Architectural transformations on the Market Square in Krakow
A systematic visual catalogue

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Passing on the knowledge of a "historical object", as it is - together with its doubts and open questions - is a challenging task.

This book is an attempt to trace, structure and present visually what is known, or ill-known, about the architectural transformations of the objects that stand or once stood on Krakow's Main Market Square. It can be seen as a catalogue summing up in a synthetic way an admittedly fairly wide - but nevertheless not exhaustive - selection of facts and information on wooden and brick- or stone-built objects. Frequently described monumental architectural objects are investigated, along with some less known to the large public, and about which it is easier to remain silent than to write due to the extent of the unknown.

The text and visual materials introduce and exemplify an interdisciplinary method (bridging historical sciences and information visualisation), the purpose of which is to depict accurately how much we know about the past of architectural objects.

This book is about:

- *architecture* the way it *really* is, ever-changing rather than everlasting.

- *history*, packed with hints needing interpretation, with alternative scenarios and possibilities,

- *visual thinking*, a non-verbal, insight-gaining reasoning process,

- *Krakow's Main Market Square*, unique, yet typical.

It contains:

→ facts, information and references about the evolution of 41 objects located on Krakow's Main Market Square, described through 349 transformations,

→ 191 visualisations and diagrams commenting on the state of our knowledge at the time of writing the book, and helping to recount and compare the stories of those 41 objects,

→ a selection of analogous examples, including 180 objects illustrated,

→ a detailed bibliography comprising over 700 references (studies and source texts, iconography, plans and restitutions, websites, scientific and popular literature) either on Krakow's Main Market Square, on analogous example, or on methodological issues.
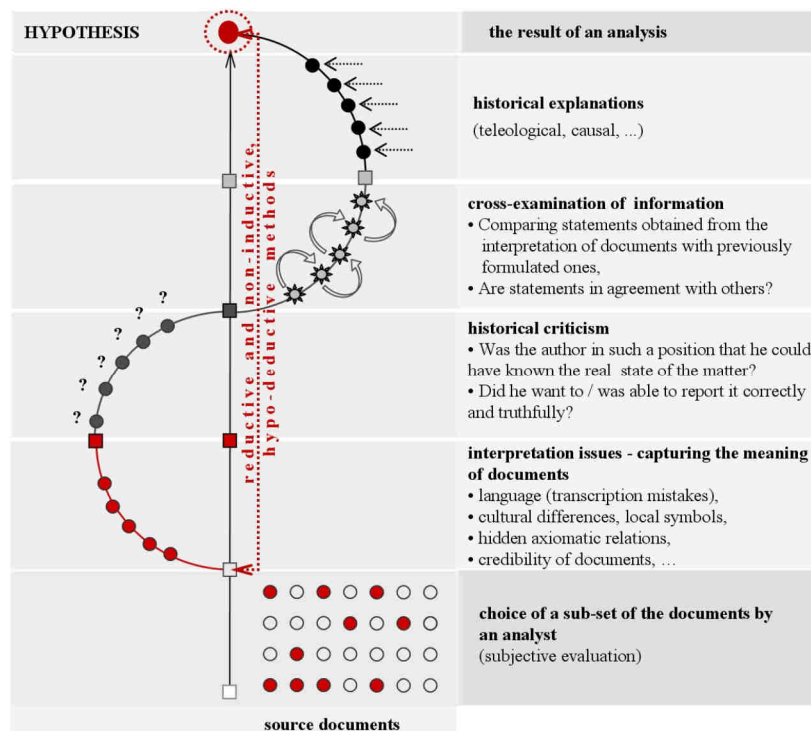
Introduction

Knowledge of past events – *history* – is most often conveyed though language, and, because of the evanescence of speech, recorded through writings. Passing on knowledge as it is, *i.e.* altogether with nuances concerning the credibility of the information it is based on, is a difficult task. What we view as a *state of knowledge* includes both what we know, with different shades of certainty, what we guess through the cross-examination of clues, and what we do not know. Thus, communicating such a complex structure cannot be a simple task: it implies for instance qualifying the trustworthiness of sources and of interpretations.

What is more, a text, *i.e.* the record of a speech, has a linear structure, developing in time, marked with bigger or smaller semantic polymorphism (multi-interpretability). It can therefore be interpreted differently, with various deviations, with diversified precision.

By contrast, visual presentations allow a simultaneous presentation of large data and information sets, and the cross-examination of numerous parameters. They help gaining a global understanding of a problem and its context in one go – overview - as well as they support local analyses of a user-chosen subset of parameters – zoom [1]. While analysing successive events, a visual chronology helping to structure the data increases our proficiency with interpretation. Visual presentations can therefore act as a fruitful complement of written language.

But when looking at the mainstream literature about history, graphics most often *illustrate* facts, people, places (*etc.*) mentioned in the text. **Visualisations***, in the proper sense of the word [2] are more rarely used – although some classic solutions such as maps and timelines are often in charge of complementing texts with simplified overviews of spatial and temporal aspects.

