Re: My claim on Omega's defn

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From: Arthur Fischer (*arthurfischer_at_sym.ca*)
Date: 01/31/05

Date: Sun, 30 Jan 2005 22:24:03 −0500

|−|erc wrote:

> "Arthur Fischer" <arthurfischer@sym.ca> wrote in
>
>>|−|erc wrote:
>>
>>>Omega = sum(p halts) 1 / (2 ^ size(p))
>>>
>>> [big snip]
>>>
>>>Even with infinitesimally small total probability of halting, Omega will not converge and will equal oo.
>>
>>
>>You seem to be missing the point that the domain of the universal
>>self−delimiting TM U is taken to be prefix−free −−− ie, the encoding of
>>halting TMs is such that if x is the encoding of some halting TM, then
>>no proper prefix of x is a encoding. Basically, any branch of the
>>infinite−binary tree will contain at most one such encoding, and so to
>>simply say that there are 2^n encoding with n bits is just being
>>ignorant. If follows via Kraft's inequality that Chaitin's Omega will
>>be bounded.
>
>
> So all Omega means is there exists 1 program of that size that halts.

No, what it does mean is that the set of encodings of programs is sparse
(quite possibly meagre) is the space of all finite binary strings. It
is a perhaps unnatural condition, but its what was done to ensure that
the "Omega series" converges.

> What a load of crap, I could design an arbirtrary UTM where Omega = 1.
>
> It skips 100% of programs without any reason.

Then this number really doesn't mean anything. We could all come up
with our own numerical constants, but unless there's a reason for them,
no−one will care. It's the natural interpretation that Chaitin was able

to get that makes it extremely worthwhile.

—
Arthur