



## Connectivity and Informativity in Scientific News Writing

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### Abstract

*The present study is devoted to investigate the central issues of connectivity and informativity in scientific articles. It particularly tries to answer the following research question: How do scientific writing attain connectivity and informativity? Accordingly, the study hypothesizes that (1) this type of writing employs references, conjunctions as well as ellipsis to ensure connectivity and (2) it employs fronting and passivization to enhance its informativity. To test these hypotheses, the investigation will use the model of textuality introduced by De Beaugrande and Dressler (1981) as the tool of analysis. The linguistic examination is conducted on six scientific articles retrieved from online British newspapers.*

**Key Words:** *reference, conjunction, ellipsis, passivization, fronting, scientific news.*

### الترايط والابلاغ في كتابة الأخبار العلمية

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### الملخص

تُعنى هذه الدراسة بدراسة خصائص النص المتعلقة بالترايط و الابلاغ في المقالات العلمية. وتحاول تحديداً الإجابة على السؤال البحثي التالي: كيف تُحقق الكتابة العلمية الترايط و الإبلاغ في النص؟ بناءً على ذلك، تفترض الدراسة أن (1) هذا النوع من الكتابة يستخدم المراجع وحروف العطف والحذف لضمان الترايط بين مكونات النص، و(2) استخدام أسلوب التقديم والمبني للمجهول لتعزيز الإبلاغ. لاختبار هذه الفرضيات، يعتمد البحث نموذج التحليل الذي قدمه دي بوغراند ودريسلر (1981) كأداة لتحليل النصوص. أُجري الفحص اللغوي على ستة مقالات علمية مأخوذة من صحف بريطانية إلكترونية.

**الكلمات المفتاحية:** المرجع، العطف، الحذف، المبني للمجهول، التقديم، الأخبار العلمية.

## 1. Theoretical Underpinnings

### 1.1 Texturation

Texturation in language is the process according to which linguistic segments are arranged to create coherent, meaningful and cohesive text. It entails the strategic application of cohesion, coherence, thematic flow and stylistic decisions that link sentences and thoughts. Texturation involves the usage of writers and speakers to create a joint discourse out of individual units of language, with a clear purpose and intention to guide the reader or listener. The interplay of form and meaning is also experienced in this process, and it has an impact on the texture of the text and the communicative power in general (Halliday and Hasan, 1976: 2-3). Now how can we recognize a text?



One can think of a piece of writing in different ways in order to be named as a text. The term 'text' is a Latin word derived from the verb "texere" meaning "to weave" or "compose". The English terms 'textile' and 'texture' have a common root that implies that a text is something that is woven into a complicated fabric. Thus, a text can be regarded as a network of analytic, conceptual, logical, and theoretical relations, which is interwoven via language threads (Brown, 2003: 17).

One of the most important means to achieve a good text or texture is 'Textuality'. It is an important concept in the discipline of text linguistics. According to Neubert and Shreve (1992: 30), textuality is the complex of characteristics that texts should possess in order to be treated as texts. Textuality denotes an attribute that a complicated linguistic entity adopts when it mirrors some social and communicative limitations. This does not imply that it is merely a quality of language per se but demonstrates the manner in which language operates meaningfully in the social and communication contexts.

There is a general consensus among scholars that there are three main areas of textuality which are texture, structure and context. The term texture incorporates the different techniques that guarantee that meaning is consistent across a text. This forms a sequence of sentences that are smooth flowing. Structure is a general arrangement that provides a text with its coherence. It assists the reader to view an intended design rather than an unorganized set of sentences. In this regard, structure serves as the structure of the text and texture serves as the content that gives it its substance. These two aspects are in harmony with each other: structure forms the general structure, and texture maintains the connection between the individual parts. When the readers read texts, they seek contextual clues indicating how the structure and texture are combined to achieve certain functions, such as to argue, narrate, describe or explain. This process constitutes what Hatim and Mason (1997: 71) refer to as 'text'.

Textuality, on a more profound level, can be viewed as a mirror of the mental and experience components of human communication. According to Stockwell (2009: 45), texts are the products of people who are driven by common experiences and shared cultures as an integral part of these capabilities. Textuality in this manner is a product of collective mind processes that facilitate the production and interpretation of discourse. The quality of a text that is experienced and that gives the sense of coherence and meaning is in its texture.

