Abstract
In this paper a type of biconditional frame named the Counterfactual frame is postulated as a type of schematic structure consisting of four propositions. It provides the logical basis for comprehending written text. Comprehension is described as a creative process in which each proposition as an element of the frame is accumulatively specified in terms of propositional content, factuality, desirability, etc. The Counterfactual frame is defined as a type of biconditional frame of which one pair of propositions is specified as factual while the other pair is specified as non-factual.

keywords: norms, biconditional, factual, non-factual, functions, propositions

1. Norms as a biconditional relation

When one can tell that under a certain condition a particular phenomenon is generally observed or that a certain action generally brings about a particular consequence, one is believed to have a normative knowledge about the situation or the action. What is commonly known as experience may be understood as a stock of norms one accumulates through one's life. In face of a new phenomenon one tries to interpret it in light of the norm and predicting a situation in the future one also depends on the norm established in the past. The notion of norm is an important factor to account for various human behaviours particularly if they are collaborative actions requiring the agreement among different human beings: participants must share the same norm to achieve the same goal. The use of language understood as a collaborative action to maintain the speech community is also based on sharing the norm among participants. At least some aspects of verbal communication can be seen as an attempt in which the encoder and the decoder cooperate in establishing a common norm as members of the same speech community.

In this paper, as in other preceding papers of mine\(^1\), it is assumed that the norm has a logical property of the biconditional relation. Biconditional is a logical relation between two propositions symbolically represented as \(p\) and \(q\): it is judged to be true either when both \(p\) and \(q\) are true or when both \(p\) and \(q\) are false; it is false either when \(p\) is true and \(q\) is false or when \(p\) is false and \(q\) is true. This characterisation of biconditional in terms of Truth Table might be more tangibly explained by setting two propositions that linguistically represent \(p\) and \(q\) respectively: one makes an effort and one passes an examination. If the two propositions constitute a norm logically characterised as biconditional, the norm is maintained either when one makes an effort and passes an examination or when one doesn't

\(^1\) Ohashi (2010),(2011)
make an effort and doesn't pass an examination. The norm is deviated either when one makes an effort but doesn't pass an examination or when one doesn't make an effort but passes an examination.

One important feature of biconditional is that identifying the truth value of one of the two propositions determines that of the other proposition. In order for the norm to be valid, the confirmation of one proposition necessitates that of the other while the denial of one proposition necessitates that of the other. This logical property enables one to predict the truth value of the second proposition once the truth value of the first proposition is identified. Once one knows that a person made an effort, one expects that the person has passed an examination. If one knows that the person failed in the examination in spite of an effort, one thinks that the norm has been deviated. The predictability attributed to the logical property of biconditional is the most basic feature of norms.

It should be noted that the prediction of truth value is not necessarily in accordance with the alphabetical order of the two letters $p$ and $q$. One can predict the truth value of $p$ on the basis of the truth value of $q$. The confirmation of $q$ as true necessitates that of $p$ while the denial of $q$ necessitates that of $p$. To use our example again, on the basis of the fact that a person passed a test one can guess that the person had made an effort. Biconditional is a logical relation which allows a both-way prediction between the two propositions.

Postulating the logical relation of biconditional as the most basic property of norms that are established in verbal communication means that the propositions, which are at the most abstract level simply symbolized as two letters $p$ and $q$, must be awarded rich semantic content to represent one's experiential knowledge relevant to the context in which the communication takes place. Propositions basically consist of a subject and a predicate as is seen in our examples: a person (subject) makes an effort (predicate); a person (subject) passes an examination (predicate). Such linguistic representation of propositions is achieved at different levels of specification in accordance with particular features of the context. For instance, the subject a person may be specified as Tom and the predicate making an effort may be specified as studying for more than eight hours every day. Propositions may also be specified in terms of the order in time: Tom's making an effort precedes in time his passing an examination. The time order may be further specified as a cause and its effect. Biconditional purely as a logical relation does not say anything about these specific meanings. In itself it simply defines co-presence and co-absence of two propositions as its validity. It is only through their specification in terms of the particular context that the propositions constituting biconditional can represent the norm.

2. Factuality

In the previous section it was discussed that biconditional is variously specified to represent the norm that is relevant to the particular context in which the communication takes place. In this section, it is explained that one of the most important aspects of the specification is concerned with whether the proposition is factual or not.

As was mentioned before two abstract propositions, a person makes an effort and a person passes an examination, might be variously specified according to the context. For instance, it might be specified as Tom's experience consisting of a cause-effect sequence. A possible resultant sentence will be Since Tom studied for more than eight hours every day,

---

2 Biconditional is different from conditional, which is symbolically represented as $p \leftrightarrow q$, in its predictability of one proposition on the basis of the other. Unlike biconditional, conditional is true when $p$ is false and $q$ is true as well as when both $p$ and $q$ are false. With respect to conditional, therefore, falsity of $p$ does not necessitate that of $q$.  

194 国際経営論集 No. 43 2012
he passed the examination. In this case the two propositions are specified as what actually happened, that is, facts. Tom did study more than eight hours every day and he did pass the examination. The pragmatic function of the sentence might be regarded as reporting the factual event. It is possible, however, to postulate propositions at an abstract level where their factuality has not been specified yet. In other words factuality of propositions is also determined in the process of specification. Thus, the same propositions can be specified as non-factual and might be linguistically expressed as: If Tom studies more than eight hours every day, he can pass the examination. In this case, the pragmatic function of the sentence is not regarded as reporting a factual event. Instead, it may be regarded as presenting a necessary condition for the future situation or recommending an action to achieve a goal depending on the context. It is also possible to imagine a case where the two propositions are differently specified in terms of factuality. For instance, only the cause member is specified as factual and the effect member is specified as non-factual. Such specification might produce a sentence such as Since Tom studied more than eight hours every day he will pass the examination. The pragmatic function of the sentence might be regarded as predicting a future situation on the basis of a fact. There is still another pattern of factual specification. It is identified in a sentence such as: Tom must have studied more than eight hours every day since he passed the examination. In this sentence, in contrast to the previous specification pattern, the proposition which was regarded as the cause member is specified as non-factual while the other proposition that was regarded as the effect member is specified as factual. The latter proposition is the factual basis for conjecturing the former non-factual proposition.

Thus, the same pair of propositions postulated at a certain abstract level can be variously specified with respect to their factuality and result in diverse linguistic expressions which have totally different pragmatic functions³.

