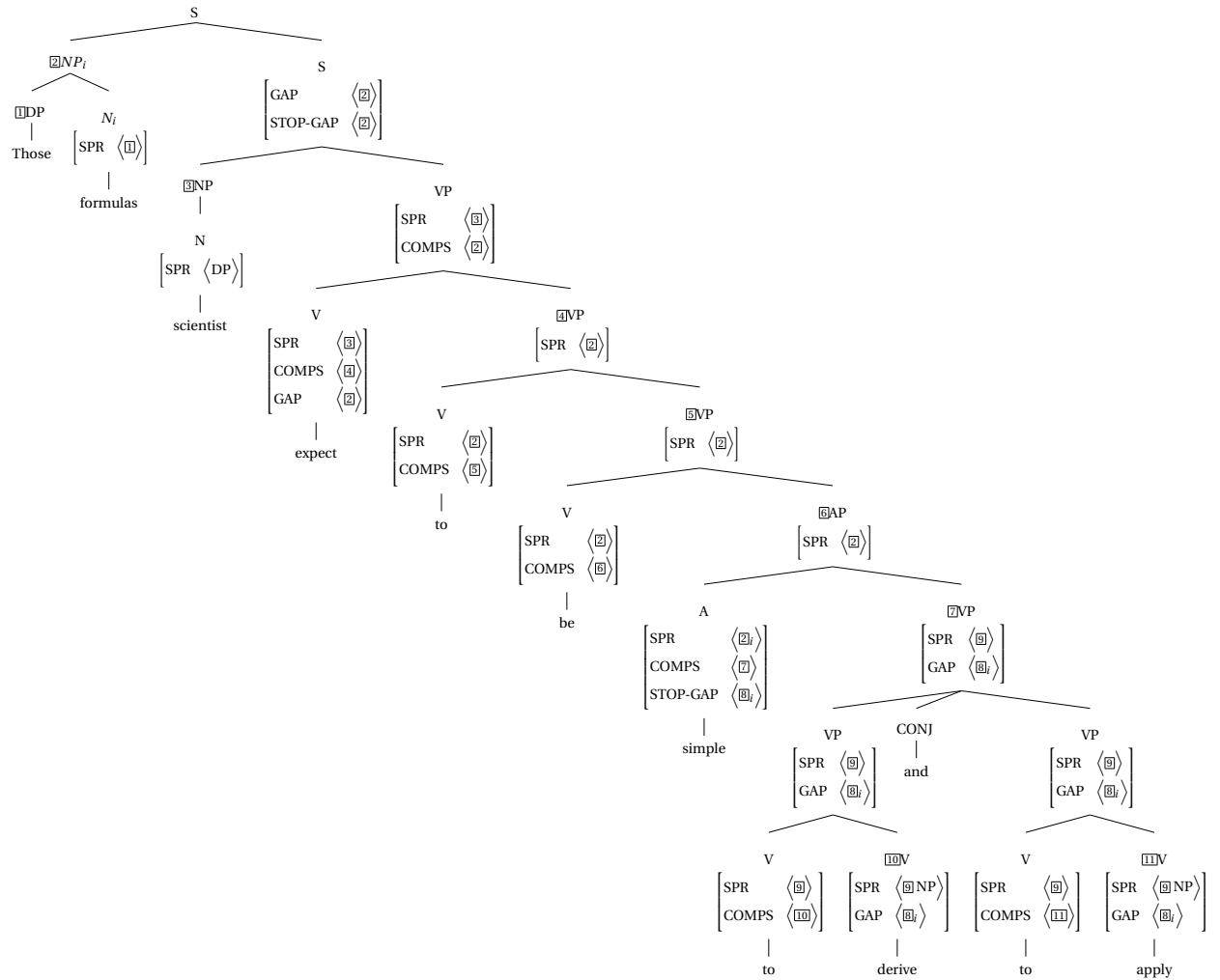# 566 Final

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1   Problem 1

Those formulas, scientists expect to be simple to derive and to apply.

1.1 Tree

1.2 Identity Cascades

To save space I will use the following abbreviations: Head Compliment Rule(HCR), Head Specifier Rule(HSR), Semantic Inheritance Principle(SIP), Argument Realization principle(ARP), Valence Principle(VP), Head Filler Rule(HFR), Coordination Rule (CR)

Grammar entity	1st member of identity	2nd member of identity
1. Lexical entry for formula	The INDEX value of N *formulas*	the INST value of the *formulas* predication
2. SIP	The INDEX value of N *formulas*	The INDEX value of the NP dominating *those formulas*
3. HFR	The NP Dominating *those formulas*	The sole element on the GAP list of the S dominating *scientists expect to be simple to derive and to apply*
4. GAP Principle	The sole element on the GAP list of the S dominating *scientists expect to be simple to derive and to apply*	The sole element on the GAP list of the VP dominating *expect to be simple to derive and to apply*
5. GAP Principle	The sole element on the GAP list of the VP dominating *expect to be simple to derive and to apply*	The sole element on the GAP list of the V *expect*
6. ARP	the sole element on the GAP list for the V *expect*	The second value on the ARG-ST for the V *expect*
7. Lexical entry for *expect*	The second value on the ARG-ST for the V *expect*	The sole element on the SPR list of the 3rd element on the ARG-ST for the V *expect*
8. HCR	The sole element on the COMPS list of the V *expect*	The VP dominating *to be simple to derive and to apply*
9. VP and HCR	The sole element on the SPR list of the VP dominating *to be simple to derive and to apply*	The sole element on the SPR list of the V *to*
10. ARP	The sole element on the SPR list of the V *to*	The first element on the ARG-ST of the V *to*
11. Lexical entry for to	The first element on the ARG-ST of the V *to*	The sole element on the SPR list of the 2nd element on the ARG-ST of the V *to*

