ADVANCED SCIENCE RESEARCH CENTER
THE GRADUATE CENTER
CITY UNIVERSITY OF NEW YORK

CONVERGENCE RESEARCH

Grand challenges & wicked problems addressed via diverse teams

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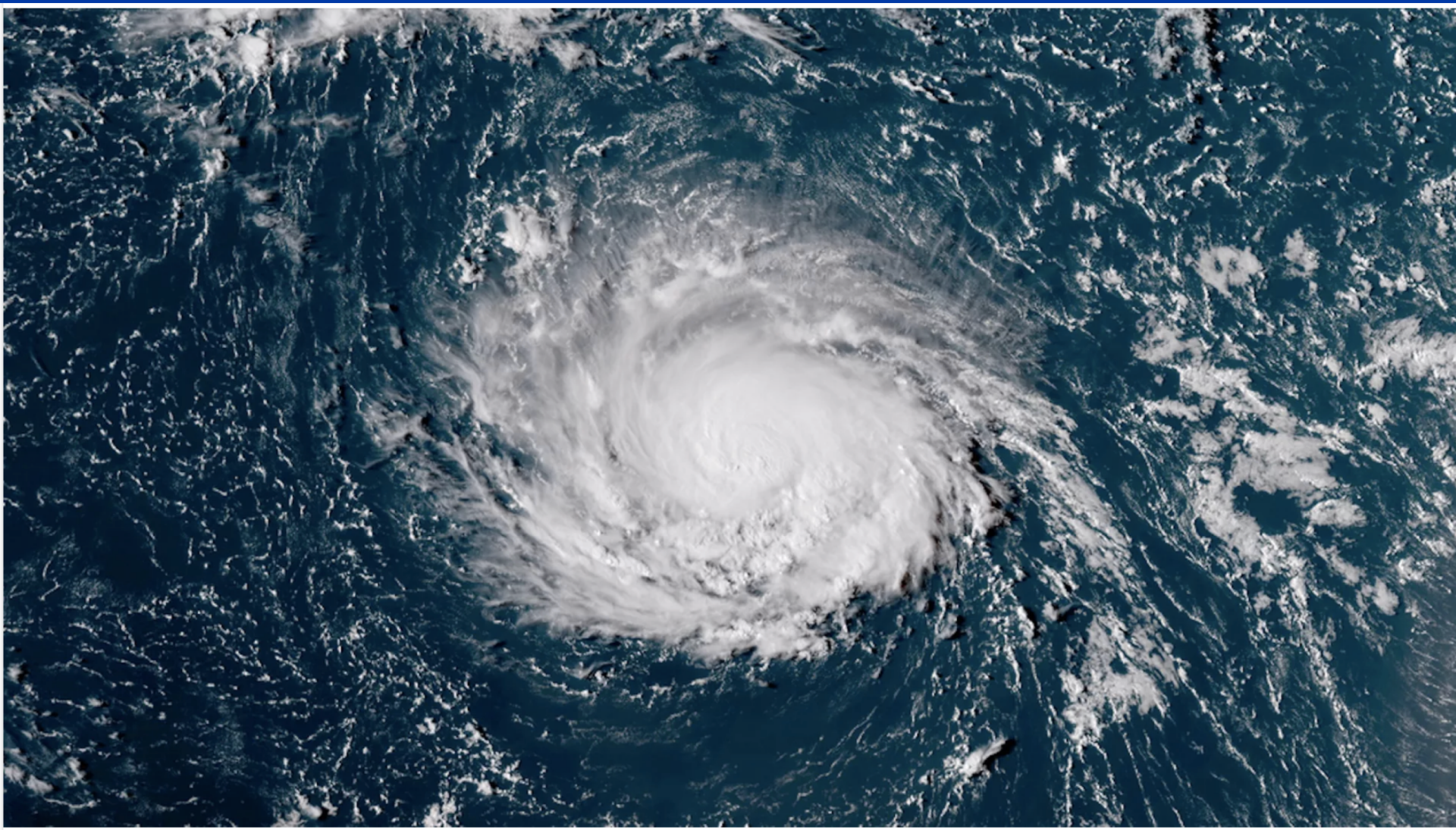
Welcome!

- Participants
  - NYC Institutions: CUNY, NYU, Columbia, New School & Mt Sinai Icahn School of Medicine
  - ~ 17 CUNY Colleges
  - ~ 22 disciplines or fields
- Speakers:
  - NSF: Dr. Joanne Tornow
  - NIH: Dr. L. Michelle Bennett
- Interactive discussions
- Agenda – fits a lot into one day!



