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Inter-media agenda-setting in the social media age. How traditional players dominate the news agenda in election times.

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Abstract

Inter-media agenda-setting is a widely-used theory to explain how content transfers between news media. The recent digitalization wave, however, challenges some of its basic presuppositions. We discuss three assumptions that cannot be applied to online and social media unconditionally: one, that media agendas should be measured on an issue level; two, that fixed time lags suffice to understand overlap in media content; and three, that media can be considered homogeneous entities. To address these challenges, we propose a ‘news story’ approach as an alternative way of mapping how news spreads through the media. We compare this to a ‘traditional’ analysis of time series data. In addition, we differentiate between three groups of actors that use Twitter. For these purposes, we study on- and offline media alike, applying both measurement methods to the 2014 Belgium election campaign. Overall, we find that online media outlets have strongly affect other media that publish less often. Yet, our news story analysis emphasizes the need to look beyond publication schemes. ‘Slow’ newspapers, for example, often precede other media’s coverage. Underlining the necessity to distinguish between Twitter users, we find that media actors on Twitter have vastly more agenda setting influence than other actors do.

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Introduction

Almost three decades of inter-media agenda setting research have yielded valuable insights in the dynamics of news and the importance of different media outlets and platforms in disseminating news through the news atmosphere. The research tradition started out from traditional news media, often with the goal of identifying the ‘opinion leaders’—the outlet that all other media seem to look to for guidance. In this respect, high profile newspapers have often found to be leading, influencing radio, television, magazines, and other newspapers (Vliegenthart and Walgrave 2008).

Over time, technological innovations led to the availability of online news media, specifically websites, blogs, and social media. Scholars have gradually introduced those in the existing inter-media agenda setting framework. The image they sketch is far less unidimensional, leaving room for non-mainstream media outlets to affect other media’s agendas (Meraz 2011). Two-way agenda setting effects between traditional and newer media forms have been demonstrated in a number of studies (Messner and Distaso 2008, Russell Neuman et al. 2014). Nevertheless, legacy media organizations remain important players. Both in their traditional form (Conway, Kenski, and Wang 2015, Groshek and Groshek 2013, Lee, Lancendorfer, and Lee 2005, Rogstad 2016), as well as via their online channels (Ceron, Curini, and Iacus 2016, Vonbun, Kleinen-von Königslöw, and Schoenbach 2015), established media titles still shape the news discourse.

It is important to note, however, that even though these studies acknowledge the distinct nature of online and social media, this observation has not been taken to its logical conclusion. Namely, these media are not mere novelties, but should make us re-examine the groundwork on which inter-media agenda setting theory is built. We argue that there are (at least) three core assertions that cannot be applied unconditionally to online and social media in this day and age. The first of these is that media have an ‘agenda’ that can be measured on the issue level; second, that fixed time lags are appropriate to measure correlations between media content; and third, that media should be treated as homogeneous entities. We address the first two aspects methodologically by measuring agendas on

the news story level, rather than on the issue level, allowing us to assess how specific news event reporting develops over time. The third assumption is tackled by differentiating between the authors of social media content.

To demonstrate how the conceptualization affects the findings, we compare the results of our alternative method—which we call the ‘news story approach’—to those of a ‘traditional’ analysis of time-series data. We take a comprehensive view and consider on- and offline media alike, applying the measurement methods to the 2014 Belgium election campaign. We find that media’s agenda-setting power, in terms of ‘traditional’ analysis, is mostly aligned with their publication cycles. This means that news websites and Twitter have a massive impact over other media that publish less often but more extensively. Underlining the need to break ‘Twitter’ up, we find that agendas are set by media and journalists’ accounts, not by other actors on Twitter. The news story analysis emphasizes the need to look beyond publication schemes, however, as factors other than time remain vital to explain media platforms’ agenda setting capacity and their role in the news landscape.

Theory

Inter-media agenda setting research is concerned with measuring the extent to which news content transfers between different media (Atwater, Fico, and Pizante 1987). The assertion is that journalists tend to let their reporting decisions be guided by the coverage of their peers at other news outlets (Breed 1955). Especially highly regarded media such as the *New York Times* or the *Washington Post* in the United States are assumed to influence the content of other media. This ‘co-orientation’ between different news outlets has economical, as well as socio-psychological origins. Obviously, following up on, or simply replicating others’ content (‘churnalism’) requires less resources and is therefore more cost-effective than seeking one’s own leads. Alongside this blunt economic reason, the occurrence of co-orientation has socio-psychological origins, too. From a social-constructionist viewpoint, no single event is inherently more worthy of coverage than the next one. Hence, journalists have to deal with the question of noteworthiness on a daily basis, often implicitly. Professional training and socialization

in the newsroom equips journalists with ‘news values’ (Harcup and O’Neill 2016) as one set of criteria for these judgments, but these still leave room for doubt as the decisions remain in the hands of a single journalist or journalists within one news organization. Looking to other media outlets’ coverage, then, can be a valuable source of guidance about which topics are of importance on this day or in this period of time.

