

Insights on continuity and evolution of concepts for the development of urban morphological processes ontologies

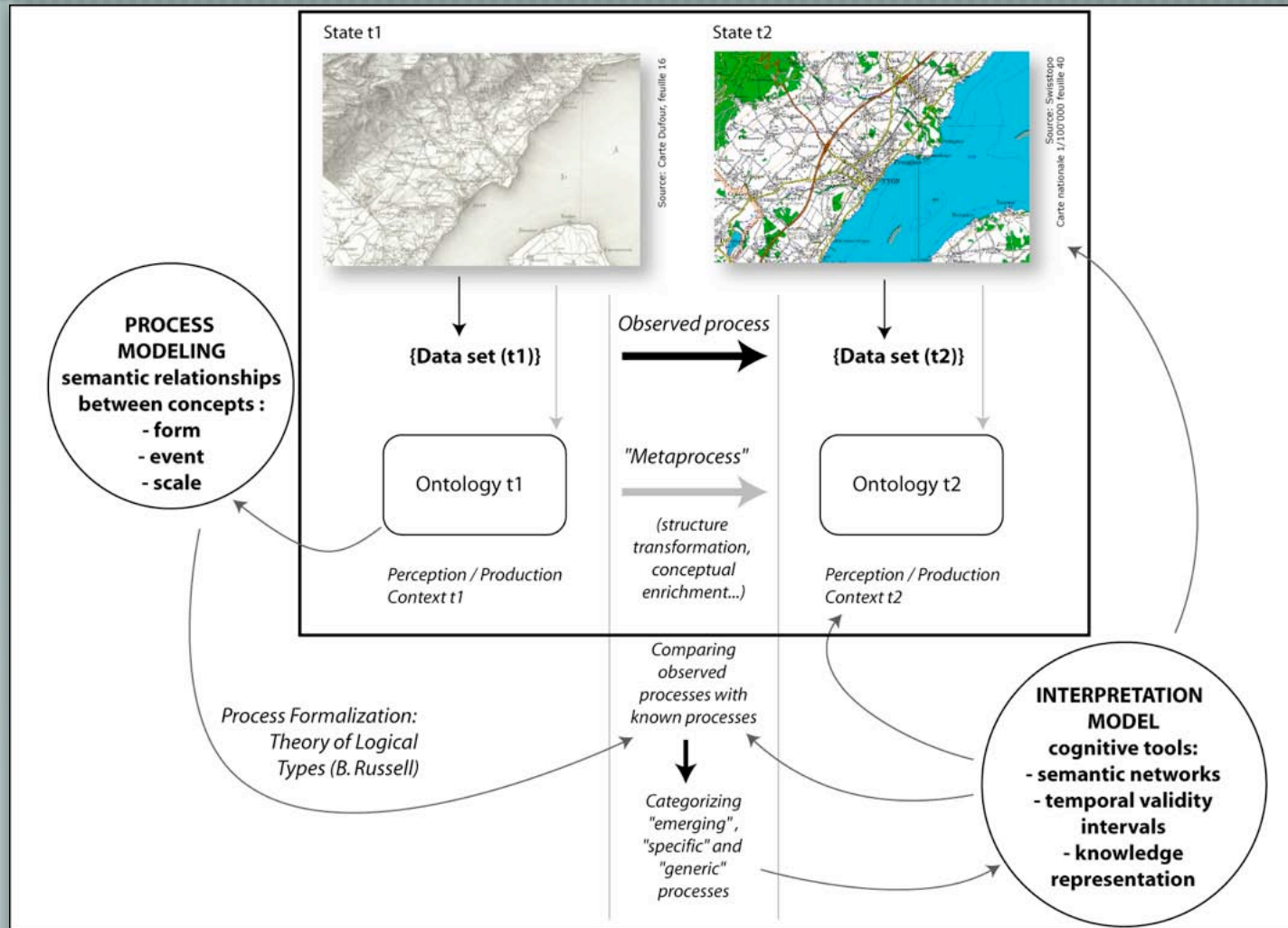
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COST C21
6.11.2006 Genève

