



Life is the Journey, not the
Destination

Graduate School is the Process, not the PhD Diploma

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Quick Tour of Some PhD Journey

- ❑ **YEAR 1:** like a **BABY** 😊 learning to speak & survive / adapt to the new world
- ❑ **YEAR 2:** like an **APPRENTICE**, learning the tricks of the trade from advisor & research group
- ❑ **YEAR 3:** realizing that you **DIDN'T KNOW MUCH!!**
- ❑ **YEAR 4:** forget it - time to **THINK**; something has to come out different 😊
- ❑ **YEAR 5:** more like a colleague to your advisor ... like a **SALESMAN** - but be yourself & pray you get the job you like 😊



1/19/2007

Beginning of First Year First Impressions

- ❑ Usually a TF
- ❑ Communicate with academic advisor
- ❑ Do VERY well in courses
- ❑ Adapt to culture/new system (new ethical and social rules)
- ❑ Improve English
- ❑ Improve teaching & communication skills
- ❑ Find a way to play your favorite sports 😊

By End of First Year Find a Research Advisor

- ❑ Learn of faculty interests & projects
- ❑ Zoom in on own research interest
- ❑ Approach *research* advisor who will provide RA or TF support
 - Advisors are CFO's

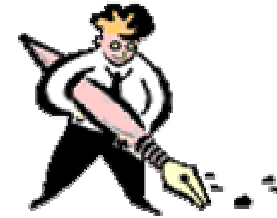


Beginning of Second Year Build Trust with Advisor

- ❑ Contribute to ongoing project
- ❑ Learn how to read research papers
- ❑ Learn how to THINK (don't just shoot your mouth off 😊)
- ❑ Learn how to
 - Use tools: analytical, simulation, system implementation
 - Work with advisor (and other team members)



By End of Second Year Write & Submit



- ❑ Learn how to write
- ❑ Submit FIRST paper
- ❑ Perhaps help with a grant proposal
- ❑ **Pass Area PhD Depth Exam (aka DWE)**
- ❑ Good time for summer internship

Beginning of Third Year Present & Network

- ❑ Hopefully FIRST publication
- ❑ Go to workshop or conference
- ❑ Learn how to present
- ❑ Talk to people about your work
- ❑ Be more critical in own thinking
- ❑ Start mentoring more junior students



By End of Third Year Realize "I didn't know much"



- ❑ Read broadly AND deeply
- ❑ Synthesize own focus area
 - Usually related to future PhD thesis
 - Advisor is important!
- ❑ **Pass Area PhD Oral Exam**

Fourth Year THINK, THINK, THINK



- ❑ Time to zero in on specific problem for PhD thesis
 - Ask good questions
 - Outline a solution approach
 - Advisor is important!
- ❑ Publish your FIRST thesis-related paper
- ❑ **Defend own thesis proposal**
- ❑ Perhaps help with a grant proposal

Fifth (and Final 😊) Year More of a Colleague to Advisor

- ❑ Continue to do good thesis work
- ❑ Publish in journals too
- ❑ Prepare CV & apply for jobs
- ❑ Prepare interview talk
- ❑ Travel for job interviews
- ❑ Write thesis
- ❑ **Get job, defend & graduate 😊**
- ❑ Again, advisor is **REALLY** important!



Summary of the Journey

Year 1	Year 2	Year 3	Year 4	Year 5
	Pass DWE	Pass Oral	Defend Thesis Proposal	Defend Thesis & Get Job

Your Thesis Advisor CTO+CEO+CFO

- ❑ Knowledge / scholarship / interesting research program (CTO)
- ❑ Wisdom + trust (CEO)
- ❑ Financial support (CFO)



A Good Thesis Advisor

- ❑ Unpretentious
 - Get down to your level
 - Learn with you
- ❑ High standards
 - Lift you up
- ❑ Like a parent?
- ❑ Like a master?

- ❑ First, a coach / mentor
- ❑ Then, a colleague / mentor, for **LIFE** 😊



As your student, what basic analytical tools should I know or learn?

- ❑ Probability & statistics (CS 670)
- ❑ Basic queuing theory (CS 670)
- ❑ Basic optimization (CS 556)
- ❑ Basic control theory (CS 556)
- ❑ Basic game theory (CS 556 or ENG SC 700)
- ❑ Algorithmics (CS 559)

A Specimen Academic/Course Schedule for a Networks PhD Student

- ❑ PhD course requirement: 2 theory + 4 applied (at least 1 from each of software, applications & systems)
- ❑ **YEAR 1 (2 systems, 2 theory):** OS-I (CS 552), Algorithms (CS 530), Networks-I (CS 655), Complexity (CS 535)
- ❑ **YEAR 2 (2 systems, 1 SW, 1 app):** Networks-II (CS 556), Compilers (CS 525), Performance (CS 670), Databases-II (562)
- ❑ **YEAR 3:** Algorithmics (CS 559), Computational Geometry (CS 532), Cryptography (CS 538), Directed Study
- ❑ **YEAR 4:** Directed Studies ...