Re: Distinct linear orderings on Z

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From: Albert Wagner (*albertwagner_at_cox.net*)
Date: 03/29/05

Date: Tue, 29 Mar 2005 16:10:47 −0600

Lester Zick wrote:
> Albert Wagner wrote:
>>Lester Zick wrote:
>>
>>>Albert Wagner wrote:
>>>
>>>>Lester Zick wrote:
>>>><snip>
>>>>
>>>>>Well the difference is that you don't need rotation. All you need is
>>>>>bisection and static construction techniques to define circles by
>>>>>approximation. In other words my definition of a circle doesn't rely
>>>>>on circular rotation. That's something that has always bothered me in
>>>>>common geometric definitions.
>>>>
>>>>Why?
>>>
>>>Mainly because rotation presumes circular rotation which assumes the
>>>thing we're trying to define.
>>
>>Perhaps I misunderstood. I thought you were referencing my
>>definition:
>>
>>Circle −− a plane curve generated by one point moving at a
>>constant distance from a fixed point.
>>
>>Which does not assume the thing I was defining.
>
> This is the same definition I learned in plane geometry, Albert. It is
> what I was referencing. But it seems to me that defining a circle in
> terms of circular rotation begs the question.

You are the one inserting the phrase 'circular rotation'. My definition makes no reference to it either directly nor indirectly. You can only call it 'circular rotation' if you are bringing to my definition some pre−defined definition of circle.

> It's true that circles
> are defined in terms of equal distance from an origin on a plane. But
> all this definition seems to do is say that a circle is equal distance
> on a plane without saying how we get the plane rotation.

The plane doesn't move, only a point on the plane.

> A radius
> could just meander in any direction. So we're really back to the
> definition of a sphere unless we assume the idea of the circle to
> begin with.

No. The definition states explicitly 'a plane curve'.

> When I suggest definition of a circle in terms of construction, the
> plane comes automatically. We first define a straight line and then
> bisect it to determine a radius. We then construct a normal to that
> straight line of radial length at the point of bisection as the basis
> of definition. And to keep the circle on a plane we construct another
> normal to both lines and proceed with angular bisection normal to both
> the original straight line and the second normal.

I know what you are doing. It is trivial.

>>>It also presumes an action or process as
>>>the basis of definition where the thing we're trying to define is not
>>>an action.
>>
>>That makes no sense. What rule of definition disallows a fixed
>>thing being defined as the result of an action?
>
> I don't know as there is any specific rule. I just think a fixed thing
> ought to be defined by fixed things.

OK. Then I reject your preference.

> I will grant you that bisection
> represents an action.

And multiple steps, each dependent on earlier steps, represent a
sequence in time. Your construction moves also.

> It just doesn't define a moving thing needed to
> do some other definition. The result of bisection is a static thing
> used to define something else that is not the result of an action.

A distinction without a difference. Whether you define your
process as an iteration closing upon a limit as 'movement' or not
is simply playing with words. My definition honestly and
straightforwardly defines the movement of a point to define a
curve on a plane.

> In
> the case of circular rotation the process is used to define itself.

No it doesn't. See above.

>>>>>My definition only relies on successively smaller subdivisions. We
>>>>>start off with a straight line segment and straight angle and through
>>>>>bisection of the segment determine radius and successively bisect the
>>>>>angle at a distance of the radius and take a circle to represent the
>>>>>curved limit of that approximation process.

Your limit is never reached, therefore your circle is never formed.

>>Successive /means/ change in time, where one step is dependent on
>>the completion of a previous step. You have also relied on a
>>series of actions for definition, which you inconsistently use to
>>disallow my definition. You have only defined a way to build an
>>infinite set of points and could have simplified by merely
>>assuming that infinite set of points, as Bob does.
>
> Well I hope I have explained above why my actions are allowable
> and yours are not.

No, you have not. Unless your personal preferences were meant to
be your justification, which I rejected.

> The actions I refer to only define static straight
> line segments used to define a circle. Your actions define the circle
> directly and in effect make the process self defining.

It is *not* self−defining, regardless of how many times or how
many ways you may invent to say it.

> I am not trying
> to justify my actions as opposed yours.

Yet, that is exactly what your statement above tries to do:

"Well I hope I have explained above why my actions are allowable
and yours are not."

