

CISC-810: Research Foundations

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Research isn't just research

- Who cares what you do, if you never tell them?
- You'll need to present your ideas in various forms and venues:
 - Networking with colleagues at RIT and elsewhere
 - Writing and submitting papers to workshops, conferences, and journals
 - Presenting papers at workshops and conferences
 - Putting together a website that highlights your interests and research activities
- ...oh, and these things also provide useful experience for job interviews, not to mention valuable job skills...



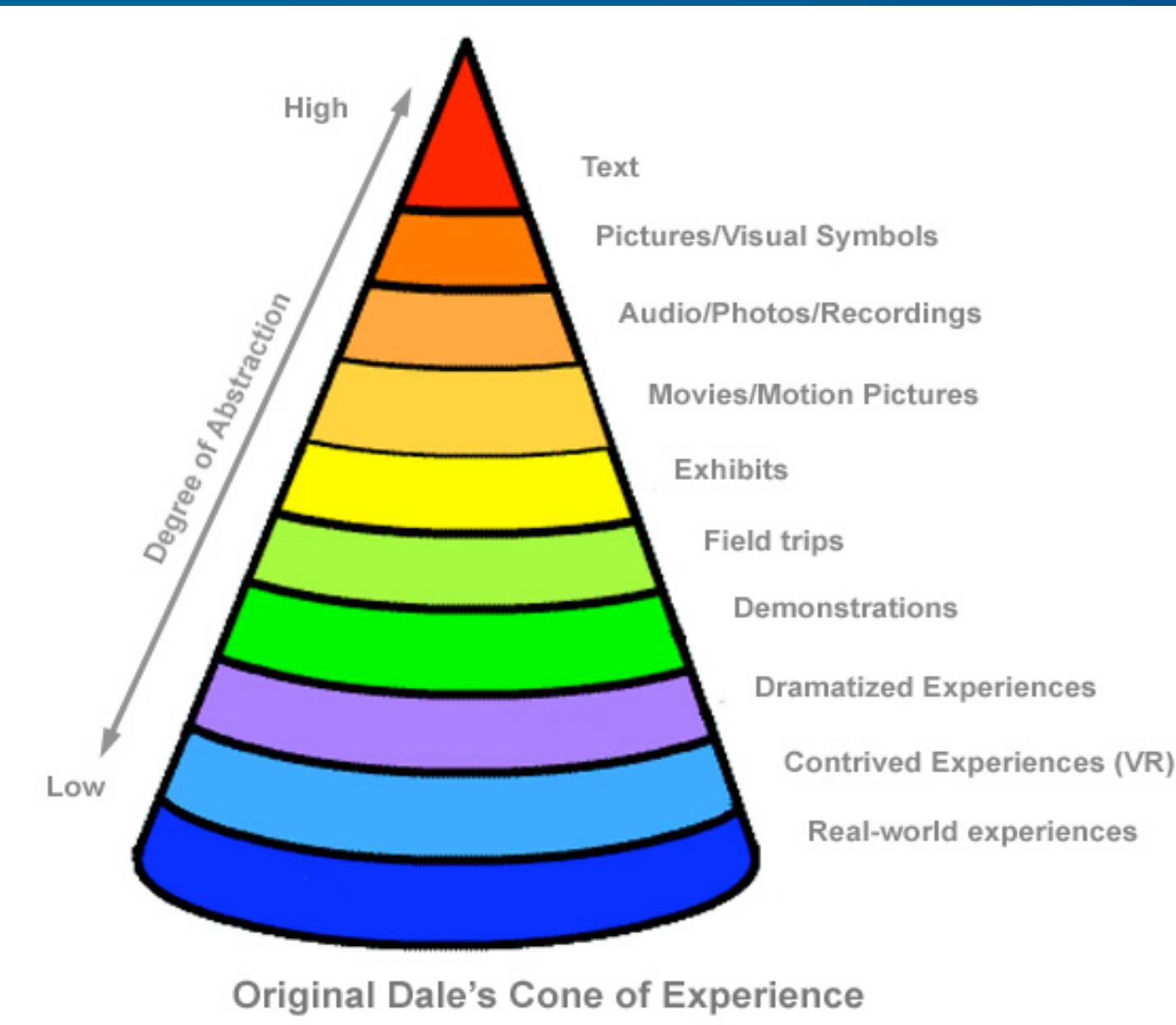
Networking

- Meet people! It helps to have an objective:
 - Find out what research they're currently working on
 - Tell them what you're currently working on
 - Find an area of common interest
 - Learn what their visions/future directions are
 - Suggest a new direction for research or topic for a class
- What's in this interaction for you?
- What's in it for them?
- If you know two friends, and they know two friends, and they know two friends... Pretty soon you know everybody!



