

Re: Predictions from Mathematical models

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From: Mike Helland (*mobydikc_at_gmail.com*)

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Mark Fergerson wrote:

> *Mike Helland wrote:*

>

> < BTW, I got a new computer (and changed browser/newsreader) so I
lost

> track of the "To what do the laws of physics apply?" thread. Any new

> thoughts on that?>

Ah, indeed. The ball is still in my court wrt that thread. I'll revisit it.

> > 2. Today, our mathematical models are relationships between values
that

> > represent measurement outcomes

>

> What else is there?

There is what I've been trying to communicate to you for a while now :-)

Leibniz, Zuse, Fredkin, they have all suggested something different from the above.

Unfortunately, these are very very poorly understood, presumably because they are such radical departures from what you've been taught.

> > 4. There is nothing about physics, or the scientific method, that
says

> > this is the one and only way of deriving predictions from
mathematical

> > models.

>

> Fine so far, except mathematical models must be based on
observations

> of physical systems. One makes observations and _then_ selects a

> mathematical formalism that fits the observations, then looks to see
if

> the mathematical formalism can predict not-yet-observed properties of

sci.physics: Re: Predictions from Mathematical models

> *the actual physical system. One does that by working the equations out*
> *farther than was used to parse the original data.*

How can you say that premise 4. is "fine so far", and then say "one does that by working the equations"?

You either except that equations (relationships between observable magnitudes) are the *only* way to derive predictions, or you do not.

Which is it? And if you think equations are the only way, what sort of argument can you provide to support that opinion?

I would agree that "tradition" certainly suggests that this has worked in the past, but inductive logic is not a response to critical inquiry.

>> *What do I mean by that? Say you have some modeled electrons and protons*
>> *and you arrange them into a mercury thermometer.*
>
>> *__oo__oo__ooo*
>> *__oo__oo*
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>> *__oo__oo*
>> *__oo++oo__o*
>> *__oo++++oo*
>> *__oo++++oo*
>> *__oooooo*
>
> *This is extremely unclear.*

It is supposed to be a thermometer, the "o" represents molecules making up the glass, and the "+" is the mercury.

In this simulation of particle physics, all the numeric values in the model represent properties of particles.

The prediction here is that the temperature is "1 degree" of whatever the unit for the thermometer is (1 because the mercury is at the single "o" marker, if it had been at "oo" then the prediction would be 2).

But the value "1" does not exist as a numeric value in the model. It is something that must be derived through analysis of the values. Not simply looked at and reported.

<snip>
>> *Essentially, physics today describes a world of measurement outcomes.*
>
> *What else is there?*

There is this:

- > > *My new application for mathematical models describes a world where*
- > > *measurement takes place. I think it is more suited for quantum and*
- > > *relativistic behavior than the technique Newton established.*
- >
- > *What does this mean?*

It is so different from what you know, that you will not understand it unless you committ yourself to understanding it.

If you are ready, you will read this web page several times, and get back to me with any specific questions:

<http://www.techmocracy.net/science/time.htm>