

Conceptual Models as Diplomatic Languages

Conceptual Models in Sociotechnical Systems Workshop

What I'm going to try to talk about

1. Conceptual modeling as it is
2. Two views of conceptual modeling
3. Conceptual modeling as it could be
4. Two examples: digital humanities and data science
5. Conceptual models as diplomatic languages

The fragmented genealogy of conceptual modeling

Conceptual modeling as it is

Three traditions

- **Mental representations for thinking machinery**
knowledge representation, knowledge engineering, formal ontology design, symbolic artificial intelligence, expert systems, rule-based reasoning...
- **Blueprints for information system construction**
conceptual modeling, data modeling, entity-relationship modeling, object-oriented modeling, business modeling, systems analysis, document engineering, domain-driven design, model-driven engineering...
- **Maps for navigating a landscape of topics**
knowledge organization, information organization, subject classification, faceted classification, information modeling, semantic tool design, knowledge graphing...

Reality mapping **versus** language design

Reality mapping *versus* language design

Lyytinen (1987) “Two views of information modeling”

Reality mapping

- Goal is to produce an impartial picture of an objective reality
- Conceptual models are factual description of that reality
- Conceptual models are what everyone must agree on

Language design

- Goal is to support action within some particular context
- Conceptual models capture social conventions and institutions
- Conceptual models are constantly re-negotiated compromises

Reality mapping *versus* language design

Formal ontologies for biomedical research

Reality mapping

“... ontologies... should be understood as having as their subject matter, not concepts, but rather the universals and particulars which exist in reality and are captured in scientific laws”

—Smith (2004) “Beyond concepts: Ontology as reality representation”

Language design

“... ontologies are intended to support the communication between scientists and must, by their very nature, be able to accommodate different scientific views”

—Dumontier & Hoehndorf (2010) “Realism for scientific ontologies”

Reality mapping *versus* language design

Data modeling for business information systems

Reality mapping

“Data modeling is not a process of creation; it is a **process of discovery**”

“Data modeling is certainly a **descriptive activity**, it's not a design activity”

Language design

“I believe rabidly and intensely that it's a **design process**”

“We're designing [but] some of the people that we work with see us as scribes”

—Data modeling “thought leaders” interviewed in
Simsion (2007), *Data Modeling: Theory and Practice*

Reality mapping *versus* language design

Information modeling for subject authority data

Reality mapping

“subjects exist independently of the thoughts and actions of humans...the classes of works of which aboutness instances are predicated are **natural kinds**... we may speak sensibly of works ‘having’ subjects, and of ‘the’ subject(s) of any given work”

