Research Project Workshop: A case for analysis, theorising, and reporting
Information Systems Research & Dissertation
Thursday 30th April 2009
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Introduction
- Background
- Industry experience?
- Research experience?

Overview
- Engage in two activities of qualitative research
  - 1. coding
  - 2. reporting
- Data consists of interview and discussion transcripts
- Theoretical starting point (cultural analysis of organisation)
- Familiarisation with data
- Analysis
- Reporting
Learning outcomes

- Researchers will employ selected coding techniques and experience a process of theory development based on data interpretation and analysis.
- Researchers will develop a deeper understanding of the complexity of qualitative, interpretive organisational and sociological enquiry.

Workshop reflection

"Analysis is the interplay between researchers and data."

(Strauss & Corbin, 1998)

T: A theoretical starting point: Ciborra’s ‘Hospitality’

"hospitality, n. Friendly & liberal reception of guests or strangers; afford me the h. of your columns, put my letter in. [I. OF hospitalite I. L. hospitalitatem as HOSPITAL, see –TY]")
T: Actors’ commitments reflect different understandings

<table>
<thead>
<tr>
<th>The old commitments as dictated by systems development methodologies</th>
<th>The new commitments dictated by hospitality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strive identity and advocacy</td>
<td>Define identity in systemic way depending on the purpose(s)</td>
</tr>
<tr>
<td>Enforce boundaries, standards, roles</td>
<td>Close boundaries, test standards and roles</td>
</tr>
<tr>
<td>Be rational</td>
<td>Care</td>
</tr>
<tr>
<td>Seek consensus</td>
<td>Be the server</td>
</tr>
<tr>
<td>Be in control of the tool</td>
<td>Release control</td>
</tr>
<tr>
<td>Measure</td>
<td>Listen</td>
</tr>
<tr>
<td>Compare, learn and improve</td>
<td>Share</td>
</tr>
<tr>
<td>Be in control of unexpected consequences</td>
<td>Be open to mysteries and ambiguities (negotiable capability)</td>
</tr>
</tbody>
</table>

T: A cultural theory for organisation

<table>
<thead>
<tr>
<th>Theoretical explorations</th>
<th>Research implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>My leaning-in, a view that technology, not developers control our identities.</td>
<td>Individual slope, result and related combinations which include technology, their embodiment, identities, how they change.</td>
</tr>
<tr>
<td>Measuring the rate technology will evolve learning by doing and improvisation.</td>
<td>Identity, interaction, in the spiral events, Observed or meant events of play, breakdowns or problems solving. Role, roles, other roles</td>
</tr>
<tr>
<td>During the leaning process technology can be both observed, measured, skill fixed or in flux.</td>
<td>Processes of development.</td>
</tr>
<tr>
<td>Hospitality involves identity and emotion.</td>
<td>Observe or recall mood, feeling, expressions, affective, language. Is culture present, repressed, visible, impinged? Is technology implicated in this?</td>
</tr>
<tr>
<td>Hospitality is about reproportion and care.</td>
<td>Hospitality involves culture and care.</td>
</tr>
<tr>
<td>The rate technology can become an enemy.</td>
<td>Technology can cause purpose. Observation culture activity; what is taken for granted, routine? How shallow or deep is it taken by?</td>
</tr>
</tbody>
</table>

Research implications

T: Hospitality’s dynamics

ignorance fear uncertainty knowledge trust confidence skill respect etc ...

introduction : bringing in : care

meeting point

time
T: Speculate:

- What evidence might support Ciborra’s claims that ‘hospitality’ is an underlying social process and ‘lens’ through which we all experience organisational change?
- the phenomenon described by Ciborra may be evident in individual and collective narratives, story telling & explanation.
- sample statements (phrases or words) you think could be indicative or evidence of this kind of cultural knowledge…

A0: Activity: word associations. As many ideas as possible

Work on activity alone, then in pairs to compare what you’ve done.

