

The Effect of Opposing Information in News on the Reader's Balance of Opinions

Elena Agapie
May 31st, 2011

The Current Work

- ▶ Can an interface for reading news make people have a more balanced view of the opinions presented in the news?



Problem Statement & Design

**Problem
Statement**

**Related
Systems**

**Proposed Design &
Related Concepts**



Experimental Design

**Experiment
Overview**

Article Processing

**Experimental Design
of Study**



Results

**Results
Overview**

Qualitative Results

Trends in the Data



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News Online

Google news

Search News

Search t

Advanced n

Top Stories

John Ensign
Bud Selig
Los Angeles
Dodgers
Kobe Bryant
American Idol
Muammar al-
Gaddafi
Phylicia Barnes
Libya
iPhone
Tim Hetherington

Starred ★

Greater Boston

Europe

World

Social Networking

Top Stories

John Ensign »

Senator John Ensign Resigns

New York Magazine - 27 minutes ago

Senator John Ensign of Nevada announced he'll be resigning before the end of his term, amid investigation related to an affair Ensign had been having with the wife of his (presumably former aide Doug Hampton.

✚ Video: Nevada Sen. John Ensign Announces Resignation  The Associated Press

Ensign: I Quit National Journal


Bloomberg - Reuters - MyNews4 - New York Times (blog) - Wikipedia: United States Senate
all 1,108 news articles »

Gary Johnson »

New GOP Presidential candidate supports gay rights, pot legalization

ChicagoPride.com - 1 hour ago

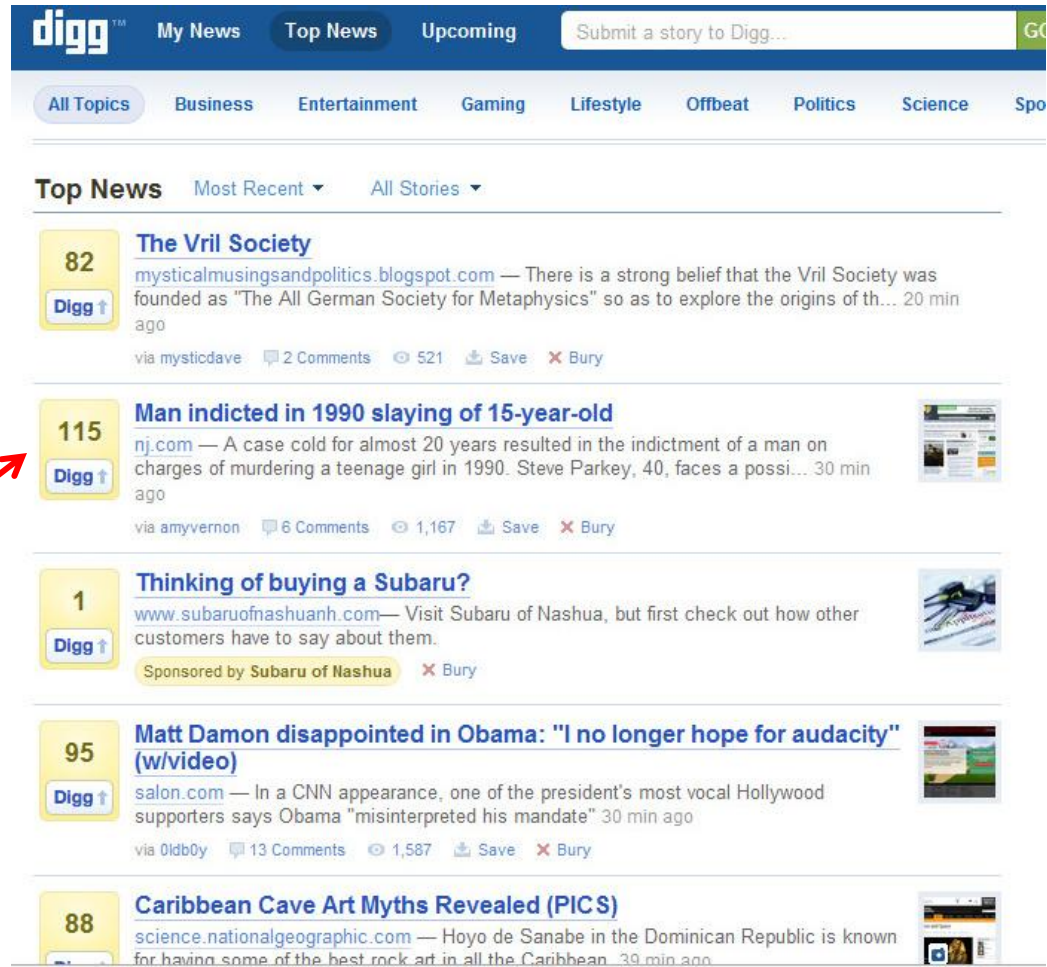
by GoPride.com News Staff Washington, DC - Former Republican New Mexico Gov. Gary Johnson supports gay rights and the legalization of marijuana, has announced he's running for President.

✚ Video: Gary Johnson launches presidential run  KRQE.com

Johnson Announces Presidential Run Dartmouth Review

Wall Street Journal - The Atlantic - Christian Science Monitor - CBS News
all 308 news articles »

News Online



The screenshot shows the Digg website interface. At the top, there's a navigation bar with the Digg logo, 'My News', 'Top News' (selected), and 'Upcoming'. A search bar on the right says 'Submit a story to Digg...'. Below this is a horizontal menu with categories: 'All Topics', 'Business', 'Entertainment', 'Gaming', 'Lifestyle', 'Offbeat', 'Politics', 'Science', and 'Sports'. The main section is titled 'Top News' with dropdown menus for 'Most Recent' and 'All Stories'. A list of news stories follows, each with a Digg score in a yellow box, a title, a snippet, and metadata like 'via', comments, and views. A red arrow points to the story with a score of 115.