Obviously, the internet as we know it today was yet to be developed when the theory of inter-media agenda setting was put forward. Gaining ever more territory in the latest decades, its influence on the news industry is profound. Not only has the business side of news been affected, also the ways in which news is made, presented, and circulated have dramatically changed as a result of the introduction of news websites, social media, and mobile internet. The resulting contemporary news environment has been characterized as ‘hybrid’, ‘ambient’, and ‘liminal’ (Chadwick 2013, Hermida 2014, Papacharissi 2014) – terms that refer to the diminished possibility of assigning fixed properties to different media platforms and their content. Properties that were originally typical of one medium are now also featured by others. Video clips, for example, originally typical of television, are embedded in news website articles. In similar fashion, journalists nowadays have to share their role as information gatekeepers with people ‘formerly known as the audience’ (Rosen 2006), who are able to produce and share their own content via blogs or social media. Their content may, in turn, be used in journalists’ reports, making citizens co-producers of news (Bruns and Highfield 2012). Journalists anticipate audience feedback on the news they cover and incorporate it in their follow-up reports (Beckers and Harder 2016). Also, the breaking news genre is not exclusively a matter for television or radio any longer, nor is news always reported first by journalists (Bruns and Highfield 2012). Being largely preoccupied with ‘the now’, social media have keenly adopted this style of reporting and made it one of their core news genres (Kwak et al. 2010). Thus, we see that media become more fluid, their different “technologies, genres, norms, behaviours, and organizational forms” (Chadwick 2013: 4) blending together to form the contemporary news media landscape.

In this setting, the notion of time has obtained a different connotation. With news websites, live blogs and social media, the publication of news depends much less on fixed schedules (Karlsson and Strömbäck 2010). Nor does news need to be communicated as a ‘finished’ product. Journalists can float snippets of news via social media channels as events unfold, only to follow them up later with a full article on their medium’s website. Even when news workers are not physically present on the location of an event, they may cover it by embedding audience-constructed material supplied in real time, be it in text, image, or video (Hermida, Lewis, and Zamith 2014). These developments imply a vast reduction of infrastructural requirements for news reporting compared to television and radio. Thereby a 24/7 news cycle is enabled not only technically, but also in practice. To a lesser extent, a 24/7 news cycle has already been introduced via cable news networks in some larger markets, like the United States and the United Kingdom (e.g. CNN, BBC News), but such initiatives have remained absent or unsuccessful in most Western democracies with smaller media markets (Cushion 2010). Because of the new digital affordances, however, immediacy has become a production norm for journalists and news organizations around the world (Buhl, Günther, and Quandt 2016), as well as an expectation of consumers (Thurman and Walters 2013). This increased emphasis on immediacy means that the gap between a newsworthy event happening and it being communicated to a wider audience is narrower than ever before.

Challenges

Given this sketch of the current news media landscape, the basic assumptions of inter-media agenda setting should be re-examined critically. This paper elaborates on three interwoven assumptions that are problematic in this day and age.

The first assumption is the postulation of an ‘agenda’ that can be measured. This agenda is usually operationalized as an index of the content of one particular news outlet or platform, reconstructed by measuring the saliency of issues (like ‘taxes’, ‘immigration’, or ‘foreign policy’). One medium’s amount of attention to these issues is then compared to that of another medium at a later

point in time. By grouping content into issue categories stable over time, this method makes the study of large longitudinal data sets feasible. The downside, however, is that this level of analysis allows only general conclusions regarding inter-media agenda setting, such as the most important issues of a particular election campaign (Welbers 2016). It does not allow us to zoom in on the underlying news stories – which seems to be a mismatch if we consider inter-media agenda setting theory to be describing what happens when journalists look to other media for story ideas. While this has always been the case for this type of research, it is arguably more problematic nowadays. In the more rigid news structures of the twentieth century, in which publication schedules were fixed and the bandwidth to carry news was relatively narrow, the likelihood that an ‘economic’ news item of today pertained to the same news event as the ‘economic’ news of yesterday was much higher than it is now. This is especially true when researchers included more specific sub-topics. However, a 24/7 news environment, combined with the fact that news sources might be brought up by virtually anyone, makes issue categories too broad to draw conclusions about journalists’ work practices.

Two, it is assumed that the flow of news media coverage can adequately be captured by aggregating the saliency of issues on discrete intervals, or ‘blocks’ of time. Depending on theoretical or statistical considerations, these blocks may comprise hours, days, or weeks (Vliegenthart and Walgrave 2008)—the interval of choice being called the time lag. Time lags best capture dynamics of a media landscape in which news is reported on relatively fixed schedules, exemplified by morning newspapers and evening television news broadcasts. With social media and news websites that report news virtually instantly, time lags as small as a few hours are insufficient to adequately describe how news spreads across media nowadays (Buhl, Günther, and Quandt 2016, Weimann and Brosius 2016). However, the time lag can only be shrunk down to a point, before no statistically meaningful results can be detected any longer. Additionally, the interval at which media influence one another may have become more variable. While some news stories spread instantaneously, others may stay under the radar, only to gain traction at a later point in time (Conway, Kenski, and Wang 2015).