Language design

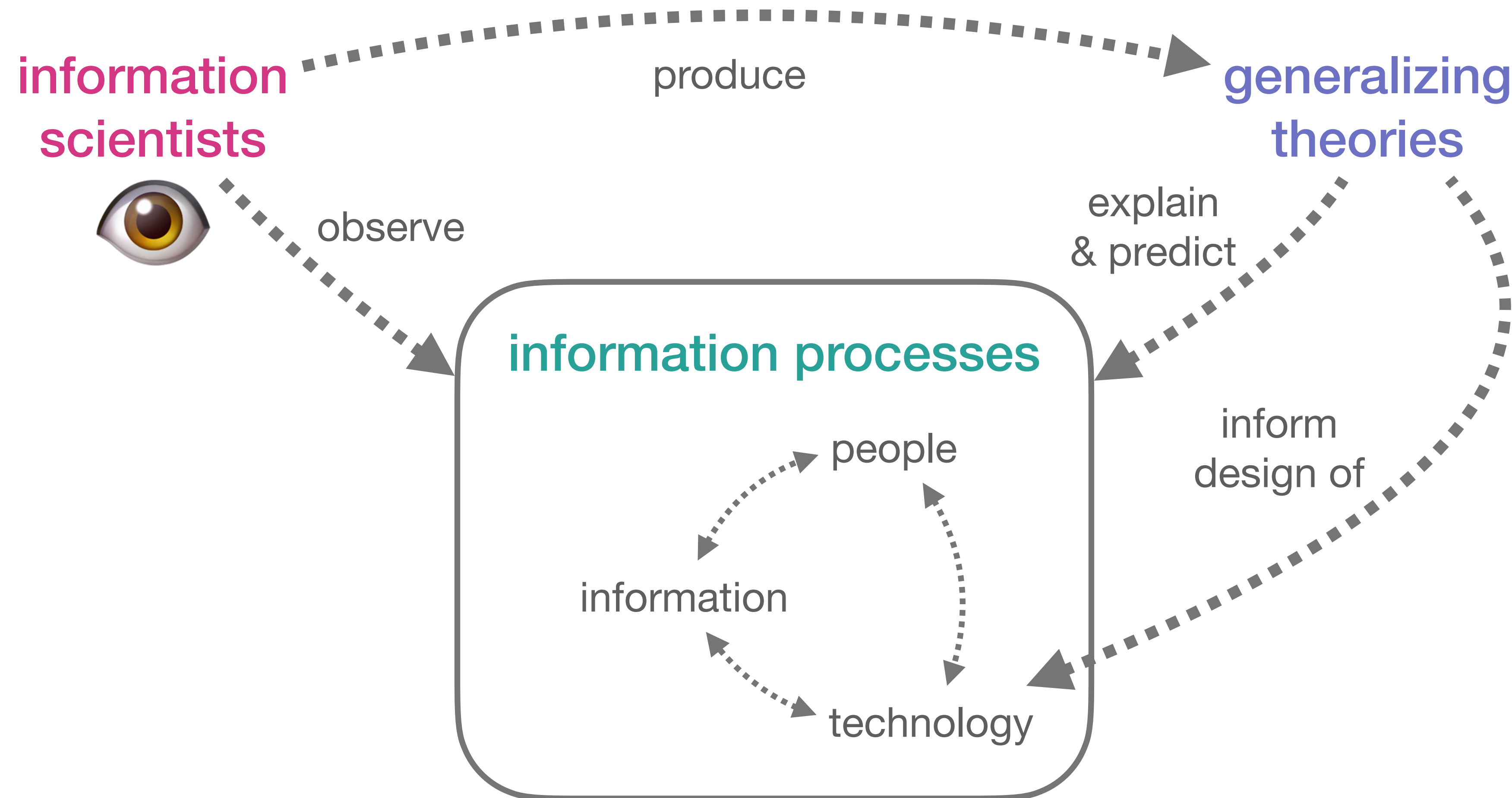
“subjects are merely linguistic expressions that serve as labels or names for sets of works... the sets of documents designated by subject labels are **nominal kinds**... it makes no sense to speak of documents ‘having’ subjects... or of ‘the’ subject of a document”

—Realist vs. nominalist views of “aboutness” as characterized in Furner (2012), “FRSAD and the Ontology of Subjects of Works”

