Modification of verbs and deverbal nouns

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Lexical decomposition:

- Common-place mode of analysis for many linguistic phenomena
- Examples:
  - Meaning postulates
  - Neo-Davidsonian lexical decomposition (Parsons, 1990)
  - Event templates (Rappaport Hovav & Levin, 1998)
  - Covert functional syntactic structure

Upside: Able to capture many subtle aspects of the meaning of a predicate.

Downside: Potentially expose too much information contained within the lexical item to modifiers.
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What constraints are there on adverbial and adjectival modification?
This talk:

- Present preliminary findings regarding modification of verbs and deverbal nouns.
- Framework for decomposition: Frame Semantics
- Case study in using frames to model contribution of modifiers
- Program of finding constraints on modification
- Look at \textit{write} and two nominalizations, \textit{writing} and \textit{writer}.
  - Complex semantics that encoding agents, created objects, instruments, ...
  - Situated in a broad semantic field with \textit{read}, \textit{draw} and other verbs.
1. Build a frame decomposition of the verbal concept *write*
2. Motivate model using linguistic data
3. Show how *-er* and *-ing* nominalizations occur with this frame
4. Discuss cases of modification in the context of this model
   - Modification *writer* and *writing*
   - Adverbial modification: *illegally, beautifully, angrily*
What’s the representation for write?
Frames

- Method for organizing lexical information
- Recursive attribute/value structures (Löbner, 2014; Petersen, 2007).
- Visually represented as a graph.
- Nodes represent values: events or individuals
- Directed arrows between nodes represent functions (attributes)
- The central node determines the referent of the frame
Method of decomposition: frames

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We adopt a frame representation similar to Zeevat & Löbner (2016, this workshop).

- Verbal concepts are structured, with levels of structure representing levels of implementation.
- For instance, a writing event may be further specified by a method (such as writing by hand or on a computer).
- Adopt a simplified representation of write for this talk.
Multiple writing events

Concept for write encodes two levels of writing events.

Higher level (write$_1$):

- Represents simply the creation of a new textual object.

Lower level (write$_2$):

- Implements higher writing event (METHOD by which the event occurs)
- Represents activity of writing and producing signs.
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Authors versus encoders

- Each event in write has an Agent associated with it.
- Agents may (but do not have to) denote separate individuals (e.g., writing by dictating)
- Upper Agent represents an author
- Lower Agent represents an encoder
Two products of writing

Events in the *write* frame produce **PRODUCTS**.

- A high-level writing product corresponding to a text.
- A low-level writing product corresponding to the sign.
- The **PRODUCTS** also share a relationship to each other.
  - The sign product is how the text product is rendered.
  - The text is what the sign is intended to represent.
Write allows for a result nominalization, writing.

- Two interpretations: text or signs (handwriting)
- Use of determiners with writing distinguishes these interpretations.

(1) Jerram Barrs delves into Tolkien’s writings and discovers a quest for goodness. (Google)

(2) a. He saw some writing on the wall.
   b. ??He saw writings/a writing on the wall.

Marginal acceptability due to predicate preferring different senses.

- Singular indefinite and bare plural prefer textual interpretation
- Some allows for textual or sign (e.g., handwriting)
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- Some allows for textual or sign (e.g., handwriting)
As these products of writing are not the same individual, they have separate attributes associated with them.

- Textual product: CONTENT (*political*), FORM (*well-written*)
- Sign product: MATERIAL (*pencil, ink*), SHAPE, ...
For the concept of “writing by hand”, this frame would be specified with further attributes.

- **HOLD**: Modeling that the writing implement is held
- **PRESS**: Modeling contact of the writing implement on a surface
- **MOVE**: Modeling movement of the hand and implement
Motivating the HOLD, PRESS, and MOVE parts of the frame:

(3)  a. He held the pen tightly/loosely while writing.
     b. ??He was writing (by hand) but didn’t hold the pen.

(4)  a. To lessen the strain on the galvanometer the pen might instead only intermittently be pressed against the writing medium, to make an impression, ... (Google)
     b. ??He was writing (by hand) but didn’t touch the paper.

