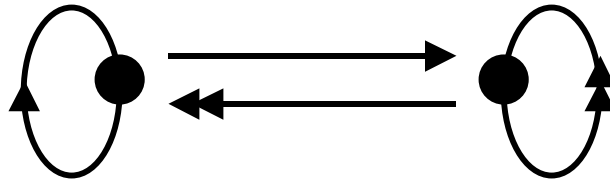


**Exercise 5 in *Natural Logic*, on p.185.**

In the following diagram dots represent individuals and arrows represent relations. Using  $Axy$  to mean ‘there is a single-headed arrow from  $x$  to  $y$ ’ and  $Bxy$  to mean ‘there is a double-headed arrow from  $x$  to  $y$ ’ write down a sentence of first order logic with identity that categorically describes the diagram:



$$\exists x \exists y (\neg x=y \wedge \forall z (z=x \vee z=y) \wedge Axx \wedge Axy \wedge \neg Ayx \wedge \neg Ayy \wedge \neg Bxx \wedge \neg Bxy \wedge Byx \wedge Byy)$$