Conceptual modeling
research constituting practice

The standard model of information science

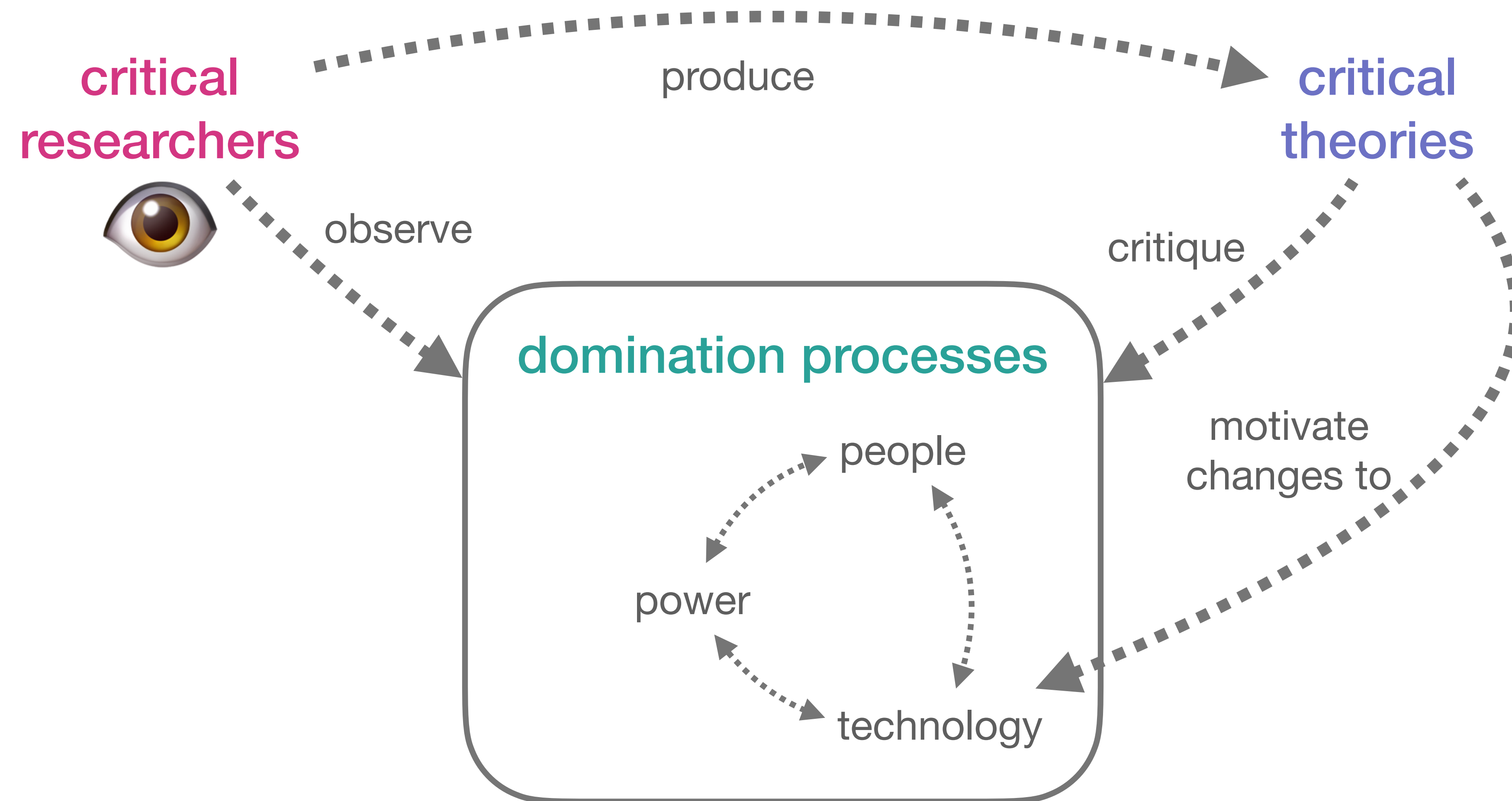
“the god trick of seeing everything from nowhere” *



* Haraway (1988) "Situated knowledges"

The critical model of information studies?

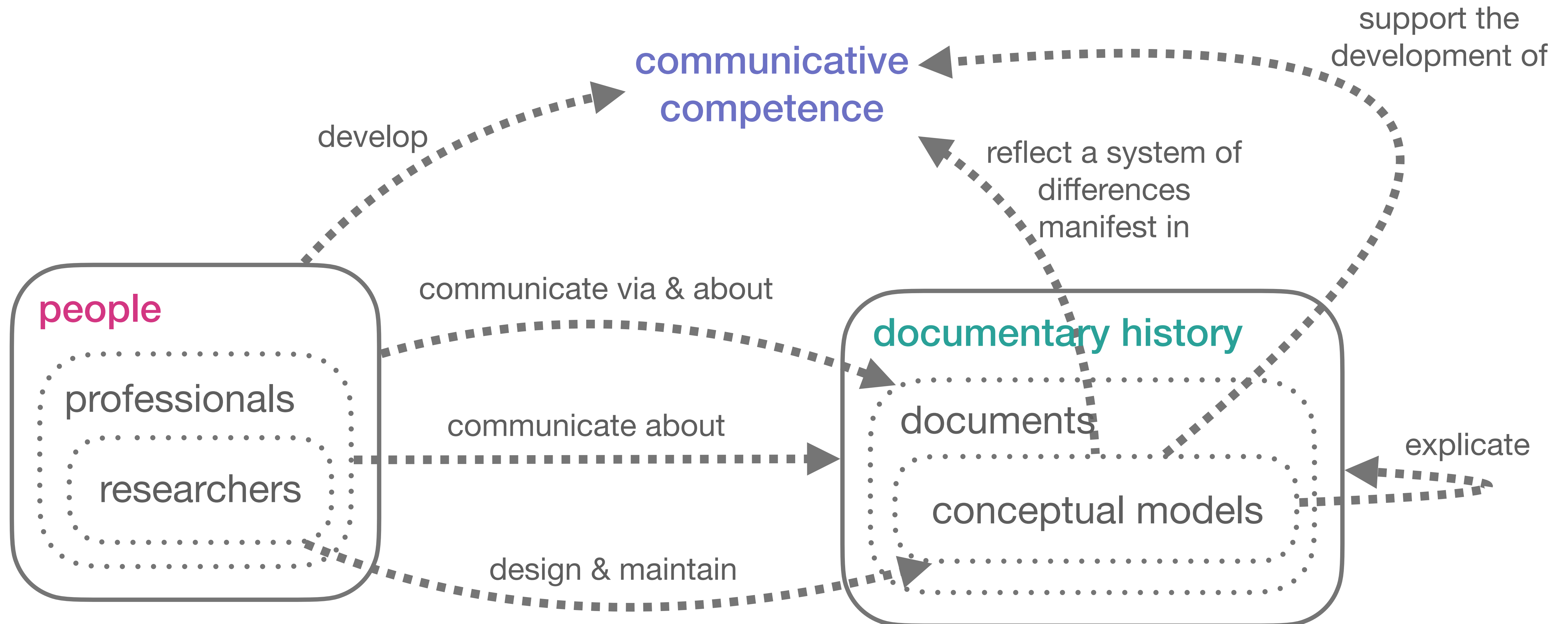
“deep asymmetry between deluded actors and the clear-minded sociologist” *