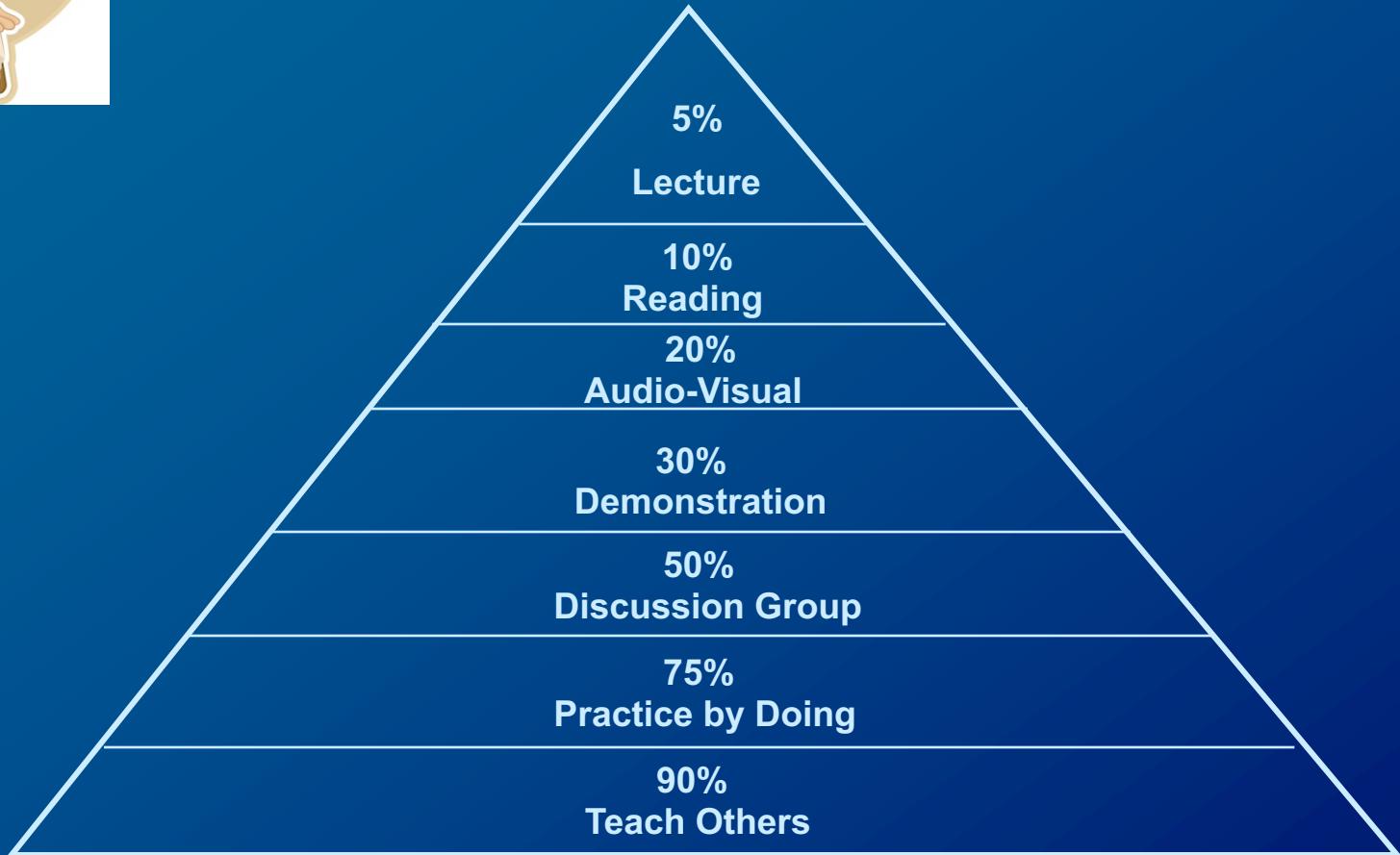
Networking II

- You need to be prepared to summarize your research
 - For a thesis topic, you should have a 1-minute, 5-minute, and 15-minute presentation already thought through
 - The same goes for other projects you've been working on
 - Be able to distinguish between your original contributions, your advisor's contributions, and ideas drawn from previous research
 - Practice with other students!





How We Learn



How we absorb information

- 1% through taste
- 1.5% through touch
- 3.5 through smell
- 11% through hearing
- 83% through sight



A picture is worth a thousand words

- Visuals:
 - slides
 - movies
 - videos





How to give a bad talk

1. Thou shalt not be neat
2. Thou shalt not waste space
3. Thou shalt not covet brevity
4. Thou shalt cover thy naked slides
5. Thou shalt not write large
6. Thou shalt not use color
7. Thou shalt not illustrate
8. Thou shalt not make eye contact
9. Thou shalt not skip slides in a long talk
10. Thou shalt not practice

How not to give a bad talk

Or

Death by PowerPoint



Giving talks: timing



- Know how long you have
 - How long is the talk? Are questions included?
 - A good heuristic is 2-3 minutes per slide for theory works and 1-2 minutes per slide for system/experiment works
 - If you have too many slides, you'll skip some or—worse—rush desperately to finish. Avoid this temptation!!
 - Almost by definition, you *never* have time to say *everything* about your topic, so don't worry about skipping some things!
 - Unless you're very experienced giving talks, you should practice your timing:
 - A couple of times on your own to get the general flow
 - At least one dry run to work out the kinks
 - A run-through on your own the night before the talk



Giving talks II: audience

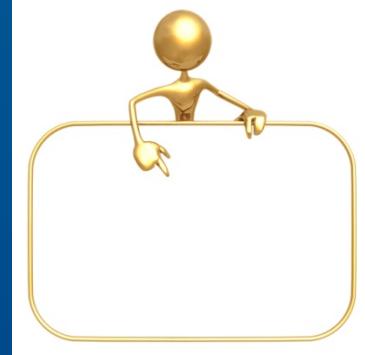
- Know who your audience is
