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Text model in mass media discourse

Abstract. The paper presents the model of a journalistic text based on its thematic structure. It reveals the peculiarities of the text structure within the mass media discourse and determines the thematic development of a key event in the text, a perspective in which the authors of a journalistic article present their material. The example article “Japan’s Economy Shrank Sharply. Now Comes the Coronavirus” is taken from The New York Times and it touches upon the most notorious problem of the beginning 2020. Since the unity of the theme provides a global coherence of text and discourse as an overtext formation it is possible to perceive a text as a combination of several topics, the development of which is interconnected. The development of the main topic in the text is rarely linear, most often it is a combination of several subtopics, each of them develops according to its own scheme, and fancifully intertwined, they create a convex text space. The methodology of the investigation provides a fundamental for combination of both mathematical and linguistic methods. The nouns from the heading of the analysed mass media article are followed as key words throughout the text, their synonyms and a wider context are investigated and thus the thematic development of the article is identified. Therefore, the novelty of the approach is in this particular combination of methods. The thematic structure in the analysed article is represented here in the form of a braid where the main topics “Japan’s economy” and “coronavirus” with their subtopics “recession”, “storm”, “tax increase”, “tourism”, “outbreak” etc. are repeated and united with the subtopic “China”. Text modeling can help to find the pattern and pragmatic focus in the text and therefore in the way we think, we understand and spread our information. The investigation seems prospective because of the possibility it opens to further comparison of text models in different languages.

Keywords: text model; topic modeling; mass media discourse; methodology of mass media discourse analysis; medialogistics; journalistic text; English

Introduction

The modern mass media discourse is a peculiar construct that unites the most diverse elements: types of information, genres, language parameters, codes (modes), types of coherence, etc. Mass media discourse is analysed in particular as to define the difference between a mass media text and mass media discourse [1; 2]. A lot of authors also appeal to this subject as a way and a place for constructing language reality [3–8]. Some attention is laid on the methodology of discourse analysis [9–11], as well as different characteristics of mass media discourse [12–17]. One of the newest approaches is to analyse the types of coherence in mass media.

Researchers of media discourse investigate the structural and semantic properties of mass media texts as components of mass media discourse; their pragmatic orientation, as well as a cognitive aspects; multimodal elements and hypertextual links caused by the virtual existence of mass media discourse; formal parameters, such as the length of the text and keywords that make possible the computer processing of media texts, etc. The set of these characteristics is specific for each text, in addition, a number of parameters also determine the connection of media texts and other elements of media discourse with each other, providing unlimited possibilities for expanding the space of mass media discourse.

In various publications, a lot of characteristics of mass media discourse are found, but the coherence is recognized by all researchers as the most important one. Its basis is formed by semantic relations in the text. Semantic coherence starts at the level of a text and continues in the discourse. When dealing with a key event in the society, the constant references to the main subject in several publications of mass media discourse form a coherent chain of the same or similar nominations that reveal the connections between different elements within one discourse.

In this paper, the term “coherence” is interpreted generally, as a whole, the ability of media texts to detect not only lexico-grammatical local connection at the sentence level (cohesion), but also a more general, semantic, thematic, or global, connection (coherence, or integrity). In the case of electronic publications, this connection goes beyond the scope of individual texts, headings, or publications, and further tends to the endless space of the Internet.

The unity of the theme provides a global coherence of text and discourse as an overtext formation. The text is perceived as a combination of several topics, the development of which is interconnected [5]. The development of the main topic in the text is rarely linear, most often it is a combination of several subtopics, each of them develops according to its own scheme, and fancifully intertwined, they create a connected and coherent speech.

Markers for the thematic development of the text are nominations (persons, objects), in particular, pronouns, lexical repetitions, synonymic substitutions forming entire co-referential chains, as well as isotopes (words of one lexical-semantic field), etc. [18–21].

