A Cognitive Resolution to Non-Stereotypical Definite Indirect Anaphora

Hui-Fang ZUO
Department of English, Xiamen University Tan Kah Kee College, Xiamen, China
653329671@qq.com

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Abstract. It is intended to explore the distribution of non-stereotypical definite indirect anaphora in news reports, and its cognitive resolution mechanism. The proposed resolution mechanism, formed by integrating the Accessibility theory and the Frame model, assumes that the interpretation of the definite indirect anaphora is the integration of the anaphor into a decisive frame, which is part and parcel of the frames activated by the antecedent trigger and the anaphor. While the anaphor is quite recognizable due to its fixed form of definite articles plus the nominal, the antecedent trigger is much more complicated to be identified. Therefore, a knowledge of the general tendency of the occurrence of the antecedent trigger is helpful to delimit the searching scope. The linguistic clues which function as a guide to the antecedent trigger information can be categorized into 4 types: the headline or the news lead, textual description, frame-heralding markers and punctuation marks. It is hoped that an alternative of understanding the non-stereotypical definite indirect anaphora from the cognitive perspective will be provided.

Introduction

Among the various kinds of indirect anaphora (IA) being studied, definite IA, achieved by the selection of definite articles plus nouns in indirect anaphora, represents the most prominent. Definite IA, in the light of the stereotypical relation between the antecedent or antecedent trigger (AT) and referring expressions, can be further classified into stereotypical and non-stereotypical anaphora. Generally, the study of IA often focuses on the stereotypical situations (Brown & Yule, 1983; Fillmore, 1975, 1985; Charniak, 1975). Charolles even holds that “the relationship used in associative anaphora, far from accepting catch-all ingredients, is limited to the stereotypical components denoted by the NP, or those attached to the scenario evoked by the sentence in which it appears.” (Charolles, 1999: 315). However, contrary to Chrolles’ view, non-stereotypical relation does exist in different genres. For example, Wangjun (2004) has studied the distribution of stereotypical and non-stereotypical IA on the data of narrative discourses and Xu Yulong (2008) summed up the distribution of different anaphorical forms based the data of one chapter of a Chinese novel, 8 children’s stories and 8 news reports.

While non-stereotypical anaphora is largely unattended in Xu Yulong’s research, Wangjun’s research indicates that non-stereotypical anaphora only accounts for approximately 4.4% of all the definite IA instances. This gives rise to the following questions: is non-stereotypical anaphora distributed likewise in news texts? Given the distinctive features of non-stereotypical anaphora, are there linguistic clues helpful to delimit the scope of antecedent trigger identification and what resolution procedures should be taken to ensure successful reference assignment?

Stereotypical and Non-stereotypical Anaphora

For the stereotypical anaphora, the relevance between the AT and IA is widely recognizable in the world or by the majority of a community. For instance, in the sentence “I just read a new novel and the story is confusing”, the definite IA is felicitous because of the stereotypical link between the anaphoric nominal “the story” and the nominal trigger “a new novel”. Nevertheless, for the non-stereotypical anaphora, the normal stereotypical association between the two entities is not
available, the inference relies heavily on the textual features and the inferring capacities of the addressee. For example:

(1) **You are five minutes too slow. No matter; It’s enough to mention the error.** *(Around the World in 80 Days)*

In this case where no stereotypical knowledge is available, the relevance between “the error” and “you are five minutes slow” is quite accountable. The knowledge that brings about the associative strength derives from the linguistic context. Therefore, non-stereotypical indirect anaphora refers to the relationship between AT and IA as text-specific, not universally accepted in the encyclopedic knowledge and the relationship takes much more cognitive efforts to be perceived.

Nevertheless it’s sometimes difficult to draw a clear line between stereotypical and non-stereotypical relation, as “the inference of indirect anaphora is always culture-based” (Prince 1981:242). What is seen as encyclopedic in one community may not be recognizable for readers in another.

What’s more, the interpretation of stereotypical and non-stereotypical relation is, in a sense, not static, because the latter can be converted into the former after repetition.

