My Last Lecture; 
or, What I Might Say in My Last Lecture if This Were It

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Recently a small book called The Last Lecture, by Randy Pausch, surprisingly dominated the best-seller lists for over a year. Pausch was a computer scientist at Carnegie Mellon University who found himself in the summer of 2007 faced with a diagnosis of metastatic cancer of the pancreas. That is about as terminal a diagnosis as one can get. He was only 46 years old, with three young children, a loving wife, a flourishing career, and six months to live. In fact, he held on for a bit more than a year, and died on July 25, 2008. He seems to have faced his grim fate with grace, remarkable good humour — and extraordinary creativity.

Carnegie Mellon had a tradition of inviting speakers to imagine what they would say if they were to have just one last chance to say what they really thought was important. Pausch gave his last lecture (which in fact was not quite his last lecture) just about a year ago today. With the help of the writer Jeffrey Zaslow the lecture was developed into a book. I read Pausch’s Last Lecture a few weeks ago, and it has gotten me thinking what I would say were I to have to give a last lecture myself. Unlike Pausch I am not (as of this writing!) faced with a terminal diagnosis, but I know that, like everyone, I am sentenced to an inevitable death that will come sooner or later, from old age if nothing else, even if I cannot predict it in advance as precisely as could Pausch. I might get hit by a bus tonite, and maybe this really is my last lecture. Or maybe I will live to expound for many more years. But in either case, I think it is a very good exercise to ask yourself what you would say if you had just one more chance, one more 40 minute time slot, in which to say what you really stand for, what you really think is important.

I’ll first comment briefly on Pausch’s book. There is much wisdom and sound practical advice in it, and I recommend it, especially to people who do not want to spend their old ages making excuses for why they did not do with their lives what they wished

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1 This lecture was meant to be a user-friendly introduction to the University of Lethbridge Philosophy Speakers’ Series for 2008/9, and it was read to a remarkably speaker-friendly audience on September 19, 2008. I am very grateful for the many insightful comments and questions I received from this audience. Thanks are due also to the University of Lethbridge for financial support for our lecture series. This paper is copyright © Kent A. Peacock, 2008, 2010; all rights reserved. I continue to revise this lecture, and the footnotes to it keep growing, as I keep on trying to clarify my “last thoughts.” This is the revision of February 20, 2011.

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they had done. If I have any criticism of *The Last Lecture* it is that it is a bit too much of a tear-jerker for my taste. However, Pausch was faced with death at a very vulnerable time in his family life, when his children were all younger than ten and there must have been nothing, just nothing, that he as a parent could have imagined as more important than their welfare. I have myself been in that place where my kids’ every broken crayon stub was a sacred relic. The thought of how hard it would have been for *them*, had I died when they were very young, would have been unbearable for me. I therefore have an inkling of how Pausch felt, and I forgive him when he sometimes lapses into sentimentality. In the end, Pausch reveals that he did his last lecture mainly for the sake of his children — so that he could speak to them as an adult (if only one-way) when they at last became adults. He said, “I was trying to put myself in a bottle that would one day wash up on the beach for my children.” This is a lovely sentiment, but I don't think I need to do that for my kids. My two sons are now grown men. Although they still have much to learn, they are strong, smart, and courageous; and they don't need one more lecture from me.

In a larger sense, though, I really am doing this for my family, if I think of the whole human species as my family or extended family. In this last lecture or virtual last lecture, I therefore ask myself what I could say (if anyone was listening) that could actually help *H. sapiens* have a future worthy of its promise.

