

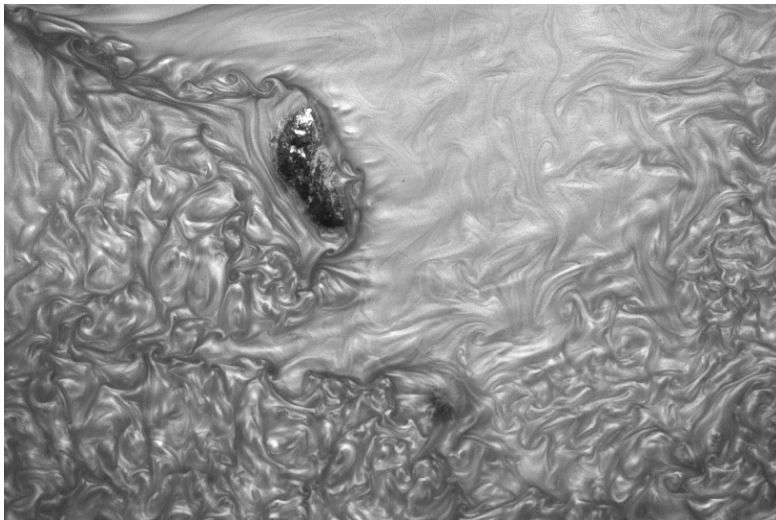
If we can catch a comet

Commencement Speech Fall 2014

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Thank you for the kind introduction. I am honored to talk with you all for a few minutes. First of all, let me congratulate both students and parents for this major achievement.

It has now been 40 years since I was in your shoes, going through a commencement ceremony. I remember it being very hot... I'll start by laying out my main theme. In early October Scott Simon on NPR was summarizing the lives of two important journalists and owners of major newspapers who had recently passed away. Paraphrasing, he said they were "people who enjoyed what they were doing, and who made their life's work stand for something". I want you to do that. Make your life stand for something. Now I have no magic recipe for this, but I do know that what you have just accomplished, graduating from this university, is a fabulous start.



I have no recipe...but I do have a few thoughts. I first ask that you revel a bit - in your own accomplishments, in those of humankind, and in the beauty of the natural world around you. You need to look up to see this, to witness the world you live in and that rips by as you travel through it in a car, train or plane. Live a life in which you are truly engaged. There is no sleepwalking through life.

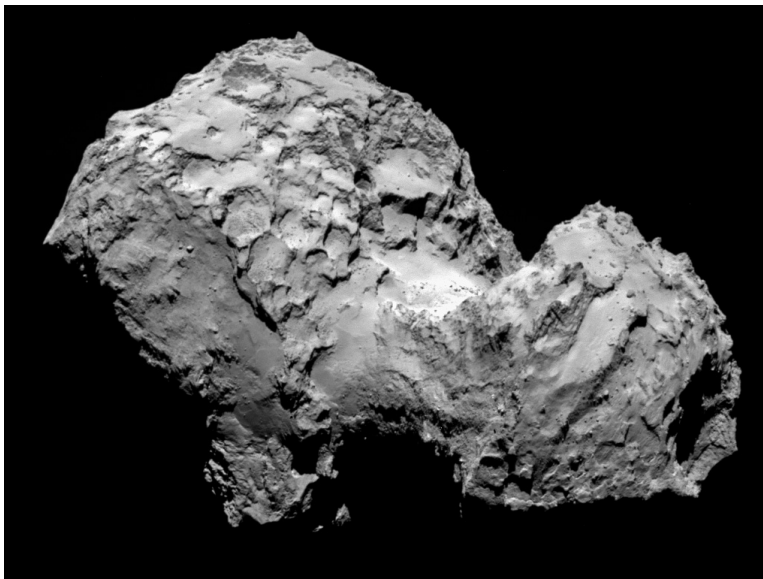
Keep asking questions – that is the best way to keep thinking – and some of the time these should be big questions, important questions.

A couple Sundays ago, I was walking our dog around Boulder Reservoir north of town. On this particular day there had to have been 50000 Canada geese squawking on the lake. As I walked, the sounds changed suddenly and the patch of goose-chaos on the lake erupted into the sky and organized itself, incredibly quickly, into strands and individual V's of 20 to 50 birds each. For a moment it looked like a black lace tablecloth being pulled up from the lake... ..before the V's headed off in their different directions and the sounds declined to a more typical Sunday morning murmur.



Take time to revel in the beauty of this world. And let it ask questions of you. Why V's? How do those geese take off simultaneously from the lake? You have to look up to see these things, to let Nature ask questions of you. Look away from your cell phones; listen not to the earphones but to the occasional cacophony, and the even more occasional quiet of the real world. Look up and keep asking questions.

Also revel in the accomplishments of humankind. I grew up in the Apollo era – and listened to all the launches on the radio, no matter what time of day, as we slowly built our way to the Moon. Yes, that target and the excitement of it is long passed. But it is not over, folks. Can you imagine that we (in this case the European Space Agency) actually caught up with a comet, half a billion miles from here. This year. The comet is only as wide as the distance from here to the flatirons! We chased it for 10 years, caught it going 40,000 miles per hour (that's 3 seconds to Denver), and are now accompanying it as it passes its nearest approach to the sun. Now that is very, very cool. It makes me proud to be a human, living now. And it makes reading



Antoine de Saint-Exupéry's *The Little Prince* all the more relevant (although as you recall he lived on an asteroid he called 325, and not on a comet – I was re-reading it last night, and you could do me no greater honor than to re-read it yourself soon). Such accomplishments are the products of the long-term collective dreams of many people, the science that backs up those dreams and the engineering that puts them into action, and the citizens and politicians who vote to put

the resources behind the programs. And lest I forget to remind you, CU plays a big role in space exploration.