Modeling of a text structure is one of the most useful tools while investigating its topic development. Since a text, in particular a mass media text, possesses various thematic lines, it is possible and even necessary to determine the topic structure hidden in the text. This analysis contributes to the computerized text processing and dealing with large text data, especially in the situation when one event spreads over the Internet flooding us with content that may not refer to the main topic.

Topic modeling in mathematical linguistics is a way of building a model for a collection of documents that can help in determining to which topic each of the documents relates. The topic model possesses a number of terms that form each of the topics. Thematic models are applied for the following purposes:

- Information retrieval.
- Identification of trends in publications and news.
- Classification and categorization of documents, images, audio and video.
- Definition of popular topics in social networks.

The concept of topic in thematic modeling finds its equivalents depending on the scientific school: “hidden patterns”, “compact descriptions of meaning documents”, “probabilistic clusters of semantically related terms”, “a link between terms and others objects (documents, authors, organizations conferences, etc.) that establishes their hidden associative relationships”. The topic

modeling is based on the Bayes-formula where the distribution of words and topics depends on their density in a text. The algorithm for constructing a thematic model deals with the collection of documents and estimates how close each document refers to the topic [22].

Nevertheless, in mathematical linguistics they work with texts as mathematical patterns that sometimes does not reflect the real language in use. Therefore, this article is an attempt to present the thematic structure of a mass media text based on the true-life up-to-date example providing a fundamental for combination of both mathematical and linguistic methods.

Materials and methods

Moving on to the example of the multidimensional structure in a text we consider The New York Times article “Japan’s Economy Shrank Sharply. Now Comes the Coronavirus”. by Ben Dooley and Eimi Yamamitsu published at www.nytimes.com on 16 February 2020¹. The article amounts to 29 short paragraphs with 1217 words.

The article touches upon the most notorious problem of the beginning 2020 – coronavirus infection. This massive tragedy affected the whole world and demonstrated for all and everyone of us that we are joint and dependent on each other like never before. Thus, the investigation of text modeling can help to find the patterns in the text structure and therefore in the way we think, we understand and spread our information. I hope this paper will contribute to reveal the mechanism of information exchange in mass media discourse providing us with a better understanding of current situation.

The methodology includes an inductive semantic approach, the explicit content of the topics in the regarded article is investigated. The nouns from the heading are followed as key words throughout the text, their synonyms and a wider context are investigated and thus the thematic development of the article is identified. The theme (the information being discussed) is accomplished by the rheme (the new information) and their positioning in the text is defined by the word order of English language: the newest information tends to appear at the beginning of the phrase. The conclusion is driven based on the apparent topic development in the text as a part of mass media discourse. The observations are also provided with a visual image of the thematic structure, a model of the topic development in the analysed article.

Results

The example article describes the effects of the virus regarding the Japan’s economy that stands in a tight correlation with the Chinese one.

Overall, the structure of the topic development in the analyzed article can look like this:

- **Japan’s economy**
 - storms
 - tsunami
 - Typhoon Hagibis
 - tax increase
 - consumption tax

¹ See full text at <https://www.nytimes.com/2020/02/16/business/coronavirus-japan-economy.html>.

- recession
- tourism
 - Chinese visitors to Japan
- business/companies
 - Mr. Natori
 - Tomy
 - Sony
- **Coronavirus**
 - epidemic
 - outbreak
 - effects

As the references to the main topic the nouns and word combinations “Japan’s economy” and “coronavirus” are mentioned in the heading. These two topic are being consequently developed in the article starting with the lead where some details are given with the references “hits from storms”, “a tax increase”, “the world’s No. 3 economy”, “recession”, “outbreak”, “a toll” and “tourism”:

1. *After **hits from storms** and **a tax increase**, the world’s No. 3 economy could face **recession** as **the outbreak** takes a toll on **tourism**.* (lead)

In the first paragraph the main references are adduced together demonstrating authors’ intention to give some explanation on what is to come further in the article.

