HOW CAN VISUALIZATIONS HELP THE KNOWLEDGE WORKER?

If you have ever browsed message boards on web sites like Digg, YouTube, or The New York *Times*, you may have wondered whether a more effective way exists to understand the themes of what the overall discussion is. "What groups of this comment community are in agreement?", or, "What clusters of people are opposed to or in support of a specific passage?" I explored this in the context of how visualizations could help the knowledge worker. Similar to Op/Ed pieces in the *Times*, students comment and annotate documents for course work. I addressed the classroom environment and found two different types of needs among instructors presented to the right.

EXISTING TECHNOLOGIES DON'T UNITE TO HELP THE TEACHER, STUDENT, OR KNOWLEDGE WORKER

Among them: thumbs up, thumbs down method of rating comments, ability to map communities based on user input, plotting student work based on machine learning (LSA), and machine coded (DocuScope), communities built upon markups and highlighting, "editors selections," and simple sorting methods.

Salon brings together interaction and visualization to help reduce the cognitive load on the instructor, engage the students in their assignments, and create a dynamic classroom community by harvesting and presenting the work in a different manner.

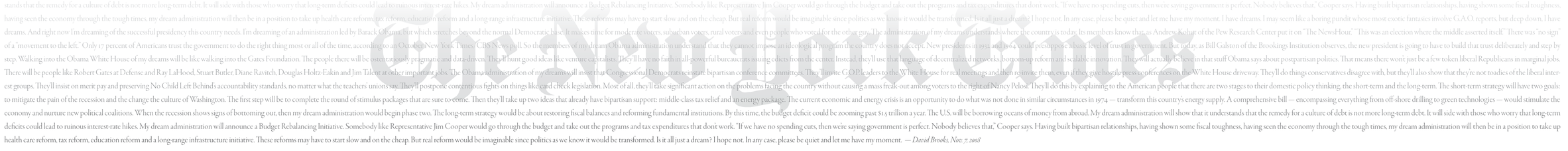
GLOBAL COMMENTING

Some knowledge workers are interested in the general reaction to a text — how the reader is reacting to the overall piece, the themes they were interested in, whether they agreed or disagreed with the author and for what reasons. These comments can be grouped into communities and visuals to drive discussion or lead to further research. This helps to break the practice of listing comments based only by time at which they were made.

LOCAL ANNOTATIONS

A different way a classroom can gather student work is through annotations they provide for specific areas of text. These can be aggregated to display "hotspots" of activity, points of agreement or disagreement, or areas of text where people reacted with high intensity. An instructor can quickly gauge the classroom's areas of interest.

HOW CAN THEY FACILITATE CLASSROOM DISCUSSION?