Up to this point factual specification has been discussed only in terms of the cases where two propositions \(p\) and \(q\) are both regarded as true. It should be remembered, however, that biconditional is valid also when both \(p\) and \(q\) are false. If the co-presence of two true propositions is treated as the only condition for its validity, the logical relation at issue is not biconditional but conjunction, which is symbolically represented by \(\land\) (to be generally read as \(\text{and}\)) in propositional logic⁴. As was mentioned before, one of the most important characteristics of biconditional as the logical property of norms is that the confirmation of truth value of one of the propositions, either as true or false, determines the truth value of the other proposition. This logical property awards the propositions predictability that is an intrinsic quality of a norm. Just as one can predict that \(q\) is true based on truth of \(p\), one can predict that \(q\) is false based on falsity of \(p\). Similarly, just as one can predict that \(p\) is true based on truth of \(q\), one can predict that \(p\) is false based on falsity of \(q\). In other

---

³ Actually, proposition should be more strictly treated as an entity which is neutral with respect to tense. The entities treated as propositions here, a person makes an effort and a person passes an examination, are, strictly speaking, not temporally neutral propositions but sentences expressing conventionally observed behaviours of human beings. If makes in the first sentence is replaced by made or should make, for example, factuality of the proposition is accordingly regarded as factual or non-factual. It is the grammatical form of the predication that mainly determines the factuality of a sentence. Thus, it is sometimes proposed that propositions should be represented in forms such as Tom be a student and Tom study a lot instead of Tom is a student and Tom will have to study a lot so that temporal neutrality of propositions is properly reflected.

⁴ \(p \land q\) is true only when both \(p\) and \(q\) are true. Unlike biconditional it is false when both \(p\) and \(q\) are false.
words, when two propositions \( p \) and \( q \) are taken to establish biconditional, it must be confirmed that \( \neg p \) entails \( \neg q \) (and vice versa) as well as that \( p \) entails \( q \) (and vice versa).

If biconditional is interpreted as the logical relation not only between two positive propositions \( p \) and \( q \) but also between two negative propositions \( \neg p \) and \( \neg q \), factual specification of the four propositions can be complex\(^5\). If \( p \) and \( q \) are respectively expressed as \textit{a person makes an effort} and \textit{a person passes an examination}, their negative forms must also be taken into consideration: \textit{a person doesn't make an effort} (\( \neg p \)) and \textit{a person doesn't pass an examination} (\( \neg q \)). In an imaginary context where a person named Tom is going to take a particular examination in the future, the biconditional relation might be specified in accordance with the context and expressed in such a sentence as \textit{If Tom studies more than eight hours every day, he will pass the examination, but if he doesn't, he won't.} The pragmatic function of the sentence might be regarded as presenting a necessary condition for Tom's success or in so doing it is recommending an action (studying for more than eight hours) to fulfil the condition. The pragmatic function of recommendation might be more explicit in the following expression: \textit{Tom should study more than eight hours every day to pass the examination. Otherwise he won't pass it.} In these linguistic expressions all of the four propositions are specified as non-factual. On the other hand, it is possible that all of them are specified as factual. For instance, in the context where Tom's failure in an examination in the past is compared with his recent success, the propositions might be linguistically expressed as follows: \textit{Tom didn't study for more than eight hours every day and he didn't pass the examination last year. But this year he did study for more than eight hours every day and he did pass the examination.} The propositions may also be expressed as Tom's problem-solving experience: \textit{Tom didn't pass the examination for lack of study last year. This year he studied more than eight hours every day. As a result he passed the examination.} It is also easy to imagine a context in which the order of success and failure is reversed: last year Tom passed the examination but this year he failed for lack of effort. At this point suffice to say that it is assumed that the same group of propositions constituting a biconditional relation are diversely specified for various semantic and pragmatic functions, and factuality of each proposition is one of the most significant elements of specification.

3. Types of Biconditional Frames

Sharing biconditional norms through communication is an effective way to maintain the speech community since they are logically designed to accommodate opposite opinions or incompatible courses of action. Dialog between opponents is one of the most essential elements of any democratic communities. The act of persuasion presupposes the contrast between opposite opinions. Constructing a norm includes postulating both the context where \( p \) and \( q \) are true and the context where \( \neg p \) and \( \neg q \) are true. It can be said that by sharing a norm participants in communication will be ready for accepting the possibility that the opponent's opinion might be as plausible as theirs, which is a necessary condition for a democratic dialogue. Then, it is natural to think that written text, which is generally produced with a purpose of persuasion, can also be seen as an attempt by the writer to share a norm with the reader. The reader's comprehension process can accordingly be regarded as the process of constructing the norm presented by the writer.

Based on this view on written text, I have tried to describe the reader's comprehension process of a text as an attempt to construct a frame which represents the norm the writer of

---

\(^5\) Conventionally, biconditional between \( p \) and \( q \) is symbolically represented as \( p \equiv q \) in propositional logic. However, the same logical relation can be represented in other forms including negative propositions: \( (p \rightarrow q) \land (\neg p \rightarrow \neg q) \), \( (p \land q) \lor (\neg p \land \neg q) \) and others.
the text is intending to share with the reader. Frames are explained as a logical structure based on biconditional established among the four propositions \( p, q, \neg p \) and \( \neg q \). In this sense there is no difference between frames and norms. However, whereas norms are considered to be neutral with respect to factuality of each propositional element, frames are the biconditional relation of which four propositional elements are specified with factuality, particular discourse functions such as problem, response, alternative action, desirable consequence and specific pragmatic functions such as recommendation, warning and criticizing. Frames are understood as particular patterns of specification of biconditional.

For instance, in a specification pattern named the hortatory frame all the four propositions are specified as non-factual and they are characterized as two incompatible courses of action: \( p \) and \( q \) are specified as response and desirable consequence respectively while \( \neg p \) and \( \neg q \) are specified as alternative response and undesirable consequence respectively. This is a specification pattern represented by the example presented in the previous section: *Tom should study more than eight hours every day to pass the examination. Otherwise he won’t pass it.* In the hortatory frame one course of action is evaluated positively while the other negatively. It recommends the first course of action to be chosen and the alternative course of action to be avoided.

Another example of specification pattern is called the factual frame, in which all the four propositions are specified as factual. Its representation was also shown in the previous section but is presented here again with a little modification: *Tom didn't make any effort last year. Consequently, he failed in the examination. This year he studied more than eight hours every day. As a result he achieved his goal of passing the examination.* In this example created for illustrating the specification pattern, the four sentences respectively express \( \neg p, \neg q, p, q \). The first course of action, \( \neg p \) (alternative response) and \( \neg q \) (undesirable consequence), taught Tom a lesson, which was learned by him successfully as is shown in the second course of action, \( p \) (response) and \( q \) (desirable consequence). The frame reports a desirable consequence as a result of an appropriate action taken by the agent who learned the lesson from a past negative experience.

