Unconventional Conventionalism

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Abstract: Conventionalism intends to reconcile empiricism with our knowledge of the necessary certainties of logic and mathematics. I will argue that this story of conventionalism as told by A.J. Ayer, accords with Ferdinand de Saussure's work in structural linguistics, in that these systems emerge from similar intentions and share the same implications. This resemblance supports my understanding of conventionalism as a form of structuralism, which provides an overarching methodology that defends conventionalism against the relevant objections.

"In logic, there are no morals. Everyone is at liberty to build up his own logic, i.e. his own form of language, as he wishes. All that is required of him is that, if he wishes to discuss it, he must state his methods clearly, and give syntactical rules instead of philosophical arguments."

– Rudolf Carnap, *The Logical Syntax of Language*

Conventionalism intends to reconcile empiricism with our knowledge of the necessary certainties of logic and mathematics. This philosophical attitude characterizes Carnap's understanding of logic as a matter of conventions about syntax that are supported by rigorous formal theories rather than philosophical arguments. A. J. Ayer ventriloquizes Carnap's position in his discussion of the a priori, in *Language, Truth and Logic*. I will argue that this story of conventionalism as told by Ayer, accords with Ferdinand de Saussure's work in structural linguistics, in that these systems emerge from similar intentions and share the same implications. This resemblance supports my understanding of conventionalism as a form of structuralism, which provides an overarching methodology that defends conventionalism against the relevant objections.

I will first elucidate Ayer's picture of conventionalism, which is motivated by his desire to preserve empiricism, despite its ostensible incompatibility with the necessary certainties of logic and mathematics. Verificationism

makes philosophy fairly empty, where sentences have meaning only when they can be empirically verified. This stipulation would render all metaphysical claims senseless, quite literally, as sense experience is required to determine factual propositions. Moral and normative discourse endure under verificationism, if we hold an expressivist attitude about morality, where moral claims have no relevant content, rather they express emotional states.

Ayer maintains that we may still rationally believe propositions whose validity cannot be logically guaranteed, and relies on Hume's principle of custom or habit[1] to argue that it is in fact irrational "to look for a guarantee where none can be forthcoming: to demand certainty where probability is all that is obtainable."[2] The empiricist thesis therefore comports with our belief in potentially fallible scientific hypotheses, but does not readily align with the a priori domains of logic and mathematics.

At this point, the continued defense of empiricism has two available avenues, where the only alternative would be to embrace rationalism. Empiricism insists that no proposition with factual content can be necessary or certain, so we must relinquish either the belief that logical and mathematical claims are necessary truths, or the belief that these claims have factual content. Mill pursues the former course, by characterizing logical and mathematical propositions as inductive generalizations based on numerous instantiations, which are therefore

highly probable, but not certain. Ayer takes issue with Mill's consignment of logic and mathematics to the same realm as scientific hypotheses, because logical and mathematical propositions behave differently under the pressure of apparent contradiction. Ayer illustrates this distinction by imagining a situation where his counting of what he believed to be five pairs of objects amounts to only nine. He argues that such an anomalous instance would not motivate us to confute the mathematical proposition '$2 \times 5 = 10$':

> One would say that I was wrong in supposing that there were five pairs of objects to start with, or that one of the objects had been taken away while I was counting, or that two of them had coalesced, or that I had counted wrongly. One would adopt as an explanation whatever empirical hypothesis fitted in best with the accredited facts. The one explanation which would in no circumstances he adopted is that ten is not always the product of two and five.[3]

Ayer thus arrives at his position that logic and mathematics consist of tautologies, analytic propositions which we never allow to be false. He defends this stance against Kant's understanding of mathematics as synthetic a priori judgments, by challenging the criteria Kant uses to distinguish between synthetic and analytic. Kant argues that the proposition '$7 + 5 = 12$' is synthetic, using the psychological criterion that our concept of twelve is not inherently contained

within our concept of the union of seven and five. In contrast, Kant employs a logical criterion to argue that the proposition 'all bodies are extended' is analytic, because it rests on the principle of contradiction. As these criteria are not equivalent, a proposition might be described as both synthetic and analytic, which indicates the weakness of Kant's distinction between these mutually exclusive categories. Ayer proposes his own criteria: that a proposition is analytic when its validity depends solely on the definitions of the symbols it contains, and synthetic when its validity is determined by the facts of experience.

