566 Final
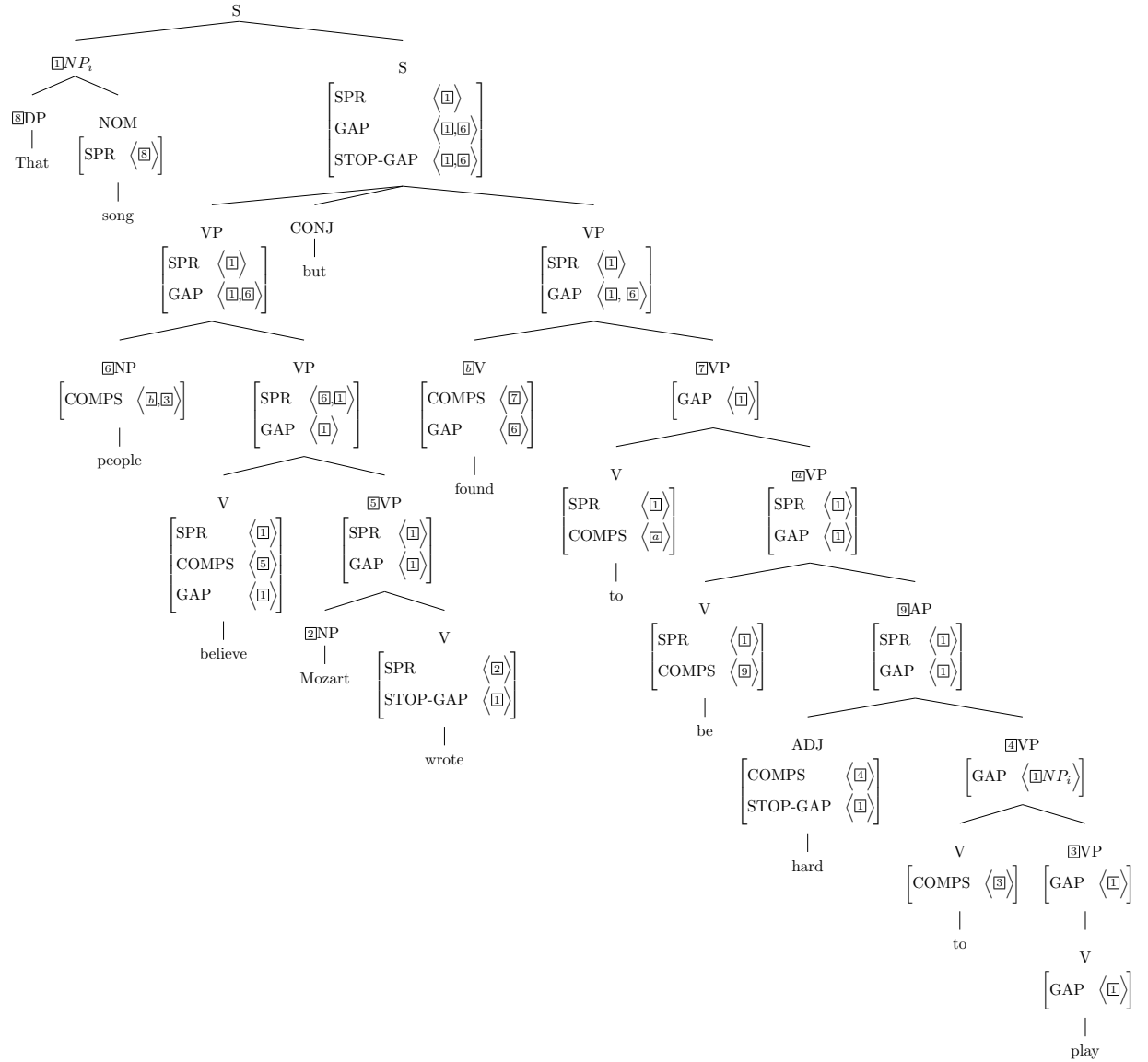
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1   Problem 1

That song, people believe Mozart wrote but found to be hard to play.

