

Re: Cantor Confusion

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- *From:* Tony Orlow <tony@xxxxxxxxxxxxxx>
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Dik T. Winter wrote:

In article <1165761763.908889.34550@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
Han.deBruijn@xxxxxxxxxxxxxx writes:

...
> Let $P(a)$ be the probability that an arbitrary natural is divisible by
> a fixed natural a . Then $P(a) = 1/a$. Forbidden by set theory.

No. Not specifically forbidden by set theory. Forbidden because there are no appropriate definitions for the words you are using (they are not used conforming to standard definitions, so you better supply definitions). In probability theory (as is commonly use) you have to define how you *select* your arbitrary natural. You have not done so, so probability theory does not have an answer.

Why does that matter? This is the same thing as your stupid ball and vase trick. Why do you need to label anything, or know what you're choosing from the infinite set? If you claim there are \aleph_0 of them, and I claim they are all equally likely to be chosen, by whatever means, then each has a possibility, but no probability, of being chosen. In other words, the probability is not a standard real, but infinitesimal. That's clear.

Look, take your naturally numbered balls and insert them with your Acme Zeno Insertion Tool between 11:59 and noon. Then place the vase in your Acme Zeno Paint Can Shaker, and shake from noon until 12:01, \aleph_0 times. Remove a ball. It's random. What's the chance ball 1 will be chosen?

Tony

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