**2 Merge**

**2.1 The insight: syntax creates hierarchies**

A1 a. *Happy* is the head, as *happy* can appear in all environments in which *very happy with this news* can appear: *John is (very) happy (with this news)*.

b. The same is true for *women*. Additionally, *most intelligent women on the planet* can be replaced by *they*, showing us that something nominal must be the head. This could be *women* or *planet*. Note, however, that when we make this constituent the subject of the sentence, *women* determines the agreement on the verb, not *planet*: *Most intelligent women on the planet know/\*knows this*.

c. The whole string can be replaced by *does*: *Tom probably likes such nonsense. Yes, Tom does*. Since *does* is verbal, *probably likes such nonsense* must be verbal too. Therefore, *likes* is the head, since it is the only verbal element in there. In addition, you can replace *probably likes such nonsense* by *sleeps*, underscoring the same analysis.

d. *Ridiculously* is the head, as you can leave out *rather* more easily that *ridiculously* in the following example: *John talks ridiculously*, versus \**John talks rather*.

e. *Men* is the head, as you can leave out *that don’t know how to shave*. In addition, the whole constituent can be replaced by *they*, showing you it has to share a categorial feature with the pronoun.

f. *Is* is the head since the rest can be left out. Remember: *Fatima* should be ignored. As in c, the whole string can be replaced by *sleeps*.

g. *In* is the head. This is a tricky one because it is not the case that everything but *in* can be left out. *Right* can be left out, but not *the middle*: *John sat (right) in \*(the middle)*. This is generally the case with prepositions: they need something nominal following it. The ‘leaving stuff out test’ therefore does not work flawlessly. Finally, note that the constituent cannot be nominal, as it cannot be combined with a determiner: \**the right in the middle*.

B2 You can leave out either adverb and check if the result is still grammatical. This worked for *rather ridiculously* in the previous exercise: *John talks ridiculously/\*John talks rather*. It also works for *really stupidly*: *John talks stupidly/?\*really*. This does not always work. Take the sentence *Aaron is quite seriously attached to his cat*. Here you can leave out either *quite* or *seriously*. You have to go by meaning. If Aaron is quite seriously attached to his cat, the attachment is serious, not quite. *Quite* modifies *seriously*, denoting the degree of seriousness, and not vice versa. This makes *seriously* the head of *quite seriously.*

***2.2 The implementation: the operation Merge***

A3 a. AdvP

AdvP Adv

really stupidly

b. VP

V AdvP

talk

AdvP Adv

really stupidly

c. NP

AP N’

beautiful

AP N

red dress

d. VP

V NP

draw

AP N

syntactic trees

e. Adv or AdvP

really really

In isolation, there is no tree, just a word with a categorial feature. It is also possible to think of *really* as a syntactic structure, ready to be included in a bigger structure. In that case, it is an AdvP.

***2.3 Consequences: testing the predictions of Merge***

A4 a. No. If you substitute the string by *them* (*Esther bought them*), the way of paying is no longer part of the meaning. In addition, the string cannot be fronted: \**Three bottles* *with her credit* card, *Esther bought*.

b. No, the string cannot be fronted: \**Endlessly about his uncle, Peter talked* (whereas both *Endlessly, Peter talked* *about his uncle* and *About his uncle, Peter talked* *endlessly* are fine).

c. Yes: *About his uncle Peter talked endlessly*.

d. Yes: *His uncle, Peter talked endlessly about*. It can also be substituted by *him*: *About him*.

e. No: \**Me a new computer, Santa Clause sent*.

f. Yes: you can substitute it for *it* or *that*. *It/That was E.T*.

g. Yes, it can be substituted by *did*: *Tommy read this book last month and I did last week*.

h. No, as fronting fails: \**This book last week, I read* (whereas both *This book, I read last week* and *Last week, I read this book* are fine).

B5 a. VP

V PP

rely

P NP

on

AP N

unclear information

Note that *on unclear information* forms a constituent, as it can be fronted: *On unclear information* *one* *should never rely*. The fact that you can also front *unclear information* (*Unclear information, one should never rely on*) only shows that *unclear information* is a constituent (as is the case in the tree above), but crucially does not show that *rely on* is a constituent. Therefore, a tree in which *rely on* forms a constituent to the exclusion of *unclear information* is ill-motivated.

b. AP

AdvP A’

unreasonably

A PP

angry

P NP

about stuff

*Angry about stuff* forms a constituent to the exclusion of *unreasonably* because you can substitute it with *so*: *John is moderately angry about stuff, but Mary is unreasonably so*. The same test does not really produce a good outcome when we try to substitute for *unreasonably angry*: \**John is unreasonably angry about politicians, and Mary is so about stuff* (where *so* refers back to *unreasonably angry*). This motivates a structure in which AdvP sits higher than PP, and not the other way round.

c. PP

P NP

above

AP N

green meadows

d. PP

AdvP P’

back

P NP

in France

*In France* is a constituent to the exclusion of *back*, because you can substitute *in France* with *there*: *This happened back in France/This happened back there*. Substitution by *there* only works with locational PPs (just like substitution by *then* only works for temporal PPs). We generally conclude from these facts that the structure of PPs like *almost in doubt* and *clearly under suspicion* is similar, despite the fact that for these cases substitution by *there* and *then* is useless for semantic reasons: *in doubt* and *under suspicion* are not locational or temporal PPs.

e. VP

V’ AdvP

slowly

V PP

talk

P NP

to me

*To me slowly* cannot be fronted (\**To me slowly, he talked*) so that cannot be a constituent. *Talk to me* is a constituent, which can be motivated by *do*-substitution: *At that time, John hardly talked to me slowly but Harry did constantly*. Also fronting works: *Talk to me, he did slowly*.

B6 a. VP

V PP

believe

P NP

in change

b. VP (*believe in change*), PP (*in change*), V (*believe*), P (*in*) and NP (*change*).

c. It looks like there is one constituent less, namely the PP *in change*. At the same time, the sentence means the same and the NP *change* is merged with the preposition *in*; it is just fronted. So, despite appearances, the PP *in change* is still a constituent of this sentence.

d. It is a constituent of which the parts are not linearly next to each other. *In change* is a continuous constituent in (i) but a discontinuous constituent in (ii) as it is broken up by *you*.

e. Yes, the VP *believe in change* is a constituent and its parts are not next to each other, because *in change* has been fronted.

B7 a. Either the man that is attacked is carrying a knife, or the knife is the instrument with which our neighbour attacks a man.

b. VP VP

V NP V’ PP

attacked a man with a knife with a knife

V NP

attacked a man

c. If you front *a man with a knife*, then you lose the interpretation in which the knife is the weapon of the neighbour, as for that meaning (corresponding to the second tree), *a man with a knife* is not a constituent, and fronted elements must always be constituents.

C8 NP NP

AP N’ N’ PP

expensive

N PP AP N P NP

shoes expensive shoes from Italy

P NP

from Italy

*One*-substitution tells us that *shoes from Italy* is a constituent (*Tommy loves cheap shoes from Italy, and Andrew loves expensive ones* (where *ones* can refer back to *shoes from Italy*). This is an argument for the existence the tree on the left because *shoes from Italy* needs to be a constituent for substitution with *ones* to work, and *shoes from Italy* is not a constituent in the tree on the right. The same test reveals that a tree in which the PP is hierarchically higher than the AP should also exist: *My wife likes expensive shoes from Spain, but I like ones from Italy*. This is an argument for the existence of the tree on the right. So this example is compatible with two different trees.