

# Government Lab Career Options

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LSU

Thanks to my old friend Gordon Emslie at OSU for some of these slides.

# Outline

## *Career Path Options*

- Company
- University
- Government

Graduate Student

Graduate Student



Company

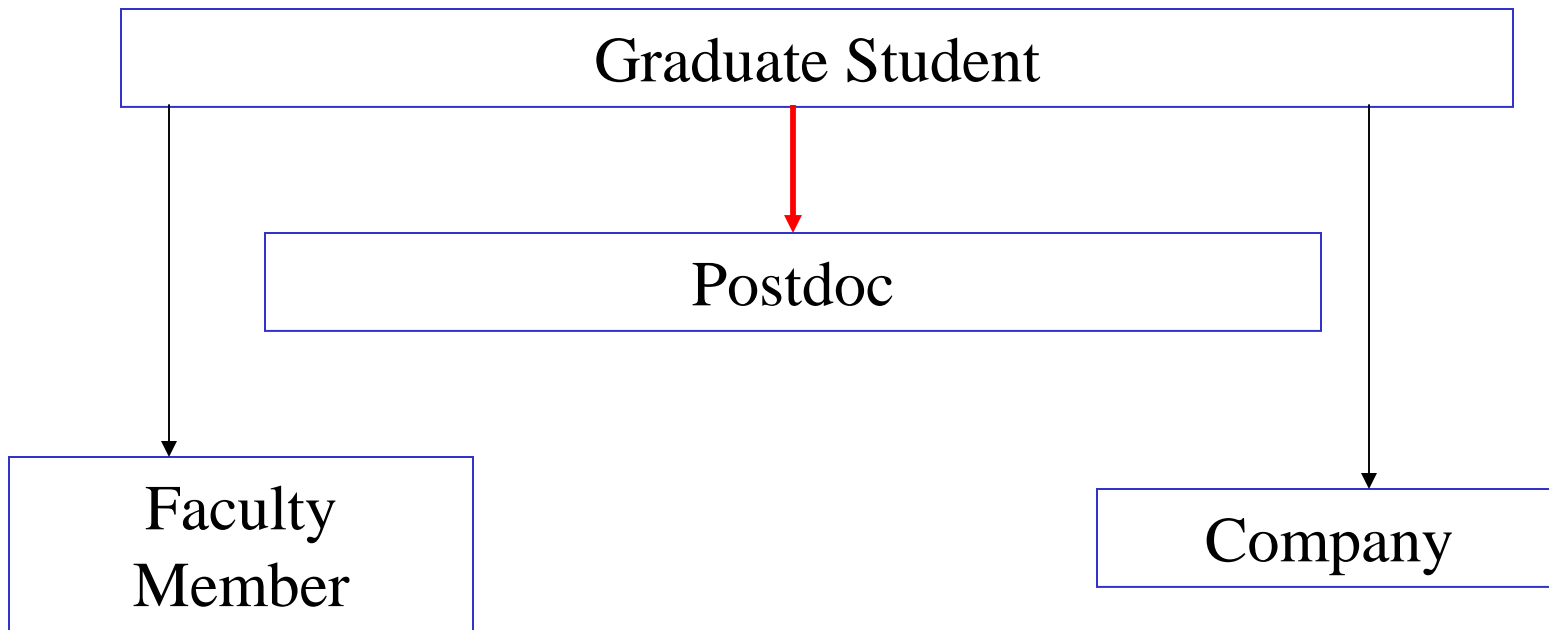
Graduate Student

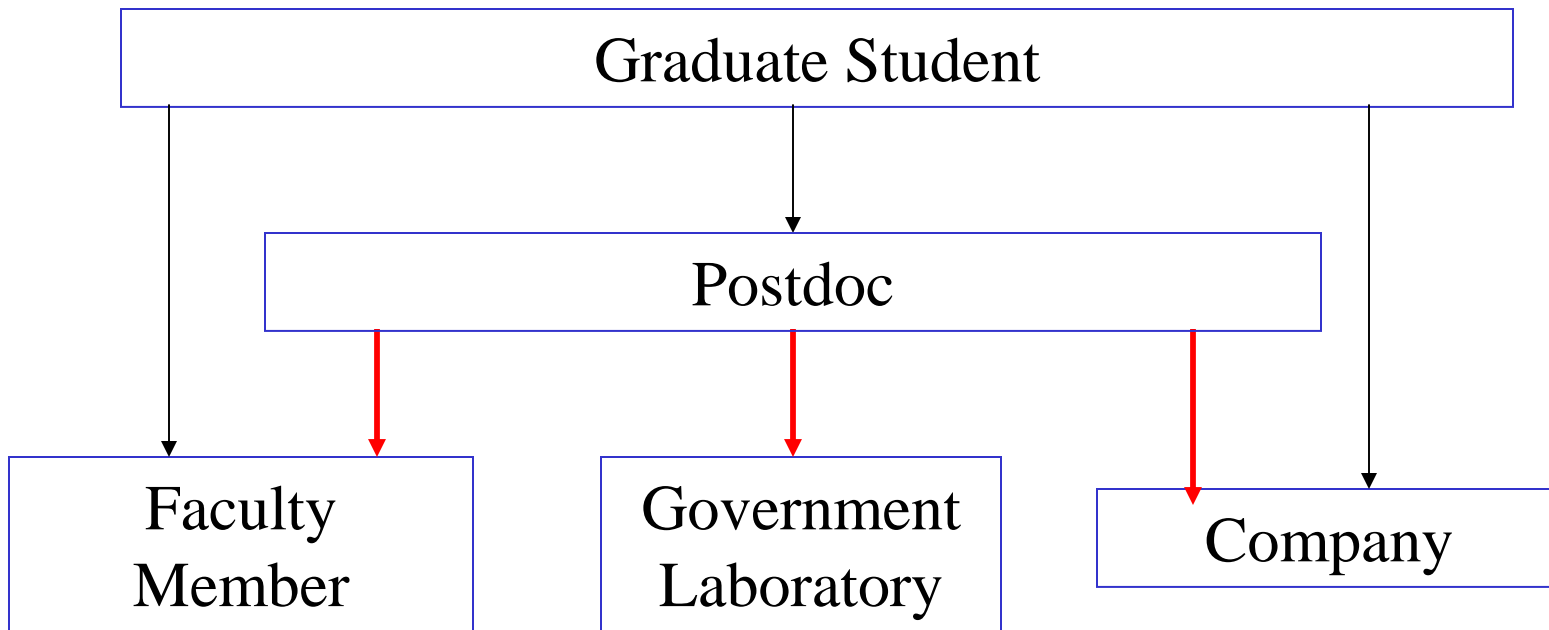


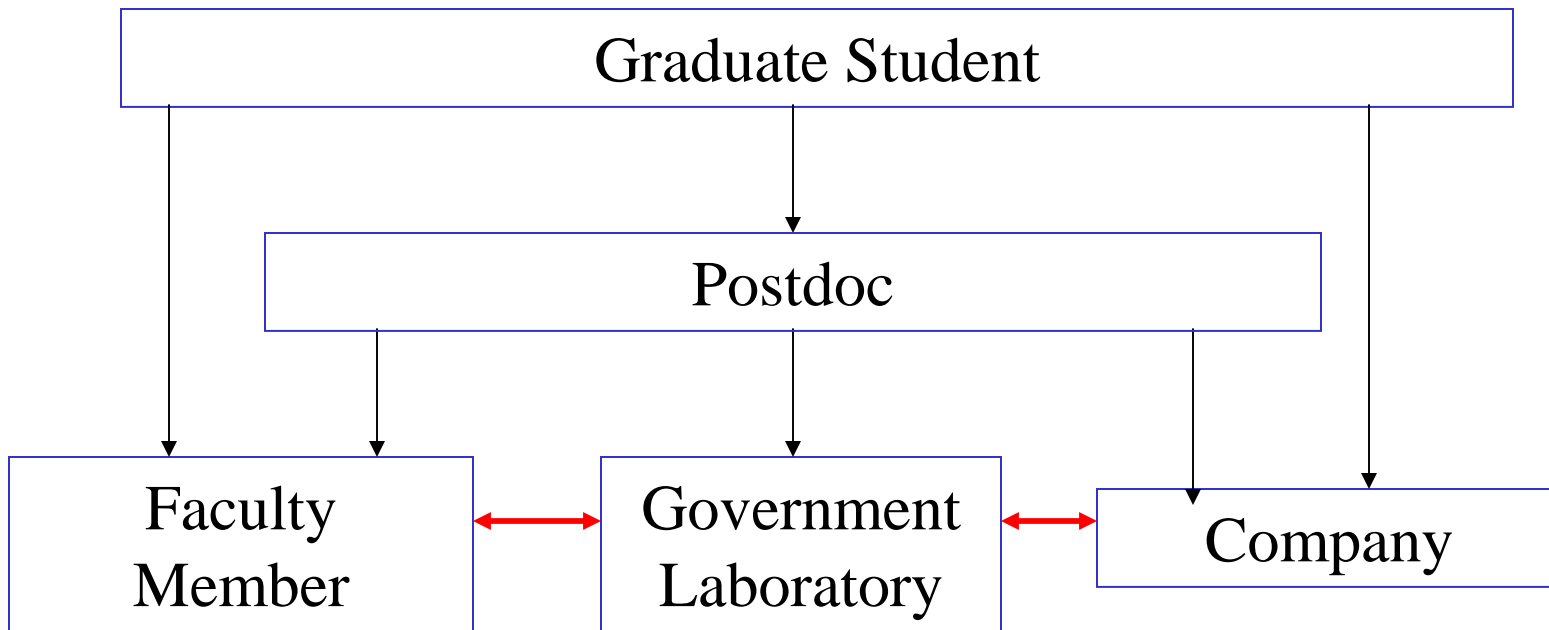
Faculty  
Member



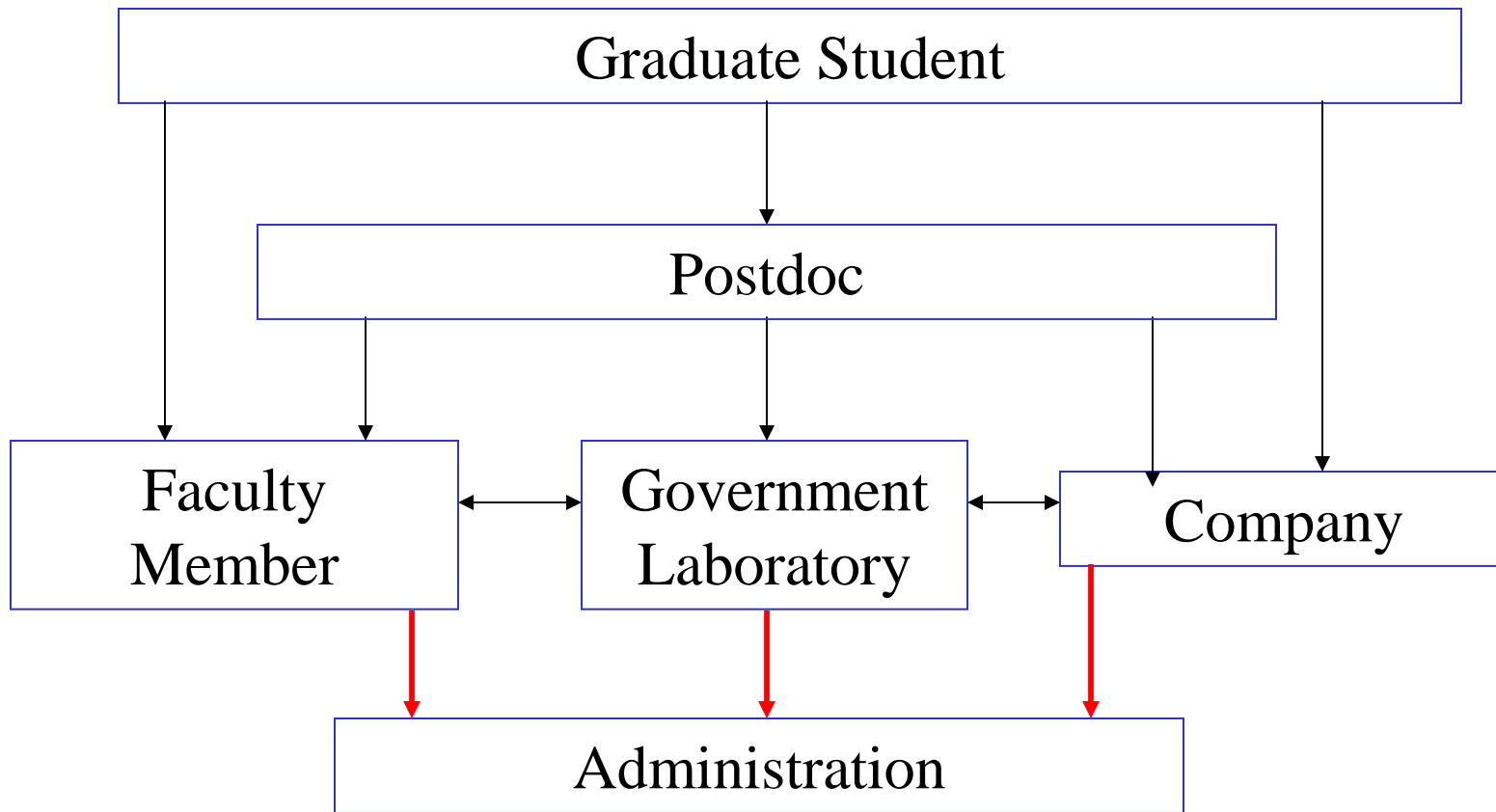
Company

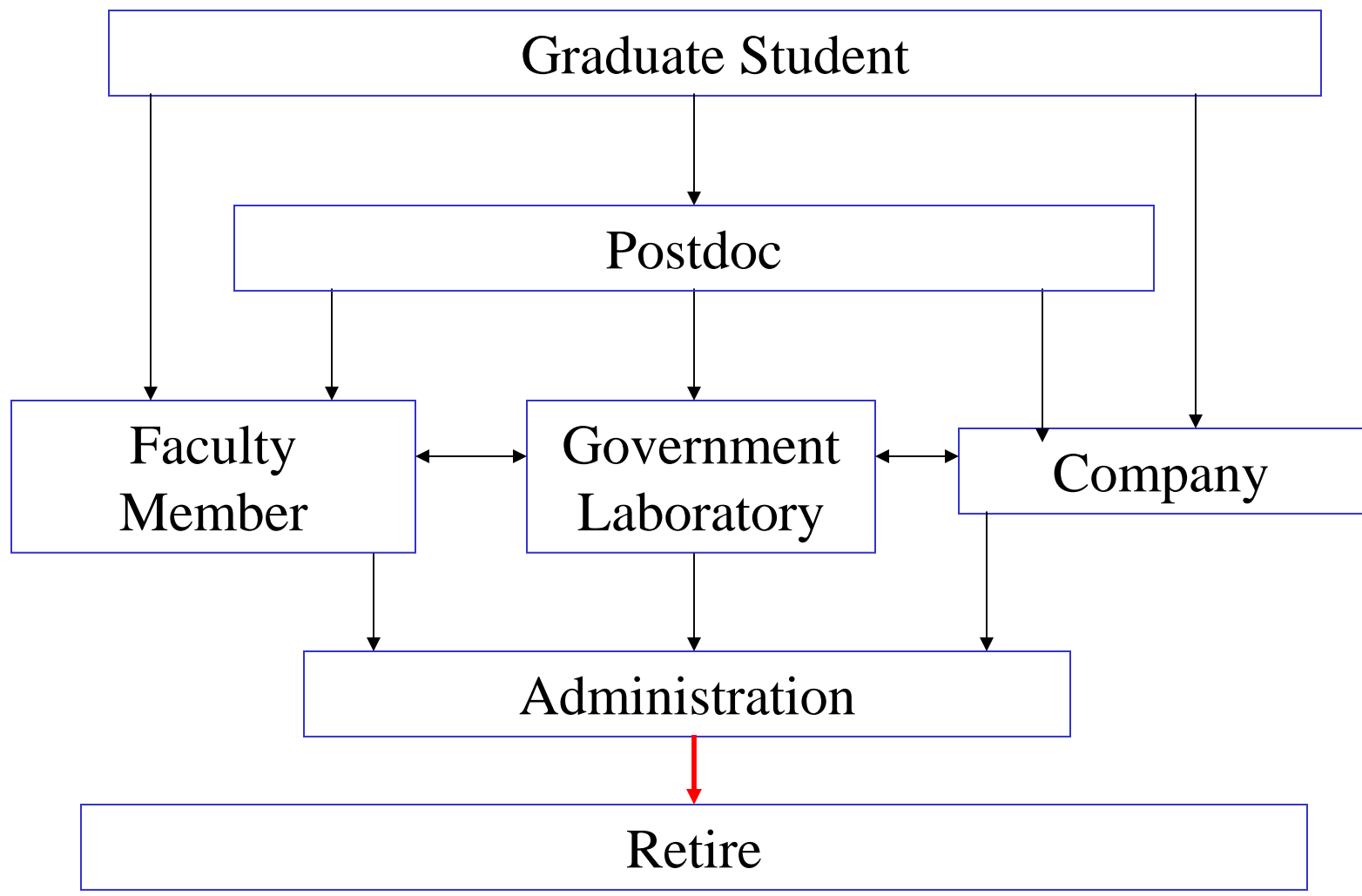


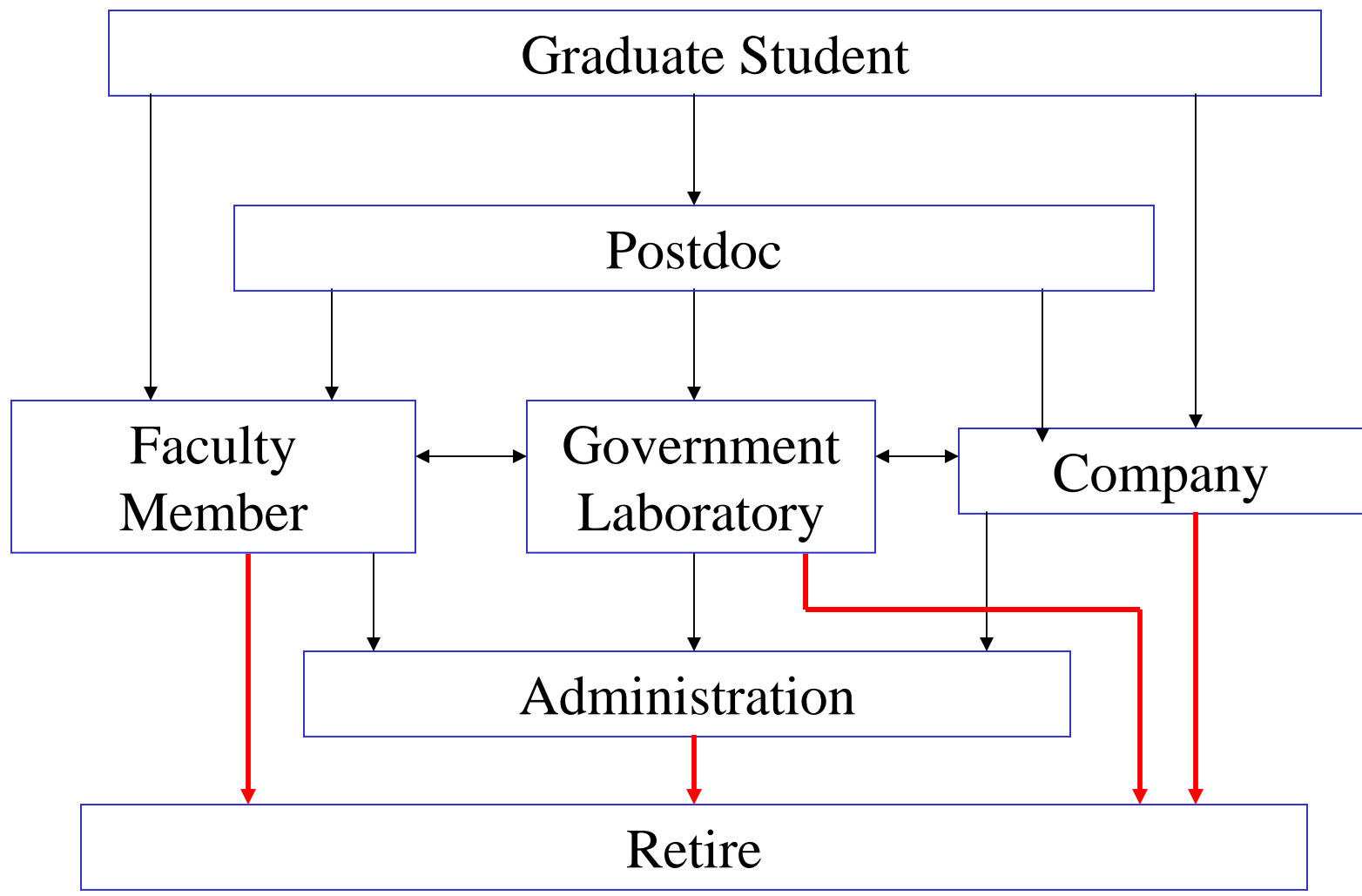