Still another specification pattern that can be characterized in terms of factuality of each proposition will be identified: it is a frame in which some of the propositions are specified as factual while the others are specified as non-factual. It is that type of frame that I attempt to describe based on the analysis of some authentic data in the rest of this paper. Before embarking on that task, however, it would be useful to create one example to give a rough outline of the frame. The simplest example might be created by changing the factuality of the propositions included in the previous made-up example. In the following example, the propositions constituting the positive course of action have been specified as non-factual. *Tom didn't make any effort last year. Consequently, he failed in the examination. This year he should study more than eight hours every day. Then, he will be able to achieve his goal of passing the examination.* The function of the frame might be explained as recommending an action on the basis of the past negative experience. Of course, it will be simply one of many examples of the function which the type of frame at issue can play in text. In the rest of this paper authentic written texts are analysed in order to identify such functions and other characteristics of the frame.

4. Frame Specification

In this section, the authentic data is analysed in terms of the biconditional frame in which two propositions, \( p \) and \( q \), are specified as nonfactual while the other two propositions, \( \neg p \) and \( \neg q \), are specified as factual. Most typically, the frame represents contrast between two courses of action, of which one is factual while the other is nonfactual. The
courses of action are often regarded at the most abstract level as consisting of two members: Condition and Consequence. In seeing the relation between $p$ and $q$ (or $\neg p$ and $\neg q$) as that between condition and consequence, one is specifying the abstract relation between them as a type of temporal sequence: $p$ precedes $q$ or $\neg p$ precedes $\neg q$ in time line. The frame constructed at this level of abstraction is diagrammatically represented below as Frame 1:

Frame 1

<table>
<thead>
<tr>
<th>Condition (non-factual)</th>
<th>Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p$</td>
<td>$q$</td>
</tr>
<tr>
<td>Condition (factual)</td>
<td>Consequence (factual)</td>
</tr>
<tr>
<td>$\neg p$</td>
<td>$\neg q$</td>
</tr>
</tbody>
</table>

Frame 1 has not been specified with respect to its propositional content yet. Frame 2 below shows the specification stage where the propositions are specified

Frame 2

<table>
<thead>
<tr>
<th>$p$: Condition (non-factual)</th>
<th>$q$: Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom should study more than eight hours every day</td>
<td>Tom will be able to achieve his goal of passing the examination</td>
</tr>
<tr>
<td>$\neg p$: Condition (factual)</td>
<td>$\neg q$: Consequence (factual)</td>
</tr>
<tr>
<td>Tom didn't make any effort</td>
<td>Tom failed in the examination</td>
</tr>
</tbody>
</table>

The propositions filling in the slots of the above frame are extracted from the example presented at the end of Section 3 repeated below:

(1) *Tom didn't make any effort last year.* (2) *Consequently, he failed in the examination.* (3) *This year he should study more than eight hours every day.* (4) *Then, he will be able to achieve his goal of passing the examination.*

The modals *should* and *will* signal non-factuality and the lexical items in the past forms *did*.
and failed indicate that the relevant propositions are specified as facts. In the process of establishing contradiction between two propositions \( p \) and \( \neg p \) or \( q \) and \( \neg q \), some kind of specification or generalization is usually required of the propositions to extract the common propositional content between them. For instance, to see the common propositional content between \( p \) and \( \neg p \) Tom's making an effort must be understood as a generalized paraphrase of his studying more than eight hours every day. It should also be noted that during the process, information such as last year of (1) and this year of (3) are excluded from the propositional content. Such information is considered to define the context in which the extracted proposition is true or false. Proposition \( p \), Tom's studying more than eight hours every day, is false in the context which is defined by the term last year while it is true in the context which is defined by the term this year. In other words, one is contrasting two contexts in terms of the common proposition: in the past (last year) the proposition is false whereas in the future (this year) it is true.

The biconditional frame often plays an evaluative function: desirability or undesirability of one pair of proposition is emphasized in contrast to the other pair of proposition. Desirability is often expressed as a beneficial or harmful quality of the consequence. It is often expressed by evaluative words and phrases such as achieve his goal (desirable), pass an examination (desirable) and fail (undesirable). Frame 3 is intended to show the stage of frame specification in which opposite evaluation has been awarded to the consequences.

Frame 3

<table>
<thead>
<tr>
<th>( p )</th>
<th>( q )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition (non-factual)</strong></td>
<td><strong>Desirable Consequence (non-factual)</strong></td>
</tr>
<tr>
<td>Tom should study more than eight hours every day</td>
<td>Tom will be able to achieve his goal of passing the examination</td>
</tr>
<tr>
<td>( \neg p )</td>
<td>( \neg q )</td>
</tr>
<tr>
<td><strong>Condition (factual)</strong></td>
<td><strong>Undesirable Consequence (factual)</strong></td>
</tr>
<tr>
<td>Tom didn't make any effort</td>
<td>Tom failed in the examination</td>
</tr>
</tbody>
</table>

According to the context, the time sequence most generally specified as the condition-consequence relation may be defined by more specific terms which can indicate the semantic content of propositions and the relationship among them more clearly. For instance, if proposition \( p \) interpreted as Condition expresses an action to be taken by some agent in hope of attaining a desirable consequence, it will be further specified as the agent's Means to attain that desirable consequence while proposition \( q \) specified simply as Desirable Consequence will be further specified as Goal. Thus, the general condition-consequence relation may be specified as Means-Goal relation. As opposed to proposition \( p \), proposition \( \neg p \) may express the lack of action by the agent, which will be specified as Lack of Action or Inaction rather than simply as Condition. The undesirable consequence resulting from Inaction may be specified as Problem. If proposition \( p \) is interpreted as a response to the problem, then it may be specified as Solution. Thus, \( p \) can be specified both as a means to achieve the goal \( q \) and as a solution for the problem \( \neg q \). It is important to identify this group of general lexical items that can label the propositions to indicate the properties of the frame. Frame 4 contains such labels to indicate a more specific quality than a pair of general condition-consequence relation:

The Counterfactual Frame 199
One of the important aspects of the frame specification is to identify the pragmatic function, that is, the type of interaction between the writer and the reader, which the frame as a whole indicates. Since the texts to be analyzed in this paper are all news articles and thus the speech act performed by the writer is generally regarded as that of reporting. In this sense, news articles are different from other types of text such as advertisements, which generally play persuasive functions to prompt the reader to take an action: buying the goods being advertised. In news articles, however, various types of speech act are assumed to be embedded in reporting: news stories may report an event in which one of the characters recommends that another character should take some action, for instance. In this case, the interaction between the two characters is embedded in that between the writer of the story and the reader. As for the made-up example we have been using here, proposition \( p \) is a recommended action to be taken not by the reader but by Tom. If the reader is assumed to identify himself with Tom by taking Tom’s position, however, it is possible to regard the recommendation as an interaction between the writer and Tom. The appropriateness of the recommended action is emphasized by its desirable consequence and by the fact that it is a solution to the problem (Tom has been in the undesirable situation brought about by his failure in the examination). The act of recommendation is, therefore, considered to be performed not by one proposition \( p \) alone but rather by the frame as a whole. It is, however, true that proposition \( p \) is the necessary factor of the speech act of recommendation. That is why the label Recommendation is attached to proposition \( p \) as its pragmatic specification in Frame 5:

**Frame 4**

<table>
<thead>
<tr>
<th>( p ): Condition (non-factual)</th>
<th>( q ): Desirable Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means to achieve the goal</td>
<td>Goal</td>
</tr>
<tr>
<td>Solution for the problem</td>
<td></td>
</tr>
<tr>
<td>Tom should study more than eight hours every day</td>
<td>Tom will be able to achieve his goal of passing the examination</td>
</tr>
</tbody>
</table>

\( \neg p \): Condition (factual)

<table>
<thead>
<tr>
<th>Inaction/Lack of Action</th>
<th>( \neg q ): Undesirable Consequence (factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom didn't make any effort</td>
<td>Tom failed in the examination</td>
</tr>
</tbody>
</table>

**Frame 5**

<table>
<thead>
<tr>
<th>( p ): Condition (non-factual)</th>
<th>( q ): Desirable Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means to achieve the goal</td>
<td>Goal</td>
</tr>
<tr>
<td>Solution for the problem</td>
<td></td>
</tr>
<tr>
<td>Recommendation</td>
<td></td>
</tr>
<tr>
<td>Tom should study more than eight hours every day</td>
<td>Tom will be able to achieve his goal of passing the examination</td>
</tr>
</tbody>
</table>

\( \neg p \): Condition (factual)

<table>
<thead>
<tr>
<th>Inaction/Lack of Action</th>
<th>( \neg q ): Undesirable Consequence (factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom didn't make any effort</td>
<td>Tom failed in the examination</td>
</tr>
</tbody>
</table>

Tom didn't make any effort
In the non-authentic example text the validity of all the propositions depends on the
writer himself: Truthfulness of the sentences is attributed to the writer himself. In many
cases, however, the writer attributes validity of propositions to other sources. Attribution is
another important factor to be considered in the frame specification. To illustrate this point,
the example text is modified as follows:

(1) Tom didn't make any effort last year. (2) Consequently, he failed in the examination. (3) Tom's mother advised him to study more than eight hours every day this year. (4) If he follows her advice, he may be able to achieve his goal of passing the examination.

Sentence (3) shows that advice or recommendation is an act by Tom's mother and not by the
writer himself: the recommendation is attributed to Tom's mother. By attributing propositions
to another information source, the writer is exempted from commitment to their validity.
Regarding (3) it would be even possible that the writer does not agree with Tom's mother
and finds her advice unhelpful. Indeed, it is possible to add another sentence (5) to the
modified example: (5) But she should have known better. Thus, attribution can totally
change the interpretation of text and have a significant effect on the construction of a frame.
Except for the recommendation in (3), all the other propositions are unattributed, that is, the
writer's assertion, (1) and (2), and the writer's prediction (4). Frame 6 shows the
specification of the frame for the modified example with difference in attribution added to
each proposition:

Frame 6

<table>
<thead>
<tr>
<th>p: Condition (non-factual)</th>
<th>q: Desirable Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means to achieve the goal</td>
<td>Goal</td>
</tr>
<tr>
<td>Solution for the problem</td>
<td></td>
</tr>
<tr>
<td>Recommendation <strong>attributed to Tom's mother</strong></td>
<td><strong>Unattributed:</strong> the writer's prediction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>¬p: Condition (factual)</th>
<th>¬q: Undesirable Consequence (factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inaction/Lack of Action</td>
<td>Problem</td>
</tr>
<tr>
<td><strong>Unattributed:</strong> the writer's assertion</td>
<td><strong>Unattributed:</strong> the writer's assertion</td>
</tr>
</tbody>
</table>

| Tom didn't make any effort | Tom failed in the examination |

In the end it should be added that the frame specification process often requires filling
in the vacant slot of the frame with implicit information, which must be inferred from the
context based on the logical relation intrinsic to biconditional: most typically the relation of
contradiction. The text below lacks the first sentence of the made-up example so far used:

(1) Tom failed in the examination. (2) This year he should study more than eight hours every day. (3) Then, he will be able to achieve his goal of passing the examination.

The frame representing this text will leave the slot of ¬p vacant. Its propositional content
must be inferred based on contradiction between p and ¬p. It is the negation of the explicit
proposition p with its tense changed to past: he didn't study more than eight hours every day.
5. Text Analysis

In this section authentic data is analysed in terms of the counterfactual frame described in the previous sections. The data consists of articles published in an American news magazine *Time* and one news script downloaded from the CNN homepage. Some of the example texts are parts of longer texts. The mark (...) added at the beginning or end of the cited parts indicates that there is a preceding or succeeding text. In many cases the sentences of the text are numbered for referential convenience. Each example text is followed by its frame analysis: a diagrammatic representation of the frame specification. Titles of the subsections are intended to show brief textual characterisations of the specification patterns.

5.1 Missed Chance

Text 1

How the lessons of Iraq paid off in Libya. By Fareed Zakaria

Generals fight the last war, and that's a mistake. The international intervention in Libya has been backward-looking - but in an entirely different sense. It has been prosecuted with the memory of the Iraq war firmly in mind. Only this time the approach has been to view the last war as a negative example. The international coalition - and even the Libyan opposition - is doing pretty much the opposite of what was done in Iraq. As rough-and-ready rules of the road go, this is not a bad one to follow. In deciding whether to intervene, President Obama was clearly trying to avoid the mistakes of Iraq. He insisted on a set of conditions before he would involve the U.S. in the operation. First, there had to be a local opposition movement that was willing and able to wage war against the dictator. Any international action had to be requested by the locals. Second, given the nature of the Arab world, it was important to gain regional legitimacy and ensure that outside intervention in Libya was not denounced as another example of Western imperialism in Muslim lands. Even Arab countries were drawn into the coalition. Third, a broader, legal legitimacy was sought through the U.N. And finally, European allies who were pressing for intervention were put on notice that the operation would have to be genuinely multilateral, with them bearing significant costs.