As a result, it is vital to determine the criteria for non-stereotypical anaphora, as they influence the validity of the research results. The criteria for non-stereotypical anaphora include: 1) there is no stereotypical relation between the antecedent trigger and the anaphor; 2) it takes much cognitive effort to track the referent of the anaphor; 3) the tracking process relies mainly on the text and the inferring capabilities of the reader.

**Data Collection**

The present study has collected from the internet 21 news reports from CNN, ABC, VOA, New York Times, Washington Post, etc., covering almost every field of the social life, totaling 71,050 words. Specifically, 118 definite indirect anaphoras are collected and non-stereotypical anaphoras are sorted out. The criteria for data collection of definite IA are as follows:

a. The anaphor is encoded in a nominal phrase with a definite article in front and appearing for the first time;

b. The structure of “the+noun +prepositional phrase”, appositives, proper names, and superlatives are excluded from the research.

**Data Analysis**

According to Wangjun’s analysis of 483 IA instances in narrative discourses, only 20 instances belong to the non-stereotypical IA, accounting for merely 4.4%. However, by closely examining all the 21 news reports, it is found among the 118 instances of definite IA, while 85 instances (72%) fall into the stereotypical anaphora, nearly 33 instances (28%) have to fall back on the readers’ inferring capacities for resolution, a proportion much larger than that in narratives.

And in many cases, the text distance between the AT and the IA is across paragraphs, making up 45.5% of all the non-stereotypical data. Among the across-paragraph cases, 5 instances (33.3%) are those in which the AT is at the end of the previous paragraph, and the IA is in the beginning sentence of the following paragraph. As the headline and news lead execute the function of evoking the general background, those in which the AT falls on the headline or news lead amounts to 8, approximately 25% of all the non-stereotypical IA cases. Below are the statistical result indicating the text distance between the AT and IA in the present study.

<table>
<thead>
<tr>
<th>Text position</th>
<th>Number of cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same sentence</td>
<td>7</td>
</tr>
<tr>
<td>Previous sentence</td>
<td>8</td>
</tr>
<tr>
<td>Same paragraph</td>
<td>3</td>
</tr>
<tr>
<td>Across paragraph</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 1. Distribution of Different Text Distances.
Reasons for the Distribution

In what follows, we will analyze the possible reasons for the distribution of non-stereotypical IA in news reports.

To begin with, news typically describes a current event in the world. Unlike the narratives in which the author presents a bunch of connected events, real or imaginary in a carefully-constructed sequence, the news tends to describe events in isolation. Beside, news reports often address aspects of the reality which seem unusual, deviant or out of the ordinary. Consequently, it is only logical to have more temporarily-established association between the AT and IA in news texts, an association that becomes accountable only when placed in the specific event frame. As a result, non-stereotypical cases are more likely to be used in news reports than in narratives.

Second, according to Ariel, definite descriptions belong to the category of low accessibility markers. Well-informed descriptions are not appropriate where fewer words, like zero pronouns, pronouns or bare demonstratives, are competent to convey the information. That is, in terms of distance, low accessibility markers are often used in long distance, such as across paragraphs. This explains why 45.5% of the non-stereotypical cases are of across paragraphs in the present study. However, it is worth noting that in many across-paragraph instances, the AT and IA are actually adjacent to each other, with the AT at the end of the previous paragraph and the IA at the beginning of the next paragraph. The adjacency guarantees that the comprehensibility of the news text is not to be interfered by the across-paragraph distance between AT and IA. For example:

(2) The line is expected to be about 770 kilometers and will run through seven Russian regions with a total population of more than 25 million. It will use regular high-speed trains rather than magnetic levitation trains.

“To ensure the operation, China will test the 400 km/h train in a selected part of the 709-kilometer Beijing-Shenyang high-speed railway line,” said Yang Guowei, a researcher at the Institute of Mechanics of the Chinese Academy of Sciences in Beijing.

Last but not least, the news title or news lead plays a crucial role in the process of IA resolution. It informs the readers of the topic of the report, providing general background knowledge for the news body. As a result, some words or expressions which are closely related to the topic naturally appear in the news body with the antecedent trigger located in the title or the lead. There are 8 instances of this type, making up 25% of all the stereotypical data.