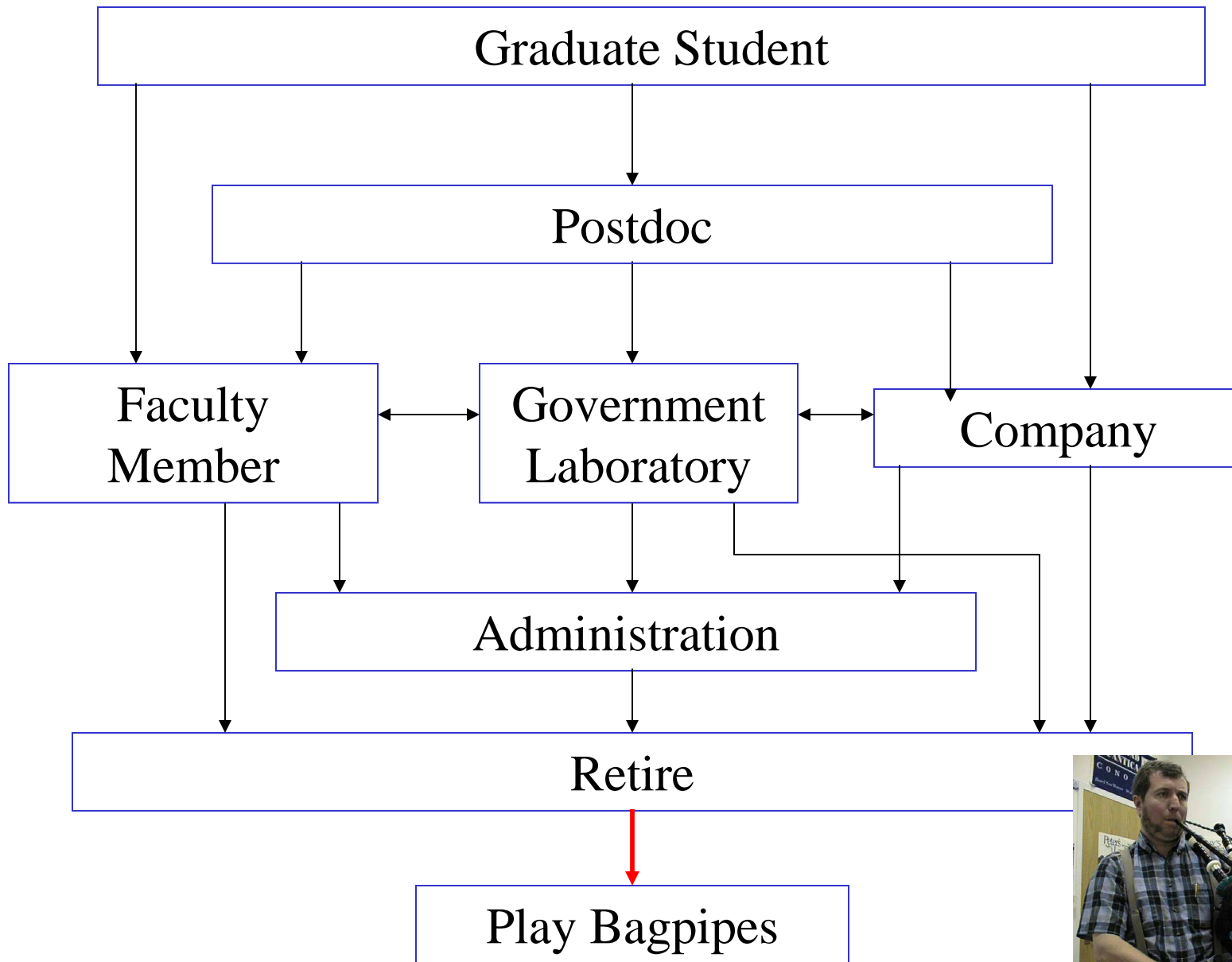


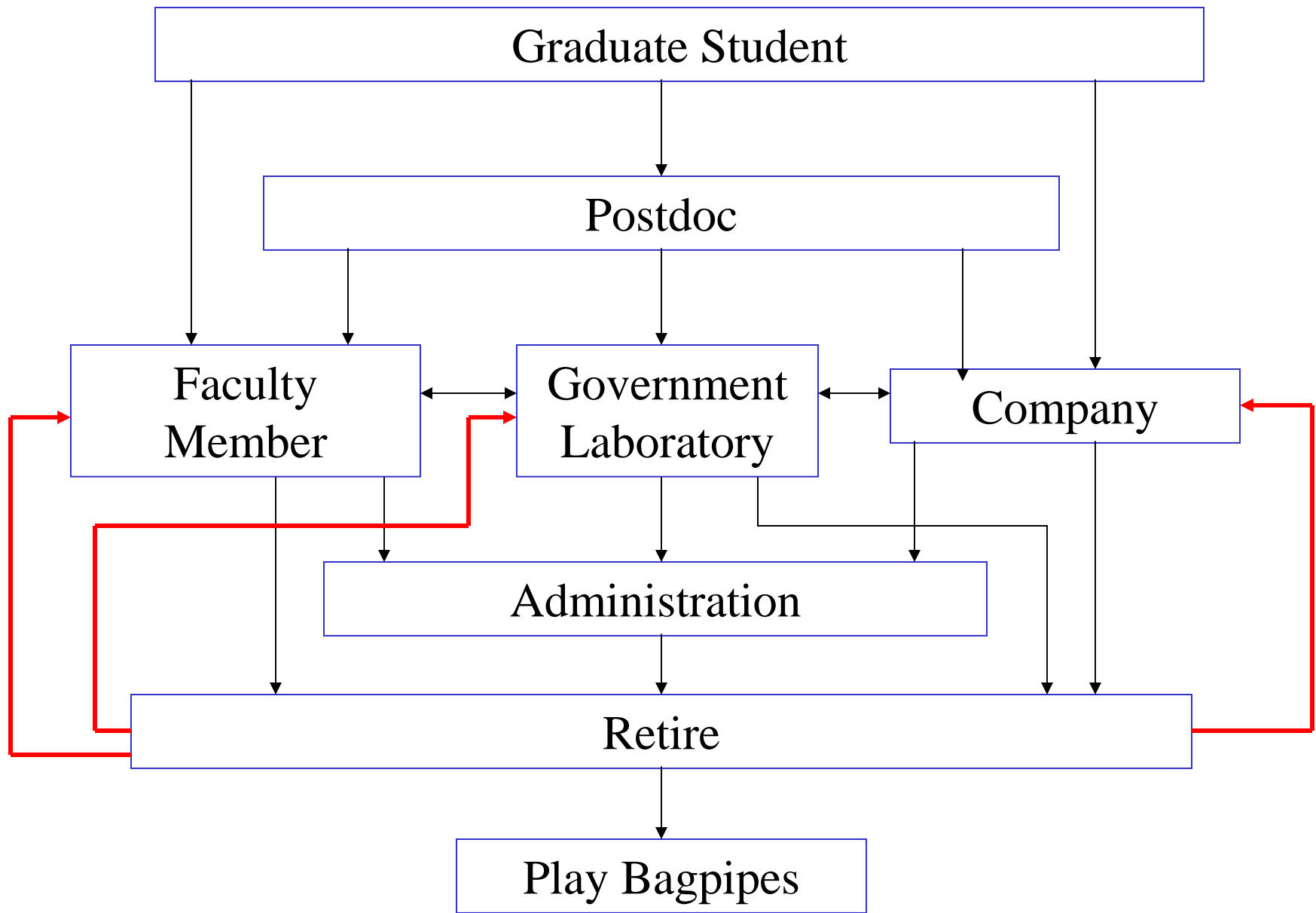












# “Post-Doc”

- Also known as
  - Research associate
  - NRC Fellow (DOD, DOE, NIST, ...)
  - ORAU Fellow (NASA)
  - Postdoctoral Fellow
- Midway between *being* a student and *working with* students
- Not common in other fields (engineering, humanities), but
- Golden opportunity at National Labs to identify yourself

# **Career Contrast**

**Company/University/Government**

# Company

- Can hire “spontaneously” in response to applicant availability
- Generally pays quite well!

