Re: Calculus XOR Probability

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- *From*: Tony Orlow <aeo6@xxxxxxxxxxx>
- *Date*: Tue, 16 May 2006 10:14:58 −0400

Virgil said:

> In article <MPG.1ed290581a4f392198acd4@xxxxxxxxxxxxxxxxxxxxxxxxx>,
> Tony Orlow <aeo6@xxxxxxxxxxx> wrote:
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> > cbrown@xxxxxxxxxxxxxxxxx said:
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> > > Tony Orlow wrote:
> > >
> > > > For the last time, no. If the limit of the
> > > > staircase is anything
> > > > different from the diagonal, which it is, then
> > > > there is no
> > > > contradiction.
>
> There is no mathematically valid model in which the limit of the
> sequence of staircase functions is anything but the diagonal function.
>
> If TO wished to claim otherwise, then he must create and present to us
> the entire system in which he claims his allegations hold, as they do
> not hold in any current system.

Okay. Here goes.

Rather than a set of points, let us define both the staircase and the diagonal as sequences of segments defined as a pair of reals which represent the x and y coordinate differences between subsequent points. Let us compare the two thus in a segment−wise manner, maintaining the same number of segments in each, and see if the segments which describe the staircase approach those that describe the diagonal. Where n=1, we have two segments to the staircase, {0,1} and {1,0}, for a total change of {1,1}. Dividing the diagonal into two segments we have {1/2,1/2} and {1/2,1/2}, also for a total change of {1,1}. Now, as n increases we have {1,1}=sum(x=1−>n: {1/n,0}+{0,1/n}) for the diagonal, and sum {1,1}=(x=1−>n: {1/2n,1/2n}+{1/2n,1/2n}) for the diagonal. While the locations

of the points in each segment become arbitrarily close, the vectors defining the segments of which the lines are made never become close, but are always at a 45 degree angle to their corresponding segments in the other line.

When you look at the distance traveled, you sum all the x components of the vectors in each line and sum all the y components, and you get {1,1} in both cases, and the distance is sqrt(2).

When you look at the lengths of each, you sum the length of each vector in the line. For the staircase we have sum(x=1−>n: 1/n+1/n)=2. For the diagonal we have sum(x=1−>n: 1/sqrt(2)+1/sqrt(2))=sqrt(2). Because of the difference in vector direction, even at the infinitesimal scale, the staircase is longer than the diagonal.

Is that an "entire" enough "system" for you? :D

> Well, do you agree that /if/ the limit of the staircase is /not/ "anything different from" the diagonal, then there /is/ a contradiction?

> > Of course. If there were not distinguishing characteristics between the diagonal and the staircase in the limit, or some other explanation for the discrepancy, then I would have to admit that you may have a real counterexample to refute the validity of infinite induction.

> > And in standard mathematics there are no such distinguishing characteristics. I have, in fact, given a specific and concrete example of the staircases as parametric functions of the diagonal distance whose limit is the diagonal itself.

No, you made a leap in saying that the points become the same set in the limit, just because they are arbitrarily close. You didn't derive one formula from the other algebraically, as asked. And, none of you have explained why the error is sqrt(2). It's obviously the inverse of the angle between each segment of the staircase and its corresponding segment in the diagonal. It's quite clear. :)

> > However, the differences I pointed out not only serve as a probable cause of the discrepenancy, but lead to an exact quantitifcation of what the dsicrepancy is.

> Except that they provably do to hold in any standard mathematics, and TO has not produced any other system in which they do hold.

That sentence good not.

> > But I have /defined/ the limit of the staircases and the diagonal
> > as /sets/ which are identical.
>
> Sets of points, which do not lend themselves to additive measure.

> They are sets which have well defined arc lengths in the only sense that any set of points is allowed to have an arc length in standard mathematics. Where is TO's definition of the 'arc length of a set of points' which is self−consistent.

> > Well, obviously, now I have to define a measurable limit definition for sets of "points", on top of everything else. Fine, it's on my list.

> Until it is done, TO is wrong.

You crack me up, Virgil. Why don't YOU invent something for a change? ha ha :D

> > And that's what I mean when I say, your knowledge of what constitutes a mathematical argument is sorely lacking; particularly
> > your knowledge of what a mathematical definition is.

Uh huh. When I point out exactly why the measure fails, including how

> the error is calculated, I don't know anything about making a
> mathemtical argument. But, when you use a definition of limit which
> doesn't lend itself to linear measure, and then blame the fact that
> the measure of the limit isn't correct on infinity, for vague
> reasons, that's a mathematical argument? Where do YOU think the error
> ratio of sqrt(2) comes from? Infinity?

> Everyone following these posts except TO knows where it comes from. The
> error comes directly from TO's insistence on his false "principle of
> infinite induction".

ha ha ha hee hee ho ho hummmm..... Thanks, I needed that.

So, you calculated the error in my insistence on infinite induction to have a value of sqrt(2)? That's very interesting. I'd like to see your calculations. Moron.

This insistence that "infinity did it" is no different, nor any more logical, than the creationists' "Goddiddit" philosophy. In fact, it rather seems to me that all the political haggling over this stuff in the 19th century had a lot to do with maintaining a mystery about the infinite, rather than making any sense of it, for religious and philosophical reasons. Thankfully, I am not bound by such constraints, because my religion allows that we CAN understand the infinite, and that this is an important goal for mankind. Demystifying the world is not a bad thing. Superstition is dumb. Evolution happens every day. Get used to it. :D

> That's a very sound
> mathematical argument, if ever I heard one.

Infinitididditology: The Cantorian Occult Philosophy

Have a nice day!
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Smiles,

Tony
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