Due to Hurricane Florence, Dr. Tornow is attending via Zoom

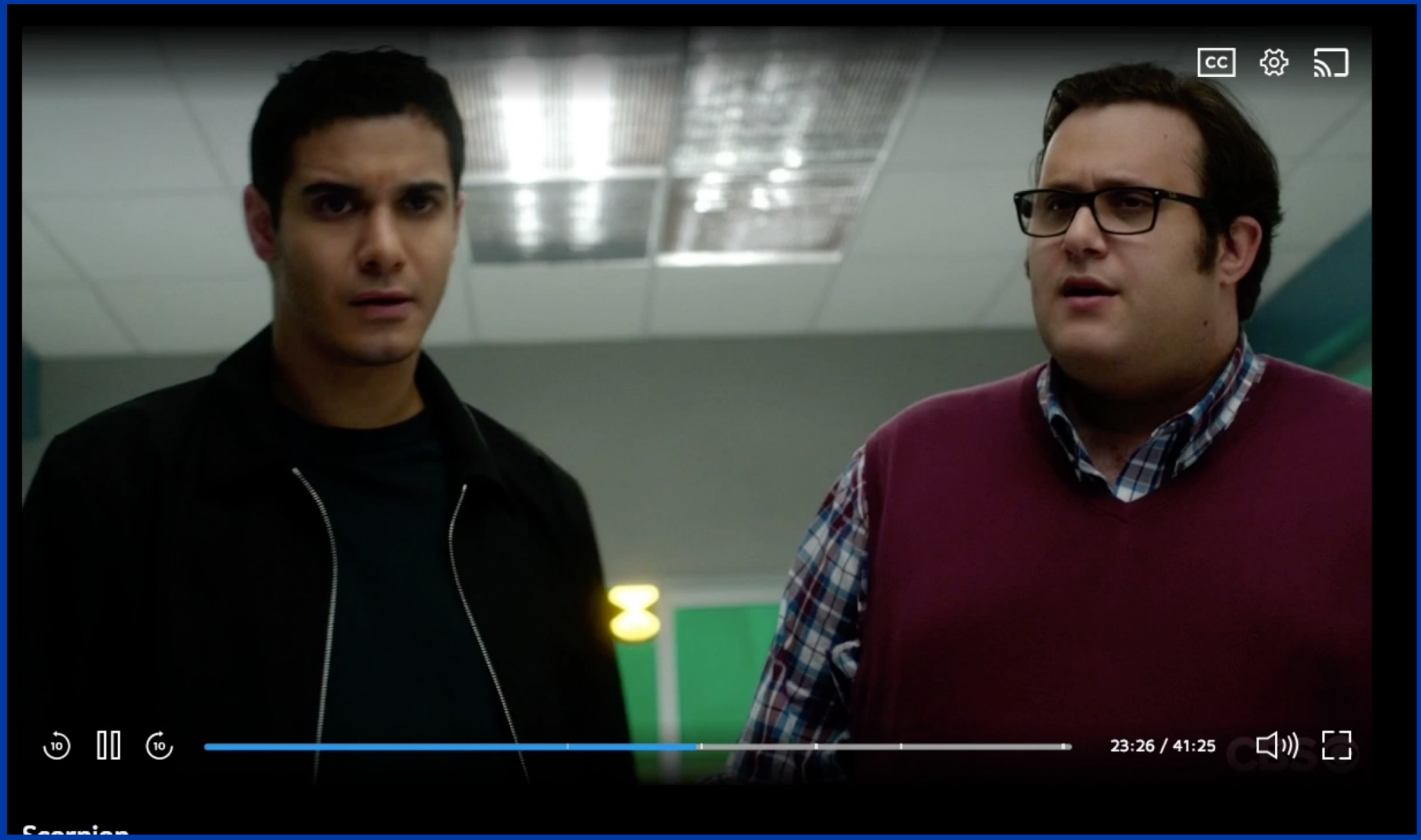
Convergence research: 2 key elements

- A significant research problem with potential high impact solution(s) to benefit society
- A high functioning collaborative team

Workshop Goals

- Help faculty understand how sponsors are thinking about convergence / team science
- Provoke deeper thinking about convergence research and building effective, collaborative teams
- Foster community building to enhance collaborative, convergence research across disciplines and CUNY – an ASRC mission
- Think deeply & have fun

Scorpion clip (season 4 episode 17)



Useful Terms

- Diversity
  - Disciplinary lenses (conceptual, methodological)
  - Geography
  - Gender, race, ethnicity, social class
  - Stakeholder communities & interests
- Wicked problem
  - A social or cultural problem that is difficult or seemingly impossible to solve:
    - incomplete or contradictory knowledge
    - the number of people and opinions involved
    - the large economic burden
    - nature of these problems as they relate to other problems (www.wickedproblems.com)
- Incommensurable
  - things that are unlike and apparently incompatible, sharing no common ground
  - things that are very disproportionate, often to the point of defying comparison (Merriam Webster)
  - some scientific theories (concepts, paradigms, worldviews) are mystifying to researchers trained in other concepts, paradigms, etc.
- Reflexivity
  - an active process of reflecting on research processes and data interpretations as well as processes or interactions of collaborations