**BUT**

- *No tenure!*
- Often doing “other people’s work”
- Job generally split between centrally and externally funded tasks



# University

- Typically hire in response to department/university needs
  - Teaching
  - Growth
  - Research initiatives
- Opportunities not necessarily well-timed to your availability

# Government Laboratory

- NASA (JPL, ARC, GSFC, MSFC, ....)
- DoD (ARL, RDEC, NRL, ....)
- DOE (LANL, LBNL, LLNL, ....)
- Typically more “project-driven” than university
- Can be more “academic” freedom than industry

# Government Laboratory

- Three Typical Ways In:
  - Postdoc (Easiest)
  - Contractor (Medium)
  - Direct Hire (Hard)
- It is difficult to FIRE a gov't lab employee so they are hesitant to hire. Job opportunities are targeted to contractors or postdocs inside the loop.

# Two Types of Gov't Labs

- **REAL Gov't Lab**
  - ARL, MSFC, ARC, ...
  - Mostly US Federal Employees
  - Some Contractors
- **FFRDC** (Federally Funded Research & Development Center)
  - JPL, LANL, Sandia, MITRE, AeroSpace...
  - Everybody is a Contractor (UC, Lockheed, ...)
  - Some Contractors are More Equal Than Others

# Real Government Laboratory (GS)

- Hiring by announcement
- Little or No salary negotiation!
- 1-2 year “probation period” – and then “tenure”!
- May have to perform other tasks related to lab operations:
  - Proposal administration
  - Mission management
- New – Full-Cost Accounting! = No Free Rides!
- Old — Very Hard to Lay Off a “REAL” Gov’t Employee! Job security: High! Salary: Low! (See University Professor....)

# FFRDC

- Hiring by announcement
- Salary negotiation!
  - Everyone at NASA JPL is a Caltech Employee
  - Caltech sets salary in negotiation with NASA — Not US Gov't Salary!
- 0.5-1 year “probation period” – almost instant tenure!
- Almost instant layoffs if funding collapses. Must be FLEXIBLE.
  - JPL Layed Off 10% of its “permanent” staff in 2005.
  - This would have been impossible at NASA Ames (Retirement/Buyouts)
  - People who stay learn to be jacks of all trades
- May have to perform other tasks related to lab operations:
  - Proposal administration
  - Mission management
- Old – Full-Cost Accounting! = No Free Rides!
  - You must write grant proposals for internal and external funding.
  - You cover your salary from these grants.
  - Mission Funding Seems Safest but Can Cancel the Mission!
  - Basic Research Requires Flexibility and Lying.
  - Very EASY to Lay Off an FFRDC Worker!
  - SALARY CAN BE VERY HIGH!

$$\Delta \$ \times \Delta \text{JS} = 1$$

High Salary Implies Low Job Security

High Job Security Implies Low Salary

My strategy:

1. Luck
2. Take HIGH RISK and HIGH SALARY when YOUNG.
3. Negotiate JOB SECURITY when OLDER
4. Keep High Salary Too!

# How to Get In the Gov't Door?

- Attend US Gov't Sponsored Workshops
- Schmooze & Booze!
- Look at Lab Web Pages
- Look at ORAU Website for NASA
- Look at NRC Website for All others

Found NRC Army Postdoc Job on “Web Site”

Used NRC Postdoc to Leverage Army Research Physicist Job

Wowed JPL guys at NASA Conference and got NASA JPL Offer.



# NRC Opportunities

<http://nrc58.nas.edu/pgasurvey/data/aobooks/search.asp>

## Research Associateship Programs

The search Engine will allow you to search by keyword, agency, adviser, location, citizenship, and/or researcher level. When you have selected or entered the criteria you wish to search for, press the "click to search" button located at the bottom of the search page.

Enter words to search on in the text of the opportunities; separate with semicolons:

Enter Agencies

Enter adviser name

Enter Locations

You can pick multiple values in this list by holding down the control key on a PC or the option key on a Mac while clicking on your selections. Selecting values from this list will limit your search results to those particular locations.

Choose Citizenship criteria

If you are a US citizen check here to see opportunities available to you.

If you are a non-US citizen check here to see opportunities available to you.

If you are US Legal Permanent Resident check here to see opportunities available to you.

Choose Senior/Regular level

Limit search results to laboratories that accept Senior applicants

Limit search results to Master's degree level opportunities (Currently NIOSH only)

Use this to match research area with a NAME, phone number, and Email address at each lab. Then contact them directly! May not have An NRC position but know of others routes in.

US Air Force Research Laboratory  
Wright-Patterson AFB, OH 45433-7542  
Sensors Directorate  
Electromagnetics Technology Division, Wright Patterson Air Force Base, Ohio

Active/Passive Optical Sensor Research  
RO#                    City:                    State:  
13.35.01.B0115   Wright-Patterson AFB                    OH 45433-7542

**Adviser Information:**

<b>Name</b>	<b>Phone</b>	<b>Email</b>
<b>McManamon, Paul F.</b>	<b>(937) 255-4039 x4024</b>	<b>paul.mcmanamon@wpafb.af.mil</b>

Keywords: Lidar; Optical sensors; Optical phased arrays; Spatial light modulators

RESTRICTED ELIGIBILITY: This research is open only to US Citizens and legal permanent residents. A few Postdoctoral Research Associateship opportunities may be open to non-US citizens in special cases when additional support is available from the research facility.

Our research focuses on the following:

- (1) Optical phased array technology for steering active and passive electro-optical (EO) systems with little or no mechanical motion. We are working on both liquid crystal and micromechanical mirror-based approaches of implementing optical phased array concepts. We have a wide range of activities in this area.
- (2) Combined RF/EO apertures. We have had a simple dish fabricated with both an RF and an EO feed. We are considering methods of developing combined RF and EO phased array apertures.
- (3) Laser communications and laser radar sensing through clouds, including investigation of forward scattering. We can image at 2-3 km range through a controlled 75-foot cloud chamber. We also have a portable cloud chamber that is much wider; to make sure no scattering occurs off of the walls. Experimental investigation of multidiscriminant laser radar through clouds will be conducted.
- (4) Multidiscriminant laser radar-both coherent and direct detection laser radars are being considered. Coherent Doppler laser radar capable of high velocity sensitivity is being investigated. Vibration laser radar experiments are being conducted for combat identification. Three-dimensional laser radar is being investigated at 1.5 mm both for mapping and for recognition of targets under trees. Longer term, we will investigate the phenomenology for target recognition using multispectral laser radar from about 1 mm to at least 2 mm.
- (5) Multifunction EO systems, including active and passive object detection and recognition. Ideally, we will move toward a single integrated EO system consisting of multiple aperture modules interconnected with a systems module. The distributed system will be capable of detecting and identifying objects in the air and on the ground, laser communications, laser designating, and countermeasures against threatening electro-optical systems.