Digg Score	Title	Source	Snippet	Time Ago	via	Comments	Views	Actions
82	The Vril Society	mysticalmusingsandpolitics.blogspot.com	There is a strong belief that the Vril Society was founded as "The All German Society for Metaphysics" so as to explore the origins of th...	20 min ago	mysticdave	2	521	Save Bury
115	Man indicted in 1990 slaying of 15-year-old	nj.com	A case cold for almost 20 years resulted in the indictment of a man on charges of murdering a teenage girl in 1990. Steve Parkey, 40, faces a possi...	30 min ago	amyvernon	6	1,167	Save Bury
1	Thinking of buying a Subaru?	www.subaruofnashuanh.com	Visit Subaru of Nashua, but first check out how other customers have to say about them.					Sponsored by Subaru of Nashua Bury
95	Matt Damon disappointed in Obama: "I no longer hope for audacity" (w/video)	salon.com	In a CNN appearance, one of the president's most vocal Hollywood supporters says Obama "misinterpreted his mandate"	30 min ago	Oldb0y	13	1,587	Save Bury
88	Caribbean Cave Art Myths Revealed (PICS)	science.nationalgeographic.com	Hoyo de Sanabe in the Dominican Republic is known for having some of the best rock art in all the Caribbean	39 min ago				

News Online

th living in government shelters, sometimes just gyms, and are running low on money.

Tokyo (CNN) -- The worst may have passed in the most serious nuclear accident since Chernobyl, but cleaning up when it's finally over is likely to take decades and cost Japan an untold fortune.

A six- to nine-month horizon for winding down the crisis, laid out by plant owner Tokyo Electric Power this week, is just the beginning.

n Near the end of that timeline, Japan's government says it will decide when -- or whether -- the nearly 80,000 people who were told to flee their homes in the early days of the disaster can return.

Friday marks six weeks since the March 11 magnitude-9.0 earthquake and subsequent tsunami that triggered the crisis.

Some of those who have already spent six weeks in emergency housing, like Tomioka funeral director Kazuhiro Shirato, say they don't expect to return to what was home.

"I've been told by TEPCO since I was very small that the nuclear power plant was safe, so I never imagined this would happen," Shirato told CNN. "I hope now that the whole town will move to another place and rebuild."

Many of those displaced by the disaster have spent a month living in government shelters -- sometimes just gyms -- and are running low on money. Tokyo Electric has promised to make a down payment on compensation of 1 million yen (about \$12,000) per household, with the intention of sending out checks by late April.

Another 66 000 have been told to prepare for evacuations in towns

Toyota makes drastic production cuts

updated Wed April 20, 2011



Toyota has announced drastic production cuts due to difficulty in supplying parts following the earthquake in Japan.

Chernobyl's 25-year shadow

updated Thur April 21, 2011



There's an eerie stillness about the desolate buildings and empty streets of Pripyat.

Inside evacuation 'ghost town'



A photographer documents the ghost town left behind by the nuclear crisis in Japan. What he found was a "time stop."

One month since the quake

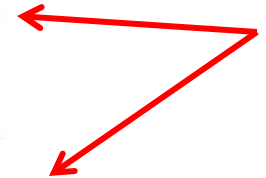


Somber ceremonies mark one month since the earthquake and tsunami killed as many as 25,000 people.

First moments of a tsunami



Witnesses capture the very first moments of the devastating tsunami that struck Japan in March.



News Online

From other news sites



Xinhua News Agency
Japanese gov't to craft 2nd extra budget
1 hr ago

CNBC
Japan plans disaster budget, building 100K homes
3 hrs ago

Mail Online UK
Ashwin Cresswell's tsunami letter to Australian and Japanese prime ministers
4 hrs ago

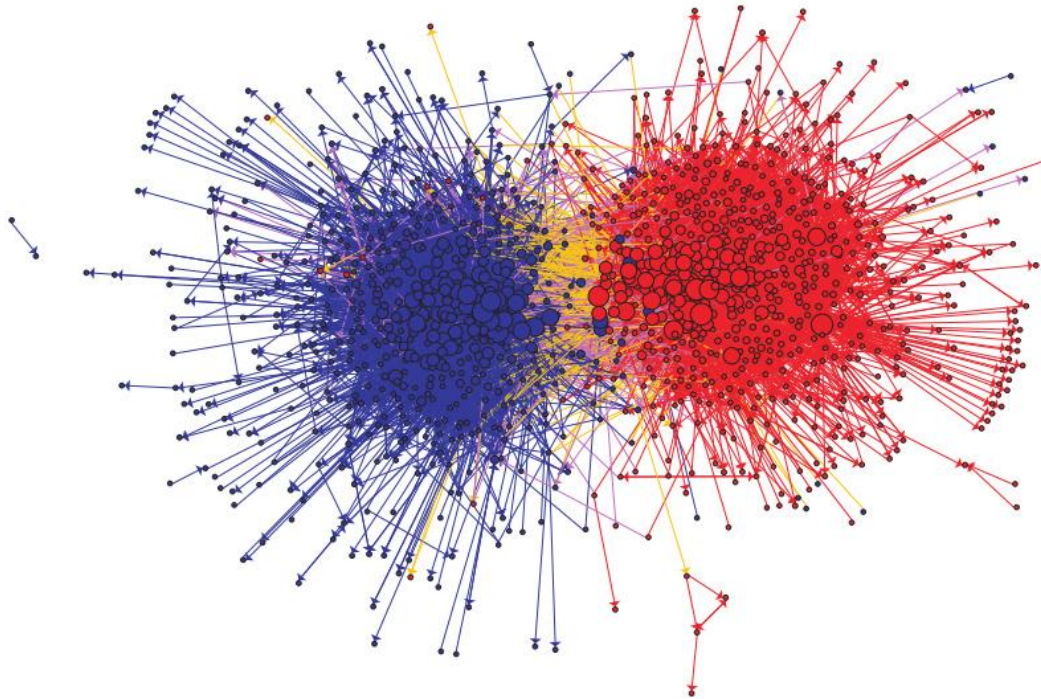
SINA
Japan earmarks 1st \$50b for post-quake rebuild
6 hrs ago

