing Alzheimer's, Mutation May Aid Drug Quest**

**Clinton Sees Reminders of Vietnam in Laos**

**NEW YORK POST** Local Business Opinion Real Estate GoSSIP Celeb Photos City Adams Teams High Schools

**Small firms in college for young adults**

**DNA link between Sarah Fox murder & US links could be mistake: sources**

**WATCH: R.A. Dickey teaches Lettman how to throw a knuckleball**

**MARRIAGE GAP FUELS O'S LEAD**

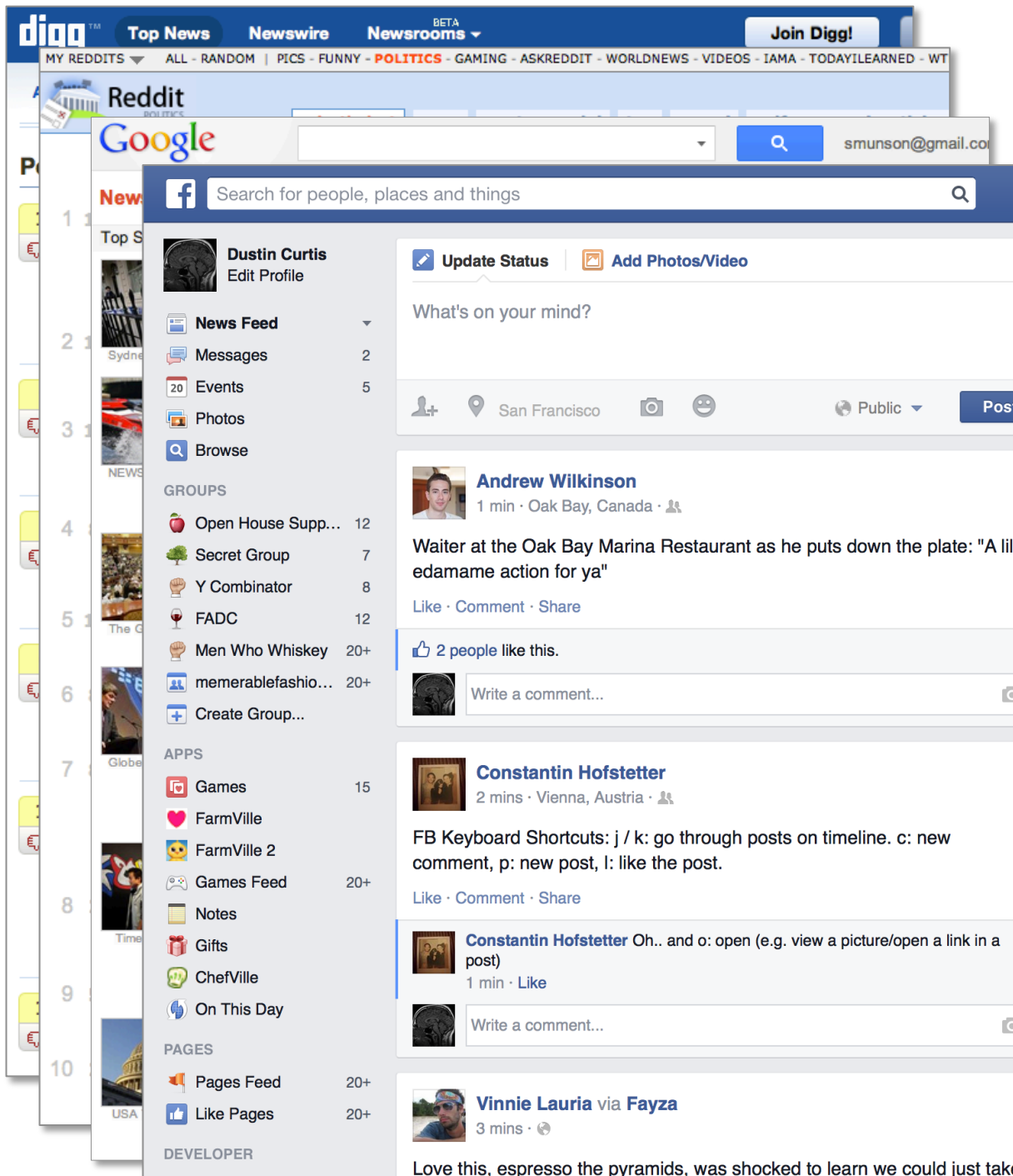
The screenshot shows a news aggregator interface with a blue header containing navigation links like 'Top News', 'Newswire', and 'Newsrooms'. Below the header is a search bar with the Google logo and a search button. The main content area is titled 'Top Stories' and lists several news items:

- UK police: Heir's wife found dead in London** - Fox News - 13 minutes ago. LONDON - Eva Rausing, one of Britain's richest women, was found dead in her west London home and a man has been arrested in connection with her death, British police said Tuesday.
- Obama expands lead on Romney, voters more optimistic** - Reuters - 20 minutes ago. By John Whitesides | WASHINGTON (Reuters) - President Barack Obama expanded his lead over Republican challenger Mitt Romney to 6 percentage points in the White House race this month as voters became slightly more optimistic about the economy, ...
- Decree to restore Egypt's parliament cancelled** - The Guardian - 38 minutes ago. Egypt's highest court cancelled a decree by the country's Islamist president to restore parliament on Tuesday. The supreme constitutional court issued a ruling that overturned President Mohamed Morsi's decision to reconvene parliament until a ...
- RPT-UPDATE 4-CEO vows to turn RIM into "lean, mean machine"** - Reuters - 40 minutes ago. Written by Alastair Sharp. \* Heins at annual meeting says BB10 will turn RIM around \* CEO acknowledges shareholders' discontent \* Company's slate of directors elected by shareholders \* Few direct questions about RIM's strategy posed \* RIM shares drop 5 pct to \$7.29 on Nasdaq By ...
- Privacy groups hail Google, FTC settlement over Apple Safari tracking** - Computerworld - 57 minutes ago. Written by Jaikumar Vijayan. By Jaikumar Vijayan Computerworld - Privacy advocates today welcomed news of a possible Google proposal to settle Federal Trade Commission (FTC) charges related to its surreptitious tracking of Apple Safari users.
- House GOP readies for vote on health care law repeal** - USA TODAY - 20 minutes ago. Written by Mark Wilson. WASHINGTON (AP) - House Republicans generally avoided talk of replacement measures on Tuesday as they mobilized for an election-season vote to repeal the health care law that stands as President Obama's signature domestic accomplishment.

On the right side of the interface, there are sections for 'Recent' news, 'Google News Badges' (including Apple), 'Recommended Sections' (including CERN, VMware, and Solarflare), and 'Editors' Picks'.

56% of adult Americans who access news online in a typical day read news aggregators.

68% of the 18-29 demographic.



30% of US adults  
get news through  
Facebook, largely  
incidentally.

NATIONAL BESTSELLER

# being digital

NICHOLAS NEGROPONTE

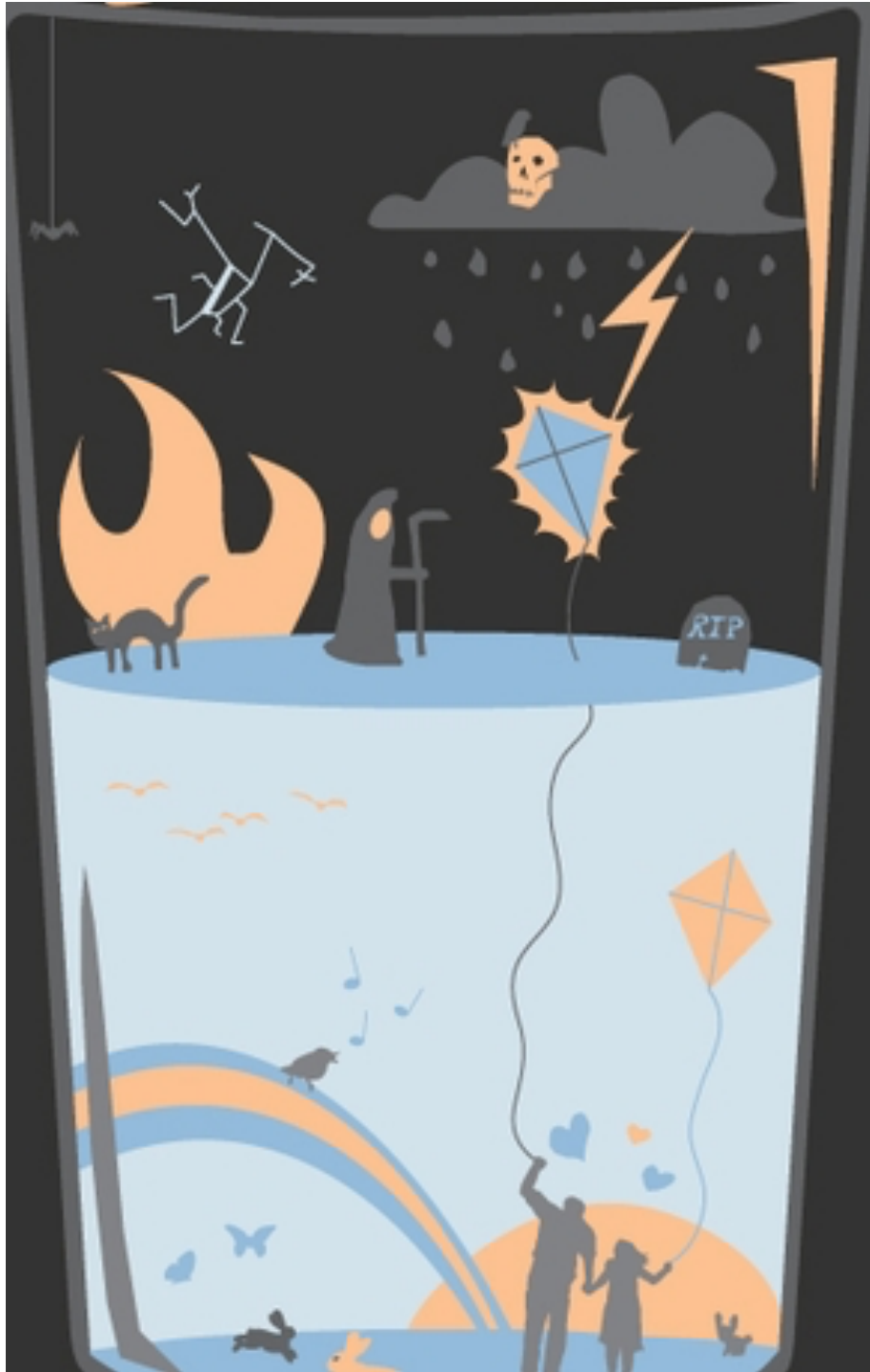
"Succinct and readable.... If you suffer from digital anxiety, that creeping sense that technology is racing along much faster than you can follow, here is a book that lays it all out for you.... We need visionaries like Negroponte."  
— *Newsday*