"A comprehensive bill — encompassing everything from off-shore drilling to green technologies — would stimulate the economy and nurture new political coalitions. When the recession shows signs of bottoming out, then my dream administration would begin phase two. The long-term strategy would be about restoring fiscal balances and reforming fundamental institutions. By this time, the budget deficit could be zooming past $1.5 trillion a year. The U.S. will be borrowing oceans of money from abroad. My dream administration will show that it understands that the remedy for a culture of debt is not more long-term debt. It will side with those who worry that long-term deficits could lead to ruinous interest-rate hikes. My dream administration will announce a Budget Rebalancing Initiative. Somebody like Representative Jim Cooper would go through the budget and take out the programs and tax expenditures that don't work. "If we have no spending cuts, then we're saying government is perfect. Nobody believes that," Cooper says. Having built bipartisan relationships, having shown some fiscal toughness, having seen the economy through the tough times, my dream administration will then be in a position to take up health care reform, tax reform, education reform and a long-range infrastructure initiative. These reforms may have to start slow and on the cheap. But real reform would be imaginable since politics as we know it would be transformed. Is it all just a dream? I hope not. In any case, please be quiet and let me have my moment. I have dreams. I may seem like a boring pundit whose most exotic fantasies involve G.A.O. reports, but deep down, I have dreams. And right now I'm dreaming of the successful presidency this country needs. I'm dreaming of an administration led by Barack Obama, but which stretches beyond the normal Democratic base. It makes time for moderate voters, suburban voters, rural voters and even people who voted for the other guy. The administration of my dreams understands where the country is today. Its members know that, as Andrew Kohut of the Pew Research Center put it on "The NewsHour," "This was an election where the middle asserted itself." There was "no sign" of a "movement to the left." Only 17 percent of Americans trust the government to do the right thing most or all of the time, according to an October New York Times/CBS News poll. So the members of my dream Obama administration understand that they cannot impose an ideological program the country does not accept. New presidents in 1932 and 1964 could presuppose a basic level of trust in government. But today, as Bill Galston of the Brookings Institution observes, the new president is going to have to build that trust deliberately and step by step. Walking into the Obama White House of my dreams will be like walking into the Gates Foundation. The people there will be ostentatiously pragmatic and data-driven. They'll hunt good ideas like venture capitalists. They'll have no faith in all-powerful bureaucrats issuing edicts from the center. Instead, they'll use that language of decentralized networks, bottom-up reform and scalable innovation. They will actually believe in that stuff Obama says about postpartisan politics. That means there won't just be a few token liberal Republicans in marginal jobs. There will be people like Robert Gates at Defense and Ray LaHood, Stuart Butler, Diane Ravitch, Douglas Holtz-Eakin and Jim Talent at other important jobs. The Obama administration of my dreams will insist that Congressional Democrats reinstate bipartisan conference committees. They'll invite G.O.P. leaders to the White House for real meetings and then go invite them, even if they give hostile press conferences on the White House driveway. They'll do things conservatives disagree with, but they'll also show that they're not toadies of the liberal interest groups. They'll insist on merit pay and preserving No Child Left Behind's accountability standards, no matter what the teachers' unions say. They'll postpone contentious fights on things like card check legislation. Most of all, they'll take significant action on the problems facing the country without causing a mass freak-out among voters to the right of Nancy Pelosi. They'll do this by explaining to the American people that there are two stages to their domestic policy thinking, the short-term and the long-term. The short-term strategy will have two goals: to mitigate the pain of the recession and the change the culture of Washington. The first step will be to complete the round of stimulus packages that are sure to come. Then they'll take up two ideas that already have bipartisan support: middle-class tax relief and an energy package. The current economic and energy crisis is an opportunity to do what was not done in similar circumstances in 1974 — transform this country's energy supply. A comprehensive bill — encompassing everything from off-shore drilling to green technologies — would stimulate the economy and nurture new political coalitions. When the recession shows signs of bottoming out, then my dream administration would begin phase two. The long-term strategy would be about restoring fiscal balances and reforming fundamental institutions. By this time, the budget deficit could be zooming past $1.5 trillion a year. The U.S. will be borrowing oceans of money from abroad. My dream administration will show that it understands that the remedy for a culture of debt is not more long-term debt. It will side with those who worry that long-term deficits could lead to ruinous interest-rate hikes. My dream administration will announce a Budget Rebalancing Initiative. Somebody like Representative Jim Cooper would go through the budget and take out the programs and tax expenditures that don't work. "If we have no spending cuts, then we're saying government is perfect. Nobody believes that," Cooper says. Having built bipartisan relationships, having shown some fiscal toughness, having seen the economy through the tough times, my dream administration will then be in a position to take up health care reform, tax reform, education reform and a long-range infrastructure initiative. These reforms may have to start slow and on the cheap. But real reform would be imaginable since politics as we know it would be transformed. Is it all just a dream? I hope not. In any case, please be quiet and let me have my moment. — *David Brooks, Nov. 7, 2008*

Although I agree with much of what you say in this column, one thing jumped out with which I must strenously disagree. It is a minor supporting point to your overall thesis, but it hit home with me.

You state that the Obama administration must "insist on ... preserving No Child Left Behind's accountability standards, no matter what the teachers' unions say." As a college educator and not a member of any union, I must object. No Child Left Behind has been deleterious in many respects, but the one outcome which I see on virtually a daily basis in my history courses is the students' lack of ability to "think".

NCLB is tied strictly to levels of student performance on data-driven, standardized, computer-read tests. Students are trained to memorize data that will be or is most likely to be on the test ("teaching to the test"), regurgitate it, then forget it to make room in their brains for the next data set on the next test. This is the "learning" (read: training) they are taught and they know little else. In fact, even the students themselves refer to their high school experience as "regurgitate and graduate".

