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# Logic Defined According To Two Philosophers Bertrand Russell And John Dewey

## Logic

What is logic? The generally accepted definition, or the “popular conception,” states that logic is simply a set of rules for good, proper, or correct reasoning (the precise wording changes depending on who you’re talking to, but you get the idea). On the surface this is a grand description, its enough to make us nod and feel that the issue is adequately tidied up. Upon analysis, however, we realize that this conception fails to hold up to much, if any, serious scrutiny. What exactly do we mean by “good,” “proper,” and “correct”? These terms are rather vague and leave a bit too much up for interpretation, something which inevitably leads to misunderstanding. Clearly a more rigorous definition is needed to avoid such misunderstandings. Presenting two possible and radically different candidates for such a rigorous conception of logic are the philosophers John Dewey and Bertrand Russell. Both claim that their conceptions of logic serve to free the world from dogmas, from being bogged down by preconceived notions of the way reality works and the world functions. Russell believed that in the face of his understanding of logic, as the only necessity in interpreting the world, dogmas simply fail to hold up. And Dewey clearly stated in his book *Reconstruction in Philosophy* that “to perceive this fact [that of his conception of logic] is to abolish rigid dogmas from the world.” (Dewey, p. 7) This, however, is where the similarities between their conceptions end.

Russell defined logic as “the study of structures as given by relation.” The most basic principles of such a conception are actually quite easily recognizable to most with a basic elementary education. Statements such as “X is X for all X,” “if X is Y, then Y is X, for all Y and X,” and “if X is Y and Y is Z, then X is Z, for all X, Y, and Z” are lines of logical reasoning within this conception. Russell believed that there exist certain facts which are synthetic a priori. That is, there are facts that are true in virtue of the world, and can be known without the need for empirical investigation. These truths simply are true, there is no reason or explanation for their existence or truth. Many candidates for synthetic a priori truths have been given over the years, including math itself, the law of inertia, and the fact that “all events have a cause.” It can be argued whether or not these are truly known a priori, but whatever is ultimately and truly known without the need for empirical investigation, these logical truths, in Russell’s belief, are the only truly necessary truths. They are the only objective and true tool we can use to understand and investigate the world. The realization that these necessary truths are the only accurate tool for exploring the world is what Russell says is so freeing about this conception of logic. Dogmas, such as “women must act as caretakers,” “some races are superior to others,” and others,

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simply don't make sense when held up against fundamental a priori truths, the only true truths.

But it is precisely these synthetic a priori truths which lead to the most biting criticism of rationalism (believing that there are synthetic a priori truths): where do these truths come from? It seems unsatisfactory to hand-wave it all away and say "they simply are," that they are true by the very nature of the world. Dewey mocks these statements saying that such understandings of logic describe mathematics "as if it had sprung all at once from the brain of a Zeus, whose anatomy is that of pure logic." (Dewey, p. 4) Surely no modern, scientific understanding of logic can have things springing from the minds of anyone, especially that of a mythical being.

Dewey attempts to address this issue by crafting an alternative conception of logic, one driven by empiricism (the belief that the only synthetic truths are known a posteriori, or through empirical investigation). Dewey does away with the universal laws and a priori truths of Russell and instead says that logic is a set of behavior protocols which result in successful organism-environment engagement. Take the behavior protocol "when I hear a buzzing sound, I attempt to eat the source of the noise." If you are a frog living in a swamp largely undisturbed by humans, it is easy to imagine this protocol leading to a successful life of eating flies, providing you with the fuel to continue living and eventually producing offspring (the main goal of life in all forms). This is "true" by Dewey's conception of logic, or as he prefers to call it, this is "acting truly." It works in this environment, so it is true for this environment. Another environment may have a different set of protocols that function well there and are just as "true." Dewey believed that all discoveries of science, mathematics, truth, and understanding result from a trial-and-error evolution or adaptation of these behavior protocols over time.

This is where the central issue with empiricism appears. It seems strange to say that the success of a single protocol in one particular environment makes it "true." If we took that same frog from before, with the same behavior protocol, and placed it in a different environment, say, a manufacturing plant, the frog may find itself with its tongue stuck in the buzzing motors of machinery. This is not an ideal situation for the frog, and certainly not one likely to lead to the birth of many offspring. All of a sudden, the protocol is no longer a success, and it suddenly loses its truth. The frog is no longer "acting truly," but rather "untruly," according to Dewey. But this seems unsatisfactory. Why should truth depend on an environment? Adding to this criticism are some of the conclusions Dewey draws from his understanding of logic. He says that all thinking and thought patterns are the result of some problem in our environment, some attempt to fulfill the need of the organism. This makes sense in some contexts, starving can certainly lead to the invention of new ways of finding food, and facing a hungry lion can lead to startling ingenuity in weaponry. However, it seems wrong to think that, should one find oneself trouble-free, that all thought will simply cease. This goes against our basic intuitive understanding of our own thoughts and the nature of their existence. The final, and possibly most damning criticism of Dewey's empiricism is the difficulty it has explaining human kind's knowledge of

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mathematics. By what empirical means can math be discovered? By what pattern of trial-and-error? There is no true real world analog for mathematics, “adding” two things together is not a physical process, but an abstract process seemingly taking place completely within one’s mind. We can add the number of moons of Jupiter to the number of moons of Saturn without traveling off planet, and we certainly don’t need to interact with any of the moons to do such addition. If an organism somehow came to the understanding that “three plus three is ten,” what phenomenon will take place to correct this error and adapt (or evolve) the protocol to the correct (or true) “three plus three equals six”? Empiricism says that all truths are discovered, essentially, by bumping into the world around us until we finally get it right. How do we find math simply by bumping into things?

In the end, neither conception of logic offers an understanding free of criticism. If these are our only two options, then we must either accept the existence of rationalism’s inexplicable synthetic a priori truths, or overlook empiricism’s unintuitive, relativistic conception of “truth” and its inability to explain our knowledge of mathematics. If you can come to terms with one of these criticisms, then you have yourself a working conception of logic. But as always, we maintain the option of rejecting both of these established conceptions and putting in the long, hard effort of crafting our own, perhaps one which manages to fill in the holes of rationalism and empiricism and escapes all of their flaws and criticisms. If this is the route you choose to take, I wish you luck.

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