# The Structure of ITV News Bulletins

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This article explores the relationship between the discourse structure and the formal structure of television news by analyzing the editing patterns of a sample of bulletins broadcast on ITV 1 in August 2011. The discourse structure of the bulletins in this sample is fixed and remains constant irrespective of the subject of news items, suggesting that content is adapted to meet the needs of this structure and that the presence and order of discourse elements in a bulletin shape its formal structure.

*Keywords: television news, discourse structure, formal structure, editing*

The organization of a television news bulletin can be analyzed in two ways. First, we can study its discourse structure—the sequence in which the various elements that constitute the text are presented and the system of coherence relations that hold between those elements (Bärenfänger, Lüngen, Hilbert, & Lobin, 2010, p. 82). Television news bulletins are a highly structured form of discourse that unfold in a predictable manner due to the strong constraints that govern the presence of a limited set of structural elements and the order in which they occur. By examining the relationships between these elements, we aim to define the functions they serve and the logic that governs their organization. A second approach is to look at a bulletin's formal structure—the arrangement of its constitutive stylistic elements, such as mise-en-scène, framing, editing, and sound—"to explain why an individual motion picture is the way it is: why it has the elements of style it does and why they stand in the relations that they do" (Carroll, 2009, p. 268) and to explore how and why these formal relationships have arisen and changed in particular empirical circumstances (Bordwell, 1989).

Although the discourse structure of television news has been extensively studied and is generally well understood (see, e.g., Choi & Lee, 2006; Montgomery, 2007; Tan, 2011; and van Dijk, 1988), the same attention has not been devoted to the formal structure of television news. Although Bentele (1985) proposed a methodology for jointly analyzing the discourse and formal dimensions of television programs, this does not appear to have produced any subsequent body of research linking discourse to form in news media. Schaefer and Martinez (2009) note the dearth of formal analyses of television news broadcasts, which they attribute to "the lack of a conventional vocabulary for describing and analyzing structural techniques used in what is primarily an audio-visual phenomenon" and a reliance on "scant anecdotal evidence" (p. 347). The lack of such a suitable vocabulary among media researchers is astonishing given the attention devoted to understanding how style affects the cognitive and emotional responses of the viewer in film studies but perhaps unsurprising when the formal elements of media texts are not treated

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as important as content and referred to as nothing more than immaterial "bells and whistles" (Grabe, Zhou & Barnett, 2001; see also Grabe, Lang & Zhao, 2003).

This article analyzes a set of television news bulletins to relate the discourse structure of a bulletin to one aspect of its formal structure: editing. In motion pictures, editing organizes viewers' experiences of on- and off-screen space via establishing shots, reciprocating imagery, maintaining eye-line matches, shot/reverse shot, and the use of the 180-degree line according to the principles of continuity editing that makes complex scenes navigable. Editing also orders viewers' attention (Anderson, 1996; Smith, 2012; Thompson & Bowen, 2009) and their experience of time by varying the pace at which information is presented and so determines their attention, arousal, memory, and emotional responses to motion pictures (Hanjalic & Xu, 2005; Lang, Zhou, Schwartz, Bolls, & Potter, 2000). Changes in editing pace are also associated with the macro- and microstructures of a motion picture in conjunction with other temporal (e.g., object motion, camera motion, and sound energy). For example, Dorai and Venkatesh (2001) observed that in Hollywood narrative cinema, large changes of pace occur at the boundaries of story segments (e.g., transitions between scenes), whereas smaller changes in pace are identified with local narrative events of high dramatic import. Research on editing in television news is limited, and no systematic studies have examined the relationship between the discourse structure and formal structure of television news bulletins. Schaefer and Martinez (2009), in noting that editing in U.S. television news bulletins since the late 1960s has shifted away from "continuity-realism" to "synthetic-montage" and has shown an increase in editing pace, argue that this reflects a shift away from television journalism as a "camera-of-record" in favor of complex audiovisual arguments. Hendersen (2007) also distinguishes between continuity editing as the creation of an illusion of reality that serves to tell an account and the intensification of an event via montage editing to create a sense of drama through accelerated pace or to create a sense of character, though she does not analyze changes in pace quantitatively. Neither Schaefer and Martinez nor Henderson discusses the spatial aspects of continuity editing, and both treat television as a primarily narrative form. Extending their research on editing and its relationship to viewers' attention and memory, Lang, Potter, and Grabe (2003) proposed varying the editing pace to make news bulletins more memorable for viewers by slowing the pace when news items are complex with minimal use of attention-eliciting structural features and increasing the pace for items with calm and relatively simple content to promote attention and memory.

It is the purpose of this article to present some basic research on editing and its relationship to the discourse structure of television news bulletins in the United Kingdom, drawing on concepts developed from discourse analysis of television news and applying methods used in the statistical analysis of film style. The existing research on editing in television news focuses exclusively on the United States, and there is no similar body of work on British television news, and so this article also seeks (in its own small way) to address this lack. The set of texts used in this study comprises the main ITV 1 news bulletins broadcast from August 8 to August 12, 2011, inclusive. Specifically, we address three questions: (1) Does the distribution of shot lengths in a bulletin vary with its day and/or time of broadcast? (2) Is there a dynamic relationship between the discourse structure and formal structure over the running time of a bulletin? (3) Are clusters of longer or shorter shots associated with particular elements of the discourse structure of a bulletin? The next section describes the sample used in the study and the statistical methods employed; then I describe the discourse structure of ITV 1 news bulletins; and the final section

presents the statistical results of the formal analysis and relates these to the structural elements that constitute each broadcast.

## Method

### *Sample*

ITV is a commercial broadcaster in the United Kingdom, with one terrestrial/digital channel public service channel (ITV 1), and six digital-only portfolio channels (ITV 1+1, ITV 2, ITV2+1, ITV 3, ITV 4, and CITV). As a public service broadcaster, ITV 1 is required to meet the requirements of high-quality, impartial news programming at peak and other viewing times as set out in the Communications Act of 2003, and determined by the Office of the Communications Regulator. ITV 1 is obliged to provide 365 hours of national and international news per year, of which 125 hours are required to be broadcast during peak viewing hours, though in fact it exceeds these requirements. The main news provision during the week is provided by three bulletins at 1330, 1830, and 2200; and by three 15-minute bulletins per day at the weekend with no fixed time, but broadcast at lunchtime, early evening, and late night. The place of the weekend bulletins in the schedule varies according to the presence of other types of programs in the schedule, and so they are not included in the study. Morning news (pre-0830) is provided as part of the Channel 3 breakfast license as a series of short, headline-driven reports, and is also not included. News programs on ITV 1 are not provided by the broadcaster but rather are provided by Independent Television News (ITN), which also provides news programming in the United Kingdom to Channel 4.

