Grammar and graphical semiotics in early syntactic diagrams: Clark (1847) and Reed-Kellogg (1876)

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Introduction

Semiotic approach
  The notion of reification
  Graphical entities are complete signs

Early syntactic diagramming
  Drawing syntax before syntactic trees
  Clark’s seminal work (1847)
  The successful Reed/Kellogg system (1876)

Logic of space: Case studies
  Subject-predicate relation
  Coordination
  Subordinate clauses

Conclusion
Introduction

Elements at study
▶ Focus on graphical depiction of syntactic analysis
▶ The diagrams at study date from the 19th C. in the US, before current syntactic trees
▶ Paradigm-shift from morphology to syntax
▶ Focus on the "deep structure" (often, word order is abstracted away)
▶ Compared systems are similar from the point of view of grammatical theory

Objectives
▶ Identify the graphical entities used to represent grammatical units in the diagram
▶ Compare their behaviour
▶ Evaluate the theoretical consequences
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- Focus on **graphical depiction** of syntactic analysis
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The notion of reification

Various ways to represent the relations between words

- Some look different but are similar
- Some look similar but are (very) different
The notion of reification

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Formal and semiotic analyses help…

- Identifying units inside a given system
- Comparing units across systems
The notion of reification

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Formal and semiotic analyses help…

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Conceptual units are turned into graphical entities

- They are reified (i.e. ‘turned into objects’ Kahane/Mazziotta 2015) in the diagram
  ⇒ The graphical entity is bound to the conceptual unit
Graphical entities are complete signs

A stroke is not a mere stroke: it is a complete sign (form and value)

(Billroth 1832 : 102) (Reed/Kellogg 1879[1876] : 62)
Graphical entities are complete signs

A stroke is not a mere stroke: it is a complete sign (form and value)

(Billroth 1832: 102)  
(Reed/Kellogg 1879[1876]: 62)

Comparison

- words (conceptual units) are reified by words
- relations (conceptual units) are reified by strokes
Graphical entities are complete signs

A stroke is not a mere stroke: it is a complete sign (form and value)

(Billroth 1832: 102)

(Reed/Kellogg 1879[1876]: 62)

Comparison

- words (conceptual units) are reified by words
- relations (conceptual units) are reified by strokes
- words are reified by labeled strokes
- relations are mostly reified by the relative positions of words
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Continuity between Clark 1847 and Reed/Kellogg 1876
Most diagrams seem to reify words rather than relations

(Clark 1847 : 23)
Continuity between Clark 1847 and Reed/Kellogg 1876
Most diagrams seem to reify words rather than relations

(Chandler 1860 : 153, apud Brittain 1973)
Continuity between Clark 1847 and Reed/Kellogg 1876

Most diagrams seem to reify words rather than relations

(Jewell 1861 : 17, apud Brittain 1973)
Early syntactic diagramming

Continuity between Clark 1847 and Reed/Kellogg 1876
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(Burtt 1869 : 265, apud Brittain 1973)
Continuity between Clark 1847 and Reed/Kellogg 1876
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(Lighthall 1872 : 50, apud Brittain 1973)
Continuity between Clark 1847 and Reed/Kellogg 1876

Most diagrams seem to reify words rather than relations

(Reed/Kellogg 1879[1876] : 81)
Clark’s seminal work (1847)

General rules
General rules

- The sentence is a combination of a **subject**, a **predicate** and, optionally, an **object**

(Clark 1870 : 49)

**Horizontally** arranged bubbles
Clark’s seminal work (1847)

General rules

- The sentence is a combination of a subject, a predicate and, optionally, an object
- These elements can be complemented by adjuncts

(Clarke 1847: 23)

Vertically connected bubbles (recursive)
Clark’s seminal work (1847)

General rules

▶ The sentence is a combination of a subject, a predicate and, optionally, an object
▶ These elements can be complemented by adjuncts
▶ **Prepositional phrases** are a combination of a preposition (*leader*) and a noun (*subsequent*)

![Diagram of a sentence structure with prepositional phrases](image)

(Clark 1847 : 23)

Vertically connected bubble for the leader, **horizontally** arranged with its subsequent
The successful Reed/Kellogg system (1876)

General rules
The successful Reed/Kellogg system (1876)

General rules

- The sentence is a combination of a subject, a predicate optionally containing an object.

