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NEWS DIFFUSION ACROSS SOCIAL MEDIA PLATFORMS

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In 2013 73% of US online adults used at least one social networking site, most of them Facebook (Duggan & Smith, 2013). Scholarly research in communication so far concentrated on four topics brought about by this trend: impression management and friendship performance, network and network structures, bridging online and offline networks, and privacy (Zhang & Leung, 2014). We want to point scholarly interest to another topic: the mechanics of dissemination of news content via social media. In 2013 30% of US adults actually got news content from Facebook (Mitchell, Holcomb, & Page, 2013); a trend still strongly correlated to certain sociodemographic characteristics of users, but speculated to be of ever growing importance (Glynn, Huge, & Hoffman, 2012). As the realm of social media consists of multiple social networking sites, with an increasing number of users using more than one platform (Duggan & Smith, 2013), studying this phenomenon of news content diffusion across social media – also termed as cross pollination (Jain, Rodrigues, Magno, Kumaraguru, & Almeida, 2011) – calls for an approach crossing the boundaries of single social networking sites. In a first step to do so, we therefore concentrate on the interrelations of diffusion patterns of online news content across two social media platforms, Facebook and Twitter:

What is the interplay of sharing patterns of online news content across Facebook and Twitter:

- . 1) in general?
- . 2) with regard to characteristics of the news content?

To answer these questions, we developed a large-scale driven methodical framework which matches standardized information on news articles with the available indicators of interest on Facebook and Twitter. Virtually all online media enable access to their

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recently published articles and their Uniform Resource Locator (URL) through a Rich Site Summary (RSS) feed. These live news tickers are available specific to categories, such as politics or sports reporting, and thus allow for categorization of the articles, which serves as a simple indicator for the characteristics of the news content. We automatically read and sort these RSS feed in 10-minute intervals, and save the articles' URL, categories, as well as the time of publication on the news site in a database. Real-time data provided by the API1 of Facebook and Twitter further provide us with insight into different communicative behavior with respect to news articles: in 10-minute intervals, the cumulative total number of Facebook shares and Twitter tweets for each article are measured and stored. This process is completed after five days (measured from the first mention of an article in the RSS feed). We noted in an earlier study (Keyling, Karnowski, & Leiner, 2013) that there is no appreciable accrual in the number of Facebook shares and Twitter tweets after a five-day period. This methodology allows us to track all articles that appear in an online news outlet, and study their diffusion on Facebook and Twitter over time.

Our analysis covers the period from September 10, 2012 to November 1, 2012, based on the following news outlets: Spiegel Online, Bild online, Süddeutsche Zeitung (SZ), New York Times, CNN, and Fox News. These are the online news sites with the highest coverage in both Germany and the United States (Olmstead, Mitchell, & Rosenstiel, 09.05.2011; AGOF, 10/2012). Altogether, 39,386 articles (for which we were able to measure the above-mentioned interest indicators) were published on the news sites during this time period.

We analyzed news event diffusion using two parameters: to assess the absolute extent of diffusion, we consider the total number of Facebook shares and Twitter tweets at the end of our automated observation, i.e. after five days. To assess the rate of diffusion, a second parameter is calculated for each article for both platforms, which quantifies the time span after which an article has reached 50% of its total recommendations. Hence, the faster an article reaches this 50%-mark, the faster the overall diffusion takes place. We then categorized each article based on these two parameters, both based on Twitter tweets and Facebook shares (see Table 1), leading to a classification for each article for both Twitter and Facebook (see Table 2).

Table 1: Theoretical classification of articles based on max. diffusion and diffusion speed

Category	Maximum diffusion	Speed of diffusion (T50)	Type
0	0-9	all	irrelevant
1	10-99	0 % to 25% of max. diffusion speed	Fast and low diffusion
2	10-99	25% to 75% of max. diffusion speed	Average and low diffusion
3	10-99	75% to 100% of max. diffusion speed	Slow and low diffusion
4	100 and more	0 % to 25% of max. diffusion speed	Fast and wide diffusion
5	100 and more	25% to 75% of max. diffusion speed	Average and wide diffusion
6	100 and more	75% to 100% of of max. diffusion speed	Slow and wide diffusion

Table 2: Overall classification of news articles for both Twitter and Facebook

Category	Facebook Shares	Tweets
0	21,200	16,239
1	3,606	4,863
2	5,967	9,457
3	3,118	4,463
4	940	924
5	3,125	2,116
6	1,430	1,324

Comparing the classification of diffusion on Twitter and Facebook on the individual level of the single news article (based on a chi2-test), we see some interesting patterns:

- 1) Significantly more often than predicted by chance articles are classified in the same category both regarding Twitter tweets and Facebook shares, thus demonstrating the strong interconnections of social networking sites within the broader realm of social media.
- 2) Another interesting and significant overlap occurs between slow and low diffusing articles on Twitter and slow and wide diffusion on Facebook, maybe due to the overall higher reach of Facebook.
- 3) On the other hand side there is a significant set of articles fast and widely diffused on Twitter but fast and only low diffused on Facebook. Taken together with the fact the diffusion on Twitter generally runs ahead of diffusion on Facebook (Authors, 2013), these articles hint to the instances where cross-pollination actually does not take place.

This first glimpse at the results of our study shows, that relating diffusion patterns across two social media platforms at the individual level of single news articles can give

some interesting first insights into the process of cross pollination. In our presentation we will discuss these findings in more detail, also regarding further characteristics of the news content, and map out paths for future research.

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