Summary

- [Introduction
- [Process formalization & partial data sets
- [Continuity and evolution of concepts
- [Conclusions

Introduction

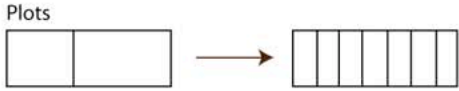
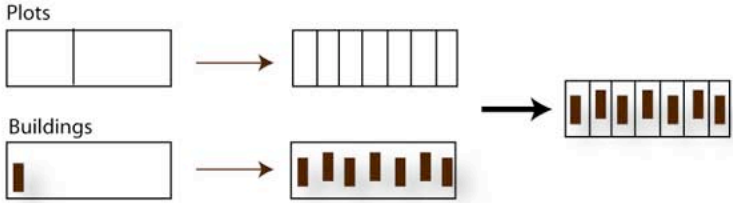
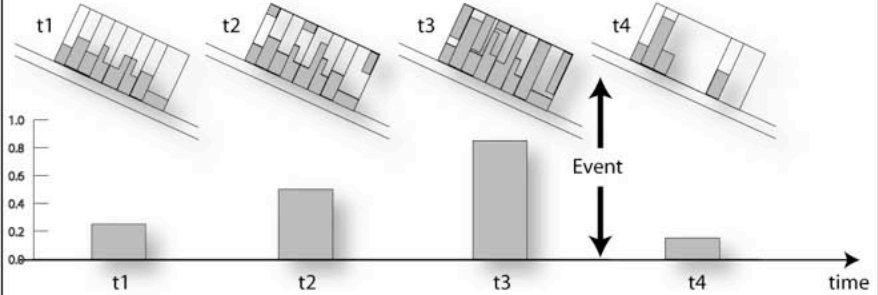


Introduction

— [Aims

- To identify temporal concepts involved in historical interpretation processes and to organize them in a formal ontology
- To analyse the evolution of relationships between concepts and instances (plurality of urban realities through history)
- To analyse the effective capacity of concepts to evolve

Processes & partial data sets

	Process name	Complexity Degree	Nature of the Process
	<p><i>Plot Pattern Metamorphosis</i> (Conzen, 1969)</p>	<p>Simple Process</p>	<p>Series of Geometrical Transformations and Topological Relationships. Monodimensional Semantics</p>
	<p><i>Building Repletion</i> (Conzen, 1981)</p>	<p>Semi-complex Process</p>	<p>Series of Geometrical Transformations and Topological Relationships. Multidimensional Semantics</p>
	<p><i>Redevelopment Cycle</i> (Conzen, 1960)</p>	<p>Complex Process</p>	<p>Series of Geometrical Transformations, Topological Relationships and Event-based Transformation. Spatial AND Temporal Semantics</p>

Processes & partial data sets

— [Example: redevelopment cycle [Conzen, 1969]

— Conformity condition between concepts and instances

— Observed continuity of the concept “cadastral partition” between t1 and t2

— Observed changes on instances (land economy, densification)

— Event

— Urban slum clearances >> new concept: “urban regeneration”