But before I get into the heart of the matter, let me say just a little about religion and spirituality, since those subjects always seem to come up when one talks about things like terminal diagnoses. Honesty requires me to declare right up front that I regard the Christian doctrines of redemption and salvation as entirely fanciful, and I regret the fact that saying this may distress some friends and relatives whom I rather would not distress. Although there is much moral wisdom and some very great poetry in the Christian Bible, I personally don't think that there is the slightest possibility that the core doctrines of Christianity are true (that the world was created either figuratively or literally in six days by a great benign architect, that his son Jesus performed various miracles, that this son died for our sins, that he rose on the third day, etc.). These claims are in my opinion on a par with the myths and legends of other religions — and while such myths and legends may have powerful symbolic, poetic, or philosophical meanings there is no real chance that they are literally true. Personally — and I emphasize that I speak personally — I find the Eastern doctrine of reincarnation more *emotionally* plausible than the punitive Christian one-shot deal where you get an eternity in the lake of fire if you don't buy into the Jesus franchise (or protection racket). I like the notion of a cycle of incarnations as a learning process in which, as you ascend the long ladder to transcendence, you pause to help those behind you. That makes emotional sense to me. However, I am well aware that the factual evidence for reincarnation or any kind of survival after physical death is slim to non-existent, and I have to conclude that the most probable outcome of the physiological death of my brain will be the utter and complete extinction of my
consciousness, personality, thoughts, and memories, just like an old light-bulb burning out. I think it is most likely (though of course I cannot prove this with anything approaching mathematical rigour) that the only kind of lasting life after death worth mentioning is through our good works, if any.

Nothing I have just said should suggest to you that I am not religious. It is possible to be religious without having faith in any particular doctrine or going to any particular church; these are entirely separate questions. The Latin root of the word “religion” (religio) means literally “reconnection.” I take being religious to mean having a sense of connection with something larger and more important (in ways that might be tough to define) than oneself. In that sense, I am quite religious. I just try to not put much stock in things that I don't have evidence for.

Yes, I need evidence; faith won't do. And why is that? You may find my answer surprising: it's because I love my children and my family and extended family, and I think that it would be utterly irresponsible of me to give advice and make decisions about anything based on mere faith when the safety and future of my family is at stake. I've spent a lot of time around engineers, scientists, construction sites and design offices, and I have what some of my philosophical colleagues might think is too much of an engineering attitude. I'm not a professional engineer myself, of course, but I used to teach engineering law, including the code of ethics, which is actually mandated by law and is not merely some sort of public relations gesture. I know that no ethically aware engineer would design a bridge on the basis of faith; bridges designed on faith tend to end up in the gorge. Like a good engineer I feel that I have the responsibility to take my best shot at figuring out what will actually work to make the world a safer and better place for my extended family. And that means, above all else, no faking it. I think that it is irresponsible to believe in something just because it comforts you to do so. By the way, Randy Pausch said that the most important piece of advice he could give for living a fulfilling life is tell the truth. So if I set out on a long drive through the mountains with my family, I have the tires and brakes checked first — I don’t just rely on faith that they will hold up. Similarly, as we set out on the long journey through life we need to be like a suspicious old mechanic and keep on checking the tires and brakes on the systems of concepts by means of which we navigate the world, because it is those systems of concepts that keep us on whatever roads we travel.

I'm an old-fashioned Renaissance humanist refracted through the Fifties and Sixties. I grew up in a household where the people to be admired the most were the great artists, discoverers, and builders — those who improved the world in tangible ways or who taught others how to do so. I was taught to emulate a combination of virtues that would seem odd to some—competence, courage, a relish for hard work, unforced generosity, a deep appreciation of natural and artistic beauty, and a strong tendency to heresy and insubordination. My parents and other adults close to me displayed a withering contempt for pomposity, but I was also taught to be entirely comfortable with
the natural arrogance that comes with genuine ability and accomplishment. Another important influence was the looming shadow of the world war that had just passed: although I was not born until seven years after WWII, my parents and virtually everyone of their generation were survivors of “the war” and I could hardly help but be imbued with the sense of tragic gallantry that characterized those years.

Then as a teenager I spent probably too much time reading science fiction. From a very impressionable age I steeped myself in the only form of literature which (as Spider Robinson put it recently) takes it that humanity has a future. Much science fiction is trashy adolescent fantasy, but the best of it teaches its readers to think on the largest imaginable scale: writers like Arthur C. Clarke were not embarrassed to extrapolate the career of our species a billion years or more into the future. And I was, of course, also a child of the Sixties. Despite Vietnam, the assassinations of great leaders, and the looming threat of nuclear war that always hung over those years, the Sixties were a time that now seems almost ludicrously optimistic. The space program had a lot to do with this optimism. I watched every launch on TV that I could from Project Mercury onward, and stayed up all night when Armstrong and Aldrin landed on the Moon on July 22, 1969. I have never forgotten the words of Robert A. Heinlein (who was interviewed by Walter Cronkite that night) proclaiming that the Moon landing was the most important event since humans learned to talk, and that the human race is going to spread throughout the universe. “We’ll be at Proxima Centauri before you know it,” he said; I still believe him.

