

The Herbert A. Simon Award for Teaching Excellence in Computer Science, established in 1986, is awarded annually by the School of Computer Science to acknowledge excellence and dedication to teaching by a faculty member in the School.

This teaching award was established in honor of Herbert A. Simon, Richard King Mellon University Professor of Computer Science and Psychology, scholar and teacher, who was profoundly influential in creating the Department of Computer Science and the School of Computer Science. He imbued a standard of excellence in both teaching and research in our university, one worthy of emulation.

2007 Herbert A. Simon Award for Teaching Excellence in Computer Science:

Manuel Blum

Bruce Nelson University Professor of Computer Science

One heuristic that has been of first importance to my work... [is] to make interesting scientific discoveries, you should acquire as many good friends as possible, who are as energetic, intelligent, and knowledgeable as they can be. Form partnerships with them whenever you can. Then sit back and relax. You will find that all the programs you need are stored in your friends, and will execute productively and creatively... The work I have done with my more than eighty collaborators will testify to the power of that heuristic.

— Herbert A. Simon

A Word of Thanks for The Herbert A. Simon Teaching Award

1. I Love Teaching. I love the students and their energy, their puzzlement when they almost (but don't quite) understand, and their delight when they do. I love teaching because it gives me a chance to learn new ideas and to discover something new in the old ones.

I try to teach well because of the terrible lows I get when I don't, and the highs I get when I do. The highs and lows of research are at least as impressive, though in a different way. I'm lucky to be both teacher and researcher: that way, if one isn't going well, there's still a chance the other will.

2. A Sincere Thank You. I am enormously grateful for this award, and owe a big thank you to the students who nominated me and wrote supporting letters, and the judges who put their time into choosing among competing candidates.

I am awed by the quality and dedication of my fellow teachers, and astonished that I am considered on a par with them. This semester I taught an undergraduate algorithms course, 451. I am thankful to my TAs who did the really hard work in the course. They did everything except the fun part — the lectures — which I selfishly did myself. These really great TAs are Elisabeth Crawford, Michelle Goodstein, Virginia Vasilevska, and Brent Bryan.

I want most especially to thank my son, Carnegie Mellon Computer Science Professor Avrim Blum, for supporting my desire to teach his 451 algorithms course...his way. I've taught algorithms before, and I could have taught this course my own way. It would have been easier for me, but different, and not nearly as exciting. This course this time was based entirely on Avrim's ideas, his text, his homeworks, his schedule, his quizzes, his exams,....

Thank you Avrim! It blows me away how much information you manage to convey: roughly twice what I put out doing it my way. I like very much what you do and how you do it.

3. A Personal Note for My Students: Ever wonder what sort of students your teachers were? Most of them as you likely know were at the very top of their class. Not me, though I truly wanted to be up there. Trouble is, I had no idea how to learn, and no idea how to think. How does one learn a multiplication table that refuses to stick in your brain? How does one remember a date or a name? (If anyone mentioned mnemonics to me that suggestion didn't stick. I had to come up with the idea independently.) Finally, and most importantly, how does one solve elegant tantalizing mathematical problems? How does one even go about getting a handle on solving new problems? I didn't know.

Everything I learned came to me...slowly:

1st grade: The meaning of number. 3 apartment buildings versus 7 cherries: cherries small; buildings big. How could there be more cherries than apartment buildings? Oh wow! Counting doesn't necessarily have to do with size!

2nd grade: how to tell right from left? I write with my right hand! My first mnemonic.

High school combinatorics: How does one count the number of necklaces with 7 red, 5 orange, and 3 yellow beads? I should have developed a general method (formula?), and then tested my method of counting on special cases, like the trivial necklace with 1 black bead and 1 white bead. But that didn't occur to me...and it wouldn't until many years later.

College Freshman year: I got a D+ in physics, despite that I worked terribly hard at it. I worked hard but got nowhere until a friend, Bob Hertel, caught me hunched over my book, memorizing formulas. "You don't memorize formulas: you derive them when you need them...from first principles!" Oh my God, I didn't know that! Those words — from a peer — made all the difference to me.