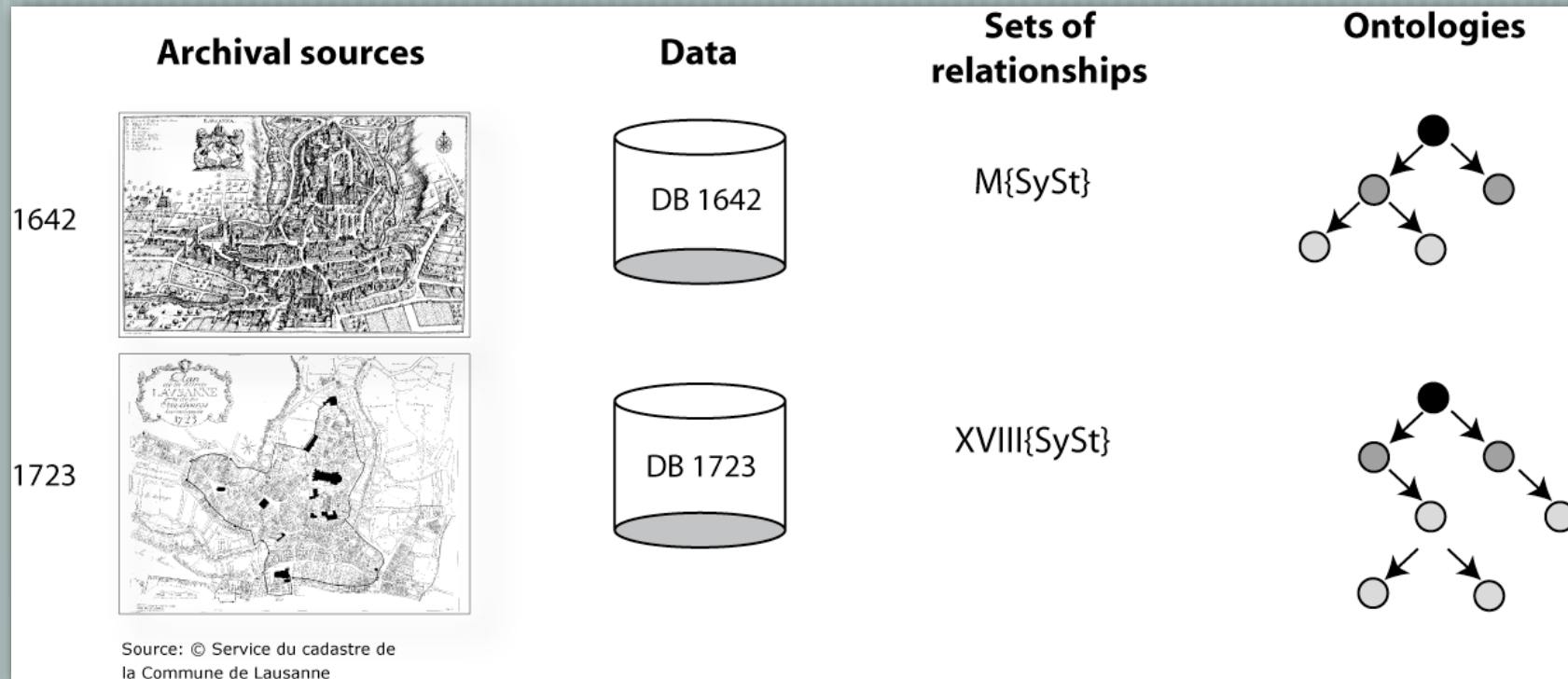
— Scalar interlocking:

— from plot to urban fabric

Processes & partial data sets

- [Historical point of view (using primary and secondary sources)
- [Bottom-up approach: to build a semantic network using “contemporary data”: single epoch-based ontology

