

Designing Process Research Studies: AOM Process Research PDW, Atlanta 8/12/06



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- Basics of Process Research
- Designing Field Studies
- Analyzing Process Data
- Exercise: Design a process study

Download from
<http://www.processresearchmethods.org/PDW06.htm>
Van de Ven, *Engaged Scholarship*, chapter 7,
Oxford U. Press, forthcoming 2007.

Further reference:
Poole, M.S., Van de Ven, A.H., Dooley, K., & Holmes, M.
*Organization change and innovation processes:
Theory and methods for research*, Oxford U. Press, 2000

Basics in Designing Process Research

1. Define the meaning of process:
 - A logic that explains a causal relationship
 - A category of concepts or variables
 - A narrative of how things change over time
2. Clarify theory of process (vs. variance theory)
 - process vs. variance theories
 - life cycle, teleology, dialectic, & evolution process theories
3. Adopt a process vocabulary
 - simple, multiple, cumulative, conjunctive & iterative progressions
4. Design research to observe and analyze process

Steps & Decisions in Designing Process Study

Key Step	Key Decision(s)	Suggestions
1. The topic	What is the research question or problem?	How/why an organization changes? How a change process unfolds?
2. The research question	Variance or process research?	Variance for causal questions Process is geared to how questions
3. Frame of reference	Who's viewpoint is featured? What is the researcher's role?	Observe change process from a specific participant's viewpoint
4. Mode of inquiry	Sound general argument or good particular story?	General explanations – causal theories Particular understanding - narratives
5. Conceptual model	One or more models/stories? Which ones?	Compare plausible alternative models
6. Observational method	Real-time or historical observations?	Observe before outcomes are known
7. Field research design	How design the field research?	Develop parallel, synchronic, and Diachronic research design
8. Sample diversity	Homogeneous or heterogeneous?	Compare the broadest range possible. Compare different viewpoints.
9. Sample size	Number of events and cases?	Focus on number of temporal intervals and granularity of events

Steps & Decisions for Analyzing Process Data

Key Step	Key Decision(s)	Suggestions
1. Developing process concepts	What concepts or issues will you look at?	Begin with sensitizing concepts and revise with field observations
2. Defining incidents & events	What activities or incidents are indicators of what events?	Incidents are observations, events are unobserved constructs
3. Specifying an incident	What is the qualitative datum?	Develop decision rules to bracket or code observations
4. Measuring an incident	What is a valid incident?	Ask informants to verify incidents
5. Identifying events	What strategies are available to tabulate and organize field data?	Apply a mix of qualitative and quantitative data analysis methods
6. Developing the process theory	How move from surface observations to a process theory?	Identify characteristics of narrative theory

Design a Process Study Exercise

- Design a process study to examine your question/problem.
- Consider the issues in the handout when designing your study.
- What design issues did you find difficult and require further discussion?

