

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 *write* and two nominalizations, *writing* and *writer*.
 - Complex semantics that encoding agents, created objects, instruments, ...
 - Situated in a broad semantic field with *read*, *draw* and other verbs.

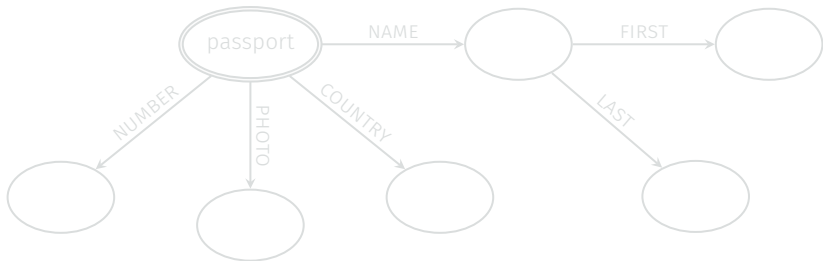
1. Build a frame decomposition of the verbal concept *write*
2. Motivate model using linguistic data
3. Show how *-er* and *-ing* nominalizations occur with this frame
4. Discuss cases of modification in the context of this model
 - Modification *writer* and *writing*
 - Adverbial modification: *illegally, beautifully, angrily*

What's the representation for
write?

Method of decomposition: frames

Frames

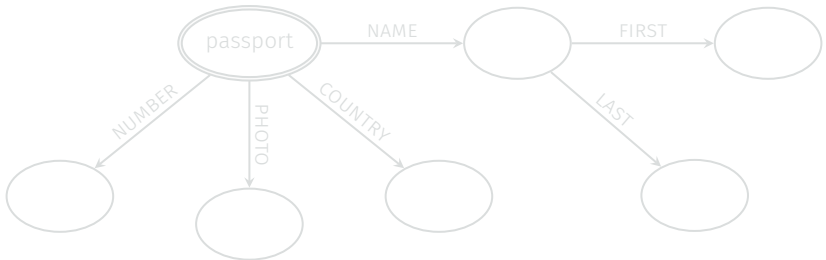
- Method for organizing lexical information
- Recursive attribute/value structures (Löbner, 2014; Petersen, 2007).
- Visually represented as a graph.
- Nodes represent values: events or individuals
- Directed arrows between nodes represent functions (attributes)
- The central node determines the referent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



Method of decomposition: frames

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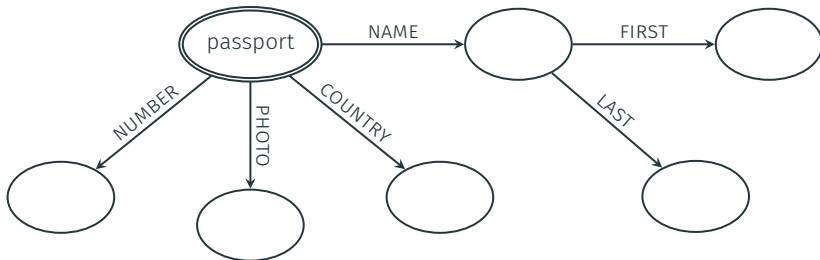
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Method of decomposition: frames

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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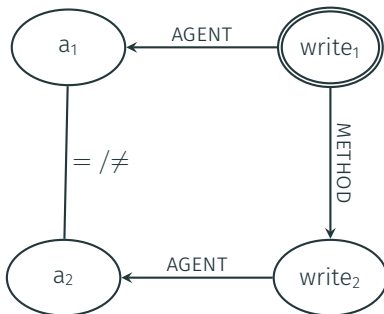
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Authors versus encoders