While I believe Ayer's criteria for distinguishing between synthetic and analytic judgments are stronger than Kant's, I would argue that some mathematical propositions can be understood as analytic according to Kant's own criteria. Kant argues that our concept of a sum is not inherently contained within our concept of the addends, which may be accurate for the proposition '7 + 5 = 12'. For smaller sums, however, we inherently conceptualize the addends in the instance of subitizing. Subitizing is the ability to immediately discern the numerical amount of a small grouping of objects without counting them, as we do when rolling a six-sided die. Part-part-whole understanding is usually used to subitize numbers greater than four or five, where a grouping of seven objects might be seen as three and four, or two and five. I would therefore argue that our concept of a sum may be analytically intertwined with

our concepts of the addends. While this argument does not extend to all mathematical propositions, and Kant would most likely dismiss it by arguing that subitizing is a synthetic process involving numbers' impression on sensibility, I believe it lends further support to Ayer's contention that the propositions of logic and mathematics are analytic.

This understanding that logic and mathematics consist of analytic propositions allows the empiricist to maintain that these propositions are necessarily true, by denying that they have factual content. That is not to say that logical and mathematical propositions are senseless, in the way that metaphysical claims are senseless under empiricism. Conventionalism sees logic and mathematics as tools to illustrate the way we use certain symbols, allowing us to make concealed assertions explicit. Our conventions frame definitions to illuminate analytic truths, and "record our determination to use words in a certain fashion."[4] The inductions we perform on the analytic propositions of logic and mathematics do nothing to extend our knowledge, as we are operating within an immense tautology. We experience mathematical discovery at the edge of our limitations to reason, when we stumble upon further consequences of our definitions. Ayer argues that "a being whose intellect was infinitely powerful would take no interest in logic and mathematics,"[5] as it is only the frailty of human intellect that allows us to learn from logical inference.

While conventionalism provides a coherent picture of logic and mathematics that aligns with our ways of thinking, its implications expose potential grounds for objection. Saussure's work in structural linguistics runs parallel to Ayer's argument, thus lending the support of structuralism to strengthen conventionalism against counterarguments.

I understand conventionalism as a form of structuralism, a methodology that applies structural linguistics to systems beyond language. For the linguist, "language is a convention, and the nature of the sign that is agreed upon does not matter."[6] At the helm of structuralism is the concept of representation, which is the legislated connection between an arbitrary signifier and its associated meaning. Structural linguistics separates that which is specific to language, from its broader application as a system for making meaning.

Saussure's departure from historical linguistics resembles Ayer's rejection of Mill's view. Empiricism demands we relinquish either the belief that logical and mathematical claims are necessary truths, or the belief that these claims have factual content. These courses of argument are mutually exclusive, just as "the opposition between the two viewpoints, the synchronic and the diachronic, is absolute and allows no compromise."[7] Historical linguistics employs a *diachronic* approach, considering the development and evolution of a language over time. Saussure's *synchronic* approach aims to describe the rules

that regulate a language at a specific point in time, to discern the underlying system. Mill's view that logical and mathematical propositions are inductive generalizations based on numerous instantiations can be characterized as diachronic, because he relies on repeated occurrences over time to justify what we come to hold as logical and mathematical propositions.

Saussure's position is similar to Ayer's, as they share an interest in maintaining necessary truths as they exist synchronically. Like mathematics, grammar is "unscientific," in the sense that its propositions cannot be confuted.[8] When a rule of grammar is violated, it provides no evidence against the rule. We instead find fault in the speaker, just as Ayer finds fault in his own calculation of five pairs of objects totaling nine. Conventions are true because we never allow them to be otherwise. Saussure and Ayer therefore understand conventions as a priori and necessary, not as products of repeated experiential instantiation. For Saussure, "language alone seems to lend itself to independent definition and provide a fulcrum that satisfies the mind."[9] Structuralism extends this system of independent definition to conventionalism about logic and mathematics.