It is important to recognize how different this is from Iraq, where the Bush Administration - either through arrogance or incompetence - got almost none of these conditions fulfilled. There were many paths to meeting some of them. Had U.N. weapons inspectors been given more time in the spring of 2003, the U.N. Security Council might well have endorsed the plan. Countries like India were seriously considering sending tens of thousands of peacekeeping troops, but only if there was a U.N.-blessed operation with a U.S. commander who also wore a U.N. hat (as was the case in Bosnia). But these were seen as petty, legalistic annoyances, and the operation felt like an American one from start to finish. (...) *(TIME September 5, 2011)*

This passage is the first two paragraphs of a much longer text. Actually, the text as a whole is analysed in terms of a factual frame in which two opposite courses of action really taken in Iraq war and Libya war are compared.8 The conditions set by President Obama for the US involvement in the war were fulfilled (factual \( p; \text{response} \)) whereas they were neglected by President Bush (factual \( \neg p; \text{alternative response} \)). As a result, the intervention was multilateral UN operation in the case of Libya war (factual \( q; \text{desirable consequence} \)) whereas the intervention felt like an American one from start to finish (factual \( \neg q; \text{undesirable consequence} \)) in the case of Iraq war. The passage reports that Obama Administration learned a lesson from the past mistake made by Bush Administration.

---

8 See Ohashi (2011) for the analysis of this text in terms of the factual frame.
Regarding the counterfactual frame which we are attempting to describe here, however, attention should be drawn to the counterfactual sentence in the second paragraph:

**Had** U.N. weapons inspectors **been given** more time in the spring of 2003, the U.N. Security Council **might well have endorsed** the plan.

In this sentence a counterfactual (a type of non-factual) proposition is explicit and is in contrast with implicit factual propositions. The implicit propositions constitute the undesirable course of action that was actually taken by Bush Administration. The diagram below is intended to indicate the contrast established in the frame:

<table>
<thead>
<tr>
<th>$p$: Condition (non-factual)</th>
<th>$q$: Desirable Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>Chance</td>
</tr>
<tr>
<td>Had U.N. weapons inspectors <strong>been given</strong> more time in the spring of 2003</td>
<td>the U.N. Security Council <strong>might well have endorsed</strong> the plan</td>
</tr>
<tr>
<td>$\neg p$: Condition (factual)</td>
<td>$\neg q$: Undesirable Consequence (factual)</td>
</tr>
<tr>
<td>Violation</td>
<td>No Gain</td>
</tr>
<tr>
<td>&lt;UN inspectors <strong>were not given</strong> more time in the spring of 2003.&gt;</td>
<td>&lt;the U.N. Security Council <strong>did not endorse</strong> the plan&gt;</td>
</tr>
</tbody>
</table>

Hereafter, < > indicates that the information in it is implicit in the text. The underlined parts of propositions indicate that they determine factuality.  

Similarly, in the subsequent sentence of the passage another contrast between factual and non-factual courses of action can be identified. It is shown in the diagram below:

<table>
<thead>
<tr>
<th>$p$: Condition (non-factual)</th>
<th>$q$: Desirable Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>Chance</td>
</tr>
<tr>
<td>Only if there <strong>was</strong> a U.N.-blessed operation</td>
<td>Countries like India <strong>were considering</strong> sending tens of thousands of peacekeeping troops</td>
</tr>
<tr>
<td>$\neg p$: Condition (factual)</td>
<td>$\neg q$: Undesirable Consequence (factual)</td>
</tr>
<tr>
<td>Violation</td>
<td>No Gain</td>
</tr>
<tr>
<td>&lt;there <strong>was</strong> no UN-blessed operation&gt;</td>
<td>&lt;Countries like India <strong>didn't send</strong> tens of thousands of peacekeeping troops&gt;</td>
</tr>
</tbody>
</table>

The lexical items, *if* and *considering* contained in $p$ and $q$, indicate that they are hypothetical or non-factual information. In both of the frames constructed above the relation between $p$ and $q$, is regarded as a general condition-consequence relation, which is further specified as

---

9 See Footnote 3
prerequisite-chance while the relation between $\neg p$ and $\neg q$ is regarded as condition-consequence, which is further specified as violation-no gain. In both of them the desirable course of action is specified as non-factual while the undesirable course of action, which is implicit, is specified as factual. The contrast between the factual and the non-factual (counterfactual) in the frames is made to emphasize the great chance that was missed because of the violation of the prerequisite. The frames can also be understood as a criticism for having made a mistake in the choice between two incompatible courses of action.

5.2 Benefits Gained

Text 2
Power Steering
How the boss of Fiat and Chrysler is driving an auto-industry revival
(...) A little Italian Love

(1)When Fiat took charge of the Jefferson North assembly plant, one of the last auto-assembly lines left in Detroit, it was a wreck: the roof leaked, bathrooms were falling apart, and one shift had been idled as then owner Cerberus fought desperately to merely survive. (2)Rather than close the plant for renovation, Fiat paid assembly workers to rebuild it. (3)They painted, made repairs and reconfigured all the conveyance systems. (4)Fiat made lots of cosmetic changes too, installing new locker rooms and an atrium break area.

(5)More important, Fiat sent over some two dozen workers from its Pomigliano plant in southern Italy to teach its World Class Manufacturing program. (6)Rather than bringing in squads of industrial engineers to dictate the exact sequence of each assembly process, workers were trained to use analytical tools to help them understand each process in the 400 or so workstations on the floor - for example, what's the most efficient and most ergonomic way of tightening a seat bolt.

(7)The emphasis is on safety and increased knowledge, which boosts productivity because workers, not engineers, own the quality-control process. (8)“The people are much more proactive. (9)You don't see the hierarchy typical of manufacturing, [so] we had very, very strong support from the UAW,” says Stefan Ketter, global manufacturing boss for Fiat and Chrysler. (10)Team leaders now take part in warranty-analysis meetings, where Marchionne is known to show up unannounced. (...)