(Reed/Kellogg 1879[1876] : 17)

Horizontally arranged strokes
The successful Reed/Kellogg system (1876)

General rules

- The sentence is a combination of a subject, a predicate optionally containing an object
- These elements can be complemented by modifiers

(Reed/Kellogg 1879[1876] : 34)

Vertically connected strokes (recursive)
The successfull Reed/Kellogg system (1876)

General rules

- The sentence is a combination of a subject, a predicate optionally containing an object
- These elements can be complemented by modifiers
- **Prepositional phrases** are a combination of a *preposition* and a *noun*

\[
\text{Model. — The finest trout in the lake are generally caught in the deepest water.}
\]

(Reed/Kellogg 1879[1876] : 62)

Vertically connected stroke for the preposition, **horizontally** arranged with the noun
Early syntactic diagramming

The rationales in Clark 1847 and Reed/Kellogg 1876 are roughly the same
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- Distinction between principal parts and adjuncts/modifiers
- Hybrid status for prepositional phrases
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Visual entities differ
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Visual entities differ
- Clark: words are represented by bubbles (bidimensional)
Early syntactic diagramming

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- Distinction between principal parts and adjuncts/modifiers
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Visual entities differ

- Clark: words are represented by **bubbles** (bidimensional)
- Reed/Kellogg: words are represented by **strokes** with a specific angle (monodimensional)
The rationales in Clark 1847 and Reed/Kellogg 1876 are roughly the same

- Distinction between principal parts and adjuncts/modifiers
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- Clark: words are represented by bubbles (bidimensional)
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What are the consequences?
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Subject-predicate relation

Clark

(Clark 1870 : 49)
Subject-predicate relation

Clark

(Clark 1870 : 49)
Subject-predicate relation

Reed/Kellogg

Planets \underline{revolve.}

(Reed/Kellogg 1879[1876] : 17)
Reed/Kellogg

"I will draw on the board a heavy, or shaded, line, and divide it into two parts [...] I will consider the first part as a sign of the subject of a sentence, and the second part as a sign of the predicate of a sentence." (Reed/Kellogg 1879[1876] : 17)
Subject-predicate relation

Comparison

▶ Clark: two entities (bubbles) arranged horizontally
▶ Reed/Kellogg: three entities (strokes), including a specific entity for the Subject/Predicate relation

⇒ Using strokes offers no solution but to introduce an additional entity.
Subject-predicate relation

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Coordination

Clark

“In the beginning God created the heaven and the earth.”

(Clarke 1847: 24)
Coordination

Clark

“In the beginning God created the heaven and the earth.”

(Clarke 1847: 24)
Reed/Kellogg

Models. — Napoleon rose, reigned, and fell.
Frogs, antelopes, and kangaroos can jump.

(Reed/Kellogg 1879[1876] : 48)
"The short line following the subject line represents the entire predicate, and is supposed to be continued in the three horizontal lines that follow, each of which represents one of the parts of the compound predicate. These lines are united by dotted lines, which stand for the connecting words. The × denotes that an and is understood." (Reed-Kellogg 1879[1876] : 47-48)
Coordination

Comparison
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- Clark: no more entities than words
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- Reed-Kellogg:
  - one entity reifies independently the “entire predicate”,

\[ ⇒ \]

Using strokes with a specific angle offers no solution but to introduce an additional entity.
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  - other strokes reify its “parts” and are linked by lighter strokes reifying the part-whole structure
Coordination

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  - the special relational status of the conjunction is symbolically rendered
### Coordination

#### Comparison

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- **Reed-Kellogg**:
  - One entity reifies independently the “entire predicate”,
  - Other strokes reify its “parts” and are linked by lighter strokes reifying the part-whole structure
  - The special relational status of the conjunction is symbolically rendered

⇒ Using **strokes with a specific angle** offers no solution but to introduce an additional entity
Subordinate clauses

Clark

(Clark 1870 : 47)
Subordinate clauses

(Clark 1870 : 47)

Clark
Subordinate clauses

Reed/Kellogg

(Reed/Kellogg 1879[1876] : 137)
Reed/Kellogg

“As this [sentence] subject cannot, in its proper form, be written on the subject line, it is placed above, and, by means of a support, the [sentence] diagram is made to rest on the subject line.”

(Reed/Kellogg 1879[1876] : 107)
Subordinate clauses

Comparison

Clark: one bubble per word + one bubble for the sentence used as a constituent
Reed-Kellogg: additional symbolic stroke between the sentence as a constituent and its decomposition

⇒ The monodimensionality of strokes does not allow to depict inclusion in an iconic way.
Comparison

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⇒ The monodimensionality of strokes **does not allow to depict inclusion** in an iconic way
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Consequences of using strokes with a specific angle
▶ it makes it impossible not to reify intermediate units (relations)
▶ it emphasizes the reified expression of part-whole relations
Consequences of using strokes with a specific angle

- it makes it impossible not to reify intermediate units (relations)
- it emphasizes the reified expression of part-whole relations
Grammatical theory and graphical conventions

- Interfere with one another
- Conceptual units are reified
- The choice of the graphical conventions constrain what can be expressed and how
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Grammatical theory and graphical conventions

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History of syntactic diagramming

- Necessitates a semiotic analysis that break down diagrams into entities
- Shows the evolution between similar systems

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