Wittgenstein on Counting in Political Economy

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This paper follows Ludwig Wittgenstein's *Remarks on the Foundations of Mathematics* to investigate the source of the purported necessity delineated in mathematical statements and proofs. It suggests that this "normativity" has a similar structure to that underlying promising, contracting, and political obligation. Whereas many philosophers have abdicated the project of defending that empirical science can yield necessary truths or universal laws,[1] still it is typical that mathematical truths are conceived to be necessary. Therefore the philosopher W.V.O. Quine, although a thorough-going empiricist who attempted to defend mathematics on the grounds of sensory perception, still faced the burden of explaining "why mathematics was (and is) *thought to be* necessary, certain, and knowable a priori."[2] If we understand "normativity" to convey some sort of structural indispensability that may guide judgment and action, then mathematical knowledge represents perhaps the paradigmatic case of a codified, law-like system that embodies non-negotiable relations and claims, that may be intuited by the human intellect.

There is an arresting debate at the foundations of mathematics over whether mathematical objects, or numbers, have an objective existence independent from the mind. To simplify various positions on this question into two varieties, on the one hand are the "realists," who hold that the truth of mathematical statements is externally determinate, even if its status is undecidable within a set theoretic or formal system: "We employ such a conception if we hold that the statement may be determinate in truth-value irrespective of whether we can recognize what its truth-value is."[3]

A second school of mathematics, referred to as anti-realism or intuitionism, accepts that mathematical truths exist only in the mind of mathematicians: they are constructed. Such an acceptance of the imaginative work done by mathematicians would seem to be on par with Wittgenstein's emphasis of the social character of the normativities of counting, calculating, and proving. "Wittgenstein's general treatment of the topic of rule-following entails that the status of a proof, or calculation, is always in need of *ratification*."[4] By this account, human counting practices retain their shape, or consistent patterns, over time not because they are laid down by iron-clad procedural rules, but because we commit ourselves to interpreting and acting on the rules as consistently as our contingent intersubjective context makes possible.

This lack of agreement about the foundation of mathematics, over whether the objects of its investigation actually exist or not, stands in parallel to debates over whether moral systems represent truths independent from the cultures in which they are expressed. There is a symmetry between the assertion of the existence of deontological moral truths, such as the Kantian categorical imperative, and the claim of independent validity of mathematical truths; either case, so far as we know, cannot in principle confirm its verification-transcendent authority. Even if this parallel is striking, it is further apparent that whereas deontology in morals is a position marginalized by mainstream scientific approaches to human behavior, [5] realism in mathematics is the more widely accepted status quo in philosophies of science and math.[6] This realism essentially accepts that humans have "the capacity to grasp a verification-transcendent notion of truth"[7] in matters of mathematics, but doubts the same in matters of morals or ethics. We routinely accept verification-transcendence in mathematics but not in ethics.

Granted this general privileging of the normativity of mathematics as evincing necessary, a priori, yet verification independent, truths, a philosophy of mathematics is called upon to "account for the at least apparent necessity and priority of mathematic[al knowledge]."[8] Indeed, it seems that much of the present-day celebration of scientific naturalism, that casts doubt on the reality of moral and ethical judgment, strives to present a position on mathematics that navigates the notoriously unbridgeable chasm between a priori and a posteriori knowledge. Quine, Hilary Putnam and P. Maddy are leading philosophers who have attempted this line of argumentation, ultimately seeking to preserve the nonnegotiable quality of math while grounding it on knowledge derivable from empirical observation.[9] However, this line of inquiry consistently concedes both that empiricism is irrelevant for the actual practice of mathematics, and that mathematical truth is independent from our procedures of knowing it.[10] Rather, it suggests that mathematics will finally be vindicated in scientific application.[11] Conveniently, Wittgenstein presents an anti-realist philosophy of math, consistent with intuitionism in many of its details and implications, but with the added benefit of not advocating any need to revise mathematical practice.

