

Re: Is continuum completely filled up?

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- *From:* "Russell" <russell@xxxxxxxx>
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Andy Smith wrote:

toshiaki <farawfu@xxxxxxxx> writes

What I intended to say, is wheather a line is build from points or not.
Why point of measure 0 gather up to produce measure or lengh?

Sticking my head over the parapet again ...I can't see how you can make up something continuous from something point like, however many points you have.

If any 2 real numbers are different, there is a gap between them, in which of course there is another real. But there are also now 2 gaps. So while there are an infinite number of reals there must also be an infinite number of gaps?

Here, I think, is the fallacy: you go in one fell swoop from 2 to infinity. What's true for any finite process is not necessarily true for an infinite one.

Plus, I think you have to be crystal clear what you mean by a gap. How would you know if the gaps were still there after you "go to infinity" with the process? You need some kind of procedure for finding a gap. I think if you try to define one, at least if it's one that agrees with our notion of a line with order topology, you'll discover that everywhere you look for a gap, there is instead a real number there.

Or is this fallacious

because implicit in this type of construction of the reals is a countably infinite process?

If I understand you right, I don't think that's it. You can

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construct the reals as the set of paths in an infinite binary tree. The depth of that tree is countably infinite.

—
Andy Smith