* Boltanski (2013) “A Journey Through French-Style Critique”

A symmetric model of communication

as presented in Suominen (1997) *Filling Empty Space*



- There are **ongoing conversations** mediated by documents
- Participating in these conversations requires developing **competence**
- Some people are interested in **conversations about conversations**
- These people, if they become familiar with the **history** of some conversation, can help others develop the competence to participate in it
- This help takes the form of **explication**, not *explanation* or *prediction*
- Sometimes we reach the limits of explication using ordinary language, and we need to **construct** languages to help us explicate better
- These constructed languages are **conceptual models**

Explication

A structuralist activity *

- **Reflect** on the conversation, **decompose** it, and then **recompose** it
- The recomposed object is a **simulacrum** of the conversation that, hopefully, makes it a bit easier to see what's going in, to get a grip on things
- Explication starts with **partition**: giving identities to fragments of conversation
- The fragments are chosen such that, if they were to change, the entire conversation would change as a result
- Reflecting on these changes leads to the **articulation** of a system of distinctions—these are the distinctions one must know to gain competence

* Barthes (1972) “The structuralist activity”

“... creation or reflection are not, here, an original ‘impression’ of the world, but a veritable fabrication of a world which resembles the primary one, not in order to copy it but to render it intelligible. Hence one might say that structuralism is essentially *an activity of imitation*, which is also why there is, strictly speaking, no *technical* difference between structuralism as an intellectual activity, on the one hand, and literature in particular, art in general, on the other...”

Barthes (1972) “The structuralist activity”

This analytic, objectifying explication of structure is carried out not as an end in itself, but in service of a greater goal: the shared orientation toward and communication about [documents]. This is where the hermeneutic tradition enters, emphasising the shared horizons of some interpretive community...

Shaw (2019) “The missing profession”

“... something more like hermeneutics... A critical technical practice [with] one foot planted in the craft work of design and other foot planted in the reflexive work of critique...”

