



So You Want To Be A Professor?

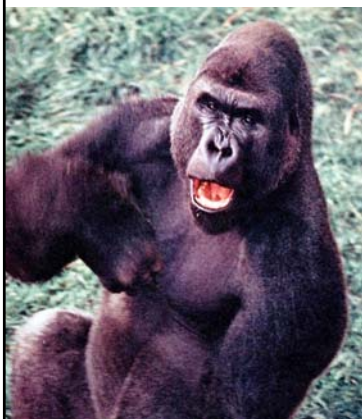
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- **Managing & Coping**
- **The Application Process**
(in the sciences and engineering)
- **Planning & Organization**
- **Presenting**



Caveats

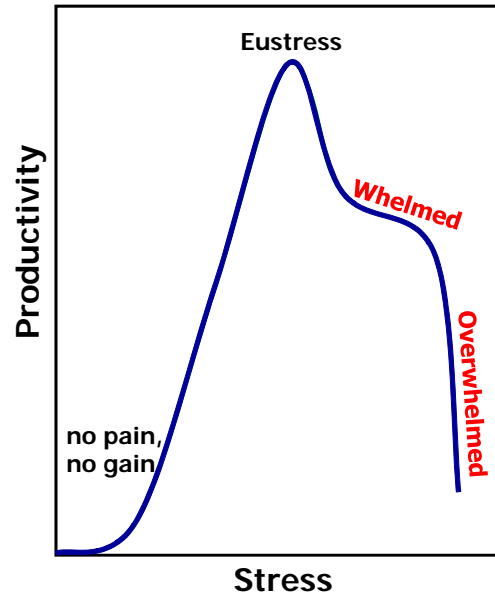


- **Do as I say, not as I do.**
This presentation represents what I would like to be to do, not necessarily what I actually do!
- **De gustibus non disputandum est.**
(*There is no arguing about tastes.*)
These are my opinions.
I could be wrong, but I'm not.
- **Snepscheut's Law:**
In theory, there is no difference between theory and practice.
But in practice, there is.
- **Monk's Commentary:**
You'll thank me later.



TANSTAFL*

The Human Tragedy Graph #1: Coping with Stress



*There ain't no such thing
as a free lunch. – R. Heinlein



Managing Stress

- Initiative vs. *Finishitive*:
starting is hard, finishing is harder.
- Tricks for starting: do something, anything;
just type, do your favorite part, futz with format, ...
- Distractions are tempting due to rate of change.
We're much more sensitive to slope than position.
- Finishing. "An artist needs two assistants:
one to help create, the other to stop him
when he's done." – W. Churchill

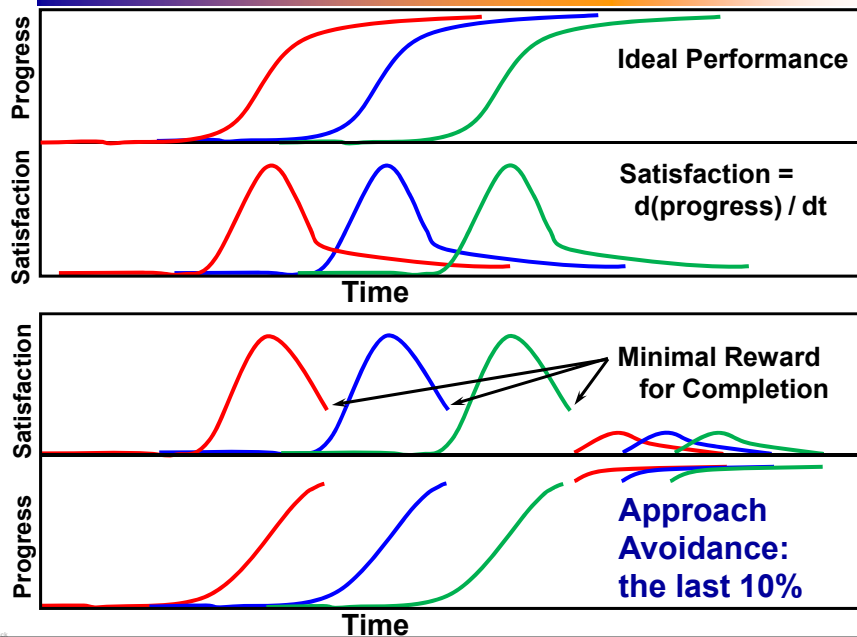


Managing Time

- **If it isn't worth doing, it isn't worth doing right!** – KSS
- **Write it down and the list will remember for you.**
- **Complex jobs are done one bite at a time:
Compartmentalize into small tasks.
Even 15 min. can get a bite done.**
- **Enjoy what you are doing! (well, mostly anyway...)
Do the crappy jobs first thing and quickly.**
- **Last daily chore: 5 min. to plan *tomorrow's* day.**



