DON'T LET THE FACTS SPOIL THE STORY
Foregrounding in news genres versus scientific rigour

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Abstract – News producers habitually make use of the technique of "foregrounding", that is, deploying structures and resources that make specific elements in the text more or less prominent. This is closely linked to the media's overriding need to communicate one clear narrative, which is bolstered by a variety of foregrounding strategies that operate both textually and multimodally. This chapter tracks the discursive processes through which a health-related research paper emphasising the benefits of a non-meat diet was transformed, through the cumulation of different foregrounding processes, into a media story about the disadvantages of a vegetarian diet. Some practices that contribute to the generation of bias are discussed, with a particular emphasis on combined multimodal effects.

Keywords: Health reporting; framing; foregrounding; headlines; multimodality.

1. Introduction

Media reporting of scientific research has been under scrutiny for some years now, after several high-profile cases in which the diffusion of misleading information was found to pose a risk to public health. It is generally thought, for example, that the UK media gave excessive coverage to anti-MMR vaccine campaigners, leading to a sharp drop in vaccination rates and a rise in serious childhood diseases (Macintyre, Leask 2008). Commenting on the role of the media in this affair, Speers and Lewis (2005, p. 171) concluded that "the media's critical scrutiny of those supporting MMR was not matched by a rigorous examination of the case against it". However, the roots of the problem actually seem to lie even deeper: the basic issue seems to be linked not so much to a failure to exert critical judgement, as to the media's intrinsic tendency to exploit and even exacerbate controversy. In Goodman's words (2007, p. 222), "some things are just too attractive to the media", and the kind of claims being made by the anti-vaccine campaigners matched neatly with the media's essential need to find a strong "story".

But how exactly can we account for the fact that even though the scientific community was almost unanimous in supporting vaccination, the public seemed to be under the impression that "medical scientists were split

down the middle over the vaccine's safety" (Dobson 2003, p. 1107)? This particular effect can be attributed not only to the need to sensationalise in general, but specifically to the media's predilection for using the "controversy" genre. In situations where a controversy is present, the habitual media practice is to give equal weight to both sides of the story - supposedly in the name of objectivity, but also to attract public interest. As Lewis and Boyce (2003, p. 914) put it, "this 'balancing act' is a time-honoured convention of journalistic good practice. The impression created by this balancing is that of two conflicting bodies of evidence. What the coverage generally failed to convey was the fact that evidence as a whole was not finely balanced, as most of it clearly indicates that MMR is safe." In other words, this particular media genre and practice - itself perhaps neutral or even positive - introduced a particular bias into the media messages on this subject, putting empirically established facts on the same level as unfounded claims. These distorted messages then had harmful effects as they filtered out into the wider society.

In this paper, I investigate another set of genre conventions/media practices commonly used in reporting research results from the field of biomedicine and nutrition, which also have the potential to introduce a systemic bias into media science reporting. These relate to news producers' habitual technique of "foregrounding" (Gee 1999, p. 79), that is, the use of structures and resources that make specific elements in the text "more or less prominent" (Khalil 2005, p. 3). In this context, this is also bound up with the news media's overriding need to communicate one clear "story", that is, one argumentative line, which is bolstered by a variety of foregrounding strategies that operate both textually and multimodally. To analyse this, I take the example of a research paper published in September 2019, about an 18-year study in which a vegetarian diet was found to be associated with a lower risk of heart disease but a slightly higher incidence of stroke. Although the original press release strongly emphasised the benefits of a non-meat diet, since the population incidence of stroke is overall much higher than that of heart disease, the news reports on the same research in six national news sources (BBC, Independent, Times, Sun, Mail, Telegraph) all transmitted the opposite message, stressing the dangers of a vegetarian diet, with only two newspapers (Guardian and Mirror) maintaining a more balanced position. In their contents, all the articles were framed as reports on vegetarianism and the risk of stroke, although the balance of associated risks or benefits varied somewhat.

In an attempt to account for this phenomenon, I examine the contribution of the different textual and multimodal foregrounding strategies found in online news articles, and suggest ways in which such foregrounding may influence reader perceptions.

2. Multimodal mechanisms of foregrounding

Science news is a subset of news reporting in general, and news from the field of biomedicine and nutrition is generally shaped by the genre conventions/media practices found in all news reporting. However, it also has certain specific features. On the one hand, all news reporting avoids complexity, as journalists tend to foreground one clear "story", that is, one argumentative line, which is bolstered by a variety of foregrounding strategies that operate both textually and multimodally. On the other hand, certain conventions of media reporting on biomedicine and nutrition also play a specific role: to present complex information in a reader-friendly way, journalists often overstate the case, and this effect is more pronounced in the more downmarket publications (Breeze 2015).

The present study examines the contribution of the different textual and multimodal foregrounding strategies to this effect, paying special attention to the use of the "slots" provided by the news genres which "automatically bestow prominence on any information occupying those slots" (Huckin 1997, p. 82). These include textual features of the genres: headlines and subheadings, the reverse pyramid structure of news, sentence-level foregrounding, particularly topicalisation, and the presence of inserts. They also encompass para-textual/multimodal aspects such as typographic highlighting, images, and hypertext links. The different foregrounding strategies together create a "slant" which is likely to influence reader perceptions. In what follows, I will explain the different features of the online news genre and, more specifically, the biomedicine/nutrition news genre, and suggest how these may contribute to the foregrounding of specific aspects.