12. ARP	The second element on the ARG-ST of the V *to*	The sole element on the COMPS list of the V *to*
13. HCR	The sole element on the COMPS list of the V *to*	The VP dominating *be simple to derive and apply*
14. VP and HCR	The sole element on the SPR list of the VP dominating *be simple to derive and to apply*	The sole element on the SPR list of the V *be*
15. ARP	The sole element on the SPR list of the V *be*	The first element on the ARG-ST of the V *be*
16. Lexical entry for be	The first element on the V *be*	The sole element on the SPR list of the 2nd element on the ARG-ST of the V *be*
17. ARP	The second element on the ARG-ST of the V *be*	The sole element on the comps list of the V *be*
18. HCR	The sole element on the COMPS list of the V *be*	The AP dominating *simple to derive and to apply*
19. GAP Principle	The sole element on the GAP list of the AP dominating *simple to derive and to apply*	The sole element on the STOP-GAP list of the A dominating *simple*
19. VP and HCR	The sole element on the SPR list of the A dominating *simple*	The sole element on the SPR list of the a *simple*
20. ARP	The sole element on the SPR list of the a *simple*	The index of the first element on the ARG-ST of the A *simple*
21. Lexical Entry for simple	The index of the first element on the ARG-ST of the A *simple*	The index of the 1st element on the GAP list of the 2nd element of the ARG-ST of the A *simple*

22. ARP	The 2nd element of the ARG-ST of the A *simple*	The sole element on the COMPS list of A *simple*
23. HCR	The sole element on the COMPS list of A *simple*	The VP dominating *to derive and to apply*
24. GAP Principle	The sole element on the GAP list of the VP dominating *to derive and to apply*	The sole element on the GAP list of the VP dominating *to derive*
25. GAP Principle	The sole element on the GAP list of the VP dominating *to derive*	The sole element on the GAP list of the V dominating *derive*
26. ARP	The sole element of the GAP list of the V *derive*	The second element of the ARG-ST of the V *derive*
27. Lexical entry for derive	INDEX value of the second element of the ARG-ST of the V derive	DERIVED value of the derive predication

2 Problem 2

We hoped that it would surprise Leslie that Kim sang, but it didn't

2.1 Lexical rules

Word	1st lexical Rule	2nd lexical rule (if appropriate)
We	Constant Lexeme Lexical Rule	
hoped	Passive Lexical Rule	Past-Tense Verb Lexical Rule
that	Constant Lexeme Lexical Rule	
it	Constant Lexeme Lexical Rule	
would	Passive Lexical Rule	
surprise	Base Form Lexical Rule	
Leslie	Constant Lexeme Lexical Rule	
that	Constant Lexeme Lexical Rule	
Kim	Constant Lexeme Lexical Rule	
Sang	Past Tense Verb Lexical Rule	Extraposition Lexical Rule

but	Constant Lexeme Lexical Rule	
it	Constant Lexeme Lexical Rule	
didn't	Non-3rd-Singular Verb Lexical rule	contraction lexical rule

2.2 Word Structure for didn't

$$
\begin{bmatrix}
word \\[4pt]
\text{SYN} \quad
\begin{bmatrix}
\text{HEAD} \quad
\begin{bmatrix}
verb \\
\text{FORM} & fin \\
\text{AUX} & + \\
\text{PRED} & - \\
\text{INF} & - \\
\text{POL} & + \\
\text{AGR} & \boxed{2}\,non\text{-}3sing
\end{bmatrix} \\[4pt]
\text{VAL} \quad
\begin{bmatrix}
\text{SPR} & \langle \boxed{1} \rangle \\
\text{COMPS} & \langle \boxed{3} \rangle \\
\text{MOD} & \langle \rangle
\end{bmatrix} \\[4pt]
\text{GAP} \quad \langle \rangle \\
\text{STOP-GAP} \quad \langle \rangle
\end{bmatrix} \\[4pt]
\text{ARG-ST} \quad \left\langle \boxed{1}
\begin{bmatrix}
\text{HEAD} \begin{bmatrix} nominal \\ \text{CASE} & nom \\ \text{AGR} & \boxed{2} \end{bmatrix} \\
\text{VAL} \begin{bmatrix} \text{SPR} & \langle \rangle \\ \text{COMPS} & \langle \rangle \end{bmatrix}
\end{bmatrix},
\boxed{3}
\begin{bmatrix}
\text{SYN} \begin{bmatrix}
\text{HEAD} \begin{bmatrix} verb \\ \text{FORM} & base \\ \text{INF} & - \end{bmatrix} \\
\text{SPR} & \langle \boxed{1} \rangle \\
\text{COMPS} & \langle \rangle
\end{bmatrix} \\
\text{SEM} \begin{bmatrix} \text{INDEX} & s_2 \end{bmatrix}
\end{bmatrix} \right\rangle \\[4pt]
\text{SEM} \quad
\begin{bmatrix}
\text{MODE} & prop \\
\text{INDEX} & s_3 \\
\text{RESTR} \left\langle
\begin{bmatrix} \text{RELN} & \textbf{not} \\ \text{SIT} & s_3 \\ \text{ARG} & s_1 \end{bmatrix},
\begin{bmatrix} \text{RELN} & \textbf{did} \\ \text{SIT} & s_1 \\ \text{ARG} & s_2 \end{bmatrix}
\right\rangle
\end{bmatrix}
\end{bmatrix}
$$