

Does time go faster as you get older?

When we were young, it seemed to take ages to get older – to the next grade in school, to the next stop on a long drive, to wait till Christmas or another holiday. There are so many cliches about the change in the experience of time as we get older.

On the other hand, for my wife, Lou Ellen and I, at least, time spent traveling overseas (which we are wont to do) passes slowly – “Weren’t we in Bac Hai a month ago? No, it was only 4 days ago.”

Let me offer a simple mathematical analysis: Vince’s logarithmic time:

Subjective time appears to be *measured as the fraction of new experiences*. From about age 4 or so, we have a permanent and growing store of memories that’s proportional, roughly, to cumulative objective time, t .

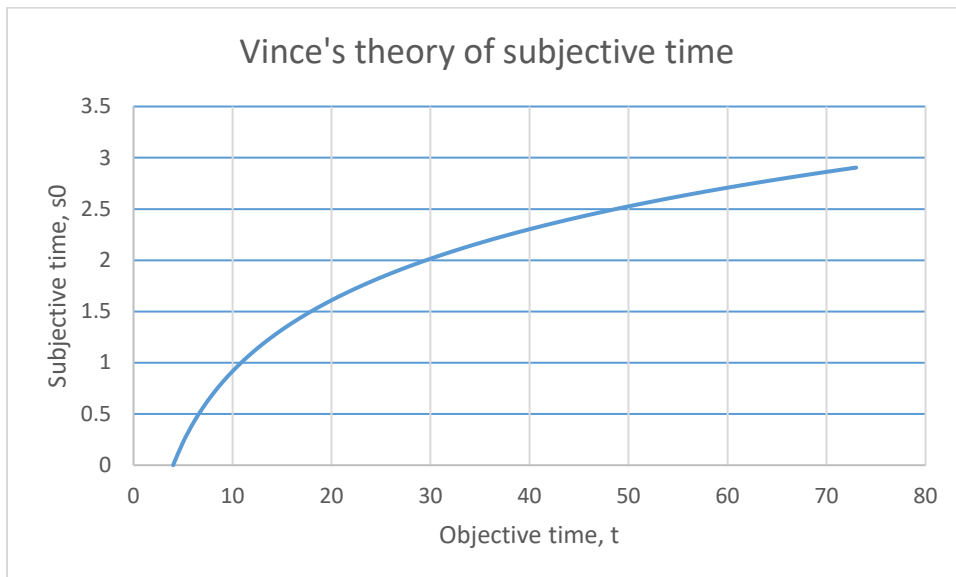
The increment in subjective time, s , is then proportional to the fraction of new experiences in a given interval of objective time, dt , which is commonly a constant, call it a , multiplied by that interval

$$ds = a \frac{dt}{t}$$

It’s no simple to integrate subjective time:

$$\begin{aligned} s &= \int_4^t \frac{a dt'}{t'} \\ &= a \ln(t/4) \end{aligned}$$

Ignoring a (setting it to 1):



When a given interval of subjective time has more than the usual degree of novelty, such as being on a trip, the factor a inflates. We could generalize to

$$s = \int_4^t \frac{a(t') dt'}{t'}$$

Most of the time, a is nearly constant and we can pull it out of the integral.

Some relative stretches of subjective time:

Subj. age	Objective time (age, in years)	Lapse since last increment (years)
0	4	--
0.5	6.6 = 4*exp(0.5)	2.6
1.0	10.8 = 4*exp(1.0)	4.4
1.5	17.9	7.1
2.0	29.6	11.7
2.5	48.7	19.1
3.0	80.3	31.6

Of course, there's a constant expansion factor between steps, $e^{0.5} = 1.65$.

Lou Ellen and I escaped some of the time compression, having lived what seems to be about 8 or 10 or more new lives even as adults – university days; grad school days; Los Alamos, before meeting each other; Los Alamos, getting married, getting a house, getting a new job (all within 3 weeks, to start off – a great time!); world travel together in a big way (Hawaii, Fiji, Australia, New Zealand, Papua New Guinea, for a start); the good years morph to bad years at Los Alamos; David's birth...and travels with him (6 countries on 4 continents by age 4 months); move to NMSU, and the "old" guard in Biology; Las Cruces, the career run; starting the Las Cruces Academy and many sidelines...and David getting married...and meeting new people galore.

We still feel the time compression, but not too badly. We're not tempted to write a date 3 or 4 years earlier on a check, usually.