Sasithorn Hennerong

1. $\dfrac{}{N}$ $\dfrac{Nx}{Nx|}$ $\dfrac{Nx}{x- \ = x}$ $\dfrac{Ny}{-y=-y}$ $\dfrac{x-y=z}{x|-y=z|}$

2.

$$
\begin{array}{c}
\hline
N \\
\hline
N| \\
\hline
N|| \\
\hline
\cdot | = \\
\hline
|\cdot|=| \\
\hline
||\cdot|=|| \\
\hline
||\cdot||\cdot| \ = |||| \\
\hline
|||\cdot||\cdot| = |||||
\end{array}
$$

3. y|

4. No. According to the formal system MIU of Hofstader, the way to get MU is having MIII and use $\dfrac{MIII}{MU}$ which means using 3 I. However, the number of I producing from the rule is always not divisible by 3.

$$
\begin{array}{cl}
\hline
MI & \text{axiom} \rightarrow \text{number of I is 1 which isn't divisible by 3} \\
\hline
MII & \text{rule 2} \\
\hline
MIIII & \text{rule 2} \\
\hline
MIIIIIIII & \text{rule 2}
\end{array}
\left.\vphantom{\begin{array}{c}1\\1\\1\\1\end{array}}\right\} \text{number of I is doubling which isn't divisible by 3}
$$

So the rule can't produce MIII, can't produce MU either.

9.

$$\dfrac{\dfrac{\dfrac{\overline{P}}{FP} \quad \dfrac{\dfrac{\dfrac{\overline{P}}{FP}}{FNP}}{FCNPN} \quad \dfrac{\overline{P}}{FP}}{Th\,CCPCNPPCCCNPPPCPP} \qquad \dfrac{\dfrac{\overline{P}}{FP} \quad \dfrac{\overline{P}}{FP}}{Th\,CPCNPP}}{Th\,CCCNPPPCPP} \qquad \dfrac{\dfrac{\overline{P}}{FP}}{Th\,CCNPPP}}{Th\,CPP}$$

which $Th\,CPP = P \to P$