Three, past inter-media agenda setting research has started from the implicit assertion that the content found in one outlet or platform is the product of deliberate choices of one specific actor group – namely, journalists. This is shown by the fact that aggregated content, irrespective of its authorship, is taken as ‘the’ agenda of the respective medium. Indeed, this is an appropriate assertion for traditional forms of media, for which journalists and editors act as the sole gatekeepers. Only they have the power to select or exclude content. However, this conceptualization is not in line with the nature of social media. After all, these platforms are a meeting place for various actors – citizens, journalists, and politicians alike (D’heer and Verdegem 2014) – who are not overseen by any editorial board. Literature on social media discourse (D’heer and Verdegem 2014) and social media sourcing (Paulussen and Harder 2014) suggests that these actors differ in the extent to which they are able to affect the discourse. Yet, the available inter-media agenda setting literature that deal with social media outlets generally treat them as single homogeneous entities (e.g., Ceron, Curini, and Iacus 2016, Rogstad 2016, Russell Neuman et al. 2014, but see Conway, Kenski, and Wang 2015).

News or information?

This diversity of publics goes hand in hand with a multitude of functions that social media perform. They are neither solely nor even primarily *news* media. If we are to embed social media (and by extension all online media) within the inter-media agenda setting framework, we are required to differentiate between content that can properly be named ‘news’ and content that is ‘just’ information. For this, we draw on the sociological approach of Michael Schudson (2003), who argues that news is “the product of the journalistic activity of publicizing” (12). Moreover, news is about *telling* something about the world. All else is not news:

“[T]he reporter’s job is to make meaning. A list of facts, even a chronologically ordered list, is not (...) a news story. From a list or chronicle, the writer must construct a tale, one whose understanding requires a reader or viewer to recognize not the sum of facts but the relationships among them.” (Schudson 2003: 177)

This implies that livestreams, liveblogs, and real-time tweets are not news per se. If journalism is a ‘first draft of history’, live-descriptions of events can perhaps best be regarded as a “first draft of the present” (Bruns and Highfield 2012, 25). Bearing in mind the focus on news as the outcome of a certain journalistic *practice* in Schudson’s definition, live content can only be associated with news *post hoc*, when its subject has actually been covered by journalists. The same is true for other ‘raw’ published information like interviews, op-eds and background programmes. They may relate to news, but are not news in themselves.

Contemporary media dynamics

In addressing the aforementioned theoretical and methodological challenges, we aim to answer the empirical question of the roles that different media play in the contemporary news media landscape. We approach this broadly, considering older media forms, news websites, and social media. Our central query, therefore, is: *How are different media platforms in the contemporary media landscape temporally interrelated?*

As an exemplar of social media, we choose to study Twitter. While Twitter is not the most popular social media platform in general, it is widely used among (political) journalists (Broersma and Graham 2016). Moreover, its characteristics seem to make it the ideal outlet to influence the news process. For journalists, Twitter allows to post short raw news facts or footage that is not (yet) ‘fit to print’ but still deemed newsworthy. For politicians, Twitter is useful to bypass the journalistic gatekeepers, strategically launching scoops to generate social media ‘buzz’. Meanwhile, (organized) citizens may employ Twitter as an outlet for their eyewitness reports or citizen journalism.

Nevertheless, the majority of the available literature suggests that the social medium’s agenda setting power is either lacking or overshadowed by more traditional news outlets. This is the case for mutual influence between Twitter and news websites (Ceron, Curini, and Iacus 2016), as well as for the dynamics between Twitter and newspapers or television news (Conway, Kenski, and Wang 2015, Groshek and Groshek 2013, Rogstad 2016). These studies, however, have only looked at a subsection

of news platforms. A more comprehensive study suggests that social and traditional media *both* set the agenda, sometimes reinforcing one another (Russell Neuman et al. 2014).

Data and method

Sample

To answer our research question, we captured newspaper, television, radio, news website, and Twitter content in the Belgian 2014 election campaign. We are aware that *political news* during an *election campaign* is a rather specific setting in which media are very much concentrated on an upcoming event. Exactly this focus, however, gives us the opportunity to capture a vast array of interconnected news items. While the volume of communication between journalists, politicians, and citizens is higher, these interactions reflect processes that are embedded within the day-to-day work routines—albeit at a higher pace.