ABC Online
Japan approves \$49 billion quake budget
8 hrs ago

About these results



Polarization of Political Blogosphere



Polarization from Information Aggregators

DRUDGE REPORT

- ▶ republican news aggregator



- ▶ conservative YouTube



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Related Systems

- ▶ Presenting and finding diverse opinions
- ▶ Identifying controversial topics



Tell Me More

HOME

Al Qaeda blamed for Iraq violence wave - CNN.com

CNN | 2009-06-10 10:24:08 |

Buzz up! Be the First to Submit This Story to Digg

Get Breaking News Alerts

never spam

SIGN UP

Share Print Comments

BAGHDAD, Iraq (CNN) -- Al Qaeda in Iraq is trying Monday to foment sectarian tensions by attacking and killing Iraqi civilians, a government spokesman told CNN.

Bombings across the country have killed 48 and wounded 231 others -- most of them civilians in Shiite areas -- according to Interior Ministry spokesman Brig. Gen. Abdul Karim Khalaf.

"Most of the terrorists attacks carried out by al Qaeda in Iraq were against civilians and not Iraqi security forces," Khalaf said. "This is an indication that al Qaeda in Iraq cannot face the Iraqi security forces."

The deadliest attack on Monday happened near the northern city of Mosul when two truck bombs destroyed 32 homes, killing 30 people and burying others in the rubble, officials said.

The bombs targeted al-Khazna village, which is inhabited by a Shiite Shabak ethnic group. The village is an area disputed between Kurds and Arabs.

Car bombings and a roadside bomb in Baghdad killed 18 others on Monday, most of them Shiites.

"This is the card that al Qaeda in Iraq is now playing by targeting mostly Shiite areas and neighborhoods to agitate the sectarian violence," Khalaf said. "But this will not happen because Iraqi security forces and Iraqi people in general are aware of this losing game and they will not fall into this trap."

The attacks come after a series of bombings in Iraq on Friday, mostly aimed at Shia targets, which killed 50 and wounded 154 others. Friday's deadliest attack happened when a suicide car bomb exploded near a Shiite mosque where a funeral was taking place, killing 38.

Last week's attacks occurred at the end of a Shiite Muslim celebration marking the birthday of Imam Mohammed al-Mehdi, the last of 12 historic imams revered by Shiites. Pilgrims participating in such celebrations have been the target of similar attacks by Sunnis.

The bombings sparked fears of sectarian violence and called into question the ability of Iraqi forces. The United States pulled back its combat troops from Iraqi cities and towns on June 30, leaving security responsibilities to the Iraqis and remaining only in a training and advisory capacity. The U.S. military continues to conduct combat operations in areas outside cities and towns.

Khalaf said the recent attacks are part of "an escalation of violence" over the past two months ahead of national elections in January.

Additional Actors

AFF: Iraq bomb attacks kill 47

Prime Minister **Nuri al-Maliki** at a meeting with army commanders praised efforts in fighting insurgents but said the struggle was ongoing.

Iraq bombs kill 40, fears of sectarian strife grow - washingtonpost.com

A row between the Arab-led government in Baghdad and the largely autonomous **Kurdistan Regional Government** in Iraq's north over land and oil has come dangerously close to all out war.

[More Additional Actors](#)

Additional Figures

AFF: Iraq bomb attacks kill 47

The massive blasts levelled **35** houses and gouged deep craters into the ground of the prosperous village of 3,000, home to members of the small **Shabak** community, a sect of Kurdish origin.

Iraq bombs kill 40, fears of sectarian strife grow - washingtonpost.com

The blasts destroyed some **40** houses in the village, home to the small **Shabak** community, a sect of Kurdish origin. Dismayed people stood around a massive crater left by one of the blasts as firemen picked through the debris searching for bodies.

[More Additional Figures](#)

Additional Quotes

Iraq bombs kill 40, fears of sectarian strife grow - washingtonpost.com

"The aim is to stall the political process and to bring it back to the era of sectarian conflict before the coming election," said analyst and professor **Hameed Fadhel**.