From their beginnings, newspaper texts have been multimodal, and conventional features of the genre, such as headlines, subheadings, different fonts, images, captions, layout, etc., have long played important an important role in the way they communicate their messages. In online media, to these traditional features we have to add a further range of meaning-making resources that may appear in association with a news story: these include hyperlinks to related stories, or to background information, inserts, discussion boards, comments boxes, advertisements, and particularly colour photographs and images with a very prominent visual impact. In this scenario, it is clear that the text itself engages a smaller portion of the reader's attention, while headlines and images tend to have prominence. Moreover, online media are particularly likely to generate cumulative effects resulting from the juxtaposition of different modes or the overshadowing of one by another. Like other multimodal texts, these orchestrate specific effects by operating on various semiotic levels at the same time, often in a coordinated way, but

sometimes in ways that are contradictory or confusing. This is important for our present purpose, and requires further explanation.

Theories of multimodality generally posit that the different semiotic systems used in a multimodal text are carefully modulated to create specific effects. The most common assumption made about multimodal texts is a common-sense correlate of relevance theory (Sperber, Wilson 1995) which can be expressed in the view that "everything is there for a reason", or alternatively, that "multimodal conjunctive relations" (Bateman 2014, p. 208) are established in the multimodal text, in such a way that the different modes are intended to combine to generate a particular effect. This can be seen most clearly in the assumptions made about the relationship between verbal and visual aspects of the text, which are generally held to be linked in a systematic manner: 1) the text and image may present relations of similarity, contrast or complementarity; and 2) the text and image may be related in terms of illustration (the image makes the text more specific) or anchorage (the text makes the image more specific) (van Leeuwen 2005, p. 230). However, when we make assumptions about this relationship, we should take into account the different properties of text and image: as Stöckl (2004, 2010) has shown, we should not fall into the trap of placing them on the same level, as though an image were a visualised text, or an article a textualised image. In Stöckl's words (2010, pp. 48-49), images are dense in meaning and have immediate cognitive and relational effects, but are semantically rather imprecise and open-ended. For example, a photograph may spark a strong negative reaction or trigger a good feeling, but it is unlikely to prompt extensive analysis. By contrast, texts are slow to digest and may require abstract thinking, but their logical linearity and clear space-time orientation give them high definition and make them capable of conveying much more explicit information in a univocal manner.

In the context of online news, it is also important to give some consideration to the obvious but often ignored point that not all text is the same. First, there is the obvious distinction between text and headlines. As Breeze (2014, p. 307) has explained in some detail, headlines can be seen as standing somewhere between text and image in terms of reader impact and semiotic role. Like images, they are eye-catching and make an instantaneous impact, and may prioritise emotional impact over ideational content. Like text, they are made up of words, which means that they are at least in one sense more explicit; but unlike text, they are often curiously allusive, ambiguous or polysemous, suggesting a broad area of relevance rather than communicating a specific proposition. Photographs, on the other hand, come with a high truth-value. Folk wisdom tells us that "the camera cannot lie", and when we combine their high truth value with their visual impact, we are clearly looking at an aspect of the multimodal mix that has the potential to

dominate and overshadow all the others. As Messaris and Abraham (2001, p. 217) point out, photographs come "with an implicit guarantee of being closer to the truth than other forms of communication". As Breeze (2014, p. 316) notes, photographs also "tend to diminish the likelihood that viewers will question a particular vision of the events, since it is more difficult to question what one can see than to doubt a proposition". The role of images in the ideological framing process is generally that of narrowing down the scope for possible interpretations and nudging the reader towards a particular view of the text and events that is consistent with the photograph.

Although headlines and images are undoubtedly the most salient aspects of the online news article, the question also arises concerning the role of other textual elements that are given a special treatment, such as subheadings, or pull quotes (key phrases lifted from the text and used as a graphic element in page design to break up the page, with a different font or colour, sometimes in the margin, in an insert box, or cutting across columns). These can take on the quality of "detached utterances" that may serve a foregrounding – or indeed an ironising – function (Maingueneau 2016). They may or may not be verbatim quotations from the text (paraphrases or abbreviated versions are often found), and they are typically placed fairly close to the actual text cited.

Finally, we should also bear in mind that the evaluative impact of the whole ensemble (headline, text, inserts, image, etc.) will vary according to the way the different elements are grouped together and to the relative salience of each one in the specific case at hand (Kress, van Leeuwen 1998, p. 200). Although in principle this might be open to considerable variation, in fact, as Huckin (1997, p. 82) points out, "Textual prominence sometimes derives from the use of genres, as certain genres will sometimes have 'slots' that automatically bestow prominence on any information occupying those slots. For example, the top-down orientation of news reports decrees that sentences occurring early in the report will be foregrounded while those occurring later will be backgrounded." Thus the genre itself actually accords particular importance to some aspects over others: headlines are more important than text, first lines of text more important than last lines of text, and so on. Within this, however, certain aspects, such as the image, have a more indeterminate status. As we noted above, photographs exercise visual dominance over the page as a whole, probably making a major contribution to the reader's initial perception of "what the story is all about". However, their contribution beyond this is more disputable. In the days of print journalism when photographs were relatively rare, their salience in the text was greater, but in online formats, photographs have lost their novelty value. The web design may now contain a slot for an image simply in order to add visual interest to the page. Although in the online newspaper genre, the expectation of relevance tells us that there should be some relationship

between the image and the text, the nature of this relationship is not clear. It is understood that this relation is not one of literal referentiality, or even of illustration or explanation, as might be the case in the school textbooks analysed by Martin and Rose (2008). For example, the vegetables in the photograph accompanying an article on diet are not the actual vegetables being referred to in the text, nor do they provide any particular elucidation (they do not elaborate on the text, in that they are not selected in a specific way, as the most healthy vegetables, for example), and they are not necessary for educational purposes (in the way that textbooks for children, for example, might include pictures of vegetables in order to prompt recall, help children expand their vocabulary, or help clarify categories, for example). The main purpose of the photograph from the production perspective, one suspects, is to lighten the page and give colour. However, even though this may be unintentional, by its very nature it also has the collateral effect of anchoring the story as a story about vegetables (rather than as a story about meat). For this reason, the photograph chosen to accompany a news article may well influence the interpretation that readers make of the text, tipping the balance between one way of framing the story and another (Breeze 2013).