## *1.2 Model of Analysis*



The paper is based on the textuality model of De Beaugrande and Dressler in their famous book, 'Introduction to Text Linguistics' (1981). These theorists (1981: 3) defined a text as a communicative event that fulfills seven standards of textuality. These seven standards include cohesion, coherence, intentionality, acceptability, informativity, contextuality, and intertextuality. In particular, this paper scrutinizes the aspects of cohesion, coherence, and informativity as utilized in scientific writing.

### *1.2.1 Cohesion*

The concept of cohesion can be defined as a system of grammatical and lexical connections between the elements of the text and the ability of the sentences and clauses to cooperate with one another. It demonstrates how words, phrases, and clauses are connected with each other and contribute to the establishment of unity and clarity in the text. According to Halliday and Hasan (1976: 11), the existence of cohesion is where the meaning of any item of the discourse involves referring to some other item in the discourse. On the same note, de Beaugrande and Dressler (1981: 3) observe that surface components are interdependent based on grammatical forms and conventions to the extent that cohesion is based on grammatical dependencies. To put it into a simpler context, cohesion depends on the relationship that exists among sentences that assists in the flow of the meaning in the text.

Jackson (1990: 252) goes ahead to explain this relationship by stating that a bond is established between one sentence and the other since the interpretation of a sentence is either dependent on or informed by some item in a preceding sentence. This is an opinion that emphasizes the importance of cohesion in maintaining continuity in a text and that sentences are not independent, but components of a meaning chain.

According to Halliday and Hasan (1976: 13) the notion of cohesion explains the necessary semantic relations whereby any piece of speech or writing is made possible to perform as a text and they divide the relations into five major types and they are: reference, substitution, ellipsis, conjunction, and lexical cohesion. The categories have a particular contribution to the coherence of a text.

- **Reference** involves the use of words to refer to other parts of the text or the context and these words form connections of identity or association. It is a process of presenting something and then mentioning it later, in a different less lengthy form, which is called a pro-form. This is normally done by the use of pronouns, demonstratives, comparatives and some adverbs and adjectives (Halliday and Hasan, 1976: 31).
- **Substitution** occurs when a language element is used in place of another to evade the repetition of a certain thing. It is done with an intention of making the



text short and in a variety of style. Halliday and Hasan divide substitution into nominal, verbal and clausal that represent different grammatical levels (ibid.).

- **Ellipsis** and substitution are similar since it is the omission of a piece of information that can be interpreted through the context. According to Donnelly (1994: 103), ellipsis allows the authors to exclude the obvious or redundant things and leaves the gaps to be filled by the reader.
- Logical and semantic relationships of clauses or sentences are explicitly indicated using **conjunction**. Writers use conjunctive devices, such as additive, adversative, causal, and temporal conjunctions, to connect ideas in a manner that supports and emphasizes connection between other elements of text (ibid.: 105).
- **Lexical cohesion** is provided by the selection and repetition of words having similar meaning. This consists of such patterns as repetition, synonymy, antonymy, collocation, and hyponymy that add meaning and texture to the text. In order to comprehend lexical cohesion, there is a need to be knowledgeable of semantic frames that arrange the meaning of the discourse (ibid.).

These cohesive devices when combined build up the texture of a well-structured and meaningful text. They make sure that the language is not limited to the single sentence, but rather they weave the linguistic cloth, which is textuality.

### *1.2.2 Coherence*

The most crucial standard of textuality is likely coherence. A text cannot be regarded as effective or excellent when it is not clear and logically meaningful. Although it is very essential, coherence remains elusive in most cases when compared to cohesion. Cohesion is associated with the verbal links between words and phrases whereas coherence is concerned with ideas that link the text in a conceptual manner.

The definition offered by Neubert and Shreve (1992: 94) is useful because it defines a coherent text as one that has a logical structure that leads the reader to the text. This organization keeps the text as a whole (Hatch, 1992: 209) and gives the text the sense that it is in fact holding together, that it makes sense and it is not a mere bunch of sentences. So, coherence demonstrates the capacity of the reader to identify logical, thematic, rhetorical connections between ideas. It is based on the structure of the text and interpretation of the reader. It integrates language issues and the world with contexts to generate a complete and significant message.