[More Additional Quotes](#)

Figure 1. Screenshot of Tell Me More showing three kinds of new information

Spectrum

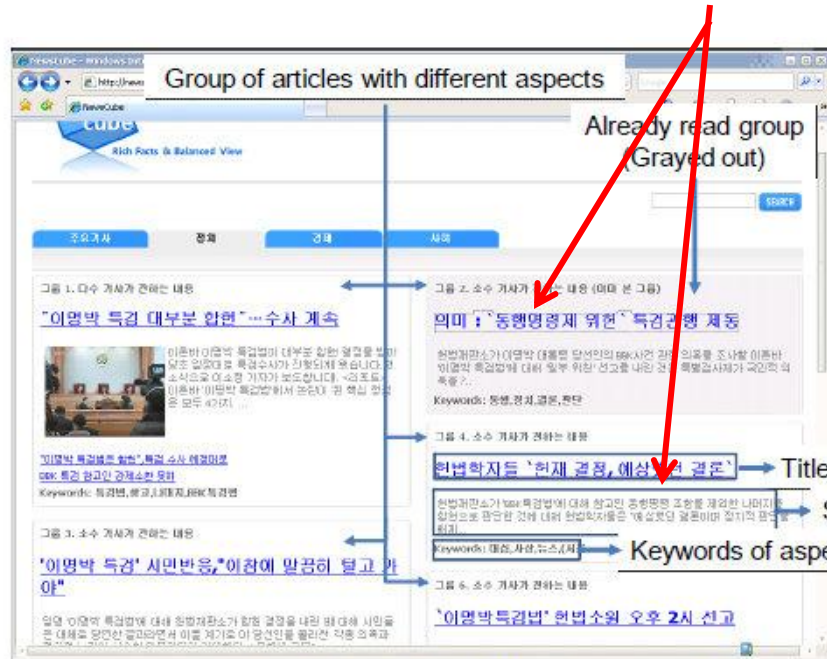
Search results for abortion

[health11](#) **law 5** [politics 18](#) [religion 14](#)

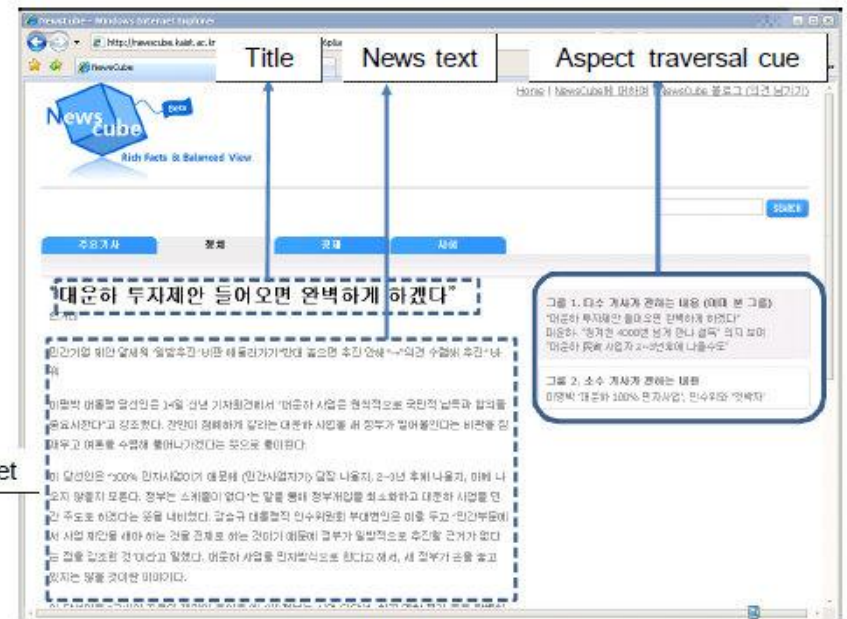
- [Drastic Reduction of Abortions in Michigan Demonstrate the ...](#)
From *Americans United for Life Blog* - <http://blog.aul.org/> 9 hours ago
As life-affirming laws in Michigan increase, the **abortion** rates in Michigan continue to plummet. Michigan state health officials announced last week that the **abortion** rate in Michigan has dropped to its record low since record-keeping ...
- [The Charter and abortion](#)
From *Charterblog* - <http://charterblog.wordpress.com> 13 hours ago
The Victorian Law Reform Commission today tabled its report on the decriminalisation of **abortion**, proposing three reform models. A conscience vote on whichever model the government chooses is expected in the Victorian Parliament before ...
- [Kansas Gov. Blasted for Hosting Late-Term Abortion Doc](#)
From *CultureWire* - <http://www.culturewire.net> 1 hour ago
Pro-life groups blast Kansas Gov. Sebelius over photos showing her with late-term **abortion** doctor at an official ceremony at her state residence.
- [Partial Birth Abortion Ban Bill Passes House](#)
From *Red Tape Blog* - <http://blogpublic.lib.msu.edu/index.php?blog=5> 28 May 2008
The **abortion** legislation, backed by Right to Life of Michigan, is intended to mirror a federal prohibition against the procedure that was upheld by the US Supreme Court last year. Previous attempts to outlaw the procedure in Michigan ...

Figure 2 Search results for “abortion” in the domain of Law

NewsCube



(a) Aspect view (after selecting an event)



(b) Article view

Highlighting Disputed Claims on the Web

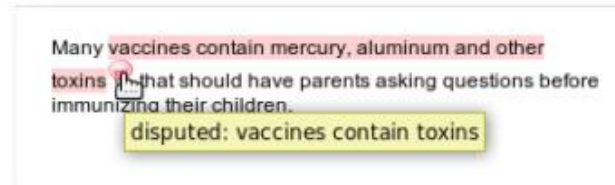


Figure 1: Dispute Finder highlights text snippets that make disputed claims.



Figure 2: Click on a highlighted snippet to see a popup interface with articles arguing for and against the claim.

Contributions of Related Work

- ▶ Identify Related or Opposing Opinions
- ▶ Use algorithmic approaches to identify the opinions
- ▶ Use crowds to identify information

- ▶ Not primarily focusing on the effect on the user



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Solution

- ▶ Provide people with additional information directly linked to the content they are reading
- ▶ The information comes from different articles, and provides opposing opinions
- ▶ The design takes into consideration people's attitudes



Current Design

In an online poll taken by The Recorder, a majority -- 71 percent -- of respondents said they support the super Walmart, compared to 19 percent who said they do not favor the project and 10 percent who said they don't care.

