

# Accounting for the Importance of Changes in Event Actuality in the Representation of Narrative

Pablo Gervás<sup>1</sup>, José Luis López-Calle<sup>1</sup>

*Facultad de Informática, Universidad Complutense de Madrid, Madrid, 28040 Spain*

## Abstract

The mainstay of any story is the sequence of events that has happened to the characters involved in it. However, stories often mention events that have not happened – wishes, dreams, duties, beliefs, plans – that are sometimes extremely important for the plot as readers understand it. These events subsequently either become true, or the hope of their ever becoming true is dashed by circumstances. The initial mentions of such non-actual events very often act as drivers of the plot, or establish some of the conflicts that are essential to the story. When it happens, the change in truth status of those statements tends to operate as partial closure for the plot. In those cases, understanding the plot of the story involves being able to represent not only the events themselves but how the initial views on these events evolve throughout the story towards a resolution of the conflict. The present paper proposes a representation of narrative that includes means for identifying non-actual events of this kind, and for keeping track of when their non-actual status changes and what it evolves to. This representation is shown to capture important aspects of narratives with complex structure in terms of shifting views on the truth value of statements fundamental to the plot, such as whether the hero is alive or whether the heroine is married to the villain or not.

## Keywords

non-actual events, modality, potentiality, conflict, chronology

## 1. Introduction

We have the intuition that narrative tells us about event that have happened, whether in the real world or in a fictional one. This is most often the case. Significant effort has been invested over the years to represent this concept of narrative as a sequence of events. However, when we summarise many well known stories, we find that they actually boil down to descriptions of what characters wanted to happen – and often did not – or what they did not want to happen – but then happened anyway. In some cases, the event under consideration – or its complete opposite – eventually happens, but the information that is relevant to the plot of the story is not that fact, but rather the contrast – or the relative time difference – between the initial statement concerning the event and the moment in the story in which the event becomes true. To consider these cases adequately requires means for representing not just the fact that events happen but the fact that they may happen, or that the author expresses particular constraints on whether they may happen. We refer to this as the *potentiality* of events.

The present paper explores the characteristics of this type of non-event that need to be captured to allow correct interpretation of their role in the plot of the story. This is addressed in terms of three major aspects: (1) a convenient expression of how the potentiality of events is usually expressed in narrative discourse, (2) some means for identifying whether – and when – in the narrative an action expressed potentially either occurs or is refuted, and (3) consideration of how this additional point of view on actions influences the representation of relative chronology for narratives.

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\*Corresponding author.

✉ pgervas@ucm.es (P. Gervás); joslop11@ucm.es (J. L. López-Calle)

🌐 <http://nil.fdi.ucm.es/> (P. Gervás); <http://nil.fdi.ucm.es/> (J. L. López-Calle)

🆔 0000-0003-4906-9837 (P. Gervás); 0000-0002-4160-9408 (J. L. López-Calle)



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## 2. Previous Work

The different topics that need to be covered to provide background for the paper are: how to represent events mentioned in a narrative that are not stated to have happened, and existing efforts for the representation of narrative relevant to the work reported here.

### 2.1. Representing Events that Do Not Happen

A very important property of narrative thinking is that it allows us to think about “non-actual episodes”: episodes that involve events at times other than the present, that might have happened, that are imaginary, or that are happening somewhere else [1]. For a correct interpretation of narrative it is important to be able to identify the different modes in which events are being mentioned, and to process these events appropriately in accordance to the mode in which they are presented. In particular, we will be concerned with situations in which the same event is presented in a narrative more than once, and in different modes at each occurrence.