1.1 Tree

S

[1]NP_i

[8]DP
|
That

NOM
$\begin{bmatrix} \text{SPR} & \langle\,[8]\,\rangle \end{bmatrix}$
|
song

S
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{GAP} & \langle\,[1],[6]\,\rangle \\ \text{STOP-GAP} & \langle\,[1],[6]\,\rangle \end{bmatrix}$

VP
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{GAP} & \langle\,[1],[6]\,\rangle \end{bmatrix}$

CONJ
|
but

VP
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{GAP} & \langle\,[1],\,[6]\,\rangle \end{bmatrix}$

[6]NP
$\begin{bmatrix} \text{COMPS} & \langle\,[6],[3]\,\rangle \end{bmatrix}$
|
people

VP
$\begin{bmatrix} \text{SPR} & \langle\,[6],[1]\,\rangle \\ \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$

V
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{COMPS} & \langle\,[5]\,\rangle \\ \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$
|
believe

[5]VP
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$

[2]NP
|
Mozart

V
$\begin{bmatrix} \text{SPR} & \langle\,[2]\,\rangle \\ \text{STOP-GAP} & \langle\,[1]\,\rangle \end{bmatrix}$
|
wrote

[b]V
$\begin{bmatrix} \text{COMPS} & \langle\,[7]\,\rangle \\ \text{GAP} & \langle\,[6]\,\rangle \end{bmatrix}$
|
found

[7]VP
$\begin{bmatrix} \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$

V
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{COMPS} & \langle\,[a]\,\rangle \end{bmatrix}$
|
to

[a]VP
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$

V
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{COMPS} & \langle\,[9]\,\rangle \end{bmatrix}$
|
be

[9]AP
$\begin{bmatrix} \text{SPR} & \langle\,[1]\,\rangle \\ \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$

ADJ
$\begin{bmatrix} \text{COMPS} & \langle\,[4]\,\rangle \\ \text{STOP-GAP} & \langle\,[1]\,\rangle \end{bmatrix}$
|
hard

[4]VP
$\begin{bmatrix} \text{GAP} & \langle\,[1]NP_i\,\rangle \end{bmatrix}$

V
$\begin{bmatrix} \text{COMPS} & \langle\,[3]\,\rangle \end{bmatrix}$
|
to

[3]VP
$\begin{bmatrix} \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$
|
V
$\begin{bmatrix} \text{GAP} & \langle\,[1]\,\rangle \end{bmatrix}$
|
play

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(ValP), Head Filler Rule(HFR), Coordination Rule (CR)