(5)  a. His pen moved rapidly as he illegibly wrote his name on a piece of paper in exchange. (Google)
     b. ??He was writing (by hand) but didn’t move the pen/his hand.
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(Partial) frame representation of *write*

```
\[
\begin{align*}
\text{a}_1 \quad & \text{AGENT} \quad \text{write}_1 \quad \text{PRODUCT} \quad \text{p}_1 \quad \text{CONTENT} \\
\text{a}_2 \quad & \text{AGENT} \quad \text{write}_2 \quad \text{PRODUCT} \quad \text{p}_2 \quad \text{MATERIAL} \\
\end{align*}
\]
```

- Method: \(= / \neq\)
- Renderings: \(\text{RENDERS} \rightarrow \text{RENDERING}\)
- Form: \(\text{FORM} \rightarrow \text{CONTENT}\)
- Shape: \(\text{SHAPE} \rightarrow \text{MATERIAL}\)
- Move: \(\text{MOVE} \rightarrow \text{PRODUCT}\)
- Press: \(\text{PRESS} \rightarrow \text{PRODUCT}\)
- Hold: \(\text{HOLD} \rightarrow \text{PRODUCT}\)
On nominalizations
Kawaletz & Plag (2015):

- Analysis of English -ment nominalizations.
- Nominalizations are modeled as a shift in reference (moving the central node) from one node to another

We make a similar move and treat -er and -ing nominalizations as a shift of the central node in the frame.
-er nominalizations reflect a shift to a node referring to an individual.

• Generally, -er nominalizations are subject- or external-argument related (Lieber, 2004).
• In the case of the write frame, this is a shift to an AGENT.
• Can be either AGENT in the frame.
With *writing*, *-ing* nominalizations provide for two interpretations:

- **Process interpretation**
  
  (6) Writing is hard work.  
  
  (process)

- **Result interpretation**
  
  (7) his writings about mathematics  
  (result, text)

  (8) I noticed some writing on the wall.  
  (result, handwriting)
Modeling *-ing* nominalization

Ambiguity between interpretations with *-ing* nominalizations reflects an ambiguity in which node is the central node.

- Process nominalizations reflect shift to event node (*write*$_1$ or *write*$_2$).
- Result nominalizations reflect shift to PRODUCT.

Moreover, ambiguity of result nominalization reflects shift to different PRODUCTS.
Shift to textual product

\[ a_1 \rightarrow \text{AGENT} \rightarrow \text{write}_1 \rightarrow \text{PRODUCT} \rightarrow p_1 \rightarrow \text{CONTENT} \rightarrow \]

\[ = / \neq \]

\[ a_2 \rightarrow \text{AGENT} \rightarrow \text{write}_2 \rightarrow \text{PRODUCT} \rightarrow p_2 \rightarrow \text{MATERIAL} \rightarrow \text{SHAPE} \rightarrow \text{RENDERING} \rightarrow \text{RENDERS} \rightarrow \text{FORM} \rightarrow \]

19
Shift to sign product

\[ \begin{align*}
  a_1 & \rightarrow \text{AGENT} \rightarrow \text{write}_1 \rightarrow \text{PRODUCT} \rightarrow p_1 \rightarrow \text{CONTENT} \\
  a_2 & \rightarrow \text{AGENT} \rightarrow \text{write}_2 \rightarrow \text{PRODUCT} \rightarrow p_2 \rightarrow \text{MATERIAL} \\
  \end{align*} \]
Modification in cascades
Basic hypotheses

Levels of Modification Hypothesis: interpretation of modifiers is constrained to particular levels in the frame decomposition.

- Find and explain incompatibilities between modifiers that occur at different levels.
- Nominalizations might “fix” the level for modification.
- Modifiers show connections between frame elements at the same level.

Assumption: Modifiers can be modeled as restricting the range of possible values within the frame.
Modification of deverbal nouns
Case 1: Modification of -er nominals

*Writer* can allow for two senses: the author of a work, and also the encoder.

(9) political writer

- With the modifier, *writer* must be construed as an author of the PRODUCT.
- CONTENT modifier restricts construal of *writer* to the AGENT of the event that produced the text.

![Diagram showing the construction of sentences involving writers and products.](image-url)
Case 1: Modification of -er nominals

*Writer* can allow for two senses: the author of a work, and also the encoder.

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![Diagram of agent-product relationships](image-url)
Case 1: Modification of -er nominals

Writer can allow for two senses: the author of a work, and also the encoder.

(9) political writer  (content modifier)

- With the modifier, writer must be construed as an author of the PRODUCT.
- CONTENT modifier restricts construal of writer to the AGENT of the event that produced the text.
Case 2: Modification and -ing nominals

- Result nominalizations allow for different modifiers.
  
  (10) a. writings about 18th century Germany  
       (CONTENT modifier) 
  
     b. There was red writing on the wall. 
       (COLOR modifier) 

- Some modifiers (such as COLOR and CONTENT) are incompatible, however.

 (11) red writing about 18th century Germany
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(11) ??red writing about 18th century Germany
Analysis: Different attributes available at PRODUCT nodes license different modifiers.