Shot length data were collected for the 1330, 1830, and 2200 bulletins broadcast on ITV 1 for the five-day period beginning Monday August 8, 2011, giving a total of 15 data sets. All broadcasts were recorded at 50 Hz, and the shot length data were analyzed at 25 frames per second. The 1830 bulletins include a commercial break, but are treated as a single unbroken program for the purposes of analysis.

In this article, a *shot* is defined as a continuous sequence of frames, and an *edit* is defined as any transition between two shots, such as a hard cut or a gradual transition (wipe, fade, dissolve, etc.). When the edit is gradual, the ending of the first shot and the beginning of the second shot are measured at the approximate midway point of the transition. The display of graphics in news bulletins often includes the use of composite shots in which the frame is broken into several sectors (e.g., split-screen shots) or that superimpose one piece of film onto another; and these are considered to be a single shot because there is no edit between the in-frame transitions, although the image itself changes.

The news bulletins in this week were dominated by reports on the riots in London, Birmingham, and Manchester that erupted on Saturday August 6, 2011, though it was not the goal of this study to specifically analyze news media on the subject of the riots. It is possible that the extent to which this topic came to dominate news bulletins during this week means the sample analyzed is unrepresentative of news bulletins on ITV 1. There is, however, no reason to believe that journalistic practices were altered specifically for this story, and there is no other similar data set against which the one used in this study may be tested

### Shot Length Distributions

The distribution of shot lengths in a motion picture is typically positively skewed and includes a number of extreme shot lengths, and so the five-number summary is used to describe this data. Additionally, $Q_n$ is used as a robust location- free measure of dispersion based on the distance of each data point from every other and is estimated to be $Q_n = c_{Qn} \times 2.2219 \times \{|X_i - X_j|; i < j\}_{(k)}$, where $k = 0.25$ to give the lower quartile of the absolute pairwise differences between shot lengths, and the factors $c_{Qn}$ and 2.2219 are for bias correction and consistency (Rousseeuw & Croux, 1993).

### Time Series Analysis: The Running Mann-Whitney Z Statistic

The Mann-Whitney $U$ test is a nonparametric test of the null hypothesis of stochastic equality between two independent random variables (Mann & Whitney, 1947); it involves combining the two samples, ranking the pooled data, and then calculating the statistic $U$ as the number of times a data value from one sample is preceded by data values from the other sample. If one variable is stochastically superior, then data values in this sample will tend to have higher ranks than the data values in the other sample. Mauget (2011) has proposed using the Mann-Whitney $U$ test as a method for identifying the most significant high- and low-ranking regimes in time series data that are simple to implement, robust against outliers, and do not depend on assumptions about the distribution of the data. Applying this method to the formal organization of a motion picture allows us to identify trends over the course of its running time, identify clusters of takes of long or short duration, identify the points at which the style changes, and determine whether any intermittent cyclical patterns are present. Because it makes so few demands on the data, it is a method that can also be used with exploratory data analysis to evaluate the assumptions required for further time series analysis of the dynamic evolution of style in motion pictures.

The first step in the analysis is to rank the $N$ shots in a motion picture, with the smallest $x_i$ assigned rank 1 and the largest $x_i$ assigned rank $N$. Shots of equal length are assigned the average of the ranks they would have been assigned if there were no ties. The rankings are then sampled with a moving window of size $n_1$ and converted to $U$ statistics by

$$U = R_1 - \frac{n_1}{2}(n_1 + 1),$$

where $R_1$ is the sum of ranks in the window of size $n_1$. When the sample size is large ($n_1 \geq 10$), the distribution of $U$ is approximately normal with mean $\mu = (n_1 \times n_2)/2$, and standard deviation,

$$\sigma = \sqrt{\frac{n_1 n_2 (n_1 + n_2 + 1)}{12}},$$

where $n_2 = N - n_1$. Statistical significance can therefore be determined by calculating a $Z$ statistic

$$Z = \frac{U - \mu}{\sigma},$$

which is compared to a standard normal distribution. Because the 1330 bulletins contain ~150 shots, their smaller sample size may reduce the statistical power of the method, potentially leading to clusters of shots being overlooked. Thus, a critical $Z$ value of $\pm 1.64$ was used to identify significant clusters of shots. Therefore, when $Z \leq -1.64$, we will identify a window that represents a cluster of low-ranking (i.e., shorter) shots; and when $Z \geq 1.64$, we will identify a cluster of high-ranking (i.e., longer) shots. A set of time series of running Mann-Whitney $Z$ statistics was generated for each bulletin in the study using multiple moving windows of $n_1 = 10, \ldots, 15$ shots; and these were screened for the most significant clusters to remove redundant significant values resulting from the overlapping windows. To enable side-by-side comparison of the time series, the duration of each bulletin was normalized to a unit length by dividing the length of each shot by the total running time of the bulletin. The most significant nonoverlapping windows of shots with high and low rankings were color-coded and plotted on a single horizontal axis, with significant clusters of low- and high-ranking shots coded as blue and red, respectively.

## The Discourse Structure of ITV News Bulletins

The discourse structure of a television news bulletin describes the overall pattern of the structural elements and the relationship between those elements, and it is highly organized at both the macrolevel of the broadcast as a whole and at the microlevel of the individual news items, so that

> there is a clear expectation that headlines will precede studio presentation of items and that reports will be introduced from the studio (not vice versa). It is not just that the separate structural elements of a news programme will be intrinsically different from each other (headlines, for instance, are recognisably different from reports) but that the elements are defined in part by their place in the sequence. (Montgomery, 2007, p. 38)

The overall structure of a bulletin follows a basic pattern common across different broadcasters in different countries consisting of opening titles and headlines (though the order may be reversed), a sequence of news items interrupted by a recap of the main story and/or a preview of upcoming news items (which often precede advertisements in the case of commercial television), a weather report, and a final summary of the main story (possibly with a trail for a later bulletin). Transitions between these different elements are deliberately and explicitly signposted, typically by the presenter, who introduces the next element verbally and which may be accompanied by a physical movement (e.g., looking away from the camera to a video monitor or turning to face an interviewee or reporter). These individual structural elements also display a regular structure. Each news item comprises an obligatory news kernel, which summarizes the key facts of an item, and an optional news subsidiary. The subsidiary material may include a news report and/or a live two-way interview, though neither of these elements is compulsory

and the order in which they occur within a news item may vary. However, a news kernel always precedes the news subsidiary.