Then at last I learned something about biology, evolution, and ecology, and I began to think of humanity as a sort of evolutionary experiment. It is of course scientifically wrong to use intentional language when talking about evolution, but if I could be allowed to speak ironically, one might say that after 3.5 or more billion years life “decided” to see if intelligence would pay off. The human experiment therefore is the crazy idea that there could be intelligent life on a small planet in this vast universe. More precisely, it is the idea that intelligent life might not arise merely as a one-off fluke, but could last for a very long time and indeed flourish in a way that would be, dare I say it, intelligent. I take that a large part of the job of philosophy, my own trade, is to say what that would be — that is, what it would be to live intelligently.

One of Canada’s most perceptive writers, Ronald Wright, described humans as Ice Age hunters “only half-evolved toward intelligence; clever but seldom wise.” Clearly there is no guarantee that the best in us will outweigh the worst in us, and the worst in us is pretty bad, as our long history of senseless warfare, genocide, fanaticism,
Let me say more about the apparent *improbability* of the human experiment. The great Italian-born physicist Enrico Fermi, creator of the first nuclear reactor and a major contributor to quantum mechanics and particle theory, was famed for his almost magical ability to make accurate back-of-the-envelope guesstimates. He once worked out the surprisingly high probability, if one makes certain apparently reasonable assumptions, that life from other worlds should have visited us by now. And yet, there is still no completely reliable evidence that intelligent aliens have yet visited this planet or even that they exist on other worlds. This led Fermi to pose his famous Question: “Where are they?” 9 (Virtually all discussions of Fermi’s Question take it for granted without discussion that the beliefs of flying saucer buffs are not well established. 10)

Fermi’s Question is subtle and difficult, and I’m not going to try to answer it here, save to note that all of the facile answers to it are almost certainly wrong. Although it appears to have no immediate practical consequences, it is a surprisingly important question since the fact that we cannot answer it means that there must be some major facts about the nature of life or the nature of the universe of which we do not yet have the slightest inkling. I think that there is one pretty reliable conclusion we can distill, however, from the large literature on the possibility of life in the universe: while simple life-forms such as bacteria must be very abundant throughout the universe, evolutionary experiments such as species capable of creating a Taj Mahal, a Bach Chaconne in D Minor, or a vaccine against a deadly virus are *probably* quite, quite rare. 11

The physical universe is so vast that one runs out of adjectives trying to suggest its sheer vastness. It wouldn’t care one whit if we go extinct tomorrow morning.

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9 I can’t resist quoting the famous answer by Leo Szilard to Fermi’s Question: “They are among us, but they are disguised as Hungarians.” Szilard was, of course, Hungarian.

10 My thinking about UFOs has changed since reading Leslie Kean’s *UFOS: Generals, Pilots, and Government Officials Go on the Record* (NY: Harmony, 2010). I’ve been following the UFO literature since I was taken in by George Adamski’s laughably fraudulent books many years ago. (Hey, I was eleven.) Much of this literature is unprofessional, shoddy and self-indulgent. However, Kean’s book has to be taken seriously. Read it and draw your own conclusions. I am still not convinced that there is sufficient evidence to accept wholeheartedly the enormously important proposition that there have been alien visitations to our little planet. But Kean has convinced me that the evidence now available is surprisingly better than the conventional wisdom would have it. It could well be that the answer to Fermi’s problem is very simple: his estimate that it is a near-certainty that the aliens are already here may turn out to have been simply right, as so many of his estimates were.