Regional, federal, and European elections were simultaneously held on May 25. Accordingly, we collected media content between May 1 (Labour Day, when left parties traditionally present their concerns for the coming period) and May 24 (the last campaign day). Our sample comprised Flemish (Dutch-speaking part of Belgium, population approximately 6.2 million) media and Twitter accounts only. Specifically, we included five print newspapers (*De Standaard*, *De Morgen*, *De Tijd*, *Het Laatste Nieuws*, *Het Nieuwsblad*), three news websites (*destandaard.be*, *demorgen.be*, *deredactie.be*), the two daily 19:00 television newscasts (*Het Journaal* of the public broadcaster VRT and its commercial *VTM Nieuws* counterpart), six daily radio newscasts (the VRT's 7:00, 8:00, 12:00, 13:00, 18:00 and 19:00 *Radio 1* bulletins), current affairs television programmes (VRT's *De Zevende Dag*, *Reyers Laat*, *TerZake*), and election-specific television shows (VRT's *Het Beloofde Land*, *Zijn er Nog Vragen?* and VTM's *Het Nationale Debat* and *Jambers Politiek*). It should be noted that the news websites in this sample are affiliated with newspapers (*demorgen.be* with *De Morgen* and *destandaard.be* with *De Standaard*), or radio and television outlets (*deredactie.be* is VRT's news website), which routinely share their content.

For Twitter, we were inspired by Axel Bruns' Twitter News Index approach (see Burgess and Bruns 2012) to construct a sample of relevant accounts. This sample encompasses 678 professional Flemish journalists, 44 accounts affiliated with legacy media organizations (the aforementioned media, complemented by magazines, local newspapers, and programme-specific accounts), 467 politicians (the top-three candidates per constituency, plus a selection of lower-listed candidates), and 19 civil society organisations. Additionally, we included a selection of 109 "influentials" (experts, businesspeople, celebrities and citizens), identified using *twitto.be*'s "top Twitter influencer" index. This list ranks Belgian users based on their *Klout* score, an algorithmic estimation of one's online influence. In sum, we had a sample of 1317 accounts of which we retrieved both their own (re)tweets, as well as tweets in which they were mentioned by other Twitter accounts. Last, all tweets mentioning the election hashtags #vk14 or #vk2014 were saved.

The aim of this sample was to sketch the Flemish "Twittersphere" that journalists may have tapped into while covering the election campaign. The underlying rationale is that even had we not included a particular Twitter user, if their tweets were relevant enough within the election campaign context, these would have been retweeted by at least one of the accounts in our sample – thereby making them part of our data set. Tweets that remained relatively unnoticed (receiving fewer than two favourites and two retweets) were excluded.

Respecting this threshold, we captured 23,134 items across all platforms. Of those, 9,935 (43%) were categorised as politically relevant—meaning it featured either a political topic, a domestic political actor, or an election-specific term. We proceeded with these 9,935 items.

Coding

Metadata, like publication date and time, were automatically registered for these news items. The issue of each item was manually coded following the Comparative Agendas Project codebook (www.comparativeagendas.net, see Baumgartner and Jones 1993) that contains 28 broad issues (such as 'macro economy', 'health care', and 'education'). Coders could attribute up to three issue codes to

each item, but only the first (most important) is used here. Another manually coded variable indicates whether the original sender of a tweet (not the retweeter) was either a political actor (1), a media actor (2), or another actor (3). The latter variable was included to deal with the heterogeneity of actors on social media and the respective roles they have. Inter-coder reliability was sufficient for both variables.¹

After coding these general properties, news items were categorized into news stories, which requires a bit more explanation. A news story comprises all of the news items that deal with the same time and place specific event (for a similar approach, see Welbers 2016). A general example of this could be the bankruptcy of a large business. Here, all coverage about this specific bankruptcy, whether it be newspaper articles, television news, or tweets, is considered part of this news story.

News stories had to be identified first in order to code on this level. Following a book of guidelines, we did this by examining all news items from legacy media organizations (newspapers, news websites, radio, and television). Every newly encountered time-and-place-specific news event was added as a news story, which was given an easily recognizable name, consisting of the subject, a predicate, and an object. For example, the most-often covered news story in the current data set was named “[Top politician] claims that everyone with a good resume is able to find a job in Belgium”. When an item related to an already-encountered news story, it was categorized as such. In order to check this, the coding form included a search box in which keywords could be put in and looked up in the news story database.

After coding all news items from traditional media outlets, the non-news items (background pieces, op-eds, interviews, live debates), as well as the retrieved tweets², were assigned to the already-identified news stories. Thus, in line with our theoretical elaboration on the difference between raw ‘information’ and ‘news’, these items were not used to detect any extra news stories. They were assigned to news stories only if they dealt with ‘regular’ news items that were published earlier or later

– if not, they were ignored. While an item might contain cues of different news stories, in the present analysis we only use the primary news story that appeared per news item.