### *1.2.3 Informativity*

The third criterion adopted in this study is informativity. This criterion describes how anticipated or unanticipated, familiar or unfamiliar aspects of a text are to the reader (de Beaugrande and Dressler, 1981: 14). In other terms, informativity is used to determine the extent to which the information is new or informative



depending on the background knowledge and cognitive expectations of the reader. Jurin and Kriskovic (2017: 24) state that informativity principle determines the volume of the novel information in a text. Recognition and processing of new information greatly rely on the prevailing knowledge and understanding of the world to the reader.

Moreover, informativity in discourse is the extent to which a text conveys new, surprising or significant information to its readers. There are numerous linguistic means that writers employ to enhance the informativity of their writings and to ensure that readers are not bored. **Fronting** and **passivization** are two of the most common processes. These methods assist authors in emphasizing fresh or significant information and deemphasizing familiar objects (Halliday and Matthiessen, 2014). Also, there is an informational gap created as **deictic terms** such as 'this' and 'these' are used. This leaves the readers struggling to continue reading to determine what is being mentioned (De Beaugrande and Dressler, 1981). Informativity is also enhanced by the use of lexical accuracy and use of technical terms which offer specialized or complex information (Biber, Conrad, and Leech, 2002).

In addition, quotation and reported speech allow the writers to provide reliable new information of experts or research results. This makes the text more credible and valuable. Finally, the use of discourse markers and contrastive conjunctions such as "however" and "although" and rhetorical questions can bring out unexpected or provocative material, which adds value to the entire communicative value of the text. The informativity is accomplished through these linguistic and structural means by balancing between the newness, relevance, and clarity.

## 2. Data Description and Analysis

### 2.1 Data Description

The current research incorporates six online scientific news stories retrieved from British newspapers, namely; *The Independent*, *The Telegraph*, *The Guardian*, and *The Express*.

### 2.2 Method of Analysis

The model of textuality presented by De Beaugrande and Dressler (1981) is employed in the study to analyze the data under scrutiny. As detailed in Section 1.2 above, this model refers to seven standards of textuality. This study will primarily focus on cohesion, coherence and informativity.

### 2.3 Data Analysis

*Text (1)*



This text (Web Resource 1) is an article about a study that finds out that women require more sleep than men due to their more complicated brains. The writer employs various ways of making the article readable, understandable, and attractive to ordinary readers. The structure of the article is well organized. The sentences and phrases have a good flow using such devices as pronouns, ellipsis, and conjunctions:

- *“**Women** need more sleep than men because of **their** 'complex' brains.”*
- *“Women's brains work harder than **men's**”* (that is, than the brains of men).
- *“You've got two choices: **Either** emerge from the covers **and** get a head start to the day, **or** you try to go back to sleep. Women tend to require more sleep than men **because of** their “complex” brains, according to research.”*

The article has coherence, in that all the sentences in the text are related to a single topic, which is the sleeping pattern of women and men. It is also informative because the journalist gives us new information as he brings out the discoveries that most readers would not be aware of. The journalist highlights the crucial points by putting them in the first position of the sentences using the device of fronting:

- *“**Women need more sleep than men because of their 'complex' brains, research suggests,**”* (rather than stating: “research suggests that women need more sleep...”).

#### Text (2)

The second article, retrieved from *The Telegraph*, talks about the environmental danger of the ash trees in Britain caused by a bright green beetle. The journalist achieves good organization and flow of ideas and sentences by the use of cohesive devices, such as pronouns, conjunctions, and ellipsis:

- *“**The insect** has passed through Denmark and is believed to have reached Sweden. In 2002 **it** was accidentally introduced to North America, where **it** has killed millions of ash trees.”*
- *“Ash is Britain's most common hedgerow tree **and** the second most common tree in woodland, **after** the oak.”*
- *“**The insect** has passed through Denmark and [-] is believed to have reached Sweden,”* (rather than saying: “the insect” or “it”).