i	Grammar entity	First member	Second member
1	lex entry for *song*	Index value of N Song	INST value of the *song* predication
2	lex entry for *song*	Index of its SPR $\boxed{8}$	Index value of DP *that*
3	HSR	the Det of *that*	the NOM of *song*
4	ARP	First element AGR-ST list of NOM*song*	sole element on the COMPS list of the nom *song*
5	SIP	Index of DP *that*	Index of NP *That song*
6	HFR	The GAP value of VP *people believe Mozart wrote but found to be hard to play*	The NP *that song*
7	HSR	NP *That song*	the specifier of VP *people believe Mozart wrote but found to be hard to play*
8	ARP	Second element of the ARG-ST of VP*people believe Mozart wrote but found to be hard to play*	sole element of the SPR list of the VP *people believe Mozart wrote but found to be hard to play*
9	CR	GAP value of *people believe Mozart wrote*	*found to be hard to play*
10	VP	specifier requirement of VP *people believe Mozart wrote but found to be hard to play*	specifier requirement of *found to be hard to play*
11	ARP	First element of the AGR-ST of VP *found to be hard to play*	specifier of VP *found to be hard to play*
12	ValP	specifier requirement of VP *found to be hard to play*	specifier requirement of V *found*
13	ARP	first element of AGR-ST of V *found*	sole element of COMPS list of V *found*
14	HCR	only comps requirement of V *found*	VP *to be hard to play*
15	ValP	specifier requirement of *to be hard to play*	specifier requirement of *to*
16	ARP	first element of AGR-ST of V *to*	sole element of COMPS of V *to*
17	HCR	only comps requirement of V *to*	VP *be hard to play*
18	ValP	specifier requirement of V *be*	specifier requirement of VP *be hard to play*
19	ARP	first element of AGR-ST of V *be*	sole element of COMPS of V *be*
20	HCR	only comps requirement of V *be*	AP *hard to play*
21	ValP	specifier requirement of A *hard*	specifier requirement of AP *hard to play*
22	ARP	first element of AGR-ST of A *hard*	sole element of COMPS of A *hard*
23	HCR	only comps requirement of A *hard*	VP *to play*
24	SIP	index of V *to*	index of VP *to play*
25	ARP	first element of AGR-ST of V *to*	sole element of COMPS of V *to*
26	HCR	only comps requirement of V *to*	VP *play*
27	SIP	Index of VP *play*	Index of V *play*
28	ARP	Second element of AGR-ST list of V	element of comps list of V *play*
29	HFR	sole element of GAP list of V *play*	second element of AGR-ST of V *play*
30	lex ent: *play*	INDEX of the 2nd item on the ARG-ST of the V *play*	PLAYED role in the **play** predication of the V *play*

2 Problem 2

Chris wanted it to be appreciated that Sandy's idea shouldn't be stolen.

2.1 Lexical rules

Chris: Constant Lexeme Lexical Rule
wanted: Past-Tense Verb Lexical Rule, Constant Lexeme Lexical Rule
it: Constant Lexeme Lexical Rule
to: Base Form Lexical Rule
be: Base Form Lexical Rule
appreciated: Past Participle Lexical Rule ,Constant Lexeme Lexical Rule
that: Constant Lexeme Lexical Rule

Sandy's: Constant Lexeme Lexical Rule, Subject Extraction Lexical Rule
ideas: Plural Noun Lexical Rule
shouldn't: Base form lexical rule , contraction lexical rule
be: Base Form Lexical Rule
stolen: Past Participle Lexical Rule, Constant Lexeme Lexical Rule

2.2 Word Structure for shouldn't

$$
\left\langle \text{shouldn't}, \begin{bmatrix} word \\ \text{SYN} \begin{bmatrix} \text{HEAD} \begin{bmatrix} verb \\ \text{FORM} & fin \\ \text{AUX} & + \\ \text{PO} & - \end{bmatrix} \\ \text{VAL} \begin{bmatrix} \text{SPR} & \langle \boxed{1}X \rangle \\ \text{COMPS} & \langle \rangle \end{bmatrix} \end{bmatrix} \\ \text{SEM} \begin{bmatrix} \text{MODE} & prop \\ \text{INDEX} & s_3 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & not \\ \text{SIT} & s_3 \\ \text{ARG} & s_2 \end{bmatrix} \right\rangle \oplus \left\langle \begin{bmatrix} \text{RELN} & should \\ \text{SIT} & s_2 \\ \text{ARG} & s_1\boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{ARG-ST} \left\langle \boxed{1}, \boxed{2} \begin{bmatrix} \text{SYN} & [\text{HEAD} & [\text{FORM} & base]] \\ \text{SEM} & [\text{INDEX} & s_1] \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle
$$

2.3 Analysis of grammar

Since neither of the two referenced ungrammatical sentences include be, both sentences are trying to combine present verbs(to, do) with a past-participle verb (appreciated). Without the be, the lexicacal forms of both to and do can only license sentences which have verbs preceding to or do which have PRED - which since appreciated is PRED + sentences won't be licensed as grammatical by the grammar.