Cognitive Approaches to Anaphora

The cognitive approaches have two theories related to the notion of definite indirect anaphora: Accessibility and Frame.

The Accessibility Theory

The Accessibility theory, proposed by Ariel Mira, is normally concerned with the level of activation of information in long or short-term memory, which determines the ease with which the information can be retrieved. (Epstein, 1999: 67) Ariel classifies anaphoric expressions into three categories: those with high accessibility, those with mid accessibility and those with low accessibility.

A full noun phrase indicates that its entity can be evoked from the addressor’s and addressee’s memory only with difficulty and is not salient in the current discourse, hence of low accessibility. A pronoun is used for a referent of relatively high accessibility, one which can be extracted from the awareness with ease because the referent has been recently mentioned or is physically present and perceptible.

Ariel emphasizes the importance of mental representation and the correspondence between mental representation and referring expressions. However, her research mainly deals with the question of co-reference. The indirect interpretation is largely neglected in her research.
The Frame Model

Another influential approach to definite IA resolution is the Frame model introduced by Charles Fillmore in the middle of the 1970s. According to Fillmore, a frame is a conventionalized situation that is embedded in one’s mental network as a long-term memory store and can be readily activated with a suitable “partial descriptions” (Matsui, 2000: 104). Each frame includes the stereotypical concepts called slots related to the situation. In the course of the discourse, some slots remain vacant all the time whereas others may be filled or instantiated with the introduction of any concept. Whether a slot can be instantiated relies on whether they will be referred to in the following discourse. Thus if in a discourse an appropriate frame is activated, the reader will have no difficulty assigning a referent to the corresponding slot contained in the frame.

Fillmore’s theory has well explained the stereotypical indirect anaphora, but has not included the non-stereotypical situations in his theory. How can one understand a definite indirect anaphor when it is not in a stereotypical situation?

Analytic Framework

A cognitive resolution mechanism, formed by the integration of the Accessibility theory developed by Ariel and the Frame model developed by Fillmore, is advanced.

Essence of the Definiteness in Non-Stereotypical Definite IA

Ariel’s theory can serve as a theoretic support to justify the definiteness. Unlike the term in Ariel’s Accessibility theory, the term “accessibility” is used in the sense that, inaccessible as the referents are, the contexts are quite accessible for interpretation in some way. It is important to note that while the stereotypical relation between the AT and IA is mutually known to both the reporter and the reader, the non-stereotypical relation might be known only to the journalist and the reader is forced to accept. For instance:

(3) Merkel is seeking a fourth term as chancellor in elections to be held in September. Her popularity has dropped since the refugee crisis. Last month, a man drove a truck through a Christmas market in Berlin, killing at least 12 people. The anti-immigration Alternative for Germany party (AfD) blamed Merkel’s immigration policies for allowing the attack to happen.

In example (3), the anaphor “The anti-immigration Alternative for Germany party (AfD)”, though obviously salient in the journalist’s working memory, is newly introduced to the reader. But it comes natural to the reader to draw the inference that the referent is an organization opposed to Merkel’s migrant policy.

In sum, the definite articles should be analyzed as markers of the “accessibility” of discourse referent, indicating that the knowledge required for interpreting a nominal in the current discourse space is accessible somewhere in the cognitive context, either in the linguistic context or the mental frame of the reporter.

Proposed Resolution Mechanism

In the proposed resolution mechanism, for every interpretation process, there are two Frames respectively activated by the AT and IA. Each FRAME includes linguistic, physical and encyclopedic knowledge related to the anaphora resolution, which are interrelated, providing a platform for the selection of an appropriate frame for the ultimate resolution of definite IA. It is worth noting that within each big FRAME are contained many sub-frames (frame a, b & c). The subframes bear distinct features from one individual to another due to individual characteristics. Among the various sub-frames contained in FRAME IA and FRAME AT, one frame from FRAME IA complements another one from FRAME AT and the two frames integrate into one which is thus chosen as the decisive frame. The blending of the anaphor into this decisive frame forms the proper interpretation of definite IA.

