

## Two Tales of Two Washingtons

### Remarks to the Brookings Institution Board of Trustees

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I'm going to tell you a tale of two Washingtons. In fact, I'm going to tell you *two* tales of two Washingtons. But these aren't tall tales – they're true stories

The first is the story of Washington then, and Washington now

#### Washington Then

- I don't want to tell you exactly how long ago I moved to Seattle from the east coast – it would make me feel even older than I look
- But “technology” at the time was pretty much limited to Boeing and the John Fluke Manufacturing Corporation. Microsoft was a dozen people in Albuquerque

#### Washington Now

- Times sure have changed!
  - Seattle is the cradle of PC software, through Microsoft
  - We invented desktop publishing, at Aldus
  - We pioneered streaming media, at RealNetworks
  - We drove the revolution in electronic retailing across the broadest imaginable range of sectors – companies like Amazon, Expedia, Getty Images, Drugstore, Zillow and Redfin
- Today ...
  - We also have one of the nation's most vibrant game industries
  - And a hugely successful mobile app sector
  - We have a cluster of successful infrastructure companies, like F5 and EMC-Isilon
- And because of our talent pool, and our environment, and our collaborative culture ...
  - California companies such as Google, Facebook, Twitter, eBay, Salesforce, and LinkedIn – and companies from elsewhere like Chicago's Groupon – have opened engineering offices here
  - And California startups like Tableau are choosing to locate here
- Looking towards the future
  - We own the cloud – with major companies like Amazon, Microsoft, and a good slice of Google, plus a huge number of newer companies like Opscode and Skytap
  - We have the potential to own “big data” – analytics – which is the next frontier
- And that's just in Information Technology!
  - There's also biotech, and telecommunications, and health care, and clean energy

- And that's just in Technology!
    - We also have one of the nation's most distinctive and innovative retail sectors:
      - Starbucks
      - Nordstrom
      - REI
      - Costco
- Companies renowned for customer service, product quality, and employee satisfaction

So that's Washington then, and Washington now – a story of transformation and of success

The second true story of two Washingtons is of the Washington of those who move here from elsewhere, and the Washington of kids who grow up here

### **The Washington for Migrants**

I've actually already told you the story of the Washington for migrants: It's the story of Washington now

- We're the #1 state per capita in the importation of individuals with a Bachelors education or greater
  - These people – people like me – power Washington's innovation economy

### **The Washington for Natives**

The Washington for those who grow up here is far different

- Our state has no real strategy for the 21<sup>st</sup> century
  - Or rather, our strategy is "Bill Boeing moved here, Bill Gates was born here, and it's a nice place to live so smart people will keep moving here"
- Just about every public policy that supports a thriving 21<sup>st</sup> century economy is broken!
  - Tax policy – authoritatively assessed as the most regressive in the nation
  - K-12 education policy – our K-12 under-performs much of the nation
  - Higher education policy – lack of Bachelors capacity; geared for our economy of the 1970s
- We rank among the top few states in science and engineering employment, per capita:
  - #2 for engineers
  - #5 for computer specialists
  - #8 for life and physical scientists
  - #5 for scientists and engineers overall
- However, we are the ass end of the donkey when it comes to educating our own children for these jobs
  - #37 in Bachelors participation rate
  - #45 in science and engineering masters degrees
  - #35 in science and engineering doctoral degrees
- It's both a pipeline issue, and a capacity issue
  - We rank 37<sup>th</sup> among the states in pre-school enrollment – early childhood education
  - We rank 31<sup>st</sup> among the states in the proportion of 9<sup>th</sup> graders who graduate from high school on time

- We rank 46<sup>th</sup> among the states in the proportion of high school graduates who enroll directly in a 2-year or 4-year college
- And while no one would assert that there is a direct correlation between expenditures and performance:
  - We rank 42<sup>nd</sup> among the 50 states in per-pupil expenditures for K-12 education (adjusted for cost of living), and
  - We rank 49<sup>th</sup> in the nation – next to last – in per-student funding for higher education: the sum of tuition and state support
  - I’m all in favor of efficiency, but it’s tough to combine high quality, adequate capacity, and the lowest expenditures per student in the nation – it simply doesn’t compute

Somehow, this is OK with the citizens of Washington!

The vanguard of our economy has transitioned from the production of goods whose content is largely physical (fish, timber), to the production of goods whose content is a mixture of physical and intellectual (electronics manufacturing, aerospace manufacturing), to the production of goods whose content is almost entirely intellectual (software, telecommunications, biotech, the professions). Our educational system, and our educational aspirations, are firmly wedged in our old economy.

## STEM

That’s it for stories. Let me conclude by talking briefly about STEM:

There is some debate about whether there is a workforce shortage in STEM. Here’s the truth:

- Nationwide, there is no STEM workforce shortage except in computer science – and the workforce shortage in computer science is severe
- Here’s what the U.S. Bureau of Labor Statistics forecasts for the current decade:
  - Consider 34 STEM fields:
    - Computer Occupations
    - 11 fields of Engineering (Aerospace, Biomedical, Chemical, Civil, Electrical, Electronics, Environmental, Industrial, Materials, Mechanical, Other)
    - 5 fields of Life Sciences (Agricultural & Food Scientists, Biological Scientists, Conservation Scientists & Foresters, Medical Scientists, Other)
    - 6 fields of Physical Sciences (Astronomers, Physicists, Atmospheric & Space Scientists, Chemists & Materials Scientists, Environmental Scientists & Geoscientists, Other)
    - 10 fields of Social Sciences (Economists, Survey Researchers, Psychologists, Sociologists, Urban & Regional Planners, Anthropologists & Archeologists, Geographers, Historians, Political Scientists, Other)
    - Mathematical Scientists
  - Across all of 34 of those STEM fields
    - 70% of all new jobs during the current decade will be in Computer Occupations
      - 11 field of Engineering: 15%
      - 5 fields of Life Sciences: 5%
      - 6 fields of Physical Sciences: 3%
      - 10 fields of Social Sciences: 5%
      - Mathematical Sciences: 2%
    - And 58% of all available jobs, whether newly-created or refilled

- Even more than that, though, computational thinking – problem decomposition, algorithmic expression, abstraction, stepwise fault isolation, modeling – is an essential 21<sup>st</sup> century capability regardless of occupation

### **Computer Science in K-12**

So, what's going on in K-12 to establish a foundation of knowledge and of interest in computer science on the part of students?

- In 1983, the report "A Nation At Risk" recommended that, at a minimum, a half year of Computer Science be required for high school graduation
  - That's not much, but computing back then was an IBM PC XT with 128KB of RAM running PC DOS 2.0
- In 2013, a new "Framework for K-12 Science Education" from the National Academies completely ignores Computer Science
  - Today, in 9 out of 10 high schools nationwide, computer science is not offered
  - Today, in 36 of the 50 states, computer science, even if offered, does not count towards the math or science graduation requirement
- In 30 years, we have moved backwards

### **What to do?**

As a region, and as a nation, we've got to admit that we have a serious problem

- You've all read the 1983 report "A Nation At Risk" (David Pierpoint Gardner)
- You've all read the 2005 National Academies report "Rising Above the Gathering Storm" (Norm Augustine)
- You've all read the 2010 sequel "Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5" (Norm Augustine)

But not much positive has happened