In all this, the relations between the different elements are subject to variation, and the relative impact of headline, image, inserts, text, etc. may differ. In some cases, the headline may dominate most readers' understanding of the image, say, while in others, the image may help to disambiguate readers' overview of the text. Thus although Barthes (1977, p. 39) concluded that text generally "anchors" the implicit meaning of images to help readers draw the appropriate inferences from the "floating chain" of possible concepts that might emanate from the image, this principle would seem to apply more strictly to carefully devised media products, such as advertisements or textbooks. This principle is less applicable to artefacts such as online newspaper pages, which are produced under intense time pressure by a team of professionals from different areas.

Finally, it is important to devote a few words to the sub-genre of news about biomedicine and nutrition. Previous research has shown specific features that are common in such reports, such as special use of "expert" statements, erosion of hedging, and an increase in emotion-markers and boosting devices (Breeze, 2015). These aspects also need to be borne in mind in this analysis, as they may well also contribute to the foregrounding effects in these texts.

3. Texts and method

The original research that provided the starting point for this study was an institutional press release: "Vegetarian and pescetarian diets linked to lower

risk of coronary heart disease, but vegetarians may have higher risk of stroke than meat eaters", published by the Nuffield Department of Population Health, University of Oxford, on 5 September 2019. This was selected on the grounds that it addressed the issue of health and nutrition, was recent, and received reasonable media coverage.

In order to obtain an overview of the media coverage, I then searched in Nexis Uni for specific days from 4-30 September 2019, using the name of the researcher/research group/journal and the term "diet". This search yielded 48 entries, 8 of which were not in English. The articles identified were classified according to date and the main frame(s) applied in the headlines. After this, the original press release and the eight articles published in major UK national news media were selected for in-depth quantitative and qualitative study, centring on: lexical content, framing of headlines, images and captions, subheadings and first line of text, representation of experts, and hedging/boosting devices.

4. Results

In order to compare the results from the broad sample of 40 articles and the focused sample of 8 articles, it is important to understand the framing of the initial press release. In what follows, I present a brief overview of the distinctive features of the press release in question, followed by my analysis of the large and focused samples.

4.1. Press release: multimodal analysis

Press releases are an interesting genre in their own right. One expert defined their communicative purpose as "preformulating the news" (Jacobs 1999), that is, packaging information in such a way that it can easily be taken up by the news media. The underlying purpose of this, however, is not so much informative as promotional, and the hybrid nature of the press release genre has formed the subject of various classic studies (Catenaccio 2008). Within the different types of press release, institutional releases about scientific topics have rarely received critical attention (Breeze 2015). Science press releases are generally intended to attract attention through the intrinsic interest/importance/potential of the research reported, and thereby to boost the reputation and visibility of the institution that produced the study. Like other press releases, they thus combine factual information with some promotional strategies that will highlight the importance of the research, its public relevance, and the qualities of the research team. In what follows, I will briefly describe the main features of the press release in this case.

The original press release published by the Nuffield Department of Population Health, University of Oxford, on 5 September 2019 had the headline:

> Vegetarian and pescetarian diets linked to lower risk of coronary heart disease.

This headline places "vegetarian and pescetarian diets" in theme position, thus establishing that this is a story about vegetarianism. The first proposition in the headline, namely that such diets are "linked to lower risk of coronary heart disease", actually conveys positive information about vegetarianism. The subheading on a separate line sends a less positive message:

> But vegetarians may have higher risk of stroke than meat eaters.

This negative message ("may have higher risk of stroke") is hedged ("may") and comes in second place. This framing is maintained in the first paragraph of the text (advantage for vegetarians is foregrounded, while disadvantage for vegetarians is placed in secondary position):

> Vegetarian (including vegan) and pescetarian diets may be linked to a lower risk of coronary heart disease, or CHD for short, than diets that include meat, suggest the findings of a large UK study published in The BMJ today. But vegetarians and vegans had a higher risk of stroke than meat eaters, particularly haemorrhagic stroke (when blood from an artery starts bleeding into the brain), which the researchers suggest may reflect low blood levels of total cholesterol or a low intake of certain vitamins.

The press release is presented soberly. The only visual information is a straightforward bar chart that shows a clear advantage for vegetarians: although vegetarians are more likely to suffer a stroke than meat eaters, meat eaters are more likely to have coronary heart disease than vegetarians. Because heart disease is much more common than stroke, the advantage for vegetarians is clearly illustrated: vegetarians had 10 fewer cases of heart disease per 1000/population than meat eaters, and only 3 more cases of stroke.

Importantly, the press release also makes use of hedging in its conclusions, and contains a disclaimer: "this is an observational study, and as such, can't establish cause". Thus the three prominent modes in the press release (headline, text and image) all point in the same direction: the principal frame available to the reader from the press release is that a vegetarian diet is beneficial for health.

