

# Re: when does induction fail? well-ordering property?

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*Source:* <http://sci.tech-archive.net/Archive/sci.math/2005-11/msg03120.html>

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- *From:* "Ross A. Finlayson" <raf@xxxxxxxxxxxxxxxx>
  - *Date:* 21 Nov 2005 08:31:39 -0800
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Dik T. Winter wrote:

> In article <1132553483.030538.90530@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> "Ross A. Finlayson" <raf@xxxxxxxxxxxxxxxx> writes:  
>> Well-ordering leads to problems, for example in well-ordering the  
>> reals.  
>>  
>> A well-order is a binary relation, that is in computer talk a function  
>> with two arguments, that returns less than, or greater than or equal.  
>> It might instead admit greater than, or less than or equal. Then, also  
>> there exists an element for the set that is less than, for any other  
>> element of the set.  
>  
> You clearly do not know what a well-ordering is, that is the definition  
> Tony Orlow uses, who also does not know it.  
> --  
> dik t. winter, cwi, kruislaan 413, 1098 sj amsterdam, nederland, +31205924131  
> home: bovenover 215, 1025 jn amsterdam, nederland; <http://www.cwi.nl/~dik/>

I'll dispute that. Not that I don't mind Tony, I find Tony refreshing, but that's a property of a well-ordering, as applied a well-ordered set, it has a least element. That applies to non-empty sets, which was an omission.

The existence of a well-ordering on a set implies the existence of a choice function that given the set as an argument returns the unique least element of the set by the well-ordering.

Why do you not agree with that? I have not been following Tony's definition of what a well-ordering is. "Maybe you are thinking of a total ordering". – Tapio Hurme

The existence of a well-ordering is convenient for quantifying over the elements of a set, for example for purposes of induction.

Ross

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- **References:**

- ◆ **when does induction fail? well-ordering property?**

- ◇ *From:* comtech

- ◆ **Re: when does induction fail? well-ordering property?**

- ◇ *From:* Ross A. Finlayson

- ◆ **Re: when does induction fail? well-ordering property?**

- ◇ *From:* Dik T. Winter

- Prev by Date: **Re: Birthday problem for such non-uniform birthday probabilities**

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