Worksheet for Designing a Process Research Study

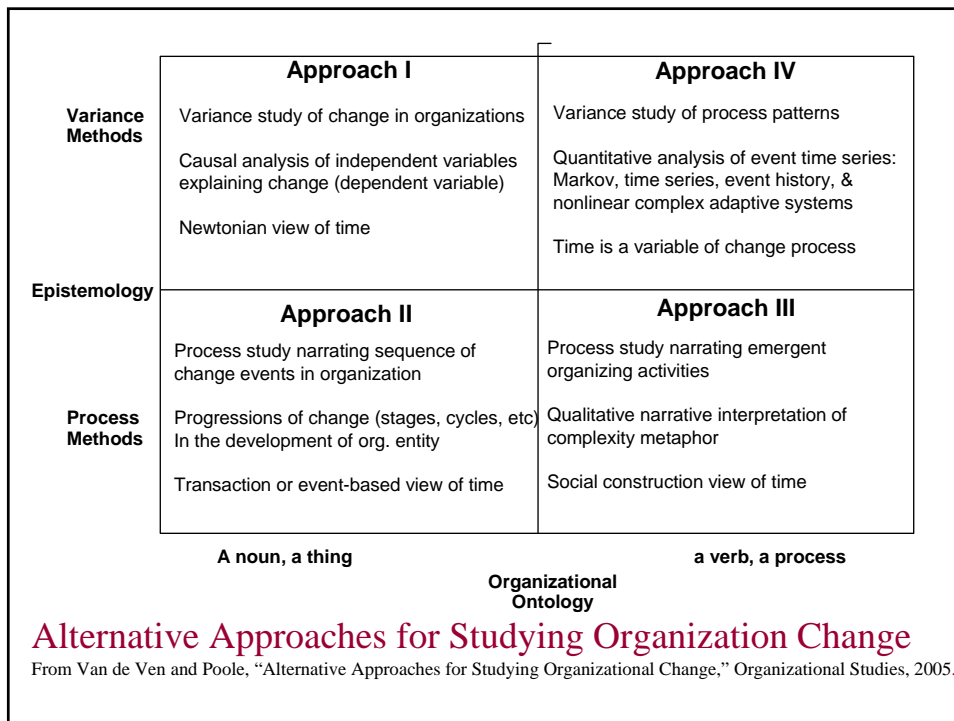
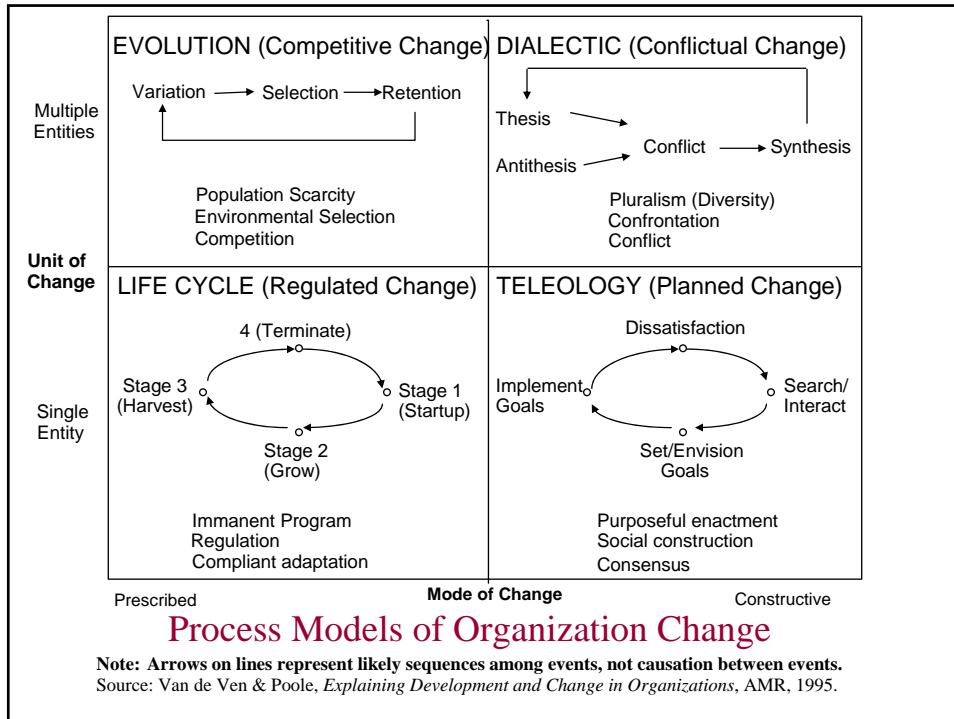
Issues	Your Process Research Study
Process Study Design	
1. State your process research question	
2. Whose viewpoint is featured?	
3. How define process - as variable or event?	
4. What process theories do you examine?	
5. Deductive, inductive Or abductive?	
6. Real-time or historical observations?	
7. What units examined within & over time?	
8. Sample diversity in what dimensions?	
9. Sample size: # of events and cases?	
Measurement & Analysis	
1. Define your process concepts.	
2. Define indicators of process concepts	
3. What is an incident or event (a datum)?	
4. How measure & verify incidents?	
5. How tabulate and organize process data?	
6. How develop a process Theory or narrative?	

Slides Illustrating Steps in Designing Process Studies

For display as questions or issues arise

Process Research Definitions

- Meaning of process:
 1. A logic that explains a causal relationship
 2. A category of concepts or variables
 3. A narrative of how things change over time
- Change: an observed difference in form, quality or state over time in an entity.
- Development: the progression of change events over the duration of an entity's existence
- Process Theory: An explanation of an observed progression of change events in terms of generating mechanisms that cause events to happen in the world and the circumstances when they operate (Tsoukas, 1989).