 - Don't waste time on basics if you're talking to an audience in your field
 - Even for these people, you need to be sure you're explaining each new concept clearly
 - On the other hand, you'll lose people in a general audience if you don't give the necessary background
 - In any case, the most important thing is to emphasize **what you've done** and **why they should care!**

Giving talks III: interest



- Know what you want to say
 - Just giving a project summary is not interesting to most people
 - You should give enough detail to get your interesting ideas across (and to show that you've actually solved, but not enough to lose your audience)
 - They want to hear **what you did that was cool** and **why they should care**
 - Preferably, they'll hear the above two points at the beginning of the talk, over the course of the talk, and at the end of the talk
 - If they're intrigued, they'll ask questions or read your paper
 - Whatever you do, don't just read your slides!

Preparing slides



- Don't just read your slides!
- Use the minimum amount of text necessary
- Use examples
- Use a readable, simple, yet elegant format
- Use color to emphasize important points, but avoid the excessive use of color
 - Abuse of animation is a cardinal sin!
- “Hiding” bullets like this is annoying (but sometimes effective), but...
- Don't fidget, and...
- Don't just read your slides!

And now ...



Let me repeat everything again...

Structure of your presentation:

Tell them what you are going to tell them

Tell them

Tell them what you just told them

Main Principles

Before the actual presentation

- Prepare your talk and yourself
- Practice, practice, and practice
- Learn the policy regarding the talking time and questions (or set it up yourself)
- Talk to chairperson



Prepare yourself ...mentally

- It is normal (and OK) to be a little nervous
- Turn the nervous energy into constructive enthusiasm
- Do not overdo!



