

**Interdisciplinarity Then, Now, and Into Networked Futures**  
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***Emergence of New Fields and Interdisciplines***

- 1) comparative literature, American studies, area studies
- 2) social psychology, biochemistry> molecular biology, radio astronomy, cognitive science, **materials science**
- 3) **environmental studies, STS**, urban studies, black, ethnic/and women's studies
- 4) expansion of **cultural/global/international/post-colonial studies**
- 5) film studies, information sciences, media and communication studies
- 6) regional studies, historical periods
- 7) **peace and conflict studies, policy studies, gerontology, criminology**, labor/future studies;
- 8) **clinical and translational science**, digital humanities

***New Syntheses, Theories, and Paradigms***

- 9) plate tectonics, “**man-land**” **shift in geography, biocomplexity**
- 10) **general systems theory**, structuralism, chaos theory, Marxism
- 11) new ID categories of knowledge: e.g., gender, culture, **sustainability, globalization**
- 12) **shift from disease model in medicine to health and wellness model**
- 13) boundary crossing between humanities and social sciences

***Prominent Initiatives***

- 14) precedents: **agriculture experiment stations, WWII defense research**, space exploration
- 15) **post 1970s: international competition in science-based industries** of engineering and manufacturing, computers, biotechnology, biomedicine, defense, nanotechnology
- 16) recent large-scale initiatives: e.g., Human Genome Project

***Quiet Daily Flow of Influence***

- 17) borrowing of tools, methods, concepts, and theories
- 18) common instrumentation, shared data and facilities
- 19) collaboration and teamwork

***Educational Reform***

- 20) legacy of experimental programs and new field studies in 1960s and 70s
- 21) 1980s+ mainstreaming in general education
- 22) reforms of major and graduate education + continuing professional education
- 23) heightened theme and problem focus across disciplines and fields
- 24) broadening teaching and learning movement, integrative studies

***Trendlines***

- 25) The 4 drivers of *Facilitating Interdisciplinarity*
- 26) Heightened imperative in management, policy, and funding
- 27) Expanding literature
- 28) Changing relationship of disciplinarity and interdisciplinarity
- 29) Expanding shadow structure of IDR and IDS
- 30) Ascendancy of transdisciplinarity
- 31) The digital horizon



UNIDISCIPLINARY	MULTIDISCIPLINARY	INTERDISCIPLINARY	TRANSDISCIPLINARY
Focusing	Juxtaposing	Integrating	Transcending
Concentrating	Sequencing	Interacting	Transgressing
Analyzing	Coordinating	Linking	Transforming
Segmenting		Focusing	Overarching
		Blending	
		Hybridizing	
		Synthesizing	

J. T. Klein and D. Roessner, Committee on Key Challenge Areas for Convergence and Health. [US National Academies of Sciences. Preliminary Definition Document, 2013.

**Interdisciplinarity (ID)** integrates information, data, methods, tools, concepts, and/or theories from two or more disciplines focused on a complex question, problem, topic, or theme. Scope and goals differ: from borrowing to large initiatives. The most common criterion is **Integration**.

**Transdisciplinarity (TD)** transcends disciplinary approaches through comprehensive or synthetic frameworks, including general systems, sustainability, feminist theory, cultural critique, and a holistic paradigm of health and wellness. In the late 20th century, it also became aligned with problem-oriented research that crosses boundaries of academic and public sectors.

### Beginning Resources

- Association for Interdisciplinary Studies. <<http://www.units.muohio.edu/aisorg/>>
- Chettiparamb, A. *Interdisciplinarity: A Literature Review*. University of Southampton, 2007. [www.heacademy.ac.uk/ourwork/networks/itlg](http://www.heacademy.ac.uk/ourwork/networks/itlg).
- Derry, S. J., Schunn, C. D., and Gernsbacher, M. A. (Eds.). *Interdisciplinary Collaboration: An Emerging Cognitive Science*. Mahwah, N.J.: Erlbaum, 2005.
- *Facilitating Interdisciplinary Research*. Washington, D.C.: National Academies Press, 2004
- Fiscella, J., and Kimmel, S. *Interdisciplinary Education: A Guide to Resources*. New York: College Board, 1999.
- Frodeman, R., J.T. Klein, and C. Mitcham (Eds.) *The Oxford Handbook of Interdisciplinarity*. New York, Oxford: Oxford UP, 2010.
- Hadorn, G. H., et al. (Eds.). *Handbook of Transdisciplinary Research*. NY: Springer, 2008.
- Kessel, F., Rosenfield, P. L., and Anderson, N. B. (Eds.). *Expanding the Boundaries of Health and Social Science: Case Studies in Interdisciplinary Innovation*. NY: Oxford UP, 2003.
- Klein, J. T. *Creating Interdisciplinary Campus Cultures*. San Francisco: Jossey Bass, 2010.
- Lyall, C., et al. *Interdisciplinary Research Journeys: Practical Strategies for Capturing Creativity*. NY: Bloomsbury Academic, 2011.
- Network for Transdisciplinary Research (td-net). <[www.transdisciplinarity.ch/](http://www.transdisciplinarity.ch/)>
- Newell, W. H. (ed.). *Interdisciplinarity: Essays from the Literature*. NY: College Board, 1998.
- O'Rourke, et. al, *Enhancing Communication and Collaboration in Interdisciplinary Research*. Sage, 2013.
- Repko, A. F. with R. Szostak and M. P. Buchberger. *Introduction to Interdisciplinary Studies*. Sage, 2014. Other textbook: *Interdisciplinary Research: Process and Theory*, 2012.
- “The Science of Team Science.” *American J of Preventive Medicine*, 2008, 35(2S), S77–S249.
- Team Science Toolkit. <<https://www.teamsciencetoolkit.cancer.gov/public/home.aspx?js=1>>