

## Re: Gauge theories in economics and physics

**Source:** <http://sci.tech-archive.net/Archive/sci.physics.research/2004-08/0619.html>

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**From:** Paul Danaher ([watwinc\\_at\\_verizon.net](mailto:watwinc_at_verizon.net))

**Date:** 08/27/04

Date: 27 Aug 2004 07:10:22 -0400

Franz Heymann wrote:

> "Eric A. Forgy" <[forgy@uiuc.edu](mailto:forgy@uiuc.edu)> wrote in message  
> [news:3fa8470f.0408260841.52ce3477@posting.google.com](mailto:news:3fa8470f.0408260841.52ce3477@posting.google.com)...  
>  
> [snip]  
>  
>> Now, a "portfolio" of stuff can be thought of as an abstract vector  
>> whose magnitude is the "value" of the portfolio. Each item in the  
>> portfolio has it's own value and you can think of them as components  
>> of a vector.  
>  
> This sounds remarkably like nonsense. The components of a vector are  
> all orthogonal to one another. What does the concept of  
> "orthogonality" mean in the present context?  
> The magnitude of a vector can be determined from a knowledge of its  
> components. How is this concept handles quantitatively in the  
> presentcontext?

Well, orthogonality here would mean that the prices of the individual assets are unrelated, i.e. a change in the price of one asset wouldn't affect the price of another. However, there's no reason to assume this, and it would typically be wrong anyway. The magnitude of the vector would be the value of the portfolio, expressed in a given currency at a given date (showing the present value of assets maturing in the future). Something I haven't seen in the papers I've read so far in this collection is discussion of present value where there are (a) multiple interest rates and (b) negative interest rates – if anybody's seen that, I'd be grateful for a pointer.