# *Meaning, Rules and Defining Concepts*

GREG RESTALL • *restall@unimelb.edu.au* • ANU PRE-SEMINAR NOTES • 26 FEBRUARY 2015

## 1. ISSUES

### — *in the philosophy of language and in semantics*

Sometimes we clarify the meaning of an expression by analysis: *X* means *Y*— so you can replace *X* by *Y* wherever it occurs. Sometimes we define not by *replacement*, but by providing *rules for use*. How does this work?

### — *in metaphysics*

Sometimes explications of certain concepts (e.g., modals) seem to feature unfamiliar entities like *possible worlds*. If we take that talk seriously—and its success in giving an account of the structure of modal discourse means we have *prima facie* reason to do so—then how are we to understand our such things? What *are* they?

### — *in epistemology*

How can we come to have knowledge using modal concepts? If the truth conditions for modal concepts involve objects inaccessible to us like non-actual worlds, then how do we come to have knowledge of such things? In general, how can we come to have knowledge by deduction?

### — *in logic*

How is it that we *can* freely define a concept by giving rules for its use? Can we give explanations of *logical* concepts in this way? Is there any way to explain our apparent *freedom* of definition of logical notions, and the *constraint* of those notions once defined?

## 2. BACKGROUND

### — *there are two traditions in logic*

(*i*) *Model theory* (invalid arguments have *counterexamples*) and (*ii*) *Proof theory* (valid arguments have *proofs*).

These are tied together by way of two significant results—*soundness* (no argument has both a proof and a counterexample) and *completeness* (each argument has either a proof or a counterexample).

*Nothing* here indicates which of these two traditions takes explanatory priority in carving out the distinction between valid and invalid arguments.

### — *criteria for rules*

If you want to give definitions of concepts by means other than replacement, rules of inference are appealing. [Examples abound: *conjunction*, *disjunction*, *negation*, *quantifiers*...]

However, Arthur Prior (1960) pointed out that presenting rules for a concept does not mean that one can freely define it at no cost. Consider the 'concept' *tonk*.

Those who use proof theory in clarifying meaning give different criteria for the acceptability of rules. Nuel Belnap (1962) proposed the joint criteria of *conservativity* and *uniqueness* as markers for the distinction between logical and non-logical concepts.

*Conservativity*: The rules for a *new* concept give no new consequences when restricted to the *old* vocabulary. Any new consequences must involve the new concept. (Prior's *tonk* violates this constraint. Cf. Dummett's *boche*.)

*Uniqueness*: The rules for a new concept characterise it. If I introduce the concept twice, the two additions must agree.

I *accept* Belnap's criteria as a demarcation of an interesting boundary between logical and non-logical notions.

However, I aim to give an explanation of these criteria in terms of prior considerations.

## 3. HOW RULES WORK

### — *norms*

To treat acts as *assertions* and *denials* is to treat them as a normatively significant. Assertion and denial are acts with a distinctive normative structure. The aim of a denial is (in part) to stand against a corresponding assertion. The aim of an assertion is (in part) to stand against a corresponding denial. In a discourse in which I have asserted *p* and you have denied it, we have to live positions on the table. There is no coherent joint position taking in both the assertion of *p* and its denial. Any position (a family of assertion and denials) containing an assertion and a denial of the same claim is incoherent.

*Identity*: $[X, A : A, Y]$ is incoherent.

On the other hand, if, given the coherent position $[X : Y]$, we cannot coherently add *A* as a denial, then it is *undeniable*, and adding it to as an assertion merely makes explicit what it is already implicit in our commitments. In other words:

*Cut*: If $[X : Y]$ is coherent, then at least one of $[X, A : Y]$ and $[X : A, Y]$ is coherent.

For more on these two norms, see (Restall 2005).

### — *rules transfer normative significance*

*Defining Rules* [*note*: a term of art] for a logical concept (e.g. conjunction, negation, quantifiers, even modals), can be understood as ways of showing how to treat acts involving *that* concept in terms of norms governing other acts.

For example: the negation rule tells us to treat an assertion of the negation of *A* as having the same significance (for coherence) as the denial of *A*. The the assertion of the conjunction of *A* with *B* has the same significance as the assertion of *A* with the assertion of *B*.

### — *certain rules are very well behaved*

*Defining Rules* have [for reasons I will not go into here] some very nice formal and structural properties, which guarantee Belnap's criteria of conservativity and uniqueness.

### — *conservativity provides freedom*

If no coherent position is ruled out, we are always free to add the concept. It is expresses no substantive commitment.

### — *uniqueness provides constraint*

Provided that I use the concept as defined by its *Defining Rule*, its behaviour is very tightly circumscribed. Uniquely.

*Defining Rules* can be understood as means for introducing a concept by explaining the significance of employing it, given the normative connections between asserting and denying.

## 4. BOUNDARIES

What kinds of concepts we can define using these sorts of rules depends on the structure of the positions scored for coherence.

