Mapping the News
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Abstract
As more and more people forgo (or at least supplement) the traditional sources of news like TV, newspaper, and radio in favor of the Internet, news has stayed significantly static with respect to its level of interaction. However, news in any medium is rarely mapped at all, leading to a loss of geographical context in the news stories. Mapping both gives context to a particular article, and shows trends and hotspots for different news stories around the globe. Adding geographical context will provide for a richer news experience and result in a broader comprehension of world events, as well as how they relate to one another. All this is accomplished through WhereTheNews.be.

Introduction
It’s no surprise how much technology has changed the world of news. Americans on Facebook are seeing powerful images and captions tweeted from across the world from social-media organized revolutions. Even news itself has changed slightly, as images and videos dominate news sites and newsrooms, providing a more salient and engaging medium for communicating events from across the world. Though news is still primary text-based, mobile apps have boiled down stories to headlines, summaries, and 140 characters.

While images are now more prevalent in actually depicting the news, there is still one crucial element to news that remains unexposed--geography. Even in a time when smartphones equipped with world maps are increasingly common, overall knowledge of geography is still on the decline. While geography is just basic civics knowledge, it also enhances--if not completes--one’s understanding of news. For example, knowing the relative sizes and distance between Israel and Iran make it easier to understand why Israel is more urgent to disarm Iran’s nuclear program than the US; or one could be able to see the scope of Hurricane Sandy’s reach of damage in comparison to other storms.

Despite other technological changes, the news we consume on a regular basis is still predominantly textual. Even though people may relate to non-local news better through visual aids like pictures or videos, their lack of geographical anchoring creates a
disconnect from distant place—consider the connotation of how people use ‘Timbuktu’ to describe a distant, foreign place. If they knew that their college roommate’s family lived in Timbuktu, and that the newest civil war was raging a few towns over, Timbuktu take on a new significance for the reader.

Thus WhereTheNews.be became a project to fuse textual news with a geographical dimension—something that pure text cannot encode, and a simple enough idea that hasn’t really been done before. With this product, people can experience the news visually in a new, innovative way, while still being able to interact with a modern interface and the functionality and features that one would hope for (and more). While there is still much to be improved upon, WhereTheNews.be seems to be a promising new way to digest global news.

Related Work

The popularity of news aggregators like Pulse, Flipboard, and Google Reader has exploded in recent years. The success of these applications is largely due to their adaptation of news into a highly visual format: they show the article’s pictures (rather than text) which catch the reader’s eye. However, no news aggregator currently has a mapping toolkit. We were unable to find a single application that mapped live news.

We did come across several niche applications that mapped live events. Gothamist Maps (http://gothamist.com/map) shows an up-to-the-minute map of incidents in the greater New York area. The incident markers are coded by type (e.g. police, fire, traffic) and the right side of the map shows a listing of the latest incidents. We found this extremely effective at adding meaning to the

Gothamist maps a live feed of current incidents around New York.
geographic data associated with the news of the incidents. Geographic data is especially important in this case because the average citizen’s response to the incident news can be almost entirely based off of the incident’s proximity to him or her: while people could generally care less about an accident, fire, or murder that happened on the other side of town, they would be extremely interested in such an event that happened in their own neighborhood (assuming, of course, that they are not reading the incident reports for their own amusement, but rather for the purpose of informing themselves for their own self-preservation). Similarly, a map of downtown Minneapolis on the Minnesota Public Radio website plots the location of current potholes around the city ([http://minnesota.publicradio.org/projects/ongoing/potholes/](http://minnesota.publicradio.org/projects/ongoing/potholes/)) in this case, the geographic data is fundamental to the news of a pothole, as people only care about a pothole if they have a chance of driving by it.

**Methods**

**Server Side**

The New York Times and AP News RSS feeds provide a comprehensive, categorized slice of the top news around the world. Every hour, we pull each source’s nine main feeds -- Business, Entertainment, Health, Politics, Science, Sports, Technology, US, and World -- into a PHP script. We then parse through each of the feeds in PHP to extract the essential parts of each news story: title, summary, time, link, source, category, and location (in text format). In order to get the latitude and longitude of each article, we pass the location text to the Google Places API. From here, a PHP script generates a JSON file containing the most recent news items. This file is retrieved by the client each time the page is loaded. Once this data has reached the client, it is plotted onto a map with the Google Maps API.

**Icons**

The standard for adding points to a Google Map is to place icons on the map. This does an accurate job of showing where news stories are happening and letting users select individual stories. We realized that some readers may be only interested in certain categories of news, so we changed the icons to reflect each stories category and developed a category filter. This also gave a sense of what kind of news different areas were producing.