In exploring the character of mathematics as a language game that perhaps best represents our paradigmatic case of "rule-following," Wittgenstein suggests that the laws of mathematics stand as imperatives and commands, and not as objectively verifiable truth claims: "Mathematical discourse is not fact-stating; its role is rather to regulate forms of linguistic practice."[12] If we distance our understanding of the source of mathematical normativity as flowing from objective objects and relations that exist outside our minds and practices, then we may understand that mathematical statements have the character of declarations,

1 For example, W.V.O. Quine, for discussion see Shapiro, Thinking About Mathematics, 218,
2 Shapiro, Thinking About Mathematics, 218.
3 Crispin Wright, Wittgenstein on the Foundations of Mathematics (Cambridge: Harvard University Press, 1980), 7; even philosophers of mathematics who hold a naturalistic position that ultimately mathematics should be verifiable through scientific (empirical) means, endorses numeric realism: "As a realist [P.] Maddy (1990: cha. 4, ss 5) agrees with Gödel that every unambiguous sentence of set theory has an objective truth-value even if the sentence is not decided by the accepted set theories" (Shapiro, 224).
4 Wright, Wittgenstein, 128.
5 Jean Hampton, The Authority of Reason (Cambridge University Press, 1998).
6 Shapiro, Thinking about Mathematics, "Numbers Exist," 201-225.
7 Wright, Wittgenstein, 10.
8 Shapiro, Thinking About Mathematics, 23.
9 See Shapiro, Thinking About Mathematics, "Numbers Exist," 201-225.
10 Shapiro, 220, 224.
11 Shapiro, 220.
12 Wright, Wittgenstein, 157.

imperatives, or commands in the form of admonishing adherence to rules that we assent to follow. The intuitionist Dummett, whose position Wittgenstein's resembles, refers to mathematical statements as quasi-assertions:

> Quasi-assertions are declarative sentences which are not associated with determinate conditions of truth and falsity but share with assertions properly so-called the feature that there is such a thing as *assenting* to them; where such assent is communally understood as a commitment to some definite type of linguistic or non-linguistic conduct, and receives explicit expression precisely by the making of the quasi-assertion.[13]

The subtle aspect of understanding the distinction between mathematical statements as in principle verifiable against an objective reality, versus having the character of being ratified by voluntarily acceptance, is that although we seek to preserve some sense of non-arbitrary structure, we must locate its apparent "necessity" in our discretionary compliance rather than in some facet of extra-mental reality. This necessity has the form of willingly binding ourselves to a normative correctness that we enact in our practice. Hence we have the sufficient leverage to not only ask "[o]f someone who is trained [in a specific type of rule-following] 'How *will* he interpret the rule in this case?'", but further to raise the question, "How *ought* he to interpret the rule for this case"?[14]

This view of mathematics as having a humanly devised command structure instead of a structure insured by objective reality alters our picture of the type of normative guidance underlying mathematical judgment. Instead of being guided in making mathematical statements by facts, we consider that "all mathematical propositions [are] expressed in the imperative, e.g., 'Let 10 x 10 be 100.'"[15] The significance is that this depiction of mathematics makes the consistency of its structure dependent on our voluntary commitment to uphold conceptual relations in specific ways:

> Such an account is exactly what we should intuitively propose for sentences expressing the making of a promise. No one would ordinarily suppose that the use of sentences of the form, 'I promise to …' is best understood as the making of a statement, true or false; though their being prefixed by 'it is true that …' is grammatical sense.[16]

The promissory quality, then, of mathematical normativity is that mathematical rules suggest what we "ought to conclude," and in participating in these rule-following exercises we accede to draw the conclusion implied by the rule. It is not that some feature of an objective world of numbers intercedes to form the basis of our judgment in a necessary fashion. Rather, in mathematical rule-following, we agree to abide by the rules as prefiguring or commanding our judgment. If we consider the role proofs play in mathematics, "it marks not a discovery of certain objective liaisons between concepts, but something more like a resolution on our part so to involve them in the future."[17]

If our understanding of the normativity structuring apparently necessary truths in mathematics rests on our commitment to follow the rules of mathematics, then it is possible to see that the rule-following nature of math is little different from other rule-following institutions throughout our society. This opens the possibility of considering that social-norms that stand as a system of rules have as much sanctity as do the rules of mathematics. Typically, social norms are regarded as subject to preference; either an individual prefers to follow a social norm or not; if she chooses to follow a social norm, this is because she prefers to do so. However, in the case of mathematical judgment, preference is seldom invoked as a source of decision over the result of a calculation or proof.

This recasting of the foundation, as it were, of mathematics from fact and objective truth to socially constructed and ratified laws suggests the possibility for drawing a parallel between legal systems of rule-following and mathematical systems. In his essay, "The Groundless Normativity of Instrumental Rationality," Donald Hubin argues that neo-Humean instrumentalists "must engage in the same 'lowering of expectations' [of the source of normativity of instrumental rationality to the same level] that the legal positivist must."[18] For Hubin, practical rationality, of which instrumentality is part, is not an objective matter. In making his point, he draws on legal positivism's retreat from natural law theory, and draws on H.L.A. Hart to expand on this view. [19] Hubin is making the point that even though a legal system provides a normative basis for action, it cannot ground its ultimate principles. I am reworking Hubin's parallel between positive law and instrumental reason to contrast a realist account of math with an alternative declarative understanding. In an anti-realist mathematics, the binding quality of rules only holds insofar as we assent to them.