Conventionalism and structural linguistics both involve deflationism about truth, where empirically verified factual content resides outside the system of signification. Saussure delineates three components of the linguistic sign: the *signifier* refers to the perceivable

'sound-image' that stands for the *signified*, which is the concept that the signifier brings to mind. The *referent* is the third component, the external entity that the sign could refer to. This model of the linguistic sign primarily concerns the bond between the signifier and the signified, and for most of his discussion, Saussure brackets out the referent. This external entity does not participate in linguistic signification, just as facts about the world do not play a role in conventionalism. Our conventions allow us to perform inductions on the analytic propositions of logic and mathematics, to make further propositions explicit, without extending our knowledge of any factual content. There are no truths about conventions, or about anything, but propositions are made true by our conventions.

Conventionalism and structural linguistics both involve independent definitions that are formally devised. Saussure insists on the arbitrariness of the sign, where the bond between the signifier and the signified is social and conventional, not natural or motivated. With the exceptions of onomatopoeia and interjection, the signifier has no inherent relationship with the signified. To say the signifier is arbitrary is not to say it is empty, just as logical and mathematical propositions are devoid of factual content, but not senseless. Analytic propositions are evaluated with respect to their form, therefore "every logical proposition is valid in its own right."[10] This independence or arbitrariness supports Carnap's conventionalist thesis that "everyone is at

liberty to build up his own logic, i.e. his own form of language, as he wishes."[11] Logic is a language whose signifiers are conventions, which are valid independently of philosophical motivation.

Structuralism contributes to resolving the apparent contradiction between our experience of mathematical discovery and the conventionalist picture of mathematics as an immense tautology. Ayer attributes this asymmetry to the limitations of human reasoning, but structural linguistics provides further understanding. Saussure distinguishes between *language*, "a self-contained whole and a principle of classification," and *human speech* as the execution of 'sound-images,' which in no way affects the system itself. Language is a system of distinct signs corresponding to distinct ideas, a finite abstraction of the seemingly infinite utterances of human speech. Mathematics is a language of necessary propositions, which provides the tools for discovering countless mathematical utterances. The distinction between language and human speech also relates to the necessary truth of conventions. Logic and mathematics as forms of language, compare to a symphony that "stands completely apart from how it is performed; the mistakes that musicians make in playing the symphony do not compromise this fact."[12]

Under the umbrella of structuralism, conventionalism is shielded from potential objection. An intuitive problem with conventionalism is the absence of normative considerations. Carnap insists that our

conventions can be anything, and does not value any system of rules over another. Conventionalism finds nothing objectionable about logic that implements slurs and hate speech, so long as it follows syntactical rules for induction. Carnap allows a convention to be rejected on practical grounds regarding its usefulness, which gestures at the feature of structuralism that precludes the slurs argument. The solution is evident in Saussure's discussion of the arbitrary sign:[13]

> The reason is simply that any subject in order to be discussed must have a reasonable basis. It is possible, for instance, to discuss whether the monogamous form of marriage is more reasonable than the polygamous form and to advance arguments to support either side. One could also argue about a system of symbols, for the symbol has a rational relationship with the thing signified (see p. 68); but language is a system of arbitrary signs and lacks the necessary basis, the solid ground for discussion. There is no reason for preferring *soeur* to *sister, Ochs* to *boeuf,* etc.

Inductions on slurs would consequently be rejected as conventions, as they do not abide by the necessary arbitrariness of the sign. Slurs are thick terms, because they convolute normative and descriptive content. The signifiers of slurs are motivated by an attitude of contempt, and therefore cannot be readily interchanged with words expressing the same descriptive content, in the way Saussure demonstrates for arbitrary signs.

Conventionalism does not take a normative stance on any given convention, because normative content is already bracketed out of structuralism.

W. V. Quine opposes the idea of truth by convention, on the grounds that it is not sufficiently robust to account for the enduring necessary certainty of logical and mathematical propositions. He conceives of conventionality as a passing trait, which is therefore a trait of events, not sentences. Quine argues that conventionalism implies a commitment to "speaking of a sentence as forever true by convention if its first adoption as true was a convention."[14] The distinction between synchronic and diachronic methodology alleviates this concern, because conventionalism, as a form of structuralism, takes a synchronic approach. While conventions are susceptible to alteration, structuralism pertains to the relationships among the elements of a system of representation as it exists at a single point in time. Conventionalism does not purport to describe the evolution of logic and mathematics over time, rather it speaks to the nature and behavior of propositions within a given system. "Language is a system whose parts can and must all be considered in their synchronic solidarity," where changes do not affect the system as a whole, but instead pertain to specific elements, and therefore must be studied outside the system.[15]

