

# Commencement Address

Computer Science Division  
The College of Letters and Science  
University of California, Berkeley

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## 1 Introduction

Good evening, graduates! I am honored to have the opportunity to address you today.

First, let me say that you look fabulous. It is remarkable to look out at you – at this diverse, independent, brilliant collection of Berkeley’s best – and see you all wearing identical, formal black gowns. What were we all thinking when we got dressed this morning?

We were probably thinking that today is a ceremonial day. These formal *commencement exercises* are a marker, a milestone in your lives. They form an opportunity to reflect and consider the past years at Berkeley, and to contemplate the new life that “commences” now.

But why the ritual dress? Why the pomp and the circumstance? Why will I be addressing you today in this high holy tone, and not the off-the-cuff board-scribbling you may be used to from my classes? (Why all the rhetorical questions?)

There are good reasons for all of this ceremony.

## 2 On Ceremonial Time

The philosopher and historian of religion Mircea Eliade contends that time has two components. The first, which he calls *profane* time, is the time we perceive in our routine lives: the time of school, of business, of the daily news. Profane time is linear: it is the continuing, inevitable, ineluctable march of events. It is the sequence of actions and corresponding reactions. It is the reality that constrains and defines our practical lives. Your careers – and recall that “career” is a verb meaning “to go headlong at top speed” – your careers will take place in profane time.

Today is not a career day.

The second kind of time is what Eliade calls *sacred* time: the time of ceremony, of ritual, of myth and magic. Sacred time is cyclical; it is reactualizable. By regularly setting aside times for ceremony and ritual, we create a different kind of time, which eludes the inevitable march of events, and exists outside of the linear, profane time. The philosopher A.J. Heschel speaks of ritual as a persistent *architecture* in time – think of commencement day as a lofty skyscraper in time, one that no earthquake or airplane can bring down. Eliade says that sacred times like today are a way for humanity to protect itself against what he calls the *terror of history*: certainly a “timely” metaphor in today’s world.

So today is a ritual day, an academically sacred day. Take a moment, look at your friends, colleagues, teachers and family, and admire this gorgeous, unshakable time you are experiencing.

### **3 Reflection and Planning**

I believe that sacred time should inform and inspire our experience of profane time, and not serve merely as a safe haven. So I would like to use some of our sacred time today to reflect on the path you have followed here at Berkeley, and the road ahead.

#### **3.1 On An L&S Degree in Computer Science**

You chose to study Computer Science, and to do so in the College of Letters and Science. I salute you for both decisions.

##### **3.1.1 Computer Science**

As computer scientists, you are uniquely trained among all scholars to utilize the complementary resources of logic and information. You have learned how to turn conceptual skills into active programs that can change the world. It is hard to imagine a more profound and relevant field of study. I say to you: Well Chosen! Of course like all choices, this one can serve as a blessing and also a curse. I suspect you already want to reprogram the world: inefficient queues at the supermarket, bottlenecks in the highway system, irrational and destructive behavior on the part of individuals and nations. The compulsion to debug the world is unlikely to leave you, and may occasionally be a source of frustration. But I encourage you to harness your talents toward fixing the world in ways both mundane and far-reaching. Our world is perennially in a beta release. I wish for you great wisdom in prioritizing the bug list, and success in integrating your changes into the main branch.

##### **3.1.2 The Liberal Arts**

I also salute you for transcending geekdom – one might argue I just demonstrated my own inability to do so – for transcending geekdom by training yourselves in the liberal

arts. There are other ways to get a degree in computer science, but there is in my opinion no better way to do so.

The notion of the “liberal arts” is due to the Greeks, who had 7 specific arts in mind as pillars of wisdom: the *trivium*, consisting of the verbal arts of logic, grammar, and rhetoric; and the *quadrivium*, consisting of the numerical arts of mathematics, geometry, music, and astronomy. There was to have been a quiz on these seven topics on the way out. But in the 16th and 17th century, the notion of liberal arts was reinterpreted as the *arts of the liberated*: the arts of freedom. In this later conception, the arts of survival – including war and moneymaking – are enslaving necessities. The liberal arts are for those who are free to make the best and noblest use of their time. Many of your classmates in Soda Hall were not “liberated” as you have been; I congratulate you on seizing the opportunity to learn broadly and well.

## 4 Reflection and Planning

I trust that you used your enrollment in the College to rub shoulders and brains with thinkers of various stripes. This is one of my continuing joys on this campus. I recently had the opportunity to attend a lecture by a linguist here at Berkeley, Eve Sweetser, who spoke on the subject of time, and how time is represented in language – and hence in thought – across cultures. Cross-cultural conceptions of time: a particularly apt topic for a ceremonial day here at Berkeley.

I alluded before to linear time, to reflecting on the path you have traveled, and on the road ahead. Sweetser observed that this conception of time as a linear march from the past (behind us) to the future (ahead of us) is not a universal concept. In the high plains of the Andes, speakers of the Aymara language routinely gesture forward when speaking of the past – further forward meaning further in the past. Sweetser contends that these cultures use a different metaphor for time: that the Unknown (the future) is invisible, and hence behind us where it cannot be seen; the Known (the past) is visible, in front of us, but receding.

This metaphor is especially suggestive on this day, when we stop to consider the past and plan for the future. Your time at Berkeley is before you, in view. Take the opportunity to observe it while it is at close range. Consider images from these last years. For example, some academic images:

- sleepless nights in the basement of Soda Hall
- refueling yourself with Berkeley’s finest health food (Top Dog? TC Garden?)
- the sudden crystalizing in your mind of a new concept: perhaps it was recursion, diagonalization proofs, or semaphores

And recall some emotional images, because college is typically an intensely emotional time:

- your arrival on the Berkeley campus
- the feeling during vacation back home that you are out of place, and more “at home” at school
- falling in love

These kinds of images – intellectual, emotional – are an integral part of your personal college experience, of your youth and growth. Store them. Index them. Back them up.

Think back on your time at Berkeley before you move ahead. Or, in Aymara terms, look both immediately and deeply into the past before you back blindly into the future. As usual, the professor is mixing metaphors (literally in this case), and seems to be trying to confuse you. But the point stands: now is the time to consider your personal lessons, triumphs, and setbacks here at Berkeley. As you do, consider them from multiple viewpoints, with the diverse tools and outlooks you were exposed to as a liberal arts student here at Berkeley.

## 5 Parting Indirection

I have been given this last opportunity to address you as a teacher, and to try to give you “direction” on the invisible, unknown “road ahead” (or behind). It is hard to give direction through the invisible.

A famous lesson in computing is that most problems can be solved by a level of *indirection* ... so rather than direction, I give you an indirection instead. Before you leave, I pass you a pointer: a reference to what you learned here at UC Berkeley, in and out of the classroom. Your experience at Berkeley will always be a major part of your knowledge base, your semantic model, your FAQ. For each of you it is different, so I cannot broadcast the experience, just the pointer (hence the required level of indirection!) By all means, preserve the data at the end of that pointer, and reference it frequently! And of course expand upon it. May it serve you well in your career and your other pursuits.

## 6 Closing

But enough discussion of the grand sweep of your lives, of past and future, of linear, profane time. Let us return to sacred time. Let us return to this beautiful, magical day, to this shining, unshakable skyscraper in time. Today is indeed a ritual day. So let me close with a ritual invocation for commencement days, recited across campuses and across the years:

Hail Graduates! I welcome you to the company of educated men and women.