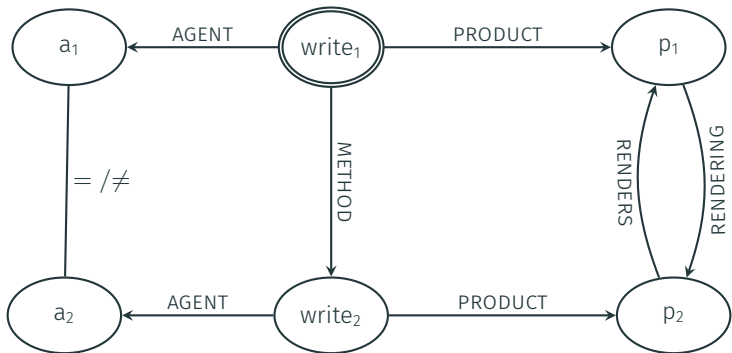
- Each event in *write* has an AGENT associated with it.
- AGENTS may (but do not have to) denote separate individuals (e.g., writing by dictating)
- Upper AGENT represents an author
- Lower AGENT represents an encoder



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.



Products of writing

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.
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Marginal acceptability due to predicate preferring different senses.

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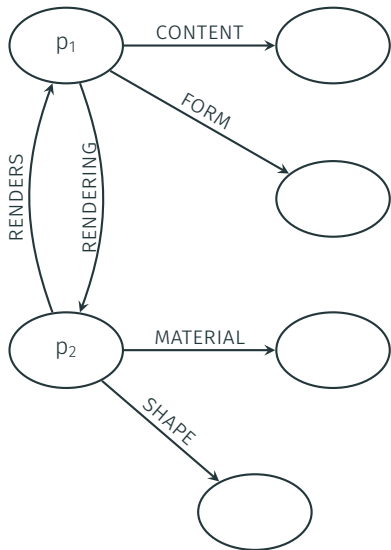
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Products of writing

As these products of writing are not the same individual, they have separate attributes associated with them.

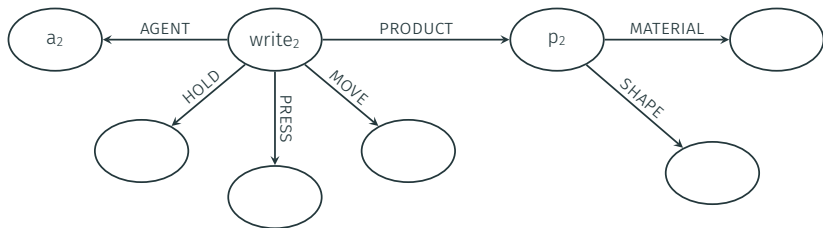
- Textual product:
CONTENT (*political*), FORM (*well-written*)
- Sign product:
MATERIAL (*pencil, ink*), SHAPE, ...



HOLD, PRESS, and MOVE

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



HOLD, PRESS, and MOVE

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)
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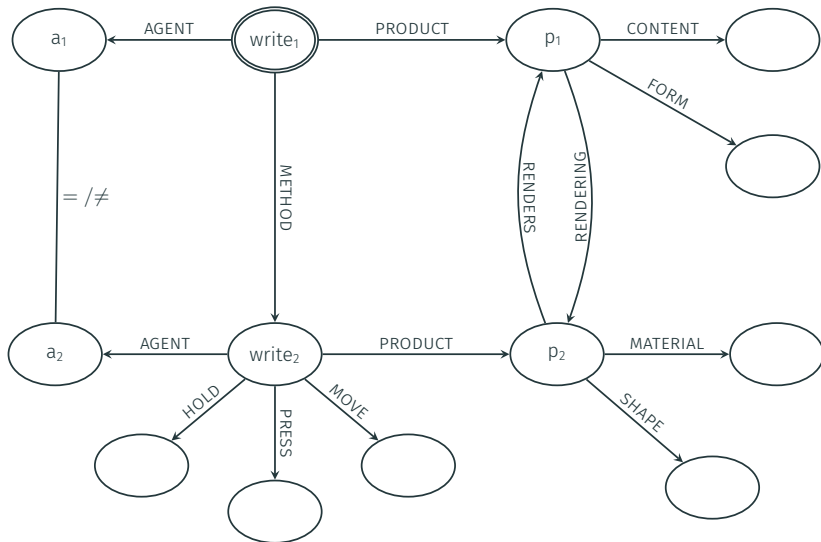
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(Partial) frame representation of write