Filtering out the items that were not considered part of a news story, the sample size on the level of the news item is 6,024, embedded within 864 news stories. Since we are specifically interested in the *dynamics* of news, we ignored the stories that did not spread beyond one news platform. As a result, our final sample contains 5,260 individual items, grouped into 414 multi-platform news stories.

Analyses

Our analysis consists of two parts. First, we aggregate our data into a ‘traditional’ time-series structure to connect our study to the existing literature. However, as argued, this standard approach has its limitations. That is why we include a second analysis on the level of news stories. We show media platforms’ respective roles by tracking how each news story transfers between them. By comparing the results of the two approaches, we learn about their respective strengths and limitations.

Results

Analysis of time-series data

The full data set of 9,935 items is aggregated by time and issue³. We use a six-hour time lag during the day (three time lags per day: 06:00-12:00; 12:00-18:00; 18:00-24:00). News published during the night (24:00-06:00)—which hardly ever occurred here—is included in the morning time lag. The resulting dataset contains the proportion of attention dedicated to each issue by each news platform during each 6-hour period. For instance, when ‘news websites’ has a value of .08 for the issue ‘immigration’ at the evening lag of May 5, this means that 8% of all website news, published on May 5 between 18:00 and 24:00 concerned immigration. We compute these data for the four traditional platforms (newspapers, news websites, television, and radio), as well as for Twitter, the latter split up according to tweets’ original senders: media actors (Twitter media), political actors (Twitter political), and other actors (Twitter other). We opt for a six-hour time lag as a middle ground between daily or weekly time

lags on the one hand, and even shorter time lags on the other. The former two are used often in agenda setting research, yet do not allow capturing the pace of online platforms. The latter makes sense theoretically, but would be practically meaningless, as too many ‘zeros’ (time lags without any items) would occur.

For each news platform, attention to the various issues is explained by the other platforms’ lagged attention for these issues. The pooled time-series structure of our dataset requires careful consideration of the used method of analysis. We opt for cross-lagged OLS models with fixed effects on the issue level. Four modelling decisions deserve attention. First, issue dummies control for the differences *between* issues, that is, for the fact that some issues systematically get more attention across different platforms than other issues (heterogeneity). The issue ‘labour’, for instance, received significantly more attention during the campaign than ‘defence’. As a result, the independent variables in our analyses account for the variation over time *within* issues, offering a conservative test for inter-media agenda setting effects. Second, a media agenda is first and foremost determined by its own past: if news websites paid much attention to a certain issue six hours ago, they are likely still doing so right now. To control for this temporal dependency (autocorrelation), every model includes a lagged dependent variable. Third, all other independent variables in the models (the other news platforms) are lagged as well, so that our models test whether or not a platform’s attention for issues *precedes* the explained platform’s attention for these issues (temporal causality). Fourth, the models with newspapers and television as dependent variables use a daily instead of a six-hour time lag, in alignment with their publication schemes. The missing six-hour lag data are imputed based on previous values. Newspapers, for instance, are published in the morning, so the respective values stay constant over the rest of the day.

Almost all series are autocorrelated, as shown by the positive and significant coefficients of the lagged dependent variables in Table 1 (area shaded dark grey). Furthermore, the content of many

platforms is influenced by that of one or several other platforms (area of significant effects shaded light grey).

[Table 1 about here]

Considering the daily-published media (newspapers and television), we see that they are typical 'followers', not agenda setters. While they are affected by other agendas like news websites, radio and Twitter, they themselves barely have any impact on other platforms. Newspapers influence Twitter media slightly, probably because news organizations tweet about recently published articles. Television does not affect other platforms.

More frequently updated traditional platforms (radio and news websites) are found to be relatively strong agenda setters. They influence newspapers and television, and one another. Their attention for issues also precedes attention patterns on Twitter: news websites have an effect on both political and media twitterers; radio only affects Twitter media. On its turn, news websites are also affected by Twitter political, whereas radio news is influenced by Twitter media.

With regard to Twitter, it stands out that Twitter other is not so much related to any of the other platforms, except for Twitter political. Apparently, the idea that citizens and civil society can co-determine the agenda of traditional media via Twitter is not true, at least not on a detectable scale. Inversely, other Twitter users' agenda does not appear to be set by traditional media either. Twitter media and Twitter political, in contrast, are more closely related to other media platforms, for there is mutual influence between them and some of the traditional media.

Wrapping up, the analyses demonstrate that the 'slower' platforms, newspapers and TV, are mainly followers, while the 'quick' platforms, news websites, radio, Twitter media and Twitter political, both follow and set other platforms' agendas. Twitter other is least dependent on other platforms, as it does not follow, nor set other agendas. We will now compare these findings with results from a news story perspective.

News story analyses

Instead of aggregating data on time lag and issue, for our second analysis we use the 414 news stories that comprise 5,260 individual items. The points in time at which each specific news story appeared first on each media platform serve as points of comparison here. For each dyad of platforms, we calculated how often both respective media platforms were first, and the median time difference with which the other medium followed. Table 2 displays the results of this analysis.

