



# Digital artifacts at the center of organizational routines

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# Teaching in person/via Zoom/via Teams is the same but different

It is the same when goal is to teach a given topic.

But it is also different when there are different ways of teaching.

# Teaching in person/via Zoom/via Teams is the same but different

Performance (in person)	Performance (Zoom)	Performance (Teams)
1. Preparing a course syllabus	-	-
2. Scheduling and booking venues	2. Creating a Zoom link 2a. Fixing a Zoom link	2. Creating a Teams link
3. Preparing a slide deck	-	
4. Conducting the session 4a. Reading the room	4. Conducting the session 4a. Establishing a Q&A procedure 4b. "Reading" the zoom	4. Conducting the session 4a. Changing the presentation mode...
5. Grading the report	-	-
...	...	...

# Organizational routines are core to organizational life

Nelson and Winter (1982): An Evolutionary Theory of Economic Change

- Routines are seen as the basic unit of analysis to understand organizational work and change, understood as “all regular and predictable behavioral patterns of firms” (p.14)
- Routines, like biological genes, are heritable and selectable by the environment and provide the basis for evolutionary change of organizations .
- Routines are the basis for change, as innovation is defined as “new combinations of existing routines” (p.130).

# There are two core research communities on organizational routines

- Capability:
  - Dynamic capability: what routines do and their effects on organizational performances
- Practice:
  - Routine dynamics (Feldman & Pentland, 2003): what the internal dynamics of routines are and how they produce stability and change

# Organizational routines are patterns of actions, that are...

- Repetitive: routines are repeated over time
- Recognizable: routine share family resemblance
- Interdependent: actions create context for other actions
- Carried out by multiple actors: participants can have multiple understandings and can be located across time and space (distributed).

(Feldman & Pentland, 2003)

# Routine dynamics challenges the notion of routines as unchanging

Routines are likened to genes (and performance programs, individual habits):

“We have an image of routines as relatively fixed, unchanging objects. These metaphors treat organizational routines as mechanisms or abstractions, rather than as collective human activities.

As with any abstraction, the focus is on the central tendencies rather than variation. As a result, these metaphors highlight the inertial qualities of routine.” (Feldman & Pentland, 2003, p. 97)

# Routine dynamics unpack the internal dynamics

Routines embody a duality of structure and agency (Giddens, 1984; Bourdieu, 1977, 1990):

“One part embodies the abstract idea of the routine (structure), while the other part consists of the actual performances of the routine by specific people, at specific times, in specific places (agency).

Each part is necessary, but neither part alone is sufficient to explain (or even describe) the properties of the phenomenon we refer to as "organizational routines." Understanding the interactions between these two aspects is necessary for to appreciate the potential of organizational routines as a source of change.” (Feldman & Pentland, 2003, p.95)



# Routine dynamics unpack the internal dynamics

Organizational routines as a duality (Feldman & Pentland, 2003):

- The ostensive aspect is the ideal or schematic form of a routine. It is the abstract, generalized idea of the routine, or the routine in principle.
- The performative aspect of the routine consists of specific actions, by specific people, in specific places and times. It is the routine in practice.
- With the performances creating and recreating the ostensive aspect and the ostensive aspect constraining and enabling the performances.

# Organizational routines are sources of endogenous change

Endogenous change (changes within routines) can take place when:

- Performance variations (like improvisations, short-cuts, workarounds) that are selectively retained in the ostensive aspect of the routine.
- Performance variations may come from elements of past repertoires of a particular routine or actions from other sources to deal with present situation.

# Organizational routines are sources of endogenous change

- Effortful: actors construct routines from a repertoire of possibilities
- Emergent: routines come about through being performed by actors and artifacts
- Generative: routines hold the seeds of their own continuity or change

