THE GREAT EPSILON SHORTAGE

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Many proofs in analysis have, at a crucial stage, the statement "given epsilon greater than zero". Until it has the epsilon, the proof cannot continue; without the epsilon, the theorem is useless. If the supply of epsilons ever dried up, analysis would collapse—and indeed, this is the intolerable situation Mathematics found itself in during the war.

With the war joined, production of non-essential items including epsilons fell to an all-time low, leaving mathematics in a state of disarray. Theorem after theorem failed due to lack of epsilons, and as analysts watched years of careful work fall down around them, many came to doubt the existence of everyday objects—especially objects for which they had existence proofs. Some even expressed relief that there was not as yet any proof of existence and uniqueness of the universe.

The situation improved somewhat, however, as mathematics came to play an increased role in the war effort. Suddenly epsilons were seen as necessary and a great mobilisation was undertaken to produce them.

Things still did not return to normal. Supply was unable to keep up with demand, bringing in the second phase of The Great Epsilon Shortage. Most epsilons were requisitioned by the military for Essential Theorems required for the war effort. Mathematicians wishing to do research had to apply for Epsilon Funding Grants in competition with Greek scholars, and work in the knowledge that their funding might be cut off at any time. An epsilon blackmarket arose on which epsilons were sold at vastly inflated prices. While analysis languished, other fields boomed with an influx of researchers unable to obtain epsilon grants.

A great deal of research was put into maximising returns on epsilons. The most successful measure was a huge efficiency drive to prove theorems as corollaries to other theorems without further consumption of epsilons. Less successful, though, was the search for substitutes. Characters such as backward threes and omega transposes were proposed but found to be useless—with the result that the epsilon blackmarket was flooded with ineffective counterfeit epsilons.

Though epsilons were in short supply, there was no such problem with deltas. If, for example, you had a continuous function, then so long as you had the epsilon you could always find the delta. It was this that provided the means of testing for counterfeits. All you needed was a continuous function, and if you couldn't find a delta the epsilon was fake.

Once the implications of the epsilon shortage were better understood, research was made into ways to exploit them, such as "Selective Unplugging": taking the epsilon out of a theorem when you didn't want it to be true. One hoped-for application was in gun targeting. An epsilon in the Intermediate Value Theorem ensured that a bullet, correctly aimed, would strike its target; if the epsilon could be removed when friendly forces were under enemy fire, a bullet that would otherwise hit its target might pass straight through. This attempt was unsuccessful, for the epsilon-theorem binding energy proved too high, but it gave birth to the field of High Energy Mathematics we have today.

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