<table>
<thead>
<tr>
<th>meeting</th>
<th>change</th>
<th>introduction</th>
<th>hostile</th>
<th>friend</th>
</tr>
</thead>
<tbody>
<tr>
<td>develop</td>
<td>we</td>
<td>they</td>
<td>engineer</td>
<td>l</td>
</tr>
<tr>
<td>gift</td>
<td>appearance</td>
<td>system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enemy</td>
<td>technology</td>
<td>threshold</td>
<td>objects</td>
<td></td>
</tr>
<tr>
<td>manage</td>
<td>exchange</td>
<td>stranger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>guest</td>
<td>outside</td>
<td>strangeness</td>
<td>share</td>
<td>Visit</td>
</tr>
<tr>
<td>fear</td>
<td>uncertainty</td>
<td>delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>care</td>
<td>rude</td>
<td>implement</td>
<td>instruction</td>
<td></td>
</tr>
<tr>
<td>innovation</td>
<td>visitor</td>
<td>procedure</td>
<td>invite</td>
<td></td>
</tr>
<tr>
<td>inside</td>
<td>Host</td>
<td>control</td>
<td>infect</td>
<td>language</td>
</tr>
</tbody>
</table>
10" break
The field data was gathered during a study into the adoption of a new software development framework in one organisation over a particular period by a particular group of people. We posit that evidence for the phenomena we are concerned with will be evident in the speech and reflections of those people recorded during the study.

Interviews were conducted in 2001 over the period from April through to June.

Interviews and discussions were recorded on audiotape and transcribed afterwards.

The participant company, project teams, individuals and other features are anonymised to remove identifying references.

D: Case Site: New Hanoi Technology

- 1993 Digital Equipment Corporation (Digital) closed its Irish assembly plants. Loss of 780 skilled jobs in Galway
- NHT was a start-up in the wake of Digital’s closure
- New Hanoi Technology founded 1994
- Open Standards based Prime Broker Suite, an interoperable FX Trading platform
- Development organised using the Digital Development Process (DDP), for managing software projects
- DDP became unworkable as they passed 100 employees (1998)
- NHT’s product delivery pipeline broke down
- Next version release dates slipped
- Quality suffered
- Employee burnt out, ill health, absenteeism, and exhaustion

D: Extreme Programming (XP) crept onto the scene in 1998

- Coding Standards; Small Releases; Metaphor; Simple Design; Testing; Continuous Integration; The Planning Game; Pair Programming; Collective Ownership; 40 Hour week; On-site Customer; and Refactoring
- Trialled by one development team, then another, then another
- NHT organisation dropped DDP and adopted XP approach for product development and maintenance
- Interviews conducted in 2001 over the period from April through to June
Analysis...

"I had not a dispute but a disquisition with Dilke, on various subjects; several things dovetailed in my mind, & at once it struck me, what quality went to form a Man of Achievement especially in literature & which Shakespeare possessed so enormously - I mean Negative Capability, that is when man is capable of being in uncertainties, Mysteries, doubts without any irritable reaching after fact & reason."

John Keats, 1817

T+M: Interpreting texts

Methodologically, the interpretation of texts implies a hermeneutic epistemology and an interpretive community making sense of texts and the role of 'text' in all its many forms. For this study we assume the following basic theoretical stance; that we gain access to social (and organisational) phenomena through language, in particular through spoken discourse. Other forms of discourse, communication and expression may also be important (written texts, visual artefacts, music, symbols, movement, sensation, etc).

In this unit we primarily address speech, and analyse it through transcripts of interviews; spoken discourse is our data.

We should be aware however that nothing is ever simply 'as it seems'. Social (and particularly Organisational) research is value laden and should always be power aware because of asymmetries and difference; privilege, class, gender, race, education, economic, age, language, ethnicity etc.

T+M: Exercises with the interview data

- Content analysis is based on an intuitive assumption that words are important, and that the more often a word is used, the more useful and important it is.
- Language analysis is rooted in the idea that the way language is used represents shared structure, or less strongly, the availability of structure we might reproduce to effect action, make sense, and carry meaning.
- Interpretive analysis addresses meaning (intended and but also unintended) in speech, texts, images, etc. Actual words and representations are important, but so too is their use; through genres or patterns of use, in actual utterances or statements, and its intended meaning and what is left implicit or unsaid. Interpretive research may also question its own role and power to value or represent some things over others.
M: Research methods

- Content analysis
  - Identify certain phrases/words, count and analyze the frequencies and recurring patterns
  - Selection of key phrases/words depend on the hypothesis of the researcher
- Grounded analysis
  - Practical approach to analyze non-standard data
  - Read & re-read, question, highlight, conceptualize, categorize, question, theory formation and constant assessing
- Narrative & Discourse analysis
  - Analysis of natural language data
  - Narrative structure in discourse (or narratives) biographies, myths, events, episodes. Expressing norms, beliefs, values
  - Identity in discourse, contradiction, dilemmas, argument

T: Recall ideas for coding or framing Ciborra’s theory

T+M: Unpack the research question

- Culture: identity pronouns and personal pronouns.
- What does this sort of analysis give us?
- Why pronouns
- What about care/emotions/exclamations
- What about past tense/future tense/continuous, present tense
A1: Content analysis

We used the ATLAS.ti word cruncher to generate the following word frequency report from the transcripts of 12 interviews and one group discussion.

