```
fun append (xs,ys) =
    if xs=[]
    then ys
    else (hd xs)::append(tl xs,ys)

fun map (f,xs) =
    case xs of
         [] => []
       | x::xs' => (f x)::(map(f,xs'))

val a = map (increment, [4,8,12,16])
val b = map (hd, [[8,6],[7,5],[3,0,9]])
```

Programming Languages
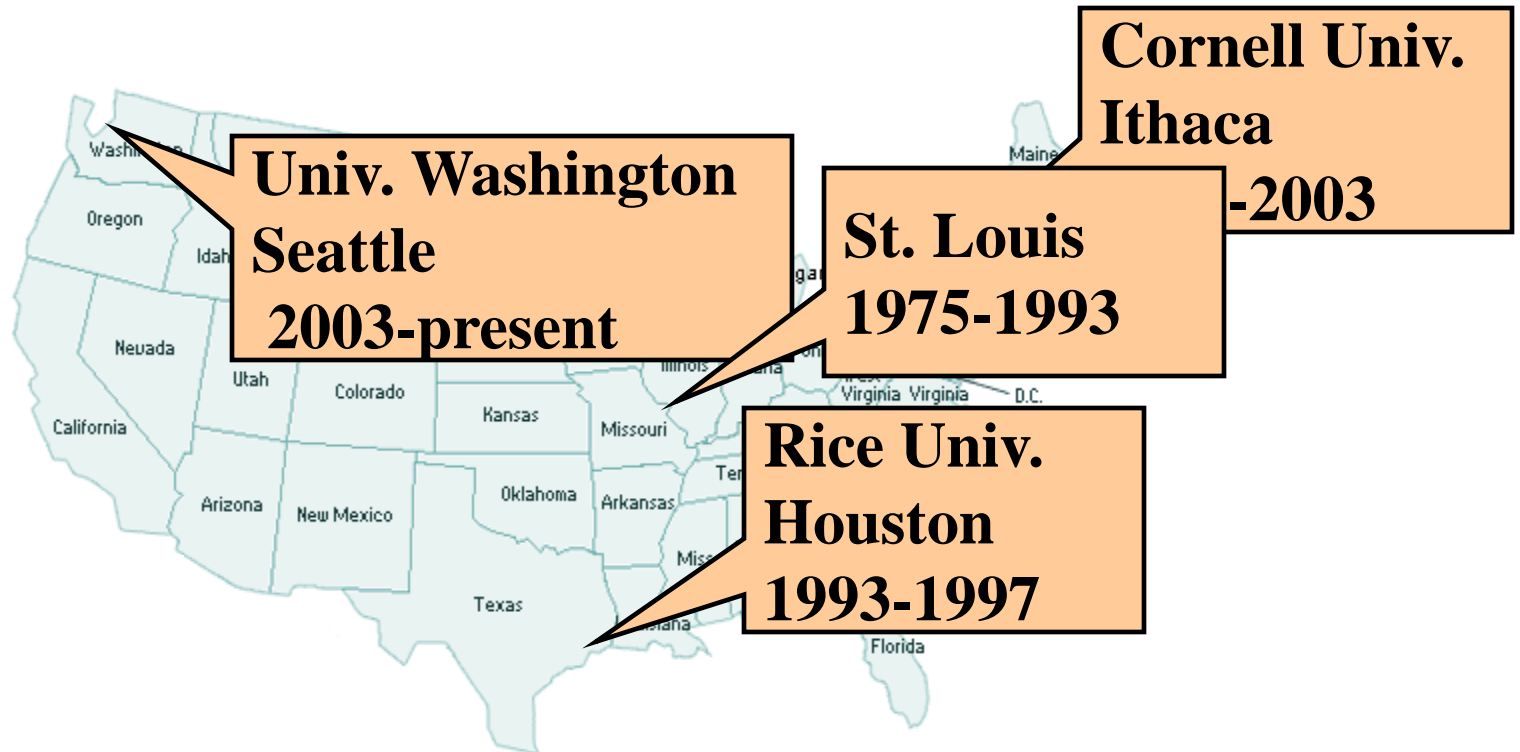
Dan Grossman
University of Washington

Optional: Who I am / Acknowledgments

Optional viewing!