Communicate the KEY ideas

Concentrate on a few ideas

Skip over what is standard, obvious or not complicated



Know your audience

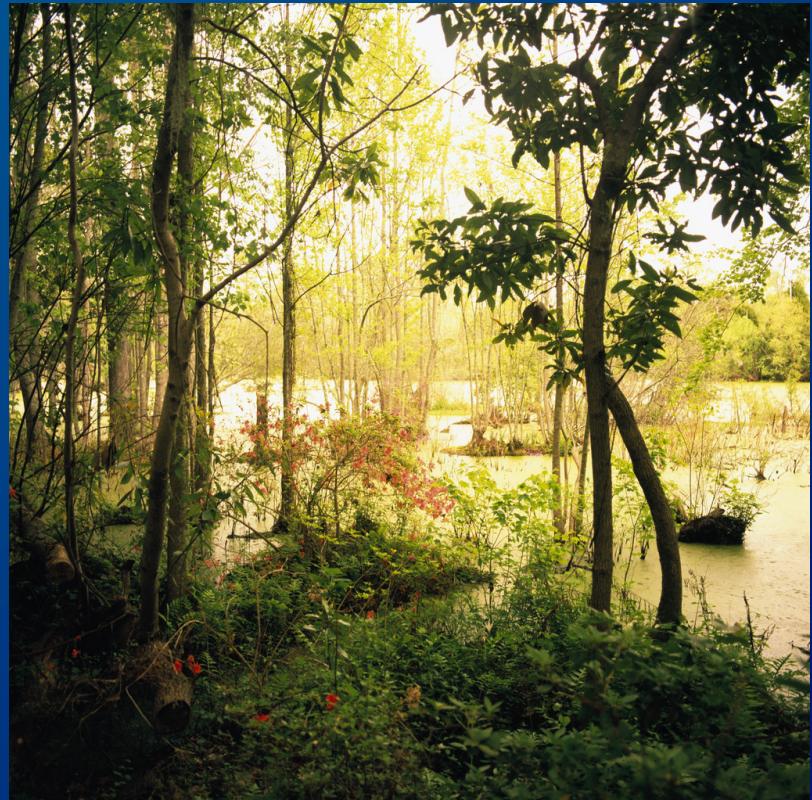
- Public
- Scientists
- Computer scientists
- Theoretical computer scientists
- Experts in a particular problem



Do not get bogged down in details

You have been thinking about the topic for some time (years?)

Your audience?



Structure your talk

Separate your talk into
a few distinctive
parts

Delineate the parts

But move the
audience from one
to another



How to structure? Top-down approach

- Introduction: informal brief description of the paper, its importance for the audience
- Body: more formal but abstract description
- Technicalities: detailed presentation of a critical part
- Conclusion: summary of the key results

Introduction

- Define the problem
- Motivate the audience
- Introduce terminology
- Discuss earlier work
- Emphasize the paper contribution
- Provide a road map



Body

- Abstract the major results
- Explain the significance of the results
- Sketch a proof of the crucial results



Technicalities

- Present a key lemma: important, non-trivial, should give a flavor of the rest of technical details
- Present it carefully



Conclusion

- Hindsight is clearer than foresight
- Give open problems
- Indicate that your talk is over



Getting through to your audience



- Use repetition
- Remind, do not assume
- Do not overrun
- Maintain eye contact
- Minimize language difficulties
- Do not get anxious
- Control your voice and motion
- Take care about your appearance

How to wake up the audience

- Important topics and relations, e.g. money, jobs, grading
- Short anecdotes that demonstrate the topic
- Relationship with previous talk or campus experience
- Promise (threat?) of a test (only works with students!)



Question time

- Could be more important than presentation
- You may rephrase the question to buy some time
- Tell “I do not have these data” or even “I do not know the answer”
- Do not interrupt the questioner
- Do not make another speech



End of talk

- Make sure you keep an eye contact with chairperson in order not to overtime
- Summary and conclusion slides should be short
- Tell audience you are done



Some useful resources

- Giving talks:
 - Mark Hill, “Oral presentation advice”
 - Patrick Winston, “Some lecturing heuristics”
 - Simon L. Peyton Jones et al., “How to give a good research talk”
 - Dave Patterson, “How to have a bad career in research/academia”

Questions?