4.2. Headlines across the whole sample

The 40 relevant articles identified from Nexis Uni were analysed in terms of

the presence of the following frames in the headline: "a vegetarian diet is good for health", "a vegetarian diet is bad for health", or "a vegetarian diet has positive and negative aspects". The following examples illustrate each of these frames:

Examples of headlines that frame the story as "a vegetarian diet is good for health":

> Vegetarian and pescetarian diets linked to lower risk of coronary heart disease (Newstex Blog, 4 September 2019)
> Vegetarian diets lower risk of heart disease (MSN South Africa, 6 September 2019)

Examples of headlines that frame the story as "a vegetarian diet is bad for health":

> Vegetarian diet dangers: Are vegetarians more at risk of having a stroke? (Newstex Blog, 8 September 2019)
> Stroke: This popular diet may raise your risk of the deadly condition by 20 percent (Express Online, 5 September 2019).

Examples of headlines framing the story as "a vegetarian diet has positive and negative aspects":

> Why a vegan or vegetarian diet may lower heart disease but raise stroke risk (News Bites, 11 September 2019)
> Vegetarians have greater risk of stroke, meat eaters have greater risk of heart disease (Newstex Blogs, 5 September 2019)

Each article was classified according to date and frame, and the results are displayed in Graph 1, which clearly shows how the frame "a vegetarian diet is good for health" was in the minority from the outset, and disappeared after the first two days, while the frame "a vegetarian diet is bad for health" dominated overall, and persisted over time.
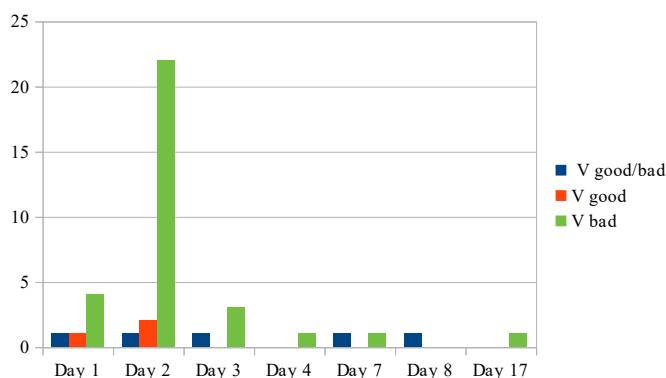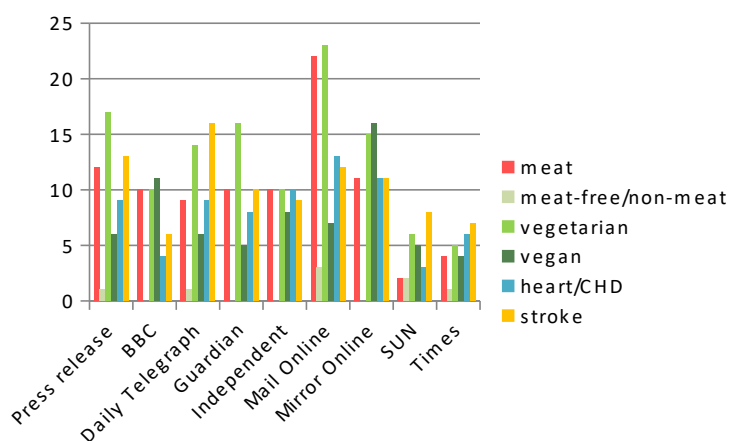
Graph 1
Framing in headlines over the first three weeks.

4.3. Detailed analysis of eight UK news sources

4.3.1. Total lexical content

The number of times a particular phenomenon is mentioned in a text is a good index of what that text is about, and ultimately in this case, of the framing that shapes the story. For example, an article such as that found in the Daily Telegraph, which mentions meat eating nine times, but refers to a non-meat diet once, a vegetarian diet 14 times and a vegan diet six times, is likely to be focusing on the pros and cons of adopting a vegetarian diet. Graph 2 quantifies the most prominent lexical items associated with the different frames, and the number of times they occurred in the press release and the eight articles.

Graph 2.
Frame-associated lexical items: raw frequency in each text.

Graph 2 shows clearly that the lemmas "vegetarian" and "vegan" and the related compounds "meat-free" and "non-meat" (together, all the green bars)

dominated the discussion of this issue in all the articles. Added together, they outnumbered the mentions of "meat" (red bar) in all cases. Similarly, "stroke" was mentioned more frequently than all the combinations referring to heart disease ("CHD", "heart disease", "heart problems", etc.) in five of the news sources, with a roughly equal number of mentions in three (Mail Online, Mirror Online and Independent).

At the same time, we can note that the pattern emerging in the media articles (more weight being placed on vegetarianism and stroke than on meat-eating and heart disease) echoes rather faithfully the number of mentions given to these aspects in the original press release (also shown in Graph 2). That is to say, although the original press release frames the story in such a way as to point out the advantages of the vegetarian diet, in quantitative terms it uses the items "stroke" and "vegetarian"/"vegan" more than "heart" and "meat", a pattern which is reflected in the media articles. The main reason for the prevalence of these items seems to be that the negative results concerning the vegetarian diet are more surprising, and require more explanation, than the positive results. However, the fact that this aspect receives more discussion may well have the effect of drawing readers' attention more to this facet of the research.

4.3.2. Multimodal analysis

The eight articles selected for in-depth analysis were all published on 4 and 5 September 2019. They all contained images, and some had substantial paratextual material.