Fred Beltran said Porterville residents will reap other benefits tax revenue and job creation.

"They say they're creating 500 jobs, but they're going to kill 2000 jobs."

He spoke at the public hearing on behalf of Comision Honorifica Mexicana-Americana, Toys for Tots and LOVE Inc., citing Porterville Walmart's contributions to the community's non-profits.

"They provide literally thousands of dollars in the forms of grant funds and damaged goods from the distribution center that goes directly to our clients," he said. "Most of the clients are on fixed income, limited income, are unemployed or have no income at all ... most of these clients of ours do shop at Walmart ... they don't have much means and they are trying to stretch their dollars out the best they can."

City Council candidate and Correctional Sgt. Shawn Cable is clearly in support of Walmart and any other big box stores.

He said at a candidate forum earlier this week that he not only shops at them, but once worked for Albertson's which he said "sends all its funds back to Boise like Walmart sends its funds back to Arkansas "



Challenges

- ▶ **What type** of information to provide readers
- ▶ **How** to display the information
- ▶ What mediates the information acquisition of the reader
 - ▶ **Attitude** of the reader towards the topic
 - ▶ Goal of the reader
 - ▶ Importance of the topic
 - ▶ Media source
 - ▶ Prior Knowledge



What Type of Info - Opinion Diversity

- ▶ Relationship between the number of supporting and challenging items in an article
- ▶ Highlighting agreeable items or showing them first can increase satisfaction when fewer agreeable items are present

Opinion Diversity

- **Why the public option matters (Paul Krugman - NYTimes.com)**
Most arguments against the public option are based either on deliberate misrepresentation of what that option would mean, or on remarkably thorough misunderstanding of the concept, which persists to a frustrating degree. Aside from the essentially circular political arguments — centrist Democrats insisting that the public option must be dropped to get the votes of centrist Democrats — the argument against the public option boils down to the fact that it's bad because it is, horrors, a government program. And sooner or later Democrats have to take a stand against Reaganism — against the presumption that if the government does it, it's bad.
- **It's come to this August wasn't a setback for us at all, says Gibbs (Hot Air)**
In which Beltway Bob channels Baghdad Bob. Despite a month of near-daily "Obama's approval rating at new low" headlines and deteriorating numbers for ObamaCare itself, the spin oozes unceasingly forth, with Gibbs mindlessly asserting that the left is closer than ever to fulfilling its dream of the boondoggle to end all boondoggles. Er, closer than they were last month? Wasn't the whole point of trying to ram a bill through Congress before the recess to avoid precisely the sort of inevitable grassroots backlash that stirred in August? I realize it's Gibbs's job to lie for his boss, but providing comic fodder for righty blogs with transparent garbage like this can't be helping much. At another point during the briefing, Tapper asked him what the big deal is about tomorrow night's speech given that Obama's been recycling the same rote talking points for months. Gibbs's answer: Well, it's a big forum. The correct answer, via Jay Cost: They're out of moves. It's Hail Mary time.
- **Kingston Claims Health System Worked "Very Well" For Bankrupt Cancer Survivor Without Insurance (Think Progress)**
At a recent town hall held by Rep. Jack Kingston (R-GA), an elderly gentleman named Jim Parker stood up and told the congressman that he was recently treated for colon cancer. "I did not have insurance," he said, because "things didn't quite work out" after he started his own business. Parker informed Kingston that "a friend of mine was in the same position, and we buried him last January." Kingston responded by telling the man that "you did do very well" because he was able to get treated when he arrived at the hospital. Parker responded, "I am functionally bankrupt!" Kingston cut him off and reiterated his point. Kingston has been telling the media that the August town halls have helped to defeat Obama's health care plan. And he recently told Politico that the GOP is "going to keep the nightmare going through the fall." A nightmare all too real for people like Jim Parker.
- **Gay Marriage Rage (Maggie Gallagher - Townhall.com)**
I was in Maine on the day that marriage qualified for the ballot this November. I went to Maine as president and founder of the National Organization for Marriage, which helped local groups organize the signature drive in Maine, as we did in California for Proposition 8. Most of the people in Maine were enthusiastic, but one clergyman asked me, "Shouldn't we live with our neighbors in peace?" His question haunts me for its debased presumptions: Is using democracy to fight for shared values somehow an act of war against our neighbors? "Agree with me or you're a hater" is not the authentic voice of peace and tolerance. But the question underscored an increasingly obvious truth: Gay marriage advocates now rage against Americans who disagree with them, no matter how civilly we conduct the debate. They believe only one side has the moral right to be heard.
- **Perry making use of stimulus boost (Houston Chronicle)**
Gov. Rick Perry rallied opposition to federal stimulus spending, but he now is the manager of one of the biggest pots of federal gold in Texas: crime grants to local law enforcement agencies. And those grants have become an integral part of Perry's political machine. Perry in the past has decided what law enforcement agencies receive about \$23 million a year in Edward Byrne Memorial Justice Assistance grants. Now, because of the American Recovery and Reinvestment Act, Perry will have an additional \$90 million to hand out. While Perry's office is the conduit for the federal money, the governor chooses which agencies receive the money and how it is spent. The political payoff has been great. About \$6 million in Byrne grants helped Perry win the endorsement of border sheriffs in 2006. Every time Perry doles out the federal Byrne grants, he sounds like the money is his.