ITV news bulletins are constructed from a narrow range of discourse elements and follow a strict pattern consisting of an opening sequence that features the signature titles of the program and establishes the main headlines; a series of discrete news items broken up by a preview of upcoming news items (which precede the commercial break in the 1830 bulletins); and a closing sequence in which the main headlines are restated and the presenters sign off the program before the credits. Other structural elements, such as trails for later bulletins and newspaper headlines, occur less frequently but are nonetheless subject to strict constraints that determine their place and function within the discourse of a bulletin. Tables 1 and 2 set out the discourse structure of the 1830 broadcasts from August 8 and August 9, 2011, respectively, as examples of the discourse structure of news bulletins on ITV 1.

*Table 1. The Discourse Structure of the 1830 ITV 1 News Bulletin Broadcast on August 8, 2011.*

| Segment | Structural elements | # of shots | Running time (in secs.) | Cumulative running time (in secs.) | Cumulative normalized running time | Description |
|---------|---------------------|-----------|------------------------|-----------------------------------|-----------------------------------|-------------|
| **Headlines** | Presenter + actualities | 3 | 26.7 | 26.7 | 0.02 | Main headline for item on London riots |
| **Title** | | 1 | 20.4 | 47.1 | 0.04 | The main title for the bulletin |
| **Headlines** | Presenter + actualities | 6 | 28.4 | 75.5 | 0.06 | Second London riots headline, and headlines for stock market, Syrian uprising, and East African famine |
| **Title** | | 1 | 2.5 | 78.0 | 0.06 | ITV news logo |
| **News item** | Kernel + report/2-way | 52 | 527.6 | 605.6 | 0.48 | London riots |
| **News item** | Kernel + report | 41 | 204.4 | 809.6 | 0.64 | Stock market slump across the globe |
| **News item** | Kernel + two-way | 3 | 59.7 | 869.3 | 0.69 | School pupils recovering after polar bear attack |
| **Preview** | Presenter + actualities | 5 | 22.1 | 891.4 | 0.71 | Announcement of the commercial break and preview of |

| Segment | Structural elements | # of shots | Running time (in secs.) | Cumulative running time (in secs.) | Cumulative normalized running time | Description |
|---|---|---|---|---|---|---|
| | | | | | | upcoming item on cancer report |
| **Studio** | | 1 | 6.9 | 898.3 | 0.71 | The presenters in the studio after the break |
| **News item** | Kernel + report | 13 | 104.5 | 1,002.8 | 0.80 | Political crisis in Syria |
| **News item** | Kernel + report | 25 | 122.1 | 1,124.9 | 0.89 | The benefits of exercise for cancer patients |
| **Recap** | Presenter + actuality | 2 | 11.3 | 1,136.2 | 0.90 | Recap of main item on London riots |
| **News item** | Kernel + report | 15 | 86.8 | 1,223.0 | 0.97 | Human interest story on a child receiving aid in the East African famine |
| **Trail** | Presenter + actualities | 5 | 16.5 | 1,239.5 | 0.99 | Trailing an item at 2200 on the East African famine |
| **Sign-off/credits/ ITN title** | | 3 | 18.3 | 1,258.7 | 1.00 | |

*Table 2. The Discourse Structure of the 1830 ITV 1 News Bulletin Broadcast on August 9, 2011.*

| Segment | Structural elements | # of shots | Running time (in secs.) | Cumulative running time (in secs.) | Cumulative normalized running time | Description |
|---|---|---|---|---|---|---|
| **Headlines** | Presenter+ actualities | 6 | 38.3 | 38.3 | 0.03 | Main headlines on riots |
| **Title** | | 1 | 20.2 | 58.5 | 0.05 | The main title for the bulletin |
| **Headlines** | Presenter+ actualities | 7 | 30.7 | 89.2 | 0.07 | Secondary headlines on riots, referring to London, police tactics, and community response |
| **Title** | | 1 | 2.9 | 92.1 | 0.07 | ITV news logo |

| News item | Kernel+ report/2-way | 62 | 576.1 | 668.2 | 0.52 | London riots |
|---|---|---|---|---|---|---|
| News item | Kernel + report | 23 | 112.7 | 780.9 | 0.61 | Birmingham riots |
| News item | Kernel + report | 7 | 26.5 | 807.4 | 0.63 | Riots elsewhere in the UK/ England football match cancelled |
| News item | Kernel + report | 20 | 142.9 | 950.3 | 0.74 | Police footage of rioters |
| Preview | | 3 | 16.9 | 967.2 | 0.75 | Preview of human interest story on community response to the riots and announcement of break |
| Studio | | 1 | 6.3 | 973.5 | 0.75 | Postbreak shot of presenters in studio |
| News item | Kernel + report | 19 | 135.4 | 1,108.9 | 0.86 | Police tactics |
| News item | Kernel + actuality | 2 | 18.7 | 1,127.6 | 0.87 | Rape conviction |
| News item | Actualities | 3 | 10.2 | 1,137.8 | 0.88 | Murder conviction |
| News item | Kernel + report | 21 | 106.7 | 1,244.5 | 0.96 | Community response and postriots cleanup |
| Recap | Presenter+ actualities | 4 | 10.8 | 1,255.3 | 0.97 | Recap on London riots news item |
| Trail | Presenter+ actualities | 7 | 17.4 | 1,272.7 | 0.99 | Trailing an item at 2200 on how the riots have been reported around the world |
| Signoff/credits/ ITN title | | 3 | 17.8 | 1,290.5 | 1.00 | |