BBC	Vegans and vegetarians may have higher stroke risk
Daily Telegraph	Vegetarians and vegans have a higher risk of stroke than those who eat meat, study finds
Guardian	Being vegetarian 'lowers heart disease risk but increases chance of stroke'
Independent	Vegan and vegetarian diets linked to increased risk of stroke, study finds
Mail Online	Vegetarians have a 20% higher risk of suffering a stroke than meat eaters 'because they miss out on key vitamins'
Mirror Online	Vegans 'have less chance of heart disease but are at greater risk of stroke'
Sun	OH NUTS Vegetarians and vegans are 20 per cent more likely to suffer a stroke, study finds
Times	Vegetarian diet 'raises stroke risk by fifth'

Table 1
Headlines of articles in the eight sources.

As Table 1 shows, all the headlines place vegetarians/vegans/vegetarianism in theme position, and six of them focus exclusively on the raised risk of

stroke. The two exceptions (Guardian and Mirror Online) foreground the positive aspect (lower risk of heart disease), and place the risk of stroke in second position. The Sun's headline is preceded by a playful comment in full capitals ("OH NUTS", a colloquial phrase meaning something like "Oh dear"), which draws attention to the information about the vegetarian diet: in the UK it is popularly supposed that vegetarians mainly live on nuts, and the prominent image of hands offering nuts that appears after the first line of text serves to reinforce this message as well as providing a visual referent to complement the pun.

Table 2 shows the images and captions found with each of the eight articles.

BBC	Fruit, vegetables, pulses and nuts. (No caption) Video on vegan junk food.
Daily Telegraph	Girl eating pasta with vegetables. Caption: The study, which tracked almost 50,000 Britons for 18 years, found vegetarians and vegans had a 20 per cent higher risk of stroke than those who eat meat.
Guardian	Woman choosing vegetables in supermarket. Caption: Despite the differences in the study, dietitians say everyone could benefit from eating more plants.
Independent	Video of women with vegetables in kitchen, man choosing salad in supermarket. Picture gallery of celebrity vegans. Caption: Celebrity vegans from Beyoncé to Natalie Portman. Vegan burger. Caption: Vegan takeaway orders in UK increase by 388% in two years.
Mail Online	Fruit and vegetables on plates, with four people's hands taking them. Caption: Vegan and vegetarian diets are linked to a lower risk of heart disease but may increase the risk of stroke, experts say.
Mirror Online	Woman eating salad. Caption: The study, published in the BMJ, included data for 48,188 people. Textbook image showing stroke in brain. Caption: The study found 20% higher rates of stroke in vegetarians and vegans than in meat eaters. Woman holding and eating vegetables. Caption: Researchers suggested low blood levels of total cholesterol among vegetarians and vegans may play a role.
Sun	Hands holding nuts, forming a heart shape. Caption: Vegetarians are 20 per cent more likely to suffer a stroke, a study found
Times	Woman handling vegetables on market stall. Caption: Vegetarians and vegans were more likely to suffer from a haemorrhagic stroke, according to research.

Table 2
Images and captions accompanying the articles.

As far as images are concerned, none of the articles reproduces the graph in the press release, and all the articles make original contributions which tend

to exert further framing effects. One of the articles includes a short video (Independent) which summarises the main points of the article. Another includes a link to a video on a topic that is only tangentially related to the topic of the article (BBC, which provides a video on "vegan junk food"). All of the images here are colourful, with high modality indicating a considerable degree of truthfulness and realism (Kress, van Leeuwen 2006, p. 158), and high indexicality (Bateman 2014, p. 138). Following Kress and van Leeuwen's principle that "any image must either be a 'demand' or an 'offer'" (2006, p. 153), we find that the images here almost all clearly belong to the category of "offer": in some cases, the "offer" is quite literal, in that we see disembodied hands holding out the vegetables/fruit/dish to us as though they were inviting us to taste them. In other cases, the photograph is taken from the point of view of the person buying, preparing or eating food (we may see his/her back or arms).

There is only one "medium-close" shot at "social distance", with clear "demand" contact, namely the third image in the Mirror Online: an attractive, sporty-looking woman is eyeing the viewer with a smile, while apparently starting to bite into a tomato, and she is holding a dish containing colourful lettuces, peppers, carrots and tomatoes towards the viewer. This positive image of vegetables and their eaters seems make a greater demand on the reader than the "offer" photographs that predominate in this sample, inviting the reader to partake of a vegetarian diet. However, it is curious that the Mirror Online also offers the only educational image, namely a computer-generated image of the upper part of a skeleton containing the brain, in which a large black spot inside a red area represents a stroke. This didactic image is also an exception in another way, namely in the way that the relationship between the text and image can be construed. As Martinec and Salway (2005, p. 352) explain: "When the level of generality of the image and the text is different, either the image or the text can be more general", and in almost all the cases analysed here, as indeed in most newspaper text-image ensembles, the image is more general than the text Martinec and Salway, 2005, p. 360). The Mirror Online illustration of stroke is an exception to this, because the relationship is of extension (the image adds new information that the text does not supply, as is often the case in textbooks).

At this point, we should perhaps consider whether the images here are not simply decorative or, in some rather trivial sense, complementary (Martinec, Salway 2005, p. 361): the "entertainment aspect of some of the image–text combinations is simply due to what seems to be an enlivening part played by images in a syntagm that in other products would be fully realized by language". In general, in news genres, photographs are essentially subordinate (Martinec, Salway 2005, p. 368), adding colour and affect, rather than contributing to propositional meanings. However, this is precisely where their framing effect gathers strength. In these articles, by drawing our

attention to the topic of vegetarian diets, they are likely to focus the reader's mind on the idea that this is an article about eating vegetables. This is somewhat paradoxical. On the one hand, in terms of informational content, the image clearly has subordinate status to the text: in almost all cases it essentially contains no information that is not in the text, there is hardly any reference to the image in the text itself, and it could even be imagined to be purely decorative (Martinec, Salway 2005, p. 351). On the other, however, in terms purely of attention, it enjoys high status: along with the headline, it exerts an initial framing effect – together, these two aspects probably prime readers to expect an article about vegetarianism and its pros and cons.