(TIME December 19, 2011)

<table>
<thead>
<tr>
<th>$p$: Condition (non-factual)</th>
<th>$q$: Undesirable Consequence (non-factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative Wrong Response</td>
<td>Risk Averted</td>
</tr>
<tr>
<td>(2) &lt;Fiat could have&gt; closed the plant for renovation</td>
<td>The opposite of (7-10) inferred</td>
</tr>
<tr>
<td>(6) &lt;Fiat could have&gt; brought in squads of industrial engineers to dictate the exact sequence of each assembly process, engineers &lt;could have&gt; owned the quality-control process&gt;</td>
<td>&lt; the hierarchy typical of manufacturing wouldn't have boosted productivity and wouldn't have made people more proactive. We wouldn't have had very strong support from UAW. There would have been no chance for team leaders to take part in important meetings.&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$\neg p$: Condition (factual)</th>
<th>$\neg q$: Desirable Consequence (factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct Response made</td>
<td>Benefit gained</td>
</tr>
<tr>
<td>(2-3)Fiat paid assembly workers to rebuild it. They painted ... all the conveyance systems.</td>
<td>(7)The emphasis is on safety and increased knowledge, which boosts productivity</td>
</tr>
<tr>
<td>(5) Fiat sent over some two dozen workers from its Pomigliano plant</td>
<td>(8) The people are much more proactive</td>
</tr>
<tr>
<td>(6) workers were trained to use analytical tools to help them understand each process... tightening a seat bolt</td>
<td>(9) You don't see the hierarchy typical of manufacturing, [so] we had very, very strong support from the UAW</td>
</tr>
<tr>
<td>(7) workers owned the quality-control process</td>
<td>(10) Team leaders now take part in warranty-analysis meetings</td>
</tr>
</tbody>
</table>
In Text 2 two responses\textsuperscript{10} to the situation expressed in (1) are contrasted: worker-centred management and more conventional top-down management. The former was actually chosen by Fiat and it brought about the desirable consequence. As opposed to $\neg p$ specified here as Response, $p$ is specified as Alternative Response, which is retrieved from (2), (6) and (7)\textsuperscript{11}. In the diagram the propositions retrieved are shown as non-factual by the inserted predicates could have + past participles. The expression rather than in (2) and (6), and the negative phrase not engineers in (7), make it possible to retrieve the propositions opposite to the propositions functioning as $\neg p$. The undesirable consequence, which would have happened if the alternative response had been made, is not expressed in the passage and must be inferred as the opposite information of the desirable consequence expressed in (7)-(10). The frame represents a context where a correct response has been made with benefits gained while the risk, which would have resulted from the alternative wrong response, was averted.

Text 2 might be a useful example to emphasise one of the most basic qualities of frames: they are creatively constructed by the reader of the text. Their construction depends on the reader's judgement on various aspects of specification: propositional contents, factuality of propositions, clause relational functions between propositions such as response-consequence, pragmatic functions of the frame as a whole and attribution. In order to establish consistent logical relations the reader has to extract the common element from apparently different original sentences through generalization. The reader also must group multiple propositions as one unit and often infer implicit propositions from the context to fill in the slots of the frame. Thus, it is natural that the same text should be interpreted in terms of different frame specifications if the reader's judgement on those points varies.

For instance, unlike the analysis of Text 2 described above, it might be interpreted in terms of a factual frame. In the above analysis, $p$ is specified as non-factual alternative response. This specification depends on the judgement that those propositions regarded as $p$ are actions that could have been taken but were not. The reader may generalise what they mean as a unified proposition: conventional top-down management could have been executed. Similarly, the propositions constituting $\neg p$ may be generalised as a unified proposition: worker-centred management was executed. If the propositional content of the frame is specified at this level of generalization, however, it is also possible for $p$ to be specified as factual: conventional top-down management was executed. This specification is represented by the following frame:

\textsuperscript{10} Response is defined as an action taken or avoided in face of a situation. It results in some consequence and in that sense can be regarded as a specific type of condition.

\textsuperscript{11} In the frame analysis described in this paper multiple propositions are often assumed to be semantically combined and function as one unit: in this case, for instance, (2)(6)(7) are assumed to function as a proposition meaning the conventional top-down management could have been executed. On the other hand, the propositions constituting $\neg p$ are assumed to be combined as a proposition meaning the new worker-centred management was executed.
The frame now represents a factual problem-solution sequence: the undesirable situation (problem) due to the mismanagement (wrong response) was improved by the worker-centred management executed by Fiat (solution) with desirable consequences (benefit). It is an example of what is called the factual frame elsewhere\textsuperscript{12}. Suffice it to say that different interpretations of a text can be reflected as different specifications of a biconditional frame.

### 5.3 Scenario Denied

In the previous examples of the counterfactual frame, no order in time can be identified between the factual and the non-factual (counterfactual): the incidents expressed in non-factual propositions could have happened at the same point in time line as the incidents expressed in the factual propositions. Those non-factual propositions, in this sense, depend on factual propositions in their existence. The non-factual propositions found in Text 3, on the other hand, are specified as an expectation attributed to one of the characters in the article. The expectation that the character had at one point in time line is contrasted with the opposite fact which occurred at a later point in time line. That is to say, there is time difference between the expectation and the fact: the non-factual propositions precede the factual propositions in time. Due to this sequence between the expectation and the fact, the contrast between them can be specified as the expectation-denial relation.

In Text 3 only the sentences in the second paragraph are numbered for referential convenience.

### Text 3

**DIED Sócrates**

“Football is freedom,” Bob Marley said, and no player epitomized hat idea more than Sócrates, both on and off the soccer field. The midfield maestro of the last Brazilian team to embody their country's jogo bonito (“beautiful game”) philosophy of open, attacking soccer died of septic shock on Dec.4 at 57. He and his teammates never won the World Cup - though their thrilling play at the 1982 tournament remains legendary - but their stylish, free spirited performances earned them an eternal place in the Valhalla of the game. Sócrates Brasileiro Sampaio de Souza Vieira de Oliveira was also lionized by Brazilians who resisted the military dictatorship that ruled for 21 years, until 1985. Current President Dilma Rousseff called him one of Brazil's “most cherished sons.”

\textsuperscript{12} See Ohashi (2011)
(1) The dictatorship saw soccer as a release valve for popular frustration, expecting Brazil's players to be both brilliant and obedient. (2) Sócrates would have none of it. (3) Like his hero Che Guevara, the bearded 6-ft-4-in. (193 cm) rebel held a medical degree, which he completed during his early years as a pro. (4) He used soccer's exalted status as a platform to agitate for change, founding a democracy movement at his São Paulo club, Corinthians, so players could encourage Brazilians to demand the vote. (5) Later, he completed a Ph.D. in philosophy and became a media figure, speaking out for the poor. (6) He also got his last wish, having once expressed a hope to die on a day when Corinthians won their league title. (7) They did, hours after news broke of his death. - TONY KARON

(TIME December 19, 2011)

Unlike in Text 1 and 2, desirability of the \( p \)-\( q \) sequences is attributed to one of the characters: it is not the writer but the dictator that regards it as a desirable scenario. The scenario is denied by the writer's averral: \( \neg p \) and \( \neg q \). This kind of interaction between the writer and one of the characters in the text is not found in the previous examples.