What follows is an illustration with the resolution mechanism.

(4) Jianzhen’s Journey to Japan, a production by Jiangsu Performing Arts Group, made the
The leading actor shed tears over the excitement when answering the curtain call. Obviously, “the excitement” in the second paragraph is the anaphor which helps to trigger a FRAME IA. Included in the FRAME IA are “shedding tears”, “exciting scene”, “theater”, etc, which are related to the anaphor. In the previous paragraph, the textual description “a production...made the full-house National Center for the Performing Arts in Beijing Roar”, especially the verb ‘roar’ is a vivid presentation of a FRAME AT in which the scene “the excited or roaring audience over a production” is included. The two FRAMEs just provide an environment for the selection of the frame that is most specific to the resolution of the anaphora. Next, the Exciting Scene frame from FRAME IA complements the Roaring Audience frame from FRAME IA and the two frames integrate into the decisive frame. When readers know the actor is excited because his performance made the audience roar, the resolution of the non-stereotypical definite IA will naturally be fulfilled.

Specific Antecedent Triggers in Non-Stereotypical Indirect Anaphora

While anaphor is quite recognizable due to its fixed form of the definite article plus the nominal, antecedent trigger is much more complicated to be identified. As a crucial element in anaphora resolution, the antecedent trigger assumes the role of activating a relevant frame. In stereotypical situation, the link between the AT and IA is fossilized and text-independent and the AT can be tracked easily. However, when it comes to the non-stereotypical definite IA, the linguistic clues functioning as the guide to the AT are of different features. It is important to spell out what they actually are. With a good knowledge of such linguistic clues, the searching direction of the AT and its frame will be more delimited.

There are mainly 4 kinds of linguistic clues that guide the addressee towards the direction of non-stereotypical AT information: a) headline or news lead b) textual description; c) frame-heralding markers and d) punctuation mark.

a) New headline or news lead

As readers always rely on the headline or the news lead to decide whether the news is worth reading, it should give the key information about the incident, providing the readers with a general background knowledge for the news body. As a result, it’s only natural for some words (most serving as IA) to appear in the middle of the news. Instances of this type reach 25% of the data collected for the present study. For example:

(5) Headline: Senate Democrats Begin 24-Hour Protests Against Trump’s Education Secretary Pick, Betsy DeVos

The goal of the talkthon, Murray said, was to persuade one more of the 52 Republican senators to vote against DeVos.

In example (5), the headline can well inform the readers of the main information it intends to convey, so readers can easily formulate a general frame of a protest against President Trump’s nominee for education secretary. When the readers come across the sentence containing a definite IA, the referent of the anaphor “the talkthon” can easily be activated.

b) Textual description

In non-stereotypical relations, textual description sometimes functions as a trigger to activate a frame that is not present in the working memory of the reader. For example:

(6) “I see stories of chaos, chaos, yet it is the exact opposite,” he (Donald Trump) said. “The administration is running like a fine-tuned machine, despite the fact that I can’t get my cabinet approved.”

The anaphor in example (6) is “the exact opposite”. However, the reader would know nothing about what the anaphor refers to if he is ignorant of what has been stated in the previous part. It is the italic bold noun phrase that evokes the relevant frames specific to the IA interpretation. Apart from noun phrase structure, the textual description can also take the form of a verb/verb phrase, a clause or a sentence.
c) frame-heraling markers

Fauconnier (1985)conceives that some linguistic expressions can serve as what he calls “space-builders”, which may “establish a new space or refer back to one already introduced in the discourse”. Space-builders may assume various forms, such as prepositional phrases (e.g. in Len’s picture, from her point of view), adverbs (e.g. probably, theoretically), connectives (e.g. if A then ..., either ...or ...), underlying subject-verb combinations (e.g. Max believes ..., Tom claims ...).