# Organizational routines can be changed exogenously

- Management demand
- Technology change
- ...or pandemic

# Artifacts (SOPs) are at the periphery of routine dynamics

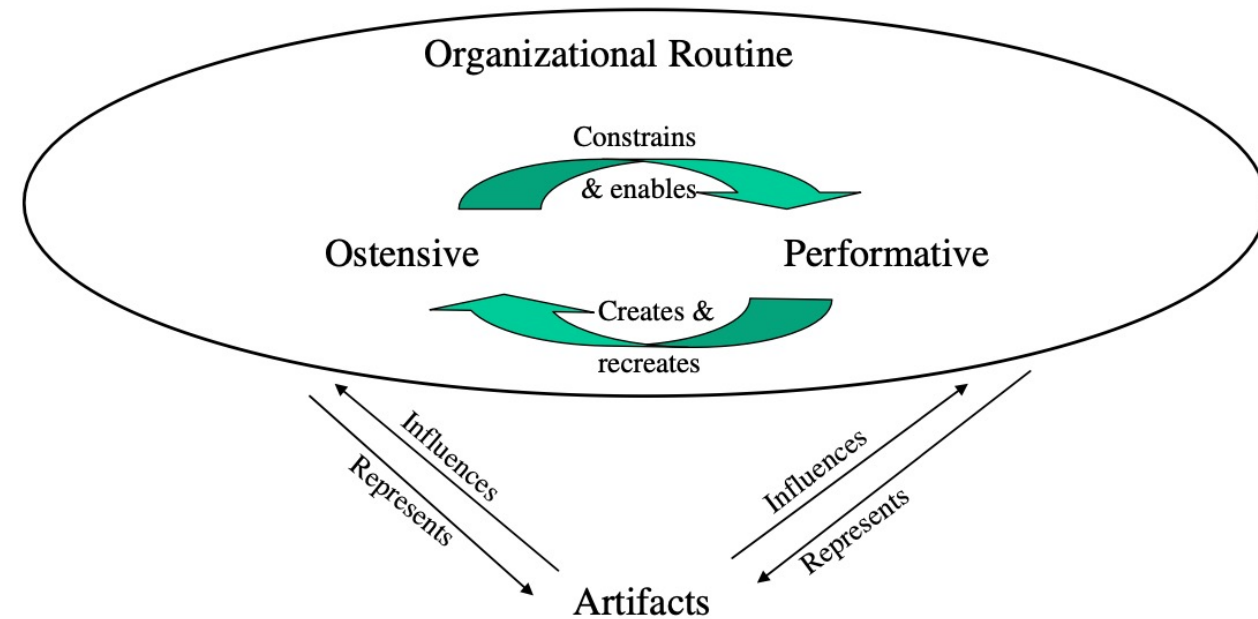
Pentland & Feldman (2008): artifacts, like rules and written procedures, are embedded in machines and software, to describe or prescribe/guide or constrain routines.

Artifact-ostensive:

- Align understanding of routines

Artifact-performative:

- Observe and monitor performance



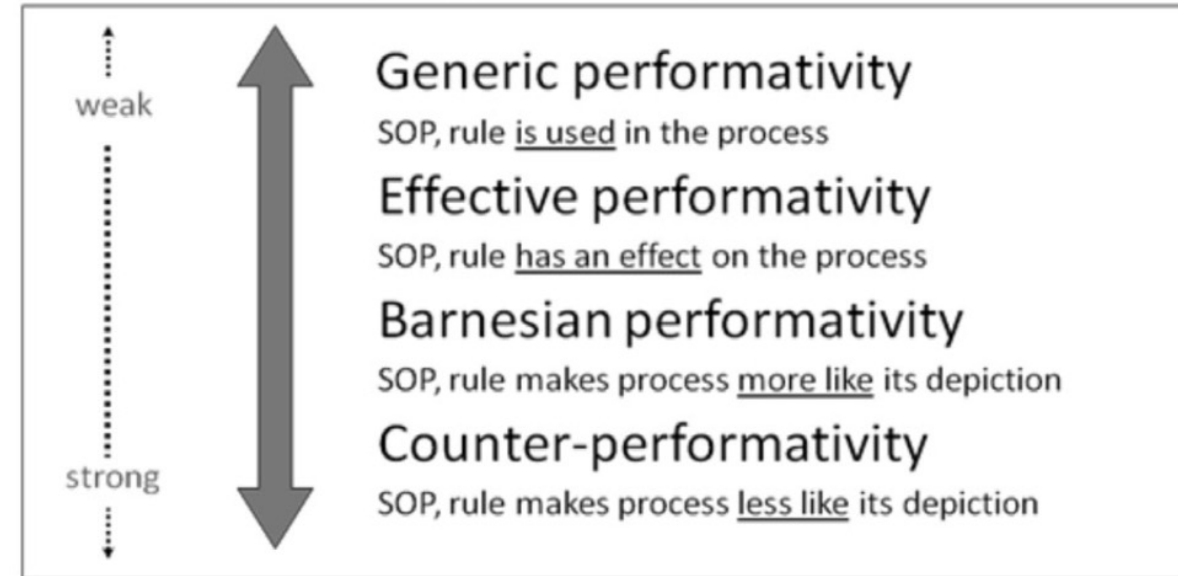
# Artifacts (SOPs) are at the center of routine dynamics

D'Adderio (2011): four steps

- Action and cognition distributed, stretched across people and artifacts.
- Artifacts have agency when actors' assumptions and intentions can be "inscribed". (STS)
- Artifacts can have degrees of influence on routines (Performativity Theory of Sociology of Finance)
- Artifacts and actors co-evolve when there are competing organizational agencies.