### *Opening Sequence*

ITV news bulletins begin with a sequence of headlines and program titles divided into four sections. First, the headline for the main news item presented by one reporter in close-up before a small section of news footage to illustrate the item, for a total of between 2 and 6 shots (see Figure 1a). This is followed by the opening title shot featuring a track and pan across a series of glass panels displaying images from current news items, which lasts for about 18.5 seconds in the 1330 bulletins and for 20 to 21 seconds in the two evening broadcasts (Figure 1b). The headlines are then developed in a sequence of between 4 and 10 shots. Unlike the opening segment of the headlines, this is presented by a newsreader seated behind a desk and is shot as a medium close-up. The final shot of the opening sequence again features the ITV news logo, but this time lasts for only about 2.5 seconds. A single journalist presents the lunchtime bulletin and covers both of the headline segments in the opening sequence, but the 1830 and 2200 broadcasts both have two presenters (a woman and a man), and the opening sequence switches between them. In the example displayed in Table 1, the first of the headline sections is presented by one newsreader (Nina Husain), and the beginning of the next headline sections is presented by the other (Mark Austin), and then the headlines announced over actuality footage for subsequent news items switches back and forth between the presenters (Figure 1c).



(a) First presentation of headlines          (b) Studio space established          (c) Second presentation of headlines

*Figure 1. Shot types in the opening headline sequence of an ITV news bulletin.*

### *News Items*

Bulletins on ITV 1 feature two types of news items: self-contained items with a kernel specific to that item and which follow two basic patterns; and items that feature in a single series that are not differentiated by separate kernels. The dominant format of individual news items follows a strict pattern, in which the presenter states the essential content of the item in the news kernel (Figure 2a) and then introduces the news subsidiary to follow. This subsidiary component consists of a report and a live two-way interview between presenter and reporter, before the presenter ends the item. The second type of item is comprised of a live two-way interview between the presenter in the studio and a reporter at a location, and which may contain a short report within the overall framework of the interview. Figures 2c and 2d present an example of a two-way interview, illustrating the maintenance of coherent on-screen space between the presenter in the studio and the reporter on location by establishing spatial relationships

in a wide shot and cutting along the axis of the lens. Occasionally, the presenter will conduct an interview with a key figure and/or commentator rather than with a reporter, but the structure of the item remains the same. The content of a news report may include to-camera pieces from a reporter (Figure 2b), graphics, brief interviews with key individuals and/or members of the public, and actualities. Figures 2e and 2f illustrate an interview between a reporter and a key individual (in this case, an economist), using continuity editing to maintain spatial relationships via the use of the 180-degree rule and eye-line matches, so that the participants maintain their respective position relative to one another, and the 30-degree rule, so that the second shot (Figure 2f) is different enough from the preceding shot (Figure 2e). Although there is no restriction on the type of graphics that can be featured in either the kernel or subsidiary, the range of graphics used in a report includes maps, charts to display statistical information, or bullet points to present key facts, whereas the use of graphics as part of the kernel is typically restricted to the use of maps.

Most news items have their own kernel, with only seven bulletins featuring a series of items undifferentiated by individual kernels, and only the 1830 Friday bulletin has two such series. A series contains two to four items, and the cumulative running time of a series ranges from 28.9 s to 73.1 s; the median length for an individual item in a series is 16.3 s, with a range of 10.2 s to 27.7 s. These reports are comprised of actualities or of stills photographed using a rostrum camera, and do not feature to-camera segments from a reporter, graphics, or brief interviews.

The bulletins in this sample feature between 5 items for the 1330 broadcast on August 8 and 13 for the bulletins at 2200 on August 11 and 1830 on August 12; and, overall, the number of items in a bulletin increases over the course of the week. This is accounted for by the division of reporting on the riots into shorter segments as the situation becomes more geographically diverse and more complex and more brief items on a range of topics once the riots themselves had subsided. At the same time, the amount of time accounted for by the first item in each bulletin contracts over the course of the week for the same reason: The duration of the first items ranges from 527.6 s to 745.3 s on August 8 and 9, but the range on the other three days of the week is from 148.9 s to 456.6 s. Again, this is due to the compartmentalization of items on the riots: In Table 1, the coverage of the riots is presented as a single item that accounts for about 42% of the running time, but in the Tuesday evening bulletin shown in Table 2, this story has been divided by geographical location (London, Birmingham, other), and news items are beginning to reflect on and analyze events (police tactics, community response, the experience of individuals, etc.). Each of these items has an individual kernel and fulfills the functions required by its place in the discourse structure so that the bulletin follows the same macrostructure as a news bulletin in which each item has a different subject matter.

(a) News kernel　　　　　　　　　(b) To-camera report

(c) Two-way interview: studio　　　(d) Two-way interview: reporter

(e) On-screen interview: setup　　　(f) On-screen interview: subject



*Figure 2. Shot types in news items sequence of an ITV news bulletin.*

The last news item on the ITV television news is typically a human interest story, and it is always introduced with the words, "And finally. . . ." Of the bulletins included in this sample, only the 1330 bulletins from August 9 and 10 did not feature a final news item of this nature. The place in the discourse structure of this element is typically between the recap of the main news item or the review of the newspaper headlines in the 2200 bulletins and the closing sequence; and the median running time of the final item is 110.5 s, with a range of 76.6 s to 140.4 s. This segment will often be of a (relatively) lighter

and occasionally humorous tone; and such items in this sample cover the rescue of a whale stranded on an Australian beach, a blind musical prodigy, the death of World War II agent Nancy Wake, and the story of a recovering child in the East African famine (see Table 1). This remains the case when the bulletins are dominated by the riots. For example, the final item in the 1830 bulletin from August 9 dealt with the response of the communities affected by the riots in London (see Table 2), and stressed the efforts to clean up after the riots and the public spirit of those who took pride in their community. This stands in stark contrast to the earlier items from the same bulletin that focused on the violent clashes between looters and the police and the destruction of property. Other stories from the riots in this slot look at the experiences of a Malaysian student mugged on the streets of London and the experiences of a furniture store owner whose century-old business was destroyed. Again, these news items therefore function as "And finally . . . " human interest stories within the broader context of the riots and fulfill the same role as items that occupy a similar position in the discourse structure of ITV news, even though the bulletins themselves are atypical in their concentration on a single topic.