(Fauconnier, 1985: 17)

Inspired by Fauconnier’s findings, it is found that some words or expressions can herald the shift of salient frames. For example, the phrase “in 1920” in the sentence “In 1920, the president was a baby.” serves as a frame-heraling marker to indicate a shift from the present frame to the past in which the president was still in his childhood; “Otherwise” in “I have no book written by Dickens; otherwise, I will show you the cover” is another frame-heraling marker to indicate that the mentality of the speaker (fictitious) is now salient in the working memory. When frames shift from one to another, the new frame will be focused while the old one will recede into the background. For example:

(7) Headline: Troops to Return Immediately
Defense spokesman Kevin sites said at a special joint session of congress, “Today we can finally enjoy the peace, not the peace of the brave, perhaps, but at lease peace”. As US and coalition troops withdraw from Iraq and Afghanistan, the UN will move in to perform peace-keeping duties and aid in rebuilding.

In example (7), “perhaps” functions as a frame-heraling marker to evoke a hypothetical or fictitious frame which exists in the inner mind of its speaker (the defense spokesman). Within the new frame, the speaker believes that the troops who fight for the welfare of their country should be esteemed as brave heroes. As a result, with the retrieval of the new frame, the components inside the frame can be expressed in accessible forms, that is definite noun phrase “the brave”. By contrasting the hypothetical frame with the reality, the speaker connotes his inner doubt on the righteousness of the war against Iraq.

Tense can also work to mark the shift of frames. For example:

(8) Trump may or may not make America great again. It has been a long time since Woodrow Wilson, Abraham Lincoln and Susan B. Anthony were in the news, not to mention import taxes, the Revolutionary War, Japanese Internment camps and the Immigration Act of 1917.

In the course of news elaboration, present tense is suddenly adopted to substitute for the present tense, the tense change brings the Past History of the Ex-presidents into the working memory. As a result, components inside the frame are accessible.

d) Punctuation marks

Punctuation marks also contribute to establishing a non-stereotypical correlation. For example:

(9) The legal Aids Society, which is representing Lewis, said in a statement today, “We have a full defense team working on this case, including our DNA unit dedicated to scrutinizing the evidence collected by local authorities. We are spending this critical time getting to know our client and his family and reviewing all the facts associated with this case. We caution everyone—including the media— not to rush to immediate judgment.

In the first two sentences, several parties are mentioned, including “the defense team”, “local authorities”, “client” and “his family”, so it is quite intelligible to reckon that “everyone” in the third sentence refers to the parties mentioned above. By utilizing the punctuation mark, a special correlation between “the media” and “everyone” is temporarily designated, the dash serves as a marker of emphasis and warning, reminding the press not to mislead the development of the criminal case.

It should be noted that the preposition “including” itself can execute the function of establishing the link between the AT and IA. However, by using the punctuation mark the link between the two entities is highlighted.
Conclusion

Non-stereotypical definite IA is an indispensable part of news reports. Owing to the unique features of news reports, non-stereotypical definite IA are more often used than in narrative discourses. In some non-stereotypical IA cases (45.5%), the AT and IA are across paragraphs. What’s more, since the headline or news lead provides a general frame in the reader’s working memory while readers read through the news, many cases (25%) have their AT located in the title or news lead. In the proposed resolution mechanism, the Accessibility theory developed by Ariel is incorporated with the Frame model developed by Fillmore. On the one hand, the Accessibility theory justifies the definiteness in the non-stereotypical definite IA. On the other hand, the term of “accessibility” is used in a broader sense here, one that is more focused on accessible contexts as simply “available for interpretation” in some way. Specifically, the knowledge required for interpreting the anaphora is accessible somewhere either in the linguistic context or the mental frame of the reporter.

The identification of the antecedent trigger is vital in the non-stereotypical definite IA resolution. The linguistic clues that can guide the readers towards the direction of the AT information normally belong to the categories of the headline or news lead, textual description, frame-heralding markers, punctuation marks. The specific antecedent triggers, the definite article, together with the employment of one’s inferring capability, can help the addressee distinguish the proper frame for current IA resolution. The successful resolution is the incorporation of the anaphor into a decisive frame, which is part and parcel of the frames respectively activated by the AT and IA.

References