Returning to the question of informational content, we might suppose that the caption could also play a part in framing reader interpretation. Previous researchers (Martinec, Salway 2005, p. 351) have followed Halliday's suggestion that tense is deictic (1994) to suggest that use of present tense in the caption points to the image, thus subordinating the text to the image, while past tense points away from the image and suggests that the image merely illustrates the text. In this case, as Table 2 illustrates, of the eleven captions found, seven were in the past, one had no verb, and three were in the present tense. Of these three, two were phrased as "experts say"/"dieticians say", which seem to point loosely to the photograph while also boosting the message through expert attribution.

Six of the eight articles contained subheadings that contributed towards the overall reader experience.

BBC	People who eat vegan and vegetarian diets have a lower risk of heart disease and a higher risk of stroke, a major study suggests
Daily Telegraph	None
Guardian	Findings of major UK study have mixed results for those giving up eating meat
Independent	Researchers say lower levels of vitamins could be the cause
Mail Online	• Researchers at Oxford University tracked nearly 50,000 people for 18 years • They believe low intake of the vitamins in meat may cause the additional risk • This is equivalent to three more cases of stroke per 1,000 people over 10 years
Mirror Online	Researchers from the University of Oxford have revealed that while vegan and vegetarian diets reduce your risk of heart disease, they may increase your risk of stroke
Sun	VEGGIES and vegans are 20 per cent more likely to suffer a stroke, a study found.
Times	None

Table 3
Subheadings in bold.

Although in principle the subheadings could be used to qualify the information from the headline and present the advantages of a vegetarian diet, in fact, this is not the case. As Table 3 shows, the newspapers that presented both positive and negative aspects in the headline (Guardian and Mirror Online) referred to both aspects in the subheading, but only one of the other news sources (BBC) alluded to advantages as well as disadvantages. Three other newspapers (Independent, Mail Online and Sun) used the subheading to elaborate on the negative aspects, while two had no subheading.

It scarcely needs to be explained that the first line of news articles presents the main information (usually who, what, where, when) and serves to anchor these points in the reader's mind as "what the story is about" (Bell 1991). The hierarchy imposed by the reverse pyramid style of reporting violates the normal rules of narrative (Bell 1995) and has a powerful framing effect.

BBC	They had 10 fewer cases of heart disease and three more strokes per 1,000 people compared with the meat-eaters.
Daily Telegraph	Vegetarians have a higher risk of stroke than those who enjoy a good steak, a major study has found. The Oxford University research, published in the BMJ, suggests that a <u>meat-free diet</u> may cause lower blood levels of total cholesterol, and reduce intake of vitamins which protect against such attacks.
Guardian	Vegetarians have a lower risk of coronary heart disease than meat-eaters but a greater risk of having a stroke, researchers have found.
Independent	<u>Vegans</u> and <u>vegetarians</u> have a lower risk of <u>coronary heart disease</u> than meat-eaters but a greater risk of having a <u>stroke</u>, researchers have found.
Mail Online	Vegetarians have a higher risk of stroke than meat eaters, researchers have found.
Mirror Onlines	They're usually seen as healthier alternatives to meat-based diets, but a new study may put you off taking up a <u>vegan</u> or <u>vegetarian</u> diet.
Sun	Experts said a plant-based diet may be deficient in protective fats and vitamins.
Times	Sticking to a <u>vegetarian</u> or vegan diet could increase your risk of having a stroke by a fifth, although it could also be good for your heart, a study suggests.

Table 4
First line of text (Hypertext represented by underlining).

In the articles examined here, Table 4 shows that the first lines of text also contribute to framing this as a story about vegetarians. In seven of the eight articles, vegetarians or vegetarianism are placed in theme position, while only one (SUN) opts to frame this as a story about expert statements, rather than as a story about people who do not eat meat. This framing is reinforced in four cases (Independent, Mirror Online, Times, Daily Telegraph) by the fact that

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hypertext is present that draws readers' attention to what such a diet is, offering readers the opportunity to link through to an explanation of terms like "vegan", "vegetarian" and "meat-free diet", as well as to the two main health conditions mentioned ("stroke" and "coronary heart disease").

The use of "expert voices" is a regular feature of science and health reports, where it serves to reinforce the credibility of what is being stated (van Dijk 2015, p. 80). It has been noted in the context of vaccine controversies that the British media often use the descriptor "expert" rather loosely, and sometimes present "experts" on both sides of an important controversy as having equal weighting (Ren *et al.* 2014, p. 371). In particular, Speers and Lewis (2005) showed that the media seemed to exert a negative effect, subjecting mainstream opinion to particular scrutiny while according "expert" status to scientists whose ideas were not widely accepted.

	BMJ	Study/University	Lead researcher	Other expert
BBC	X	x	no	2
Daily Telegraph	X	x	x	2
Guardian	X	x	x	2
Independent	X	x	no	1
Mail Online	X	x	x	3
Mirror Online	X	x	no	1
Sun	No	x	x	1
Times	X	x	x	0

Table 5
Mention of information sources.