The article is neatly coherent. The entire sections are devoted to one main topic which is the destructive effect of beetles on ash trees. The article is also informative introducing new and significant information to the population, which has both ecological and social significance. The journalist employs fronting and passivization to emphasize important new information:

- *“Bright green beetle will wipe out Britain's ash trees, scientists warn,”* (rather than saying: *“scientists warn that Bright green beetle will ...”*).
- *“**The insect** has passed through Denmark and is **believed** to have reached Sweden.”*

Also, the journalist provides background information, including how the beetle was accidentally introduced to North America and how this insect has devastated the land. It provides the reader with a better idea of the danger and the urgency of the ecological issue.

### *Text (3)*

The third article retrieved from *The Guardian* highlights the probable death of the last golden eagle in England, according to the reports given by wildlife experts. The article is organized properly. It employs the use of conjunctions and pronouns to connect sentences and maintain the flow of ideas:

- *“**Wildlife experts** say **the bird** likely died of natural causes after **they** fail to spot **him** at **his** usual haunts in the Lake District.”*
- *“When the eagle didn't appear last month we thought there was a chance he might be hunting in a nearby valley **but** over the past few weeks we've been gradually losing hope.”*

The article is coherently arranged. The sentences all lead to the same subject, which is the extinction of the final golden eagle in England. It also tells the readers how old the eagle is, its history, as well as why it is in decay. Linguistic means such as fronting and passive voice are used by the journalist to emphasize the important information and maintain the focus of the story:

- *“England's only resident golden eagle is likely to have died after failing to appear this spring, wildlife experts fear”,* (meaning to say: *“wildlife experts fear that England's only resident golden eagle is ...”*).
- *“**The eagle was believed** to have been around 20 years old and had lived alone since the death of his mate in 2004.”*



The article creates an emotional appeal because it focuses on the uniqueness and symbolic meaning of the eagle for English people. The selection of the descriptive words and the chronological sequence of events both add much to the clarity and influence of the article.

#### *Text (4)*

The fourth article (Web Resource 4) taken from *The Independent* examines the study of the level of altruism in human beings. The author of the article pays attention in arranging the work, utilizing such cohesive features as pronouns, conjunctions, and ellipsis to interlink sentences and ideas:

- “However, **researchers** at the University of California, Los Angeles have used science to try and find out. **They** came to the conclusion that ‘our altruism may be more hard-wired than previously thought’.”

- “They also looked at the dorsolateral **and** dorsomedial parts of the prefrontal cortex, which regulate behaviour **and** control impulses.”

- “The more we experience the states of others, the more we appear to be inclined to treat them as we would ourselves” (that is “as we would ourselves like to be treated”).

The article is coherent in that each section is neatly organized making logical sense and concentrated on the research findings that propose how altruistic behavior can be promoted in humans. It is informative, and it provides a reader with the novelties related to neuroscience and human behavior. The journalist highlights the major findings through the device of fronting in an attempt to present the new information first:

- “Altruism may be “hard wired” into the human brain, scientists have suggested, (rather than saying: “scientists have suggested that altruism may be ...”).

The journalist also gives a background information by referring to certain parts of the brain and its complex processes, in an attempt to capture the attention of the readers who might be interested in the neurological foundation of behavior then present the new scientific findings.

#### *Text (5)*

According to the fifth scientific article (Web Resource 5) retrieved from *The Telegraph*, a documentary team discovered that there were signs that indicated the Shakespeare skull could have been stolen out of his grave through the use of



high-tech radar. The article is well-written, and the sentences are linked with the aid of such cohesive devices as the pronouns and conjunctions:

- *“A **team** performed a ground-penetrating radar scan on the grave at the Holy Trinity Church in Stratford-upon-Avon. **They** found evidence of ‘a mysterious and significant repair to the head end of William Shakespeare’s grave’.”*

- *“Frank Chambers raided Shakespeare's vault in the chancel of Holy Trinity Church **and** left Shakespeare's skull in a church in Worcestershire.”*

The article is coherent because all the parts are logically devoted to the subject of the potential evidence concerning the removal of the skull of Shakespeare. It is a source of information of historical and cultural significance. The journalist employs fronting and passivization to bring out important information and ensure that the story is attracting the readers’ attention:

- *“Shakespeare's skull may have been removed from grave, documentary finds,”* (rather than saying: *“documentary finds that Shakespeare's skull ...”*).