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

-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)

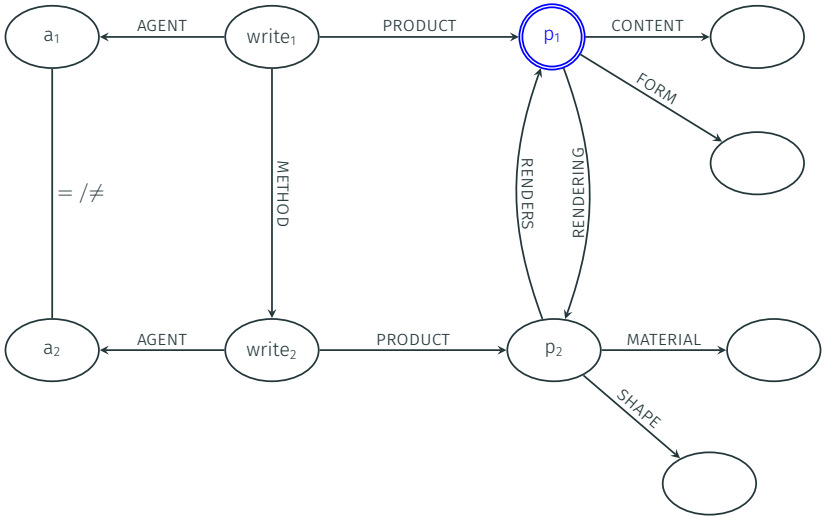
(8) I noticed some writing on the wall. (result, handwriting)

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

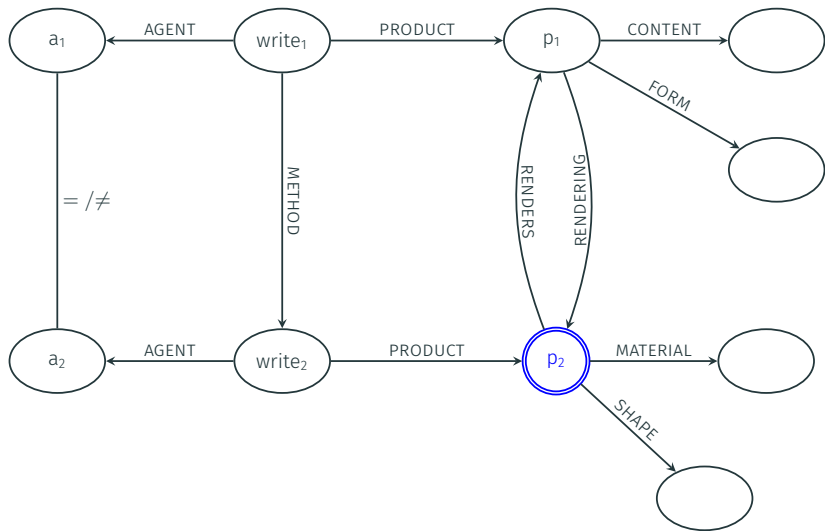
- Process nominalizations reflect shift to event node (*write*₁ or *write*₂).
- Result nominalizations reflect shift to PRODUCT.

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

Shift to textual product



Shift to sign product



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.