OK. Back to Scott Simon's comment about "people who enjoy what they do". This means every day stuff. It doesn't mean every once in a while – like on a vacation, or in retirement. You should seek to "do" something that you enjoy – if you do that you will be more likely to get up every day wanting to make yourself and the world around you better. I happen to love the early morning hours when few are up and about, the cars aren't sizzling down the street, and my light at the dining

room table that is my home office is the only one in the neighborhood. This is when I get to do what I love, exploring the origins of the patterns in Nature on our planet's surface, and the teaching of it.

This is not to suggest that you avoid those occasional adventures, those things you do to jostle life a bit – like climbing a mountain, or traveling to a new country. Darcy Thompson, who wrote a marvelous book called *On Growth and Form* about patterns in Nature, said, "Everything is what it is because it got that way". I can rephrase this to say yet more succinctly that "history matters". Geologic history. Human history.



History of a human. When you are my age, you too will "be the way you are because you got that way" – because you interacted with the people along your path, and had the adventures with them. Adventures are a wonderful way to count time in your life. They are the punctuation that keeps life from being a run-on sentence that we are all taught to avoid. A friend of mine calls adventures "wide aperture" experiences – in analogy with

cameras, which when they are in wide aperture mode pull in the maximum amount of light.



In thinking back to my own graduation, I can say with certainty that my “wide aperture experiences” had only begun. They started a week after graduation when I was hired as a shepherd and put in charge of 1500 sheep above timberline in the San Juan Mountains in southern Colorado for 3 months. Now, how in the world my parents dealt with this I have never asked. Thankfully, for whatever reason, they gave me complete freedom to choose my own way. They took to the bleachers to watch. No doubt they cringed as I careened from herding sheep to attempting graduate school to irrigating a square mile of grass in NW Colorado, to traveling in Africa with a pack full of cameras ...the list goes on...for years... Maybe my folks were simply too busy to worry. But I bow to them for their implicit support. For

those were formative experiences. They gave me the sense that I could do many things. And fail at several. By the time I figured out that I craved an academic life, I had already under my belt a number of adventures, stories to tell, images to hold onto, and most importantly the confidence that I could do a lot of things.

And, long story short, after a PhD, and teaching in California for 15 years, I got to come back to Colorado to teach in 2003, partnered with my wife Suzanne who is a professor in Geography, and with twin daughters who are now sophomores in Boulder High up the creek a bit from here. So I amnow... a scientist, a geologist, a professor. And if I have a legacy, if my life “stands for something”, it is through teaching of graduate students who are now engaged in research and teaching all over the world, or undergraduates who are simply a little better informed as citizens of our planet. It is truly an honor to teach about our planet, and to work with students like you.

As an earth scientist I would be remiss if I were not to point out that ours is a planet that humans are changing in every way... Humans now move more dirt on this planet in a year than the rest of Nature moves, ... and you should already know that the greenhouse gases have risen beyond the levels the planet has seen in the last several million years. *I would like to think that if we are smart enough to catch a comet half a billion miles from here, that we are wise enough to be the shepherds of our own planet.* A major challenge your generation faces is to learn how to adapt as the

planet responds to these human-inflicted alterations, and to reduce any further alterations.

While these planetary scale problems are indeed daunting, paralyzingly so, and their solution in the end will require a collective willpower that my generation appears to lack, you can all make a difference, acting as individuals. You can ride your bike to work. You can put up solar panels on your house. You can vote. You can write, you can inspire others through your art. You can teach.

I would also like to think that if we are smart enough to catch a comet, we are compassionate enough to acknowledge that all people of the world, men and women of all nations, deserve equal respect. I was listening to Garrison Keillor's Prairie Home Companion on my way to walk the dog on that Sunday morning. It was the week after Obama gave his immigration speech. Keillor introduced his song saying, "Here are a few thoughts on immigration". It was a beautiful song about the need for compassion for our fellow humans, those who are working for us in the fields, or making the beds for us in the hotels, whose labors we quite literally live off of. This issue is amplified in tensions within our own nation, in wars both civil and international, and in epidemics that threaten to go global. Here too I do not have answers. But I hope that you engage, look up from your day-to-day duties and face these societal issues head on, with compassion, and the will to listen to and to respect the views of others.

Ok. My final points. How do you stay engaged? In my experience it is very easy to be ping-ponged about by life, doing what is easiest, or just what happens to happen because you are in a particular place at a particular time. It is actually hard to take command of it, to force yourself on life rather than react to it. You have just spent 16 or more years in the ping-pong mode, largely within the bounds of school... Now it is your opportunity and your challenge to take charge.



And this is not simple. You actually sort of have to have a plan. And to plan you have to think. I find that one of the greatest challenges in this noisy world is finding the time to think, really think, and to ask these larger questions? Most of the time you don't. But you can file information and inspiration away to be brought back up when you do have time. Discover heroes whose lives you wish to emulate, and read about them. Find wise

people and listen to them; read the wise writers and poets. Listen to Ted talks. The opportunities abound. This loads the brain, what Agatha Christie's Hercule Poirot called the "little grey cells", with images, scraps, puzzle pieces. These are your note cards. The jostling of these notes into something coherent, like a plan of action, might happen on a run or on a bike ride. I actually find that pondering of the broader issues is best done in the quiet of a mountain trail, where my mind can better wander and these puzzle pieces can at least have a chance of falling into place. Make the time for that to happen.

So, again, congratulations. Go forth into the world and make a difference. Find something you like doing, and make your life's work stand for something. We will be watching you with the greatest of hope that you will do just that. We need you.

Thank you and take care.

[image credits: Comet 67P, imaged by Rosetta spacecraft, European Space Agency; all others: Robert Anderson]