Some of the non-actual events that occur in narrative correspond to modal statements. Several authors in the field of narratology have addressed the important role played by modality in narrative. The basic treatment of modality in narrative was established by Greimas [2], who identifies the most widely used modalities as: wanting (*vouloir*), having to do (*devoir*), being able (*pouvoir*), and knowing (*savoir*). Todorov [3], who considers modalities as *narrative transformations*, introduces an additional distinction between simple narrative transformations (the predicate marking the modality simply qualifies the truth value attributed to the modalised statement, as in ‘having to do’ or ‘able to do’, and there is a single subject for both the modality and the statement) and complex narrative transformations (the predicate introduces additional nuance, and the subject of the modality may be different from the subject of the statement, as in ‘X knows/finds out/learns that Y has done something’). Todorov introduces a distinction between modal verbs (basic modalities: being able, wanting and having to do) and transmodal verbs (verbs for perception and intellection). Todorov considers that modal verbs are fundamental for the existence of stories. Tenev [4] addresses the issue of *literary potentiality*, which he defines as “the possibility that is inherent to the literary work which makes different readings possible”. He analyses this in terms of different possible accounts of modality, and outlines that conflict in narrative may arise from “the clash of desire and obligation, or of two desires, or of two incompatible obligations, etc.”

The importance of this type of modality information has been recognised in its inclusion in the ISO-TimeML annotation scheme [5]. The ISO-TimeML scheme provides a structured approach to annotating both actual and non-actual events through attributes such as Mood, Modality, and Class (e.g., I-State, I-Event), as well as subordination links (e.g., Intensional, Factive). However, the annotation scheme is designed to capture the values for these attributes for a sentence at a specific point in the discourse, and it does not consider how to represent transitions in Modality Status, which is a valuable feature for event annotation.

In her description of the modal structure of narrative universes Ryan [6] presents a model of narrative based on a number of possible worlds, one of them describing the ‘actual world’ of the narrative – which contains the events considered to be true in the storyworld – and the others describing alternative views of the storyworld which are predicated in a different mode. She considers a number of different modes: epistemic, hypothetical, intentional, desired, moral and obligation. These describe alternative possibilities of what might have or should have been true in the future, what characters wish or intend, or what morals dictate should be true. This set of worlds she considers a narrative universe. She also considers the possibility of having another completely different set of equivalent worlds describing a different storyworld – an alternate universe. Ryan’s distinction between the actual world and all the satellite possible worlds within the same narrative universe corresponds to the difference we want to represent. According to Ryan, the structure of a narrative may be described as a sequence of movements of the set of worlds in a narrative universe, over which the characters involved attempt to make the actual world match as best as possible their personal model worlds. She proposes different kinds of conflict that may drive a narrative in terms of the different contrasts between actual and personal

worlds that the story may resolve.

## 2.2. Formal Representation of Narrative Discourse

Gervás [7] proposed a simplified computational model capable of representing discourses for embedded stories and interpret them onto a representation that captures their recursive structure. A revised version [8] of that model explored how embedded stories are exploited by authors to progressively modify the knowledge that the reader has about the events true in the storyworld, either revealing new information or forcing the revision of information already given. The model constructed a representation that allowed several conflicting views in terms of what events are true in the storyworld to be held at different points during the reading of the discourse, so that the impression on the reader could be captured as an ordered succession of such epistemic states.

Gervás and López Calle [9] propose a representation of events in a story that captures aspects such as the co-existence of alternate universes within the same narrative, the use of embedded stories, and means for representing relative chronology between the *fabulae* for different narrative levels and between *fabula* and discourse. In this approach, the events narrated in the story are represented explicitly as *action units*. An action unit is a representation of an event that includes data on: the storyworld in which the event takes place, the depth of narrative level at which the event is narrated, temporal relations of the action unit with other action units, and a number of fields that capture the informational content of the action unit. This representation also included data on modality that allowed representation of different types of modality of reported speech. For these cases, the clause that reports the telling and the clause describing the reported speech are encoded as separate action units, with the Action Unit ID of the reported clause appearing as direct object of the reporting clause. This notation also allows for the representation of sets of clauses being reported in a single reporting clause. This solution allows distinct handling of the reporting clause – which is often part of the frame story – and the reported clauses – which are usually part of the embedded story – and separate treatment of them in terms of: the universe they are ascribed to, the narrative level at which they operate, their relative chronology, and the relation of embedding between them. The proposed scheme for representation is illustrated with examples from the film “The Princess Bride” (Rob Reiner, 1987). For the rest of the paper we will be relying on this basic representation as a seed for the extensions proposed here.