The ability to analyze, synthesize and generally operate at cognitive levels beyond memorization and application of formulae is atrophied or absent in the majority of students I teach. They have no capacity for assessing information they received and making measured judgments about it and its import. I have students coming to my office constantly who tell me that they study for hours and hours but just don't "get it". They do work so hard and come to me feeling so helpless, frustrated and, to quote many of them, "stupid". I explain to them the difference between what they were doing in high school and what is expected of them in higher education, and give them study regimens designed to help them learn a different way. Some just cannot "retrain" their brains, but the majority of students who apply themselves to the new regimen s[illegible]vement. It's a joy to see the light of comprehension in their eyes an[illegible]lf-confidence manifest itself in their classroom performance a[illegible]

NCL[illegible]come[illegible]tive behind it (although educa[illegible]ll see it a[illegible]ed), but its effect o[illegible]us. [illegible]thout substantial[illegible]tion.

David Brooks makes at least one point that needs to be refuted, and energetically. That is his call for the Obama administration to "postpone contentious fights on things like card check legislation."

For the last 50 years, our labor relations system has allowed the balance of power to shift relentlessly in favor of employers. This is evident in illegal firings of workers when they use their lawful rights; the use of permanent replacement workers when workers dare to engage in work stoppages; the rise of contingent employment in place of stable, secure jobs; and the general sense of precarity that a growing proportion of American workers has endured.

Infusing democratic provisions into US employment relations (as the card-[illegible]tem would do) should be viewed as a vital part of economic policy and [illegible], achieve greater economic equality --not as some left-wing power grab.

Brooks is right. Forget do everything in 100 days. The greater need is national unity and that means incrementalism in social policy and not antagonizing the center-left of the GOP. The only thing that I disagree with Brooks about is that he left out the simplest easy but yet important issue that it should be easy to make progress on. Solve the Social Security Deficit by asking small,across the board sacrifices in both benefits, revenues and age of retirement. Problem solved for another 50 years. The system as Liberals love it would be retained and no one asked to suffer very much! The first thing that Obama would have to admit that he too would have to sacrifice and back away from his silly campaign promise that the problem can be solved without age extensions or increased taxes beyond his mimimalist approach.

Where was this voice of David Brooks when the Republicans were dismantling government as documented by another conservative Republican, John Dean, in his thoughtful book, Broken Government?

It's time we stop describing issues as being on a right/left continuum, or a conservative/liberal one, and start looking upon government's role in terms of whether it makes sense or not, whether it works in practice or not. Health care insurance is a good example. Nearly every other first world country has a single-payer health insurance system resulting in lower costs and better outcomes. It works. That's what matters, not whether it's "right" or "left." It should not be an ideological decision. It should be a practical one.

No one should go broke as a result of his or her health.

No one should pay more for health insurance--or worse, be denied it--because of a pre-existing condition. Why should someone's life be destroyed financially, as well as in terms of health, by a serious illness like multiple sclerosis? No one chooses to have MS. It's not a result of lifestyle decisions. This country needs medicare for all. It's not a matter of right/left, it's a matter of the best solution to a problem that's collectively strangling us individually and collectively.

It's time we stop throwing labels like "socialism" around loosely. This kind of cheap [illegible]oric clouds issues and prevents clear thinking and decision-making.

How could anyone disagree with that? Bush has genuinely and clearly offered full assistance with the transition. He was obviously moved by the election of our first black president. Now, if Nancy Pelosi and her ilk (total lack of professionalism and class) would get out of the way, maybe Americans will be served by their president. If not, it will be the same old partisan bickering and we might as well have simply elected Hilary Clinton.

I hope much of your dream comes true. I think that the electorate shares your dream, and that is why we elected Barack Obama to be our President. He has not sounded like a liberal to me in this campaign, but like a thoughtful pragmatist. He is thoughtfully pragmatic about the economy, about fighting an immoral and expensive war in Iraq, about the distribution of health care dollars, about energy and its relation to security and the economy. Even on the subject of abortion his stance can be construed as pragmatic -- an attempt to preserve basic constitutional rights, mindful that a government that can prohibit abortion can also mandate abortion. I think we will continue to find President Obama thoughtful and pragmatic during his tenure in office as we did during the campaign, data driven and people-oriented, like the Bill and [illegible]elinda Gates Foundation. God help us all. Let's go to work!