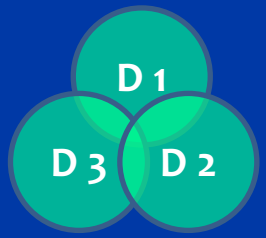
Collaboration Configurations

Distinguishing characteristics

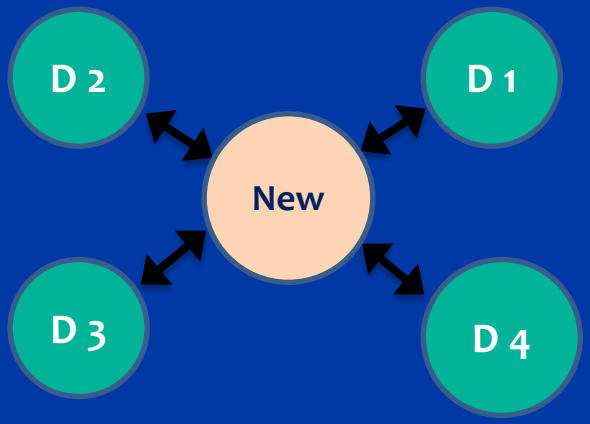
Uni-disciplinary : Single lens

Multi-disciplinary : Additive

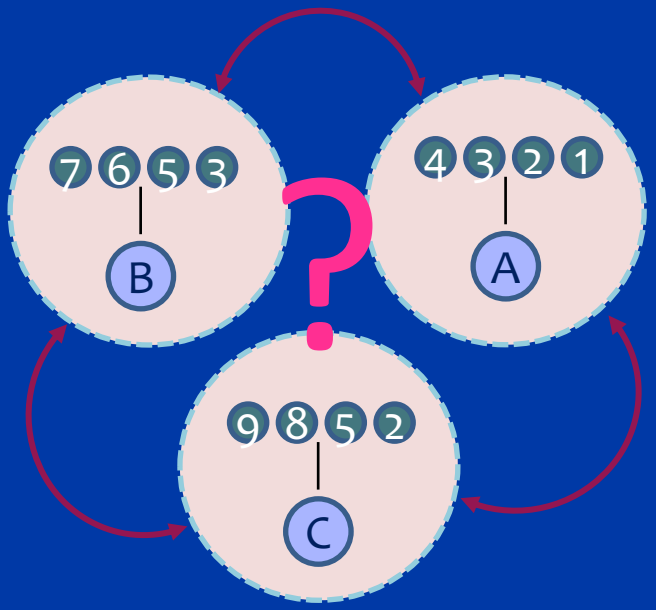
= discipline



Inter-disciplinary : **Integrate**



Trans-disciplinary : **Integrate**
Transcend
Create new field
Depth + breadth

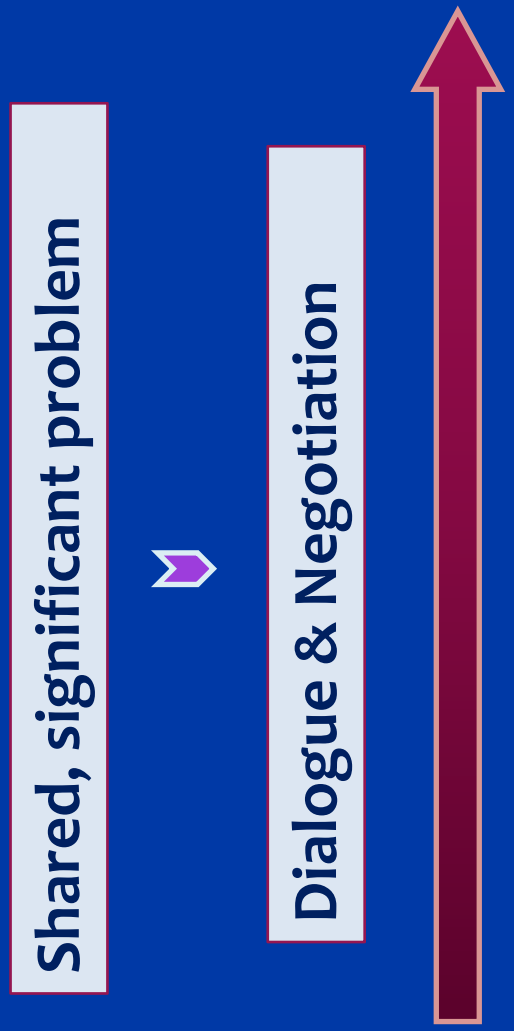


Convergence :

Radical ***diversity***
Systematic complexity
Reflexive team science
Focused on grand challenges

1 = Disciplines

C = Research sub-problems



Incommensurability & Strong Diversity

- Convergence
- Cross-disciplinary
- Inter-disciplinary
- Multi-disciplinary
- Uni-disciplinary

Commonality

Convergence Website

- https://convergence.commons.gc.cuny.edu/
- A work-in-progress website of resources

Role play / empathy exercise

- 20 minute convergence thinking warm-up
  - how well do people from different disciplines "predict" how someone from another discipline thinks about a concept or their motivations
- See handouts on tables

Role play and discuss

15 minutes to think & discuss at tables
5 minutes to share findings with full group

Guest Speakers

Dr. L. Michelle Bennett,

- Director, Center for Research Strategy, National Cancer Institute, NIH
- A thought leader in the Science of Team Science
- Topic: Perspectives on Convergence and Team Science

Dr. Joanne Tornow

- Acting Assistant Director of Biological Sciences at NSF
- Deeply involved in strategic thinking about convergence at NSF
- Topic: Research, from an NSF perspective