Conditions here are specified as a state of affairs or situation rather than as a response, which is most typically an intentional action.

In order to extract a common proposition some kind of generalization is required: for instance, Brazil's players and an individual, Sócrates, must be treated as exchangeable information between \( p \) and \( \neg p \). It is also required to see being a rebel as opposite to being brilliant and obedient.

5.4 Recommendation Rejected

In Text 4 the two courses of action contrasted are respectively specified as a recommendation by one party and its rejection by another. The frame is specified as a type of speech act chain.

Text 4
Birth Control Plan B
(1) A policy change that would expand access to emergency contraception has hit a snag. (2) In a surprise move, the U.S. Department of Health and Human Services (HHS) overrode the Food and Drug Administration's recommendation to remove age restrictions on the morning-after pill Plan B One-Step, which would have made the drug available without a prescription to all women. (3) (Those under 17 currently need a prescription.) (4) In rejecting the advice, HHS cited concerns about putting weighty reproductive decisions in the hands of girls as young as 11. (TIME December 19, 2011)
This frame is different from those in preceding examples in that desirability must be detached from Consequence at the most basic level of specification since evaluation of propositions constituting Consequence $q$ differs between the two participants: FDA and HHS. One of the consequences of the recommended change is specified as Desirable Consequence attributed to FDA while the other Undesirable Consequence attributed to HHS, which is further specified as the Reason for Rejection.

5.5 Problem-Solution

Text 5
Decoding Breast Cancer

(1) A gene test lets some patients with early tumors skip radiation

(2) Cancer patients often say the hardest part of their disease is not the diagnosis but the treatment—and all the decisions they need to make on the road to recovery. (3) So there was welcome news for breast-cancer patients from the San Antonio Breast Cancer Conference, where researchers reported on a genetic test that may spare many women unnecessary radiation therapy.

(4) The test may be used by some 60,000 American women who are diagnosed each year with ductal carcinoma in situ (DCIS), an early form of breast cancer that starts in the milk ducts. (5) Some of these tumors never leave the ducts, while others aggressively spread to other tissues. (6) Until now, doctors didn't have reliable ways to distinguish the two, so most women opted to play it safe and get both surgery and radiation to treat their cancer even though the potentially toxic radiation benefited just 15% to 30% of them.

(7) Now scientists report that a modified version of an existing gene test called Oncotype Dx, which has been on the market since 2004, can identify which tumors are more aggressive or docile. (8) In a study of 327 women diagnosed with DCIS, the 21-gene test deemed about 75% low risk, meaning they would likely need only surgery to remove the tumors. (9) Over 10 years, just 5% of these women developed invasive cancers. (10) By contrast, about 11% of women showed high-risk genetic signals, and 19% of them saw their disease spread within a decade.

(11) The existing version of Oncotype Dx is currently used to guide chemotherapy in women diagnosed with other early-stage breast cancers. (12) Those who score low have a small risk of seeing their tumors recur and can skip chemo, while those whose tumors yield higher scores should forge ahead with chemotherapy.

(13) At more than $4,000, the test is expensive, but compared with radiation therapy, which can cost...
upwards of $20,000, the genetic analysis could end up saving both lives and dollars.

\[ \neg p: \text{Condition (factual)} \\
\text{Lack of Action/Solution} \]

\[ \neg q: \text{Undesirable Consequence} \\
\text{Problem} \]

(5-6) Some of the tumors ... while others ... Until now, doctors didn’t have reliable ways to distinguish the two,

(6) so most women opted to play it safe and get both surgery and radiation ... just 15% to 30% of them (factual)

(13) radiation therapy can cost upwards of $20,000 (non-factual: possibility)

\[ p: \text{Condition (non-factual)} \\
\text{Solution} \]

\[ q: \text{Desirable Consequence (non-factual)} \\
\text{Benefit expected} \]

(1) A gene test/(3) a genetic test

(4) The test may be used by some 60,000 American women who are diagnosed each year with ductal carcinoma

(7) a modified version of an existing gene test called Oncotype Dx ... can identify which tumors are more aggressive or docile.

(8-12) explanation of the genetic test: the statistic details and the existing version

(1) some patients can skip radiation

(3) it can spare many women unnecessary radiation therapy.

(13) the genetic analysis could end up saving both lives and dollars.

The first thing to be noted about this frame is that factuality must be detached from Consequence at the most basic level of specification since the proposition, radiation therapy can cost upwards of $20,000, is not factual but non-factual. This is similar to the separation of desirability from Consequence at the most basic specification in the frame representing Text 4. Though it makes the structure of the frame more complex, it simply verifies the view of the simple condition-consequence relation as the most basic specification of the relation between \( p \) and \( q \) or between \( \neg p \) and \( \neg q \) of biconditional, which is accumulatively specified by desirability, factuality, etc. Setting aside the non-factual proposition mentioned above, the above frame is treated as an example of the counterfactual frame.

The factual sequence of the frame consists of one proposition specified as a current situation brought about by lack of a solution and the other specified as its undesirable consequence, problem. The non-factual sequence of propositions, on the other hand, is specified as the solution for the problem and its desirable consequence, benefit. Thus, there is a problem-solution sequence between the factual and nonfactual courses of action. It is an authentic example of the frame specification pattern that was briefly sketched at the end of Section 3.

Though the genetic test has already been reported by scientists as a new diagnostic treatment based on statistic data, it has yet to be applied to patients as is seen in (4): The test may be used by some 60,000 American women. It is, therefore, treated as a non-factual solution.13 Sentences (8)-(12) include factual propositions such as statistic data but they are

---

13 It is easy to imagine a context in which the solution has already been taken in reality. In such a case the focus of information will be shifted from the presentation of the solution to the question whether the expected consequence will be attained or not. This means that it is possible to postulate a frame specification pattern with only one of the four elements specified as non-factual. Similarly, it would be possible to postulate a specification pattern with only one element specified as factual.
considered to simply expand on the features of the genetic test yet to be used, and therefore is treated as part of $p$.