![Different categories of news receive different icons.](image)

**Tooltips**

Initially the articles were unidentifiable, greatly limiting the usefulness of the tool. We added article summary tooltips to the icons so the plotted stories could be explored. This allows the user to identify each article without leaving the map view. The reader can then
choose if he or she wants to read more of the article after reading the summary.

The tooltips display article summary on the map.

Clustering

We found that in active regions, the icons would cover each other, hiding some news stories. We implemented a clustering-and-spidering technique so that nearby articles form a cluster that expands upon click. This makes it much easier to browse through all of the articles in a tightly packed region, while keeping the geographical integrity of the plotted points.

Side reader and search

We realized some users may want to search for headlines that interest them and then see their location, so we added a reader of top headlines and a search bar on the side of the map. We got this idea from the Gothamist Maps tool mentioned above. This feature gives the tool use when the user not looking for stories in a particular region.

A snapshot of the side bar and text search.

Heatmap

When using icons to mark each story, it was difficult to compare the activity of regions with more than two or three articles, as the icons covered each other. Therefore, we developed a heatmap view to allow for quick pinpointing of the most active areas. This is useful when the user is not interested in the individual stories, but rather in the geographical picture painted by all of the stories together.
Final Product

Our final product combined all of these features onto one map, accessible online through a desktop computer. The combination of multiple features made for a robust toolkit: for instance, viewing the heatmap while filtering the maps stories can show interesting trends in the distribution of the world’s news. The feed is live and allows all of the features of a normal news aggregator.

The heatmap gives a global picture of the world’s news activity.
Results

Strengths

Our application provides users with a quick and easy way of interacting with a number of news sources, basing their interaction off geographic location. This has the result of causing an increased diversity of exploration among users in their consumption of the news. Individuals who previously would only browse the news for specific sectors have exhibited a broader exploration of news items than we would have previously expected. Visualizing the news in this manner has also enabled previously very tedious research involving geographical placement of news to be done in a matter of seconds as we have already visualized the data in question.

Weaknesses

In its current state, our application only features news items from the New York Times and AP News. While these are reputable sources, many of our initial users lamented in the lack of more sources to choose from.

Live

Discussion

Our finished product enables users to visually interact with news around the world, providing location context to stories throughout the globe with no additional work required by the user. In preliminary user testing, several three major use cases arose - using the tool to explore and consume news, using the tool to explore a specific topic or keyword, and using the tool to visualize trends in different sectors around the world.

Exploratory Consumption

The most common use case of our application was for an exploratory overview of what is happening in the world with the user often choosing to zoom in on a geographic region that is interesting to them (usually a former home or the location of loved ones) and seeing what has made the headlines from their selected region.

Keyword Investigation

The second most frequent use of the application was to explore a keyword and see how the locations of the news stories moved across the map, if they moved at all. One particularly strong example was an user who chose to view articles with “fiscal cliff” as their keywords. As you might expect, many of the articles were clustered around Washington D.C. but there were also articles in Europe and Australia which mentioned the most recent economic predicament of the United States. Curious as to what other parts of the world were thinking about the looming fiscal cliff, the user read several articles that were not sourced in D.C. and commented that they provided a different picture of the issue which proved to be both educational and informative.

Sector Trends
The last usage case that came up across multiple users was taking advantage of the category filtering to view trends in different sectors across the world. One user that was particularly interested in the product found it extremely useful to display only the technology articles and was very excited about the potential to draw inferences from this data and loved the idea of being able to visualize where different startups in different industries are being funded by venture capitalists.

Summary

Our application has enabled a new spatial interaction of news across the world. Preliminary user testing has demonstrated that this new way of interpreting, exploring, and consuming news has significant potential to positively impact the understanding and critical thinking that a person experiences in relation to the news. Not only does our tool promote the discovery of trends among topics and categories, but filtering by keyword also enables the viewing of a story from multiple perspectives to provide a more rounded view of the story being told. We believe this increased understanding of the news will prove to be extremely valuable in a world that is overflowing with media bias, hopefully serving as a tool to help our users discover a story that is much closer to the truth than they would find otherwise by reading a single news source.

Future Work

In the future, we hope to look into ways of adding new visualizations and improving the general feel and usability of our application. We aim to increase the number of news feeds that we use as sources, collect past news, make the product mobile-friendly, and add an in-app story viewer so the user doesn’t need to leave the app (via external link) to read the full text on the source website. We also hope to add a temporal visualization, where one can see where stories occur with time. This feature could lead to an innovative ‘year-in-review’ approach to recapping the year’s news stories around the globe, based on the movement of geo-markers or a heatmap. We will explore other data visualizations that enhance the geographical component.