2. ***Japan’s economy** has already been staggered by **a devastating typhoon** and **a wallet-shutting tax increase**. Now, **the coronavirus** that has brought business in neighboring China to a virtual standstill threatens to knock **Japan** into **a full-blown recession**.*

We learn more about the topics mentioned in the heading and in the lead because the authors add to the thematic nouns some new details expressed with a noun and several adjectives. The characteristics given in adjectives – *devastating*, *wallet-shutting*, *full-blown* – without being the rheme itself constitute rhematic focus of the main topic and apart from this, supply the text with more figurative elements making it vivid for a reader. The rheme here is “*a virtual standstill*” and “*business in neighboring China*”. The topics of “Japan’s economy” and “coronavirus” get attention in the following paragraphs what lets the audience know even more specific details.

1. Japan’s economy

Beginning with Japan, the first key word from the heading, the authors mention it 20 times in the following context:

3. *That seems unlikely to happen soon. At least 400,000 travelers from China are expected to cancel trips through March, according to data from the **Japan Association of Travel Agents**.* (par. 11)

4. *By propping up domestic consumption as **Japan’s population** declines, visitors from China make an outsize contribution to the **country’s bottom line**.* (par. 26)

In the example 4 the synonym “*the country*” is used for Japan as the authors need no repetition in the same sentence. “*The country*” replaces Japan in some other occasions:

5. *The country has had the most confirmed cases outside China <...> (par. 6)*

6. *The country's consumption tax was raised to 10 percent from 8 percent in October <...> (par. 15)*

The synonym is also used in the paragraph 12:

7. *Officials have begun to express concern about the outbreak's effect on their country's fragile economy <...> (par. 12)*

A synonymic usage “*their country*” is applied instead of “*Japan*” together with its economy characterized as fragile. As it is usual for pronouns, a demonstrative one this time, we understand the reference from a wider context only:

8. *Officials have begun to express concern about the outbreak's effect on their country's fragile economy, which in recent quarters had defied gloomy projections and eked out modest growth <...>. (par. 12)*

As we read here, the pronoun-adjective-noun combination is surrounded by the phrases “*Japanese airlines*” and “*Japanese goods and services*” which make reference to Japan's economy, and additionally “*their*” refers to the noun “*officials*” which also means the officials of Japan.

In general, the noun “*Japan*” comes in sight more often in the text than the adjective. The adjective “*Japanese*” is used in several cases only:

9. *But then the coronavirus began its deadly spread in China, halting the lucrative flow of tourists from that country and further imperiling Japanese exports. (par. 3)*

10. *Japanese airlines have suspended flights as demand has plummeted. (par. 11)*

11. *Officials have begun to express concern about the outbreak's effect on their country's fragile economy, which in recent quarters had defied gloomy projections and eked out modest growth even as sales of Japanese goods and services abroad continued to decline. (par. 12)*

12. *Japanese manufacturers are major suppliers to Chinese companies, sending them everything from precision machine tools to components for smartphones and cars. (par. 17)*

The surrounding components “*exports*”, “*airlines*”, “*goods and services*”, “*manufacturers*” lay the focus of the story on the economic side, especially tourism. Also, this can be found in some other components with “*Japanese*”: *Japanese companies* (par. 18–19), *Japanese exports to China* (par. 18), *Japanese consumers* (par. 20). Later in the text they refer to business situation in Japan.

Besides, “*Japan's economy*” is mentioned in the number of cases:

13. *Japan's economy has already been staggered by a devastating typhoon and a wallet-shutting tax increase. (par. 1)*

14. *Japan said on Monday that its economy had shrunk at an annualized rate of 6.3 percent in the three months that ended in December, the worst contraction since mid-2014. (par. 2)*

15. *If Japan's economy – the world's third largest after the United States and China – shrinks again in the first quarter of 2020, the country will officially fall into recession for the first time since a brief dip in 2015. (par. 4)*

16. *But perhaps no businesses in Japan are feeling the effects of the epidemic as much as those dependent on tourism, which has grown significantly in importance to the Japanese economy in recent years. (par. 22)*

As it is clear from the examples, the reference to the full variant “*Japan's economy*” can be found mostly at the beginning of the articles (paragraphs 1, 2 and 4). On the contrary, at the end only

one more example can be seen in the paragraph 22. Altogether, the economy is mentioned 8 times. The focus of the main topic “*Japan’s economy*” builds a wider range of other subtopics connected with this economy, in particular storms, tax increase, recession, tourism and business. They are regarded separately below.

