

## The End of It All

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At the risk of sounding like a man who would strap a sandwich board to his torso and hand out pamphlets on the streets downtown, the End is coming.

I don't mean to cause you panic. At some point, each of us realizes that the end is nigh. Whether someone begins to think of their own mortality after seeing Big Bird on Sesame Street learn that Mr. Hooper has passed away, or finds out about the end of the universe in a religious context, every human eventually discovers that same inescapable truth: everything that we know must eventually come to an end.

Believe me; as a physics student here, I have had the distinct pleasure of learning exactly how the End will come. If our species manages to not wipe itself out in the next few hundred years, we might have the fortune of leaving the earth before the sun expands and engulfs the entire planet in a few billion years more. Not that it would really matter – no matter what new planet you decide to call home, it's only a matter of time until it reaches the same fate. And it gets harder and harder to reach new places. The universe, and literally empty space itself, is expanding faster and faster. Toward the end, everything will be so far away from you that you won't even be able to see a single spot of light in the night sky.

"Oh no!" you cry – and here is where my date to whom I've been pontificating on physics for the better part of an hour clutches my arm somewhat more tightly – "is there nothing we can do?"

"No, nothing. Nothing at all."

And there really isn't a lot we can do about it. Our very existence – the way the atoms and molecules of our body are held together and forced to carry out their life-sustaining tasks – is contributing to the eventual heat death of the universe. Eventually, the laws of physics win out, and the universe will use up all the gas it's got – at least, if you believe what we scientists posit.

But even if you don't trust me on the thermodynamics, I would contend that everyone in this room believes that their time on this planet is limited, in one way or another. What are we to do with that knowledge? It is something our ancestors have struggled with since time immemorial, and it is one of the great enigmas of mankind – that even in the face of near-certainty that nothing we do will have any lasting impact in the grandest scheme of things, we each push on with our lives, seeking those things which our limited consciousnesses have come to value: Happiness. Comfort. Joy. Love.

Thousands of years ago, my Hindu ancestors proposed one method of dealing with the knowledge that our time is limited. Every life, and indeed, the entire cosmos, went

through circles of birth, death, rebirth, and redeath, forever and ever. I should also note that the ancient Indians were particularly good at dealing with enormous numbers, no doubt due, in part, to my ancestors' discovery of zero and its use in the place value system. That one was on the house, modern civilization.

In ancient Hindu cosmology, time at a macroscopic level is divided into Yugas, or epochs that subdivide the life cycle of the universe. Fascinatingly, Hindu cosmology actually somewhat accurately reflects the timescales that modern cosmology has imposed up on the universe. The full set of Yugas, one Mahayuga, comes out to 4.32 billion years. Ask an EPS concentrator, and they'll tell you that the earth is around 4.5 billion years old. Not bad, ancient India!

Of course, there's only so much you can read into this – Hindu cosmology indicates that the life cycle of Brahma, the god of creation, comes out to something like 100 trillion years, at which point even he is reincarnated. It might. The physicists reply that it might not. Details aside, the important thing is that Hindu tradition simultaneously passes along the notion of ostensible eternity – time scales so vast that they are simply beyond human comprehension – while simultaneously providing hope that even when these immense hourglasses finally run out of sand, something manages to turn them back over, and start the whole thing over again.

But most of the time, we simply don't deal with the fact that our time is limited, or that eternity is too much for man to grasp. Humans are particularly good at ignoring important things. As T.S. Eliot noted, "Humankind cannot bear very much reality." If I truly subscribed to my own notion that nothing we do matters in the grandest scheme of things, I wouldn't be standing here giving this speech to you, and I certainly wouldn't start to work on that gov paper that may or may not be due tomorrow morning. It is the fact that our own time is so limited that makes life wholly worth living!

And without even recognizing it, I think that each of us ignores the fact that our legacy is limited and seeks immortality at least a little bit, whether it is in the biological sense of passing on our genes to our progeny, or in taking a few photos with people who have become your closest friends, or in giving a five minute talk to Lowell House about how you think the imminent end of the universe impacts our lives. It is that quest for immortality that makes life interesting. I know firsthand that the desire to pass on our genes to an appropriate mate can make life interesting (for better or for worse), and that our friendships can define a person more than any of his or her intrinsic traits. And the two can obviously go hand-in-hand, because if you wanna be my lover, you gotta get with my friends. Almost everything we do is simply a prerequisite to continue our quest for happiness, comfort, joy, and love – life and liberty lie in the pursuit of happiness.

I leave you with one last point. It has been my sincerest pleasure to spend the past three and a half years singing with the Harvard Glee Club, and our shared music has been one of those pleasures that has made my collegiate life worth living. Music, too, becomes part of our quest for immortality. My freshman year, I sang a setting of Henry Wadsworth Longfellow's "Fata Morgana," which had the following lines:

O SWEET illusions of song  
    That tempt me everywhere,  
In the lonely fields, and the throng  
    Of the crowded thoroughfare!  
I approach and ye vanish away,  
    I grasp you, and ye are gone;  
But ever by night and by day,  
    The melody soundeth on.

It is the melody of the human spirit that fights against the inexorable push of time's arrow. And it is that melody which will carry us into eternity, past the end of it all. Because if the universe is merely one verse, imagine the whole song.