republic.com  
cass sunstein

## The Filter Bubble

What [redacted] the [redacted]  
[redacted]  
[redacted] Internet [redacted]  
[redacted]  
[redacted] Is [redacted]  
[redacted]  
[redacted] Hiding [redacted]  
[redacted]  
[redacted] From [redacted]  
[redacted]  
[redacted] You [redacted]

Eli Pariser



The choices designers make either build bubbles or break them.

Image: Josh Perkins, Threadless (buy his shirt!)



# Catering to your in-the-moment instincts.

*e.g.*, Algorithm designers assume you want agreeable news (& give it to you)

Ann, a liberal, gets MSNBC and Huffington Post:

A screenshot of a search engine results page for the query "barack obama". The search bar shows the query and "About 171,000,000 results (0.09 seconds)". The left sidebar lists categories: Everything, Images, Videos, News, Shopping, Realtime, Blogs, and More. The main content area is titled "News for barack obama" and features three news items circled in white:

- Obama To Give Address On US-Middle East Policy** (24 minutes ago) - WASHINGTON -- President Barack Obama will give a major address on US policy on the Middle East in the "relatively near future," White House Press Secretary ... [Huffington Post](#) - 168 related articles - Shared by 10+
- Senate Dems re-introduce DREAM Act** - [msnbc.com](#) - 318 related articles - Shared by 20+
- Barack Obama approval rating hits two-year high** - [The Guardian](#) - 821 related articles - Shared by 20+

Below the circled items is a link for "Obama for America | barackobama.com".

Lisa, a conservative, gets Fox News:

A screenshot of a search engine results page for the query "barack obama". The search bar shows the query and "About 143,000,000 results (0.11 seconds)". The left sidebar lists categories: Everything, Images, Videos, News, Shopping, Realtime, Blogs, and More. The main content area is titled "News for barack obama" and features three news items circled in white:

- Obama to lay out new Mideast strategy** (26 minutes ago) - President **Barack Obama** walks across the tarmac after stepping off Air Force ... By Ma Spetalnick WASHINGTON (Reuters) - President **Barack Obama** will give ... [Reuters](#) - 236 related articles - Shared by 50+
- White House Defends Invite of Political Rapper to Poetry Event** - [Fox News](#) - 285 related articles
- Obama's Approval Bump Hasn't Transferred to 2012 Prospects** - [Gallup.com](#) - 685 related articles - Shared by 5+

Below the circled items is a link for "Obama for America | barackobama.com".

## Stuck with your old preferences.

*e.g.*, You expressed an interest once, now you will see an ongoing stream of content about that.

# Reinforcing homophily.

Your friends tend to be like you, so what they share can further reinforce your views.

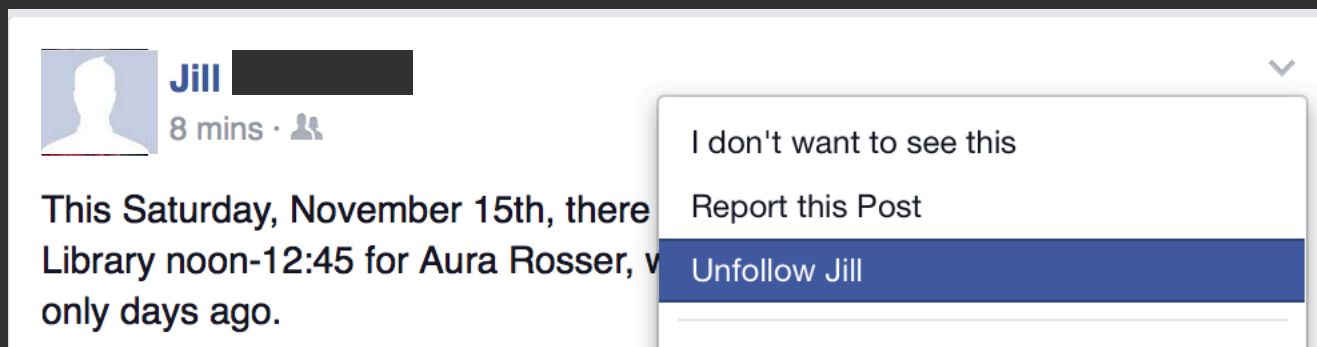
"Real and perceived attitude agreement in social networks."

