

Re: A simple question?

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- *From:* David Marcus <DavidMarcus@xxxxxxxxxxxxxxxx>
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MoeBlee wrote:

Jules wrote:

Actually, that quote

For example, the real numbers are not well ordered, but there is a well-ordering of the real numbers which is not the standard ordering.

came from my post. I meant that such an ordering exists, if one assumes the axiom of choice. I meant to use this simply as an example that a set need not be well ordered, even if a well-ordering of the set exists.

What does it mean for set not to be well ordered even though a well ordering of the set exists?

A better example is probably the set \mathbb{Z} of integers. \mathbb{Z} is certainly not well-ordered (it has no minimal element),

The standard ordering is not a well ordering, but that does not entail that the set is not well ordered. Maybe this is just a difference in how we use these phrases, but I say a set is well ordered iff there exists a well ordering of the set. So the fact that the standard ordering is not a well ordering doesn't contradict that the set is nonetheless well ordered.

To me, if someone says a set is well-ordered, they mean whatever ordering relation the set has (or whatever ordering relation we are talking about) is a well-ordering. It doesn't mean that I can construct a new ordering relation that is a well-ordering.

Do you see somewhere in Enderton where he uses "well-ordered" to mean a

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well-ordering exists?

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David Marcus

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