

Those of us here today who knew and loved John Tooby are mourning twice. We are mourning first of all the loss of John the man. John, who was one half of a symbiotic unity with Leda that fused their intellects, their passions, their humor. John the loving father of Nike, who he often said transformed him more than any other life experience. John who was the indefatigable mentor of many students, providing them with a world view, intellectual guidance, and occasionally blunt career and personal advice. And John who was an endlessly kind and fantastically entertaining friend and colleague.

We are also mourning a mind. John had a singular mind, an incandescent mind, a beautiful mind. It was a mind with staggering intellectual power, astonishing erudition, panoptic curiosity, speed-of-light wit.

John had insight into human nature worthy of our greatest novelists and playwrights, which he grounded in an understanding of the natural world worthy of our greatest scientists. Evolution for him was a link in an explanatory chain that connected human thought and feeling to the laws of the natural world.

It was this depth of thinking that made John's company so precious. His conversations would mix sly observations of people's foibles with profound allusions to science, history, and culture. Conference audiences forgave him for his famously discursive presentations, in which he might use up his time with a digression on the Big Bang before he ever got to the data.

John will also be remembered for his experimental discoveries, done in collaboration with Leda and their students, about a wide range of psychological phenomena, including [statistical thinking](#), the [perception of race](#), the development of [sibling feelings](#), and the emotion of [anger](#).

But John's greatest accomplishment was bringing to fruition Darwin's prediction that "psychology will be placed on a new foundation." That

[foundation](#) is natural selection, since it alone can carve nooks of beneficial organization out of a universe that relentlessly slides into disorder. The primary challenge for a science of mind is to explain how such improbable feats as perception, reasoning, and goal-seeking could have arisen in a world in which entropy must increase. The answer ultimately lies in the only force in nature that can shape matter into functioning organs, including the human brain.

When he was a postdoc around 1990, John and Leda laid out the foundations for the study of human nature as a product of evolution. They articulated ideas that continue to be the common currency of the field, including the tension between adaptation and phylogeny, the environment of evolutionary adaptedness, the cognitive niche, ecological rationality, the idea that humans are not fitness-maximizers but ancestral fitness-cue maximizers, and how the uniqueness of the individual may be reconciled with the universality of human nature.

John was also famous among his friends for his *bon mots*, some of which I plan to share with you as the afternoon proceeds. I'll mention just one now. At a dinner one night, a first-year graduate student noted how he preferred his new intellectual freedom to the pressure for immediate results he had endured in industry: "I like coming home at the end of the day not having accomplished anything." John replied, "Young man, you have a bright future in academia."

John explored the dark side of human nature unsentimentally, but also our better angels with appropriate awe. Fittingly so, because I can think of no specimen of *Homo sapiens* who better exemplifies the best of what we're capable of. Together with his singular brilliance, John was jolly, self-effacing, altruistic. He showed that at least one member of our species can confer immense benefits to others regardless of the costs to self. I am one of those lucky others, and over the years John showered me with ideas, advice, and support, and I will forever bear his influence in ways large and small.

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I know I speak for many when I say that John's intellectual influence on me was chimeric, retroviral – his ways of thinking are so deeply embedded in my ways of thinking about the world that I can no longer distinguish them from my own.

I'd like now to invite tributes now from some of John's friends and colleagues, which I will intersperse with some of my favorite passages from John's writing and correspondence over a span of 34 years. I hope this will do a little something to bring John himself into the gathering to honor him today.

Before I do, I'd like to acknowledge three people who won't be speaking, but have lovingly and heroically dedicated themselves to caring for John and Leda in John's last days and in the agonizing weeks since: Deb Lieberman, Ryan Oprea, Dylan Tweed.

We'll do it alphabetically, beginning with **Pascal Boyer**.

The Second Law of Thermodynamics, one of the fundamental principles of science, was the foundation of John's scientific view. I'd like to begin with an explanation of why that is, in his own words.

