NLP2 – Solution Notes 2002 p9 q14
EJB

a) 3sing rebel suffix forces W. D. to modify 'comp. sci' rather than 'friends'
Pl noun suffix forces 'more than one' interp. of 'some'
– section 4

b) $\forall x \exists y,z$ CompSci(x) & Friend(y,x) & Device(z) & Reprogrammable(z) & Obsess-about(x z)

Variation: Obsess-about(y z) if no 3sing suffix
$\exists z_1, z_2$ Device(z_1) & Device(z_2) $z_1 \neq z_2$ if Pl suffix

Lexical variants: with(x y) & friend(y)
decomposition of 'reprogrammable' etc
all acceptable
(NOT: computer-(x) & scientist(x))
– section 7

c) Morphology represent (non)3sg + pl/sg diffs + optionally tense + progressive + aspect as features
– section 4
Syntactically these features effect parse via unification of agreement constraints to control attachment of W. D. modifier to head and interp. of fixed NP
– section 6

Compositional semantics – scope of universal wide as existentials' embedded constituents, require beta reduction (or unification) to get right variable binding & lexical information about predicate-arity & NN compound interp (at least)
– section 8

d) Representation should be as those extracted from requests ~~and~~ or else it will need augmenting with inference about lexical predicates. Logical (eg Prolog style) databases & theorem proving better than standard (relational) approach to flexibly cope with range of potential requests — section 9