1.1 Storms and tax increase

These two topics were introduced together with several adjectives in the first paragraph (see ex. 2) where an additional characteristic was given to these processes: “*a devastating typhoon and a wallet-shutting tax increase*”. In the third paragraph the combination Typhoon Hagibis has a hyperlink to one more New York Times article on the disaster (“*Typhoon Hagibis Slams Into Japan After Landslides, Floods and a Quake*”) published earlier in 2019.

17. *Officials had been optimistic that **an easing of the effects of Typhoon Hagibis and the consumption tax increase** would return the country to growth as the new year began. (par. 3)*

Here for the first time in the article we see that it was a consumption tax that hit Japan few years ago. The main problems are given together as a part of the combination “*an easing of the effects*” that emphasizes not the storm and the tax increase themselves but their consequence as they are put in a weak position at the end of the word group where the main word remains “*an easing*”.

In the paragraph 9 we get more details on the storms:

18. *The last time things were this slow, Mr. Natori said, was in March 2011, after **an earthquake and tsunami** caused a nuclear meltdown, scaring tourists away from Japan for months. (par. 9)*

The storms are specified and their result “*a nuclear meltdown*” is mentioned.

Later in the text, the authors mention the disasters only in the paragraphs 14–17 to touch upon the financial side:

19. *<...> **an economic injection** that came as Japan tried to stave off recession after **the tax increase and the typhoon**. (par. 14)*

The tax is explained like this:

20. ***The country’s consumption tax** was raised to 10 percent from 8 percent in October, a move that officials said was necessary to support expanded public services as the population rapidly ages and pay down the national debt, the highest among developed nations. But it has also **depressed consumer spending**. (par. 15)*

The disasters are being introduced chronologically so as to show the logic of the crisis development:

21. *Days **after the tax increase** went into effect, **Typhoon Hagibis** slammed into Japan, battering its main island, causing enormous damage and further suppressing economic activity. (par. 16)*

22. *As Japan has recovered from **the storm**, its industrial output rose slightly in December. (par. 17)*

The time conjunctions “*after*” and “*as*” in the context put the happenings into right places and let the reader see how the problems developed one by one. The combination “*has ... depressed consumer spending*” (ex. 20) as well as the adverbial participial phrase “*causing enormous damage and further suppressing economic activity*” (ex. 21) both imply the bad impact on economy and refer

further to the economic recession. The participles “*depressed*” and “*suppressing*” with the same root “*press*” create a negative characteristic of economy in this period.

1.2 Recession

One of the focuses in Japan’s economy becomes the recession which is referred first in the lead and then in the first paragraph (see ex. 1 and 2) together with other topics mentioned in the text. Further, “recession” comes in sight in the paragraph 4:

23. *If Japan’s economy – the world’s third largest after the United States and China – shrinks again in the first quarter of 2020, the country will officially fall into **recession** for the first time since a brief dip in 2015. A **recession** is generally defined as two straight quarterly contractions. (par. 4)*

The authors put conditions for the recession and bring the context that creates contrast between the prior stability and followed crisis (*the world’s third largest after the United States and China – shrinks again in the first quarter of 2020, for the first time since a brief dip in 2015*). Also there is a short explanation to the reader on how a recession is understood in the context (*two straight quarterly contractions*).

In the paragraph 14 “*the recession*” is referred in the context of financial support approved to stabilize the economy after the tax increase and the typhoon as we saw in the example 19:

24. *That followed the government’s approval of a \$120 billion stimulus package late last year, an economic injection that came as Japan tried to stave off **recession** after the tax increase and the typhoon. (par. 14)*

In this sentence, the connection is established between the tax increase, the typhoon, the recession and the financial help needed for the country.

