

Learning in the pipeline industry

Proposal structure

- 1980-2000 pipeline spills fell
- 2000-2020 refined pipeline spills did not fall
- Learning literature (learning curves) predicts this —
- Learning literature does three things:
 - Improving various performance metrics
 - Vicarious learning
 - Organizational forgetting
- Organizational forgetting → learning is complex, nonlinear
 - This deserves more attention in my writing*
- Convergence/standstill in learning curves
 - Use this point to move audience from modern to postmodern ideas*
 - Set up a world where learning is rare
- *Organizational knowledge*—how does it fit with standstill
 - Saturation or
 - Forgetting
- Mixed methods approach
 - Look into learning standstill
 - Qual: deductive
 - Quant: explain empirical/larger scale observation
 - Take advantage of learning from failure
- Relevance
 - Highlight convergence stage
 - Emphasize importance of double loop/second order learning/exploration
 - Grand challenges: highlight greater trends

Exemplary article structure

Howard-Grenville, J., Nelson, A. J., Earle, A. G., Haack, J. A., & Young, D. M. (2017). "If Chemists Don't Do It, Who Is Going To?" Peer-driven Occupational Change and the Emergence of Green Chemistry. In *Administrative Science Quarterly* (Vol. 62, Issue 3). <https://doi.org/10.1177/0001839217690530>

Introduction

- Occupations are crucial for change
- Occupational change literature focuses on external triggers
- How about change without external trigger?
- Give some examples
- Internal change—no common enemy—internal heterogeneity as obstacle
- Growth of green chemistry and available documents

Lit Review: Occupations and Occupational change

- Definition of occupation
- Occupation as more than work, "way of life"
- Hence, occupations interventions in external imposing processes

Occupational Responses to External Triggers for Change

- Literature: three pathways for occupational change
 - Rules, identity, practice
 - Each discribed in detail

Moving Away from Occupational Commonalities

- Example of occupational heterogeneity
- Interpenetration of occupations
- Heterogeneity—members experience stuff differently

Methods

Research Settings

- Chemistry good example of coherent occupation
- Green chemistry is example of internally generated change
- Green chemistry '98 book as anecdotal evidence

Brief summary

Success and failure within occupation

Data Collection

—

Data Analysis

—

The Emergence and Evolution of Green Chemistry

- Early green chemistry raised multiple frames
- Different frames resonate with different occupation incumbents
- Frame incompatibility trickled down, created more heterogeneity

Versatile Framing: Advocates Present Concrete Practices Yet Multiple Distinct Frames

- Adoption of change in chemistry generally slow
- Early adopters efforts to make adoption easy for others
- "Versatile framing" strategy with examples
- Early adopters offer three different frames
- Deliberately loosening control
- Normalizing: systematically apply "normal science" model
- Moralizing: social benefits, obligation etc.
- Pragmatic: efficiency/economic benefits
- Different frames resonate with different roles of chemists

Role-centric Mobilization: Distinct Frames Resonate with Chemists' Different Roles

- Example of advocates applying frames to other chemists roles

Normalizing frame resonates with innovator role

- With colleagues, emphasize chemistry following the scientific method and yielding valuable outcomes

Moralizing frame resonates with educator/communicator roles

- As spokespeople/educators, raising enthusiasm of outsiders/newcomers

Pragmatizing frame resonates with problem-solver role

- In industry/work settings to solve problems in practice

Experiencing Frame Incompatibility: Tensions of Quality, Commitment, and Complexity

- Describe diversity of community with examples
- Raise notion of incompatibilities/tensions
- There are three types of tensions

(Subsections on tensions)

Three tensions, every subsection includes explanation and examples from qual data

Tightening Frames to Reduce Tensions

- Introducing rigor to ease tensions
- Subsuming some goals under other goals

Sustaining Versatile Framing to Further the Change

- Agility as a virtue
- Different principles for different circumstances, e.g., international
- Questioning the potential of overarching tools and metrics
- Emphasize importance of integrated view

A Model of Peer-driven Occupational Change

- General model
- Versatile frame render possible mobilization of different groups
- Versatile frames utilize heterogeneity but give rise to tensions to conflicts between roles
- → divergent responses, in this case two-tightening frames or sustaining versatile framing
- Overall, different from externally triggered change that has been observed before

Discussion

- External triggers initiate collective response
- Internal trigger leverages heterogeneity
- Potential for "stable condition of pluralism"

Occupational Heterogeneity and Occupational Change

- Existing literature focuses on homogeneity that allows occupation to respond
- This research emphasizes heterogeneity that can generate change
- Notion of politics in occupations
- This paper: new approach to strategies
 - Not the large professional associations-top-down
 - Individual tailoring of messages, bottom-up
- New conceptualization of occupations as loose coalitions
- Professionalization may inhibit heterogeneity and hence change
- Newcomers may be source of heterogeneity, harbingers of change
- When change is externally triggered, heterogeneity can still assist response/adaption

Sustained Pluralism and Occupational Change

- Heterogeneity essential to peer-driven change in occupations
- Other work on change argues that ambiguity should be reduced over time
- For occupations, convergence unlikely
- Also, ambiguity can assist growth
- This growth sustains ambiguity but generates tension
- Tensions are research opportunity

Moralization and Peer-directed Change

- Occupational change through morals, its difficulty, resisted by experts
- Moral calls for change need to be internally generated
- Occupations have their own moral frames
- Incumbents may be hesitant to raise morals-related stuff
- Moral stuff clashes with science/objectivity stuff

Boundary condition and Future Research

- Boundary: observation salient in science, might be different in non-science occupation
- Analysis does not cover external environment, e.g., employers
- Analysis does not cover the context of external environmental movements
- Neat summary in the end