

***Contribution of Evaluation to Management  
of R&D in the Process of Technology  
Transfer: A Knowledge Value Mapping  
Approach***

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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*

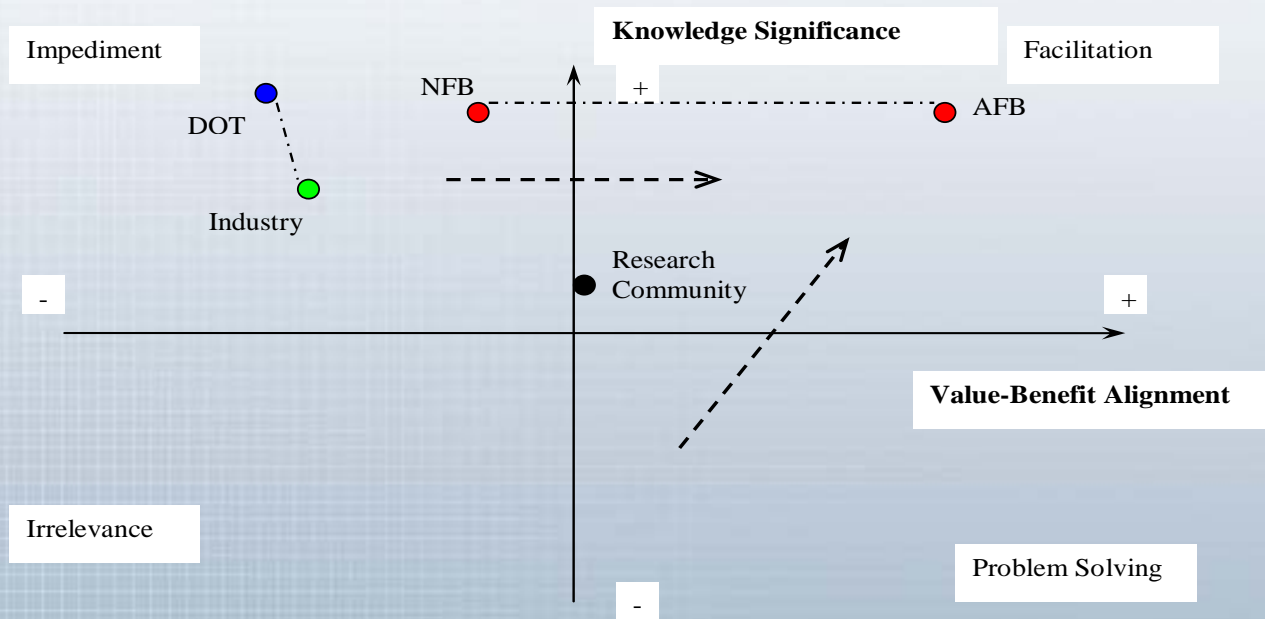
- **Prospective KVM:**

- 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



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**