# NRC Continued

- Once you match a name to a research area, contact this person.
- They have other options besides the NRC.
- Example JPL Postdoc, Caltech Postdoc, Contractor, Even Full Hire (if Desperate)
- Can also go to Lab Jobs Web Site but likely filtered by incompetent HR office.

# Typical JPL Job Announcement through HR Office

7261 - Scientist - Outer Solar System Science

Apply Now

Overview

Date Posted:

2/28/08

Job Code:

X502

Category:

Government

Job Family:

Science

Requisition Number:

7261

Will Statement

**Will:** Be a research scientist to conduct independent and collaborative research in Outer Solar System science, more specifically in planetary surface geology and geophysics. Assist research activities related to Cassini RADAR data and in, particular, studies of Saturn's moon, Titan. Will become an integral part of the Geophysics & Planetary Geosciences group in the JPL Science Division and will help to generate R&A proposals, collect data and generate peer-reviewed scientific publication. Will report to Geophysics & Planetary Geosciences group supervisor.

**Skills**

**Required Skills:** Ph.D. degree in Planetary Science, Geology, Environmental Science, Physical Science or related field with 3+ years of experience or an MS degree with 8+ years experience. Demonstrated research experience in a broad range of scientific areas including geological fluid dynamics and analysis of extra terrestrial remote sensing data. Experience in interpretation of Synthetic Aperture Radar (SAR) data. Ability to perform independent and collaborative research in planetary science and geophysics. Excellent written and verbal communication skills.

**Desired Skills:** Experience in laboratory experimentation and the interpretation, processing and analysis of spacecraft data. Good laboratory and computer skills with respect to data acquisition and analysis. Ability to develop research proposals for external funding.

**No contact information!  
That's what Google is for!**

# ORAU Opportunities

<http://see.orau.org/>

Army Research Laboratory Postdoctorate Fellowship Program through Oak Ridge Associated Universities (ORAU)

For more information: ARL Postdoc Fellowship

Description: opportunities to significantly increase the involvement of creative and highly trained scientists and engineers from academia in scientific and technical areas of interest and relevance to the Army. Scientists and engineers at the U.S. Army Research Laboratory help shape and execute the Army's program for meeting the challenge of developing technologies that will support Army Forces in meeting future operational needs by pursuing scientific research and technological developments in such diverse fields as applied mathematics, atmospheric characterization, simulation and human modeling, digital/optical signal processing, nanotechnology, material science and technology, multifunctional technology, combustion processes, propulsion and flight physics, communication and networking, and computational and information science.

Discipline(s): engineering, mathematics, physical sciences, and related scientific disciplines

Eligibility: U.S. Citizens Only. Applicants must present evidence of having received a Ph.S., Sc.D., or other earned research doctoral degree recognized in US academic circles as equivalent to a Ph.D.

Location(s): Maryland. Army Research Laboratory, Adelphi, and Aberdeen Proving Ground, MD locations.

Duration: one year appointment, renewable up to a total of three years

Frequency: continuing

Awards made: varies

Deadline(s): applications are accepted on a year-round basis

Benefits: stipend based upon research area(s) and academic classification.

Funding source(s): Contractual agreement between the Army Research Laboratory and Oak Ridge Associated Universities

How to apply: complete required application at ARL Postdoc Fellowship

Contact(s):

ORAU Manager      Recruiter  
Joanne Rasnake      Kim Myers  
Joanne.Rasnake@orau.org

Kim.Myers@orau.org

410.274.2516

ORAU has made it tougher to match individual to research opportunity to individual. Must now apply through their system making it hard to contact a real person.

# The First Interview

*They are in charge!*

- Seminar – substance, relation to mission of group
- Your long-range research plans
- Conversations with future colleagues
- Interviews with administrators
- The Branch Heads

# Finalizing the Hire

*You are in charge!!*

- Salary
- Research Support Startup Package
- Understand the periodic review process

# Government Laboratory (Sub-Contractor)

- Most hires are in this category
  - Company
  - University affiliate
- Hired by/working for company/university
- Perform tasks related to mission objectives:
  - Hardware development
  - Software development
  - Subcontract work
- Tasks originate/assigned by Government civil servant or by super contractor. JPL contractors farmed out work to subcontractors.

**JPL Had about 5,000 employees and 1,000 subcontractors.**

**Subcontractors can often become employees or vice versa.**



# Government Laboratory Administration: What You Must Do To Keep Getting Promoted

- Group Supervisor
- Section Manager
- Division Manager
- Laboratory Chief (SES)
- Science Director
- Set goals and direction for laboratory
- Still solving other people's problems

**JOB SECURITY COMES AT A PRICE!**

**Section Managers and Above at JPL Almost NEVER Layed Off! No Grant Writing. No Research!**

# Other Roles in the Community

- Government Agency Program Manager
  - permanent
  - “rotator” DOD->NSF->NSA->DOD
- Laboratory Director
- Education & Outreach

