

# Preparing Your Thesis Proposal and Becoming a PhD Candidate



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# In this session ...

- What's a Thesis
- The Thesis Proposal
- Stories
- Pitfalls and Best Practices

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# Where are you in the THESIS PROPOSAL PROCESS? (Select all that apply)

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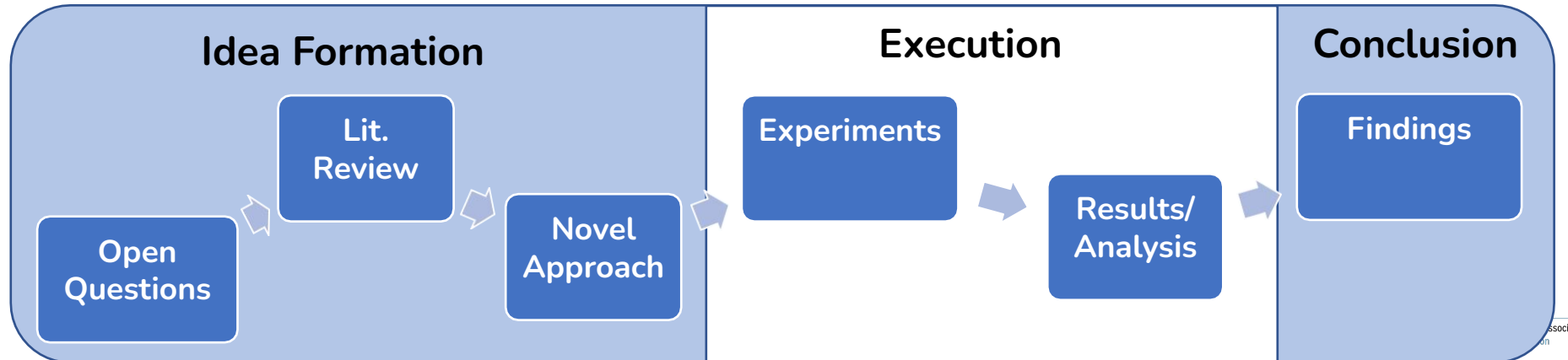
# The Thesis (aka Dissertation)

# the·sis | \ 'thē-səs

**1:** a dissertation embodying results of original research and especially substantiating a specific view *especially* : one written by a candidate for an academic degree

**2a:** a proposition to be proved or one advanced without proof : **HYPOTHESIS**

**2b:** a position or proposition that a person (such as a candidate for scholastic honors) advances and offers to maintain by argument  
-Merriam Webster



# To Advance the Discipline

## with new knowledge

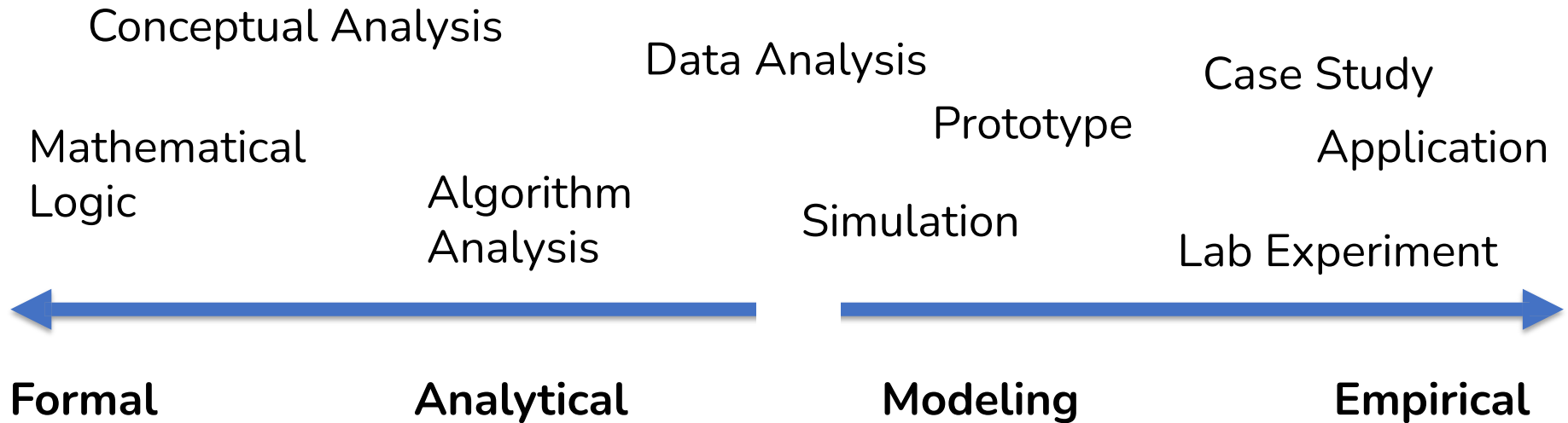
- new fundamental concepts about computation
- better capabilities in computer design, programming, or usage
- new methods or algorithms to solve new problems in other fields
- render useful computer application, tool or data artifacts