Alternative Progressions of Events

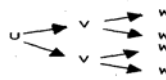
- **simple unitary progression**
 - A sequence of the form $U \rightarrow V \rightarrow W$

- **multiple progressions**
 - Development can follow several paths
 - Forms: parallel, divergent, and convergent

PARALLEL



DIVERGENT



CONVERGENT



- **cumulative progressions**
 - More than one stage may belong to a unit at a time.
 - Forms: by addition, substitution, or modification



- **conjunctive progressions**
 - Events in one path are related or influence events in another path of a multiple progression
 - Relations may be probabilistic, inclusive, or mediated

- **Recurrent progressions**
 - Repeating strings of events over time

Source: L. van den Daele, "Qualitative Models in Developmental Analysis," *Developmental Psychology*, 1969.

Variance and Process Epistemologies



Lawrence Mohr

VARIANCE APPROACH	PROCESS APPROACH
Fixed entities with varying attributes	Entities participate in events and may change over time
Explanations based on necessary and sufficient causality	Explanations based on necessary causality
Explanations based on efficient causality	Explanations based on final, formal, and efficient causality
Generality depends on uniformity across contexts	Generality depends on versatility across cases
Time ordering among independent variables is immaterial	Time ordering of independent events is critical
Emphasis on immediate causation	Explanations are layered and incorporate both immediate and distal causation
Attributes have a single meaning over time	Entities, attributes, events may change in meaning over time

Bruner's Two Modes of Thought

	Logico-Scientific Mode	Narrative Mode
Purpose	Develop and test a theory that explains the causes or consequences of a general phenomenon in its context.	Develop a plausible story that interprets meaning to a particular experience or sequence of events
Method	Logical "if-then" propositions that derive testable hypotheses among variables in specified context	Plot linking intentional actions of characters in events and settings. Discourse: Triggers assumptions, Is reflexive, and open to multiple views
Evaluation Criteria	Valid argument Empirical truth Boundary conditions	Verisimilitude A good story Reflexive Open to multiple views



Jerome Bruner
(1915 -)

Narrative Features of Process Theory

- In narrative theory, the the story includes more than just event sequence. A process theory should include:
 - Sequence in Time
 - Focal Actor(s)
 - Narrative Voice
 - Evaluative Frame of Reference
 - Indicators of Content and Context



Brian Pentland, "Building Process Theory with Narrative: From description to explanation," *Academy of Management Review*, 24, 4 (1999): 711-724.

Narrative Positions of Voice & Perspective

Voice ("Who says")	Perspective ("Who sees")	
	Internal Analysis of Events	External Analysis of Events
Narrator as a character in the story	1. Main character tells the story —Pip in <i>Great Expectations</i> —Whyte (1955/1991) —Young (1991) —Burrell (1993)	2. Minor character tells the main character's story —Watson in <i>Sherlock Holmes</i> —Geertz (1973)
Narrator not a character in the story	4. Analytic or omniscient narrator tells the story —Fielding in <i>Tom Jones</i> —Foucault (1973) —Rosen (1991)	3. Narrator tells the story as an observer —Agatha Christie narrating Hercule Poirot —Durkheim (1966) —Pfeffer (1982)

SOURCE: Based on Gerard Genette (1980, p. 186), who credits Cleanth Brooks and Robert Penn Warren (1943, p. 589) for their analysis of the "focus of narration" in *Understanding Fiction*, New York: Crofts.

Mary Jo Hatch, "The Role of the Researcher: An Analysis of narrative position in organization theory," *Journal of Management Inquiry*, 5, 4, December 1996, p. 362.

Barley's Field Research Design

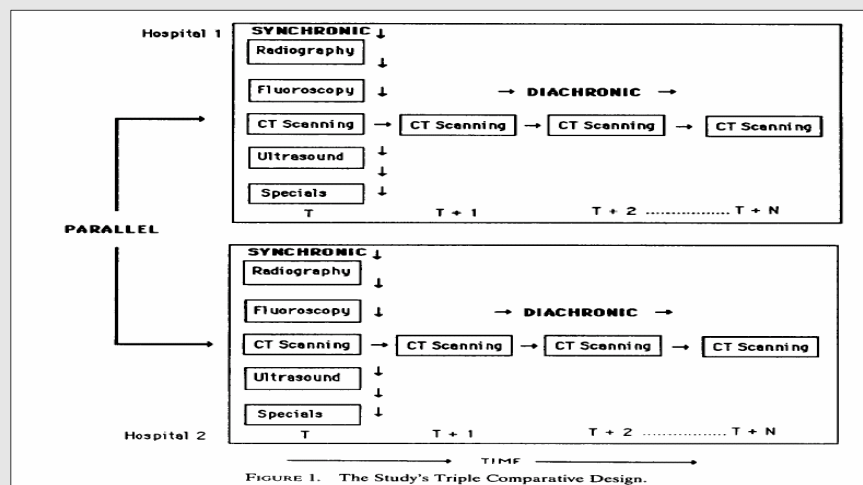


FIGURE 1. The Study's Triple Comparative Design.

