Propositional Logic, Truth Tables, and Epicurus' Objection to "Dialectic"

Post by “Cassius” of September 21, 2021 at 10:04 AM

OMG that is very interesting! Thank you Joshua! What what a great Latin phrase for the pseudo-Romans like Don and me -- **EX FALSO SEQUITUR QUODLIBET!** How many occasions that fits!

And I bet you're right that if we researched Soissons we could find more that is relevant to the essential insight of the "It isn't necessary that Hermarchus be either alive or dead tomorrow so I'm not engaging in your game" observation!

In classical logic, intuitionistic logic and similar logical systems, the **principle of explosion** (Latin: *ex falso [sequitur] quodlibet*, 'from falsehood, anything [follows]'; or *ex contradictione [sequitur] quodlibet*, 'from contradiction, anything [follows]'), or the **principle of Pseudo-Scotus**, is the law according to which any statement can be proven from a contradiction.[1] That is, once a contradiction has been asserted, any proposition (including their negations) can be inferred from it; this is known as **deductive explosion**.[2][3]

The proof of this principle was first given by 12th-century French philosopher William of Soissons.[4] Due to the principle of explosion, the existence of a contradiction (inconsistency) in a formal axiomatic system is disastrous; since any statement can be proven, it trivializes the concepts of truth and falsity.[5] Around the turn of the 20th century, the discovery of contradictions such as Russell's paradox at the foundations of mathematics thus threatened the entire structure of mathematics. Mathematicians such as Gottlob Frege, Ernst Zermelo, Abraham Fraenkel, and Thoralf Skolem put much effort into revising set theory to eliminate these contradictions, resulting in the modern Zermelo–Fraenkel set theory.

As a demonstration of the principle, consider two contradictory statements—"All lemons are yellow" and "Not all lemons are yellow"—and suppose that both are true. If that is the case, anything can be proven, e.g., the assertion that "unicorns exist", by using the following argument:

1. We know that "Not all lemons are yellow", as it has been assumed to be true.
2. We know that "All lemons are yellow", as it has been assumed to be true.
3. Therefore, the two-part statement "All lemons are yellow OR unicorns exist" must also be true, since the first part "All lemons are yellow" of the two-part statement is true (as this has been assumed).
4. However, since we know that "Not all lemons are yellow" (as this has been assumed), the first part is false, and hence the second part must be true to ensure the two-part statement to be true, i.e., unicorns exist.

In a different solution to these problems, a few mathematicians have devised alternate theories of logic called *paraconsistent logics*, which eliminate the principle of explosion.[5] These allow some contradictory statements to be proven without affecting other proofs.

(until such time as OMZ is established to mean Oh My Zeus I've stuck with OMG)

Now we have to know what a PARVIPTONIAN is!

William of Soissons was a French logician who lived in Paris in the 12th century. He belonged to a school of logicians, called the Parvipontians.[1]

^ William of Soissons fundamental logical problem and solution

William of Soissons[2] seems to have been the first one to answer the question, "Why is a contradiction not accepted in logic reasoning?" by the Principle of explosion. Exposing a contradiction was already in the ancient days of Plato a way of showing that some reasoning was wrong, but there was no explicit argument as to why contradictions were incorrect. William of Soissons gave a proof in which he showed that from a contradiction any assertion can be inferred as true.[1] In example from: *It is raining (P) and it is not raining (¬P)* you may infer *that there are trees on the moon (or whatever else)(E)*. In symbolic language: $P \& \neg P \rightarrow E$.

If a contradiction makes anything true then it makes it impossible to say anything meaningful: whatever you say, its contradiction is also true.