ATLAS.ti is a software package supporting qualitative data analysis. Two quantitative functions are supported, SPSS export and Word Cruncher. Word Cruncher performs quantitative processing of textual data (primary documents). Word occurrence frequency can be generated from individual documents or aggregated over an entire collection of primary documents.

A1: Word Cruncher

<table>
<thead>
<tr>
<th>Source</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>29,636</td>
</tr>
<tr>
<td>SW</td>
<td>61</td>
</tr>
<tr>
<td>project</td>
<td>196</td>
</tr>
<tr>
<td>project</td>
<td>236</td>
</tr>
<tr>
<td>time</td>
<td>201</td>
</tr>
<tr>
<td>work</td>
<td>302</td>
</tr>
<tr>
<td>customer</td>
<td>138</td>
</tr>
<tr>
<td>engineer</td>
<td>187</td>
</tr>
<tr>
<td>team</td>
<td>269</td>
</tr>
<tr>
<td>them</td>
<td>247</td>
</tr>
<tr>
<td>for</td>
<td>247</td>
</tr>
<tr>
<td>have</td>
<td>257</td>
</tr>
<tr>
<td>on</td>
<td>283</td>
</tr>
<tr>
<td>in</td>
<td>383</td>
</tr>
<tr>
<td>is</td>
<td>428</td>
</tr>
<tr>
<td>people</td>
<td>48</td>
</tr>
<tr>
<td>their</td>
<td>180</td>
</tr>
<tr>
<td>us</td>
<td>581</td>
</tr>
<tr>
<td>and</td>
<td>72</td>
</tr>
<tr>
<td>management</td>
<td>127</td>
</tr>
</tbody>
</table>

A1: Commentary: What good is simple content analysis?
Methodology: A way of thinking about and studying social reality

Methods: A set of procedures and techniques for gathering and analyzing data
(Strauss & Corbin, 1998).

- Grounded theory method
  - Microscopic examination of data
  - Asking questions, making comparisons
  - Starts with line by line
    - Labelling
    - Conceptualising (abstracting from labels)
    - Memos (researcher’s thoughts and reflections – line by line)
  - Grounded theory method, three processes
    - Open coding
    - Axial coding
    - Selective coding
Fergus: Is pair programming accepted now (?) Has everybody bought into that (?) It’s the one practice that I’m not sold on (.) I can see benefits (.) however (.) I’m nervous about it (.) things like personalities (.) things like people’s programming habits (.) and people being people (.) It can be tricky (.) I’m just nervous about it (.) If it works I can see it being very beneficial (.) so does it become a matter of policy (.) Can you override it and say “no I don’t want to pair program on this piece of work” I want to do this by myself (.) would that be frowned upon because maybe some people would always want to work on their own (?) I just want to say that I’m a bit nervous about pair programming (.) is anybody else nervous about pair programming or is it just me (?)

See TEXT: Group discussion line 300

T: Hospitality’s phenomena (Ciborra’s hypothesis)

ignorance
fear
uncertainty
knowledge
trust
confidence
skill
respect
etc ...

introduction : bringing in : care

meeting point

time

T+M: Reconsider evidence of identity?

In spoken and written discourse pronouns substitute for nouns and noun phrases (e.g. pair programming).

Personal pronouns

Instances of pronoun use might indicate the speaker’s perception of identity and group membership.

Possessive pronouns such as ‘my’, ‘our’, ‘your’, ‘their’, may be indicators of a speaker’s identification of self, group markers, others, and ‘otherness’ more generally.
For the text ‘is it just me’:
highlight the personal pronouns used by Fergus.
List the personal pronouns
Comment on how they are used.
Consider some of the following questions:
Q: Whom do the pronouns refer to (speculate)?
Q: How are pronouns used in this text?

Everybody: x: Group (programmer or larger organisational group?)
Their: x: Possessive, collective (implied individual?), group programmers?
You: x: Third person (personal conjecture)
Frowned upon: x: Implied third party? Group norm or managerial control?
Anybody: x: Meaning occupational group or larger organisational group?
Me: x: Himself.

