Requiem for a theory: the 'story grammar' story

Andersen and Slator 1990

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Paper Overview

- Historic retrospective of story grammars
- Background
- Survey of story grammars
- Criticism and rebuttal
- Conclusions
- Discussion

Story Grammars
Initial Work

- **Barlett 1932**
- **Propp 1968**

Story Grammars
Development

- Barlett 1932
- Propp 1968
- **Lakoff 1972**
- **Colby 1973**
- **van Dijk 1972**
- **Rumelhart 1975**

Story Grammars
Refinement

- Barlett 1932
- Propp 1968
- Lakoff 1972
- Colby 1973
- van Dijk 1972
- Rumelhart 1975
- **Mandler & Johnson 1977**
- **Thorndyke 1977**
- **Stein & Glenn 1979**

Story Grammars
Criticism and Decline

- Barlett 1932
- Propp 1968
- Lakoff 1972
- Colby 1973
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- Rumelhart 1975
- Mandler & Johnson 1977
- Thorndyke 1977
- Stein & Glenn 1979
- **Black & Wilensky 1979**
- **Garnham 1983**

Background

- People use mental schemas to match to filling in gaps (Barlett 1932)
- Assumptions:
  - Stories has some kind of internal structure like sentences
  - Stories can be described in terms of a hierarchy of categories and logical relations between them
  - The hierarchy corresponds to the way people organize story information
  - Story consists of: setting, theme, plot, episodes, resolution
- Stories are composed of a grammar that defines propositions that in turn define the story

Background
Grammars

- Finite State Grammars
- Context Free Grammars
- Context Sensitive Grammars
- Unrestricted Rewriting System (Transformational Grammar)

Propp 1968

- Based on Slavik folktales
- 31 functions and subfunctions
- 7 narrative roles

Lakoff 1972

- Grammar of rewrite rules based on Propp
  - disruption of a state of equilibrium
  - arrival and mission of the hero
  - trial of the hero
  - task accomplished by the hero
  - original state re-established
    hero is recompensed

Colby 1973

- Based on Eskimo folktales
- Includes
  - the basic plot (the eidochronic)
  - the symbolic component (metaphoric, metonymical and synecdochic relations)
  - the dramatic component (interest and meaning to a story)
- Excludes
  - poetic component (choice of words, the rhythm, etc.)
  - the linguistic component (phonetic, syntactic, etc.)

van Dijk 1972

- Propositional FSG
- Event → Event + (Event)*
  - Actions
- Symbols represent:
  - Text
  - Qualifiers
  - Modality
  - Characters
  - Quantifiers
  - (Im)probability

Rumelhart 1975

- General story grammar (CFG)

The EPISODE schema is:
  Episode about Protagonist P.
    (1) Event E Causes P to Desire goal G.
    (2) P Tried to Get G until Outcome O occurs.
The TRY schema is:
  Agent A Tries to Get goal G.
    (1) A Selects a Method M which could lead to goal G.
    (2) For Each Precondition P of M,
          A Tries to Get P until Outcome O.
    (3) A Does M which has Consequence C.

Mandler & Johnson 1977

- Generalized Rumelhart 1975 (CFG)
- Terminal nodes are states or events
- Relations between terminals (*and, then, cause*)
- EPISODE → BEGINNING + CAUSE + DEVELOPMENT + CAUSE + ENDING

Mandler & Johnson 1980

- Expanded Mandler & Johnson 1977
- Generalized for real-world stories
- Added rules for multi-episodic stories (and restrictions)
- Proposed transformational rules
  - Deletion and reordering
  - CFG → URS

Thorndyke 1977

- Extended Rumelhart 1975 (CFG)
- CFG to organize stories, not content
- STORY → SETTING + THEME + PLOT + RESOLUTION
- PLOT → Number of episodes
- Episode → Subgoal + Attempt* + Outcome
- Focused on story recall and comprehension

Stein & Glenn 1979

- Extended Rumelhart 1975 (CFG)
- Borrowed from Mandler & Johnson 1977
- Episode → Initiating Event + Response
- Focused on story recall and comprehension

Black & Wilensky 1979

- Criticism
  - Formal properties of the grammars
  - "Coverage" of grammars
    (describe all stories and only stories)
  - Comprehension (processing) value of the grammars
    (proper computational account of story understanding)
- Only Johnson & Mandler (1980) was sufficiently powerful (URS)