## 3. A Proposal for Representing Potentiality in Movies

The sources reviewed in Section 2.1 agree on the importance of modality as a primary contributor to plot-relevant conflict in narrative. They also establish that plots often pivot precisely on the transition from an initial contrast between a modal and an actual view of the storyworld and a final resolution where either the modality has changed or it has become actual. It is therefore important to ensure that solutions for the representation of narrative capture not just modality as it is stated in the course of a narrative discourse but also any relations between such modal statements and developments later in the discourse that modify the status of the corresponding statements in any relevant way. The representation proposed in this paper addresses both of these aspects.

The representation we propose is an extension to the format already described in [9], in the sense that it relies on the mechanisms presented there for the representation of alternate universes, embedded stories, and relative chronology. It introduces a refined version of the representation of informational content of action units, adapted to the more detailed processing of modal statements. It also introduces a refined set of categories for capturing the information relative to modality as explicitly declared in the discourse.

The enriched version of the representation for an action unit includes informational features grouped into the following subsets:

- *Main Information* subset: a univocal identifier to uniquely identify and contextualize each narrative unit in the dataset.

- *Action* subset: describes specific actions as portrayed on screen and transcribing dialogues from the film. It includes the main character involved, and either a line of dialogue or a description of what is happening on screen.
- *Grammatical Breakdown* subset: the components for the identification of the type of event and the entities taking part in it. It includes: subject, verb, direct object and indirect object (temporal complements are captured in the Chronologies subset).
- *Tense & Aspect* subset: stands as a complement for Chronologies and Potentiality Subsets. It includes features for: Past, Present, Simple, Continuous, Perfect and Perfect Continuous.
- *Potentiality* subset: intended to allow representation of unrealized or hypothetical actions. It includes explicit features to represent intention, possibility, obligation, commands, questions, hypothetical scenarios, and mental scenarios.
- *Truth* subset: provides means for representing the evolution of the truth status of statements over the duration of the narrative discourse, and possible conflicts between actions. The features for this subset are described in Section 3.2.
- *Chronologies* subset: captures the sequencing and temporal relationships of each narrative unit, distinguishing between discourse and Fabula, but also the absolute timeframe and granular complements. The features for this subset are beyond the scope of the present paper. Interested readers can find them described in [9].

This representation inherits from the previous version the notational solution for representing complex events as groups of action units linked by the ids for (the action unit representing) subordinate clauses appearing as arguments in (the action unit representing) the main clause. It also inherits the procedure for representing relative chronology in terms of relations between action unit ids according to Allen’s temporal algebra [10] (see [9] for details).

### 3.1. Representing Modality in Narrative Discourse

We have observed that the potentiality of actions within narrative discourses is not marked exclusively in terms of modal statements. There is a larger set of linguistic markers that are often used to convey equivalent meanings of potentiality. For instance, commands suggest desired actions, hypothetical expressions explore imagined possibilities, conditional constructs explore possibilities without immediate resolution, dreams and visions introduce alternate realities, and questions introduce uncertainties or emotional reactions. In each of these cases, there are potentialities that may be relevant to the plot of a story that would be missed if annotation is restricted to potentialities explicitly marked via modal statements. Yet there is also an important risk that, if we allow the direct annotation of potentiality as inferred from these cases, the resulting material may be specific to the view of a particular annotator. For this reason we have opted to restrict the annotation format to the set of elements that are expressed explicit in the discourse in terms of linguistic markers, while attempting to include among them all those that we reckon may be susceptible of conveying some form of potentiality.