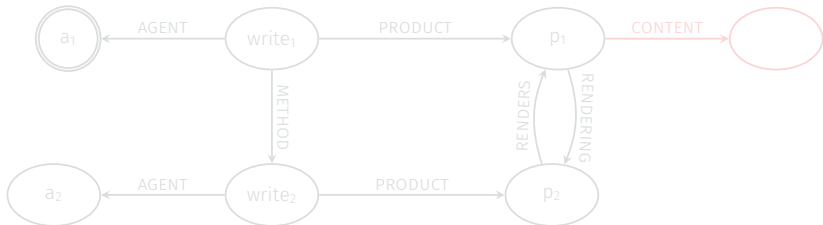
Modification of deverbal nouns

Case 1: Modification of -er nominals

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

(9) *political* writer (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.

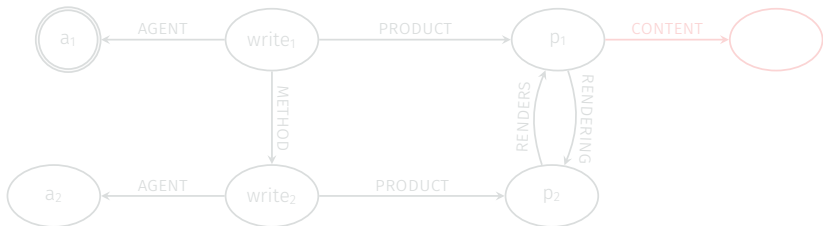


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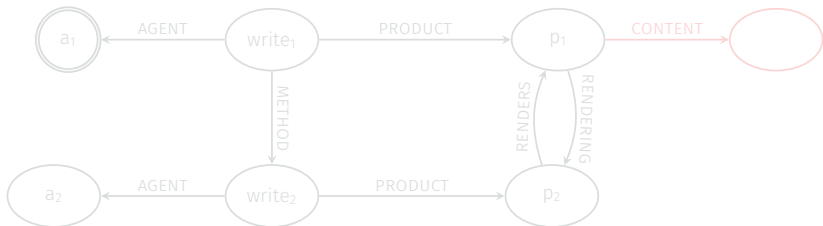


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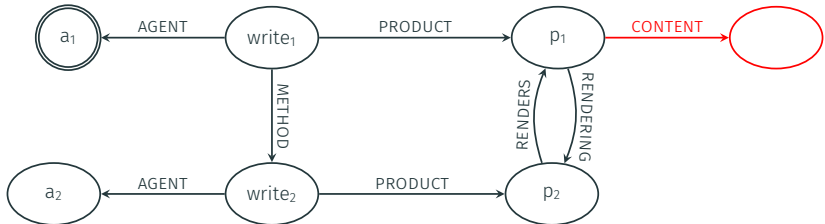
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Case 2: Modification and *-ing* nominals

- 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.

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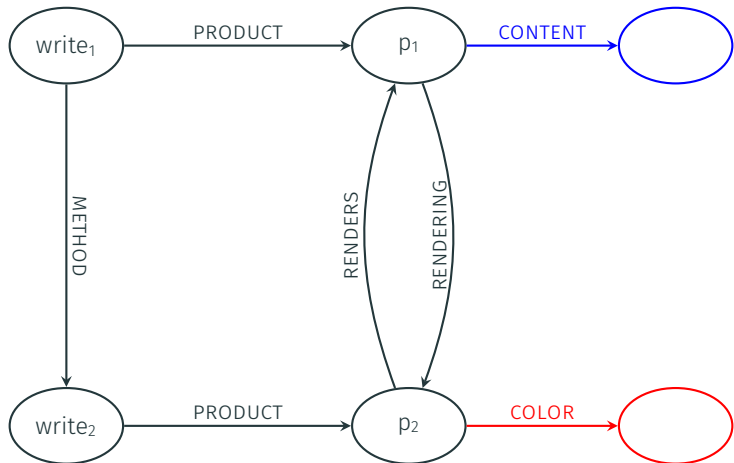
Case 2: Modification and *-ing* nominals