S Goel, W Mason, DJ Watts. *Journal of personality and social psychology* 99.4 (2010): 611.

# Reinforcing homophily.

Your friends tend to be like you, so what they share can further reinforce your views.

Some people hide updates from or even unfriend friends who are politically different.



"Managing political differences in social media"  
C Grevet, LG Terveen, E Gilbert. *CSCW* 2014.

# Reinforcing homophily.

Your friends tend to be like you, so what they share can further reinforce your views.

Some people hide updates from or even unfriend friends who are politically different.

On sites with a common front page (*e.g.*, Digg), the tyranny of the majority can drive others away.

50  
diggs



## Lively Links - a conservative Digg

livelylinks.com — Annoyed with the liberal bias of Digg.com? Frustrated with the popularity of those stories that display conservatives / Republicans in a negative light. Thanks to capitalism and free enterprise, I've decided to create a more conservative alternative to Digg, LivelyLinks.com.



**r-igg**

Published Stories | Upcoming Stories | Submit New Story

Home | Login | Register | On Your Site | On Facebook | Contact | Search..

Sort news by ⇒ **Recently Popular** | Top Today | Yesterday | Week | Month | Year

**3** votes  
R-igg It!

**Isms—"Make Mine Freedom" & "How to Brainwash A Nation"**  
Posted by NYCnative 3 days ago (<http://web.me.com>)  
Amazing how relevant both the videos in this article are today. One explains how the demoralization process by Communist operatives was more successful than they could have ever dreamed. The other warns, if only people would have listened, of drinking from the "ism" bottle that will bring a collective utopia [read more](#) »  
[Discuss](#) [Add this link to...](#) [Bury](#) Category: [Miscellaneous](#)

**3** votes  
R-igg It!

**Politik Ditto: MSNBC Using Liberal Blog Daily Kos For Talking Points**  
Posted by MrGreyGhost 11 days ago (<http://politikditto.blogspot.com>)  
While MSNBC and the mainstream press continue to whine about FOX News being an arm of the Right, the same networks steal from liberal blogs for their on-air talking points. [read more](#) »  
[Discuss](#) [Add this link to...](#) [Bury](#) Category: [News](#)

**3** votes  
R-igg It!

**Politik Ditto: Under Obama Unemployment Highest In 25 Years**  
Posted by MrGreyGhost 9 days ago (<http://politikditto.blogspot.com>)  
As the nations struggles under hard financial times. Barack Obama is busy making

**What is R-igg?**  
R-igg is a Crowd-Powered News website for the Right [read more](#)

**Categories**

- ⇒ Presidential
- ⇒ Congress
- ⇒ — Senate
- ⇒ — House
- ⇒ Statewide
- ⇒ Local
- ⇒ Democrats
- ⇒ Republicans
- ⇒ Technology
- ⇒ News
- ⇒ — U.S. News
- ⇒ — World News
- ⇒ Miscellaneous

# this has costs

Fewer opportunities to learn.