Your dream is inverted. Health care reform must come first. Hospitals will need immediate relief from the wave of patients that won't be able to pay as the economy continues its downward spiral. Access to health care in the greatest country in the world shouldn't be determined by your employment status.

Mr.Brooks: Your dreaming should be aimed at Limbaugh, Hannity, Savage, Richard Scaife and others on the right who, already on Wednesday, began the vitriol. President-Elect Obama delivered his version of a dream for getting us off the track of the last eight years. The GOP is shattered. It needs to regain some credibility by asking President-Elect Obama what they can do to help right the ship. For example, the Senate GOP will have a tremendous amount of pressure not to abuse the filibuster power that they MAY have. They can begin by helping to fullfill the Obama agenda and not setting up roadblocks with partisan filibusters. The populace has spoken in landslide proportions in support of a dream. It cannot be compromised by measures such as you propose. The GOP must say "How can we help?"

salon

CLASSROOM INTERACTION & VISUALIZATION

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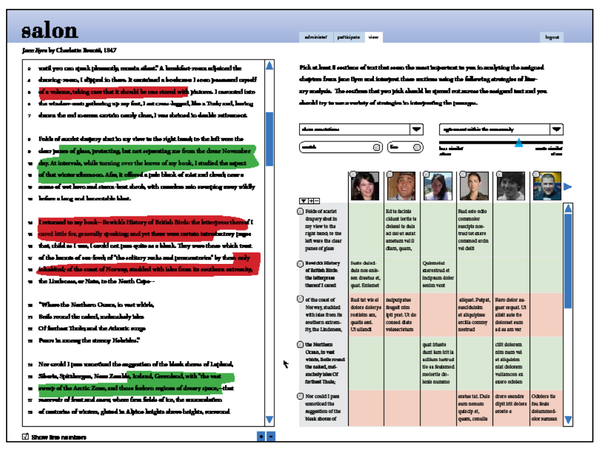

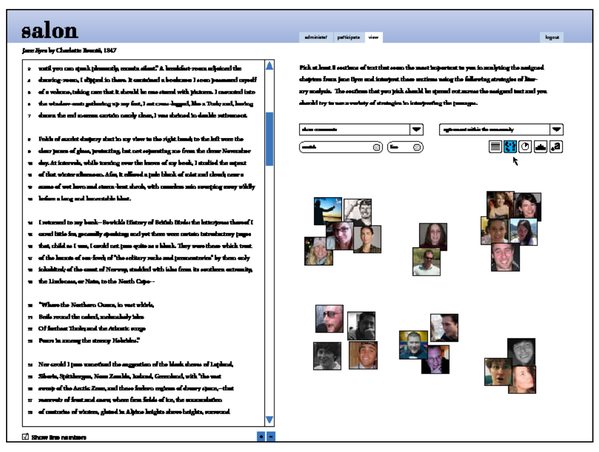

TRANSLATING INDIVIDUAL WORK INTO DYNAMIC COMMUNITIES

EXPLORATORY PHASE

I began this project with David Kaufer and Joanna Wolfe. Both had different interests in what they wanted to learn from a classroom commenting community but both needs I believed could be met in a single environment. Harvesting student work for them is a cognitive challenge and laborious task.

SPRING 2008

GENERATIVE PHASE

David's needs could be met by simple visualizations that are built off of generalizable reaction and phrases from global comments. Joanna's were more complex; local annotations are generally smaller chunks of information spread out over a document. The matrix design helped accomodate the complexity.

SPRING/SUMMER 2008

PROTOTYPING

I worked with Dave and Joanna throughout the spring building wireframes that matched their needs as instructors and how the system would accommodate their tasks to manage a classroom and direct discussion. The team welcomed senior Information Systems students who built a working system for testing.

SUMMER/AUTUMN 2008

TESTING

We plan to use the prototype to gauge the affect on, and reaction from a classroom. A range of texts would be ideal to point out strengths and weaknesses of the design, as well as surveying the students. Though the prototype does not incorporate the full range of visualizations from the generative phase, it is useful and usable for testing.

SPRING 2009