11 I will leave it as an exercise for the student to show that this likely fact, by itself, is not the answer to Fermi’s Question. For a sobering take on Fermi’s Question, see Robert A. Heinlein and Spider Robinson, *Variable Star*, Tor Books, 2006.
However, I think the extinction of our species, especially in the near future, is something that would or should be regretted by most thoughtful humans. Based on values that reflect and arise out of the highest levels of human sentience, it would or should be very regrettable to humans if the human species fizzled out or blew itself up before it had a decent chance to prove its abilities. That would be like a case of a very bright teenager, full of promise, who kills himself or herself in a reckless accident (something that happens all too often); there would be just nothing good about it from the human point of view. Indeed, I often think of the human species as being like a teenager with a lot of potential who is growing up in a very tough neighbourhood and hasn’t yet quite learned how to behave. I submit that it would just be a damned shame if we went extinct before we find out whether we can develop a degree of wisdom commensurate with our cleverness and toughness. Even if the universe doesn’t care, we really ought to. And the sheer improbability of the human experiment does not necessarily imply that it is unlikely to last much longer; rather, it could just as easily mean that we have a lot going for us, all appearances to the contrary. We’ve come this far against very long odds; although there is no question that luck played a part, could it have been purely a fluke?

Here at last is what I stand for: I’m dedicated heart and soul to making the improbable human experiment work; and all of my research, writing, and teaching is directed to that end in one way or another. It would take much more than one forty minute talk to explore the specifics of what it would take to accomplish this large aim, and I certainly don’t have it all figured out anyway. But if this is to be a last lecture, I think it is apropos to conclude with some brief remarks on two virtues — optimism and the willingness to learn — which I think are among the most important aspects of what I will call the pragmatics of survival.

It is not too hard to convince yourself that even if we do not destroy ourselves with nuclear weapons, we will render ourselves extinct in the fairly near future via some sort of self-induced ecological catastrophe. And of course this might be right; it is clear that right now humanity is approaching one of the most hazardous phases of its existence, and the better-educated one is, the more one tends to be aware of this uncomfortable fact. Even as we are too often cocksure and careless, those who are the most caring, the most critical, the most careful, are often too unsure of their own abilities. At the same time it seems to me that some people cling to pessimism like a security blanket; it gives such a lovely excuse for inaction, and I suppose it is a relief, in a way, to relax to what one perceives as inevitable.

Just as it is irresponsible to proceed on the basis of sheer faith, it may be irresponsible (in a subtler way) to indulge too much in pessimism. It is not merely that

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12 See, for instance, Peter D. Ward, *Under a Green Sky: Global Warming, the Mass Extinctions of the Past and What They Can Tell Us About Our Future*. Smithsonian Books, 2007. This important book reports very recent research that demonstrates that we really, really ought not to allow the atmospheric carbon dioxide concentration to rise much above 1000 ppm. (As of this writing, it is around 391 ppm and increasing at well over 2 ppm/year.)
negative prophecies too often become self-fulfilling. Rather, even though there is almost certainly no big daddy in the sky who looks after us, it happens to be the case (and this is a very important metaphysical fact that we still do not fully understand) that the universe is so constituted that things can be made to work, often in surprising ways. We’ve all heard of Murphy’s Law, the cynical pronunciation that “if something can go wrong it will.” In fact, those who have some experience with actually accomplishing difficult things in the real world know that there is also an odd sort of anti-Murphy’s Law in operation, even though it is can be hard to access or even to put into clear words. This tendency of things to work is certainly not infallible — things often go wrong and terrible disasters do occur. But it is just amazing what you can pull off if you are well-prepared and approach things with the right (but so hard to define) attitude. I’m not sure whether even now I know precisely how to define that winning methodology, but a very important component of it is simply a willingness to learn. This is a fact that appears in studies of ecological history. Jared Diamond, in his recent book Collapse: How Societies Choose to Fail or Succeed, presents good evidence to show that those few societies which worked out ways of life that were relatively sustainable (such as Tikopia and Tokugawa Japan) can be distinguished from the majority that failed (Easter Island being the paradigmatic case) by their willingness to learn from their mistakes.

A well-known weakness of optimism is that it is often coupled with self-deception. The pessimist somehow seems to be more honest and it has been said that no one who is intellectually honest can fail to see the human condition as essentially tragic, not triumphant. Yet, as I have hinted, pessimism is a kind of self-indulgence as well.

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13 One anecdote has it that Murphy’s Law was named after an aerospace engineer who allegedly had a tendency to get his wires crossed. See Wikipedia, which cites Nick T. Spark, A History of Murphy’s Law, 2006.