I thought some of you might be curious about who I am since you will be spending so many hours listening to me…

… and I want to acknowledge everyone not in front of the camera

Where I am from

Univ. Washington
Seattle
2003-present

Cornell Univ.
Ithaca
-2003

St. Louis
1975-1993

Rice Univ.
Houston
1993-1997

My research: "from Greek to graphs"

Use the *fundamental elegance* of PL…

- – Functional languages, type systems, logic, proofs, …
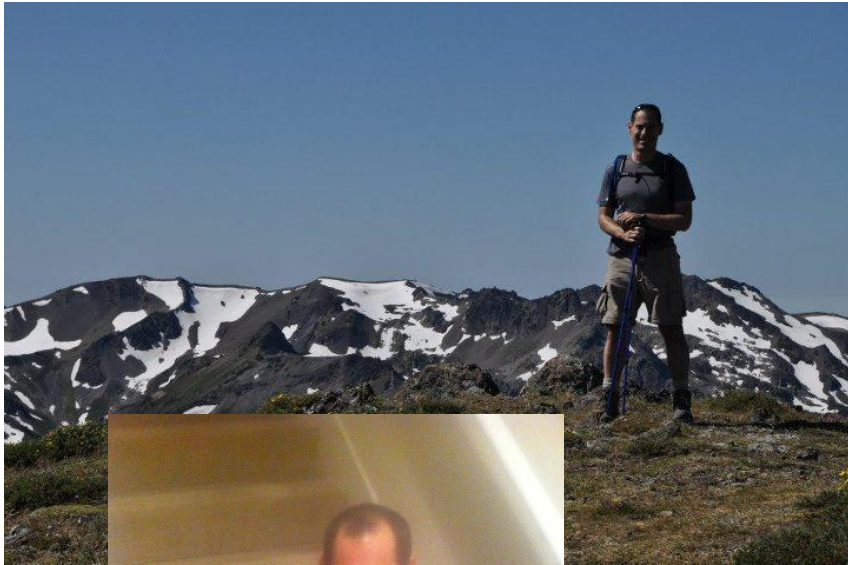- – Formal semantics is very, very beautiful – and very useful

… to improve *modern technology trends*

- – Systems programming
- – Multicore
- – Power limitations
- – *… [much more]*

A powerful and fulfilling strategy: Collaborate with others, bringing precision, formalism, and language structure

Also: Focus on CS education (curriculum, PL, etc.)

The old me [until 2013…]

Where I have been

Countries:

Vatican City, Monaco, St. Lucia, Luxembourg, Bahamas, Israel, Switzerland, Estonia, Ireland, Italy, Norway, Germany, Japan, Sweden, Spain, France, Tanzania, South Africa, Mexico, India, China, United States, Canada, Russia

U.S. States:

All except Alaska, Delaware

The new me

- Kid #1: December 2013

- Kid #2: September 2015

- Most of this MOOC was created before that ☺
  - As was most of my sleeping ☺ ☺

Acknowledgments [so far!]

- Initial TA crew: Cody S., Rachel S., Sean W., Claire M., Eric M., Max F.
    - In Summer/Fall 2012, it was "the wild west"

- Later TAs: Amaris C., Max S., Trevor K.

- Platform migration: Brett B., Ben E., Lauren W.

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- A/V: Rod P., Fred V.

- Coursera: Anne T., Conner D., Pang Wei K., Allison F., Sabah B., Meera R., Tovah K., …

And more!

- Special tech help at crucial times: Ben W., Stefan M., John R., Sam H.

- All the TAs, faculty, and colleagues that contributed to the material we draw from over the years
  - Alan B., Craig C., Stuart R., Lydia D.
  - [and dozens (hundreds?) more]

- And the 1000s of students so far!