The preview of upcoming news items signals the end of the first part of the program and the onset of the commercial break in the 1830 bulletins. The section of the 1830 bulletins that precedes the commercial break accounts for between 71% and 75% of the bulletin of Monday, Tuesday, and Thursday, but only about 64% on Wednesday and Friday. The second part of the bulletin then begins with a shot of the presenters in the studio. This pattern of preview-studio shot is present in all but two of the bulletins in the sample, even though the 1330 and 2200 broadcasts lack a commercial break, and it serves the same function of dividing the bulletin into two parts even though the broadcast itself is continuous. Leaving aside those bulletins that have no preview element (at 1330 on August 9 and 10), the median proportion of a news bulletin prior to and including the preview accounts is 59%, with a minimum of 41% and a maximum of 68%, when the bulletin does not include a commercial break. The median number of news items occurring before the preview in all bulletins that include this element is 4 (min = 1, max = 7), and the median number of items to occur after the preview is 5 (min = 3, max = 9). News items that occur after the preview also tend to be shorter, with a median running time of 104.2 s (min = 10.2 s, max = 388.5 s), compared to a median of 161.6 s (min = 9.4 s, max = 699.2 s) before the preview.

### *Closing Sequence*

The later parts of a bulletin may include three distinct elements: trails for later bulletins, a recap of the main news item, and a review of some newspaper headlines. Trails occur infrequently in this sample: Only the Monday, Tuesday, and Friday 1830 bulletins feature this element, and in all three instances the trail is the last element prior to the closing sequence. In the example shown in Table 1, the trail is related to the human interest story on the famine in Somalia that precedes it and alerts viewers to a special report on the same subject that will feature in the 2200 bulletin. A recap of the main news item occurs in 8 of the 15 bulletins in the sample, comprising between two and five shots and ranging from 10.8 s to 48.6 s, and, as noted, may feature before or after the last news item. The 2200 bulletins feature a review of the front pages of three newspapers (see Figure 3a), which vary from day to day. This sequence is comprised of four shots in each of these bulletins, lasting for between 23.5 s and 39.8 s, and includes a shot of the presenter followed by a graphic of a front page against a pale background. None of

the bulletins broadcast at 2200 feature a recap of the main news item, with the reviews of the front pages occurring immediately prior to the last news item, where the recap is frequently placed. Consequently, there is no need for both these elements, and the front pages fulfill the same function as the recap in other bulletins.

Each bulletin ends with the same sequence of structural elements: the sign-off by the presenter(s), a credits sequence, and a title card for ITN. This sequence may comprise three shots, in which each element is separate, or two shots, in which the sign-off and the credits are continuous (see Figures 3b and 3c). The credits shot at the end of the news bulletin features a mobile camera that performs the opposite movement to that in the opening title sequence, pulling away from the news desk to indicate the end of the broadcast (compare Figure 3c with Figure 1b). On occasion, the credits will be shown over news footage: In the 2200 bulletin from August 8, the credits were shown over a 20.4-second shot showing live footage of the London riots. The amount of screen time taken by the closing sequence ranges from 14.3 s to 47.1 s, with a median of 25.6 s.



*Figure 3. Shot types in the closing sequence of an ITV news bulletin.*

**The Formal Structure of ITV News Bulletins**

*Shot Length Distributions*

Table 3 presents the descriptive statistics for the shot length distributions of each bulletin. The running times of the bulletins vary with the time of broadcast: The 1330 bulletins show little variation in their length from 22.25 minutes, and the 2200 bulletins are all about 28 minutes long; the 1830 bulletins range from about 21 minutes to 23 minutes 39.3 seconds. The number of shots in a bulletin is generally consistent over the course of a week depending on the time of broadcast: Four of the five 1330 bulletins have between 149 and 153 shots, and one has 171 shots; the 2200 bulletins have between 214 and 230 shots. The 1830 bulletins show greater variation, with between 156 and 190 shots. Overall, there is little variation in the distribution of shot lengths of the bulletins. The median shot lengths of the bulletins range from a minimum of 4.0 s to a maximum of 5.6 s, with a median of 5.0 s. The lower and upper quartiles exhibit little variation. The median of the lower quartiles is 3.1 s, with all 15 bulletins within ±0.5 s; and

the median of the upper quartiles is 9.1 s, with 12 of the bulletins within ±1 s. Consequently, there is little variation in the interquartile ranges, with a median of 5.9 s (min = 4.1 s, max = 7.8 s). There is also little variation in the dispersion of shot lengths as measured by $Q_n$, the values of which are covered by a narrow range, with a median of 3.3 s and all 15 bulletins within ±1.1 s.

*Table 3. Descriptive Statistics of Shot Length Distributions for ITV 1 News Bulletins, August 8–12, 2011.*

| Bulletin | Length (in secs) | # of shots | Min. (in secs) | Lower quartile (in secs.) | Median (in secs.) | Upper quartile (in secs.) | Max. (in secs.) | $Q_n$ (in secs.) |
|---|---|---|---|---|---|---|---|---|
| 08/08: 1330 | 1,335.0 | 149 | 0.6 | 3.1 | 5.1 | 9.7 | 74.3 | 3.7 |
| 08/08: 1830 | 1,257.8 | 176 | 0.3 | 2.8 | 4.3 | 8.4 | 54.1 | 2.8 |
| 08/08: 2200 | 1,729.4 | 217 | 1.4 | 3.3 | 5.0 | 9.1 | 55.8 | 3.3 |
| 09/08: 1330 | 1,335.0 | 150 | 1.5 | 3.4 | 5.1 | 9.9 | 60.8 | 3.2 |
| 09/08: 1830 | 1,290.5 | 190 | 1.2 | 3.0 | 4.0 | 7.1 | 60.8 | 2.2 |
| 09/08: 2200 | 1,699.5 | 214 | 1.0 | 3.4 | 5.2 | 9.2 | 78.1 | 3.1 |
| 10/08: 1330 | 1,335.0 | 153 | 1.2 | 3.3 | 4.8 | 9.9 | 71.4 | 3.3 |
| 10/08: 1830 | 1,419.3 | 168 | 0.6 | 3.4 | 5.1 | 8.7 | 94.0 | 3.3 |
| 10/08: 2200 | 1,708.6 | 222 | 0.8 | 3.1 | 4.9 | 9.0 | 64.2 | 3.3 |
| 11/08: 1330 | 1,334.4 | 152 | 0.0 | 2.8 | 5.5 | 10.6 | 54.0 | 4.3 |
| 11/08: 1830 | 1,289.8 | 156 | 1.6 | 3.5 | 5.6 | 9.6 | 65.2 | 3.5 |
| 11/08: 2200 | 1,669.4 | 230 | 1.0 | 3.1 | 4.6 | 7.7 | 101.9 | 2.8 |
| 12/08: 1330 | 1,334.2 | 171 | 0.2 | 2.6 | 4.9 | 8.9 | 76.4 | 3.5 |
| 12/08: 1830 | 1,350.0 | 185 | 0.2 | 2.7 | 4.5 | 8.3 | 62.2 | 3.3 |
| 12/08: 2200 | 1,669.9 | 219 | 0.9 | 3.0 | 5.1 | 9.3 | 41.6 | 3.5 |