## Non-performativity

(disuse/cerimonius adoption, i.e. "shelfware")

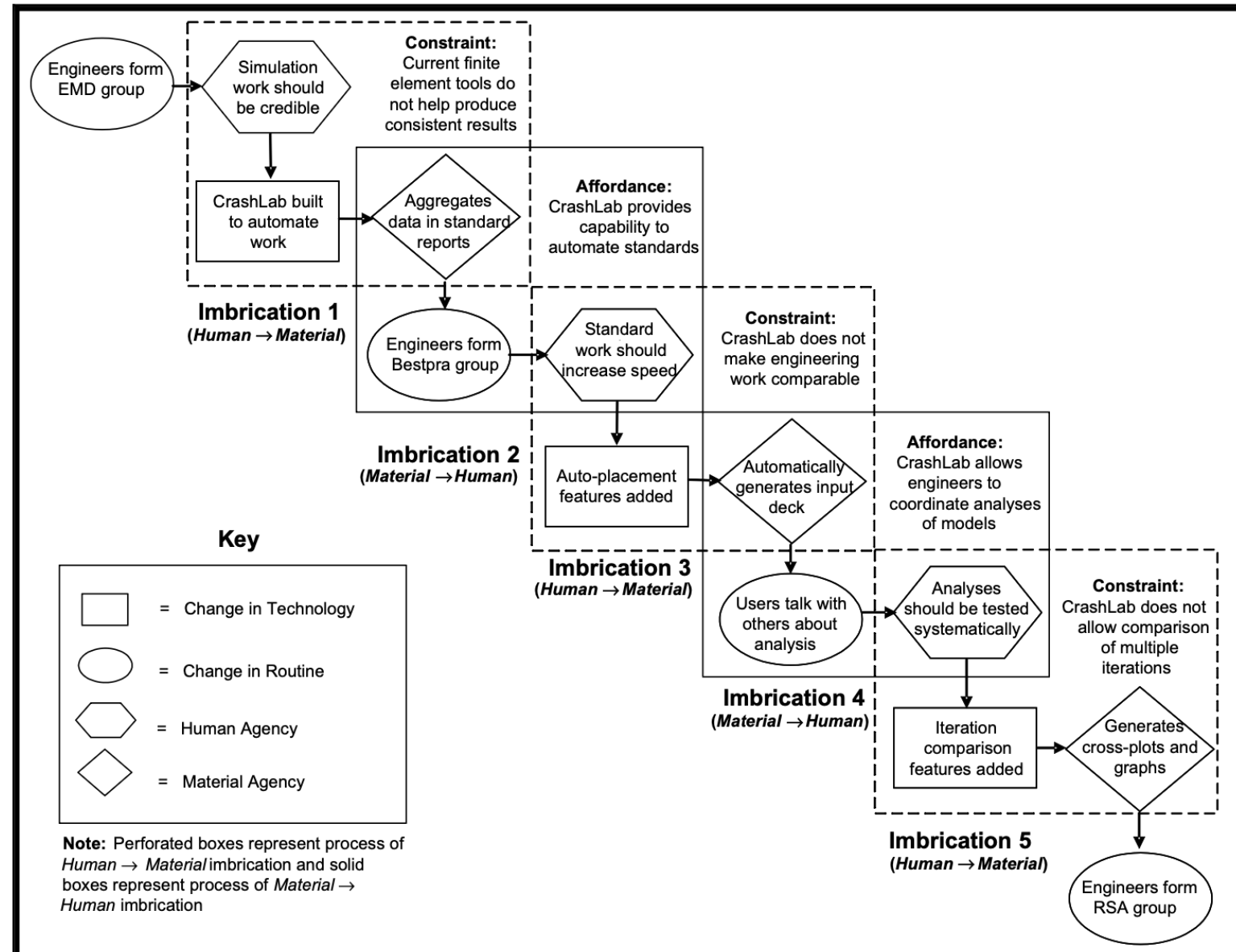


## Prescription

(automatic reproduction, i.e. algorithmic sequence)

# Imbrication

Leonardi (2011)



# Inscribed intentions in digital artifacts (software) may lead to dead routines

Pentland & Feldman (2008, p.240-241; p.248):

”**Dead routines** are artifacts; they are rigid, mindless, and can be explicitly stored. The classic example is the sequential list of actions that is developed by people who do not enact the routine and is largely if not totally ignored by those who do enact the routine.”

”**Live routines** are best conceptualized as generative systems that can produce a wide variety of performances depending on the circumstances.”