Therefore, the references of recession are not so often in the article where the main accent is laid on Japan’s economy. This may be regarded as a part of authors’ intention not to worsen the reader’s opinion on the situation.

1.3 Tourism

The tourism at that time is widespread because of the Lunar New Year Holiday, high season in Japan. It is mentioned twice in the text, for the second time with a hyperlink to the article “*Coronavirus Outbreak Tests World’s Dependence on China*”. As it is evident from the heading already, this new text has little connection to the Holiday itself. Among the references to tourism “*Chinese visitors to Japan*” are the most common:

25. *The Lunar New Year holiday is high season for **Chinese tourism to Japan**, but the small streets and alleys surrounding Mr. Natori’s business have been unusually quiet for weeks. The nearby Sensoji temple – famous for its enormous red lanterns and throngs of selfie-taking tourists – is nearly empty. (par. 8)*

The first mentioning of influences on the touristic branch is given in the paragraph 8 (see ex. 25) whilst the full development of this subtopic occurs only later in the paragraphs 22–27. The authors introduce their switch to the subtopic of tourism in the paragraph 22 like this:

26. *But perhaps no businesses in Japan are feeling the effects of the epidemic as much as those dependent on **tourism**, which has grown significantly in importance to the Japanese economy in recent years. The number of **visitors to Japan** has more than tripled over the last decade, reaching 31 million in 2018, according to government statistics. (par. 22)*

The next references are all connected with China:

27. *More than 30 percent of those visitors came from China – almost nine in 10 for vacation – making the country the largest source of tourists to Japan. (par. 23)*

28. *While visitors from South Korea and Taiwan – second and third in Japan’s tourism rankings – spend most of their money on sightseeing, **Chinese travelers** tend to shop. (par. 24)*

29. *Busloads of **Chinese bargain hunters** – leery of high taxes and knockoff products at home – descend on Tokyo’s upscale shopping districts to buy foreign and domestic goods in a flurry of consumption known in Japan as bakugai, or “explosive shopping”. (par. 25)*

30. *By propping up domestic consumption as Japan’s population declines, **visitors from China** make an outsize contribution to the country’s bottom line. (par. 26)*

31. *“If you look at consumption patterns of **Chinese visitors to Japan**, a lot of people are buying things like makeup”, said Keiji Kanda, a senior economist at the Daiwa Institute of Research, adding that “places like department stores and drugstores are likely to be heavily impacted”. (par. 27)*

The references “*Chinese visitors to Japan*” happen in each paragraph slightly differing in form: “*More than 30 percent of those visitors came from China*” (ex. 27), “*Chinese travelers*” (ex. 28), “*Chinese bargain hunters*” (ex. 29), “*visitors from China*” (ex. 30) and finally “*Chinese visitors to Japan*” (ex. 31). Such variety of synonymic replacement stands for the proof of frequency that is needed to mention Chinese tourists in the context.

1.4 Business / Companies

One of the key aspects of economy is the situation with business. That is why the authors of this article refer to different Japanese companies. They are in the focus in the paragraphs 19–21:

1. *The epidemic has also affected operations of **Japanese companies inside China**. In response to the virus, the Chinese authorities extended the Lunar New Year holiday, effectively shutting down manufacturing work for **many Japanese companies**. (par. 19)*

2. ***The toymaker Tomy** lowered its earnings estimates for the end of the financial year, which closes March 31, because of **a slowdown in production in China**. Japan’s national broadcaster, NHK, reported. **Nintendo** has said it will delay shipments of its Switch console to Japanese consumers as a result of the outbreak. (par. 20)*

3. *Addressing investors this month, **Hiroki Totoki, a top executive at Sony**, warned that the outbreak could have a “major impact on our supply chain, logistics and sales”, potentially erasing a projected increase in earnings growth. (par. 21)*

Japanese companies such as the toymaker Tomy, Nintendo, Sony are brought as examples of difficulties in business. Again, we see more references to China: “*Japanese companies inside China*” (ex. 16) and “*a slowdown in production in China*” (ex. 17).

