Refutation of behavioral mereology

Abstract: If P≤P′ and Q′≤Q, proposition $<>^{P'}_{P}<>^{Q}_{P'} = <>^{Q}_{P}$ is equivalent to $[]^{P'}_{P}[]^{Q}_{P'} = []^{Q}_{P}$ and respectively not tautologies.

We assume the method and apparatus of Meth8/VŁ4 with Tautology as the designated *proof* value, **F** as contradiction, N as truthity (non-contingency), and C as falsity (contingency). Results are a 16-valued truth table in row-major and horizontal, or repeating fragments of 128-tables for more variables. (See ersatz-systems.com.)

LET p, q, r, s: P, Q, P', Q';
~ Not; & And; > Imply; < Not Imply, less than; = Equivalent;
% possibility, for one or some, <>; # necessity, for every or all, [];
~(y<x) (x≤y).

From: Fong, B.; Myers, D.J.; Spivak, D.I. (2018). Behavioral mereology.
arxiv.org/pdf/1811.00420.pdf bfo@mit.edu

Proposition 23. Suppose that P ≤ P ′ and Q′ ≤ Q. Then

1. $<>^{P'}_{P}<>^{Q}_{P'} = <>^{Q}_{P}$ (Prop. 23.1.1)

```
(~(r<p)&~(q<s))>(((%s&%p)&(%q&%r))=(%q&%p)) ;
                      TTTT TTTT TTTC TTTT      (Prop. 23.1.2)
```

2. $[]^{P'}_{P}[]^{Q}_{P'} = []^{Q}_{P}$ (Prop. 23.2.1)

```
(~(r<p)&~(q<s))>(((#s&#p)&(#q&#r))=(#q&#p)) ;
                      TTTT TTTT TTTC TTTT      (Prop. 23.2.2)
```

Remark 23: Props. 23.1 and 23.2 as rendered produce the equivalent truth table result.

Props. 23.1 and 23.2 are *not* tautologous, diverge by one value of falsity, as `C` for contingency, and refute behavioral mereology.