$$
\begin{array}{lcl}
[\![p_1 \cup p_2]\!]_{fo}(x,y) & := & [\![p_1]\!]_{fo}(x,y) \vee [\![p_2]\!]_{fo}(x,y) \\
[\![/p]\!]_{fo}(x,y) & := & \exists z.\mathsf{root}(z) \wedge [\![p]\!]_{fo}(z,y) \\
[\![p_1/p_2]\!]_{fo}(x,y) & := & \exists z.[\![p_1]\!]_{fo}(x,z) \wedge [\![p_2]\!]_{fo}(z,y) \\
[\![axis{::}test[q]]\!]_{fo}(x,y) & := & axis(x,y) \wedge \mathsf{lab}_{test}(y) \wedge [\![q]\!]_{fo}(y) \\
[\![q_1 \wedge q_2]\!]_{fo}(x) & := & [\![q_1]\!]_{fo}(x) \wedge [\![q_2]\!]_{fo}(x) \\
[\![q_1 \vee q_2]\!]_{fo}(x) & := & [\![q_1]\!]_{fo}(x) \vee [\![q_2]\!]_{fo}(x) \\
[\![\neg q]\!]_{fo}(x) & := & \neg [\![q]\!]_{fo}(x) \\
[\![\mathrm{true}]\!]_{fo}(x) & := & \mathrm{true} \\
[\![p]\!]_{fo}(x) & := & \exists y.[\![p]\!]_{fo}(x,y)
\end{array}
$$

where:

$$
\begin{array}{lcl}
\mathsf{root}(x) & = & \forall y.\neg\mathsf{child}(y,x) \\
\mathsf{lab}_{*}(y) & = & \mathrm{true} \\
\mathsf{self}(x,y) & = & (x=y) \\
\mathsf{descendant\text{-}or\text{-}self}(x,y) & = & (x=y \vee \mathsf{descendant}(x,y)) \\
\mathsf{following}(x,y) & = & \exists z,z'.\ (z=x \vee \mathsf{descendant}(z,x)) \wedge \mathsf{following\text{-}sibling}(z,z') \\
 & & \qquad \wedge (z'=y \vee \mathsf{descendant}(z',y)) \\
axis^{-1}(x,y) & = & axis(y,x)
\end{array}
$$

Figure 1: Translation of CoreXPath into First-Order Logic.