

Naturalistic Inquiry and Requirements Engineering: Reconciling their Theoretical Foundations

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The Naturalistic Turn in RE

- **Holistic ethnography**
 - » Blomberg et al. (1993) - industrial design
 - » Pycock & Bowers (1996) - fashion industry
 - » Sommerville et al (1992); Randall et al (1994) - ATC
 - » Suchman (1987) - clerical work
- **Ethnomethodology**
 - » Devlin & Rosenberg (1996); Sachs (1995) - maintenance
 - » Luff et al (1994) - train dispatching
- **Design methods using naturalistic techniques**
 - » Holtzblatt & Jones (1993)
 - » Potts & Hsi (1997)

Abstract

- Philosophical assumptions of Naturalistic Inquiry (NI)
- Axioms of NI as they apply to RE practice & research
- Implications of NI for the RE community

Two Views of Naturalistic Inquiry (NI)

- Weak view (appropriation of technique)
 - » NI is a form of data gathering
 - » Therefore, for practical benefits to RE, use ethnography, ethnomethodology, etc.
- Committed view (adoption of paradigm)
 - » NI is a paradigm of investigation
 - » Few practical benefits unless one adopts this paradigm

NI in Social Science

- Growing dissatisfaction with science as inquiry metaphor
 - » Organizational studies (Morgan & Smircich, 1980)
 - » Educational research (Lincoln & Guba, 1984)
- Qualitative/naturalistic methods standard in cultural anthropology
 - » Geertz (1970) etc
- Not everyone agrees
 - » “Crunchy Granola and the Hegemony of the Narrative” Cizek (1995)

Lincoln & Guba's Axioms

	Naive positivism	Naturalistic Inquiry
Reality is...	single and tangible	socially constructed
Knower and known...	are independent	interact
Goal of inquiry is...	theory (nomothetic statements)	working hypotheses (idiographic statements)
Causes...	precede effects	and effects are mutually shaping
Inquiry is...	value-free	value-bound

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Cause & Effect vs. Mutual Influence

- Practice
 - » Most processes require occasional backtracking
 - » Reqts. as desirable features are created (by definition) by delivery
- Research
 - » Incremental evaluation of research efficacy
 - » Action research replaces controlled environment

Nomothetic Theory vs. Idiographic Knowledge

- Practice
 - » In human-intensive domains, context is richer and more subtle than tempting abstractions
- Research
 - » Reflective case studies as a vehicle for innovation & dissemination

Analyst-Independence vs. Perturbation & Intervention

- Practice
 - » Analyst/designer is a human instrument
 - » Designer has expectations of intervention
 - » Analysis triggers organizational processes
- Research
 - » Action research replaces (illusory) control with relevance

Objective Domains vs. Negotiated Realities

- Practice
 - » Positivist assumptions apply differently to physical & human-activity systems
 - » Activities are not prescribed, routinized processes, but are constitutive
- Research
 - » Target objects of research innovations (meaning, goals, etc.) are defined during the activity

Value-free vs. Value-laden Inquiry

- Practice
 - » Design implies priority of some stakeholders' values & desirability of participation
 - » Designers have technical-integrity values of their own
 - » Methods suggest attentional foci
- Research
 - » Many techniques for raising trustworthiness of findings (e.g. triangulation, member checks, audits, etc.)

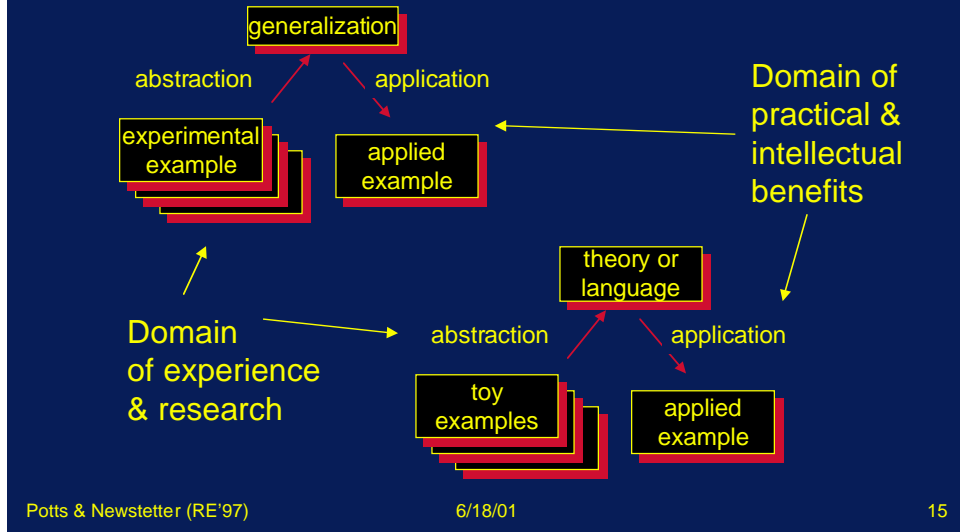
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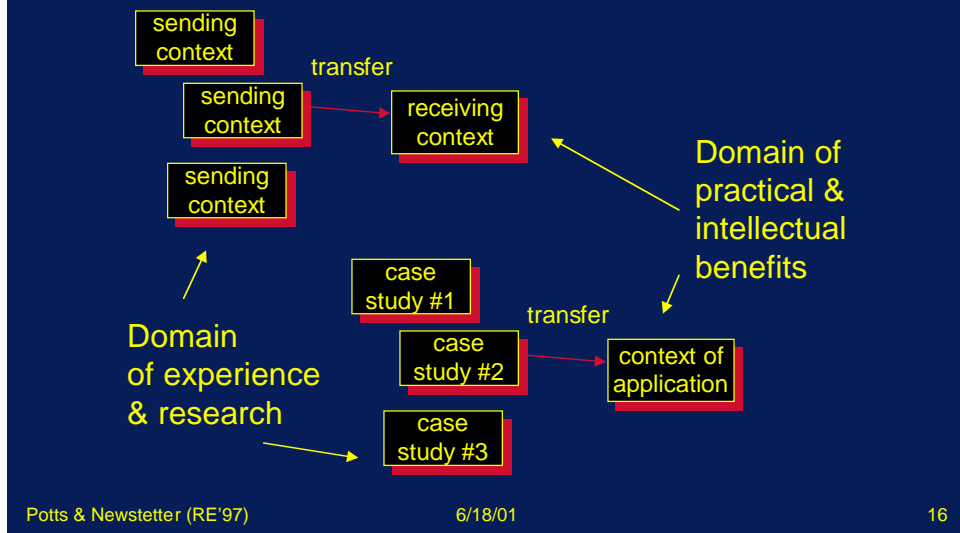
Necessity of the committed view

- Uncommitted view marginalizes NI
 - » Puts at risk in project planning
 - » Retains commitment to abstract goals
- But, can it be systematically useful?
 - » Incremental / simultaneous abstraction & contextual analysis
 - » Transferability as a goal
 - » Islands of stability

Generalizability vs. Transferability



Transferability vs. Generalizability



Islands of stability

- System metaphor
 - » Interconnected components
 - » Heterogeneous w.r.t. detail & content
 - » Homogeneous w.r.t. form & ripeness for automated support
- Archipelagic metaphor
 - » “Oceans” of constitutive activity
 - » “Islands” of stability
 - » Constitutive activities only supportable through generic IT
 - » Islands of stability supportable through constrained-scope IT