But the most personal private example is introduced at the beginning of the article. It is Mr. Natori’s business. Starting with one particular example of Mr. Natori in the paragraph 7 the authors involve this character in the story:

4. *The effects can already be seen in places like **Shun Natori’s sweets shop** in what is normally one of Tokyo’s busiest tourist districts. (par. 7)*

Also, there is a quotation, one of the few added to the text, that illustrates the situation in small businesses:

5. *The last time things were this slow, **Mr. Natori said**, was in March 2011, after an earthquake and tsunami caused a nuclear meltdown, scaring tourists away from Japan for months. (par. 9)*

Further, the authors mention this protagonist in the final paragraphs and thus unite the beginning and the end:

6. *Some **hope**, though, could be around the corner. **Mr. Natori**, who owns the sweets shop near the Sensoji temple, said he was looking forward to the cherry blossom season, when tourism usually booms. (par. 28)*

7. *In anticipation of that, **he** plans to use the downtime to “think up a seasonal menu”. (par. 29)*

The references to Mr. Natori serve as an example of the economic situation. Such examples of real people and their normal lives are commonly used in the articles especially in reports where it is necessary to bring evidence to the words. Here, Mr. Natori's business becomes a kind of background to illustrate the poor conditions people are surviving now. The mentioning of hope (“*Some **hope**, though, could be around the corner*”), a little joke (“*...he plans to use the downtime to “think up a seasonal menu”*”) and a softening synonym “*downtime*” for recession in this context may show something positive to the readers to a greater degree because of their positioning quite at the end of the text in the two last paragraphs.

2. Coronavirus

2.1 Epidemic

The second main topic regarded in the text after being stated in the heading is “coronavirus”. Despite the fact that it is the most discussed topic at the time, we find hardly much information on the virus itself in the article. There are only 10 references to the word “virus”. The first mentioning occurs in the paragraph 1 where all the main topics are collected (see ex. 2). Further the references can be found in the paragraphs 2, 3, 5 and 6:

8. *The results predated **the virus epidemic** but were affected by a monthslong slump in Chinese demand for Japanese exports. (par. 2)*

9. *But then **the coronavirus** began **its deadly spread in China**, halting the lucrative flow of tourists from that country and further imperiling Japanese exports. (par. 3)*

10. *It's unclear how long **the virus outbreak** will continue, but the entire global economy could suffer from a prolonged shock in China, and some economists are already predicting slower growth for the year. **The virus's ripple effects** are hitting Japan particularly hard: China is its largest trading partner and by far its biggest source of visitors, many of whom come ready to shop. (par. 5)*

11. ***The spread of the coronavirus inside Japan itself** also presents a wild card. Last week, Japan recorded its first death from **the virus**. (par. 6)*

The authors use the noun “coronavirus” (ex. 40 and 42) as well as its shortened variant “virus” (ex. 39, 41 and 42). In the paragraph 2 (ex. 39) they declare a more strong effect of the virus using the compound noun “*the virus epidemic*”, later “*the virus outbreak*” in the paragraph 5 (ex. 41). The characteristic becomes even gloomier with the combination “*its deadly spread in China*” in the example 38. One of the key problems are the effects of the virus so the authors use the word “*ripple*” in the group “*the virus's ripple effects*” (ex. 41) comparing them with the movement of water.

At the end of the article the authors touch upon the topic of coronavirus once again in the paragraphs 17 and 19:

12. *But now **the coronavirus** poses a serious threat to a crucial market for the goods being produced. (par. 17)*

13. ***The epidemic** has also affected operations of Japanese companies inside China. **In response to the virus**, the Chinese authorities extended the Lunar New Year holiday, effectively shutting down manufacturing work for many Japanese companies. (par. 19)*

The usage of synonym “*the epidemic*” again puts a stronger accent on the problem scale, and the “*virus*” in the combination “*in response to the virus*” brings a hope that there can be and there are measures to be taken against the virus.