In the present case, Table 5 shows that the site of the study (Oxford University/Nuffield Department of Population Health) and either the journal (British Medical Journal) or the lead researcher (Dr. Tammy Tong) was mentioned in all the news sources. There was somewhat more variation in the alternative sources used to contrast the information from the study: the Mail Online actually quoted three other "expert" sources, two professors of public health and a dietician specialising in heart patients, while most sources only quoted one or two, with the focus mainly on dietary advice and the need for balanced food intake.

For hedging, I looked at modal verbs (may, might, could) and reporting verbs (suggest, seems to/appears to) used to modulate the main health claims in the text.
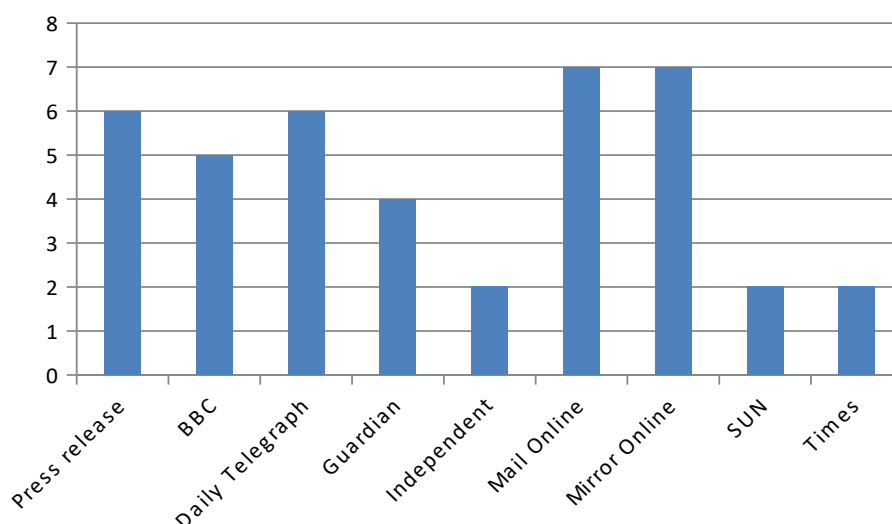
Graph 3
Number of times main claims are hedged in each text.

As Graph 3 illustrates, the main claims were hedged in the original press release and in most of the news sources. The finding that the Sun did not hedge was consistent with previous research on science reporting in downmarket newspapers (Breeze 2015); however, even though the Mail and Mirror can also be situated on the lower end of the newspaper spectrum, their reports were more carefully hedged in this case. The paucity of hedges in the Times can be explained by the shortness of the article, but the same does not hold for the Independent, which has a similar number of words to those from the other news sources, but adopts a categorical style throughout.

Just as important as the number of hedges in the text, however, is the relative foregrounding of hedged and non-hedged statements. The most extreme example of this is found in the Sun, where the headline declares boldly:

> OH NUTS Vegetarians and vegans are 20 per cent more likely to suffer a stroke, study finds.

Yet the article ends with a strangely hedged expert statement:

> And Cambridge University's Dr Stephen Burgess said: "This suggests taking up a vegetarian diet may not be universally beneficial for all health outcomes." (SUN)

Apart from the obvious example from the Sun, above, in which the capitalised phrase "OH NUTS" that precedes the headline already primes the reader to receive shocking news, boosting was extremely rare in these texts.

On the other hand, the journalists did make liberal use of different resources to convey numbers, and thereby, to indicate the relative risk of not

eating meat. All the articles included the size of the sample and the number of years over which they were followed. The largest variation was found in the description of the risk involved.

Press release	After taking account of potentially influential factors, such as medical history, smoking, use of dietary supplements and physical activity, pescetarians and vegetarians had a 13% and 22% <u>lower risk</u> of CHD than meat eaters, respectively. This is equal to 10 fewer cases of CHD in vegetarians than in meat eaters per 1000 people consuming these diets over 10 years. The difference may be at least partly due to lower BMI and lower rates of high blood pressure, high blood cholesterol and diabetes linked to these diets, say the authors. In contrast, vegetarians and vegans had a 20% <u>higher risk</u> of stroke than meat eaters, equivalent to three more cases of stroke per 1000 people over 10 years, mainly due to a higher rate of hemorrhagic stroke.
BBC	People who eat vegan and vegetarian diets have a <u>lower risk</u> of heart disease and a higher risk of stroke, a major study suggests. They had 10 <u>fewer</u> cases of heart disease and three <u>more</u> strokes per 1,000 people compared with the meat-eaters.
Daily Telegraph	The study, which tracked almost 50,000 Britons for 18 years, found vegetarians and vegans had a 20 per cent <u>higher risk</u> of stroke than those who eat meat.
Guardian	The results reveal that once factors including age, sex, smoking status and socioeconomic status were taken into account, fish eaters had a 13% <u>lower risk</u> of coronary heart disease than meat-eaters, while vegetarians had a 22% lower risk. Meanwhile, vegetarians had a 20% <u>higher risk</u> of having a stroke than meat-eaters.
Independent	After adjusting for factors that might influence the results, including age, sex, smoking status and socioeconomic status, researchers found that fish eaters had a 13 per cent <u>reduced risk</u> of heart disease than meat eaters, while vegetarians and vegans had a 22 per cent <u>lower risk</u>. Meanwhile, vegetarians had a 20 per cent <u>higher risk</u> of having a stroke than meat-eaters.
Mail Online	The academics found vegetarians and vegans had a 20 per cent <u>higher risk</u> of stroke than meat eaters.
Mirror Online	After adjusting for factors that might influence the results, researchers found that fish eaters had a 13% <u>reduced risk</u> of heart disease than meat eaters, while vegetarians and vegans had a 22% <u>lower risk</u>. The study found 20% <u>higher rates</u> of stroke in vegetarians and vegans than in meat eaters, equivalent to three more cases of stroke per 1,000 people over 10 years
Sun	VEGGIES and vegans are 20 per cent <u>more likely</u> to suffer a stroke
Times	Sticking to a vegetarian or vegan diet could <u>increase your risk</u> of having a stroke by a fifth, although it could also be <u>good</u> for your heart, a study suggests.