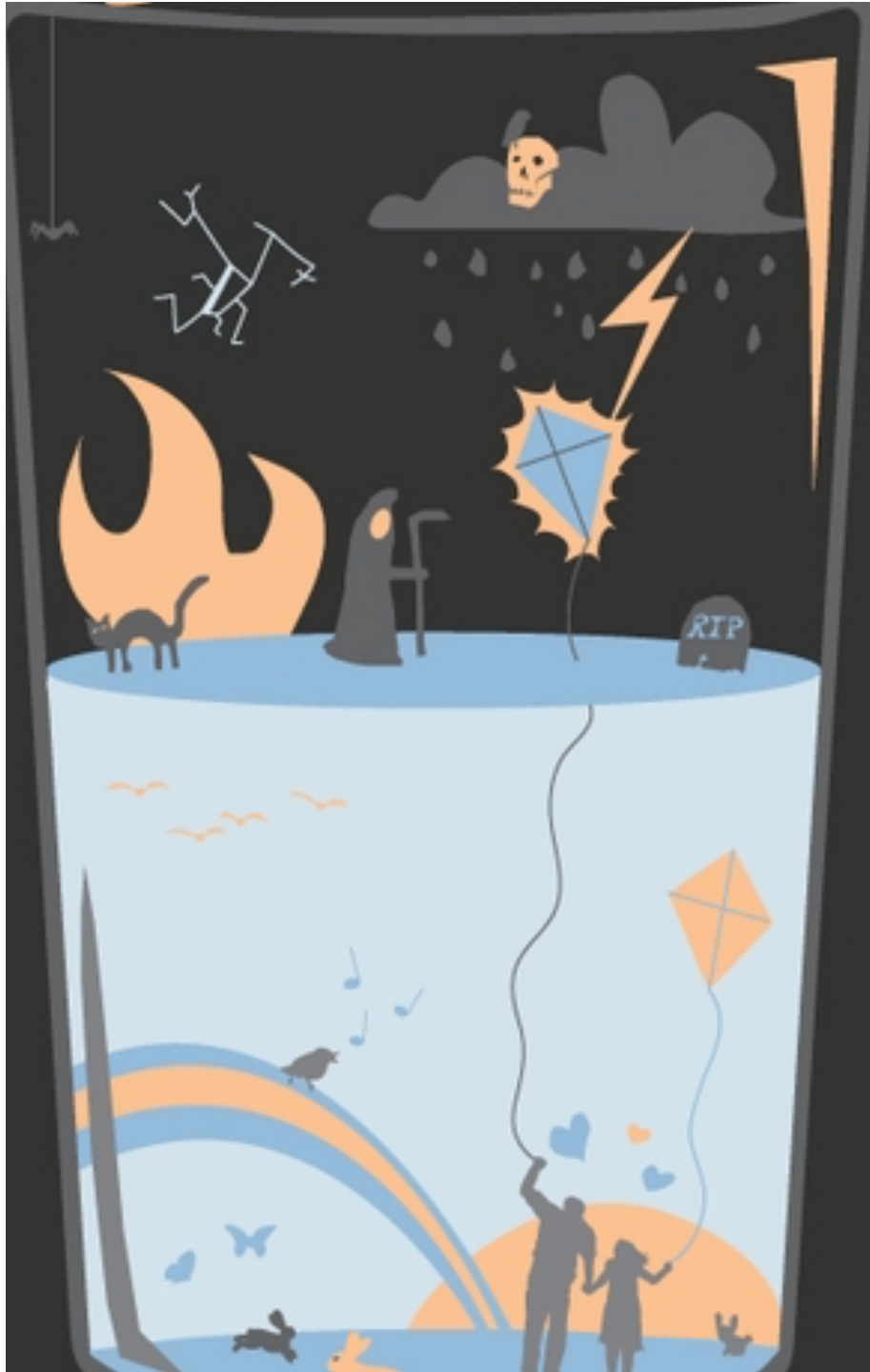
Less common ground for decision making.

Reduced empathy and understanding.

Fragmentation.

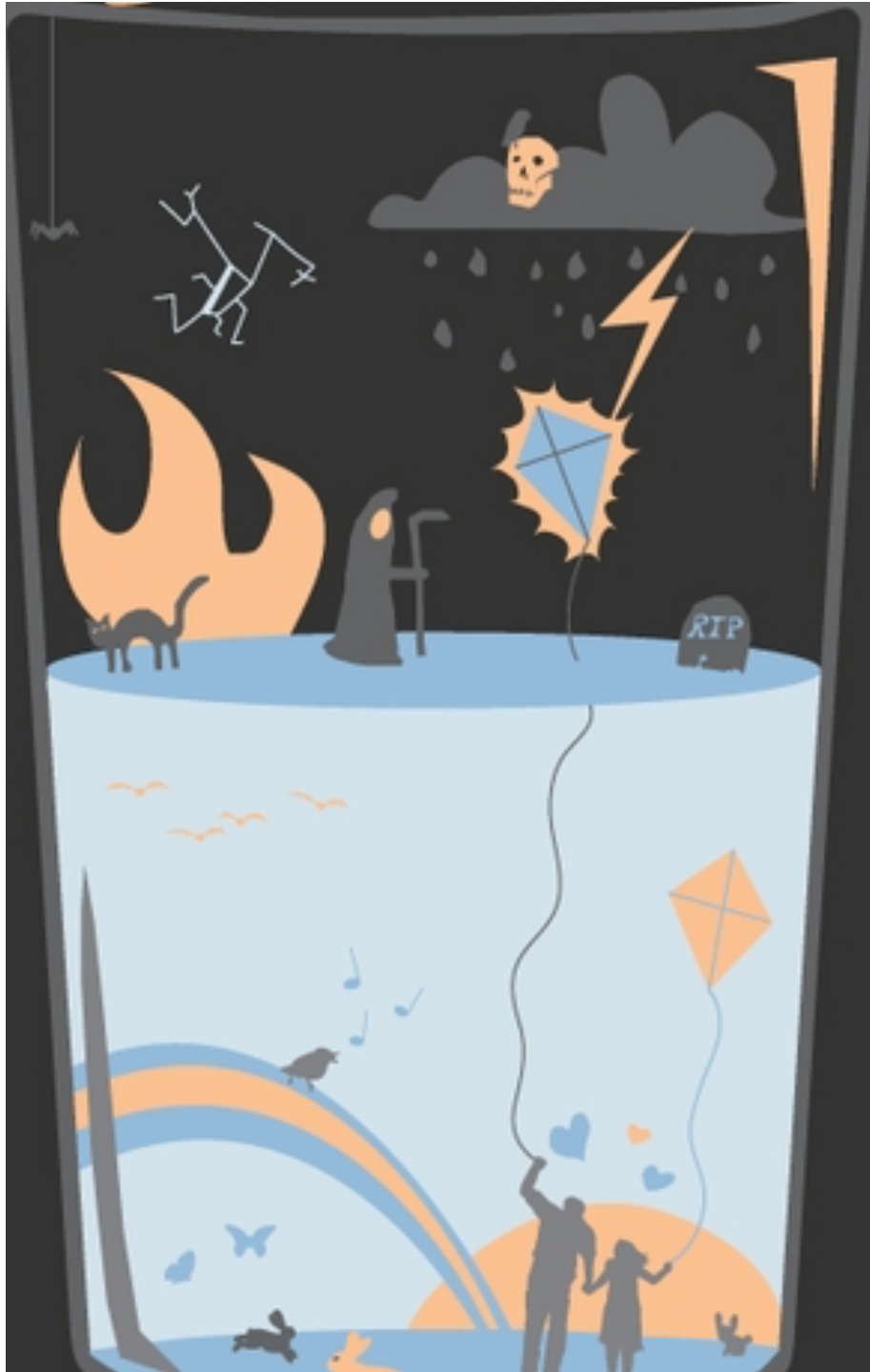
*Lower* engagement if taken to the extreme.