I and ‘I am’ (I’m) precede Fergus’s most personal statements, declarations and feelings. He is fearful of being forced to do something, in particular an activity that involves working closely with others.

I’m just a bit nervous about pair programming

‘Others’ also feature prominently in the text; ‘everybody’, ‘people’, ‘their’, ‘anybody’. The message appears to be that they all have a part to play, something to say, or some say in what happens with the practice of ‘pair programming’. Fergus conceives that these others ‘have a say’ in the work of programming, even though the work itself involves:

‘things like personalities, things like people’s programming habits, and people being people…’

Fergus reminds us that programming is often considered to be a solitary occupation but the changes implied by using the new methods imply a fundamental shift towards programming as a social and collaborative occupation!
Lunch break 1hr

Data...

...qualitative research has preferred, instead, to describe and illuminate the meaningful social world as prescribed by the interpretivist paradigm.

(Silverman, 1993)

D: Collecting speech

Image: Seosamh Ó Dálaigh recording on the ediphone from Cáit and Máire Ruiséal, Dún Chaoin, County Kerry. Full-time folklore collectors like Seosamh Ó Dálaigh made repeated visits to exceptional informants in an effort to record as fully as possible their repertoire of tales and other folklore material. Photographer: Tomás Ó Murchuaraigh, c.1942.

Image courtesy of UCD Delargy Centre for Irish Folklore and the National Folklore Collection.
P+T+D+M: Reflection

- What constitutes evidence?
- What do you think is the status of interview data?
- Are interviews and records authoritative, explicit and unambiguous?
- Are recordings accurate representations of what happened during an interview or discussion?
- What happens during transcription of recordings?
- What does the text stand for?

D: Guidelines on collecting speech

Get permission before taping

Be aware of the problems a recorder poses
- awkward, stilted, self-conscious, unnatural, unsociable
- Don’t rely on technology, bring two of everything and extra batteries

Don’t rely on technology, make handwritten notes in your journal

Observer’s paradox
- does act of recording influence the observation?
- does the act of recording influence the phenomenon?

Preserve anonymity of informants, companies, products, events

Get permission before taping
D: (very) simple transcription

/ intonation boundary marker (that is, where the elements inside the slashes were given a particular intonation contour)
(0.7) times in brackets are seconds, or fractions of a second
(.) indicates a normal length of pause – that is, nothing unusual
underlined words or parts of words show where particular syllables were stressed

(Carter et al., 2001: 243-309)

Coding...

Coding: The analytic processes through which data are fractured, conceptualized, and integrated to form theory
(Strauss & Corbin, 1998).

M+T: What is Grounded Theory?

- “theory that was derived from data, systematically gathered and analyzed through the research process.” (Strauss & Corbin, 1998: 12)
- An approach “to generate and develop categories in order to produce delimited theories grounded in the data.” (Silverman, 1993: 153)
- “It moves from one inductive inference to another by selectively collecting data, comparing and contrasting this material in the quest for patterns or regularities, seeking out more data to support or qualify these emerging clusters, and then gradually drawing inferences from the links between other new data segments and the cumulative set of conceptualizations.” (Miles & Huberman, 1994: 14)
M: A method for theory construction

Step 1. Underline key terms in the text
Step 2. Restate key phrases
Step 3. Reduce the phrases and create clusters
Step 4. Reduction of clusters and attaching labels (pattern coding)
Step 5. Generalizations about the phrases in each cluster (propositions)
Step 6. Generating 'mini theories'; i.e. more conceptual explanation
Step 7. Integrating theories in an explanatory framework. ‘Central Theme’

(Miles & Huberman, 1994: 87-88)

A3: Text: ‘I feel it myself’

Niall: Can we just come back to the pair programming and the task board (?) What I think about the task board (.) and I feel it myself (.) is that the engineers have a hell of a lot more autonomy now (.) In what they do (.) there is much less control about what we do now (.) we pick things off the board (.) ourselves and we drive them ourselves right through to the end (.) There is an element of control and management in terms of what we actually do is gone now which may have existed in a more traditional model (.) And I think what unit testing and pair programming does (.) it’s a different kind of control (.) It’s a control over how we do what we do (.) that we do it right (.) because without that (.) you can have a lot of mavericks (.) Not on purpose (.) they’re not out to break the system (.) Essentially that’s why they’re there (.)