Black & Bower 1980

- Added criticism to Black & Wilensky 1979
  - no correlation with people's memories of story parts
- Propose
  - combine elements of Schank's (1975) causal chain analysis with the Kintsch (1974) notion of textual hierarchy

Garnham 1983

- Added criticism to Black & Wilensky 1979
  - Story grammar parser not possible (when compared to sentence grammar parser)
  - Not possible story structure, no finite lexicon of proposition (because of recursive propositions)
  - Flawed experimental findings *"sympathetic interpreters perform a great deal of filling in and glossing over"*

Response to Criticism

- Story grammar intended to be only one component of a larger story understanding system
- Criticism is based on comprehension models that nobody believes in

Conclusions

- Story grammars dead in AI
- Theory of story grammar alive in psychology
- Scientific method evidences AI is a science

“AI is whatever hasn't been done yet.”

Lawrence Gordon Tesler

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Story Grammars

Criticism and Decline

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- Lakoff [illegible]
- [illegible]
- [illegible]
- [illegible]
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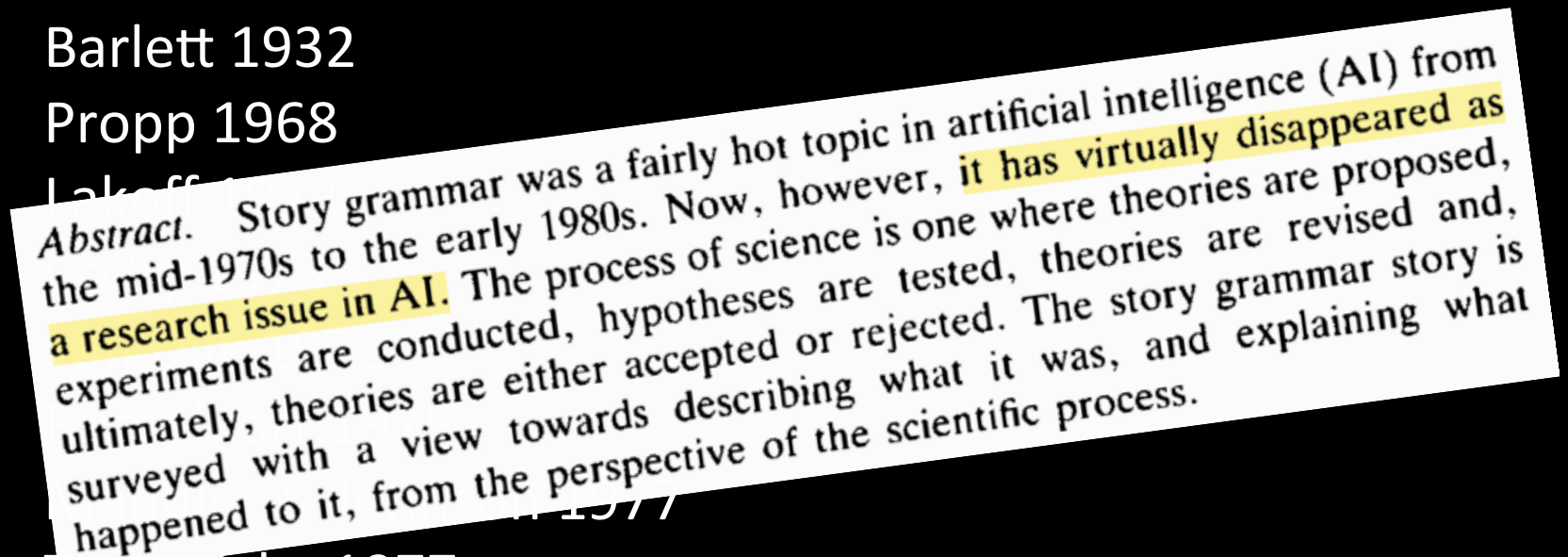

Abstract. Story grammar was a fairly hot topic in artificial intelligence (AI) from the mid-1970s to the early 1980s. Now, however, it has virtually disappeared as a research issue in AI. The process of science is one where theories are proposed, experiments are conducted, hypotheses are tested, theories are revised and, ultimately, theories are either accepted or rejected. The story grammar story is surveyed with a view towards describing what it was, and explaining what happened to it, from the perspective of the scientific process.

Story Grammars

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Resurrection?

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- Intelligent Narrative Technologies WS (8th 2015)
- Computational Models of Narrative WS (3rd 2016)
- International Conference on Interactive Digital Storytelling (9th 2016)

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