### *Time Series Analysis*

Figure 4 presents the normalized and color-coded side-by-side comparison of the clusters of long and short shots in the sample. Although the discourse structure of these bulletins is governed by a strict set of constraints, there is no overall pattern to the formal structure. The number of significant clusters ranges from a low of 5 to a high of 12, but shows no pattern by time or day of broadcast. There is no order in which the significant clusters of long or short takes occur: Clusters of long shots may be followed by clusters of short shots, and clusters of short shots may be followed by clusters of long shots, with several occasions when there are runs of similar clusters. No trends or cycles are evident over the course of the bulletins, and there are no clusters of shorter or longer takes common to the time series of all the bulletins.

Sixty-eight percent of the clusters of short shots begin the second half of a bulletin, and 32% begin in the first half. (Only one cluster of short shots begins and ends in different halves of a bulletin). When considered along with the tendency of news items to run shorter after the preview element, this suggests a quickening of the tempo of an ITV news bulletin in its second half. However, this conclusion must be regarded as tentative given that this sample covers only a single week of broadcasts and there is at present no research on the viewer's perception of pacing in UK television bulletins. There is no similar pattern for the clusters of longer takes in this sample, with 59% beginning in the first half of the bulletin. The 1830 bulletin from August 12 does exhibit a particular pattern, with the clusters of longer takes all occurring before clusters of shorter shots, the latter of which all occur in the final quarter of the program. This pattern is not evident in any of the other bulletins in this sample, and it is unknown whether it occurs in other ITV news bulletins.
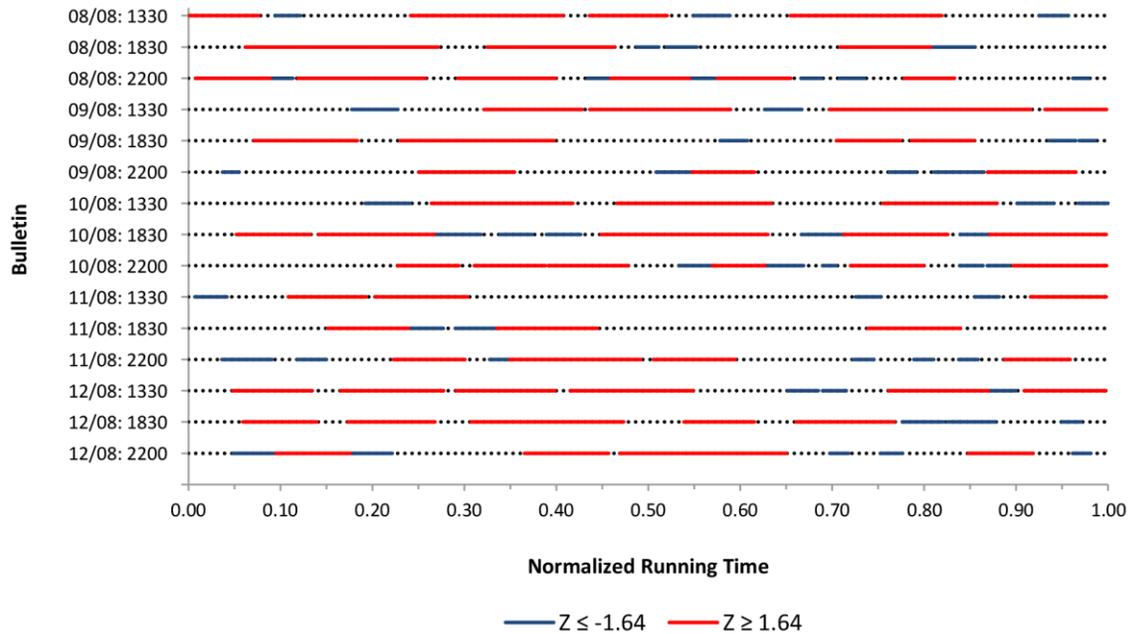
**Figure 4. Side-by-side comparisons of the most significant non-overlapping regims of short and long shots based on runing Mann-Whitney Z statistics using mutliple windows ($n_1$ = 10-15) in ITV news bulletins, August 8–12, 2011.**

Although the results show no particular pattern, we can identify some of the structural elements of the discourse of television news as being associated with clusters of longer or shorter takes. Clusters of long takes occur when there are several shots of people talking on screen near one another. This includes the kernel of a news item, press conferences, interviews with named key figures in news items, the reporter talking directly to camera at the beginning and/or end of a report, and live two-way interviews. To illustrate this aspect, we use the 1830 bulletin from August 9 described in Table 2, which contains four such clusters. The first cluster at 0.07 (shown in Figure 1) begins with the kernel for the main item on the London riots and includes footage of a press conference by the prime minister. This cluster is 15 shots long and runs for 144.8 seconds, with 11 of these shots longer than the than the median shot length of the whole bulletin (min = 2.7 s, median = 6.3 s, max = 40.8 s), and the longest of which is the news kernel. The cluster at 0.23 includes a live two-way interview between a presenter and the mayor of London, and a two shot of the presenters in the studio introducing the next part of this item. This cluster is 216.0 seconds long (min = 2.7 s, median = 6.8 s, max = 60.8 s), with 9 of 11 shots longer than the overall median shot length. From the same bulletin, we see two later clusters (at 0.70 and 0.79) that exhibit the same characteristics. The first of these clusters is 10 shots in length, of which 8 are greater

than the overall median, and lasts for 89.9 seconds (min = 2.6 s, median = 7.3 s, max = 19.7 s) and includes an interview with a social commentator as part of the item showing police footage of the riots, the deliberate discourse work by the presenters to announce the break for advertisements, and the kernel of the first postbreak item on policing tactics. The second cluster is also part of this item on the policing of the riots and is also 10 shots long, of which 9 are greater than the overall median, and lasts for 87.9 seconds (min = 3.8 s, median = 7.3 s, max = 17.4 s) and includes footage of the riots intercut with a to-camera piece by the reporter and two talking-head interviews with current and retired police officers. The elements of the discourse of the bulletins that are common to clusters of long takes tend to be filmed in the same way, with a static camera and a static subject framed in either a medium close-up or a medium shot.