Barley, S (1990) "Images of Imagining: Notes on Doing Longitudinal Field Work," *Organization Science*, 1, 226.

Typology of Process Research Designs

	FEW EVENTS	MANY EVENTS
Few Cases	Summary Case Studies	Summary Case Studies Phasic Case Studies Time Series Analysis Markov Analysis
Many Cases	Multivariate Analysis Phasic Analysis with Optimal Matching Event History Analysis	Multivariate Analysis of Summary Data Phasic Analysis with Optimal Matching Markov Analysis Time Series Analysis

Source: Poole, et al (2000) *Organizational Change and Innovation Processes: Theory and Methods for research*. New York: Oxford Univ. Press.

ASSUMPTIONS AND OBSERVATIONS ABOUT CORE INNOVATION CONCEPTS

Literature implicitly assumes:

But we see this:

<i>Ideas:</i>	One invention, operationalized.	→	Reinvention, proliferation, reimplementation, discarding, and termination.
<i>People:</i>	An entrepreneur with fixed set of full-time people over time.	→	Many entrepreneurs, distracted fluidly engaging & disengaging over time in a variety of roles.
<i>Trans- actions:</i>	Fixed network of people/firms working out details of an idea.	→	Expanding, contracting network of partisan stakeholders who converge & diverge on ideas.
<i>Context:</i>	Environment provides opportunities and constraints on innovation process.	→	Innovation process creates and constrained by multiple enacted environments.
<i>Outcomes:</i>	Final result orientation; A stable new order comes into being.	→	Final result indeterminate; Many in-process assessments and spinoffs; Integration of new orders with old.
<i>Process:</i>	Simple, cumulative sequence of stages or phases.	→	From simple to many divergent, parallel & convergent paths; some related, others not.

A Sample Event Data Entry Form

Date: _____	Event #: _____
Event: _____ _____	
Observation: _____ _____	
Source: _____	
Keywords: _____	

A Sample Event Report

Number: 38 **Date:** 02/01/77

Event: University of Melbourne approaches 3M on a joint venture to develop and manufacture CI. News of the development of a "bionic ear" triggers interest of executives at 3M.

Observ: The relationship was not established, and 3M decides to pursue the "bionic ear" idea separately.

Number: 41 **Date:** 12/15/77

Event: 3M evaluates U. of Melbourne, Australia proposal for the "bionic ear." A report to 3M executives states the project is a promising business opportunity. However, exclusive rights and patent protection is reported as unclear.

Observ: On the surface the project is very promising -- the US market potential using \$ 1000 device (conservative) is \$ 1000 mm. The device is an emerging technology, I am not aware of any published on-going research in this type area. (As with heart pacers, the first company in the market can dominate). There is a good fit with existing 3M technology. On the minus side, I have some doubts about the patent protection. The Australian proposal does not indicate a strong position. There is also the problem with the distance involved and the proposal is rather vague about exclusivity after investments by 3M.

Existing Event Data File					Added Columns							
Days	Event	Observation	Source	Keywords	ic	ir	pe	tr	ci	ce	op	om
01/01/77	House & Doyle in Los Angeles conduct the 1st cochlear implant in the U.S. by implanting a limited # of patients using single electrode dev.	The event was published in W.F. House and K.Berliner's, "Cochlear Implants: Progress & Perspectives," Annals of Otology & Rhinol. 1982, p. 1-124.	ASHA, May 1985	House, Academicians, transaction outcome-positive	0	0	0	1	0	0	1	0
	More Events ↓											

A Datum: Quantitative & Qualitative

A **quantitative datum** in survey research consists of:

- (1) a numerical response to a question (variable) scaled along a distribution,
- (2) about a fixed object (the unit of analysis)
- (3) at the time of measurement, which is
- (4) entered as a variable (along with other variables on the object) into a record (or case) of a quantitative data file, and
- (5) is subsequently recoded as an indicator of a theoretical construct.