> I can't justify or define
> bisection as an action either, as in effect defining a straight line
> as motion in a straight line or in a direction of constant angular
> velocity with respect to all points in space. I can only justify it in
> terms of results as the difference between points in space.
>
> Bob's definition wanders over the surface of a sphere unless he
> assumes a plane which I don't have to do because contruction of
> normals to a straight line segment defines the plane for me.

I find my definition of 'A plane curve' perfectly adequate.

>>>>In that a point is the bisection of lines, haven't you then just
>>>>introduced a way of constructing points? And thereby only
>>>>entered the back door to a set definition of a circle?
>>>
>>>Well I consider a point the intersection of lines but not necessarily
>>>straight lines and not necessarily a bisection. But yes construction
>>>does delimit points on the perimeter of a circle. However the circle
>>>itself is the limit of a series of line segments between those points
>>>rather than the points themselves.
>>
>>A distinction without a difference. The limit is only reached
>>after an infinite number of iterations.

Bob, has corrected me. The limit is never reached. So your
circle is never fully formed, only approximated.

> True. But that doesn't mean the limit is not a circle. It only means
> that our ability to think through circles in terms of straight line
> segments we can think through as differences between points is finite.

OK. A fun exercise. But, not actually a definition of a circle
and certainly not simple.

>>>And as far as sets themselves go I don't really mind them very much.
>>>There are in fact a great many things we can do under the set rubric
>>>without going to far astray. The problem is what the mathematikers do
>>>with sets that make them impossible to use consistently. Even infinity
>>>makes sense in terms of sets of infinitessimals between cardinal
>>>limits. Sets in general have ordinality and certain subsets have
>>>cardinality and a variety of other properties.
>>
>>But wasn't the problem to be solved: how to define a circle
>>without recourse to sets, especially infinite sets?
>
> Not really. The mathematics discussion here has pretty much been
> sets versus geometry. But there isn't any reason to dismiss sets as
> useless just because set theorists make ridiculous assumptions
> concerning set characteristics and behavior.

The discussion concerning sets is irrelevant to the challenge to
define a circle sans sets.

> We originally got off on this circle definition tangent because Bob
> couldn't define a circle using sets exclusively and had to go back to
> Euclidean assumptions regarding planes. That doesn't mean sets are
> useless. What it means is that point definitions are useless because
> no dimensional definition is possible in dimensionless terms. The
> problem wasn't sets in general but points in particular and collective
> definition in terms of points.If we take the difference between points

> we wind up with a collection of "all" points because that difference
> is indefinitely divisible through bisection. But trying to go the
> other way around is futile because there is no other way to define the
> set of "all" points. Mathematikers pretend they can do anything they
> can say or put into words. But they forget the words themselves aren't
> what govern the sense or nonsense those words make in combination.
>
>>>Epistemologically the problem isn't with sets so much as regression of
>>>dimensional properties to dimensionless points.
>>
>>I thought the problem was as I stated above.
>
> Well I hope I've explained a little better.

Yes, you have explained why you didn't or couldn't define a
circle without recourse to an infinite number of points.

>>>Mathematikers want to
>>>believe they can regress things terminologically without performing
>>>any kind of scientific reduction. They just adopt a new vocabulary to
>>>talk about cardinality, ordinality, well order, denseness, sparseness,
>>>etc. as if they were contributing something useful to the history of
>>>knowledge when all they're really doing is talking about everything
>>>pretty much already known in different terms. It's the same trick the
>>>materialists and behaviorists use in calling everything behavior as if
>>>they were contributing some kind of radical scientific insight without
>>>reducing behavior to any kind of mechanical insight worth discussing.
>>
>>I think that you have used a similar bag of tricks in your
>>definition of a circle.
>
> Well I certainly hope not, Albert. As previously stated I don't mind
> being righteous but I certainly mind being self righteous. At least I
> hope I've explained myself better. But regardless these are exactly
> the kinds of issues that have to addressed and resolved if we're ever
> going to get to the bottom of science and truth in general.

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"I know that most men, including those at ease with
problems of the greatest complexity, can seldom
accept even the simplest and most obvious truth
if it be such as would oblige them to admit the falsity
of conclusions which they have delighted in explaining
to colleagues, which they have proudly taught to others,
and which they have woven, thread by thread,
into the fabric of their lives." –
        -- Tolstoy
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