Table 6
Presentation of actual risk data.

As Table 6 shows, in the representation of actual risk, which appeared in different places in the text in each case, the risks associated with the vegetarian diet were foregrounded in four cases (Daily Telegraph, Mail Online, Sun, Times). In particular, the Sun places this information at the beginning of the text, and capitalises "VEGGIES", which draws attention both typographically and through the use of an informal word for vegetarians: the use of slang and informal language in general belongs to the tabloid newspaper's discursive strategy to build collusion with its readership, positioning itself alongside them by using what it presents as "their language" (Conboy 2002).

In the other four media sources, the benefits of the vegetarian diet were placed before the risks, and thus foregrounded in this section of the text. We may note, however, that in some cases, this blatantly contradicts the foregrounding in the text as a whole: thus, for example, the BBC's framing in this part of the text tells the opposite story from its own headline "Vegans and vegetarians may have higher stroke risk". This apparent inconsistency may be due to production factors (even if headlines are now often proposed by the journalist, it is often the subeditor who produces the final version after a cursory glance at the story before the article is launched on the web), or simply to time pressure.

5. Discussion

This study sheds light on what happens when news from the area of science is presented in the media, where a different epistemological regime prevails. The media's overwhelming need for a clear "story" results in information loss and distortion, and to a re-narration of the story that is shaped through the operation of various foregrounding devices. The complexity of the seemingly straightforward genre of online news lies in the way that several different foregrounding processes take place at the same time, sometimes acting in unison and sometimes generating conflicting messages. The question thus arises as to how foregrounding works, and which modes tend to dominate in the overall message that is conveyed. Although it is clear that reader response experiments would be needed to address this question in a broader sense (i.e. what do people notice?), the evidence from these examples can help us to trace the workings of the different modes and their probable combined effects.

In this particular case, almost all the modes transmit the message that the "story" is about the dangers of following a vegetarian diet, in blatant contradiction to the original study and the information supplied in the press release. This sheds light on how the systematic distortion of scientific information can come about: as we have seen in the present case, there seems

to be a tendency for framing effects to set in early in the life-cycle of the article and be all-pervasive. When we look at how this is realised textually, we see that the most prominent modes in the articles – most of the headlines and subheadings, the first line of text in most articles, and above all the accompanying images – all send the message that vegetarianism is the central topic. In particular, headlines and images, as the most visually prominent modes, tend to exert the strongest influence. As I have noted elsewhere (Breeze 2014), although we might imagine, with Barthes (1977) that the text "anchors" the images, making their meaning explicit by providing information about the study in question, this is not the whole story. If we are talking about importance, i.e. status, which is a vital aspect of foregrounding, it seems rather that the images anchor the text: colourful photographs are modally dominant, standing out from the dull black-and-white text, and can be "read" without effort from a distance. The images thus signal to the reader what the text is (supposedly) about. The only other aspect of the online news article that potentially has a similar immediate impact is the headline. When both modes (image and headline) send the same essential message, it is clear that the reader would have to persevere in his/her scrutiny of the text to work out that the message is something else. Moreover, within all this, it is indisputable that the different modes contribute in different ways, and the balance between them may sway the overall message conveyed. In the words of Kress and van Leeuwen (2006, p. 202), "[V]iewers of spatial composition are intuitively able to judge the 'weight' of the various elements of a composition, and the greater the weight of an element, the greater its salience". In the present case, that "weight" may not be part of a grand design, but rather a random production effect resulting from the relative size of photographs and headlines, for example. Yet this also shapes the final impact that the article as a whole will have on its consumers.

At the same time, a few words of caution need to be said about the notion of multimodal cohesion (Bateman 2014, p. 161), that is, the expectation that the text-plus-image should make sense as a whole. In the case of advertising, textbooks, and other highly-thought-out multimodal productions, this assumption is reasonable, and we can suppose that someone has thought carefully about the relations between the different modes, and their respective contributions to the meaning-making process. In online media, the actual production of the webpage may be determined by factors other than the sincere desire to be as informative and coherent as possible. Like all news, online news is generated in a hurry, and like other newspapers, an online newspaper is the result of collaboration between different teams (designers, photographers, writers, subeditors, webmasters). In this case, it is not so clear that a particular person is masterminding the operation, and the messages may indeed be incoherent or contradictory (i.e. headlines that do

not match well with the contents, or photos that set up an ironic contrast to the article). The evidence considered in the present article shows how some multimodal contradictions arise (presentation of the dangers of a vegetarian diet, adorned with appetising photographs of fruit and vegetables, for example), which frustrate the search for a consistent framing effect.

Finally, one emergent theme in this study is the need to address the relations between the different modes within news genres. As Bateman says (2014, p. 251), the interrelation and interaction of images in news is still an under-researched area, but we could also add the need to explore the interrelation of the different textual components. Both press releases and online news genres provide abundant material for studying this important aspect of media discourse.

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