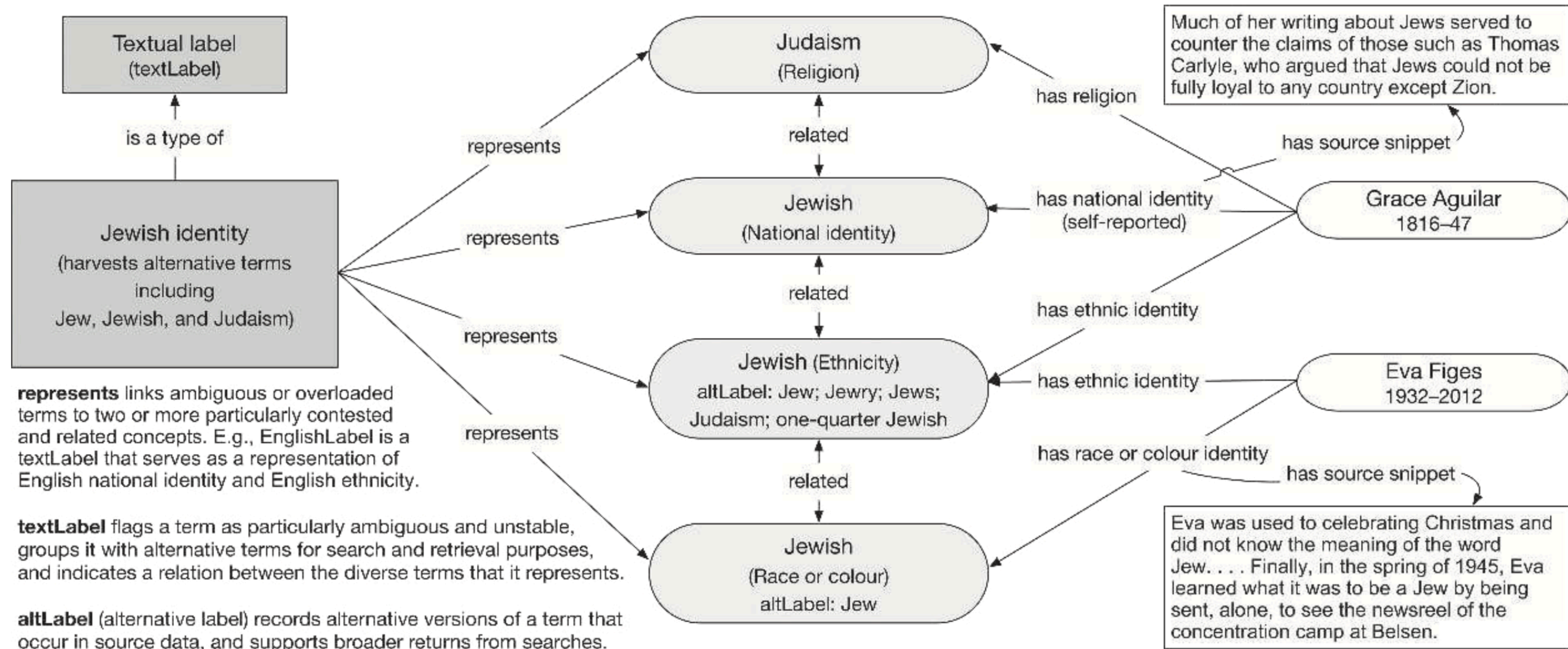
Agre (1997) “Toward a critical technical practice”

Two examples

digital humanities and data science

Expansion and condensation

of distinctions of identity



Data hermeneutics

as opposed to “data science”

“... statistics... has always been a small, largely academic discipline that extends vast intellectual jurisdiction by commodifying its techniques in texts, formulas, tables, and graphing tools... statisticians flood their techniques everywhere, let others use them badly, and make a living repairing bad applications and contracting their direct services to the elite clientele... One can easily imagine a large profession like public accounting, but called statistics, that comprised consultants who would swear that statistical analyses meant what the substantive authors claimed they did. In fact, however, this did not happen, for reasons which suggest a deliberate choice.”

Abbott (1988) “The information professions”

Data hermeneutics

as opposed to “data science”

“Treated as the subject of a scientific inquiry, 100 million tweets are a series of observations generated by the same implicit and unchanging mechanism, the nature of which is to be discerned via statistical generalization from that series. Treated as the subject of a historical inquiry, 100 million tweets are an assembly of individual utterances, the circumstantial relations among which must be discerned through a process of mutual criticism and interpretation.”

Shaw (2015) “Big data and reality”

Conceptual models as diplomatic languages

The background of the entire image is a complex, abstract composition. It features a dense network of thin, black, intersecting lines that create a web-like or scribbled effect. Overlaid on this network are various organic, splashed, and curved shapes in a wide range of colors, including bright pink, magenta, light blue, pale yellow, and hints of green and orange. The overall impression is one of chaotic energy and modernist abstraction.