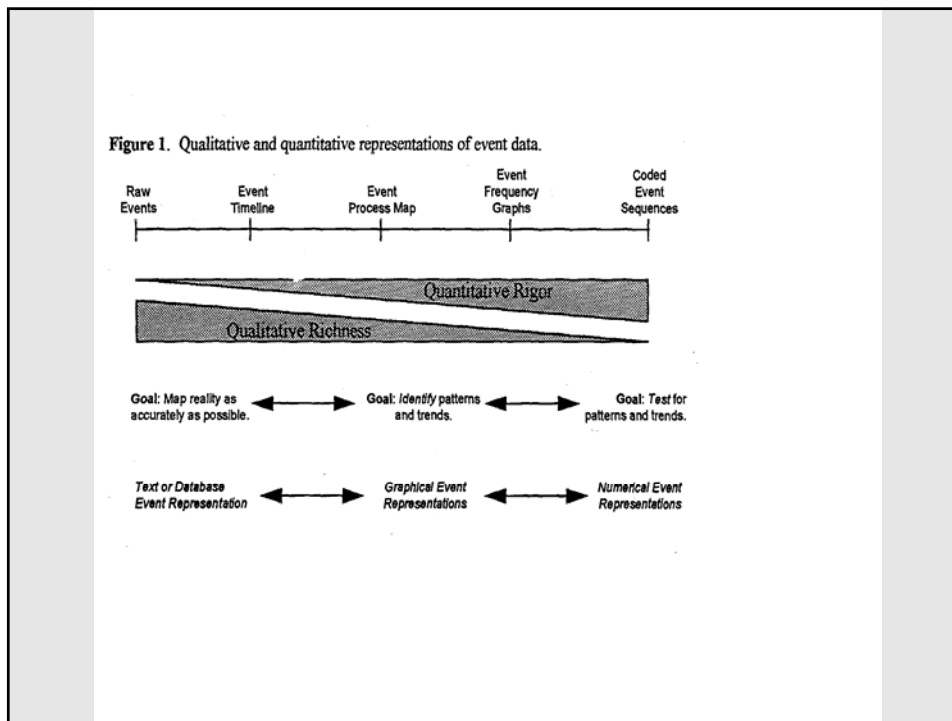
A **qualitative datum** is analogously defined as:

- (1) a bracketed string of words capturing the basic elements of information
- (2) about a discrete incident or occurrence of a subject being analyzed
- (3) that happened on a specific date and place, which is
- (4) entered as a unique record (or case) in a qualitative data file, and
- (5) is subsequently coded and classified as an indicator of a theoretical event.

Strategy	Key Anchor Point(s)	Exemplars	Fit with Process Data Complexity	Specific Data Needs	"Good Theory" Dimensions (Weick)	Form of Sensemaking
Narrative strategy	Time	Chandler (1964) Bartunek (1984) Pettigrew (1985)	Fits with ambiguous boundaries, variable temporal embeddedness, and eclecticism.	One or few rich cases. Can be helped by comparison.	High on accuracy. Lower on simplicity and generality.	Stories, meanings, mechanisms
Quantification strategy	Events, outcomes	Garud & Van de Ven (1992) Van de Ven & Polley (1992)	Focuses on "events" and their characteristics. Eschews ambiguity.	Needs many similar events for statistical analysis: one or few dense cases is best.	High simplicity, potentially high generality, modest accuracy (abstraction from original data).	Patterns, mechanisms
Alternate templates strategy	Theories	Allison (1971) Markus (1983) Finfield (1986) Collis (1991)	Adaptable to various kinds of complexity. Different templates capture different elements.	One case is enough. Degrees of freedom come from multiple templates.	Each theory can be simple and general. Together, they offer accuracy, but simplicity and generality disappear with theory integration.	Mechanisms
Grounded theory strategy	Incidents (units of text) Categories	Sutton (1987) Isabella (1990) Gioia, Thomas, Clark, & Chittipeddi (1994)	Adapts well to eclectic data and ambiguity. May miss broad high-level patterns.	Needs detail on many similar incidences. Could be different processes or individual-level analysis of one case.	High on accuracy, moderate simplicity. May be difficult to go from substantive theory to more general level.	Meanings, patterns
Visual mapping strategy	Events, orderings	Meyer (1984, 1991) Nutt (1984, 1993) Langley & Truxx (1994)	Deals well with time, relationships, etc. Less good for emotions and interpretations.	Needs several cases in moderate level of detail to begin generating patterns (5-10 or more).	Moderate levels of accuracy, simplicity, and generality. Not necessarily good at detecting mechanisms.	Patterns
Temporal bracketing strategy	Phases	Barley (1986) Denis, Langley, & Cazale (1996) Doz (1996)	Can deal with eclectic data, but needs clear temporal breakpoints to define phases.	One or two detailed cases is sufficient if processes have several phases used for replication.	Accuracy depends on adequacy of temporal decomposition. Moderate simplicity and generality.	Mechanisms
Synthetic strategy	Processes (e.g., decisions, change efforts, new products)	Eisenhardt (1989a; with Bourgeois, 1990) Meyer & Goes (1988)	Needs clear process boundaries to create measures. Compresses events into typical sequences.	Needs enough cases (5+) to generate convincing relationships. Moderate level of detail needed for internal validity.	Modest accuracy (but much better than questionnaire research). Can produce simple and moderately general theories.	Prediction

