The Introduction

Better than this one.

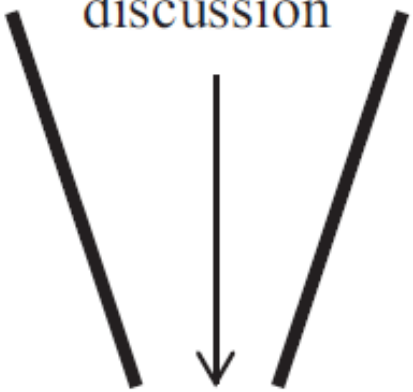
Three functions of the Introduction

1. Advertisement: why should people read the paper?
2. Summarize: what work was done?
3. Set context: why is the work interesting?

#1 and #2 are less important now that most papers have Abstracts

Three components of an Introduction

1. Define a research territory
2. Establish a niche within the research territory
3. Occupy the niche



Introduction

General context of the work *(1a)*

Narrower research area and statement of its importance *(1b)*

Identification of a gap or other need for research *(2a)*

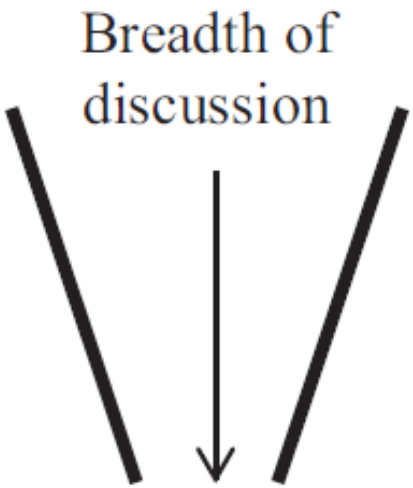
Specific research question meeting the identified need *(2b)*

Summary of approach to answer the research question *(3a)*

Announcement of principal findings *(3b)*

1. Define a research territory

- Start broad: what context makes your work **most important** to **the most readers?**
- *How* broad depends on what journal you're aiming for
- Then within that broader field, where does your work fit? This is your *research territory*.



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1. Define a research territory

- ***How* broad depends on what journal you're aiming for**

"The standard model of particle physics describes the fundamental particles and their interactions via the strong, electromagnetic, and weak forces."

"Exclusive J/ψ and ψ(2S) meson production in hadron collisions are diffractive processes that can be calculated in perturbative quantum chromodynamics (QCD)"

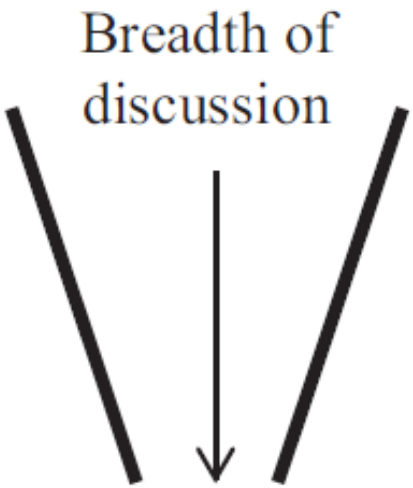
Which is *Nature* and which is *Journal of Physics G: Nuclear and Particle Physics*?

1. Define a research territory

- EX: Astronomy Paper:

1a) Sentence or tow about how life in the universe depends on the existence of stars and planets and thus on the physics by which diffuse gas and dust condense to form objects

1b) Indicate that focus is massive stars. Point out massive stars are critical because supernovae explosions seed newer stars and planets with heavy elements.



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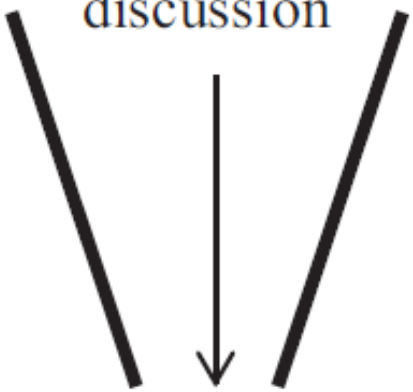
2. Establish a niche within the research territory

- Identify concrete, narrow **open problem** within the territory
- State specific research question



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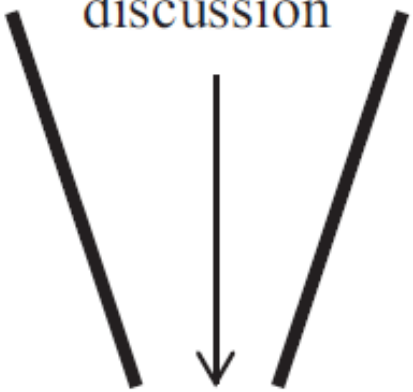
2. Establish a niche within the research territory

- EX: Astronomy Paper:

2a) There are multiple models for massive-star formation, making different predictions about appearance and spatial distribution.

2b) Do massive protostars always appear within local clusters of protosars, as the cluster model predicts?



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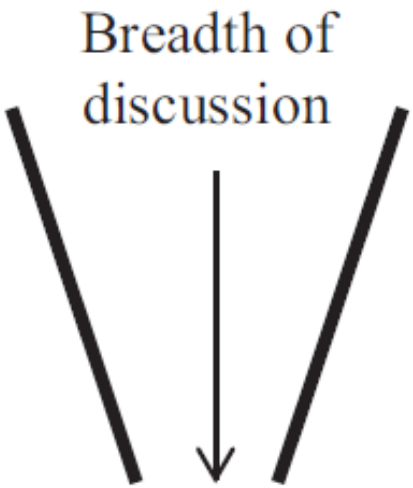
3. Occupy the niche

- What did you do, and how does it answer the research question?
- This involves brief summary of major methods (few sentences)
- Controversial: should you end with a brief summary of the *results*?



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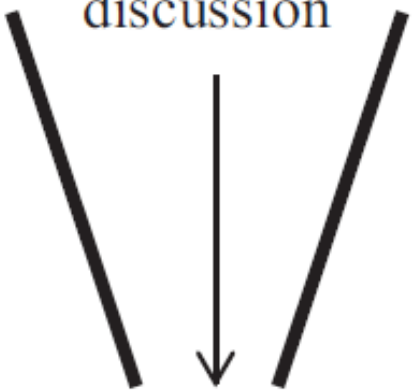
3. Occupy the niche

- EX: Astronomy Paper:

3a) Indicate that you used radiotelescopic observations to identify massive protostars by inferring mass from the relationship between radius and rotational velocity, and that you calculated distances among protostars using annual paralax. This provides a test of the cluster assist model, because…

3b) Findings?



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Today's workshop

Introduction markup

- Each group will take a paper with a short Introduction.
- Label the following elements:
  - (1a) general context of the work (yellow);
  - (1b) narrower research area, and its importance (orange);
  - (2a) identification of knowledge gap (blue);
  - (2b) specific research question to close that gap (green);
  - (3a) summary of approach to answer the research question (pink).
- Some Introductions also have (3b) announcement of principal findings. Does yours?
- If yes, remove them (if needed, replace with concise statement of question).
- If no, draft 1-2 sentences to play this function (if the Results are complex, just make something up) and append them
- Which way is better?

ASSIGNMENT - Write down 1a)-3b) for your 495 paper and be ready to read and discuss.