Human Tragedy Graph #2: Managing Rewards

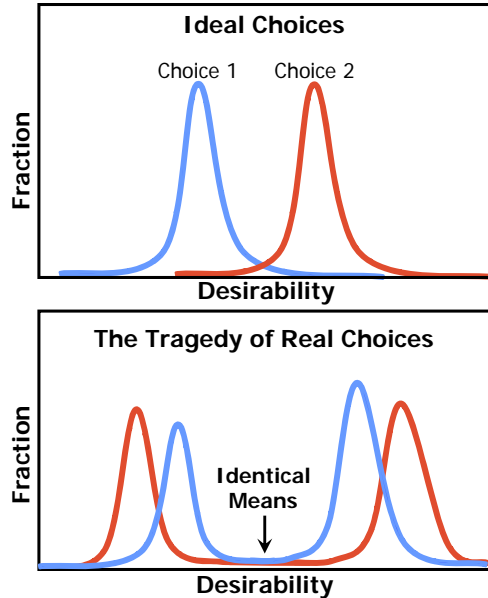




Managing Decisions

The Human Tragedy

Graph #3:
Reality of choices



The Professor



- Did you ever wonder what Full Professors were actually full of?
 - **Faculty are M&M's:**
Hard outer shell, soft interior.
Inside they're mostly shy,
insecure, scared little kids.
- (Yeah, hard to believe,
but think about it: it will explain
much of our behavior!)

I

The Professor



- Why do we do what we do?
- Faculty are **exceedingly curious**:
Discovery is not “Eureka”, but
“That’s odd...”
- Faculty are ‘**maladjusted**’.
They try to adjust the world to
them, *not* themselves to the world
- Faculty are borderline **obsessive-
compulsive**: i.e., control freaks.

I

The Professor



- Why do we **really** do what we do?
- Faculty are driven by ego, not \$.
Pecking order among peers
(world -wide & local),
not fame per se with the public.
- Intellectual dare-devils;
BUT personally risk-averse.
- Tenure is stability
in exchange for salary
(remember, scared little kid...).



What Do Faculty Do?

A Professor has 5 jobs:

- **Teaching** (classes, mentoring, advising)
- **Research Mentoring** (graduate students, papers, theses)
- **Service** (committees, reviews, editorships)
- **Entrepreneurship** (consulting, start-ups)
- **Fundraising** (needed to support all of the above)
(aka: 'Grantsmanship')



Professorial Roles: Mentoring

- In sciences, research = graduate education
- Symbiotic: Last Great Medieval Apprenticeship
- Students work **WITH** the prof., not **FOR** the prof.
- Invoke their passion for research
Undergrad: learning that which is known.
Graduate: learning that which no one knows!
- Mentoring student growth is rewarding
in the same way that parenting is,
and frustrating in the same way that parenting is!



So, you **still want to be a Professor?!**

The Assistant Professor Application Process

- **Universities solicit applications.**
Must be advertised for legal reasons.
- **Applications come in from around the world.**
>100 applications per faculty position.
At UIUC – maybe 10 are good enough to be faculty here.
- **Triage process: Eliminate all but 10 or so.**
- **Jaundiced reading of outside letters.**
- **Decision who to invite based on**
CV (i.e., productivity), letters, research props,
intangibles (e.g., fit, mentors...)



The Triage Process

- **Personal connections – do they know**
your research advisor and like his/her work?
- **Publication count.**
- **Prestige of the journals of your papers.**
- **Research area; is it exciting; does it fit into**
where the department sees itself going?
- **Teaching: are you serious about being faculty.**
- **Does the university have the resources**
for you to do the work?
- **Demographics.**



Things To Increase Your Chances

- **Try to make the personal connections long before your cover letter.**

Go out of your way to meet the dept head and relevant faculty of target schools at national meetings.

A year before you apply, be sending out reprints to faculty that overlap closely with your work.