It has traditionally been the case the social and political normativity has been viewed as of a lesser pedigree than instrumental and mathematical normativity insofar as the former is conditional, and the latter is non-negotiable. For example, Phillip Pettit provides an explanation for how social norms may be derived from instrumental agency as the former is conditional on individual rational self interest.[20] In his *Theory of Justice*, John Rawls was widely criticized from within rational choice theory for placing action according the "the reasonable," which included the political theoretic concept of fair play, on par with agency conforming to the dictates of expected utility theory.[21] It was not automatically obvious from within rational choice theory that agents had a duty to uphold the rules of government if they did not further an agent's ends in each and every circumstance of action.[22] Therefore, without some sanctioning device that alters payoffs, the rule of law does not in and of itself provide a reason for action that trumps agents' preferences over end states. Rawls concludes of his contrasting approach to justice as fairness, "There is no thought of trying to derive the content of justice within a

13 Wright, Wittgenstein, 155.
14 Ludwig Wittgenstein, Remarks on the Foundations of Mathematics, ed. by G.H. von Wright, R. Rhees, and G.E.M. Anscombe, trans. By G.E.M. Anscombe (Cambridge, MA: MIT Press, 1996) (RFM), V-9, p. 267.
15 Wittgenstein, RFM, 155.
15 Ludwig Wittgenstein, RFM, V-17, p. 276.
16 Wright, Wittgenstein, 157.
17 Wright, Wittgenstein, 135.

18 Donald Hubin, "The Groundless Normativity of Instrumental Rationality", The Journal of Philosophy 98:9(2001), 445-468, 466.
19 Hubin, "Groundless Normativity," 463.
20 Philip Pettit, "Virtus normativa: Rational Choice Perspectives," in his Rules, Reasons, and Norms (Oxford University Press, 2002), 308-343.
21 John Rawls, A Theory of Justice (Harvard University Press, 1971); John Rawls, "Justice as Fairness: Political not Metaphysical," Philosophy and Public Affairs, 14:3 (summer, 1985), 223-51.
22 This is the problem David Gauthier faces in Morals by Agreement (Oxford University Press, 1985).

framework that uses an idea of the rational as the sole normative idea."[23]

I am suggesting that mathematics, in any form, but even more specifically as it is harnessed to anchor all manners of institutions in political economy that depend on "accurate counting" for their functioning, embodies the normativity of Rawls' "reasonable" as opposed to the rational.[24] By Rawls' description, "if the participants in a practice accept its rules as fair, and so have no complaint to ledge against it, there arises a prima facie duty…of the parties to each other to act in accordance with the practice when it falls upon them to comply."[25] Most of us accept the normativity of mathematical rule-following automatically out of habit or a sense of duty. We do not at first perceive that this virtually innate compliance cuts across the grain of the competing, and supposedly more basic, normativity of instrumental agency which recommends counting in one's favor when one can get away with it. In fact, considerations of expected utility do interrupt counting practices in cases of embezzlement, fraud, bribery, and ballot box stuffing. The normativity of counting and calculating represents the logic of appropriateness and not the logic of consequences. Adherence to mathematical rules confines judgment; judgment is not a function of preferences over outcomes.

Counting practices throughout political economy resemble the rule of law insofar as they do not have an independent object or autonomous truth-value separate from the rules constituting them. Although most of us do not actually determine, or even consent to, the rules governing these procedures in banking, insurance, taxation, inheritance, or elections, still there is an evident presumption that one counts in accordance to the rules free from considerations of our obvious interest in the outcomes. Much like Rawls' formulation of "the Reasonable," most of us have been conditioned to accept, or even to reflexively consent to, an inherent necessity of counting in accordance with the rules directing the activity.

23 Rawls, "Justice as Fairness," 237.
24 For a discussion of the distinction between the rational and the reasonable in Rawls, see Rawls' "Justice as Fairness," and S.M. Amadae, Rationalizing Capitalist Democracy (Chicago University Press, 2003), 271-3.
25 Rawls, "Justice as Fairness," 60.