## with new professionals

- trained to be proficient and independent researchers
- with fundamental knowledge and skills appropriate for the discipline
- adept with deep expertise appropriate for specialty area

# CS Research Methods

Exploratory research based on  
the formulation and study of a hypothesis



# Example Thesis Design Patterns

Problems + Research Methods = Outcomes

- Theoretical: A study based on mathematical logic and principles to develop new theorems
- Analytical: Conceptual analyses to evaluate an algorithmic solution to an existing problem, compared to current techniques
- Experimental: Implementing and evaluating a software or hardware prototype that renders new capabilities
- Observational: Understanding new concepts of human behavior in relation to technology



# Real Thesis Examples

## Cheryl's and Dorian's Elevator Pitches

### Other Considerations:

1. How far along was the project when you proposed?
2. Where did the problem/project come from?
3. How close was the final project to the original proposal?
4. Was your proposal and defense committee the same?

# Thesis Proposal

# The Thesis Proposal

Your proposal is a formal documentation of your **thesis execution plan**, providing **opportunities** to ...

master background  
of chosen sub-field

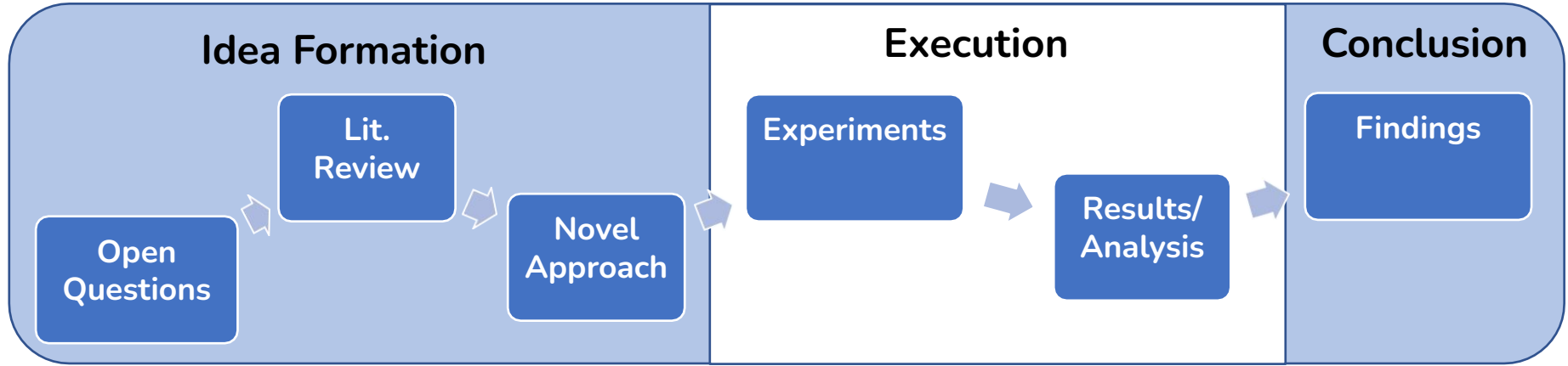
demonstrate your  
research readiness

receive (early)  
feedback and advice

brainstorm and  
refine project ideas

get your thesis plan  
formally endorsed

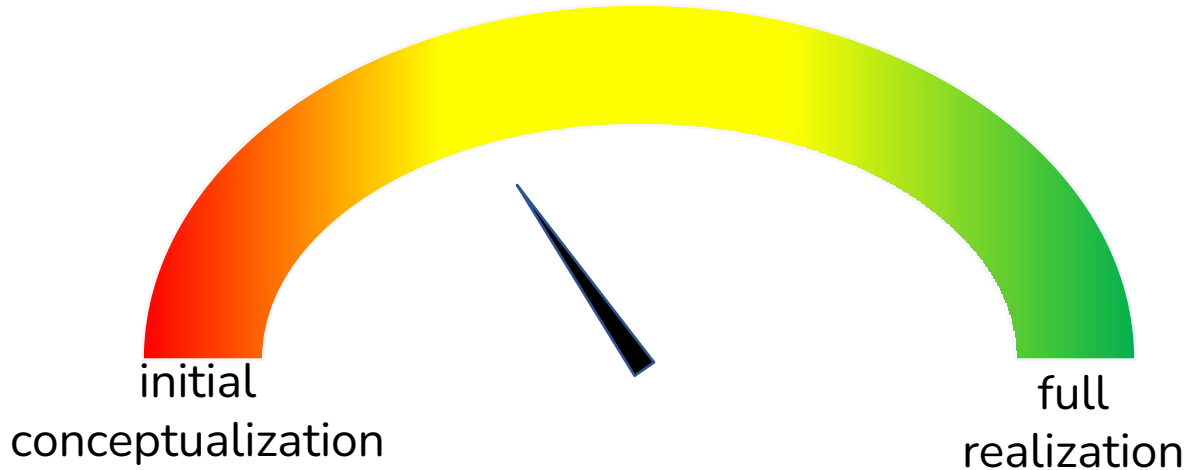
# Proposal process



Are you ready to propose?

1. Demonstration of feasibility
2. Formal writeup
3. Committee formation
4. Presentation/Defense

# When to Propose



# Executing a Strong Proposal

# A strong research proposal ...

Motivates ...

- **background** for the target problem and challenges
- **inspiration** for who should care and why
- **limitations** of state of the art and field

Describes ...

- objectives or **target problems**, questions and challenges
- a **novel approach** for addressing the problems
- a hypothesis of anticipated **outcomes**
- a convincing **methodology** for evaluating the hypothesis
- **feasibility** arguments for proposed methodology
- an **assessment**, including risks, costs, resources and time

# Arnold's RIPE Project Assessment

Rate each criteria “*High*”, “*Medium*”, or “*Low*”

**Risk:** How feasible is the project? How high is risk of “failure”?

**Impact:** If successful, how impactful will the outcomes be?

**Passion:** How excited/motivated are you about the project?

**Effort:** How much time and resources are needed to complete the project?



# PhD Candidacy

aka

