Re: My claim on Omega's defn

Source: http://coding.derkeiler.com/Archive/General/comp.theory/2005−01/1228.html

---

From: Arthur Fischer (*arthurfischer_at_sym.ca*)
Date: 01/30/05

```
Date: Sun, 30 Jan 2005 09:38:49 −0500
```

|−|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.

> Now try the modified Omega.
>
> If all programs halt
>
> Omega' = 1/4 + 1/4 + 1/16 + 1/16 + 1/64 +1/64 + 1/64 + 1/64 + 1/256 + ..
> = 1/4 + 1/4 + 1/8 + 1/16 + 1/32...
> = 0.75
>
> You could dissalow the 1st program, 0, so it adds to 1.
>
>
> Omega' = sum (p halts) 2 ^ (−2 |p|)

How will your "omega" correspond to the "probability that a program halts"? This seems to be one of the most important aspects of Chaitin's constant, though you just seem to be taking a naive approach to ensure that things will work out.

You do not seem to have invested any time into any sort of worthwhile literature−search. Even a Google search will lead you to various papers by Calude, Chaitin, etc. that will show your objections are founded only

on ignorance. Try, perhaps, the first 3 sections of
http://www.cs.auckland.ac.nz/CDMTCS//researchreports/059cris.pdf

--
Arthur