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Theory of Knowledge

October 19 2025

Is certainty more possible to attain in maths than in other areas of knowledge?

According to the general definition of mathematics, mathematics is always absolute.

Conversely, the way the world works has never been absolute. While mathematics itself is based on high-level logic, this position of certainty struggles when it is combined with modeling the real world or chaos theory. Mathematics is a game in an abstract world (not to say that this game is boring; it is very fun). Those who oppose this generally focus more on applied mathematics than pure mathematics. Applied mathematics can be termed as a field of mathematics that is applied to other disciplines and is used in the real world and diverse disciplines. Moreover, no matter how many rules are added to this mathematics to model the real world, the functioning of the world and nature is chaotic, so uncertainties arise.

Inductive logic is at the core of mathematics, the foundation of its power. With the particular axioms and assumptions, we are getting 100 percent certain results. This foundation of mathematics struggles with the real world's absolute certainty. For example, the statement "The sum of the angles of a triangle is 180 degrees" is an absolute certainty within the axioms of Euclidean geometry. Conversely, this foundation of mathematics began to struggle when it crossed with the messy and non-linear reality of the world. The scope of mathematics claims on certainty determines its borders. This is when chaos theory comes into play. According to the chaos theory, we can observe and predict the behaviour of a simple deterministic system, but

cannot predict the absolute numerical certainty. For instance, Edward N. Lorenz, who was a meteorologist, mathematician, and academician at MIT, while he was trying to model a meteorological event, which is atmospheric convection, he found out that small changes can cause big consequences, which is the core of the chaos theory's statement. To clarify this idea, in a lecture, Edward N. Lorenz said that a flap of a seagull's wing causes a hurricane on the other side of the world. This sentence is misunderstood and many movies and series created to this sentence.

The precision of mathematics lies into the paradigms. If we not accept $1+1$ equals to 2, we can not sustain. For example, Euclid's parallelepiped axiom was accepted as an absolute truth. However, in the 19th century, non-Euclidean geometers (Lobachevsky, Riemann) emerged who interpreted this axiom differently. This marked a paradigm shift. In this perspective which path we are going to select changes significant rules of mathematics. This demonstrates concept of perspective is a essential core of mathematics.

Furthermore, we consider mathematic "non-biased". Think a AI algorithm which could be written mathematically in a "perfect" way for the human resources selection process. But this algorithm trained with biased information, this could cause ethical concerns and this "perfect and certain" algorithm make unfair and highly discriminative selections. This states that our ethical responsibility for using and producing knowledge may be more important than mathematical precision.

In conclusion, mathematics is more than a subject. It is a powerful tool for understanding concepts like certainty, perspective, and scope. The purest expression of absolute certainty is observed with the axiomatic world of pure mathematics, governed by deductive logic.

Works Cited