From this table we can read, for example, that 47 (25+22) news stories were covered by both newspaper and radio. A small majority (53%) of these stories were covered by radio first, with a median advantage of 12 hours over newspapers. In the other cases (47%), radio lagged a median number of 14.5 hours behind newspapers. The N differs per dyad, since not all news stories were featured on each media platform (in fact, only 15 of the 414 stories were covered by every platform). As this analysis does not provide indicators of statistical significance, we shaded cells light grey (>60%) or dark grey (>70%) to highlight stronger temporal dynamics.

[Table 2 about here]

These comparisons tell us about the role of each media platform vis-à-vis other platforms regarding the development of news stories. Like in the analysis of time-series data, publication schedules heavily affect a platform's agenda setting capacity. Infrequently publishing media platforms, here television and newspapers, are quite slow compared to other media. Both are slower than virtually all others in the majority of the cases, as their respective columns in table 2 demonstrate. This pattern is most pronounced for television. Newspapers precede other media platforms in 36 to 52 per cent of the cases, suggesting that they have a substantial influence on certain topics.

Of particular interest is newspapers' temporal relationship to news websites, which is comparatively short. Interpreting this time difference, we should take into account that newspapers are printed only once a day, just after midnight, while news sites start publishing in the morning⁴. From

this small time difference, we can infer that news websites start the day by providing a round-up of news stories covered in the newspapers. Remarkably, this pattern is not found when comparing radio and newspapers.

Although the results of both types of analysis are similar, the news story approach provides a more nuanced picture. It is clear that *all* media types set and follow each other, at least to some extent. For instance, while the analysis of time-series data did not show any significant correlation between political or 'other' Twitter actors, and newspapers, the dyadic comparisons show that there *is* a relationship, with newspapers lagging behind in most cases (14.2 and 12.8 hours, respectively).

For the other two media platforms that publish more often than daily, radio and online, the news story confirms the results of the analysis of time-series data only partially. It reaffirms the capacity of news websites to set other media's agendas, but it downplays the influence that radio has. Still, the low median time differences demonstrate that when online outlets follow radio news, they do so swiftly (1.3 to 2.5 hours).

Another noteworthy finding is the close relation between the three groups of Twitter actors, and their interaction with news websites. The six dyads between Twitter actors are characterized by low median time differences, indicating their vast interconnectedness. Within this Twittersphere, actors that represent a media organization generally set the agenda for both political and other actors on Twitter. Remarkably, while politicians and parties on Twitter do not seem to set the agenda of Twitter media users that often (38%), their discussions of particular news stories precede websites' news coverage in a (small) majority of cases (55%). This pattern suggests that political Twitter accounts may function as inspiration or source material for website news more often than that they directly influence 'other' actor's tweets. By contrast, Twitter media accounts' agenda seems to be influenced by news websites: 60% of the news stories they discuss were already published on websites. The median time difference here (0.7 hour) is lower than any other dyad, suggesting that this often concerns tweets linking to the very same news report on the website.

Conclusion and discussion

Starting from a traditional inter-media agenda-setting perspective, we analysed how different media platforms in the contemporary media landscape are temporally interrelated. From both of our analyses, we conclude that news dissemination processes are mainly aligned with media platforms' (lack of) publication schemes. Having no fixed schedule, news websites and Twitter are both comparatively fast to carry news stories, attesting their prominent agenda setting role. Television news and newspapers, in contrast, have fewer occasions to publish and are consequently relatively slow to cover news. Their ability to set other media platforms' agenda is therefore limited. Radio takes an intermediate position. It is bound by a fixed broadcast scheme, but does air multiple bulletins per day. Its agenda setting capacity is in line with this – setting the agenda for most other media platforms, yet not to the extent that media platforms without fixed schedules do. From these findings, we conclude that speed (or immediacy) is a key factor to estimate media platforms' agenda setting capacities.

This does not mean that slower news media can be discarded altogether, however. The news story approach offers refinement to the negligible agenda setting role for newspapers and television that we find in the analysis of time-series data. Indeed, newspapers and television not seldom *do* cover a news story before it is published by media platforms that are typically faster, such as news websites or Twitter. We should also note that even when the former two platforms are late to cover a news story, their subsequent impact may be larger. After all, one television news item or front-page feature normally reaches far more people than a single tweet. News websites and social media, in turn, may respond with more coverage on the story, further amplifying the impact. The role of offline media platforms in agenda setting nowadays may thus be more of a reinforcing or legitimizing one.

Furthermore, while speed undoubtedly matters for media platforms' agenda setting capacity, our findings indicate that it is not its sole determinant. Radio news, broadcasted multiple times during the day, does not affect the agenda as much as newspapers do, even though the latter only publish once a day. One explanation is that this could be due to role perceptions of a given media platform. In

this case, radio journalists themselves may deem that the value of their platform lies more in providing regular news round-ups, rather than broadcasting every bit of news as fast as possible. In turn, this means that other media platforms' journalists are inclined to look elsewhere for inspiration for their own work.