In view of this, the representation for potentiality has been extended to include the following categories:

- *Assertive*: Statements that declare information or describe facts.
- *Subjunctive*: Statements corresponding to sentences in subjunctive mode.
- *Imperative*: Statements corresponding to sentences in imperative mode.
- *Modal*: Expressions that convey possibility, necessity, or hypothetical situations.
- *Conditional*: Dialogue lines that establish conditions or hypothetical premises (e.g., “If you wish...”, “Should you decide...”).
- *Result*: Statements that capture the outcome or consequence that follows from a Conditional or Modal expression.
- *Purpose*: Statements that describe the purpose or reason for doing something
- *Interrogative*: Questions that seek information or clarification.

Action Unit ID	Character	On Screen Action Dialogue Line Action	Assertive	Subjunctive	Imperative	Modal	Conditional	Result	Purpose	Interrogative
1083	Buttercup	If we surrender,					yes	yes		
1084	Buttercup	and I return with you,	Yes							
1085	Buttercup	will you promise				will				yes
1086	Buttercup	not to hurt this man?								yes
1087	Humperdinck	May I live a thousand years and				may				
1088	Humperdinck	never hunt again.	Yes							

**Figure 1:** Buttercup negotiates Westley’s release in exchange of marrying Humperdinck.

- *Exclamatory*: Emphatic expressions that convey strong emotions.
- *Mental Scenario*: Statements that refer to mental constructs being held in mind by one of the characters.

In designing this set of categories, we have given priority to the goal of capturing cleanly the information explicitly available in the discourse in the form of linguistic markers. This differs significantly from the traditional views of modality considered in Section 2.1. It is possible to infer from this layer of information a corresponding set of markers for modality. However, there is a risk of allowing the subjectivity of the annotator to introduce contaminating information in the process if the annotation is made directly in terms of the traditional set of modality markers.

Figure 1 shows an example of a small fragment of “The Princess Bride” annotated for these features. From the point of view of annotating linguistic markers for potentiality, it shows a conditional statement by Buttercup (action units 1083-1086) describing the conditions of her proposal (“If we surrender and I return to you”, action units 1083-1084, marked as Conditional), a request for a promise on what Humperdinck will do in the future (“will you promise not to hurt this man?”, action units 1085-1086, marked as Modal of type *will*), and a description by Humperdinck of the penalties he is willing to suffer if he defaults on his promise (“May I live a thousand years and never hunt again”, action units 1087-1088, marked as Modal of type *may*) which carries an implicit commitment to the promise.

### 3.2. Representing Transitions in Modality Status

Whenever a statement has been identified as non-actual, implying a certain potentiality, it is important to track whether this status changes at some point later in the discourse. If this happens, it is important to know which event in the discourse brings the change about, and whether the transition in truth status takes place over a long span of discourse or a short one. In addition to statements that refer to the same event but assigning it a different truth status or modality, we are also interested in cases in which a statement in the discourse is initially stated as true and then falsified at a later point in the discourse. This also applies to statements presented initially with a certain potentiality, in the sense that later events that conflict with that statement also modify its status, even though the statement was never asserted as true in the first place.

To capture this information, the representation is extended with the following specific features:

- *Truth Validation Status*: used to record the ids for action units somewhere else in the discourse that modify the truth status of the current statement
- *Verifying Lapse*: used to record the length of the span of discourse between the current point in the discourse and the point where the truth status is modified
- *Conflicting AUID*: used to record ids for action units somewhere else in the discourse that represent a conflict with the current statement

Figure 2 shows an example of a small fragment of “The Princess Bride” annotated for the features described above. It constitutes a good example because it includes instances of very diverse features.