In the paragraph 22 the authors go away from “the epidemic” to its consequences in business. Here the combination “*the effects of the epidemic*” is used as a theme whilst “*tourism*” becomes a rheme: “*But perhaps no businesses in Japan are feeling **the effects of the epidemic** as much as those dependent on **tourism**...*”

2.2 Outbreak

In some cases the authors use the noun “*outbreak*” to refer to the epidemic. It begins in the lead (see ex. 1) and continues in the paragraph 5 together with the noun “*virus*” (see ex. 19). Therefore, at the beginning of the article the authors create a stable synonymic bound between the disease and other problems. The noun “*outbreak*” appears later in various paragraphs:

14. *But China’s ban on group travel as it tries to contain **the outbreak** is **the more immediate economic threat** to Japan. (par. 7)*

15. *Officials have begun to express concern about **the outbreak’s effect** on their **country’s fragile economy**, which in recent quarters had defied gloomy projections and eked out modest growth even as sales of Japanese goods and services abroad continued to decline. (par. 12)*

16. *Japan on Friday announced a limited \$96 million package of emergency funds that will be used in part to help **businesses** struggling because of **the outbreak**. (par. 14)*

17. ***Even before the outbreak**, Japanese companies were struggling to cope with the effects of China’s economic slowdown, a result in part of its trade war with the United States. (par. 18)*

18. *Nintendo has said it will delay **shipments** of its Switch console to Japanese consumers as **a result of the outbreak**. (par. 20)*

19. *Addressing investors this month, Hiroki Totoki, a top executive at Sony, warned that **the outbreak** could have a “**major impact on our supply chain, logistics and sales**”, potentially erasing a projected increase in earnings growth. (par. 21)*

The context surrounding the noun “*outbreak*” in the examples given refers mostly to the effects of it: the authors use the words “*effects*”, “*result*”, “*because of*”, “*a major impact*” indicating the epidemic as a reason for the economic decline: “*the more immediate economic threat* (ex. 43), *country’s fragile economy* (ex. 44), *businesses* (ex. 45), *shipments* (ex. 47), *supply chain, logistics and sales*” (ex. 48). The combination “*Even before the outbreak*” (ex. 46) indicates the previous problems and finds for the outbreak a place on the chronological axis in our nowadays history.

3. China

Interestingly, the rhematic reference “China” with 14 references throughout the text becomes the new topic of the article without being introduced at all, neither in the heading nor lead. The first mentioning of China occurs in the first paragraph in the following sentence:

20. Now, the coronavirus that has brought business in *neighboring China* to a virtual standstill threatens to knock Japan into a full-blown recession.

The adjective “*neighboring*” explains the reason why these countries are so influenced by one another in the current situation.

On the one hand, the noun “China” appears in the context connected with the virus at the beginning of the article: *its deadly spread in China* (par. 3), *a prolonged shock in China* (par. 5), *the most confirmed cases outside China* (par. 6). On the other hand, China is stated to be the trade partner of Japan which is why a lot of mentioning occurs in the economic context:

Japan’s economy – the world’s third largest after the United States and China (par. 4),
China is its largest trading partner and by far its biggest source of visitors (par. 5),
China’s ban on group travel (par. 7),
at least 400,000 travelers from China (par. 11),
the effects of China’s economic slowdown (par. 18),
Japanese exports to China (par. 18),
Japanese companies inside China (par. 19),
a slowdown in production in China (par. 20),
more than 30 percent of those visitors came from China (par. 23),
visitors from China make an outsize contribution to the country’s bottom line (par. 26).

Some context is negative (*ban, slowdown*), but a lot more surrounding words speak of the full integrity of Japanese economy with the Chinese one (*its largest trading partner, its biggest source of visitors, exports to..., companies inside..., visitors from..., contribution to the country’s bottom line*). Therefore, “China” as the subtopic appears in the two main topics – Japan’s economy and coronavirus – and establishes the semantic connection between them.

