Conceptual Integration across Disciplines and Convergence Research

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Conceptual Integration across Disciplines

**What** are we actually talking about?

What type of research do **you** do?

**How** do we actually do interdisciplinary research?

**Why** would we want to move in the direction of deeper conceptual integration and convergence research?
## Conceptual Integration across Disciplines

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Disciplinarity
Unidisciplinarity
Multidisciplinarity
Interdisciplinarity
Transdisciplinarity

Disciplinarity
Refers to a specific branch of learning or body of knowledge whose defining elements—such as objects and subjects of study, phenomena, assumptions, epistemology, concepts, theories, and methods—distinguish it from other knowledge formations.

Unidisciplinarity
A process in which researchers from a single discipline, field, or area of established research and education practice work singly or collaboratively to study an object or to address a common question, problem, topic, or theme.

Multidisciplinarity
Juxtaposes two or more disciplines focused on a question, problem, topic, or theme. The juxtaposition fosters an array of information, knowledge, and methods, but disciplines remain separate. The existing structure of knowledge is not questioned.

Interdisciplinarity
Integrates information, data, methods, tools, concepts, and/or theories from two or more disciplines focused on a complex question, problem, topic, or theme. The key defining concept of interdisciplinarity is integration, a blending of diverse inputs that differs from and is more than the simple sum of the parts.

Transdisciplinarity
Transcends disciplinary approaches through more comprehensive frameworks, including synthetic paradigms. The construct goes beyond interdisciplinary combinations of existing approaches to foster new worldviews or domains. Transdisciplinarity often involves stakeholders from academia, the public and private sectors, and/or non-profit organizations.
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https://hazards.colorado.edu/resources/research-centers

https://hazards.colorado.edu/resources/recent-awards/nsf-awards
## Increasing Conceptual Integration Across Disciplines

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Increasing depth and breadth of knowledge

Increasing depth, breadth, and integration of knowledge
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**Conceptual Integration across Disciplines**

- **Unidisciplinarity**: Increasing *depth* of knowledge
- **Multidisciplinarity**: Increasing *depth and breadth* of knowledge
- **Interdisciplinarity**: Increasing *depth, breadth, and integration* of knowledge
- **Transdisciplinarity**:
Methods and Ethics in Hazards and Disaster Research
Interdisciplinary Methods and Approaches in Hazards and Disaster Research

How do we actually do interdisciplinary research?

• Trends and Developments
• Theory
• Methods
• Approaches
• Interdisciplinary Research Projects
• Applications
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(1) Research driven by a specific and compelling problem
- Convergence research is generally inspired by the need to address a specific challenge or opportunity, whether it arises from deep scientific questions or pressing societal needs (NSF, 2019: 1).

(2) Research that involves deep integration across disciplines
- As experts from different disciplines pursue common research challenges, their knowledge, theories, methods, data, research communities, and languages become increasingly intermingled or integrated. New frameworks, paradigms, or even disciplines can form sustained interactions across multiple communities (NSF, 2019: 1).

NSF is encouraging it.
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"An approach to knowledge production and action that involves diverse teams working together in novel ways—transcending disciplinary and organizational boundaries—to address vexing social, economic, environmental, and technical challenges in an effort to reduce disaster losses and promote collective well-being" (Peek et al., 2020, p. 2)

NSF is encouraging it.

Our field demands it.

- Vitality: Health and Positive Functioning
- Opportunity: Life Goals and Financial Stability
- Connectedness: Community Support and Social Interdependence
- Contribution: Meaning, Purpose, Engagement and Belonging
- Inspiration: Motivation and Hopeful Activities

Reduce Disaster Losses

Identify and Address the Root Causes of Disaster

Promote Collective Well-Being

- Climate Change
- Environmental Degradation
- Hazards Exposure
- Population Growth in Hazardous Areas
- Poor Land Use Planning
- Expansion of the Global Economy
- Corporate and Political Corruption
- Poverty and Economic Inequality
- Social Injustice, Patriarchy, and Structural Racism
- Lack of Building Code Adoption and Enforcement
- Inadequate Policy Frameworks
- Lack of Political Will or Ethical Leadership
- Public Mistrust of Authorities

- Death and Injury
- Property Loss
- Infrastructure Failure
- Crop Loss
- Job Loss
- Business Closure
- Emotional Distress
- Loss of Social Networks and Support Systems
- Population Displacement
- Educational Delay and Disruption
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