Action Unit ID	Character	On Screen Action Dialogue Line Action	Truth Validation Status	Verifying Lapse	Conflicting AUID
1082	Westley	What was that?			
1083	Buttercup	If we surrender,	1099	16	
1084	Buttercup	and I return with you,	1106	22	
1085	Buttercup	will you promise	1087	2	
1086	Buttercup	not to hurt this man?	-1485	399	
1087	Humperdinck	May I live a thousand years and	-2125	1038	
1088	Humperdinck	never hunt again.	-2125	1037	
1089	Buttercup	He is a sailor on the pirate ship "Revenge."	923	-166	
1090	Buttercup	Promise	1092, 1093	2	
1091	Buttercup	to return him to his ship.	1092, 1093	2	
1092	Humperdinck	I swear	-1119	27	
1093	Humperdinck	it will be done.	-1119	26	
1094	Humperdinck	Once we're out of sight,			1092, 1093
1095	Humperdinck	take him back to Florin and	1119	24	1092, 1094
1096	Humperdinck	throw him in the Pit of Despair.	1119	23	1092, 1095
1097	Rugen	I swear	1118	21	
1098	Rugen	it will be done.	1118	20	

**Figure 2:** The second kidnapping of Buttercup (The Princess Bride).

From the point of view of annotating truth status (*Truth Validation Status* column), it is interesting to note that:

- Buttercup's statement about Westley not being hurt ("will you promise not to hurt this man?", action units 1085-1086) is annotated with a reference to the point when Westley is tortured in the Pit of Despair ("Prince Humperdinck activates machine", action unit 1485, which leads to Westley's death; this is marked as negative to show it does not match the expected outcome of Humperdinck's promise),
- Humperdinck statement about his future ("May I live a thousand years and never hunt again", action units 1087-1088) is annotated in the *Truth Validation Status* column with a reference to Westley's decision on his life towards the end of the movie ("Whatever happens to us, I want him to live a long life alone with his cowardice", action unit 2125, marked as negative to show it does not match the expectations that Humperdinck is setting here),
- Buttercup's demand for Humperdinck's promise ("Promise to return him to his ship", action unit 1090, which is a request) is marked as a reference to his actual promise made in response ("I swear it will be done", action units 1092-1093)
- Humperdinck's actual promise ("I swear it will be done", 1092-1093) refers to the point later when Westley is taken to the Pit of Despair ("Count Rugen knocks out Westley and sets him out in the torture table", action unit 1119, again marked as negative to indicate that the expectation initially set out is being contradicted at that point)
- Humperdinck's instructions to Count Rugen ("Once we are out of sight, take him to Florin and throw him in the Pit of Despair", action units 1094-1096) refer to the point later when Westley is taken to the Pit of Despair ("Count Rugen knocks out Westley and sets him out in the torture table", action unit 1119, this time marked as positive because it does match the instruction issued by Humperdinck)

**Table 1**

Sequence of revisions on the actuality of two main driving statements for the plot of *The Princess Bride*.

Plot Point	Buttercup marries Humperdinck	Westley is dead
Buttercup and Westley consider marriage	false	false
Buttercup receives news of Westley’s demise	false	believed
Humperdinck announces his marriage to Buttercup	planned	believed
The man in black reveals himself to be Westley	planned	false
Buttercup and Westley reconciled	false	false
Buttercup negotiates marriage with Humperdinck	planned	false
Buttercup dreams she is married	nightmare	false
Westley killed in the Pit of Despair	planned	true
Westley’s friends revive him	planned	false
Buttercup and Humperdinck marry	true	false
Westley tells Buttercup her marriage is not valid	invalid	false

The Verifying Lapse column shows the distance, in terms of position in the discourse, between the events that cross refer to other events and the events they refer to. This is useful because events with a longer verifying lapse are more likely to be relevant to the plot.