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

Case 2: Modification and *-ing* nominals

(12) ??red writing about 18th century Germany

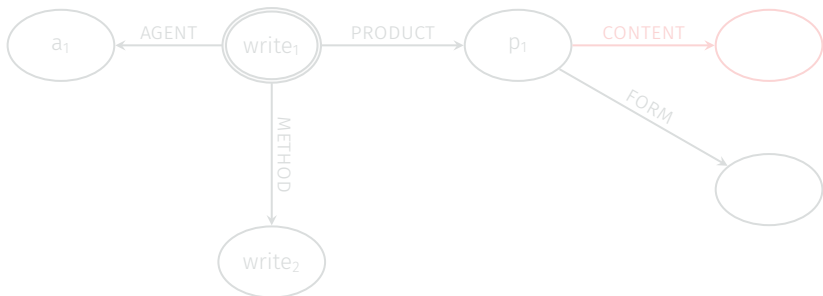


Adverbial Modification

Beautifully

- High position – only content

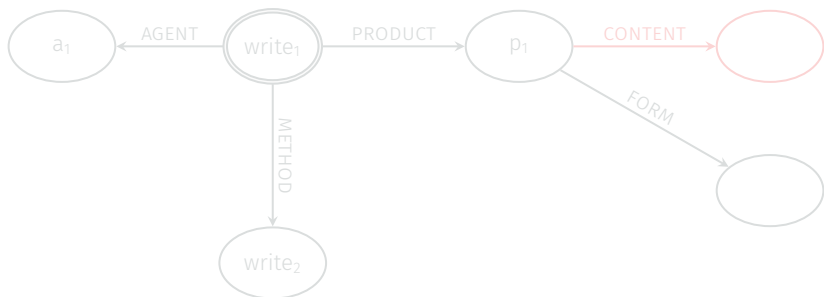
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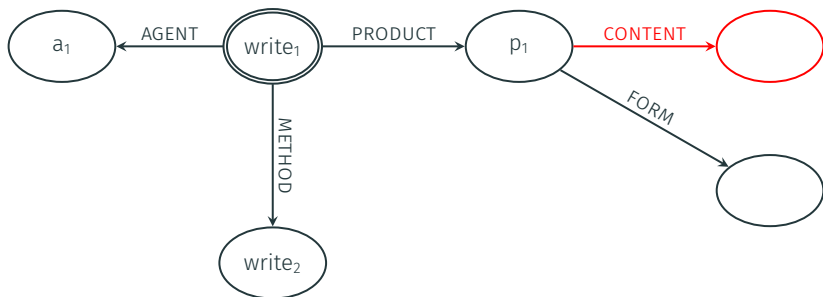
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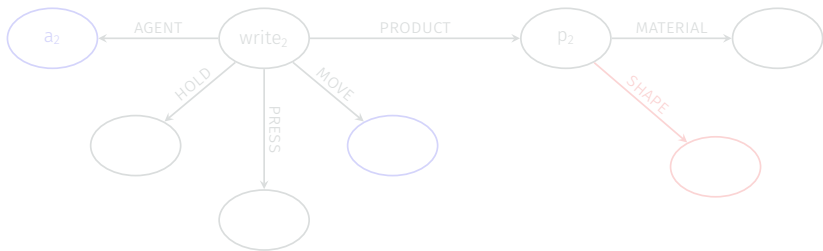


- Low position – either the content or the shape

(14) Shape:

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

Lower level:

