**Special Cases for Translation**

CONSTRUCTION TRANSLATION

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

neither p nor q

not either p or q ~(p v q) or

both p and q are not ~p • ~q

not p and not q

not both p and q ~(p • q) or

not p or not q ~p v ~q

p or q but not both (p v q) • ~(p • q)

p unless q p v q or

~q http://www.earlham.edu/%7Epeters/writing/matimp.gif p or

~p http://www.earlham.edu/%7Epeters/writing/matimp.gif q

if p then q

if p, q

p only if q p http://www.earlham.edu/%7Epeters/writing/matimp.gif q

p is sufficient for q

p implies q

p if q

p is necessary for q q http://www.earlham.edu/%7Epeters/writing/matimp.gif p

p is implied by q

For transformation of the conjunction and disjunction, see DeMorgan's Theorem:

~(p • q) ≡ (~p v ~q)

~(p v q) ≡ (~p • ~q)

For transformation of the conditional, see Contraposition:

(p http://www.earlham.edu/%7Epeters/writing/matimp.gif q) ≡ (~q http://www.earlham.edu/%7Epeters/writing/matimp.gif ~p)

Exclusive disjunction (p v q) • ~(p • q)

Inclusive disjunction (p v q) • (p • q)