Academia vs Industry: Choose Your Own Adventure

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Karina Montilla Edmonds

- Immigrated from Dominican Republic
- BS in Mechanical Engineer at University of Rhode Island
- MS, PhD at California Institute of Technology (Caltech)
- Northrop Grumman (Automotive Division for TRW)
- Jet Propulsion Laboratory (NASA, Managed by Caltech)
- Director of JPL Technology Transfer at Caltech
- US Department of Energy, under Secretary Chu (Obama Administration)
- Executive Director for Corporate Partnerships at Caltech
- Lead for University Relations at Google Cloud AI

- Mother of 3 strong, intelligent,
  kind daughters (17, 15 & 10)

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Dilma Da Silva

Education

BS 1986 USP-Brazil / MS 1990 USP/ PhD 1997 Georgia Tech

Professional (Academia → Industry → Academia)

– Professor at USP-Brazil 1996 -2000 (tenure 2000)
– Research Scientist at IBM TJ Watson 2000-2012
   Manager since 2007; several other leadership titles
– Principal Engineer&Manager, Qualcomm Research (2012-14)
– **Professor and Department Head, Texas A&M University**

Personal

– 1 cats, 125+ first cousins;
– Single except for 8 years ☺
– caretaker 2010-2015
– Fun: knitting, reading, travel with people I love,
         babysitting for friends

A vs B: So Simple, Right?

Industry could be:

- Engineer
- Research scientist
- Eng manager
- Corporate Leadership
- Consulting
- Government
- Start-up

- **Academia** could be:
- Professor at research-oriented university
- Teaching-oriented position
- Academic administration
- Research associate

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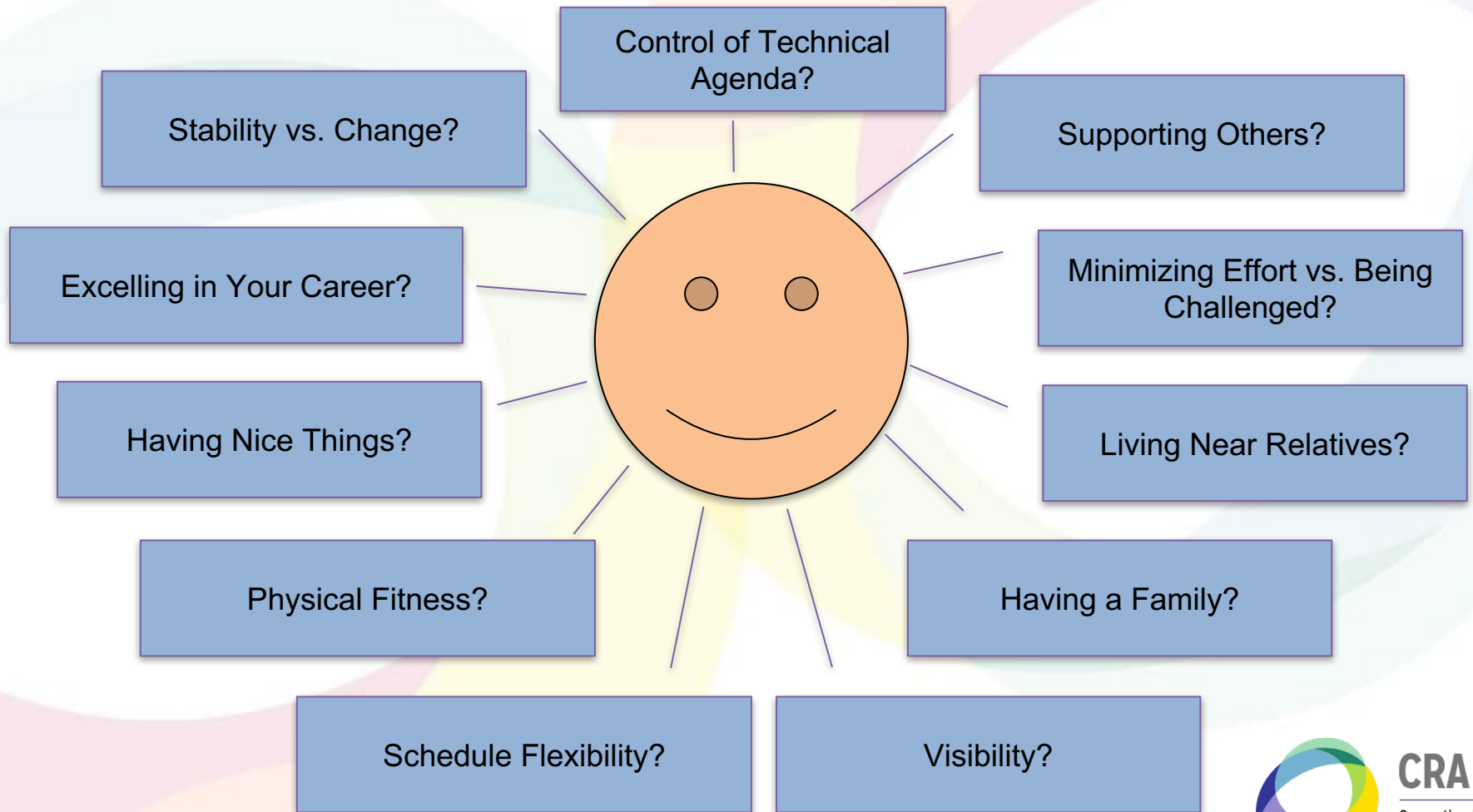
Turn and Talk to Your Neighbor

