Refutation of Frege's inference rule of generalization

Abstract: We evaluate Frege’s inference rule of generalization which is not tautologous. This result forms a non tautologous fragment of the universal logic $\mathcal{VL}4$.

We assume the method and apparatus of Meth8/$\mathcal{VL}4$ with $\mathcal{T}$autology as the designated proof value, $\mathcal{F}$ as contradiction, $\mathcal{N}$ as truthity (non-contingency), and $\mathcal{C}$ as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

Let $\sim$ Not, $\neg$; $+$ Or, $\lor$, $\cup$; $\neg$ Not Or; $\&$ And, $\land$, $\cap$, $\cdot$; $\setminus$ Not And;
$\succ$ Imply, greater than, $\rightarrow$, $\Rightarrow$; $\prec$ Not Imply, less than, $\in$, $\subset$, $\notin$, $\subsetneq$; $\equiv$, $\equiv$, $\equiv$; $\neq$ Not Equivalent, $\oplus$;
% possibility, for one or some, $\exists$, $\exists$, $\exists$; # necessity, for every or all, $\forall$, $\Box$, $\Diamond$;
$(z=z)$ $\top$ as tautology, $\top$, ordinal 3; $(z@z)$ $\bot$ as contradiction, $\emptyset$, Null, $\bot$, zero;
$(%z>\#z)$ $\mathcal{N}$ as non-contingency, $\Delta$, ordinal 1; $(%z<\#z)$ $\mathcal{C}$ as contingency, $\nabla$, ordinal 2;
$\sim(y<x)$ ($x \leq y$), ($x \subseteq y$); ($x \subseteq y$); ($A=B$) ($A\neq B$).

Note for clarity, we usually distribute quantifiers onto each designated variable.

From: en.wikipedia.org/wiki/Begriffsschrift

The rule of generalization allows us to infer $\vdash P \rightarrow \forall x A(x)$ from $\vdash P \rightarrow A(x)$ if $x$ does not occur

\[ (2.1) \]

Let $p, q, r, s$: $P, x, A$.

\[ (\neg (r<p) \Rightarrow (p>(q\&r))) \Rightarrow (p>(q\&r)) \]

\[ TTTT \ TTTN \ TTTT \ TTTN \]

\[ (2.2) \]

Remark 2.2: Eq. 2.2 as rendered is not tautologous. This refutes Frege’s inference rule of generalization, and any conjecture making use of it.