Rejecting the Axiom of Choice

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Abstract

In this paper, I describe the Axiom of Choice, the problems the Axiom of
Choice poses, and finally reject the Axiom of Choice.
The paper ends with "The End"

Introduction

The Axiom of Choice is a fundamental yet contested Axiom of modern mathematics.

In this paper, I describe the Axiom of Choice, the problems the Axiom of Choice poses, and finally reject the Axiom of Choice.

The Axiom of Choice

The Axiom of Choice states that it is possible to choose one element e_i from each set $S_i \neq \phi$ where $i \in \{1, 2, 3, \ldots, n-1, n\}$ to form a set $S_{AoC} = \{e_1, e_2, e_3, \ldots, e_{n-1}, e_n\}$.

The problem of the Axiom of Choice for finite n

For finite n, the Axiom of Choice **seems** innocuous to laymen and novice mathematicians, but this is **NOT** the case.

Suppose $n = P$ where P is the population of a nation and each S_i is the set of the substances of the ith individual of that nation.

Then the Axiom of Choice essentially states that a sample of substances can be obtained from each and every individual in the population of that nation.

NOT all economists, mathematicians and statisticians of a nation would accept such an Axiom, because doing so would place them too in the set of individuals that can be sampled.

The problem of the Axiom of Choice for infinite n

Even if the Axiom of Choice were accepted for finite n, the Axiom of Choice brings about a new problem for infinite n, this time in the domain of computer engineering.

After all, how can any nation store an infinite set of samples S_{AoC} in any type of memory unless the memory of the nation is infinite? Even if the memory of that nation were infinite, would the remaining nations also not **acquire** a service from that nation with infinite memory for the same purpose of national sampling?

Again, NOT all computer engineers of the set of nations would accept such an Axiom, because doing so would categorize them in the sets of nations that can do or cannot do a national sampling.

The problem of the application of the Axiom of Choice for finitely N times

Even if the Axiom of Choice were accepted for finite and infinite sets, the application of the Axiom of Choice finitely N times brings about a new problem, this time in the domains of computer science and biology.

If the Axiom of Choice were applied $N = P$ times in a nation of population P what would this mean for computer science and biology? Would doing so not reduce the population to a single individual?

Again, NOT all computer scientists and biologists of every nation would accept such an Axiom, because doing so would make them **one**.

The problem of the application of the Axiom of Choice infinitely many times

Even if the Axiom of Choice were accepted for finite and infinite n, the application of the Axiom of Choice infinitely many times brings about a new problem, this time in the domains of mathematics and philosophy.

If the Axiom of Choice were applied infinitely times in a nation of infinite population, what would this mean for mathematics and philosophy? Would this not categorize mathematicians and philosophers that accept the Axiom of Choice and those that don't?

Again, NOT all mathematicians and philosophers of every nation would accept such an Axiom, because doing so would categorize them too in the set of individuals with an epistemic problem.

Conclusion

Therefore, the Axiom of Choice comes with many **problems** from even the simplest application of the Axiom of Choice to the most complex application of the Axiom of Choice.

Therefore, I reject the Axiom of Choice.

The End