Curso de Problemas de Lógica: *Lógica Modal*

Quinta sesión (*Symbolic Logic*)

Otoño de 2017

Raymundo Morado

Implication and the Algebra of Logic (1912) (en nuestra página)

- P. 522: (1) a false proposition implies any proposition, and (2) a true proposition is implied by any proposition. [...] suspicious to common sense [...], they are neither mysterious sayings, nor great discoveries, nor gross absurdities.
- P. 526: We may say that extensional disjunction concerns actualities; intensional disjunction, possibilities [...] We may call this kind of implication "strict" at least in the sense that its meaning is narrower than that of the algebraic implication.

- P. 529: In the ordinary and "proper" use of implies certain conclusions can validly be inferred from contrary-to-fact suppositions, while certain others cannot. Hypotheses whose truth is problematic have logical consequences which are independent of its truth or falsity.

- P. 531: An alternative and more fruitful method of developing the calculus of strict implication would be to retain both extensional and intensional disjunction, symbolise them differently, and define implication in terms of intensional disjunction only. [...] this calculus would prove a valuable instrument of logical analysis. Its primary advantage over any present system lies in the fact that its meaning of implication is precisely that of ordinary inference and proof.

Symbolic Logic (1932)

Clarence Irving Lewis (1883-1964)

Cooper Harold Langford (1895-1964)

Algunas ideas en el transfondo

- P. 139: It is a fact, however, that for every material implication which is asserted in any theorem in the system of Material Implication, the corresponding strict implication also holds. [...] (It is certain unasserted, or subordinate, material implications which cannot validly be replaced by the corresponding strict implications.)

- P. 140: the whole system of Material Implication is contained in the system of Strict Implication.
- P. 144: the usual mathematical requirement that the members of a set of postulates should be consistent and independent—would not be possible if poq and "q is deducible from p" should be synonymous.

- P. 147: The strict relations, p ≺ q, and p = q (and the relation of consistency [...]) are not such truth-functions
- P. 241: a tautology, *i.e.*, a principle whose truth is demonstrable by exhaustion of some set of alternative possibilities.
- P. 245: Let any relation of truth-implication be introduced into the system of Strict Implication, by suitable definition. [...] The laws of this relation of truth-implication will then be provable theorems in the system of Strict Implication. And in these laws, in any case in which this truth-implication, *I*, is tautological, it will be possible to replace it by ≺ ; but in any case in which *plq* is true but is not tautological, the relation *I* will not be replaceable by ≺.

Postulados

P. 493: *The amended postulates (set A below) compare with those of Chapter VI of this book (set B below) as follows:*

A1. $pq.\prec.qp$	B1. $pq.\prec.qp$
A2. $qp.\prec.p$	B2. $pq.\prec.p$
A3. $p\ .\ \prec\ .pp$	B3. $p\ .\prec.\ pp$
A4. $p(qr)\ .\ \prec\ .\ q(pr)$	B4. $(pq)r\ .\prec.\ p(qr)$
A5. $p \prec \sim(\sim p)$	B5. $p \prec \sim(\sim p)$
A6. $p \prec q.q \prec r :\prec.p \exists r$	B6. $p \prec q.q \prec r :\prec.\ p \prec r$
A7. $\sim\Diamond p \prec \sim p$	B7. $p\ .\ p \prec q :\prec.\ q$
A8. $p \prec q.\prec.\sim\Diamond q \prec \sim\Diamond p$	B8. $\Diamond(p\ q) \prec \Diamond p$
	B9. $(\exists p,q):\sim(p \prec q).\sim(p \prec \sim q)$

[...] they form equivalent sets

Transcriba, Parafrasee, Ejemplifique, Evalúe

B8. $\Diamond(p\ q) \prec \Diamond p$

B9. $(\exists p,q)\ [\sim(p \prec q).\sim(p \prec \sim q)]$

C10. $\sim\Diamond\sim p \prec \sim\Diamond\sim\ \sim\Diamond\sim p$

C11. $\Diamond p \prec \sim\Diamond\sim \Diamond p$

S1-S5

Pp. 500-501: there is a group of systems of the general type of Strict Implication and each distinguishable from Material Implication. We shall arrange these in the order of increasing comprehensiveness and decreasing 'strictness' of the implication relation:

S1, deduced from the set B1-7 [...]

S2, deduced from the set B1-8 [...]

S3, deduced from the set [B1-B9] A1-8, as in the Survey [casi] [...]

S4, deduced from the set (B1-7 and C10) [...]

S5, deduced from the set (B1-7 and C11)

|	|	|	|	|	Bl.	$pq.\prec.qp$
|	|	|	|	|	B2.	$pq.\prec.p$
|	|	|	|	|	B3.	$p\ .\prec.\ pp$
|	|	|	|	|	B4.	$(pq)r\ .\prec.\ p(qr)$
|	|	|	|	|	B5.	$p \prec \sim(\sim p)$
|	|	|	|	|	B6.	$p \prec q\ .\ q \prec r :\prec.\ p \prec r$
|	|	|	|	S1	B7.	$[p\ .\ (p \prec q)] :\prec.\ q$
|	|	|	S2		B8.	$\Diamond(p\ q) \prec \Diamond p$
|	|	S3			B9.	$(\exists p,q):\sim(p \prec q).\sim(p \prec \sim q)$
|	S4				C10.	$\sim\Diamond\sim p \prec \sim\Diamond\sim\ \sim\Diamond\sim p$
S5					C11.	$\Diamond p \prec \sim\Diamond\sim \Diamond p$