In contrast with most existing studies on inter-media agenda-setting, we disentangle different Twitter publics. Our analyses demonstrate that this is required to interpret inter-media agenda setting dynamics correctly. The role of 'other' actors' tweets (including experts, civil society, and citizens) is overshadowed by that of media and political accounts. The analysis of time-series data shows that they seldom set platforms' issue agenda, and likewise tend to trail, rather than lead, journalists and politicians on Twitter in discussing news stories. Twitter is thus mostly influential via tweets by journalists or news organizations, indicating processes of monitoring, imitation, and co-orientation between different media outlets (Atwater, Fico, and Pizante 1987, Buhl, Günther, and Quandt 2016). Also, institutionally powerful actors—politicians and parties—exert relatively much influence on the media coverage, which is in line with the universal 'power elite' news value (Harcup and O'Neill 2016).

The way forward: suggestions for future IMAS studies

As always, this study has obvious limitations and only provides a partial answer to the questions and challenges that we put forward. Building on our findings, we suggest three research paths future studies should prioritize. First, we cannot detach our conclusions from the context in which they were found. The campaign setting is at least partly responsible, and in particular, the role of non-institutional actors may be much more outspoken in the case of an unexpected event. After all, elections are well-announced, "highly structured and ritualized" (Jungherr 2014: 254) events, of which the coverage can be roughly planned beforehand by media outlets (Vliegthart and Walgrave 2008). This leaves little room for non-elite actors to influence the flows of communication. In contrast, unexpected events may offer opportunities for outsiders to challenge the traditional dominance of elite actors in the news, for journalists can count less on traditional news routines like relying on institutional sources

(Hermida, Lewis, and Zamith 2014, Lawrence 2000). We expect that the information flows in both types of events be structurally different, leading to different dynamics. Future research should assess the extent to which inter-media agenda setting capacity is contingent on this context, updating our knowledge from the pre-social media era (Vliegenthart and Walgrave 2008).

Second, more research is needed to the ‘new’ role of the traditional media outlets in the creation and distribution of news stories. It is clear that they are losing the battle in terms of speed, but as our results suggest their added value might be more in legitimizing and broadening stories than in initiating them. Echoing the classical idea on opinion leadership in inter-media agenda setting, we assume that some media outlets are still regarded more highly than others (Breed 1955). Journalists are more inclined to follow up the coverage of media with a high stature. In this respect, the print version of a newspaper may be deemed more noteworthy than more ephemeral forms of news media. To assess how the influence of the platform compares to that of the media outlet, future research should supplement the current platform-level analysis with an inquiry that traces the influence of individual newsrooms across platforms. For example, how do the combined efforts of the *New York Times* staff on print, website, and social media stack up against those of other newsrooms? An interaction effect between platform and newsroom may exist.

Third, and most fundamentally, we believe that future inter-media agenda-setting studies need to have more fine-grained methods to study ‘who follows whom’. This study suggests a news story-based approach. By embedding individual news items within larger narrative, this method ensures the existence of a substantive (though not necessarily causal) link between the items. That is, all grouped news items deal with the same news event – something that cannot be established with issue categories. While this requires intensive coding, and may not be suited to do long-term analyses, it allows to track precisely how specific news stories transfer between platforms (Welbers 2016). Besides, a news story approach is not reliant on time lags. Instead of forcing data into these pre-determined time intervals, this enables the study of news platforms’ temporal dynamics in a more

inductive way, irrespective of whether different media affect one another within weeks, hours, or even minutes.

Comparing the methods we used, our conclusion is that while both are helpful, the news story approach provides a more nuanced picture of how news travels between agendas. This should be the preferred method for in-depth analyses, especially on the short term. However, we should acknowledge that, like with 'traditional' analyses of time series data, using this method does not 'prove' the assertion that temporal precedence signifies causality—in this case meaning that if one medium features the same news after another medium, journalists of the former were inspired by those of the latter. We can simply not be sure that one platform or medium 'caused' the other medium to cover a certain news fact, perhaps unless we would interview journalists or Twitter users, or do an ethnographic newsroom study – methods that come with their own drawbacks. On a conceptual level, moreover, a recent line of thinking in journalism studies argues that we cannot think in terms of media outlets providing cues to other media for specific news stories any longer. Rather, the amalgamation of news coverage should be regarded as an on-and-off awareness system ('ambient journalism', see Hermida 2014), that affects the topics that are considered relevant at a certain moment (the 'zeitgeist') and influences news coverage more subtly.