Clusters of shorter shots are associated with four different elements of news discourse. The most frequently occurring clusters are montages with a voice-over provided off-screen by a reporter. For example, the cluster at 0.27 in the 1830 bulletin from August 10 is part of an item on the riots in Manchester; it lasts for 67.6 s (min = 2.1 s, median = 3.6 s, max = 9.8 s), with 10 of the 15 shots less than median shot length of the bulletin. This cluster is primarily composed of a series of stills of rioters provided by Greater Manchester Police and news footage of the riots, with the events depicted described by a reporter who does not feature in any of the shots. Similarly, in the item on the community clean-up after the riots in the 1830 bulletin on August 9 (see Table 2), the cluster at 0.94 features shots of the people of London clearing debris from the streets while the off-camera reporter describes the mood of the public rather than the action. This cluster is 40.3 seconds long, with 9 of the 11 shots less than the median of the bulletin (min = 2.2 s, median = 3.4 s, max = 6.0 s) and follows the reporter's to-camera piece.

The second common factor is sports reporting. Seven of the clusters of shorter shots are associated with items on England's cricket test match series against India. For example, the cluster at 0.87 in the 1330 bulletin from August 12 is 35.5 seconds long (min = 1.3 s, median = 2.0 s, max = 5.8 s), with 14 of the 15 shots shorter than the median of this bulletin. Another such cluster occurs at 0.87 in the 2200 bulletin from August 10, with a report on international football fixtures that features clips of matches (min = 1.3 s, median = 3.4 s, max = 8.2 s). However, the item on Arsenal's transfer policy from the 1330 bulletin on August 12 is not associated with any such cluster. In fact, the four shots constituting this item are part of the cluster of longer shots that occurs at 0.76 in this bulletin, and they range from 8.1 s to 23.7 s. Again, the item previewing the 2011/2012 Premiership season from the 2200 bulletin on August 12 is associated (in part) with a cluster of longer rather than shorter takes. This item is 18 shots in length (min = 0.9 s, median = 7.7 s, max = 24.8 s), and the final 7 shots are a part of the cluster of longer takes that occurs at 0.85 (see Figure 1). Like other clusters described above, these shots include footage of press conferences and reporters speaking to camera up close. This difference suggests that sports *action* is formally different from sports *news*, though they typically have similar positions in the latter part of the discourse structure of a bulletin.

Sequences of actualities that cover several items in quick succession without differentiating kernels are often associated with clusters of short shots. For example, the cluster at 0.76 in the 2200 bulletin from August 9, which is 12 shots and 49.0 seconds long (min = 1.7 s, median = 3.9 s, max = 6.8

s), covers items on a murder conviction, and the Libyan and Syrian uprisings. However, this cluster does not include the first item in this sequence (on job cuts in the banking sector), and so does not include the initial kernel. A similar example can be seen in the cluster at 0.72 in the 2200 bulletin from August 11 covers a series of three items on the Syrian uprising, a rail crash in China, and the famine in East Africa (min = 2.1 s, median = 3.2 s, max = 5.8 s). This sequence is 11 shots long, but the cluster of short takes includes only 10 shots running for 37.1 seconds; and, again, it does not include the kernel that begins the sequence, which, at 8.8 seconds, is 3 seconds longer than the next longest shot in the sequence.

Finally, clusters of shorter takes are associated with footage that is not produced by ITN news, including footage from other broadcasters, library footage, and clips from feature films. For example, the last item in the 2200 bulletin on August 8 looked at the life of the World War Two spy Nancy Wake, who was the inspiration for Cate Blanchett's character in the film *Charlotte Gray* (2001). The item included scenes from this feature film and library footage of the D-Day landings. This footage forms the major part of the cluster at 0.96 in this bulletin, which runs for 10 shots and 29.6 seconds (min = 1.6 s, median = 2.5 s, max = 6.4 s); the rest of this item is not associated with a specific editing regime.

### The Structure of an Individual News Item

The item on the world's stock markets from the 2200 bulletin on August8 reveals how the editing changes over the course of an item. This item is divided into two parts, with the first section focusing on the New York Stock Exchange following the downgrading of the United States' credit rating and the second looking at the crisis in the Euro zone and its impact on share prices. This item is 388.5 seconds long and is illustrated in Figure 5 as the shaded shots, covering four distinct clusters—two clusters of shorter takes and two clusters of longer shots. The first four shots of the item, including the kernel (screen grab in Figure 5a, are not a part of any cluster. These are followed by an 11-shot cluster of shorter takes running for 44.3 s (min = 2.2 s, median = 3.8 s, max = 7.2 s), comprised of a montage sequence of the New York Stock Exchange (screen grabs (b) and (c)) and the trading floor of a financial company, while the reporter describes the impact of the downgrade off camera. This is immediately followed by a cluster of 12 longer shots running 153.4 s (min = 2.8 s, median = 9.1 s, max = 53.5 s) that includes an interview with a trader (screen grab (d)), press conferences from President Obama (screen grab (e)) and Mitt Romney, and a live two-way interview between London and New York all framed as static medium shots (screen grabs (f) and (g)). The final shot of this cluster is of the studio presenter linking events in the United States with those in Europe (screen grab (h)), and this is immediately followed by a cluster of 13 shorter takes running 42.3 s (min = 1.6 s, median = 3.3 s, max = 5.4 s). This third cluster is another montage sequence with voice-over description by an off-camera reporter (screen grab (i)), and includes within it footage from a French broadcaster on the same subject. As such it combines two different types of the clusters of short takes that we find in this sample. The final cluster of longer takes includes 11 shot cluster runs for 138.2 s (min = 2.9 s, median = 11.1 s, max = 32.6 s), and the last two shots of this cluster belong to the following item (accounting for 27.0 s). The shots in this cluster belonging to the item on the stock markets include interviews with a banker and an economist (screen grabs (j) and (l), respectively), a graphic providing statistical data (screen grab (k)), and a live piece to camera from a reporter (screen grab (m)). This example demonstrates that the presence of particular structural elements (the montage