Thermodynamics informs us that functional order does not come about spontaneously: Geology does not produce frescoed Tuscan villas, hurricanes do not assemble violins, and shaking up mixtures of sugar, milk, and dirt will not produce komodo dragons or congressmen. ...Because the second law states that physical systems tend to move toward more probable states, they tend to move away from organization on their path toward maximum disorder. Even more depressing, as highly ordered physical systems, organisms should tend to slide rapidly back toward a state of maximum disorder or maximum probability (with death occurring at some intermediate point in the decline, shortly before rot).

Thus, to study organisms scientifically is to be confronted with the following questions: Why is it that living things exhibit a miraculously high level of order not found among the nonliving? In the history of life, what causes increasing order to accumulate so often across geological time? Over the individual life span, what causes organisms to start out as single cells and then anti-entropically climb to dizzyingly greater heights of order (in the case of humans, to cell populations in the trillions built into intricate intercellular structures such as the eye, vasculature, and brain)?

And now, **David Buss**.

Date: Fri, 5 Jan 90 01:31:19 PST

Subject: Happy New Decade

Dear Steve,

Happy New Year, Happy New Decade, and (to a 1% approximation) Happy New Millenium.

I really am ready for nearly anything, given how suddenly the East Bloc has liberalized, the Wall has come down, etc. Anything seems possible. What next?

Next Millenium: Starships, communication with extraterrestrials and silicon-chemistried Earth mantle denizens, neural implants that will allow the visualization of twelve-dimensional objects, the abolition of poverty, sickness, war, stupidity... 4000 new scientific revolutions, the discovery that we live in a universe of 44 space-like dimensions, 7 time-like dimensions, and 3.4 glorg-like dimensions.

Bonzai (Japanese for 10,000 more) to you from Leda and me.

-- John

**Steve Gaulin.**

August 1990 (John Tooby to Steven Pinker):

Thank you for sharing Geoff Pullum's *The Great Eskimo Vocabulary Hoax*. It will get its own section in a half-serious project of mine -- a book whose working title is *100 Years of Anthropological Malpractice*. I have been collecting instances of gross professional incompetence for years now: all of the anthropological chestnuts that turn out not to be true, but maintain their presence in textbooks anyway as the intellectual commonplaces of the field. Samoan free sex and resultant lack of crime and frustration, the sex-reversed cultures like the "gentle" Arapesh (the men are head-hunters), the "stone-age" pristine Tasaday (a fabrication of the corrupt Phillipine Minister of Culture -- nearby villagers, dressed down as matriarchal "primitives"), the ancient matriarchies during the dawn of civilization, the fundamentally different Hopi concept of time, the cultures that everyone knows are out there where everything is the reverse of here, etc., etc.

One of the unifying threads will be that complete cultural relativism makes anthropologists far more credulous of almost any absurdity than almost any ordinary person would be, equipped only with common sense. (Casteneda's Don Juan novels -- which I really enjoyed by the way -- are in many textbooks as sober fact.) In other words, their professional "expertise" has made them complete and total gulls. Just as fundamentalism disposes you to accept accounts of miracles, being of the trained anthropologist faith disposes you to believe in any exotic account from Elsewhere. In fact, a lot of this nonsense is part of the standard intellectual equipment of every educated social scientist, providing a permanent obstacle to balanced reasoning about various psychological and social phenomena. I figure it will make me permanently unemployable, so I am not aiming to finish it any time soon. One of the frightening realizations from collecting material from this is how devoted anthropologists are to the central myths of their field. A litmus test of how attached someone is to something is what they will give up in order to keep it. To judge by the Mead/Samoa controversy, anthropologists are willing to give up consistency, science, logic, scientific epistemology, belief in an external world, etc., in order to keep their faith in the founding myths of cultural particularism and arbitrariness.

