

## When the Life of the Law is Logic

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Sarah B. Lawsky, *Formalizing the Code*, 70 **Tax L. Rev.** 377 (2017), available at [SSRN](#).

In *Formalizing the Code*, [Professor Sarah Lawsky](#) offers a glimpse of what might be gained if law were written in formal logic language. It might be written by machine-language specialists attached to Congressional tax-writing committees. It could reduce unintentional ambiguity and complexity. Computers could understand it.

Lawsky takes as her focus a problem she calls definitional scope, defined as “when the Code uses a term but the structure of the Code leaves unclear to what a term refers.” (P. 378.) Definitional scope is about cross-references, and cross-references are one element of the formal structure of the Code.

Two examples that illustrate definitional ambiguity run through the paper. One is the question of whether the definition of “acquisition indebtedness” limits IRC Section 163(h)’s mortgage interest deduction with respect to a primary mortgage to debt of \$1 million. Another is an ambiguity about the application of the so-called 50% ownership test to “a series of” corporate stock redemptions for purposes of the substantially disproportionate redemption rule of IRC Section 302(b)(2).

Lawsky shows how the discipline of translating statutory code into formal logic would identify ambiguities like those in Sections 163(h) and 302(b)(2). In the case of the definition of acquisition indebtedness, she proposes a logical formula that defines debt eligible for the mortgage interest deduction in terms of three elements labeled “Purpose,” “Secured” and “Amount.” Once definition is structured this way, “[t]he statute cannot be formalized without resolving” whether a \$1 million limitation is part of the definition of acquisition indebtedness. (P. 401.)

Lawsky advances two reasons for formalizing the code: increased certainty and decreased complexity. The discipline of logic that she proposes can help reveal instances of obscurity and ambiguity in the Code. In both of the examples presented, it is reasonable to think that if only Congress realized that its words were confusing, it would correct the problem quickly and easily. The uncertainty and complexity are not intentional. They are mistakes, which can be discovered with tools of formal logic, so that Congress can do what it meant to do in the first place.

In the examples that Lawsky presents, I agree. Congress often intends to write an ex ante rule, but trips itself up inadvertently. I also agree with her that a prescription for formalizing the code should leave room for intentional ambiguity. As she explains, ambiguities could be presented as “alternate formalizations” or drafters could choose not to formalize an ambiguous point of law. (P. 399.)

One interesting question is whether rule drafters reliably know whether a provision should or should not be ambiguous. What about the definition of “primary residence” in Section 163(h)? Does it mean an RV, a boat, a yurt, a permanently orbiting spaceship? What sorts of partial interests in property does it include? Does a correct decision about the ambiguity of “primary residence” require not only that the drafters know about home ownership, but also that they appreciate the extent and limit of their knowledge?

This paper, like other recent examples of Lawsky’s work ([here](#) and in *A Logic for Statutes*, 21 **Fla. Tax Rev.** (forthcoming 2017) considers the potential of computer logic and artificial intelligence to transform law. The idea of formalizing the code is powerful and provocative. It shows how machine logic could identify and prevent human error. It also raises the issue of when formal logic can capture the meaning of law, and when it cannot.

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