Summer School on Law and Logic 2018
European University Institute – Harvard Law School

Session 3.2.2
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Logocratic Domain:
Using predicate logic as a tool of argument in law and legal theory

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Warmup example

Is this a rule enthymeme, an argument enthymeme, both, or neither?:

Everybody doesn't like something, but nobody doesn't like Sara Lee

A type of rule enthymeme, but, unlike rules of law, this is not a norm

LIKES(x,y) [two-place predicate, 1 likes 2]

s   [constant, the type of cake Sara Lee]

rulification: ($\forall$x $\exists$y (~Lxy)) & (~$\exists$z(~Lzs))

Rules for WFFs

Formulas

1. Atomic formulas: If *P* is a predicate (with *n* arguments) and t1, …, tn are terms (i.e., variables, constants, or function symbols), then P(t1, …, tn) is an atomic formula;

2. Every atomic formula is a formula;

3. If **A** and **B** are formulas and x is a variable, then ¬**A**, **A**→**B**, ∀**xA** and ∃**xB** are formulas;

4. Nothing except those defined in the steps above are formulas.

Warmed-up example: set up for Hohfeld relations

John Dewey, "Logical Method and Law"

"[T]here are different logics in use. One of these, the one which has had greatest historic currency and exercised greatest influence on legal decisions, is that of the syllogism. To this logic the strictures of Justice Holmes apply in full force. For it purports to be a logic of rigid demonstration, not of search and discovery. It claims to be a logic of fixed forms, rather than of methods of reaching intelligent decisions in concrete situations, or of methods employed in adjusting disputed issues in behalf of the public and enduring interest. Those ignorant of formal logic, the logic of the abstract relations of ready-made conceptions to one another, have at least heard of the standard syllogism: All men are mortal; Scorates is a man; therefore, he is mortal. This is offered as the model of all proof or demonstration. It implies that what we need and must procure is first a fixed general principle, the so-called major premise, such as 'all men are mortal;' then in the second place, a fact which belongs intrinsically and obviously to a class of things to which the general principle applies: Socrates is a man. Then the conclusion automatically follows: Socrates is mortal. According to this model every demonstrative or strictly logical conclusion 'subsumes' a particular under an appropriate universal. It implies the prior and given existence of particulars and universals."

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"In a certain sense it is foolish to criticise the model supplied by the syllogism. The statements made about men and Socrates are obviously true, and the connection between them is undoubted. The trouble is that while the syllogism sets forth the *results* of thinking, it has nothing to do with the *operation* of thinking. Take the case of Socrates being tried before the Athenian citizens, and the thinking which had to be done to reach a decision. Certainly the issue was not whether Socrates was mortal; the point was whether this mortality would or should occur at a specified date and in a specified way. Now that is just what does not and cannot follow from a general principle or a major premise. Again to quote Justice Holmes, "General propositions do not decide concrete cases." No concrete proposition, that is to say one with material dated in time and placed in space, follows from any general statements or from any connection between them."

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Dewey: "No **concrete proposition, that is to say one with material dated in time and placed in space**, follows from any general statements or from any connection between them."

Task: using the tools of predicate logic shown to you so beautifully and masterfully by my favorite professional philosopher in this room in the three sessions before this session, other than myself, offer a **counter-example argument that is in dialectical competition with** Dewey's assertion.

I(x,x,y,z) Identical to itself at all times and in all places [four-place predicate, 1 is identical to 2 at y and at z]

s Socrates [constant]

a Athens

2416 2416 B.B. [**before Bartosz;** = 398 + 2018 B.C.]

Note some interesting properties of the identity relation:

reflexive, symmetrical, transitive

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s Socrates [constant]

a Athens

2375 B.B. [**before Bartosz;** = 398 + 1977 B.C.]

∀x ∀y ∀zI(x,x,y,z)

I(s,s,a,2375 B.B.)

Powerful example of use of tool of predicate logic in legal analysis (both legal argument and legal theory)

Hohfeld relations and Logocratic Analysis