### 5.6 Ideal Status Quo in Danger

Tex 6 is the second paragraph taken from a much longer article titled: *Rain Forest for Ransom*

*Ecuador's demand: Pay us or we'll drill for oil in the Amazon.*

*Should the world say yes? By Bryan Walsh/Yasuni National Park*

In the first paragraph preceding Text 6 Yasuni National Park is described as a paradise with rich wildlife and untouched rain forest.

Text 6

(...)(1) Yasuni National Park - a 10,000-sq-km reserve on the western fringes of the Amazon basin - is indeed a paradise, considered by many scientists to be the single most biodiverse spot on the planet. (2) But it's a paradise in danger of being lost. (3) Oil companies have found rich deposits beneath the park's trees and rivers, nearly 900 million barrels of crude worth billions of dollars. (4) That's money that Ecuador - a small South American country in which a third of the population lives below the poverty line and petroleum already accounts for more than half its export revenue - badly needs, money that oil companies and consumers will be only too happy to provide if drilling is allowed to go forward. (5) If Ecuador follows the usual path of development, that's exactly what will happen - with disastrous consequences for the park. (6) “Yasuni is a truly unique place in the world,” says Gorky Villa, an Ecuadorian botanist who works with the conservation group Finding Species. (7) “Our concern is that it will be ruined before we can even understand it.” (...)

(Time December 19, 2011)

<table>
<thead>
<tr>
<th>Condition (factual)</th>
<th>Correct Response</th>
<th>$\neg q$: Desirable Consequence (factual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\neg p$: Inaction / Lack of Action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$&lt;$There are no human actions in Yasuni$&gt;$</td>
<td>(1) Yasuni National Park... is a paradise... the single most biodiverse spot on the planet</td>
<td></td>
</tr>
<tr>
<td>$p$: Condition (non-factual)</td>
<td>Wrong Response</td>
<td>$q$: Undesirable Consequence (non-factual)</td>
</tr>
<tr>
<td>Tampering/Interference</td>
<td></td>
<td>Risk/Danger</td>
</tr>
<tr>
<td>(3-4) if drilling is allowed to go forward</td>
<td>(2) it's a paradise in danger of being lost.</td>
<td>(5) that's exactly what will happen - with disastrous consequences for the park</td>
</tr>
<tr>
<td>(5) If Ecuador follows the usual path of development</td>
<td>(7) it will be ruined before we can even understand it.</td>
<td></td>
</tr>
</tbody>
</table>

Unlike in Text 5 where the factual sequence is negatively evaluated, in Text 6 it is positively evaluated: lack of action here is a condition for the ideal status quo. Accordingly, the non-factual sequence is negatively evaluated: Response is specified as Tampering or Interference; Undesirable Consequence is specified as Risk or Danger resulting from tampering the ideal status quo.

Since the negatively evaluated sequence is hypothetical, it can still be avoided in reality. Thus, the frame can indirectly function as a warning not to tamper the ideal status quo or
recommendation to maintain inaction to avoid the risk.

5.7 Risk averted

Text 7 is a part of a script for a news report on the wildfire approaching a nuclear facility.

Text 7

Wildfires near Santa Fe worry residents
By Molly Green, CNN June 29, 2011 -- Updated 0123 GMT (0923 HKT)
(...)(1)The fire has raised concerns about whether hazardous materials kept there are being adequately guarded. (2)McMillan and other officials say the materials are secure, and that any information important to the safety of the public would be announced.
(3)Doug Tucker, the Los Alamos fire chief, said the Las Conchas fire touches the south border of the lab's 40-square-mile facility, and comes close to the west border. (4)He made no promises that it would stay away.
(5)But McMillan said lab personnel had prepared for such an event.
(6)“They have anticipated the problem of fire, and they've taken precautions,” Sen. Jeff Bingaman of New Mexico told CNN Monday. (7)“The structures that are central to the operation of the laboratory are well protected.” (...)

The undesirable course of action is specified as non-factual. It should be put in contrast to the undesirable course of action specified as factual in Text 5. The difference between Problem (found in Text 5) and Risk/Danger (found in Text 6 and 7) is in factuality: problem is regarded as factual while risk/danger non-factual. Inaction results in an undesirable consequence (Risk) here while it results in a desirable consequence (Ideal Status quo) in Text 6. In Text 7 the factual sequence attributed to the officials plays a pragmatic function of convincing the residents of security.

One of the conspicuous characteristics of the above frame is that all the 'factual' propositions are attributed and are not the script writer's aerral. Though the frame as a whole emphasizes that the risk has been averted by the precaution taken by lab personnel, the attribution of factuality to other sources exempts CNN, the news source, from commitment to the fact.
6. Concluding Remarks

The notion of frame, as well as other similar notions such as schema and script, is variously understood among researchers. The Counterfactual frame proposed in this paper is unique in many points. Here, only five of them are mentioned again to summarise its main characteristics.

First, it is a frame that is assumed to be exploited to enhance the process of reading comprehension.

Second, it is a type of biconditional frame which is most basically regarded as the logical relation of biconditional. Biconditional frames consist of four propositions symbolically represented as \( p, q, \neg p \) and \( \neg q \).

Third, its propositions are creatively specified during the comprehension process based on both textual and contextual information.

Fourth, its propositions are specified in terms of factuality in such a way that one of the two pairs of propositions, for example, \( p \) and \( q \) are specified as factual while the other pair of propositions, for example, \( \neg p \) and \( \neg q \) are specified as non-factual. (Factuality of the pairs can be reversed.)

Fifth, the specification of the frame is a creative process and the propositions are specified in terms of not only factuality but also many other aspects: propositional contents, desirability, clause relations such as Condition-Consequence, pragmatic functions and attribution.

It must be added that I have no intention to claim that a comprehensive list of specification patterns of the counterfactual frame has been made in this paper. On the contrary, analysis of each text shows its own unique features and at this stage I cannot predict even roughly how many specification patterns should be postulated. Based on the very limited amount of analysis, however, it can at least be said that those aspects of specification mentioned above are useful enough to elucidate unique features of each text. Though, admittedly, the lexical items that are used for showing clause relations, such as condition, consequence, problem, solution, risk, benefit, gained, missed, etc., have not been well-defined yet, phrases such as missed chance and risk averted seem to be useful to evoke predictable elements of the frame. It would also be pedagogically valuable to identify such phrases with linguistic devices associated with them.

Bibliography


Hoey, M. (1979) Signalling in Discourse. Discourse Analysis Monographs, Birmingham:
Ælter, University of Birmingham.