The choices  
designers make  
either build bubbles  
or break them.

Image: Josh Perkins, Threadless (buy his shirt!)



The choices  
designers make  
either build bubbles  
**or break them.**

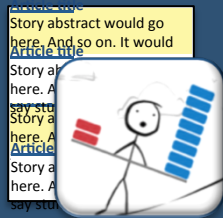
Image: Josh Perkins, Threadless (buy his shirt!)

# Strategies for breaking barriers



	A	B	C	D	E	F
1	✓	✓		✓		✓
2	✓	✓		✓		✓
3	✓	✓		✓		✓
4	✓	✓		✓		✓
5						
6						
total	3	4		3	0	3

Selection



Presentation



# Selection



# Selection

Naïve to assume that people only want ideologically agreeable, topically consistent news.

“Presenting Diverse Political Opinions: How and How Much.”  
SA Munson, P Resnick. *CHI* 2010: 1457-1466.



# Selection

Naïve to assume that people only want ideologically agreeable, topically consistent news.

*Also value:* being able to participate, being correct, learning new things, serendipity, and variety.



# Selection

- Explore your reactions to diverse items.



# Selection

- Explore your reactions to diverse items.
- Present you with novel information.





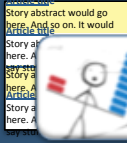
# Selection

- Explore your reactions to diverse items.
- Present you with novel information.
- Give others a turn, and help a user be aware of the breadth of discourse and ideas.

“Sidelines: An Algorithm for Increasing Diversity in News and Opinion Aggregators.”  
SA Munson, P Resnick. *ICWSM* 2009.







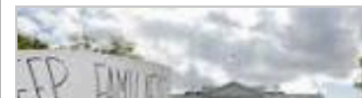
# Presentation

Be (reasonably) transparent.

Show value in the information.

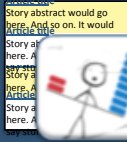


**John Doe** and 10 of your co-workers shared a link.



**White House Considers Timing**

People rally for immigration reform

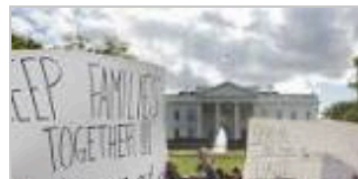


# Presentation

Be (reasonably) transparent.

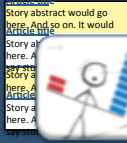
Show value in the information.

10 of your co-workers shared a link.



## White House Considers Timing of

President Barack Obama could announce executive actions overhauling the immigration system as early as next week, though White