**Michael Gurven**

8-15-1997:

Dear Steve,

Leda and I went to our first baby class, and between that experience, our hospital tour, a software training session, and traffic school, I tremble for the Republic. On the one hand, I am reading up on ISDN to figure how to get a 1 megabit per second connection to my home computer, so I can tap into the accumulated wisdom of the species. Then I go to these classes, where the rate of information transfer is 1 bit per half hour. Leaving aside the nonsense in universities, the explosion of contentless training sessions and seminars is terrifying: if this is how knowledge is being transmitted, a new dark age is descending.

Here was how we spent the first two hours: Everyone introduces themselves to everyone else (what is learning without instant intimacy?).

We then break into groups, elect a secretary, discuss and compile a list of 6 things we all have in common (sample items: we are all having babies, we are all from Santa Barbara), and 6 things we hope to learn by the end of the course (the secretary pointedly refused to write down my proposed entry of "something, anything").

We then recongregated, and shared each group's questions (no answers, mind you). The German secretary noted that in their group, everyone was blond and had blue eyes.

We then saw a video with a ten-minute folk song lead-in, off-key, written especially for the occasion, about the wonderful sentiments of impending fatherhood (causing the teenage unwed mother to start crying), along with an endless montage of infants, parents, parks, butterflies, etc.

Now, having grown up in the 1960's and 1970's, I've heard some pretty bad music, but this rivaled Vogon poetry from *The Hitchhiker's Guide to the Galaxy* in true awfulness. If you are not familiar with Vogon poetry, it is said that the only known way of surviving being forced to listen to it, is to gnaw your arms off as a distraction.

Leda kept darting nervous glances at me, correctly suspecting that I was about to flee from the room. The video then went on to share in endless inarticulate hemmings the personal feelings of two expectant fathers about topics they knew nothing about (what it would be like to go through the birthing experience, what it would be like to be a father, etc.).

We then took a break for juice.

They passed out brochures for other classes and products, and ended by pointing out that each woman had a uterus and that is where the baby was. We then gave them a check.

I suspect that when I get ISDN up and running, I will be able to tap into similar seminars all over the planet.

Hope you are well.

John

David Pietraszewski (*Pea-tra-zoo-ski*)

March 2000 (John Tooby to Steven Pinker):

I find, to my embarrassment, that "dubious" honors that the edgy youthful me would have disdained now seem somehow pleasing in my midlife dotage. I'll confess to you that my true secret shameful ambition is -- in some distant decade, but before I die of old age -- to get an honorary degree from Oxford, so I can get one of their spiffy blue octagonal monastical hats to wear during graduation ceremonies when I hood our students. I find our square mortarboards humiliatingly undersided and undercolored. No wonder their empire was bigger than ours.

**Jordan Smoller**

August 2012 (John Tooby to Steven Pinker):

But back to me, the ever-fascinating topic. I had a very resistant case of progressive atrial fibrillation (I think it is a genetic syndrome that killed off my uncles and aunts in their 40's). I went through 20 drugs (including black box drugs so dangerous they hospitalize you when they start administering them, so they can burst into your hospital room and re-enact the Pulp Fiction scene of direct intracardiac injections when things go less than perfectly). I also went through an atrial ablation in 2008 that did improve me a bit for a year. But the thing is progressive, and in my case was relentless. ...I decided on a radical step of ablating my AV node, which passes the body's natural pacemaking from the atria to the ventricles, so that it essentially no longer transmits anything. It is radical because that means I am now almost completely dependent on a biventricular pacemaker to keep my heart beating—rather than the more normal arrangement, where it is a supplement and a regularizer. So, a la Kurweil, the Singularity has come, and I am now a Borg/Cylon artificial life form. I suspect my soul has left, but who notices these things?

**Larry Sugiyama**

**Dan Sznycer**

**Alvaro Fischer & Ximena Katz:**

The breadth of his knowledge, the sharpness of his mind, and his need to anchor everything on basic principles, scientifically consistent from the Big Bang onwards, still resonate with my own intellectual instincts. However, the best John I recall, enlarging his persona even further, was the one giving Margo Wilson's eulogy at the 2010 HBES meeting in Eugene, Oregon. It was so exquisite, so profound and beautiful, so humane, that even his powerful mind and scientific genius, admired by everyone, dwarfed under the subtle flow of emotions he was triggering in all of us.