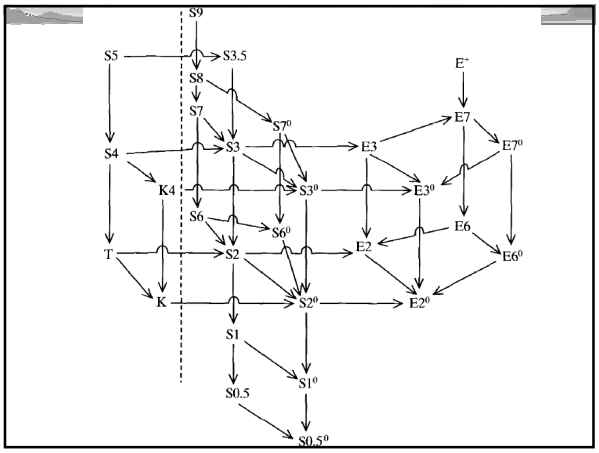
Tarea 3

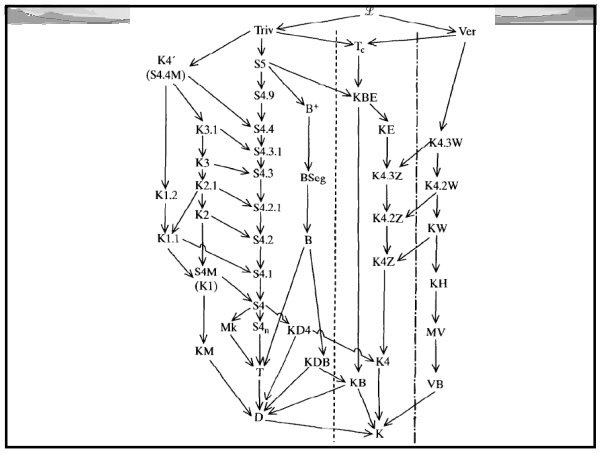
Lea el apéndice II de *Symbolic Logic* de Clarence Irving Lewis y Cooper Harold Langford y haga los siguientes ejercicios:

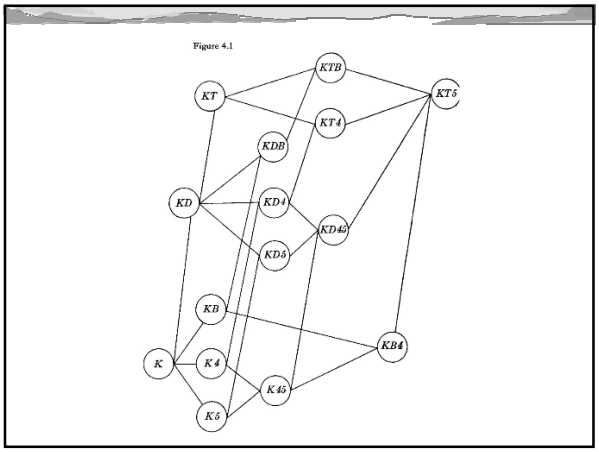
(1) Transcriba los postulados de S1, como aparecen en el apéndice.
(2) Transcriba los postulados de S2, como aparecen en el apéndice.
(3) Transcriba los postulados de S3, como aparecen en el apéndice.
(4) Transcriba los postulados de S4, como aparecen en el apéndice.
(5) Transcriba los postulados de S5, como aparecen en el apéndice.
(6) ¿Cuál de ellos, si es que alguno, coincide con el sistema (corregido) del *Survey*?
(7) Diga cuál de los sistemas S1-S5 prefiere y mencione alguna ventaja que tenga con respecto a cada uno de los otros cuatro. (Si no prefiere ninguno, compare las ventajas relativas entre cada uno de los miembros de los 10 pares de ellos. Es decir, compare S1 con S2, S1 con S3, S1 con S4, S1 con S5, S2 con S3, S2 con S4, S2 con S5, S3 con S4, S3 con S5, y S4 con S5.)

¿Cuál es la correcta lógica modal?

Pp. 501-502: Prevailing good use in logical inference—the practice in mathematical deductions, for example—is not sufficiently precise and self-conscious to determine clearly which of these five systems expresses the acceptable principles of deduction.







Lógica y Fundamentos
50 Congreso Nacional de la SMM

Lunes 23

- 12-13 Reseña de algunas lógicas José Ramón Enrique Arrazola Ramírez
- 13-13:30 La lógica CG'3 Miguel Pérez Gaspar
- 13:30-14 Una implicación para las lógicas paraconsistentes genuinas Jesús Alejandro Hernández Tello
- 16:30-17:30 Axiomas que caracterizan a la lógica clásica. Favio Ezequiel Miranda Perea
- 17:30-18 Acerca de algunos sistemas de prueba para la Lógica Modal Lourdes del Carmen González Huesca
- 18-18:30 Verificación Formal en Lógica Modal Estefanía Prieto Larios

Lógica y Fundamentos, SMM
Yelizcalli "204", Facultad de Ciencias

Jueves 26

- 10:30-11 Las Semánticas Algebraicas como herramientas para la solución de problemas filosóficos. El caso de la semántica de R. Paulina Mayela Raigosa Gomez.
- 11:30-12 Acerca de la prueba de solidez de la aritmética inconsistente Luis Estrada González.
- 12-13 Dedekind y los Fundamentos de las Matemáticas Max Fernández de Castro Tapia.