# Inscribed intentions in digital artifacts (software) may lead to dead routines

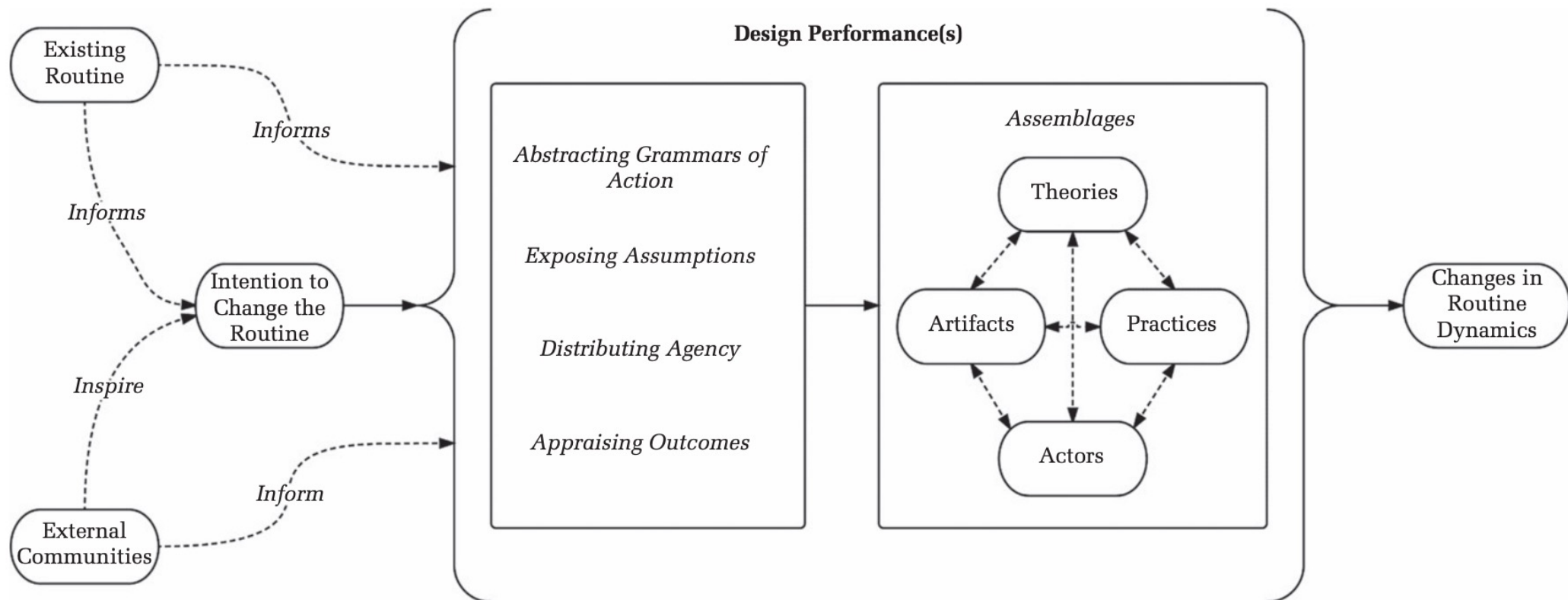
Pentland & Feldman (p.248):

“Traditionally, we ascribe a very narrow mindset to participants in an organizational routine. To the extent that **the routine is “designed” by management**, employees should not even think: they should just carry it out. This is the dead routine. Of course, many routines require some thought on the part of participants – they need to interpret rules and make decisions. If we think of this as a “decision” mindset, then we are basically locking the participants into **a fixed set of alternatives (live, but just barely)**. Participants may have a generative, improvisational mindset, where they are empowered to make significant choices about how work gets done. To the extent this is true, users become designers.”

# Organizations inscribe digital artifacts to change routines (design performance)

Glaser (2017): a game-theoretic artifact in Excel

## A Theoretical Framework Explaining How Organizations Use Design Performances to Change Routines



# Digital artifacts are at the center of routines when...

- Action and cognition distributed, stretched across people and artifacts, **and across time.**
- Artifacts have agency when actors' assumptions and intentions can be “inscribed”, **which are designed/changed.**
- Artifacts can have degrees of influence on routines, leading to **live and dead routines**
- Artifacts and actors co-evolve when there are competing organizational agencies.
  - **Whose intentions are materialized?**

# Studying digital artifacts and organizational routines zoom in on actions

## Data collection

- Qualitative studies (primarily ethnography-inspired studies)
- Quantitative studies with digital trace data
- Unit of observation: Situated actions (doings, sayings)
- Unit of analysis: patterns of action