Processes & partial data sets

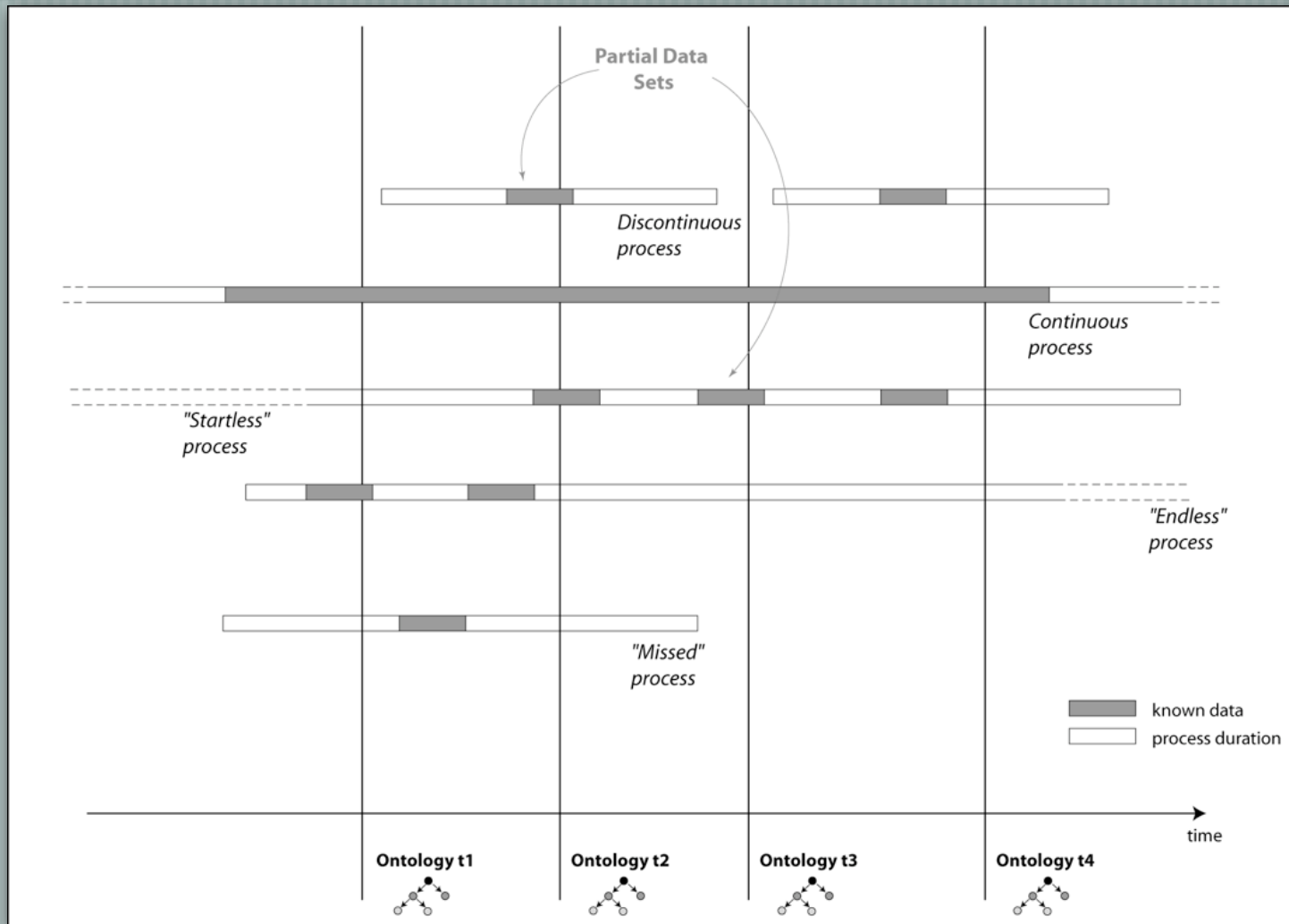


Processes & partial data sets

— [Three levels of abstraction:

- Extraction of data (instances) from archival and historical sources (construction of single period ontologies) to address changes of value due to urban change processes
- Physical concepts linked to morphological studies (merged ontology of single period ontologies) to address changes of concepts at the physical level (description of the city as a whole)
- Morphological concepts (merged ontology) to address changes of concepts at the perception level (interpretation modeling)

Processes & partial data sets



Processes & partial data sets

— [Two main issues:

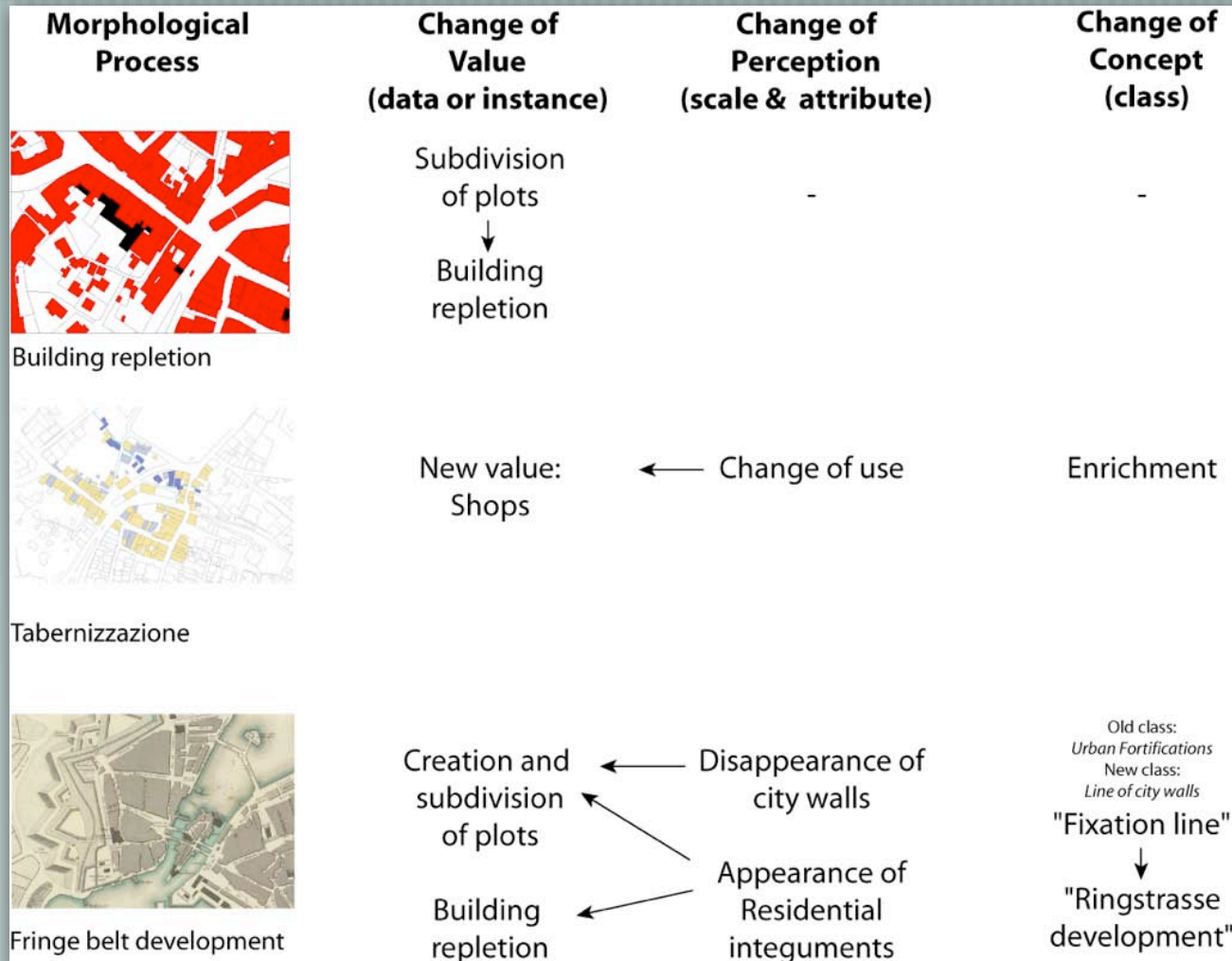
— Incompleteness of archival and historical sources

— Complexity of morphological process (irreducibility to instances only)

Processes & partial data sets

- [Process = series of changes...
 - ... observed on temporal data (instances) >> {process}
 - ... observed on classes (concepts) >> {metaprocess}
 - ... of perception (relationships, scale) {non temporal process}

Processes & partial data sets



Processes & partial data sets

- [Concepts, relationships between concepts and instances can change
- [From a semantic point of view, these changes could be interpreted as follow:
 - Change of instances = spatial configuration change
 - Change of relationships between concepts = conceptual configuration change (context, perception)
 - Change of concepts = urban reality change (act of utterance, interpretation)

