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Examples of English Phrase Structure and Transformational Rules from *Syntactic Structures*

The following phrase structure rules appear on page 111 of *Syntactic Structures*.

Σ : # Sentence #^[1]

- F: 1. Sentence \rightarrow NP + VP
 2. VP \rightarrow Verb + NP
 3. NP \rightarrow NP_{sing}
 NP_{pl}
 4. NP_{sing} \rightarrow T + N + \emptyset
 5. NP_{pl} \rightarrow T + N + S^[2]
 6. T \rightarrow *the*
 7. N \rightarrow *man, ball, etc.*
 8. Verb \rightarrow Aux + V
 9. V \rightarrow *hit, take, walk, read, etc.*
 10. Aux \rightarrow C(M) (*have + en*) (*be + ing*)
 11. M \rightarrow *will, can, may, shall, must*

The following transformational rules, which appear on pages 112–113 of *Syntactic Structures*, are discussed in this book. Each is given with its *Syntactic Structures* name and, where applicable, the nickname by which it is generally known and under which it is discussed here. (SA = structural analysis; SC = structural change)

12. *Passive* (optional)
 SA: NP – Aux – V – NP
 SC: $X_1 - X_2 - X_3 - X_4 \rightarrow X_4 - X_2 + be + en - X_3 - by + X_1$
15. *Number Transformation* (obligatory)
 SA: X – C – Y
 SC: $C \rightarrow \left\{ \begin{array}{l} S \text{ in the context NP}_{sing} \text{ —} \\ \emptyset \text{ in other contexts} \\ past \text{ in any context} \end{array} \right\}$
16. T_{not} “*Negation Transformation*” (optional)
 SA: $\left\{ \begin{array}{l} NP - C - V \dots \\ NP - C + M - \dots \\ NP - C + have - \dots \\ NP - C + be - \dots \end{array} \right\}^{[3]}$
 SC: $X_1 - X_2 - X_3 \rightarrow X_1 - X_2 + n't - X_3$
17. T_A “*Affirmation*” (optional)
 SA: same as 16
 SC: $X_1 - X_2 - X_3 \rightarrow X_1 - X_2 + A - X_3$
18. T_q “*Subject-Aux Inversion*” (optional)
 SA: same as 16
 SC: $X_1 - X_2 - X_3 \rightarrow X_2 - X_1 - X_3$

19. T_{w1} “Wh-Movement” (optional and conditional on T_q)
 SA: $X - NP - Y$ (X or Y may be null)
 SC: same as 18
20. *Auxiliary Transformation “Affix Hopping”* (obligatory)
 SA: $X - “Af” - “v” - Y$ (where “Af” is any C or is *en* or *ing*; “v” is any M or V, or *have* or *be*)
 SC: $X_1 - X_2 - X_3 - X_4 \rightarrow X_1 - X_3 - X_2 \# - X_4$
- 21a. *Word Boundary Transformation* (obligatory)^[4]
 SA: $X - Y$ (where $X \neq “v”$ or $Y \neq “Af”$)
 SC: $X_1 - X_2 \rightarrow X_1 - \# - X_2$
- 21b. *Do-Transformation “Do-Support”* (obligatory)
 SA: $\# - “Af”$
 SC: $X_1 - X_2 \rightarrow X_1 - do + X_2$

[1] For brevity, *S* is used in this book rather than *Sentence*.

[2] *s* is used in this book rather than *S* to avoid confusion with the abbreviation *S* for *Sentence*.

[3] “V. . .” (for example) means ‘V followed by anything at all’; it is equivalent to $V + X$ or $V X$. The notation in *Syntactic Structures* is somewhat inconsistent on this point.

[4] Transformations 21a and 21b are both numbered 21 in *Syntactic Structures*.