- Modifiers at different levels of the decomposition are incompatible.
- Shifting reference to a PRODUCT bars the use of modifiers targeting attributes of the other PRODUCT
(12) ??red writing about 18th century Germany
Adverbial Modification
• High position – only content

(13)  

a. ..., as David Leatherbarrow once *beautifully* wrote, we make “buildings that last for places that... (COCA)

b. As my sister Jamie *beautifully* wrote on Facebook... (Google)
• High position – only content

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(13)  
a. ..., as David Leatherbarrow once beautifully wrote, we make “buildings that last for places that... (COCA)  
b. As my sister Jamie beautifully wrote on Facebook... (Google)
• Low position – either the content or the shape

(14) Shape:
One said when they began medical school they wrote *beautifully* with an edged pen. (COCA)

Lower level:
• Low position – either the content or the shape

(14) **Shape:**
One said when they began medical school they wrote **beautifully** with an edged pen. (COCA)
• Low position – either the content or the shape

(14) **Shape:**
One said when they began medical school they wrote *beautifully* with an edged pen. (COCA)

Lower level:
(15) **Content:**

She wrote *beautifully* but swore profusely when she spoke...

(COCA)
(15) **Content:**
She wrote *beautifully* but swore profusely when she spoke...
(COCA)

Upper level:
High position – the agent

(16) “The story is untrue,” she angrily wrote on Twitter. “Sam has not filed for divorce citing infidelity, neither... (COCA)
• High position – the agent

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• High position – the agent

(16) “The story is untrue,” she angrily wrote on Twitter. “Sam has not filed for divorce citing infidelity, neither... (COCA)

Upper level:
• Low position – either content or shape

(17) a. **Content:**

   I wrote *angrily* about his choice of Rick Warren to deliver a prayer at the inauguration. (COCA)

b. **Shape (although hard to grasp):**

   He wrote *angrily* on the sheet of paper.
Angrily

• Low position – either content or shape

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Illegibly

· Any position – only shape

(18)  a. They purposely wrote their names *illegibly*... (Google)
     b. Prime Minister Zhāng liked flowing script and wrote it beautifully, but *illegibly*... (Google)
     c. The boy took a piece of paper and *illegibly* wrote his wish before sticking it in the bamboo... (Google)

Lower level:
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Lower level:
(19)  

(a) They purposely wrote their names *illegibly*... (Google)  
(b) They decorated the room *beautifully*. (Geuder, 2002)  
(c) They wrote their names *beautifully*.

- *Illegibly* (and *beautifully*) seems to create a tight connection between different parts of the frame, namely AGENT, MOVE, and PRODUCT.  
- Such a connection is not that clear considering standard examples of the use of resultative adverbs.  
- The difference might be explained by the concept of 'write' itself.
Illegibly – Resultative or Manner?

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- Such a connection is not that clear considering standard examples of the use of resultative adverbs.
- The difference might be explained by the concept of 'write' itself.
• Simple manner adverbs do not need or force complex connections between parts of the frame
  
• Rapidly, for example, modifies only the Move part no matter the concept it could be assumed to modify

(20)    a. He was writing *illegibly*.
    b. He was moving *rapidly*.
    c. He was writing *rapidly*.
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Illegibly vs. illegible

Illegibly:

- with *write* and *scribble*
- only possible in connection to the MOVE meaning component

Illegible:

- with any kind of writings and with *map*
- other reasons, like spilling coffee, besides writing possible
Illegibly vs. illegible

Illegibly:

• with write and scribble
• only possible in connection to the MOVE meaning component

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Summary and conclusions

- Initial support for multi-level representation of frames
- Present a preliminary analysis of the verb *write* and how it relates to its *-er* and *-ing* nominalizations
- Frames can be used to show and explain how exactly modifiers interact with an event
- Modifiers are sensitive to particular levels within the frame and thus could be classified based on the level of the frame and the attributes they operate on
- Provided an analysis of why certain modifiers may be incompatible with each other (in the case of *write*)
Thank you!

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Appendix
Partial logical form of frame

\[(21) \lambda e : x, y, p, p' \quad \begin{align*}
\text{write}(e) & \land \text{AGENT}(e) = x \land \text{PRODUCT}(e) = p \land \\
\text{content}(\text{CONTENT}(\text{PRODUCT}(p))) & \land \\
\text{AGENT}(&\text{METHOD}(e)) = y \land \\
\text{PRODUCT}(&\text{METHOD}(e)) = p' \land \\
\text{color}(\text{COLOR}(\text{METHOD}(e))) & \land \\
\ldots
\end{align*}\]

where \text{write} is a property of write events, \text{color} and \text{content} are placeholders for properties for color and content, \(x, y, p, p'\) are individuals.