# Presentation

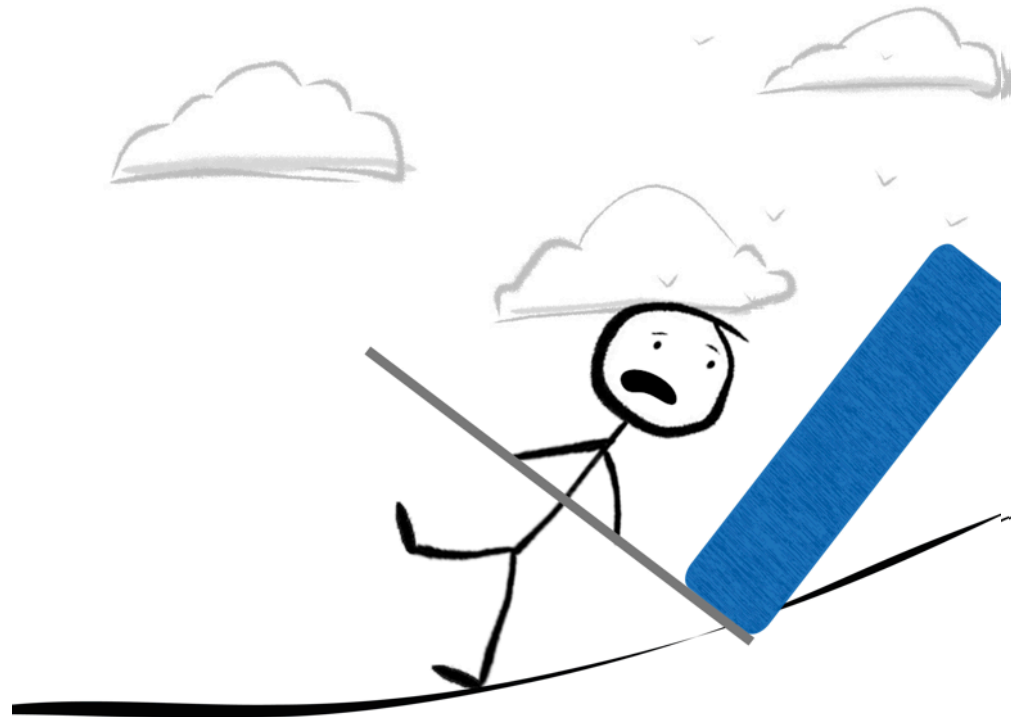
Be (reasonably) transparent.

Show value in the information.

Nudge people toward their better selves.

“Encouraging Reading of Diverse Political Viewpoints with a Browser Widget.”  
SA Munson, SY Lee, P Resnick. *ICWSM* 2013.

# Balancer



“Encouraging Reading of Diverse Political Viewpoints with a Browser Widget.”  
SA Munson, SY Lee, P Resnick. *ICWSM* 2013.

# Balancer





## Balancer | Field experiment

For median [liberal-reading user](#) (187 visits per 28 days), the difference in change between control (no feedback) and treatment (feedback) was equivalent to:

- 4 new monthly visits to a [right-leaning site](#) *or*
- 20 new monthly visits to a [neutral site](#)

“Encouraging Reading of Diverse Political Viewpoints with a Browser Widget.”  
SA Munson, SY Lee, P Resnick. *ICWSM* 2013.

# Slimformation (Knight Lab, Northwestern)

The screenshot shows a Medium article page with a sidebar overlay. The article is titled "You Are What You Read" by Sylvia, with a sub-headline "My Last Supper in You are what you read · 3 min read". The article text begins with "Tell me about the books you gathered — how do they define myself in books. I love art books, reference books, mysterious gardening books, and current political and historic...". The sidebar, titled "Reading Goals", shows progress bars for various categories: politics (actual goal), business (actual goal), technology (actual goal), sports (actual goal), science (actual goal), and entertainment (actual goal). The sidebar also includes an "Edit Goals" button and navigation tabs for "Activity", "Goals", and "Prescription".

Medium

A better place to read and write things that matter. [Learn more](#)

New Post

EDITOR'S PICK

## You Are What You Read

My Last Supper in You are what you read · 3 min read

Tell me about the books you gathered — how do they define myself in books. I love art books, reference books, mysterious gardening books, and current political and historic...

MOST RECOMMENDED TODAY

## Collecting Air

Nick Bilton in What I Learned Today · 4 min read

As a kid, I spent a lot of time traveling alone on airplanes. I and moved to the United States when I was 12 years old after up. Like a pingpong ball being lobbed across the ocean in sl bounced back-and-forth internationally sever...

## In Pursuit of Discipline

Joel Jenkins in Better Humans · 3 min read

Several years ago my older brother Scott drove a cement truck. To do so

Activity Goals Prescription

### Reading Goals

Edit Goals

politics	actual	goal
business	actual	goal
technology	actual	goal
sports	actual	goal
science	actual	goal
entertainment	actual	goal