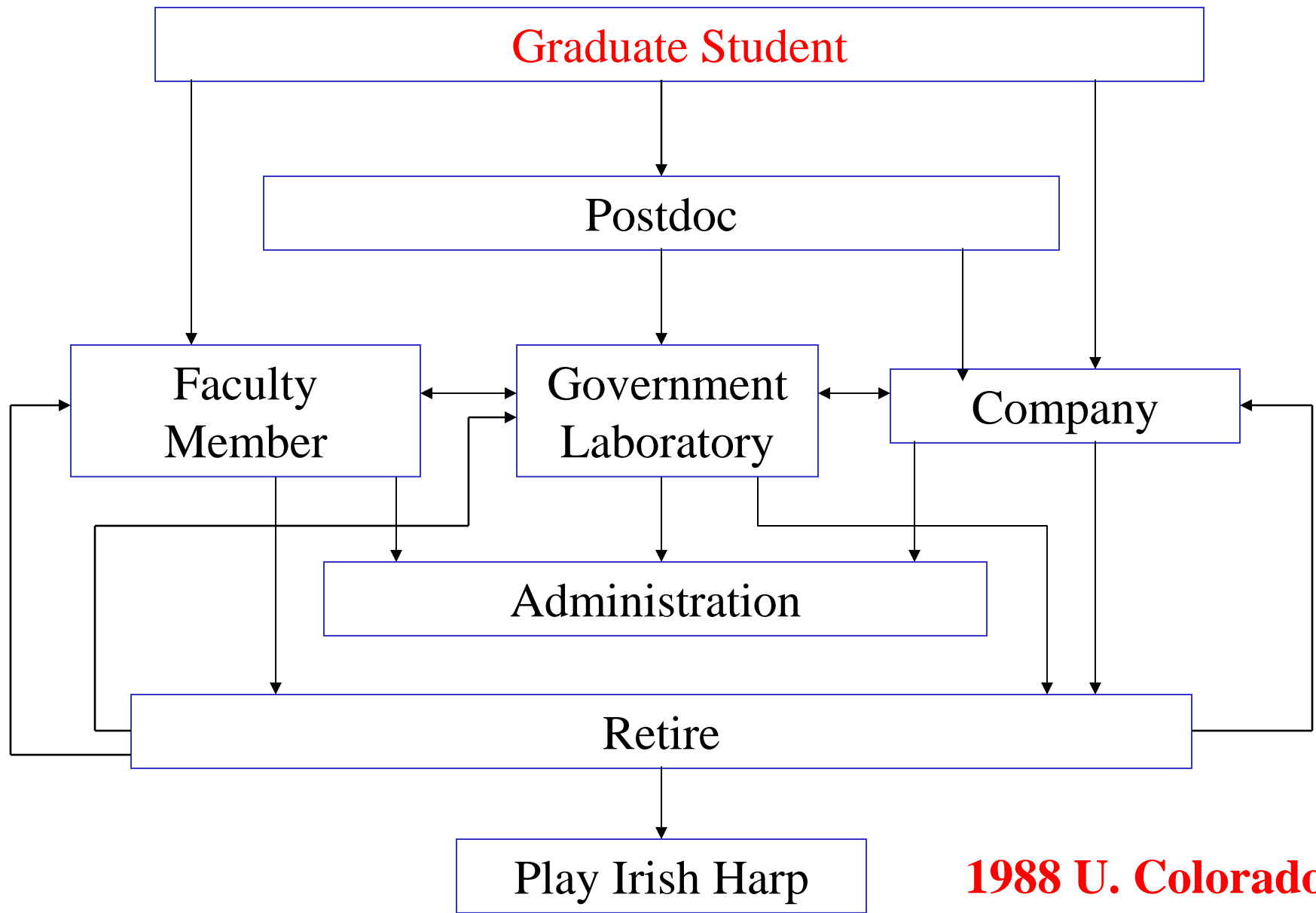
# Role of Research

- Varies by career type
- In some fields, not always gauged by funding rate, but...
- In Physics, it is!
  - University
    - Summer salary
    - Tenure (and post-tenure support for others)
  - Government – job *assignment*
  - Company – job *security*

