Refutation of Fodor’s causality principle and extension to the class Fodor principle

Abstract: We evaluate Fodor’s principle in two versions we name *weaker* and *stronger*. Neither is tautologous. By extension, the class Fodor principle is *not* tautologous. Because of this, using Kelly-Morse set theory as a basis for denial is rendered moot. However, to rely on KM set theory to deny Fodor principles as a class principle is obviated by the refutation above. Therefore Fodor’s causality principles and extension are *non* tautologous fragments of the universal logic VŁ4.

> We assume the method and apparatus of Meth8/VŁ4 with `T`autology as the designated proof value, **`F`** as contradiction, `N` as truthity (non-contingency), and `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 ~ Not, ¬ ; + Or, ∨, ∪, ⊔ ; - Not Or; & And, ∧, ∩, ⊓ ,·; \ Not And;
> Imply, greater than, →, ⇒ , ↦, ≻, ⊃, ↠ ;
< Not Imply, less than, ∈, ≺, ⊂, ⊬, ⊭, ↞, ≲ ;
= Equivalent, ≡, :=, ⇐⇒, ↔, ≜, ≈, ≃ ; @ Not Equivalent, ≠;
% possibility, for one or some, ∃, ◊, M; # necessity, for every or all, ∀, □, L;
(z=z) `T` as tautology, ⊤, ordinal 3; (z@z) **`F`** as contradiction, Ø, Null, ⊥ , zero;
(%z>#z) `N` as non-contingency, Δ, ordinal 1;
(%z<#z) `C` as contingency, ∇, ordinal 2;
~(y < x) (x ≤ y), (x ⊆ y); (A=B) (A~B); (B>A) (A⊢B); (B>A) (A⊨B).
Note for clarity, we usually distribute quantifiers onto each designated variable.

From: en.wikipedia.org/wiki/Jerry_Fodor

“The asymmetric causal theory

The main problem with this theory is that of erroneous representations. There are two unavoidable problems with the idea that "a symbol expresses a property if it is ... necessary that all and only the presences of such a property cause the occurrences". The first is that not *all* horses cause occurrences of *horse*. The second is that not *only* horses cause occurrences of *horse.* Sometimes the *A*(*horses*) are caused by A (horses), but at other times—when, for example, because of the distance or conditions of low visibility, one has confused a cow for a horse—the *A* (*horses*) are caused by B (cows). In this case the symbol *A* doesn’t express just the property A, but the disjunction of properties A or B. The crude causal theory is therefore incapable of distinguishing the case in which the content of a symbol is disjunctive from the case in which it isn’t. This gives rise to what Fodor calls the "problem of disjunction".

Fodor responds to this problem with what he defines as "a slightly less crude causal theory". According to this approach, it is necessary to break the symmetry at the base of the crude causal theory. Fodor must find some criterion for distinguishing the occurrences of *A* caused by A’s (true) from those caused by B’s (false). The point of departure, according to Fodor, is that while the false cases are *ontologically dependent* on the true cases, the reverse is not true. There is an asymmetry of dependence, in other words, between the true contents (*A*=A) (1.1)

LET p, q, r: *A*, A, B

p=q ; TFFT TFFT TFFT TFFT (1.2)

and the false ones (*A*=A or B). (2.1)

p=(q+r) ; TFFT FTFT TFFT FTFT (2.2)

The first can subsist independently of the second, but the second can occur only because of the existence of the first" (3.0)

Remark 3.0: We write Eq. 3.0 as 1.1 implies 2.1. (3.1)

(p=q) >(p=(q+r)) ; TTTT FTTT TTTT FTTT (3.2)

Remark 3.2: We name this Fodor's *weaker* principle.

To strengthen Fodor's weaker principle, we write Eq. 1.1 (*A*=A) as

(A=A), (4.1)

q=q ; TTTT TTTT TTTT TTTT (4.2)

and 2.1 (*A*=A or B) as

(A=A or B). (5.1)

q=(q+r) ; TTTT FFTT TTTT FFTT (5.2)

Remark 3.0: We rewrite Eq. 3.0 as 4.1 implies 5.1. (6.1)

(q=q) >(q=(q+r)) ; TTTT FFTT TTTT FFTT (6.2)

Remark 6.2: We name this Fodor's *stronger* principle.

Fodor's weaker principle (Eqs. 1, 2, 3 as expressed) is *not* tautologous; and Fodor's stronger principle (4,5,6) is *not* tautologous, thereby refuting the Fodor principle. In particular, the notion of Eq. 3.0 that while a true antecedent is independent of a consequent, the consequent can occur only because of the existence of the antecedent is mistaken.

These principles are extendable to the class Fodor principle, for example:

Gitman, V.; Hamkins, J,D.; Karagila, A. (2019).
Kelley-Morse set theory does not prove the class Fodor principle. arxiv.org/pdf/1904.04190.pdf
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However, to rely on KM set theory to deny the Fodor principle, as the class Fodor principle, is obviated by the refutation above.