College Sophomore year: A (different) friend offers a steak dinner to whoever can solve the problem* of the 5 shipwrecked sailors, the monkey, and the coconuts: how many coconuts? It took me a whole Thanksgiving to construct an answer. I was so proud. But the answer wasn't minimal. So no steak dinner. Only much later would I realize that to answer this problem, one best start small. Assume just 3 sailors, and if that's too many, try 2, or even just 1. Hey, that works for all those probability and combinatorics problems from high school too!

4. We are born into this world without a manual. It is our job to learn without one...indeed to develop our own unique and personal manual. It's a really great project. Good luck with it! And finally, good luck and best wishes for an exciting and enjoyable life.

— Manuel Blum, 2007

* 5 shipwrecked sailors gather up all the coconuts and agree in the morning to divide the entire stash evenly amongst themselves.

In the middle of the night, sailor 1 wakes up and decides to take his share. He divides the stash into 5 equal piles with 1 left over, which he throws to the monkey, then goes back to sleep.

Sailors 2,3,4,5 in turn wake up and do the same thing, each throwing the one extra coconut to the monkey.

In the morning, the sailors wake up, divide the remaining coconuts into 5 equal piles, with none left over.

How many coconuts?

First of all, he is a great lecturer who can keep your attention throughout the full class. Rather than just lecturing, he makes you feel as if you're rediscovering the topic as he guides you through it in an incredibly insightful manner.

He injects personality into lectures, often coming up with examples which feel relevant. He enunciates what steps in thought really are difficult ones, and thus...makes the material feel much more approachable.

He is funny, articulate, and taught algorithms in a way that was interesting to me...His greatest strength, however, is in his ability to advise students on their research. Manuel always has a different angle on research problems...

...his outstanding knowledge of the field was evident whenever he lectured...Additionally, he eased some of the pressure of the material through his own good nature. For example, he brought in cakes during his lecture on the cake cutting algorithm. It's a simple gesture, but it has a noticeable effect on a room full of students who are tired as the semester nears its end.

Rather than simply judging whether our answers were correct, Manuel took the time to help us clearly evaluate all of our steps, to make sure that we had a complete understanding of our problems.

For someone of his stature in the field, he is incredibly friendly, accessible, and completely not intimidating...

...an incredibly humble teacher, motivates responses from students with amazing grace and friendliness...and in tune with students' characters and needs, makes an effort to get to know students and to motivate students to get to know each other!

...[he] goes above and beyond in all areas...[he] pushes students without pressuring them...and creates a very open and welcoming atmosphere with no intimidation.

Rather than just lecturing, he makes you feel as if you're rediscovering the topic as he guides you through it in an incredibly insightful manner.

Manuel has a youthful fascination and sense of humor about teaching sometimes dry material, and keeps a lively atmosphere in the classroom, leading students to maintain an enthusiasm about learning.

I stayed awake in every single one of his lectures and attended ALMOST every single one. I don't think I have to pretend like this isn't a big achievement.

...He works out the problem from the same point of view as the student (trying out different approaches and reason why one fails and the other does not). Thus in class we're not only learning the new knowledge but also the approaches to solve the problem.

...he had the rare gift of simplifying difficult concepts into their basic components, and teaching them in a manner that students could comprehend easily. I feel like the highest tribute a student could give is to say that he learned a large amount of difficult material, yet was confident and able to learn it without being cheated of the rigor and difficulty of the subject.

...there's one thing about him that really impresses me...He's really good at taking a sophisticated topic or technique and peeling it apart layer by layer. His way of doing this has two excellent effects. First, it makes it a lot easier to understand the topic. He breaks it down in ways that clearly highlight the important concepts. Even more importantly, though, from him you learn HOW to break down a problem. The way he goes through an example gives you a good idea how to approach often very broad classes of problems. This is, in my opinion, a much harder thing to teach...

— The Students

Herb was a man who had an enormous curiosity about life and an insatiable passion for acquiring knowledge. He didn't want to know — he needed to know. That is what drove Herb Simon.

— Janet Hilf