- *“The Bard and his loved ones were wrapped in winding sheets.”*

Moreover, the article involves the readers as it incorporates the historical background with the contemporary investigation techniques combining factual coverage with the aspects of curiosity and narration.

#### *Text (6)*

The sixth article (Web Resource 6) talks about astronomy research carried out by a professor at Harvard, who indicates that there may be ‘extraterrestrial’ life in the form of big clusters of stars at the Milky Way Galaxy periphery. The journalist employs clear and well-organized structure, via the use of pronouns and conjunctions:

- *“**ALIENS** are living in giant clusters of stars and scientists will be able to find **them** on the edge of our Milky Way.”*

- *“The sun is 4.6 billion years old **and** has allowed us to evolve to intelligent beings.”*

The article is coherent, and all the elements refer to the main subject of alien life in star clusters. New and interesting findings are delivered in a way that enhances the informativity of the article. More specifically, the writer implements the demonstrative **this** inventing a knowledge gap that is filled in later on:

- *“**THIS** is where we should be searching for aliens.”*



In addition, fronting puts a focus on new information and attracts the attention of the reader:

- *“THIS is where we should be searching for aliens, according to Harvard professor,”* (rather than saying: *“according to Harvard professor, THIS is where we ...”*).

Moreover, the article links the scientific finding to the imaginary concept of “alien life” to enhance its credibility and the interest of the reader.

#### 2.4 Results and Discussion

Six scientific news articles have been analyzed to arrive at the patterns of cohesion, coherence, and informativity utilized in scientific writing. Cohesion was evident in all analyzed texts achieved through linguistic devices designed to connect sentences and phrases. Pronouns, ellipsis and conjunction were extensively employed so that transitions and redundancy could be avoided. For instance, in Text 1, elliptical constructions and the use of pronouns made the text easier to understand and helped to connect sentences logically. Likewise, Texts 2 and 3 employed conjunctions and pronouns in order to maintain a smooth narration. These unifying features not only joined the texts but also made it easier to follow the presented information and made the articles easier to read and follow.

The articles have been coherent throughout, and each article has been structured in a logical manner with one unified topic: sleep research in Text 1, environmental threats in Text 2, wildlife conservation in Text 3, human altruism in Text 4, historical investigation in Text 5, and astronomical research in Text 6. The sentences were semantically and logically related and made a coherent story. Coherence was further strengthened by the fact that it was well-structured internally, events were chronologically ordered, and the cause-effect relationships were well presented.

All articles had an important characteristic of informativity since each text contained new information that was of value to the readers. Journalists tended to emphasize new information through the use of fronting and passivization in which the most significant or startling information is situated in the first position in the sentence. Moreover, a few of the articles left knowledge gaps to capture the attention of the readers such as in Text 6 where the demonstrative ‘this’ leaves a momentary gap in the text that is later filled in the text.

In general, the results imply that successful online news writing, in particular, scientific and informative writing, depends on the use of cohesion, coherence, and informativity, and is assisted by structural and stylistic devices. Cohesion gives a smooth flow, coherence keeps the focus and informativity keeps the readers interested and informed. The fact that these features are utilized



consistently in different topics demonstrates that they are necessary in the attainment of clarity and effective communication in online journalism in general and in scientific writing in specific.

### 3. Concluding Remarks

As the analysis of the scientific articles has shown, cohesion, coherence, and informativity are important linguistic aspects resorted to in effective scientific news writing. Cohesive devices such as pronouns, conjunctions and ellipsis ensure that there is smooth transitions between the parts, and coherent structure makes every article have a clear and unified focus. Informativity is always presented in the form of new valuable information, which is often emphasized with such devices as fronting and passivization.

The results suggest that the journalists combine these textual characteristics with the stylistic decisions, including context, storytelling, and language that is easy to relate to, to make the readers more engaged and considerate.

Finally, the paper underlines that cohesion, coherence, and informativity are vital in the context of scientific news writing. This makes the availability of complex information easy, logical, and interesting to the readers. The research findings demonstrate the importance of texturation and informativity in meaningful science communication and how it assists in bridging the gap between science and social cognition.

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