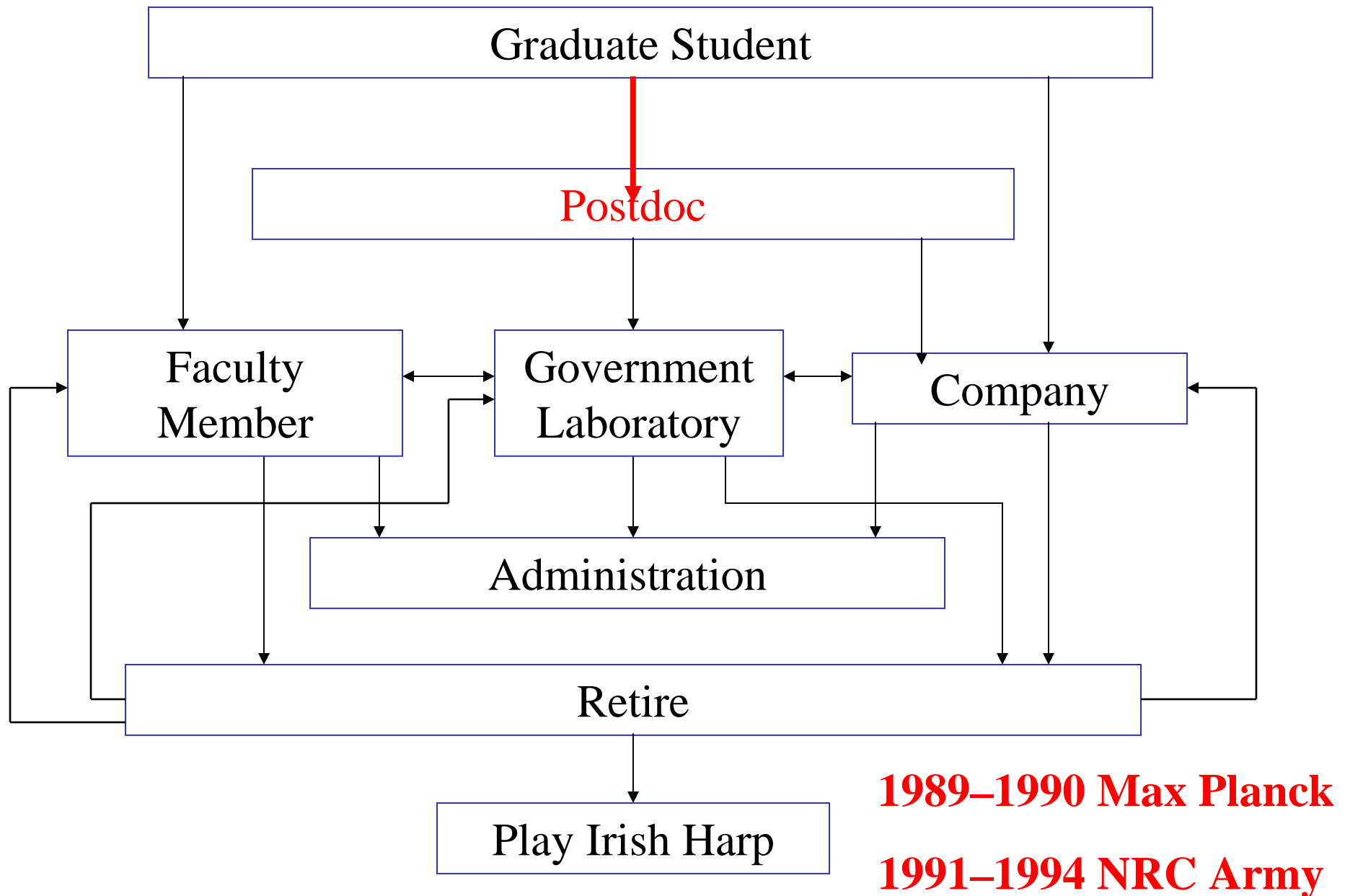
# Funding Research

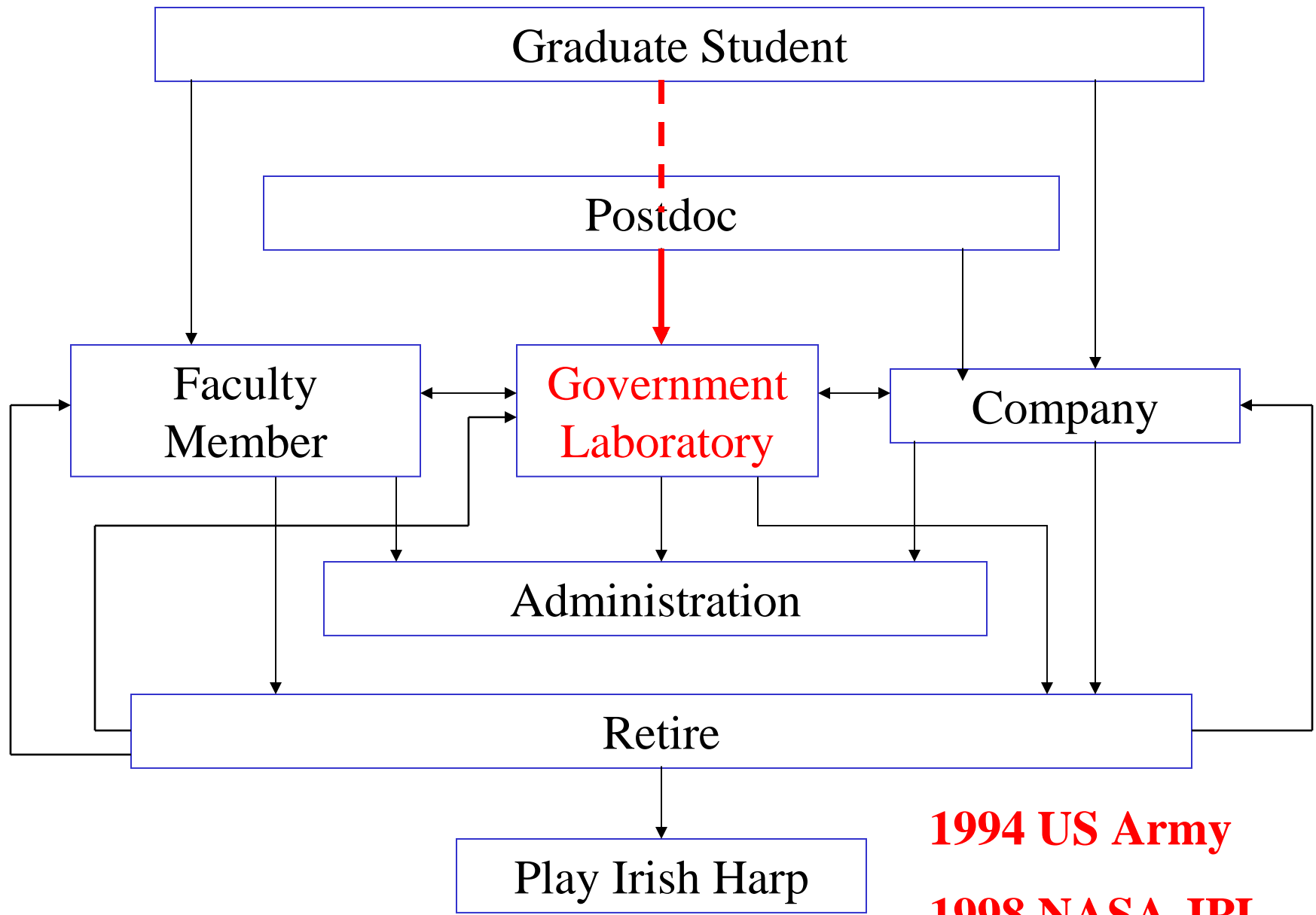
- With full-cost accounting, now necessary in virtually all career options
- Required \$\$ Overhead HUGE at Gov't Labs
  - ~2–3 × gross salary
  - ~1.5 × other
    - Travel
    - Publication
    - Equipment
    - Subcontracts
    - Supplies, materials
- Requires steady output of grant-writing activity!
- At JPL and Army there were internal grants (easy) and external grants (hard).
- If you don't have coverage you take unpaid leave at JPL. Army would ding you on performance reviews.

# JPD – a timeline/case study



**1988 U. Colorado**

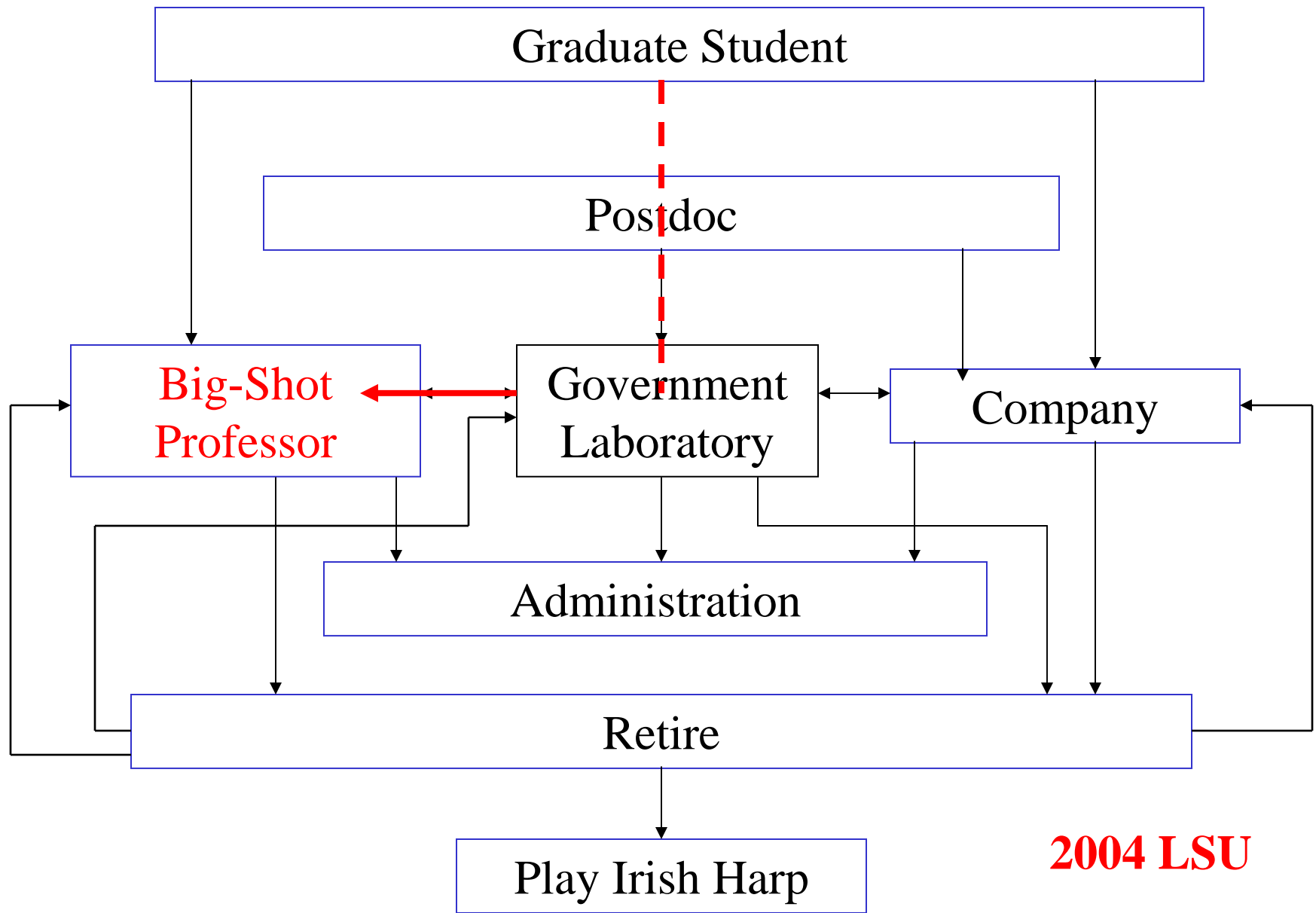




**1994 US Army**

**1998 NASA JPL**





# Points to Remember

- TINSTAAFL!
  - There Ain't No Such Thing as a Free Lunch!
  - There Ain't No Such Thing as a Free Launch! (NASA)

However,.....

- Take More Risks When Younger = \$\$\$
- Focus on Job Security When Older = ZZZ
- Non-Location, Non-Location, Non-Location!
  - Boulder / Munich / Huntsville / Pasadena / Baton Rouge
  - Must weight the PERSONAL vs. the CAREER!