# Slimformation (Knight Lab, Northwestern)



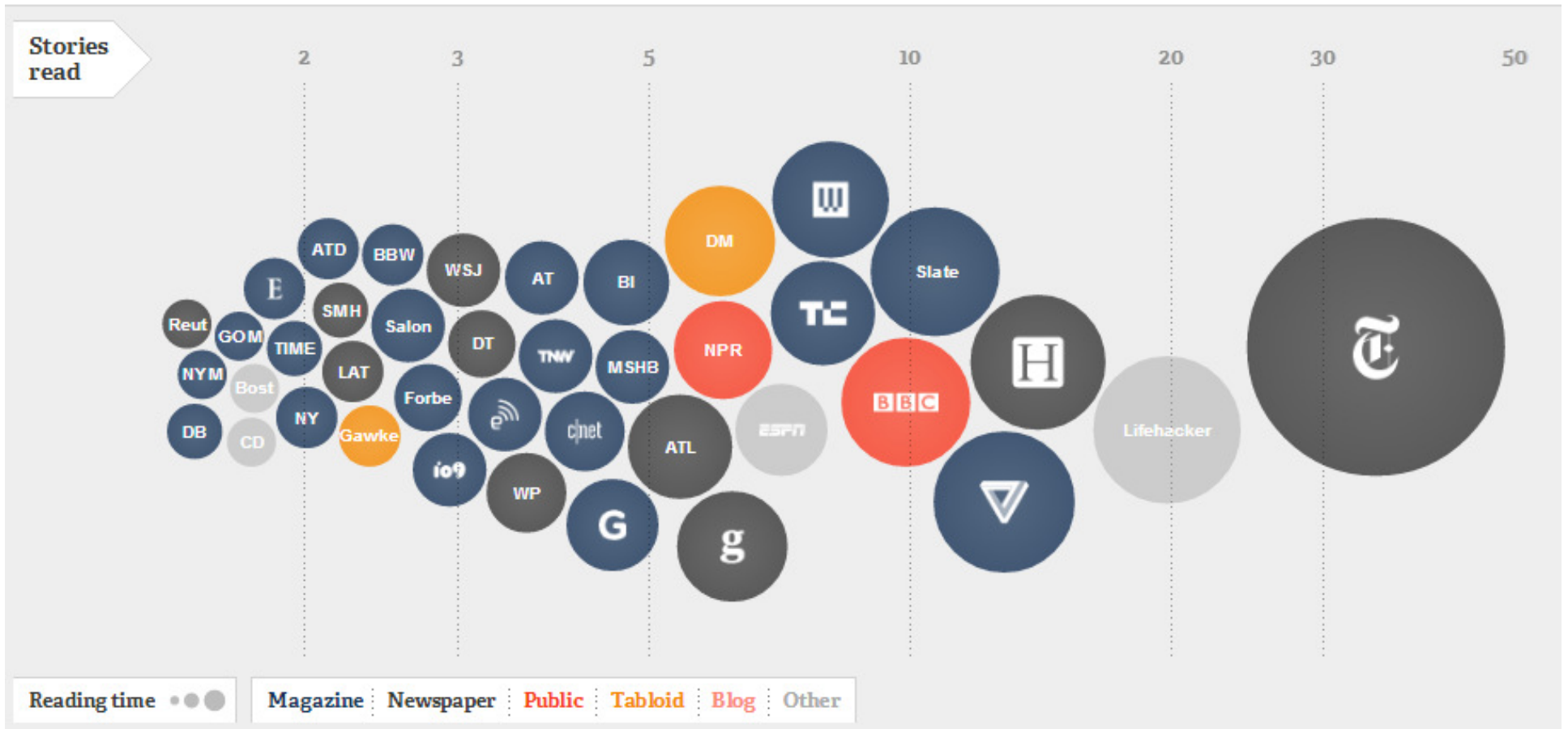
**Nick Bilton**

Writes for **The New York Times**

Follow @nickbilton

180K followers

In the past month, the average reader of Nick Bilton also read:



# Selection + Presentation | NewsCube

The screenshot shows the NewsCube interface with several annotations:

- Group of articles with different aspects:** A box at the top left of the article list.
- Already read group (Grayed out):** A box pointing to a grayed-out article titled "의미 : '동행명령제 위헌' 특검관행 제동".
- Title:** A box pointing to the title of article 4: "헌법학자들 '헌재 결정, 예상했던 결론'".
- Snippet:** A box pointing to the first few lines of article 4's content.
- Keywords of aspects:** A box pointing to the keywords of article 4: "대심, 사상, 뉴스, (서)".

The interface also shows a search bar, navigation tabs (주요기사, 정치, 경제, 사회), and a list of articles with their titles and keywords.

NewsCube: delivering multiple aspects of news to mitigate media bias.  
 S Park, S Kang, S Chung, J Song. *CHI* 2009.

# System designers can build or break bubbles

Bad personalization is fraught with potential downfalls.

# System designers can build or break bubbles

Bad personalization is fraught with potential downfalls.

Good personalization – in selection and presentation – can support individual engagement & learning as well as better societal outcomes.

# thanks!

Sean A. Munson

smunson@uw.edu  
@smunson

## Collaborators

Paul Resnick

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Erica Willar

Jeremy Canfield

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Stephanie Lee

## Funding

NSF Awards IIS-0916099 & IIS-0812042

Intel PhD Fellowship

Yahoo! Key Technical Challenge Grant

**HCDE** Human  
Centered  
Design &  
Engineering

**dub**

# System designers can build or break bubbles

Bad personalization is fraught with potential downfalls.

Good personalization – in selection and presentation – can support individual engagement & learning as well as better societal outcomes.

Sean Munson | [smunson@uw.edu](mailto:smunson@uw.edu) | [@smunson](https://twitter.com/smunson)

**HCDE** Human  
Centered  
Design &  
Engineering

**dub**