# Research Experiences

## Of a Female in a Male-dominated Area

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# Why go there at all?

- Love the feeling of achievement after solving a problem
- Like the beauty of abstract constructs
- Like to be able to construct something from nothing
- Can do anything you want: art, science at the same time while having a (well) paid job
- Want to be at the cutting edge, a pioneer…
- Want to be with smart people

# Why not go there?

- My dad/mom wants me to make a PhD
- To make a lot of money afterwards ($$)
- To hang a “Dr.”, “Ph.D” or a “M.Sc.” before / in front of my name
- Since everyone else is going there
- Since I couldn’t find a job
- Since it is so cool to be a student

# Choose an area

- Pick
  - an area you are good in
  - an area which is just starting to develop
  - an area that you like for all the reasons mentioned before
  - a supervisor who is a nice person

# Pick a topic

- An area where you think you can make a contribution (have an idea of how solve the biggest problem)
- Probably this idea will not work
- But it is a good start, gives a perspective, a motivation for reading papers and a critical viewpoint
- It will make you refine / change the problem until you nail it down…

# How to research a topic?

- Read everything you can find
- Write notes for each paper you read
  - but YOUR opinion, ideas, not just copy the abstract
  - this will help you remember what the paper was about when the number gets too large
  - use memory support tools: PDAs, flash-cards etc.
- Try to THINK about an idea everywhere you can
  - minimize your brain idle time
  - draw pictures
  - try to summarize, compare different approaches, see the “big picture”, and have an intuitive idea

# Discuss

- Discuss your understanding of the topic with everyone you can get hold of:
  - of course, with your supervisor
  - other grad students in the lab / class
  - on newsgroups
  - with your significant other or with friends
- People will think you are a crazy academic
  - No problem, as long as you can use them to bounce ideas
- Each of this will help you reflect on how you see the problem, will force you to explain in words your ideas, and on different levels for different audience

# Implement and Evaluate

- Bring idea down to a design
- Ask yourself at every stage:
  - how does this assumption / design decision relate to the problem
  - am I still solving the same problem
  - how general is my solution (isn't it just a hack?)
- Evaluate
  - Proof by existence (prototype)
  - Argument
  - Empirical – compare with the best other approach (hard)

# Publish or perish

- Yes!
- But it matters:
  - What you publish
  - Where you publish
  - How you write it
  - How you present it
- Building a reputation of a productive and serious researcher is important, not the number of papers
- Publish WELL, and you won’t perish

# Attending a conference

- Probably one of the most rewarding things
  - If you present your paper well
  - Get some relevant questions and insightful suggestions
  - Get a chance to discuss your ideas with the experts in the area
  - Get to know the people in person and let the people know you
  - Make friends and meet potential employers
  - Visit new places and stay in nice hotels, feel important
  - Get glory and recognition

# So what is the difference if you are female?

- In the period when you work alone (do the research and write the paper) – no difference
- But the differences start when you get to communicate with others about your research
  - in your research group (later, when you work, in your department)
  - at a conference

# Problems

- Invisibility
  - Whatever you say is not noticed
  - Whatever you do is not praised
  - Whenever you try to discuss research, conversation slides into chatting
- You do the unthankful work, someone else does the work that reaps rewards / recognition
- Never sure if recognition is due to your work or due to your gender
  - The dark side of affirmative action
  - Even in informal interactions, e.g. at a conference

# Why?

Man=Woman:

Treat the woman as a man (it is fair so), if she bends, it is her problem. Don't they want equality after all?

Man <>Woman:

True: Lower self-esteem, lower confidence, less assertive in communication

False: Other differences – usually based on deeply anchored stereotypes

# Stereotypes

- In men
  - “If she is smart she can’t be beautiful”,
    “If she criticizes my idea, she is incompetent”,
    “If she is assertive, she is aggressive”

Sometimes innocent, but sometimes to protect the ego and self-respect and sometimes plain jealousy

- In women
  - “If I say “no”, this will spoil the relationship.”; “OK, I will take this job, so that there is peace”
  - “It is ugly to brag all the time about my achievements, like the boys”,
    “If I just work harder, somebody will notice and reward me”,
  - “He is so confident. Maybe he is right and I am wrong; maybe I haven’t thought so deeply about this as he”.

# So what to do?
# First approach


Play the boys game

- Talk loud
- Be confident (or pretend)
- Never let them interrupt you!
- Reiterate about what you have done or your ideas
- Dress like a man and do the man's things
- Being feminine is a weakness

But you may end up sacrificing too much

  - Family, kids, male attention

# The other approach

a Beautiful Mind: how Hollywood star Hedy Lamarr invented spread spectrum technology - and transformed the wireless world

Be feminine

- Be kind
- Dress well, be charming
- Let them fight for your attention
- Make the best from it
  - Dine with the big wigs
  - Accept offers to diversify the environment
- Live with the advantages and disadvantages
- But you may wonder whether they respect you as a researcher or as a decoration


Inbetween these two extremes

# More you can do

- Connect
  - ACM Committee on Women in Computing (ACM-W)
  - Computing Research Association Committee on the Status of Women in Computer Science and Engineering (CRA-W)
  - The Institute for Women and Technology (IWT)
- You will be amazed how much experience there is to be shared…

# And in the end

- Whichever approach you choose
  - You will have your research and all the things because of which you choose to do research
  - You will go through periods of frustration, of feeling unappreciated and will ask yourself “Were all the sacrifices and all the work worth it?”, but also through triumphs and star-moments. Both of the extremes will be brief. What remains in between is your work.
  - Hard work is the best cure and the best approach.

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# DO WHAT YOU WANT AND ENJOY IT!