Leśniewski’s Wheel and Spoke Notation

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Leśniewski described his wheel and spoke notation in 1939 [English translation in Stanisław Leśniewski. Collected Works, pp. 669–671]. He devised it in order to precisely formulated the deductive rules of Protothetic and Ontology, but did not use it in class or other informal situations.

I have created his symbols for equivalence (\(\equiv\)), and (\(\not\equiv\)) and if-then (\(\rightarrow\)). By examining the macros in the file WheelAndSpokeNotation.tex you should be able to create other symbols that you need. I have also used Leśniewski’s symbol for negation (\(\not\)).

Here is the original axiom of Leśniewski’s Ontology using this symbolism:

\[
\begin{align*}
&\not Aa \not\not (\varepsilon \{Aa\} \not\in \not\not B \not\in (\varepsilon \{BA\})^{-} \\
&\not BC \not\not (\varepsilon \{BA\} \varepsilon \{CA\} \varepsilon \{BC\})^{-} \\
&\not B \not\not (\varepsilon \{BA\} \varepsilon \{Ba\})^{-}
\end{align*}
\]

The \LaTeX{} code for preparing this document is on the next page.
\documentclass[11pt, oneside]{article}
\usepackage{geometry}
\geometry{letterpaper}
\usepackage{graphicx}
\usepackage{amssymb}

%%% New Macros for the wheel and spoke notation:
\newcommand{\is}{\varepsilon,}

\usepackage{tikz}
\newcommand{\lesand}{\raisebox{-6pt}{\begin{tikzpicture}
\draw (0,.3) circle [radius=0.1];
\draw (0,0) -- (0,.2);
\end{tikzpicture}}}
\newcommand{\lesiff}{\raisebox{-6pt}{\begin{tikzpicture}
\draw (0,.3) circle [radius=0.1];
\draw (0,0) -- (0,.2);
\draw (0,.4) -- (0,.6);
\end{tikzpicture}}}
\newcommand{\lesthen}{\raisebox{-6pt}{\begin{tikzpicture}
\draw (0,.3) circle [radius=0.1];
\draw (0,0) -- (0,.2);
\draw (0,.4) -- (0,.6);
\draw (0.1, 0.3) -- (0.3, 0.3);
\end{tikzpicture}}}

\title{Leśniewski’s Wheel and Spoke Notation}
Leśniewski described his wheel and spoke notation in 1939 [English translation in *Stanisław Leśniewski. Collected Works*, pp. 669--671]. He devised it in order to precisely formulated the deductive rules of Protothetic and Ontology, but did not use it in class or other informal situations.

I have created his symbols for equivalence (\lesiff), (\lesand) and if-then (\lesthen). By examining the macros on the next page you should be able to create other symbols that you need. I have also used Leśniewski’s symbol for negation ($\vdash$).

Here is the original axiom of Leśniewski’s Ontology using this symbolism:

\begin{verbatim}
\llcorner Aa \lrcorner \ulcorner \lesiff ( \is\{Aa\}, \lesand (\vdash\lrcorner B \lrcorner \ulcorner \lesand (\is\{BA\} \is\{CA\}) \is\{BC\}) \urcorner \\
\hfil\break
\{}\hskip 1.55in \llcorner BC \lrcorner \ulcorner \lesthen (\lesand (\is\{BA\} \is\{Ba\}) \is\{BC\}) \urcorner \\
\hfil\break
\{}\hskip 1.55in \llcorner B \lrcorner \ulcorner (\lesthen (\is\{BA\} \is\{Ba\}) \is\{BC\}) \urcorner
\end{verbatim}

\end{document}