What is your plan?

Industry vs Academia vs Undecided?

Why?

How do you enjoy spending your time?

What is Important to You?

Must-haves vs. Nice-to-haves?

- Control of Technical Agenda?
- Stability vs. Change?
- Supporting Others?
- Excelling in Your Career?
- Minimizing Effort vs. Being Challenged?
- Having Nice Things?
- Living Near Relatives?
- Physical Fitness?
- Having a Family?
- Schedule Flexibility?
- Visibility?

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Does What You're Doing Align With What's Important to You?

- What you value most could change over time
- Absolutely no one is in your exact situation
- A PhD gives you options
- Be true to yourself and your values
- Don't be afraid to course correct

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Academic Careers

Academic Career Ladder

Professorial Ranks
- Assistant: Tenure-track, 5-7 years
- Associate: Usually with tenure
- Full (no set time limit to achieve)
- Chaired Professor – endowed

Administrative Ranks
Department Chair/Head, Dean, Provost, President

Instructor
Can vary significantly on course load
Some roles offer tenure equivalent

Postdoctoral/Research Associate
- Usually on "soft money"

Traditional Professor/Instructor Roles

Research universities

- Ph.D. program - emphasize *research, funding*

Teaching-oriented colleges

- B.S. program – emphasize *teaching, service*

Public vs. Private

- Impacts funding structure

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What can I do now to prepare for an academic job?

- Research
  - Apprenticeship: learn from advisor, write papers, collaborate
  - Grant writing: Help out on proposals, read successful proposals
  - Corporate connections (for funding, student job placement)

- Teaching
  - Guest lectures, teaching assistantships
  - Professor-in-training programs, courses