THE AGE OF THE CRISIS OF MAN

THOUGHT AND
FICTION IN AMERICA,
1933-1973

MARK GREIF

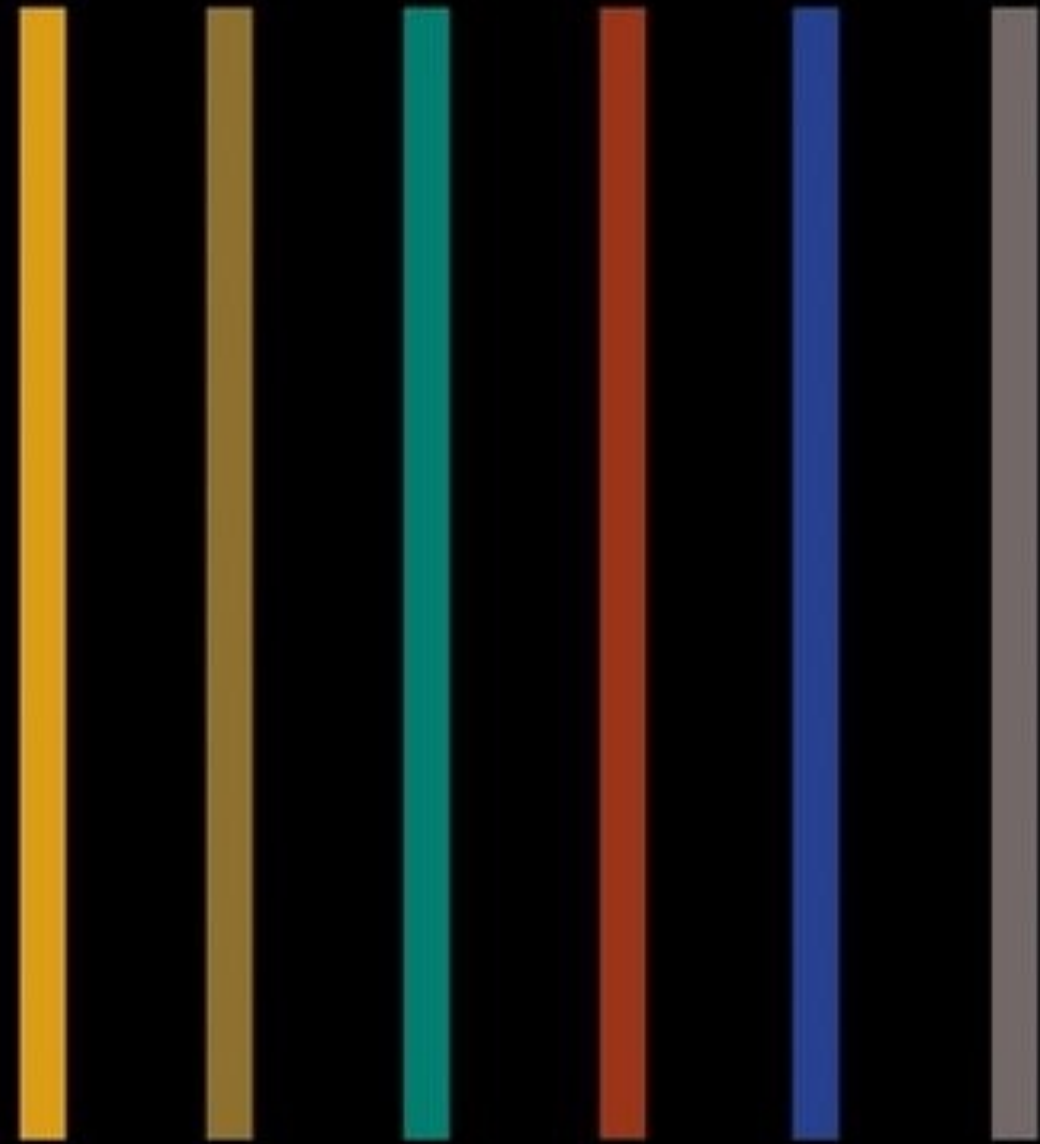
Clashing conversations

and the need for diplomacy

“The goal is to develop a mutually agreeable language that is not so rigid that it excludes either approach but not so loose that it fails to satisfy each party’s standards... usually the solution in such cases is something of a compromise, which in practice fails to satisfy at least a few disputants on the fringes. These can then go on arguing, demanding that the compromise be reviewed, or they can walk out...”

Carus (2007) “The ideal of explication” in *Carnap and Twentieth-Century Thought*

ON JUSTIFICATION
ECONOMIES OF WORTH
Luc Boltanski & Laurent Thévenot



An Inquiry into Modes of Existence



AN ANTHROPOLOGY OF THE MODERNS



In summary

1. Conceptual models are constructed languages
2. Constructed languages explicate ongoing conversations and support the development of communicative competence
3. The construction and reconstruction of languages for communicating about documentary communication is (or should be) the core of LIS
4. The grand challenge (not only) for LIS: to diplomatically bridge between discourses that mutually acknowledge a need for institution-building