

## CA446 Statistical Machine Translation

### Tutorial Exercises, 3rd April 2014

(a) List all phrase pairs that are consistent with the following word alignment:

	<i>A</i>	<i>B</i>	<i>C</i>
<i>X</i>	■	□	□
<i>Y</i>	■	■	□
<i>Z</i>	□	□	■

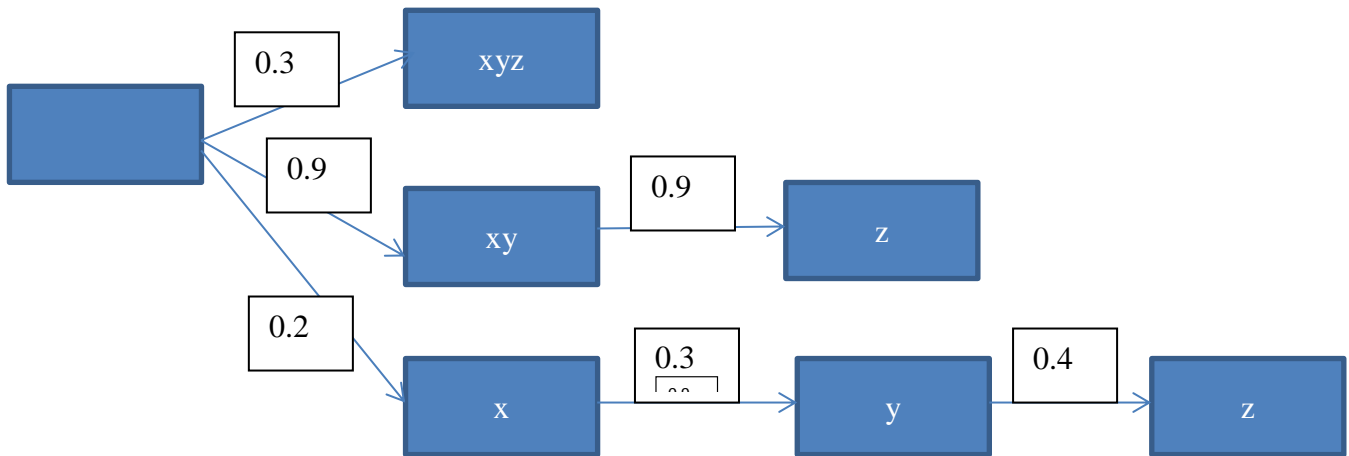
(b) List all phrase pairs that are consistent with the following word alignment:

	<i>A</i>	<i>B</i>	<i>C</i>
<i>X</i>	□	□	□
<i>Y</i>	□	■	□
<i>Z</i>	□	□	□

(c) List all phrase pairs that are consistent with the following word alignment:

	A	B	C
x			
y			
z			

(d) Which hypothesis will remain after hypothesis recombination?



For use in exercises (a)-(c):

A phrase pair  $(e, f)$  is consistent with a word alignment  $A$  if and only if:

1. For all words  $x$  in  $e$ , if  $x$  is aligned to some word  $y$  in  $A$ , then  $y$  must be in  $f$ .
2. For all words  $y$  in  $f$ , if  $y$  is aligned to some word  $x$  in  $A$ , then  $x$  must be in  $e$ .
3. There exists a word  $x$  in  $e$  and a word  $y$  in  $f$  such that  $x$  and  $y$  are aligned in  $A$ .