- **Increase your chances by putting a personal touch into your cover letter.**

It was nice meeting you at

Professor X, Y, Z recommended that I write to you

Praise the people at the University and tell how you fit in

- **Ask your research advisor for advice.**



There Are Many Qualified Candidates

- **Many qualified people will not get an invitation.**
- **The only solution is to blanket the nation with applications.**
- **Once a letter has been written, sending it to many is not a problem.**
- **Pick and choose after you get interviews.**



The Research Proposals For A Faculty Job

- **Big picture:**
 - What is the area that you want to work in?
 - What are the key questions in that area?
 - What special expertise do you bring to the table?
 - How will you be a leader in that area?
- **The first big question that you wish to address.**
 - Why is this question important.
 - Overview of how will you address it.
 - 3 Specific Proposals, typically.
 - 5 pages each, including background and refs.
- **Who will pay for it?**



The Hourglass Picture Of Research

Start with an important area!

**Describe an important big question in that area
that you can use to build your career.**

Focus to solvable question.

Observables?

Data Analysis?

Reach conclusions.

Generalize back to big problem!



Proposal Evaluation Criteria

- **What are you trying to do?**
State your objectives **using absolutely no jargon.**
If you cannot explain it simply,
you are not going to get a job.
- **Who will care?**
If you're successful, what difference will it make?
- **What's new in your approach?**
- **Why do you think it will be successful?**
- **What special skills do you bring to the question?**
- **How much will it cost, how long will it take?**



Proposal Evaluation Criteria

- **If you do what you propose, will you get tenure?**
Faculty generally assume that candidates will only do
half of what they propose, if they're lucky!
- **Can you do it?**
In your existing work, have you demonstrated
the brains and the drive you need for success?
- **How well will the work fit into the department?**



More Than Just a Proposal

- **You need a career plan, not just a research prop.**
People are judging whether they should hire **you** as a colleague:
Is your area exciting enough to sustain a career?
Do you have plans beyond the start-up of a lab?
- **Indicate that your goal is to become a leader in an area and here is how you will do it.**
Rather than saying, “Here is a piece of work that I want to do.”



The Interview

- **Everything changes in the interview.**
If you get to the interview, your previous work has been judged as being good enough:
BUT you *can* still convince them otherwise!!
- **Interviews are focused on the future not the past.**
The quality of your research ideas.
Whether you can communicate/teach.
Whether you demonstrate drive and enthusiasm you need to succeed.
Whether you can fund your work.



Preparation For The Interview

- **You need**
 - A 5, 15, and 50 minute description of what you have done.
 - A 5, 15 and 50 minute description of what you are planning to do.
 - A 5 minute contingency talk on alternatives you would try **if your initial experiments do not work.**
 - A 3 minute blurb on every technique you are planning to use.
 - A 5 and 15 minute description of your teaching: what, how, why.
 - A 5 minute description of what you need to get started: equipment, students, space.
 - A 5 minute sales pitch of how you will fund your work
- **You also need to know who you are likely to collaborate with at the university or outside.**



The 5 Minute Research Description

- **Define the problem:**
 - What is the area (1 sentence).
 - Mention why it is important.
 - What is the **first key question** to address – this should be one specific aim from your prop.
 - Explain how that fits into the big problem.
- **What has been done before (< 4 sentences).**
- **What are you going to do that is new?**
i.e., how is it different than things that were done before.
- **Preliminary results (< 2 sentences).**



The 15 Minute Research Description for Each Proposal

- **Define the problem:**
What is the area (1 sentence).
Why it is important.
- **What is the **first key question** to address –**
this should be one specific aim from your prop.
Two other specific aims from your prop.
Explain how they fit into the big problem.
- **What has been done before (< 4 sentences).**
- **What are you going to do that is new?**
i.e., how is it different than things
that were done before.
- **Preliminary results (< 2 sentences).**



Planning the Organization of the Talk

- You are **telling a story**.
Tell it so they understand.
- **Graphics & figures first, then words.**
Easier to organize your talk.
- **Verbal comprehension is limited:**
Tell them what you are going to tell them,
then tell them,
then tell them what you told them.



Acknowledgments and Ending

- **Note American spelling of “acknowledgments”.**
- **Make it brief and to the point:**
*Thanks to R. Masel for his thoughts on this topic,
and P. Darrow for illustrations.*
- **Let the audience know when you are done!**
Best closing line:
 **“And finally, I’d like to thank you
 for your very kind attention.”**
(Then, **shut up and wait for the applause!)**