Dear Leda and Nike, you know how Ximena and I love you, and how we also loved John. Our hearts and thoughts are with both of you right now. We hope the appreciation and admiration John generated in so many people, expressed in so many ways, will somehow alleviate the sadness and the struggles ahead, and enable you to make amends with entropy's victory this time.

**Miguel Eckstein and Maria Acosta**

John always was kind to me, even when I was new to UCSB. Always with a smile on his face and interested in it all. That curiosity! I see that many faculty 's flame to learn and explore fades as they get older. I even see it a little in my generation already. Not John. I loved that curiosity, that drive to dissect things and connect findings and theories at a deeper level. He honored that tradition of academics as real thinkers, that I fear we are losing.

In Argentina we use a phrase: "Ese model no se hace mas".. which translates to " they do not make those models any longer" . It originally was used to refer to old models of watches or cars that were made with a quality not encountered in the models today. But we now use it to describe those unique individuals that are special. I will miss John.

February 2000 (John Tooby to Steven Pinker):

We know the odds against human-type intelligence to be on the rough order of  $1/N$  (total number of species that has ever existed), or one over billions or more. Since intelligence (whatever it is) seems like an advantageous thing, the preconditions for its evolution must be very narrow and highly contingent, or it would have been busting out all over, like eyes, wings, camouflage, locomotion, etc.

If God constructed the universe to nurture intelligence, all I can say is that He (after being subjected to Naomi Wolf everywhere, I am in a backlash sort of mood, so I'll omit the She) -- He is incompetent on a scale so immensely wasteful as to make all of the Little Moron jokes making the rounds when I was growing up sound like descriptions of the Godhead.

Speaking of which, I am a bit cranky with Him over this senescence and death thing also, and not just the massive misallocation of time, space, and matter into a universe consisting of a vast wasteland of lifeless fields, particles, gaseous nebulae - - and, as near misses, lumps of rock. It seems like the work done by Hume must all be done over again: Hume argued that if, as the design theologians argued, we can infer the properties of the maker from the thing made, then would an infinitely perfect, infinitely intelligent, infinitely compassionate being make a machine that worked for a while, and then gradually fell into disrepair, until it collapsed?

John, of course, knew the answer to his poignant question. Death is inevitable because organisms slide toward a state of maximum disorder. Natural selection pulls against the slide, but only for so long. Senescence is inevitable because whenever selection is implicitly faced with the choice between adaptations that would build vigorous young bodies at the expense of declining old bodies, and adaptations that would make the organism equally robust throughout its life, it favors the former.

And there's a reason for that, which, befitting an occasion remembering John, lies in a fundamental property of the universe, the asymmetry of time. Any organism, no matter how strong, faces a nonzero chance of accidental death at any point in its life. If a lightning bolt kills a forty-year-old, there will be no fifty-year-old or sixty-year-old to worry about, but there will have been a twenty-year-old and a thirty-year-old. Any bodily feature designed for the benefit of the potential over-forty incarnations, at the expense of the under-forty incarnations, will have gone to waste. So genes that strengthen young organisms at the expense of old organisms have the odds in their favor and will accumulate over evolutionary timespans. The enfeeblement of age is the price we pay for the vigor of youth.

And this may answer a question we all can't help but asking, despite knowing we are asking it in the wrong domain. Entropy finally overtook John, as he above all knew it would, but why so soon? Why could we not have had John for another decade or more? We know that a "why" question is sensibly asked about human artifacts, not the natural world, but the tradeoffs in natural selection may offer insight and solace. John's body surrendered to disorder too soon, but while he was with us his brain reached dizzying heights of order. His mind ran hot and ran bright, and illuminated the world to the enlightenment of us all.