sequences, interviews, live two-ways, etc.) and the order in which they occur determine the ebb and flow of the formal structure of an individual news item. These discourse elements and editing regimes also reveal a repetitive functional structure of description (the quickly edited sections) and comment and analysis (which is edited more slowly) apparent in both subsections of this item. In this news item, the montage sequences do not serve to create character or narrative and are a paradigmatic alternative to the to-camera report in which the reporter provides the same information presented as a single long take. By extension, the overall formal structure of a news bulletin is also determined by the presence of and sequence in which discourse elements are presented.
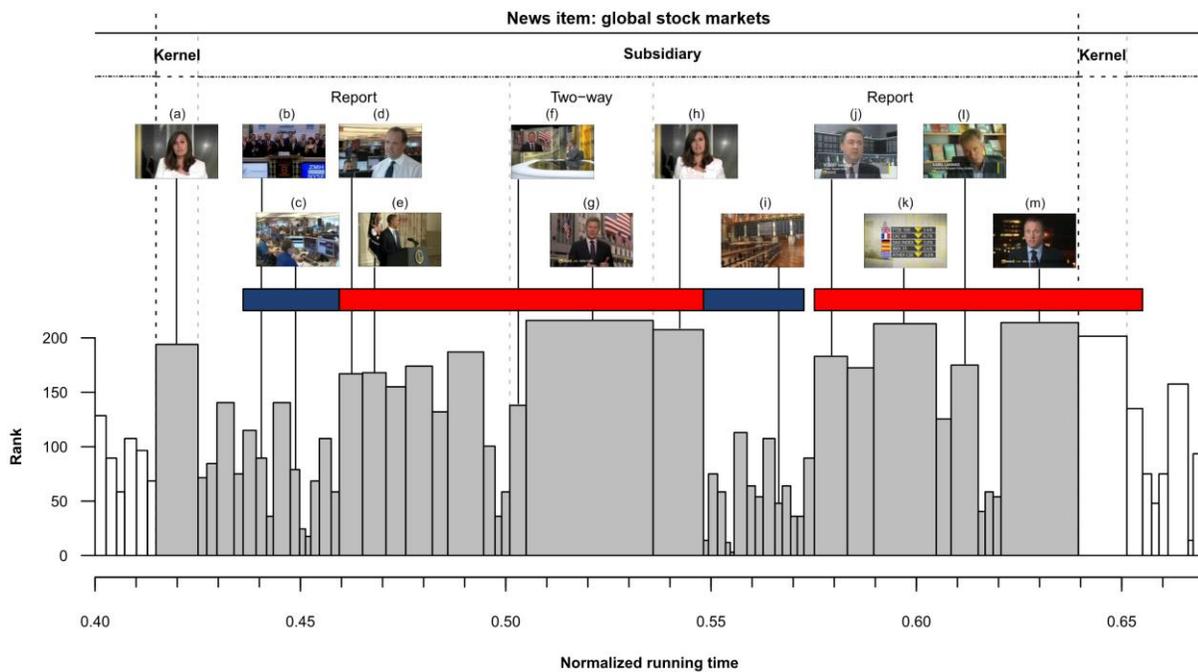


*Figure 5. The structure of a news item from the 2200 ITV 1 news bulletin broadcast on August 8, 2011. The red and blue bars correspond to the color-coded significant clusters for this bulletin in Figure 1.*

## Conclusion

This article analyzed the distribution and time series of shot lengths in ITV news bulletins. The bulletins in this sample follow a strict discourse structure (though individual elements may be missing from some bulletins) that remains constant even when the content of a bulletin is atypically dominated by a single subject. This suggests that news content is produced in such a way as to meet the constraints of

the discourse structure rather than vice versa. The statistical analysis reveals (1) the distribution of shot lengths in the bulletins show little variation, and there is no evidence that day or time of broadcast are important factors in shaping form; (2) there is no overall formal structure to the bulletins, with no trends, cycles, or clusters occurring at common points; but (3) clusters of longer and shorter shots are associated with a range of different structural elements, and the formal structure of a news bulletin and of individual news items depends on which discourse elements are included in a bulletin and the order in which they occur.

The existing body of research on editing in television news programs examines bulletins on U.S. television networks, whereas this article has analyzed bulletins broadcast in the United Kingdom. Some significant differences between the findings presented here and those of earlier studies are evident. There is no evidence of the opposition between "continuity-realist" and "synthetic-montage" editing identified by Schaefer and Martinez (2009) in the ITV bulletins discussed above; both types of editing are present in each bulletin—and often within a single item, depending on the presence or absence of individual discourse elements. Schaefer and Martinez did not examine the relationship between the discourse and formal structures, and by not looking at editing patterns at the level of the individual news item it may not be possible to accurately distinguish between the ways in which different editing styles are used in television news. Similarly, there is no evidence on the opposition between the use of continuity editing for narrative presentation and montage editing for dramatic presentation described by Henderson (2007). It is unknown whether this is because of a fundamental difference between the discourse and formal structures of UK and U.S. television bulletins, because no comparative studies have been undertaken.

It is clear that the discourse structure of ITV news bulletins dominates the way in which information is presented to viewers so that the news is made to fit the structure of the preexisting structure of the bulletin. Different elements, such as the main item and the "And finally . . .' item, focusing on a single event (such as the London riots) present different perspectives according to the function they serve within the overall discourse structure. In light of this result, there is little prospect that news producers will consider suggestions such as those by Lang, Potter, and Grabe (2003) for developing viewers' attention and memory by varying editing in relation to content, because it is not content that determines how news is presented. If our goal is to understand how news producers organize the material at their disposal and how news viewers make sense of the information presented to them, then it is necessary to understand both the discourse structure and formal structure of television news.

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