See TEXT: Group discussion line 352

A3: Activity

Individually, then discuss what you’ve done in pairs, then in fours draw conclusions.

Finally a full group discussion compares conclusions.

For the text ‘I feel it myself’, highlight the personal pronouns used by Niall.

List the personal pronouns and comment on how they are used.

Are occupational beliefs expressed by the speaker?

Are occupational values evident in the text?
A3: Commentary

A4: Ciborra: Actors commitments reflect different understandings

- Review these categories on your own then complete activity 4.

<table>
<thead>
<tr>
<th>The old commitments dictated by systems development methodologies</th>
<th>The new commitments dictated by hospitality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong identity and discipline</td>
<td>Define identity in a plastic way depending on the guest's needs</td>
</tr>
<tr>
<td>Enforce boundaries, standards, rules</td>
<td>Cross boundaries, test standards and roles</td>
</tr>
<tr>
<td>Be hierarchical</td>
<td>Be plastic</td>
</tr>
<tr>
<td>Been consistent</td>
<td>Be the server</td>
</tr>
<tr>
<td>Be in control of the tool</td>
<td>Release control</td>
</tr>
<tr>
<td>Measure</td>
<td>Listen</td>
</tr>
<tr>
<td>Compare, learn and improve</td>
<td>Share</td>
</tr>
<tr>
<td>Be in control of unexpected consequences</td>
<td>Release too rigorously, seek alignment (negative rigidity)</td>
</tr>
</tbody>
</table>
A4: Code the following statements as evidence of ‘old’ or ‘new’ commitments

- “we deliver products in well known traditional time honoured processes”
- “It says so in the operating structures”
- “nothing gets done unless I sign off on it”
- “we need these formal sign-off meetings”
- “how do you know what you’ve got unless you can measure it”
- “the group decides for bad”
- “communicates through the interface”
- “leaves over the wall”
- “projects have their own logic”
- “people know what they’re doing in the traditional approach?”
- “we don’t like uncertainty”
- “you’ve got to talk to the others before changing things”
- “it makes it personal, to take responsibility”
- “by getting close to the customer”
- “I wasn’t empowered to question”
- “to challenge and engage in the decision making processes around what it is they end up doing”
- “their engineers or end-users sitting beside my engineers in my office”
- “groups need to interoperate, communicate and interact at a certain pace”

A4: Commentary

- A short focused discussion, coding ‘old’ or ‘new commitments

D+A: Tools for analysis

- ATLAS/i
- NVivo
- Word processor
- Search
- Highlight
- Mark
- Comment/code
A5: Group work: Microscopic examination of data part 1

- Set up groups of 4-6 to work on microscopic examination of the data.
- The groups will report back to the whole class

A5: Microscopic examination of data

Open coding
- Mark (underline, highlight)
- Label or name
- Memo (write brief thoughts or reflections)
- Conceptualise from labels etc.

Axial coding
- Concepts and categories
- Subcategories address questions like: Who, what, why, when, how, how come, what consequences
- Write statements relating the category to the subcategory
- Axial categories/subcategories are mini-theories
- A category is considered saturated when no new information seems to emerge (Strauss & Corbin, 1998: 136)

A6: Selective Coding & Theoretical Sampling

Theoretical sampling
- A method of focusing future data gathering, driven by the concepts, categories grounded in earlier data
- An aide to both further building and ‘testing’ theory
- A method of creating comparisons

Selective Coding
- Narrowing into a central category, all other categories relate to it
- Explanation relating categories to the central is logical, consistent, unforced
- The central is sufficiently abstract as to suggest general theory
- The nascent theory has explanatory power
- It can explain positive and negative outcomes, affirmative and contradictory phenomena (problem, issue, event, happening)
A6: Investigation anchored in Ciborra’s ‘Hospitality’

“hospitality, n. Friendly & liberal reception of guests or strangers; afford me the h. of your columns, put my letter in. [. OF hospitalitatem (as HOSPITAL, see –TY)]

Group discussion

P+T+D+M: Reflection

- What is the object of study?
- How will I record or gather evidence of it?
- What are they saying?
- What am I hearing?
- What am I looking at?
- What’s happening?
- What can I see?
- How do I interpret what I sense, experience, record?
Workshop reflection

“Analysis is the interplay between researchers and data.”
(Strauss & Corbin, 1998)

Method/Analysis References


End