Quine's strongest objection to conventionalism points to explanatory circularity, where we use logical

vocabulary to articulate our conventions, so an understanding of logical terminology must predate convention. This seems to indicate that logic itself cannot be conventional, because it is built into the conventional system. Quine's objection draws on the work of Lewis Carroll, as he argues, "if the convention whereby those statements are singled out as true is to be formulated in finite terms, we must avail ourselves of conditions finite in length which determine infinite classes of expressions."[16] Infinitely many instances of logical entailment must be organized into bundles as conventionally true, but if conventions take the form of such bundles, some kind of entailment must be involved in the application of conventions to individual sentences.

In relationship to my argument that conventionalism is a form of structuralism, this objection aligns with post-structuralism. Jacques Derrida argues that the model of a system put forth by structuralism is paradoxical in nature. The coherence of a system depends on the structural center, which "permits the play of its elements inside the total form."[17] Derrida's use of 'play' refers to the possibility of permutation or transformation of the elements within a structure, without altering the nature of the structure itself. The center makes play possible within a structure, but it is the point at which substitution of contents, elements, or terms is no longer possible. The center thus escapes structurality; it is "paradoxically, *within* the structure and *outside*

it."[18] The explanatory circularity of conventionalism is a manifestation of this paradox, where the conventions governing logic and mathematics cannot be placed within the system.

I would respond to this post-structuralist argument by invoking metalanguage to discuss conventions as the structural center of logic and mathematics. The rules governing a language are articulated in that same language, yet there is nothing paradoxical about learning a language. The argument that an understanding of logical terminology must predate convention, is analogous to insisting that complete knowledge of a language is necessary to understand its linguistic conventions. The intrinsic nature of structuralism, as a methodology with broad application over a variety of systems, calls for the implementation of metalanguage to integrate conventions within the relevant systems. The conventions governing logic employ logical vocabulary in a way that supervenes on individual logical utterances.

Notes:

1. Hume, David. *An Enquiry Concerning Human Understanding*.
2. Ayer, A.J. *Language, Truth and Logic*. New York: Dover Publications, 2014. p. 38.
3. Ayer, 40.
4. Ayer, 47.
5. Ayer, 48.
6. Saussure, Ferdinand de. "The Object of Linguistics." Introduction. *Course in General Linguistics*. New York: Philosophical Library, 1959. p. 10.
7. Saussure, Ferdinand de. "General Principles." Part One. *Course in General Linguistics*. New York: Philosophical Library, 1959. p. 83.
8. Saussure, 82.
9. Saussure, 9.
10. Ayer, 45.
11. Carnap, Rudolf, and Amethe Smeaton. "17: The Principle of Tolerance in Syntax." *The Logical Syntax of Language*. Chicago: Open Court, 2002. p. 52.
12. Saussure, 18.
13. Saussure, 73.
14. Quine, W. V. "Carnap and Logical Truth." *Synthese* 12.4 (1960): 362.
15. Saussure, 87.
16. Quine, W. V. "Truth by Convention." *The Ways of Paradox, and Other Essays*. Cambridge, MA: Harvard UP, 1976. p. 91-92.
17. Derrida, Jacques. "Structure, Sign and Play in the Discourse

of the Human Sciences." *Writing and Difference*. Chicago: University of Chicago Press, 1978. p. 279.
18. Derrida, 279.

Works Cited:

Ayer, A.J. *Language, Truth and Logic*. New York: Dover Publications, 2014. 37-49.
Saussure, Ferdinand de. "The Object of Linguistics." Introduction. "General Principles." Part One. *Course in General Linguistics*. New York: Philosophical Library, 1959. 6-23, 65-137.
Carnap, Rudolf, and Amethe Smeaton. "17: The Principle of Tolerance in Syntax." *The Logical Syntax of Language*. Chicago: Open Court, 2002. 51-52.
Quine, W. V. "Carnap and Logical Truth." *Synthese* 12.4 (1960): 350-374.
Quine, W. V. "Truth by Convention." *The Ways of Paradox, and Other Essays*. Cambridge, MA: Harvard UP, 1976. 77-106.
Derrida, Jacques. "Structure, Sign and Play in the Discourse of the Human Sciences." *Writing and Difference*. Chicago: University of Chicago Press, 1978. 278-293.