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Presentation Outline

• General Problems of R&D Evaluation
• Technology Transfer as Key Component in R&D Performance
• Use-and-Transformation in Tech Transfer
• An approach: Knowledge Value Maps
• Case Examples:
  • Knowledge Translation in Health and Disability Research
  • National Level R&D Policy Assessment
General Problems of R&D Evaluation

- Political climate demands a “mechanical control” model
- Incompatible with well known traits of science:
  - More valuable results are the most unpredictable
  - Every so often changes its mode of operation to suit new challenges
  - We have poor understanding of the socio-cognitive mechanisms that cause many important things in the workings of research
- Focus should broaden from “how” to “what” we are evaluating
  - Almost always happens in actual R&D evaluation projects
- Normative analysis: what values are realized
Technology Transfer and R&D Policy Performance

- Outcomes, impacts, ultimate results happen in a different location from knowledge creation
  - Social systems that must reflect impacts and outcomes are not the ones that receive resources to do research
- Many dissimilar communities and social actors are involved: E. Rogers - *heterophily*
  - Complex knowledge flows are involved
- Creates difficulties for R&D policy design and implementation and program management and evaluation
  - Accountability is hard to articulate:
    - Due to the displaced outcomes vis a vis research activities
    - Due to the poor understanding of the mediation processes

→ Effectiveness of TT is inherent in R&D performance
Use-and-Transformation in Technology Transfer

- Technology transfer and its cognates
  - Knowledge transfer
  - Knowledge translation
- Beyond the “Linear Model”
  - But how far?
- Analytical frameworks reflect normative concern for impact rather than empirical knowledge of underlying phenomena
- No pure use of knowledge in its flow
  - Knowledge is transformed as it takes each step in its flow
  - True of its process of creation
  - More serious and less understood as it crosses community boundaries
  - All relevant participants are hybrid user-producers of knowledge
A Knowledge Value Mapping Approach

- KVM focuses on the knowledge flows between knowledge creation activities and the impact contexts
- Management of R&D always includes concern for knowledge flow
  - Internal to R&D process
    - Interdisciplinarity
    - Portfolio management
  - External to R&D process
    - Impact and outcomes
    - Mission requirements
    - Accountability to stakeholders
- Knowledge flows are hard to manage
  - May be facilitated to certain extent
  - They are not uniform across relevant dimensions
A Knowledge Value Mapping Approach II

• Content-value structures affect knowledge flows
  • Knowledge doesn’t have all its consequences in itself
• Current evaluation takes only goals and objectives as relevant values
  • When stakeholders are included, their values are taken as added or conditional objectives (i.e. explicit interests)
  • This perpetuates the fact-value dichotomy
• Values must be investigated empirically in the entire domain of knowledge flow
  • Interests and agendas matter, but
  • Epistemic values such as validity and rigor criteria are generally not analyzed for their effect on outcomes (intra-content)
  • Values must be also pursued for different articulations
A Knowledge Value Mapping Approach III

• Procedure:
  • Map the field
    • Identify creators and users (we called “knowledge-value collectives”)
      • Explicit references (publications, citations, etc.)
      • Documented relationships (advisory roles, collaborations, consortia)
      • Nominations
  • Find the patterned dynamics (organized actions, teams, collaborations, contracts, etc.)
  • Find the communication patterns
  • Find evidence and infer the normative stances of all involved
  • Articulate relevant patterns of knowledge flow
A Knowledge Value Mapping Approach IV

**Retrospective KVM:**
- Features of past or present knowledge flow
- Examples:
  - Division of knowledge labor in interdisciplinary teams or inter-sector teams
  - Emergence of new specialized roles in interdisciplinary research
  - Institutional innovation in technology transfer
  - Community valuation of hidden knowledge outcomes

**Prospective KVM:**
- Given KVM and proposed intervention, predict likely effects
  - Determination of facilitating and hindering factors for knowledge flows (relevant to evaluation and other policy concerns)
Case Example I: Knowledge Translation in Health

- **Knowledge Value Maps in KT:**
  - Research agenda and associated validation and rigor criteria
    - *Difference in EBM and EBP by subfield of health care* (e.g. role of patients experience in “recovery theory” of schizophrenia)
  - Clinicians and practitioners knowledge use environment
    - *Their criteria of relevance and validity*
    - *Effects on practices, labor conditions, meaning of work*
    - *Outcome as “behavior modification” or organizational design*
  - Different articulations of shared values
    - *Accessible currency lawsuit and differing positions of activists*
Case Example I: Knowledge Translation in Health

Knowledge Significance

Facilitation

+  

Impediment

-  

DOT

NFB

Industry

Research Community

Value-Benefit Alignment

Benefit Facilitation Knowledge-Value Map

Irrelevance

Problem Solving

DOB

AFB

Industry

Research Community

Problem Solving

Benefit Facilitation Knowledge-Value Map
Case Example II: National Level R&D Policy

• Stakeholder participation in policy design and implementation
  • Diverse expectations about outcomes (e.g. research to reduce poverty)
  • Diverse political and institutional contexts of learning about R&D policy
  • What are the proper concerns of evaluation design under these conditions? Performance metrics?
    • Political boundaries for information flow, transparency issues
    • Topology of knowledge flow networks is embedded in institutional arrangements: cannot manage without knowing them
    • Other experiences do not apply at the detailed level
• Standard evaluation is irrelevant
• Must be designed based on a KVM
Concluding Remarks

- Knowledge flows are inherent in R&D evaluation
  - “Nobody’s land” between research and impacts
- Must be determined empirically in the evaluation process
- KVM is proposed to do so
- Content-value maps of user-producers of knowledge