In order to research this, future studies will need to devise alternative models and methodologies that do not consider inter-media agenda setting to be a strictly linear process. In this study, we used the news stories analyses only to determine on which platform a study appeared first. However, the method allows more detailed analyses that track and follow the most relevant stories through time. Such an in-depth approach would allow much more accurate insights on how and when media outlets influence each other. In short, we believe the news story approach, while needing further refinement, could be one pathway for inter-media agenda setting research in the digital era.

Notes

1. Krippendorff's alpha: .70 for major issue code, .86 for sender of tweet (based on gold standard; double-coding of 174 items).
2. Krippendorff's alpha: .76 for assigning news story to tweet (based on gold standard; double-coding of 174 items).
3. The issue 'functioning of democracy and public government' is excluded, as almost all non-substantive items about the campaign in general are categorized as such. In addition, non-political issues like 'fires and accidents' or 'natural disasters', which were barely covered, are omitted.
4. We set newspapers' publication time at 1:00 at night, so assuming that news websites start publishing around 7:00, the 'actual' median time difference is about 2.1 hours.

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Table 1—Analysis of time-series data

| | Twitter Media | Twitter Political | Twitter Other | Television | News websites | Radio | Newspapers |
|------------------------|---------------|-------------------|---------------|--------------|---------------|--------------|--------------|
| Twitter Media(n-1) | .14*** (.03) | .07** (.03) | .05 (.03) | .07 (.09) | .05 (.03) | .21* (.08) | .13* (.06) |
| Twitter Political(n-1) | .11** (.03) | .15*** (.03) | .17*** (.03) | -.14 (.10) | .14*** (.04) | .16 (.09) | -.02 (.06) |
| Twitter Other(n-1) | .00 (.03) | .09** (.03) | .09** (.03) | -.17 (.10) | .03 (.04) | .02 (.09) | .10 (.06) |
| Television(n-1) | -.10*** (.02) | -.01 (.02) | -.01 (.02) | -.03 (.04) | .03 (.03) | -.02 (.07) | .05 (.03) |
| News websites(n-1) | .07** (.02) | .08*** (.02) | .02 (.02) | .44*** (.07) | .21*** (.03) | .34*** (.07) | .27*** (.04) |
| Radio(n-1) | .03** (.01) | .00 (.01) | .02 (.01) | .22*** (.03) | .05*** (.01) | .25*** (.03) | .08*** (.02) |
| Newspapers(n-1) | .08* (.03) | .01 (.03) | .06 (.03) | -.03 (.07) | .04 (.04) | .03 (.10) | .11** (.04) |
| Constant | .01*** (.00) | .02*** (.00) | .01*** (.00) | .02*** (.00) | .01*** (.00) | .01* (.01) | .01*** (.00) |
| N (obs) | 1,360 | 1,360 | 1,360 | 460 | 1,360 | 1,360 | 440 |
| N (issues) | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| R ² | .24 | .36 | .35 | .27 | .23 | .23 | .57 |

Notes. Fixed effects models, issue dummies included in the analysis but not reported in table. * p < .05; ** p < .01; ***, p < .001.

Table 2. News story analysis (median time differences in hours).

| | | precedes... | | | | | | |
|-----------|-------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|----------------------|
| | | Twitter Media | Twitter Political | Twitter Other | Television | News websites | Radio | Newspapers |
| Medium... | Twitter Media | - | n=79 (62%) 6.2h | n=79 (68%) 3.5h | n=61 (73%) 21.1h | n=63 (40%) 5.5h | n=25 (62%) 10.3h | n=78 (64%) 10.4h |
| | Twitter Political | n=48 (38%) 5.4h | - | n=72 (60%) 3.2h | n=65 (71%) 10.6h | n=78 (55%) 5.3h | n=28 (66%) 3.8h | n=71 (56%) 14.2h |
| | Twitter Other | n=39 (32%) 5.1h | n=49 (40%) 6.3h | - | n=48 (69%) 11.4h | n=51 (42%) 4.3h | n=22 (61%) 4.9h | n=64 (58%) 12.8h |
| | Television | n=23 (27%) 1.9h | n=27 (29%) 3.3h | n=22 (31%) 1.8h | - | n=18 (19%) 1.7h | n=9 (19%) 17.0h | n=42 (48%) 6.0h |
| | News websites | n=95 (60%) 0.7h | n=64 (45%) 5.1h | n=70 (58%) 4.6h | n=76 (81%) 11.6h | - | n=44 (73%) 6.8h | n=101 (63%) 11.2h |
| | Radio | n=15 (38%) 2.5h | n=14 (34%) 2.0h | n=14 (39%) 1.7h | n=39 (81%) 7.0h | n=16 (27%) 1.3h | - | n=25 (53%) 12.0h |
| | Newspapers | n=43 (36%) 20.9h | n=56 (44%) 15.4h | n=46 (42%) 19.1h | n=46 (52%) 18.5h | n=60 (37%) 8.1h | n=22 (47%) 14.5h | - |