Text model

The whole thematic structure of the article can be seen as follows (Figure 1 composed by the author):



Figure 1. Text Model for The New York Times article “Japan’s Economy Shrank Sharply. Now Comes the Coronavirus”

In the text model for The New York Times article “Japan’s Economy Shrank Sharply. Now Comes the Coronavirus” we see the thematic development as it is going along the text. The authors start with the introduction of all the topics and subtopics (heading, lead and the first paragraph), then develop the “*economy*” topic introducing tax increase, storms and recession (paragraphs 2–4) as its subtopics, then follows “*coronavirus*” as the second topic (paragraphs 5–6), the outbreak and its effects on tourism as a subtopic for economy (paragraphs 10–13). The development repeats the same line in the second half of the article (paragraphs 14–29) finishing with the effects on tourism at the end of the story. The red line stands for “*China*” as it is the third main topic mentioned neither in the heading nor in the lead. This third topic bands together the two topics of “*Japan’s economy*” and “*coronavirus*” declared in the heading.

The whole structure as it can be seen from the figure reminds a braid where the authors weave their story round the main topics and repeat the consequence twice. The extensional model allows us to present the thematic structure of the text clearly and in perspective, that is, holistically. The narrative angle and various accents placed by the authors become visible. To look at this is essential for mass media discourse especially, in which the declared topic often does not correspond to the true content of the article.

Conclusion

Here, the text of mass media discourse is represented in the form of an extensional formation and the topic development is followed throughout the news article. Just as the space around us has dimensions that allow us to perceive the world as an extensional structure, so it is in the text where the combination of different subtopics defines a convex text space. The topic development undergoes authors’ intention and their perspective and focus in describing an event that goes beyond a straightforward mathematical accounting. In the paper the main problem of the beginning 2020 – coronavirus – is considered as a key event widely discussed in mass media. Its thematic structure in The New York Times article is developing in form of a braid. Furthermore, the construction of extensional models can be used to compare the thematic development of different texts, including texts of different genres.

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Модель текста в медиадискурсе

Аннотация. В статье описывается исследование тематической структуры текста медиадискурса. Эта структура представлена в виде модели, отражающей тематическое развитие в описании ключевого события и перспективу, с которой авторы анализируемого текста представляют свой материал. Примером послужила статья “Japan’s Economy Shrank Sharply. Now Comes the Coronavirus”, взятая из издания The New York Times и посвященная самой обсуждаемой теме начала 2020 года. Тематическое единство приводит к глобальной связности текста внутри дискурса как надтекстового образования, в связи с этим возможно проследить тематическое развитие текста как комбинации нескольких подтем, переплетающихся между собой и образующих объемное текстовое пространство. Исследование тематического развития определяет тему как основное условие связности медиадискурса и поэтому такой анализ интересен и актуален с точки зрения поиска подходов к изучению медиадискурса и развития медиалингвистики. Методология данного исследования включает в себя комбинацию математического и лингвистического методов. Прежде всего, упоминания существительных из заголовка прослеживаются на протяжении всей анализируемой статьи, далее исследуется контекст и синонимы этих словоупотреблений и таким образом раскрывается тематическое развитие статьи. Новизна подхода состоит в данной комбинации различных методов при обнаружении тематической структуры текста медиадискурса. Тематическая структура анализируемого текста представляет собой форму косички, в которой развитие основных тем «японская экономика» и «коронавирус» и их подтем «рецессия», «увеличение налогов», «шторм», «туризм», «эпидемия» повторяется и связывается воедино с помощью общей подтемы «Китай». Моделирование тематического развития в тексте способствует определению прагматической направленности текста, а также пониманию того, как мы сообщаем и передаем информацию. Проведенное исследование представляется перспективным для дальнейшего сопоставления с тематическими моделями текстов других жанров и на других языках.

Ключевые слова: модель текста; тематическое моделирование; медиадискурс; методология исследования медиадискурса; медиалингвистика; публицистический текст; английский язык

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