What Type of Info - Opinion Diversity

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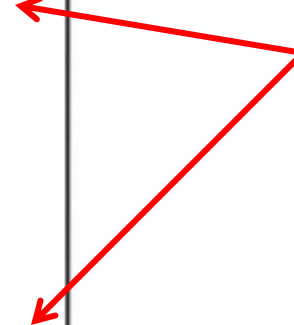
How to Present Info - Anchored Annotations

- ▶ Anchored annotation based discussion environments may lead to better conversations about text
- ▶ Text with negative annotations
 - ▶ Readers spent more effort to verify they comprehend the text
- ▶ Anchored annotations resulted in better use of compromise - trying to bridge competing positions



How to Present Info - Anchored Annotations

<p>Net tepid reviews. "Most of the content on acknowledges. "But if you find one good err believes that Dyson is being unrealistic. y not be there the next day, or the eing asked to jump in and figure out if what y don't have the skill or time to do that." ternet's much-vaunted search software. or thousands of sources within seconds, gines, and the Net itself, miss important</p> <p>ls, not more," David Gelemter, a professor year in The Weekly Standard. "Couldn't we re favoring them with three orders of with Larrv Cuban, of Stanford, he argued.</p>	<p>But you can find a lot of garbage in printed sources too. -- R.W.</p> <p>Abundance of info is <u>definitely</u> a problem. -- D.H.</p>
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Related Work on Annotations Reflect System

Frankly, everyone should be treated with a little more respect. It's a very small subsection of males who respond to that kind of banter. And many men can play that game, but it doesn't mean that it leads to a more productive or enjoyable experience.

Randomran 04:19, 6 May 2010

99.237.208.131 I thank you for your honesty - you describe exactly the culture that I meet on Wiki: guys having guy-type banter because they assume all editors are male. No malicious intention just an honest mistake. **As a girl, I can tell you the pink label for girls thing just aint going to fly. Is there anything else Wiki could do to remind you that you are in a mixed environment? Pink labels for everyone, maybe? A reminder at the top of the editing box that this is a mixed gender environment so play nice?**

Dakinijones 11:23, 9 May 2010

Thank you 99.237.208.131 and Dakinijones for telling about your personal experiences on wiki. Getting these type of first hand accounts is helpful. Taking the discussions from a theoretical to real life examples reminds us that this is not merely a process driven exercise but is in fact meant to make the community stronger and our end products (articles) better.

Some of our editors are elderly and are not accustom to having young people speak with disrespect to them and I see this cause problems sometimes. And people with professional degrees can be surprised when the discussion are not of a professional nature but rather more of a ruckus at times. So I agree with Randomran that showing all editors more respect is important.

FloNight♥♥♥ 10:11, 12 May 2010

- Everyone should be treated with more respect. Not only females. [Daler45](#)

• [Add a point that Randomran makes](#)

[Reply](#) [Parent](#) [More](#) ▾

- Affirms the assertion that males by default assume that they are interacting with a male editor. [Daler45](#)

- But does not believe in having the sex displayed in the signature is a solution to the problem. To be nicer [Daler45](#) general is better. [Daler45](#)

• [Add a point that Dakinijones makes](#)

[Reply](#) [Parent](#) [More](#) ▾

- Elderly editors are not accustomed to having young people speak disrespectfully to them [Eskim](#)

• [Add a point that FloNight♥♥♥ makes](#)

[Reply](#) [Parent](#) [More](#) ▾

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"They provide literally thousands of dollars in the forms of grant funds and damaged goods from the distribution center that goes directly to our clients," he said. "Most of the clients are on fixed income, limited income, are unemployed or have no income at all... most of these clients of ours do shop at Walmart... they don't have much means and they are trying to stretch their dollars out the best they can."

City Council candidate and Correctional Sgt. Shawn Cable is clearly in support of Walmart and any other big box stores.

He said at a candidate forum earlier this week that he not only shops at them, but once worked for Albertson's which he said "sends all its funds back to Portavillo Walmart's distribution center."

Mediator of Info Acquisition Attitude Towards Topic

▶ Attitude

- ▶ An individual's degree of like or dislike for something
- ▶ Responses to corrections in mock news articles differ significantly according to subjects' ideological views
 - ▶ The role of attitude strength as a moderator variable with regard to the direction of the relation attitude - behavior
 - ▶ Strong attitudes are more resistant to change

Mediator of Info Acquisition Attitude

► For the information to be used

► Accessible

- **Chronic accessibility** - accessibility of information independent of the particular situation

- How frequently used
- How it is organized in memory
 - Frequently activated
 - Connected to many other nodes in memory

► Appropriate

- Relevance of the information
- Info inappropriate => evaluated opposite to its original implications

Mediator of Info Acquisition Attitude

have, when we have the highest number of people in the world being criminalized [for] many nonviolent crimes relating to marijuana," she said.

"Marijuana has not caused anybody directly to die. It's not a toxic substance that would cause people to die and ... we can use our resources so much better."

Last week, Gov. Arnold Schwarzenegger signed a law reducing the



Accessible
hover over text




Mediator of Info Acquisition Attitude

I don't think much could be worse than the present situation that we have, when we have the highest number of people in the world criminalized [for] many nonviolent crimes relating to marijuana.

"Marijuana has not caused anybody directly to die. It's not a toxic substance that would cause people to die and ... we can use our resources so much better."

Last week, Gov. Arnold Schwarzenegger signed a law reducing charges for 1 ounce or less of marijuana possession to a misdemeanor from an infraction, essentially saying that those found in possession

You wouldn't want someone in that state or even a milder one coming toward you on the road, and while it would still be illegal to drive under the influence, that would almost certainly happen more often under legalization.