" Note that the entries in this table are indicative only. There is obviously considerable variation amongst the research following each strategy.

Langley, A. (1999) "Strategies for Theorizing From Process Data," AMR, 24, 1, p. 696.



Example of Visual Mapping Strategy in CIP Case

272 CASES IN DIFFERENT ORGANIZATIONAL SETTINGS

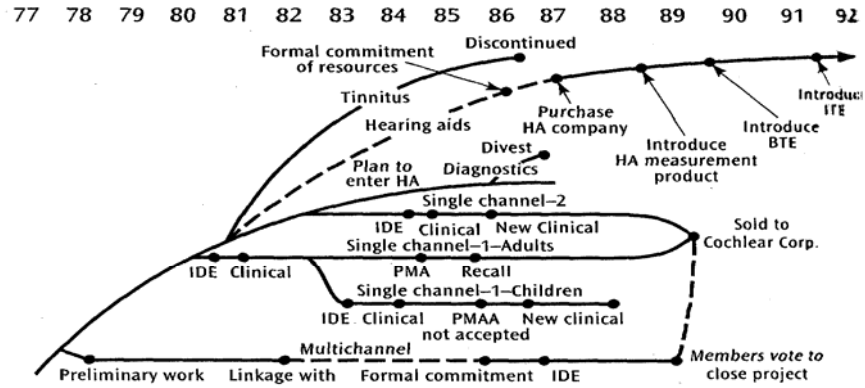


Figure 8.4 Temporal development of product and functions in the Cochlear Implant Program

Source: Van de Ven, Polley, Garud & Venkataraman, *The Innovation Journey*, NY: Oxford, 1999.

Example of Temporal Bracketing Strategy in CIP Case

Table 1. Strategy process issues during CIP venture history

Period	Environment	Actions	Plans	Outcomes	Corporate sponsors
Agenda setting (1978-80)	No competitors	Formal inception of CIP	Be first in the market with a series of products	Assessment of position very favorable—large market with few competitors	Separation of corporate sponsors from entrepreneurial team
Expansion (1980-85)	Several cochlear implant approaches with multiple testing standards resulting in ambiguity	Actions to be first in market with simple single-channel device	Plans extended to include related projects such as tinnitus and diagnostics	Mixed outcomes—FDA approvals but cues from environment that single channel not appropriate in the long run	Corporate sponsors are involved on a periodic basis
	Competitor's multi-channel device receives regulatory approvals	Emergent activities to develop multi-channel device curbed Actions taken to develop safer single-channel device	Plans to develop multi-channel device abandoned to develop safer device Change of plans to target children and patients with residual hearing	Outcomes worsen as CIP unable to accomplish sales and revenue objectives	Corporate sponsors seek economic rationale for continuing with single-channel device
Contraction (1985-89)	Ambiguity disappears as multi-channel devices considered superior to single-channel devices	Single-channel development stopped & multi-channel development begun; Other programs pruned Persistence of CIP actions despite decision to discontinue	Plans to phase out of single- to multi-channel and then to hearing aids	No longer technological leaders; CIP multi-channel devices do not show good results; Mounting financial losses	Change in venture manager; Very close monitoring of venture by corp. sponsors who encourage change in plans to include hearing aids

Source: R. Garud & A. Van de Ven, "An Empirical Evaluation of the Internal Corporate Venturing Process," *Strategic Management Journal*, 13 (1992): 93-109.

