

Promotion and Tenure in Interdisciplinary Team Science: An Introductory Literature Review

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For a compilation of publications on P&T, join the Science of Team Science group at Mendeley (<http://www.mendeley.com/groups/3556001/science-of-team-science-scits/>)

Shared Impetus and Challenges

Both Interdisciplinarity and Team Science (ITS) have become mantras for institutional change in the 21st century, with heightened priority for solving complex societal problems.

- Frodeman, R., Klein, J.T., and Mitcham, C. (2010). *The Oxford Handbook of Interdisciplinarity*. NY, Oxford: Oxford UP.
- Elfner, L.E., et al. (2011). *Team Science: Heaving Walls and Melding Silos*. Sigma Xi White Paper.

Dan Berrett explicitly couples interdisciplinary research and collaboration across departments.

- Berrett, D. (2011). "Tenure Across Borders." *Inside Higher Ed*, 22 July.

Barriers and Disincentives for Promotion and Tenure in Interdisciplinary Team Science (ITS)

Respondents to preliminary surveys for National Academy of Sciences 2004 report ranked promotion and tenure (P&T) criteria the highest of the top five impediments to interdisciplinary research.

- *Facilitating Interdisciplinary Research*. (2004). Washington, D.C.: National Academies Press. 73, 76

Obstacles to ITS span the entire academic system of organizational structure and administration, procedures and policies, resources and infrastructure, and recognition, reward, and incentives.

- Klein, J. T. (2010). *Creating Interdisciplinary Campus Cultures*. San Francisco: Jossey Bass and AACU. 127-151.
- Individuals in ITS face double marginalization: they are judged by conventional discipline-based standards, and contributions to collaborative research are minimized or discounted.
- The challenge of evaluation is compounded by research that bridges traditional forms of "fundamental" or "basic" knowledge production and "applied" or "commercial" research and development. Conventional P&T policies are misaligned with success factors.

Strategies and Models for Moving beyond Vague Promises of Good Will to a Culture of Reward

Stage 1: Council of Environmental Deans and Directors' (CEDD) guidelines for interdisciplinary (ID) careers contend the first stage should be assessment of institutional readiness to support them.

- Ads should indicate the climate and expectations for interdisciplinary and collaborative work.
- Both parameters should be discussed explicitly during interviews and specified in Memorandum of Understanding (MOU) or Letter of Agreement (LOA). For joint appointments, percentage of time devoted to each unit should be specified and expectations for research, teaching, service.
- Graybill, J. and Shandas, V. (2010). "Doctoral Student and Early Career Academic Perspectives." *The Oxford Handbook of Interdisciplinarity*. 404-418.
- Klein, J. T. (2010). "Monitoring the Interdisciplinary Career." *Creating Interdisciplinary Campus Cultures*. 127-151.
- Lyall, C., Bruce, A., Tait, J., and Meagher, L. (2011). *Interdisciplinary Research Journeys: Practical Strategies for Capturing Creativity*. London, Bloomsbury Academic.
- Pfirman, S., and Martin, P. (2010). "Facilitating Interdisciplinary Scholars." *The Oxford Handbook of Interdisciplinarity*. 387-403.
- Pfirman, S., et al. (2011). *Interdisciplinary Hiring and Career Development*. Washington, D.C.: National Council for Science and the Environment. <NCSE@NCSEonline.org>

Pre-Tenure and Tenure Review Committees

- **Most respondents to CEDD survey reported using joint committees from more than one unit.**
- **Computing Research Association:** “Best Practices” model for ID tenure advocates external representation of other units and projects beyond “home” department (www.cra.org).
- **Ohio University:** home department administers all probationary reappointments and progress towards P&T, but peer evaluation committees must include at least one voting representative from secondary unit. Committees produce a single written evaluation, but members of secondary unit may append a statement if desired (Pfirman, et al., 2011).
- **Duke University:** when in doubt allows option of an ad hoc committee. Peter Lange urges pre-tenure and tenure review committees to reflect candidate’s job description
- **University of California system:** Judson King stressed role of deans as intermediaries; can adjudicate differing assessments and insure explicit comments on ID nature. If work did not match department priorities but advanced university priorities, explanation required.
- **University of Southern California:** 2011 manual of University Committee on Appointments, Promotions and Tenure recommended including one or more members from departments outside a home department, appropriate judging of work beyond core discipline, recognizing ID graduate teaching and advising; spanning fundamental and applied research, and problems of social importance
- Lange and King qtd. in issue on ID Research assessment. *Research Evaluation*. 15 (2006): S1–80.

Dossier Preparation: Challenge of Constructing a Profile of an Individual.

Detailed annotation of CV and dossier essential: e.g., description of a field, its epistemic community, qualified peers, genres of scholarship, venues of publication and presentation, funding sources, awards, public or stakeholder engagement, and any extra service work a position requires.

- Pfirman, et al. (2011) suggest enclosing a list of FAQs along with ad and MOU/LOA.
- USC’s “Guidelines for Assigning Authorship and for Attributing Contributions to Research Products and Creative Works” endorse principle of “fair and honest attribution.” Urge inviting collaborators’ letters. Administrative reports, personal statement and CV should acknowledge (plus website)
- http://www.usc.edu/academe/acsen/Documents/Resolutions/URC_on_Authorship_and_Attribution_passed%20with%20resolution.pdf

School of Arts, Media and Engineering at ASU incentivized ID collaborations and impacts.

Four-category meta-matrix for calibrating evaluation standards across differing outcomes and practices accounted for size, strength, and diversity of individual’s network.

- Rikakis, T. (2009). Innovative Faculty Evaluation Criteria for Incentivizing High-Impact Interdisciplinary Collaboration. *Frontiers in Education Conf.*, 2009. FIE '09. 39th EEE.

Expanding Criteria of Evaluation Beyond Proxy Measures

- Impact of new conceptual models and explanatory power on multiple disciplines and fields
 - New integrative frameworks, methodological and empirical analysis, and research hypotheses that enhance study of particular problems across knowledge domains
 - Scope and conceptualization of research topics broaden, and levels of analysis are bridged.
 - Changing career trajectories: new expertise and methods, appointments and affiliations in other areas, co-mentoring of students in other departments, recognition outside original discipline, service on multidisciplinary advisory or review groups. Public and policy brokering, new treatment protocols, dissemination of results in position papers and expert testimony.
 - Movement beyond bibliometrics to include social network mapping, dynamic models, heuristics, or combination of approaches; short-, middle-, and long-term impacts. Use of new technology.
 - Klein, J.T. “Evaluation of ID and TDR.” (2008). *Amer J of Preventive Medicine*, 35(2S): S116–S123.
 - Wagner, C., et al. (2011). “Approaches to Understanding and Measuring Interdisciplinary Scientific Research (IDR): A Review of The Literature.” *Journal of Informetrics*, 165:14–26.
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