- Service
  - Organizing student organizations/support groups – Women in CS
  - Working on department committees
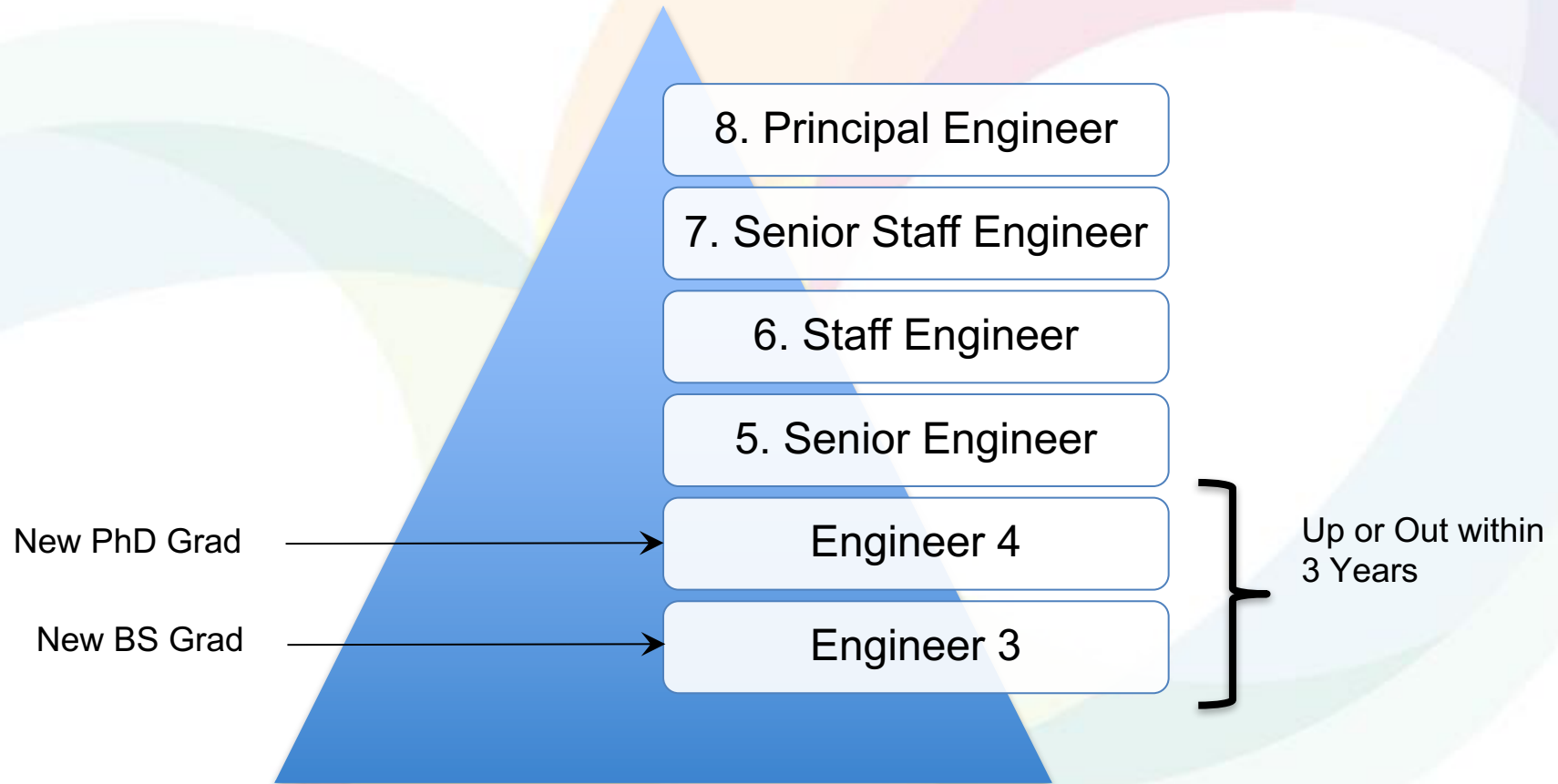 - Volunteering at conferences

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Industry Research Careers

Industry Careers

Role	Visibility	Flexibility
Engineer	Low	High
Research scientist	Medium	High
Eng Manager	Medium (all internal)	Medium
Corporate leadership	High	Low
Consulting	Low	Varies/Low
Government	Medium	High
Start-Up	Low	Low

Same role can vary a lot from group to group

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The Engineering Ladder

8. Principal Engineer

7. Senior Staff Engineer

6. Staff Engineer

5. Senior Engineer

New PhD Grad → Engineer 4

New BS Grad → Engineer 3

Up or Out within 3 Years

Implications: Pay, Expectations

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Career Change

Moving Between Industry and Academia

- **From University to Industry**

  - Must build real systems
  - Establish visibility and knowledge in industry
  - Need to pass a technical interview (coding, complexity)

- **From Industry to University**

  - Must continue publishing
  - Establish visibility and reputation in research community
  - Need to pass an academic interview (presentation, strong publication record)

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Our "change" stories …

All Choices are Valid!

- Do what you love
- If you don't love what you're doing, do something else
- A PhD gives you that option
- Take ownership of what you do now and what you want to do next

Questions ?