“All **B**ut **D**issertation”

# Publishing your thesis work

Implicit or explicit program/advisor publication requirements?

- papers published? written? researched?

How do I turn my publications into my thesis document?



# When are you PHinished?

Easiest: Proposal is fully executed.

Hardest: Your advisor and committee say so.

*Truest: You convince your advisor and committee!*

# Common Pitfalls

# Common Pitfalls



- **Proposal Process:**
  - Ineffective proposal, including ambiguities and vagueness, incompleteness, poor writing, and unresolved research plans
  - Ineffective presentation, including cramming entire proposal document in a short timespan
  - Committee members not seeing your proposal document in advance
- **Dissertation Process:**
  - Research gets scooped
  - Results not as expected
  - Unexpected technical challenges
  - Far deviation from proposal plan
  - Interpersonal challenges with advisor or collaborators, including incompatibility and departure
  - Burnout
  - Life

# Interactive Q&A

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## Choose up to three concerns about proposal and candidacy process

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# Closing Thoughts



# Cheryl's Closing Thoughts

- Effective Time Management
  - Writing Prowess: Acknowledge the interactive nature of the writing process when incorporating feedback and the refinement may take longer than expected
  - Prioritize and Stay Focused
- Motivational Techniques
  - Strategic selection of a research topic that (1) You, (2) Your advisor and (3) committee are interested in
  - Personal Drive: Stay motivated, tenacious and be persistent
  - Coping with Writer's Block: Have multiple strategies to maneuver period of creative stagnation
- Take Care of yourself and seek assistance when needed
  - Physical (e.g., get proper rest, nutrition)
  - Emotional & Mental Health (e.g., relax & recharge)
  - Well-being is multi-faceted (e.g., Social, Intellectual, Environmental, Spiritual, Financial, etc.)

# Dorian's Closing Thoughts

- Tackle and resolve difficult problems early!
- Find groups for technical, logistical and emotional support!
  - Engage periodically with your committee
- Establish good routines!
  - When and where do you work best?
  - What habits help you work best?
  - Understand and mitigate chronic distractions?
- Your dissertation is not the end, just the beginning!

# Session Materials

<https://tinyurl.com/IDEALS24-TP>

