[Morse code beeps]
[Whoosh]
[Helicopter rotor]
Hi. My name is Annika Thomas, and I'm a fellow
with the AeroAstro Communication
Lab at MIT,
and today we're going to be talking about
how to organize a research paper.
By the end of this lesson, you should be
able to understand that organization
is important for an audience's
understanding of a research paper.
You'll be able to use
common organization templates
to craft a cohesive research story,
and you'll be able to develop
central arguments
and organizational structure of a paper.
So we're going to start off
with a brief introductory activity
where you're going to organize
paper claims.
So go ahead and open up the activity
called “Organize Paper Claims”
and take about five minutes to organize
these lettered claims into the story
for a research paper.
Write the sequence of letters from A
to J in your chosen
order, down, and then we can compare it
with the next slide,
where we have the actual answers
of how this research paper was organized.
[Alien spaceship beeps]
So in
the paper
“Length Scaling in Spacecraft Dynamics”,
this is the organization of the claims
within the research paper.
And you might have
some little discrepancies or changes
in the way
in which you organize these specifically,
but they should follow
roughly the same format where it goes
from more general ideas into specifics
and then back into general ideas again.
And so we're going to talk a little bit
about this structure of papers, which
is the way that you should be presenting

material in your research papers.
So we use what's called the hourglass
approach, where the hourglass structure
is a measure of generality
within your paper.
So you start off with more general things
like establishing significance,
describing the status quo,
and identifying the gap
that you're addressing with your paper.
Then you move into your work of addressing
the problem where you talk about
what did you do?
You fill the gap with your research
and then reestablish
significance in the context of the field.
Now this hourglass can look
a bit different.
The shape of
it is largely dependent on your audience.
If there's a larger bowl,
this is usually focused more towards
a general audience that doesn't have
as much background information
on what you're working on.
If you're working with an audience
that has a similar experience
and background to you,
you might have a longer stem instead,
where you are talking about the specifics
of what you did,
and not spending as much time establishing
kind of the generality of your work.
So your paper is going to be comprised
of what we call arguments.
And arguments are a combination
of claims, evidence, and reasoning.
Your claim is a
statement of our understanding
about a phenomenon,
the results of some study or you
as the author, and your view of the field.
Your evidence is your quantitative
or qualitative data
that is used to support that claim,
and your reasoning
is the justification of that claim,
which shows how the evidence
specifically supports that claim.
And when you shape these arguments,

we actually work backwards.
We start by gathering evidence,
including notes,
results, slides, etc.
Then we can rearrange that material,
that evidence,
until we start to see a logical series
of conclusions.
Next, we identify thematic bins
that correspond to different claims.
And finally we tie that evidence together,
those claims, into a mean claim
that has reasoning associated with it.
So remember,
when you're working backwards
and you're shaping these arguments, that
the goal of your paper is to prove
that you did something new and useful.
So just to
recap, the two main tools that you learned
about during this lesson
for organizing a research paper include,
first off, crafting your research story
using the hourglass approach,
of kind of changing the generality
of what you're talking about
based on your audience.
Next, we learned how to develop arguments
using claims, evidence, and reasoning.
And now you should be able to use
common organization templates
to craft a cohesive research story
and to develop the central arguments
in organizational structure
of your research paper.
[Morse code beeps]