Refutation of Leibnitz’ indiscernibles

Abstract: Four equations defining Leibnitz’ law of indiscernibles are not tautologous, hence refuting it. What follows is that these theories are also refuted: Ramsey cardinals; Erdös cardinals; and Zero sharp. These conjectures form a non tautologous fragment of the universal logic $\mathcal{V}_Ł\mathcal{4}$.

We assume the method and apparatus of Meth8/$\mathcal{V}_Ł\mathcal{4}$ with $\top$ as tautology as the designated proof value, $\bot$ as contradiction, $\perp$ as truthity (non-contingency), and $\perp$ 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 $\neg$, $\lor$, $\land$, $\equiv$; $\rightarrow$, $\Rightarrow$, $\hookrightarrow$; $\exists$, $\forall$, $\nexists$, $\forall$

From: en.wikipedia.org/wiki/Indiscernibles

If a, b, and c are distinct and \{a, b, c\} is a set of indiscernibles, then, for example, for each binary formula $\beta$, we must have

$$\begin{align*}
[\beta(a,b) \land \beta(b,a) \land \beta(c,a) \land \beta(b,c) \land \beta(cb)] & \lor \\
[\neg \beta(a,b) \land \neg \beta(b,a) \land \neg \beta(c,a) \land \neg \beta(b,c) \land \neg \beta(cb)]
\end{align*}$$

(1.1)

Rem. 1.2: Eq. 1.2 collapses logically to:

$$\begin{align*}
(p \lor \neg(q \lor r)) + (p \land (q \land r))
\end{align*}$$

(1.2)

Remark 1.2: Eq. 1.2 collapses logically to:

$$\begin{align*}
(p \lor ((q \lor r) \land s)) + (\neg p \land (q \land r) \land s)
\end{align*}$$

(1.3)

In some contexts one considers the more general notion of order-indiscernibles, and the term sequence of indiscernibles often refers implicitly to this weaker notion. In our example of binary formulas, to say that the triple (a, b, c) of distinct elements is a sequence of indiscernibles implies

$$\begin{align*}
([\phi(a,b) \land \phi(a,c) \land \phi(b,c)] \lor [\neg \phi(a,b) \land \neg \phi(a,c) \land \neg \phi(b,c)] \land \\
([\phi(b,a) \land \phi(c,a) \land \phi(c,b)] \lor [\neg \phi(b,a) \land \neg \phi(c,a) \land \neg \phi(c,b)])
\end{align*}$$

(2.1)
Eqs. 1.2, 1.3, 2.2, and 2.3 as rendered are not tautologous, refuting Leibnitz’ law of indiscernibles. What follows is that the these theories are also refuted: Ramsey cardinals; Erdös cardinals; and Zero sharp.