14 Oh, okay, I’ll try to list some of the other habits apart from dogged persistence that in my experience do seem to conduce, though never infallibly, to activating that mysterious anti-Murphy factor. One of the most important is simply to do your goddam homework (as my uncle Grant A. Whatmough would have put it in his uncompromising idiom). I just learned a lovely Latin phrase that captures this idea: Amat victoria curam: victory loves careful preparation. (This phrase was used in the recent movie The Mechanic, in which Jason Statham plays an unkillable hitman.) Another is to maintain a constant openness to simplicity, to seeing the obvious, while at the same time being infinitely painstaking and patient with those details that really matter. Maintain an almost Cartesian methodicality, and never deceive yourself about whether or not you have completed a step of your task as you intended it to be completed. (This part is incredibly important.) Sheer persistence has a lot to do with getting things to work, so long as it is intelligent persistence. When faced with an apparently intractable problem, think laterally, not linearly. (Creative thinking is not just a miracle; one can try to think that way. See any of the numerous writings of Edward de Bono on laterality.) Another is to not fear to buck the conventional wisdom: while what most people think is not always wrong, it is wrong often enough that it cannot be relied upon, especially in regard to problems that remain unsolved by conventional methods. Another is to not be blinded by what you think should be the case, but open your eyes to what is the case. And cultivate what is called in martial arts a “beginner’s mind,” which means maintaining a humble readiness to relearn and rethink everything you know, no matter how experienced or expert you may think you are. By the way, while browsing through amazon.com I just learned that there is a whole book called Breaking Murphy’s Law: How Optimists Get What They Want From Life — And Pessimists Can Too, by Suzanne C. Segerstrom, NY: Guilford Press, 2006.

Perhaps a resolution can be found in a remark by Robert Heinlein who once said that the way to live is to be optimistic in temperament, but pessimistic in policy. If you think it would be wonderful to see some spectacular scenery, then do go ahead and set out on a journey through the mountains — but check your tires and brakes first.

Randy Pausch never seems to have deluded himself; at no point, once he received the terminal diagnosis, did he kid himself that he would be delivered by some sort of miracle. And yet he never failed to brim with optimism. Of course, his optimism did not cure his illness, but optimism works in unexpected ways. For instance, his book has generated millions of dollars for his family, and on a wider scale it is, I suspect, inspiring many people to live in more creative ways.

To some extent there is a very simple statistical explanation for the efficacy of optimism: it increases the probability that you will keep trying to find new ways to succeed, even when the odds seem to be against you, and that increases the probability that you will succeed simply because you will sample more possible routes to success. But success will not follow from mindless repetition of a poor strategy. What works, if anything is going to work, is mindful repetition of effort, coupled with creative adaptation to the response of the environment. It is so, so important that we be willing to learn from our mistakes, and continually try to see our problems in new ways. So long as it is coupled with the right sort of practical thinking, being optimistic about the prospects for the human condition increases the probability that humanity will do well, while the pessimist risks missing a solution that is right under his nose.

The hockey star Alex Ovechkin recently noted that there is no mystery about why he scores so many goals: he shoots on the net every chance he gets. Of course, there was some irony in his statement since you have to be a pretty tough and ingenious playmaker to manufacture as many scoring chances as he does. It also helps if, like Ovechkin and the human species itself, you are born with a lot of talent. However, talent is a necessary but not sufficient condition for great achievement. Numerous highly accomplished people have insisted that hard work was at least as important to their success: Edison, for instance, famously remarked that he owed his success as an inventor to “one percent inspiration and 99% perspiration,” and Einstein said that success or failure in science is mainly a matter of character. But even talent and hard work are not enough; it is also critical that there be a social milieu in which talent can operate. Given, therefore, the demonstrated fact that the human species (or at least a subset of it) is extraordinarily talented, the problem is to identify those behavioral patterns and social structures that


17 Trudy Govier has suggested (in conversation) that a better word than “optimism” might be hope. I think I’m going to stick with optimism because it can be used in a sense that implies a reasonable (though perhaps conditional) expectation of success, while hope is something that is a little too close to faith for my taste.
allow human talent to flourish. This could well be the most important question bearing on the survival of the human species.

It is that magic combination of creativity and never quitting — a sort of dogged persistence combined with a willingness on the basis of evidence to change your mind about how to do what you want to do — which seems to be our best bet for preserving a world where our grandchildren and their grandchildren can frolic safely in the sun. And that is an aim — a realistic aim — of which I am sure Randy Pausch would have approved.