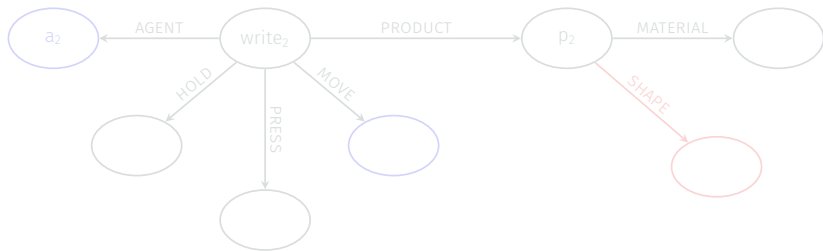


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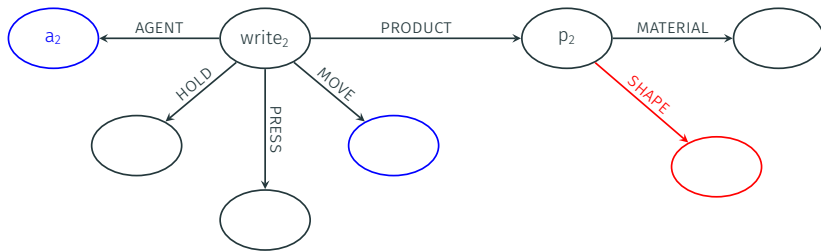


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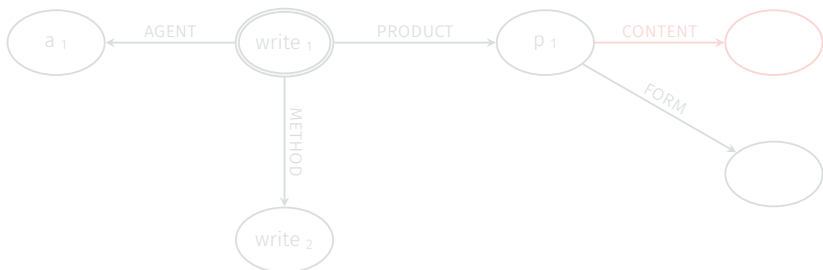
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(15) **Content:**

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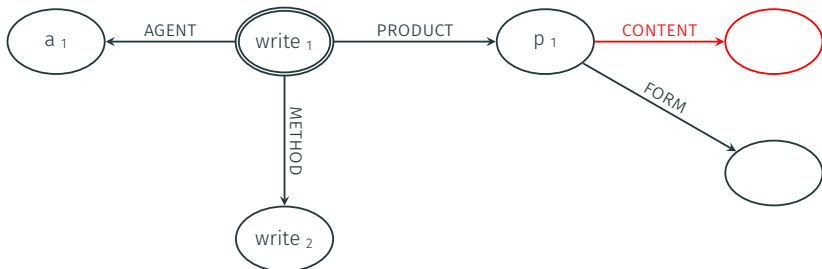


