Re: The Double or One Half Paradox

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On Sun, 4 Jul 2004 23:47:59 −0400, Carl Cotner
<cfc−usenet@tau.aauetiu.net> wrote:

>[...]

I didn't read the following carefully at first, because
I was wrongly convinced that it was irrelevant. Reading
it carefully it appears there's a problem, although
it seems like just a typo:

>[*] Theorem: Suppose f: (0, oo) −> [0, 1] is a strictly decreasing
>function. The expectation for switching envelopes with probability
>f(x) when the first envelope one chooses has x amount of money in it
>exceeds the expectations of never switching, always switching, or
>switching randomly independent of x. Moreover, this does not depend on
>the distribution of x, nor that x follows a distribution at all.
>
>Proof (ala Hein Hundal): There are four possible events:
>
> E1. You randomly pick the lesser envelope and keep it,
> E2. You randomly pick the lesser envelope and switch,
> E3. You randomly pick the greater envelope and keep it, or
> E4. You randomly pick the greater envelope and switch.
>
>If x is the amount of money in the smaller envelope,

We should note, to prevent confusion, that this "x" is
not the same as the x in the statement of the theorem...

>the expectation
>for any given strategy is
>
> P(E1)(x) + P(E2)(2x) + P(E3)(2x) + P(E4)(x)
>
>which, if one never switches, simplifies to
>
> (1/2)x + (1/2)(2)x = (3/2)x
>

>The expectation for the always switching and the switching at random
>cases is the same.
>
>If one switches envelopes with probability f(x),

Switching with probability x is impossible, because we don't know what the amount in the smaller envelope is. But looking at the next few lines it appears that what you meant was "switch with