Continuity and evolution

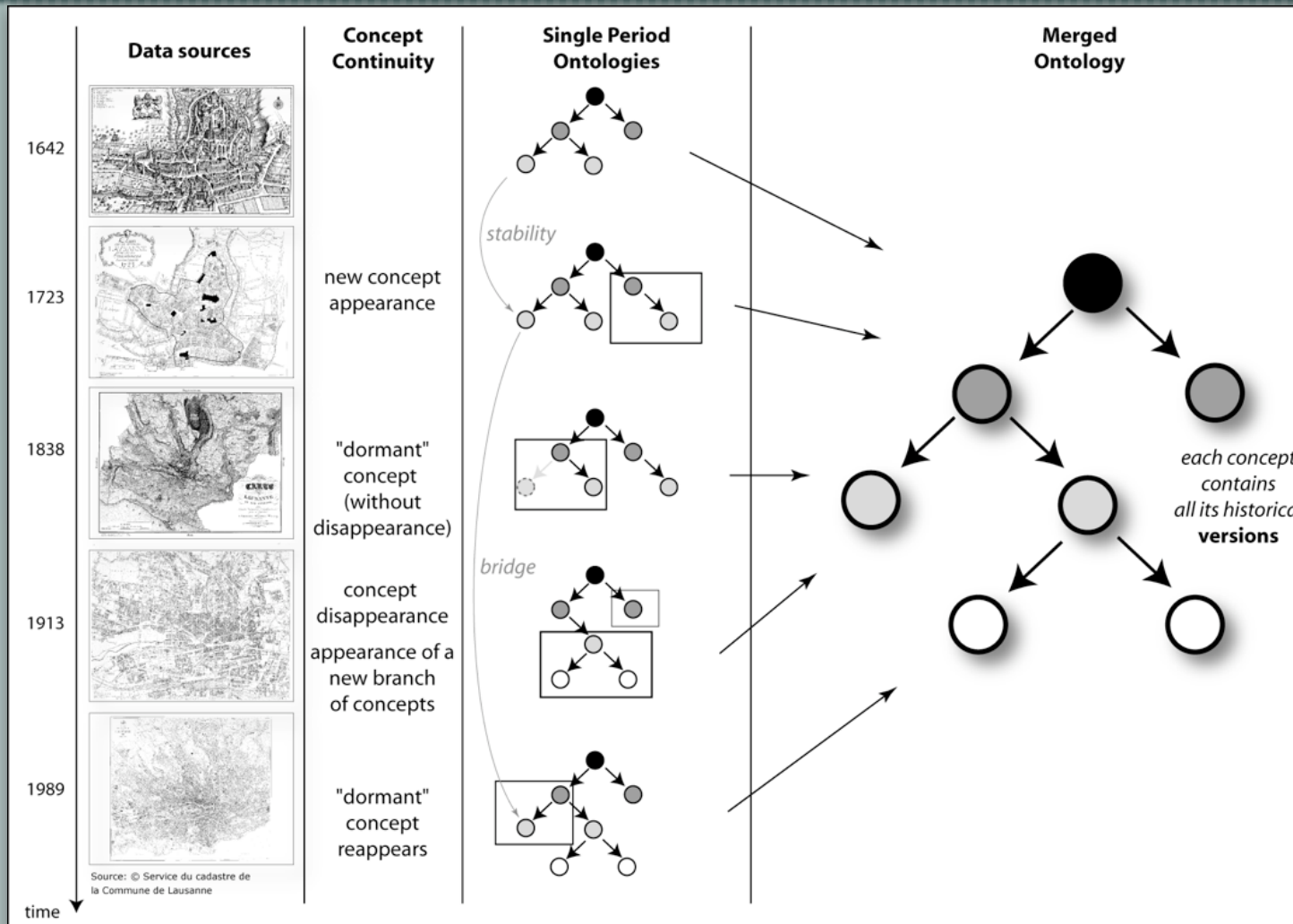
- [Nature of meta-processes

- Stability / Enrichment

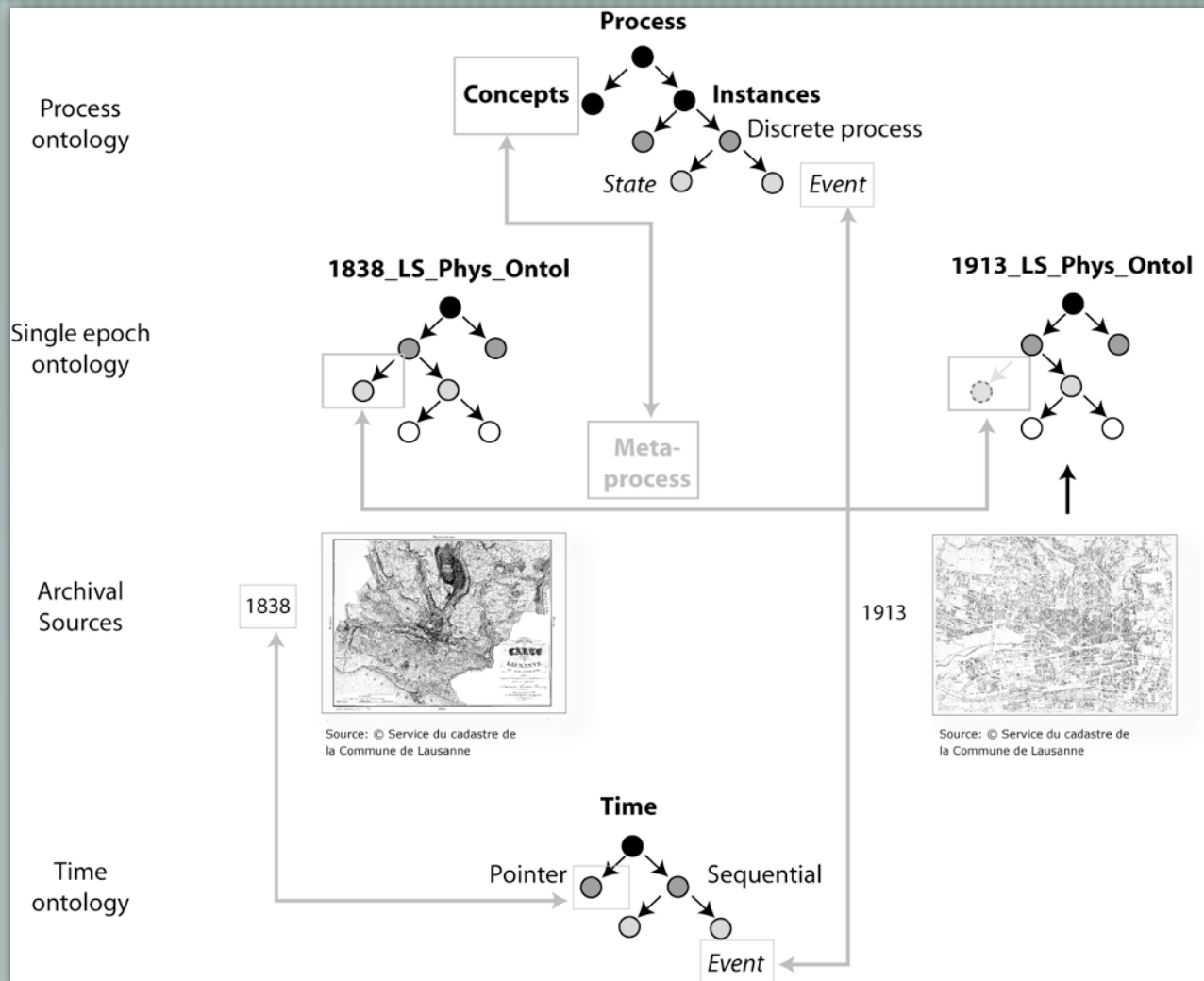
- Appearance / Disappearance

- Dormancy (temporary disappearance of concepts)

Continuity and evolution



Conclusions



Conclusions

- [Formalization of processes found on urban morphology literature
- [Categorization and interpretation of processes and metaprocesses:
 - transformative, additive, adaptive & repletive
 - emergent, specific, generic...