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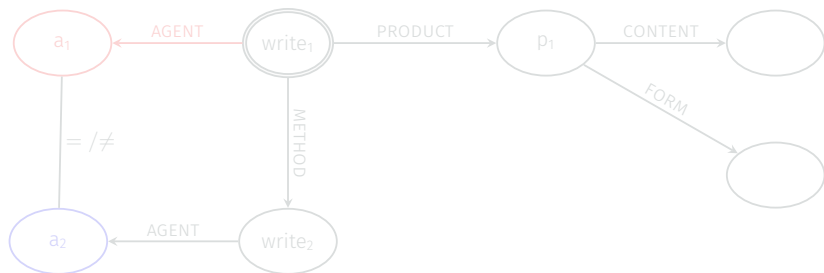
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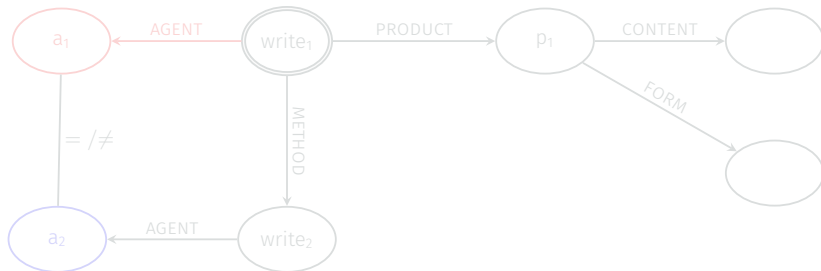
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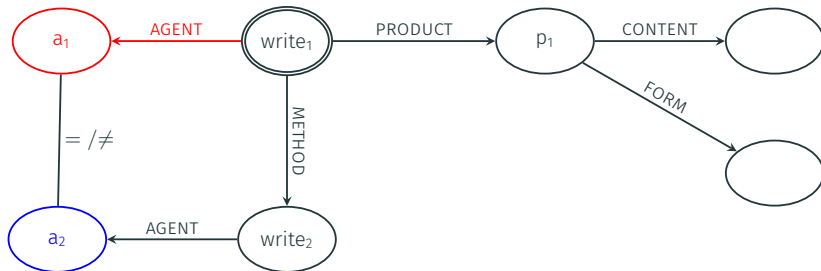
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I wrote *angrily* about his choice of Rick Warren to deliver a prayer at the inauguration. (COCA)
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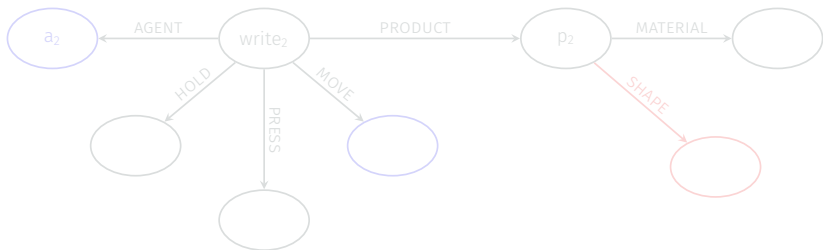
The intangibility of digital experience
makes us uncomfortable, AND WE DON'T
KNOW WHY YET.

Illegibly

- Any position – only shape

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

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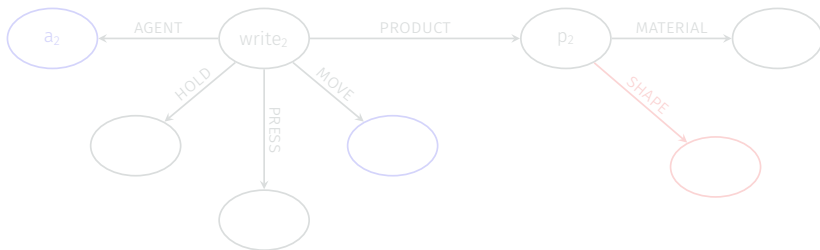


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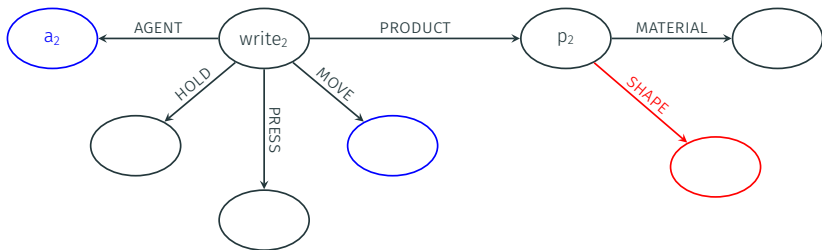


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Illegibly – Resultative or Manner?

- (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

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 - 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?

- 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*.
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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

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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*)

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Appendix

Partial logical form of frame

$$(21) \quad \lambda eix, y, p, p' \left[\begin{array}{l} \mathbf{write}(e) \wedge \text{AGENT}(e) = x \wedge \text{PRODUCT}(e) = p \wedge \\ \text{content}(\text{CONTENT}(\text{PRODUCT}(p))) \wedge \\ \text{AGENT}(\text{METHOD}(e)) = y \wedge \\ \text{PRODUCT}(\text{METHOD}(e)) = p' \wedge \\ \text{color}(\text{COLOR}(\text{METHOD}(e))) \wedge \\ \dots \end{array} \right],$$

where **write** is a property of write events, *color* and *content* are placeholders for properties for color and content, x, y, p, p' are individuals.