### —*Level One*

From the mere fact that we have assertion and denial, we can define the usual classical notions of *conjunction*, *disjunction*, *negation*. etc. The standard definitions work nicely.

### —*Level Two*

*Quantifiers*, *identity*. This requires a regimentation of the vocabulary into singular terms and a notion of substitution. Coordinating on the quantifiers and on identity is possible, provided that we coordinate on what counts as a singular term and a substitution of one singular term for another.

### —*Level Three*

Modal operators. We need to track not only assertion an denial, but assertion and denial in different conversational *contexts*, separated by suppositional shifts. Philosophers' notions of *necessity*, *actuality* and perhaps even a kind of *a priori knowability* can be freely and uniquely characterised in terms of the significance of assertion and denial under two different kinds of shift (Restall 2007, 2012).

Again, coordinating on these modal concepts is possible, provided we coordinate on what counts as indicative and subjunctive shifts in our discourse.

In each of these cases, we have completely free definitions, the notions all count as *logical* by these lights.

For each of these notions, we have a normative pragmatic explanation of the significance of assertion and denial of a new kind of content in terms of assertions or denials of its constituents (possibly utilising singular terms, substitutions and discourse shifts).

### —*Where Else?*

What other notions could be defined cannot be determined in advance, unless we have an account once and for all of the structure of possible positions.

## 5. THE UPSHOT

### — *in logic*

We *can* freely define a concept by giving rules for its use. We use these rules to give an account of how the norms governing discourse in general apply to the specific acts introduced by using these logical concepts. The constraint of logical vocabulary is that the normative significance is uniquely characterised (fixed) by those rules.

Furthermore, Attending to the normative significance of proof helps in the design and application of better formal systems.

### — *in the philosophy of language and in semantics*

These rules never replace an expression by another expression, but tell us the significance of an assertion or a denial of a new kind of content in terms of the significance of acts involving constituent contents. This is clearly an instruction concerning how to use a concept, without appealing to a definition as a substitution.

Bonus #1: one may use this kind of definition, together with a deflationary account of truth to rephrase these rules as truth conditions, if you like that kind of thing.

Bonus #2: you might be worried about the Frege–Geach problem, arising when we take some vocabulary—say, moral vocabulary—to be expressive, others representational, and we wonder how to treat the expressive assertion "Murder is wrong" in the antecedent of a conditional "If murder is wrong then..." in which the content is not asserted. What does that conditional mean? Here, provided that the discourse is structured according to the norms of assertion and denial, it doesn't matter if it's expressive, representational or anything else.

### — *in metaphysics*

Modal reasoning has the structure it does (explicable in terms of "worlds"), not because of any independent access to worlds, but because these other 'possible worlds' stand to different positions in a discourse in the same way that *this world* (construed as the totality of facts—as *how things are*, and not just a *big thing*) is an hypostasiation of our 'home' position in a discourse (Restall 2009, 2012). Unlike other 'ersatz' accounts of modality, we have an explanation of *why* modal concepts have the logical structure they do.

### — *in epistemology*

If we coordinate our concepts using *Defining Rules*, we can see how we can get knowledge by deduction, by showing that certain putative positions are, in fact, ruled out. This is not the *only* way to come to knowledge, but as a means of showing how we can map out the field of available options, it is quite a start. It also tells us where else to look in terms of how we might come to know modally rich claims.

## 6. CODA

This little picture a small component of a larger philosophical program. I have said little about the norms connecting assertion and denial. They can be spelled out in a number of different ways. One congenial way is found is in the work of Robert Brandom (1994). However, this approach is applicable more broadly, by other normative pragmatists and their fellow travellers. If you can make sense of the fundamental commitments of assertion and denial, you can tell this story.

## 7. REFERENCES


Nuel D. Belnap (1962) "Tonk, Plonk and Plink," *Analysis* (22) 130–134.

Robert Brandom (1994) *Making it Explicit*, Harvard University Press.

Arthur N. Prior (1960), "The Runabout Inference Ticket," *Analysis* (21) 38–39.

Greg Restall (2005), "Multiple Conclusions," *Logic, Methodology and Philosophy of Science*, ed. Hájek, Valdés-Villanueva and Westerståhl; KCL Publications. <http://consequently.org/writing/multipleconclusions/>

Greg Restall (2007) "Proofnets for s5: Sequents and Circuits for Modal Logic," *Logic Colloquium 2005*, ed. Dimitracopoulos, Newelski and Normann, Cambridge University Press. <http://consequently.org/writing/s5nets/>

Greg Restall (2009) "Truth Values and Proof Theory," *Studia Logica* (92) 241–264. <http://consequently.org/writing/tvpt/>

Greg Restall (2012) "A Cut-Free Sequent System for Two-Dimensional Modal Logic, and why it matters," *Annals of Pure and Applied Logic* (163:11) 1611–1623. <http://consequently.org/writing/cfss2dml/>