Appropriate
Information directly
related to original opinion

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Current Study

- ▶ Test if by using the designed interface
 - ▶ Reader's attitudes will be more moderate
 - ▶ Readers will have a more balanced overview of opinions
 - ▶ Readers will make more balanced arguments about the topic they are reading



Current Design

In an online poll taken by The Recorder, a majority -- 71 percent -- of respondents said they support the super Walmart, compared to 19 percent who said they do not favor the project and 10 percent who said they don't care.

Fred Beltran said Porterville residents will reap other benefits tax revenue and job creation.

"They say they're creating 500 jobs, but they're going to kill 2000 jobs."

He spoke at the public hearing on behalf of Comision Honorifica Mexicana-Americana, Toys for Tots and LOVE Inc., citing Porterville Walmart's contributions to the community's non-profits.

"They provide literally thousands of dollars in the forms of grant funds and damaged goods from the distribution center that goes directly to our clients," he said. "Most of the clients are on fixed income, limited income, are unemployed or have no income at all ... most of these clients of ours do shop at Walmart ... they don't have much means and they are trying to stretch their dollars out the best they can."

City Council candidate and Correctional Sgt. Shawn Cable is clearly in support of Walmart and any other big box stores.

He said at a candidate forum earlier this week that he not only shops at them, but once worked for Albertson's which he said "sends all its funds back to Boise like Walmart sends its funds back to Arkansas "



Experiment Overview

- ▶ Preparation of materials for the study
 - ▶ Identify topics and articles
 - ▶ Identify the information we want to relate between articles
- ▶ Experimental Design of the Study
 - ▶ Measurements
 - ▶ Conditions



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Article Topics

- ▶ **Controversial or debatable topics:**
 - ▶ Building a Walmart in your local neighborhood, pros and cons.
 - ▶ California Prop. 19 vote on legalizing marijuana, pros and cons.
- ▶ **Choice of articles**
 - ▶ Sets of articles with opposing opinions
 - ▶ Similarity in how strong they are against or favor the issue in the article
 - ▶ Similar size



Article Processing

- ▶ Rated how extreme the articles are (pro/con) on the topics chosen
- ▶ Identify all confirming and opposing opinions in the articles
- ▶ Related each opinion with opposing statements
- ▶ Asked 4-5 raters for these tasks
- ▶ Made a consensus



Proposition 19 article – pro legalization

Proponents of the measure [proposition 19], however, argue **that it would not only help California's sizable budget deficit but would in turn reduce crime by shifting law enforcement's focus to harder substances and targeting only serious offenders.**

The California government projected that at an excise tax of \$50 per ounce, **the new law would bring in about \$1.4 billion in additional revenues. It would save the state \$960 million a year in enforcement costs,** according to the Cato institute.

Proposition 19 has earned the endorsement of several influential groups , such as California's NAACP, Latino voters league and unions like service employees international union and the united food and commercial workers.

Former U.S. Surgeon General Joycelyn Elders defended the measure on CNN Sunday, saying that **much more harmful substances, such as tobacco and alcohol, are legal, and marijuana should be no different.**

"i don't think much could be worse than the present situation that we have, when we have the highest number of people in the world being criminalized [for] many nonviolent crimes relating to marijuana," she said. **"Marijuana has not caused anybody directly to die. It's not a toxic substance that would cause people to die and ... We can use our resources so much better."**

Last week, Gov. Arnold Schwarzenegger signed a law reducing the charges for 1 ounce or less of marijuana possession to a misdemeanor from an infraction, essentially saying that those found in possession wouldn't face arrest, a court appearance and a criminal record.

While legalizing marijuana remains a hot-button issue, **Americans' views toward medical marijuana have softened in recent years, and more states are paving**

Important issues

- ▶ Different people have different concepts of what an opinion is and its granularity
- ▶ It is hard to accurately match opinions 1-to-1 between articles
- ▶ It is hard to identify what is the best opposing opinion



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Current Study

- ▶ Simulate different reading practices
 - ▶ Reading one article confirming one's attitude
 - ▶ Reading an article augmented with additional opinions
 - ▶ Reading several articles with different orientations



Experimental Design

Pre-survey

Measure attitude of participants



Main Study

Participants Read News Articles



Original Article

Augmented Article

Two Articles



Post Survey

Measure attitude
awareness of opinions
argumentation



Experiment Design

	Pro Legalization	Counter Legalization
Interface 1 (Original Article)		
Interface 2 (Augmented Article)		
Interface 3 (2 articles)		

- ▶ The same design for the Walmart topic



Experimental Design

Pre-survey

Measure attitude of participants



Main Study

Participants Read News Articles



Original Article

Augmented Article

Two Articles



Post Survey

Measure attitude, strength of attitude, awareness of opinions, argumentation



Purpose of Pre-survey

- ▶ Measure attitude on the topic of the articles
- ▶ Assign participants to the condition in accordance to their opinion



Strength and Orientation of Attitude

▶ Items:

- ▶ Smoking marijuana for recreational purposes should be forbidden by law.
- ▶ Legalizing marijuana for recreational purposes would be very detrimental to society.
- ▶ If it was possible, I would vote for my state legalizing marijuana for recreational purposes.