The example also shows an instance of conflicting views on events being recorded:

- Humperdinck’s instructions to Count Rugen (“Once we are out of sight, take him to Florin and throw him in the Pit of Despair”, action units 1094-1096) are marked as conflicting with the promise he has just made to Buttercup (“I swear it will be done”, action units 1092-1093)

## 4. Discussion

With respect to Todorov’s terminology [3], the proposed annotation schema would tag statements introduced by modal verbs – and the related simple narrative transformations – under the *Modal* feature and statements introduced by transmodal verbs – and complex narrative transformations – under the *Mental Scenario* feature. However, it is also possible that some of the inferences described in Section 3.1 over the remaining set of linguistic markers included in the annotation might lead to estimates on modal or transmodal potentiality for additional statements not explicitly marked under those features.

Texts annotated with the ISO-TimeML annotation scheme [5] would provide relevant information on the values for some of these linguistic markers for a sentence at a given point in the discourse, which might be cross referenced with information in the proposed annotation scheme on whether and when those values change at different points in the discourse for a given narrative. Experiments based on this type of datasets for narrative will be considered as further work.

With respect to the different modes considered by Ryan [6]: epistemic, hypothetical, intentional and desired would be tagged under the *Mental Scenario* feature, whereas moral and obligation would be tagged under the *Modal* feature. As above, it is possible that inferences arising from the linguistic markers annotated may estimate additional modes of those proposed by Ryan for statements not explicitly considered under the features mentioned.

The need for additional inferences to fully identify the relevant undercurrents that drive the plot is made patent in the example described above. Buttercup’s decision to marry Humperdinck – whom he does not love – to ensure the safety of Westley – whom she loves – involves a serious conflict between her wishes for herself and her wishes for the man she loves. This conflict matches those described by Tenev [4] and Ryan [6] in their accounts of narrative. However, the conflict in itself is not represented explicitly in the current version of the annotation.

In contrast, the proposed representation allows us to capture the information underlying what is a particularly interesting feature of the particular plot of “*The Princess Bride*”: a large part of the intricacies of the plot of the movie revolve around the changing status of just two predicates in terms of

their actuality. Even though the movie includes many scenes of action, travel across a significant number of locations, and a large cast of characters, the fundamental outline of the movie can be described in terms of the changing truth/actuality values attributed to two different statements: whether Buttercup is intending to marry Humperdinck, and whether Westley is dead or not. The combined evolution of these values for the two statements is summarised in Table 1. This table does not rely on the proposed annotation scheme, because to do so would exceed the size limits imposed by the conference format. However, the plot points presented in column 1 can be matched to specific action units in the annotation for the movie, and the values presented for the two statements in columns 2 and 3 can be inferred from the values annotated for those actions units under the various linguistic markers considered relevant for determining actuality. This frequent switching in the actual value of just two predicates, and the fact that the changes in value very often act as driving forces for the actions of the characters in the movie, may be considered an extreme case of the observations by various authors discussed in Section 2.1 as to the relative importance of changes in actuality to the plot of narratives.

## 5. Conclusions

This paper addresses the problem of representing events mentioned in a story as potential, and providing the means of tracking changes in their actuality that may be relevant to the plot of a story. The proposed representation captures a set of explicit linguistic markers used in narrative discourse to introduce potentiality of events. Additional mechanisms have been proposed to cross reference additional points in the narrative discourse that challenge the truth or actuality value of the statements recorded.

An important challenge in this task is the fact that potential events of this type are more often implied – via common sense inferences to be made by the reader/spectator – rather than explicitly reported. For this reason, an effort has been made to refrain from including in the representation features requiring inferences by the annotator that may not be warranted by the discourse under different possible interpretations.

Further work is required for establishing manageable heuristics that may serve to estimate non-controversial contextual inferences of the type required: from particular combinations of linguistic markers onto established descriptions of potentiality. To inform this process we contemplate a substantial effort of annotating a larger set of movies with a set of annotators trained for the task. We will also consider an additional task of asking human volunteers to estimate the type of inferences on actuality that we would like a fully developed system to make. Based on detailed analysis of the results of such experiments, we hope to establish the feasibility of automating parts of the annotation process.

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