Experimental Design

Pre-survey

Measure attitude of participants



Main Study

Participants Read News Articles



Condition 1 Topic 1
Original Article

Condition 2 Topic 1
Augmented Article

Condition 3 Topic 1
Two Articles

Condition 1 Topic 2
Original Article

Condition 2 Topic 2
Augmented Article

Condition 3 Topic 2
Two Articles

Post Survey

Measure attitude, strength of attitude, awareness of
opinions, argumentation



Experimental Design

Pre-survey

Measure attitude of participants



Main Study

Participants Read News Articles



Original Article

Augmented Article

Two Articles



Post Survey

Measure attitude, strength of attitude, awareness of opinions, argumentation



Strength of attitude

▶ Items:

- ▶ Smoking marijuana for recreational purposes should be forbidden by law.
- ▶ Legalizing marijuana for recreational purposes would be very detrimental to society.
- ▶ If it was possible, I would vote for my state legalizing marijuana for recreational purposes.



Awareness of Opinions

- ▶ **Measurement:**
 - ▶ Number of recalled pros and cons from the articles read



Balanced Argumentation

- ▶ **Prompt:**

- ▶ Make a decision on whether marijuana should be legalized.
Write an argument listing the most important facts and opinions

- ▶ **Measurement:**

- ▶ Ratio of pros to cons used in a written argument



Informal Interview

- ▶ **Goal:**

- ▶ How did participants perceive the annotations?
 - ▶ What did they think about the interface design
- ▶ Was the information in the annotations relevant to participants?
 - ▶ Would they want to see this kind of information?
 - ▶ How did they make sense of the information?
- ▶ How did the participants perceive the articles they were assigned to read?



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Results Overview

- ▶ Qualitative results from interview
 - ▶ Informs design decisions
 - ▶ What information to use in the annotations
 - ▶ How did participants like the design?
- ▶ Quantitative trends from the data
 - ▶ Did the different interfaces have an effect on attitude change, balance of opinions?



Participant Sample

- ▶ 25 participants
- ▶ Condition 1 (7 participants), Condition 2 (11 participants), Condition 3 (7 participants)
- ▶ Students at Harvard (mostly graduate students in engineering)



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Interview Results

▶ Interface Design

- ▶ Annotations were disruptive (3 participants)
 - ▶ Disturbed the flow of the article
 - Participants read annotations separately from reading the article
 - ▶ Information overload
 - ▶ Preferred articles that have both pro and counter argument brought together by an editor (1 person)
- ▶ Preferred a different kind of pointer to additional information
 - ▶ Pointer to an opposing article
 - ▶ Ability to click to go to additional information



Implications 1

- ▶ Make additional annotations unobtrusive
- ▶ Keep the flow of the article
- ▶ Think about other ways to point to the additional information



Interview Results

▶ Type of information

- ▶ Annotations were useful (2 participants)
 - ▶ Contained opposing opinions
 - ▶ They would clarify the original article
- ▶ Annotations were not useful (3 participants)
 - ▶ They contained opposing opinions
 - Participants not interested in them
- ▶ Making sense of the information
 - ▶ Not immediately clear that annotations were opposing opinions
- ▶ Appropriateness of the information (1 participant)
 - ▶ Additional information is fine in other contexts, but not with opinions



Implications 2

- ▶ Design for different populations (diversity seekers, adverse-resistant)
- ▶ Make the meaning of the information clear, set an expectation
- ▶ Opinions are a sensitive aspect on which to point to opposing views. What is the best way to do it?



Interview Results

▶ Perceiving the articles

▶ Article balance

- ▶ In condition 3 – participants thought the pro and counter article were part of the same article (3 participants)
- ▶ Articles were neutral with the annotations (1 participant)
- ▶ Perceived the biased articles as more neutral and stated it was because they had a strong opinion and the article was not as strong as it could have



Implications 3

- ▶ Expectation of the reader about how balanced the article should be
 - ▶ Readers expecting balanced articles
 - ▶ Readers expecting articles that are as biased as them
- ▶ How to satisfy all readers and have a balanced amount of opinions?



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Participant Sample

- ▶ 25 participants
- ▶ Condition 1 (7 participants), Condition 2 (11 participants), Condition 3 (7 participants)
- ▶ Students at Harvard (mostly graduate students in engineering)



Results

- ▶ Attitude Change
- ▶ Balance of Opinions Recalled
- ▶ Balance of Opinions used in Arguments
- ▶ Balance of Opinions reused in Argument



Discussion

- ▶ Trend of data is encouraging towards making people's opinions more balanced
- ▶ Balance of Arguments – still inconclusive
- ▶ Important design decision emerged from user feedback



Discussion and Future Directions

- ▶ Understand data further
 - ▶ Look into data more to see what might cause the current trends
- ▶ Experiment redesign
 - ▶ Redesign annotation content
 - ▶ Redesign information display
 - ▶ Different ways to point to the information
 - ▶ Make experiment scalable for an online study
 - ▶ Consider topics on which users don't have a prior opinion
- ▶ Run follow up experiment on MTurk



Future Directions and Interests

- ▶ **Design of the Interface**

- ▶ Make information accessible
- ▶ Easy to process
- ▶ Good user experience

- ▶ **Design of the additional information**

- ▶ What is most useful and relevant?
 - ▶ Opposing facts, additional facts, details to statements, opinions related to statements
- ▶ How might that differ to different type of news articles?



Future Directions and Interests

- ▶ Build a system that automates the process of relating information
 - ▶ Can we automate the entire process? NLP challenges
 - ▶ Can we use crowds for part of the article matching?
- ▶ The best model for building such a system
 - ▶ What combination of human reasoning and automation is appropriate
- ▶ Redesign the concept so that people can create their own annotations of relevant additional information
 - ▶ How to engage people to participate in creating this body of knowledge?