This book sums up pieces of information about the evolution of the architectural objects that used to be located on Krakow's Main Market Square [3]. It combines texts and visualisations – and accordingly aims simultaneously at verbal and non-verbal ways of thinking.

HYPOTHESIS — the result of an analysis

historical explanations
(teleological, causal, …)

cross-examination of information
• Comparing statements obtained from the interpretation of documents with previously formulated ones,
• Are statements in agreement with others?

historical criticism
• Was the author in such a position that he could have known the real state of the matter?
• Did he want to / was able to report it correctly and truthfully?

interpretation issues - capturing the meaning of documents
• language (transcription mistakes),
• cultural differences, local symbols,
• hidden axiomatic relations,
• credibility of documents, …

choice of a sub-set of the documents by an analyst
(subjective evaluation)

source documents

reductive and non-inductive, hypo-deductive methods

Fig. 1. A diagram illustrating the analysis process leading to the formulation of a hypothesis in the context of historical (idiographic) sciences.
Re-interpreted from J.M. Bocheński, *The Methods…, op.cit.* [*I. Dudek, J.Y. Blaise, 2006*]

Content of this publication

Only three architectural objects stand today on Krakow's Main Market Square: St Adalbert church, the Cloth Hall and the Town Hall's tower. Yet remains of a number of objects formerly standing on the Market Square are still accessible underneath its actual surface: part of the cellars of the granary and of the Town Hall, fragments of the Grand Scales, of the Rich Stalls and of Boleslaus' Stalls - to a lesser or greater extent transformed to fulfil new functions.

There used to be many more architectural objects in various areas of the Market Square (at least fourty-one mentioned in this book), most of them built mainly of wood. Accordingly, if they were not built over brick/stone cellars, not much has remained of them. We have little information about wooden objects, usually not enough to try and recreate, basing on facts, their form. Nevertheless, it does not mean that we know nothing. This book is an attempt to trace, structure and present visually what is known about the architectural transformations of the objects that stand or once stood on Krakow's Main Market Square [4]. One of the aspects that we wish to emphasise are *differences* inside the collection of objects – differences in the amount, precision and credibility of the data, differences in how we interpret this data. Another one is *kinship* - similarities in function, size, construction type, temporal or spatial patterns, that shed light on the way objects may share properties, or impact one another.

Note 4. Although a large number of references are quoted all along this text we make no claim about their exhaustiveness. Noticeably, the method developed and applied here (systematic description of transformations, chronological charts, visualisation tools) can be reused at any time so as to complete with possibly missing information.

This book is divided into four main sections. Each of these sections can be read (almost) independently.

Section one presents a method of analysis developed over the years in order to model and visualise the evolution of architectural objects. The method combines a systematic description of transformations, qualification and classification of references, and visualisation tools that support reasoning tasks inside an object's lifeline, and across the whole collection of objects.

In this section some fundamental epistemological issues will be discussed (diachronic bias, intersubjectivity, historical criticism, *etc.*). Details will be given on the choices we made in order to describe architectural transformations and to cope with classic uncertainty problems (trustworthiness, precision, credibility, *etc.*) . Section one is ded by a chapter presenting the set of time-oriented data visualisations designed for section two - catalogue, and by an overview of that catalogue's general layout.

Section two sums up what we know of each object's evolution (localisation, lifeline and transformations, sources, illustrations, visualisations, *etc.*). The presentation we have adopted is this of a *catalogue*, with for each object the following content:

- Each object is identified by means of a *leading name*. When possible, we have tried to list the main alternative names, used at one time in history to identify the object.

- The object's relative localisation inside the Market Square is presented on a schematic map (*cf.* Chapter 4.1). For some objects, the localisation is approximate : it is represented as a "probability cloud" [5].

Note 5. It should be pointed out that we do not mean here a numerical (statistical) probability – which can be expressed in numbers – we barely use a glyph (various densities of dots) to indicate where the object is supposed to have stood.

- The information (facts and hypotheses) concerning the object's evolution over time is described in a twofold way. Short paragraphs mention the historical context (function and role of the object, details about guilds, crafts, *etc.*). *Chronological charts* then list historical sources backing up each transformation in a condensed way. (*cf.* Chapter 5.2 - Content and layout of the chronological chart),

- Three different visualisations are used to summarise and distribute in time various doubts concerning the dating of events, the occurrence of a given event, or possible consequences of a given event (multi-hypothesis chronology diagram, graph of potential interactions, visual measure of complexity, *cf.* Chapters 3.3, 3.4 and 3.5),

- In the majority of cases we have also inserted illustrations showing how the objects may have looked like at each step of their evolution [6].

Note 6. When showing a hypothetical appearance for an object, representations will be called *reconstruction hypotheses* or *restitutions* in this text ('*restituer*' is French for: to reconstruct using remaining fragments, deduction or historical sources).

Section three – entitled *Different faces of one 'idea'* presents a selection of analogous examples (European medieval public-use and commercial buildings) so as to help the reader weigh to which extent the layout of Krakow's marketplace, as well as its architectures, can be related to other sites.

Among these examples readers should observe a number of unexpected similarities, as well as sharp contrasts in terms of form, usage and layout of buildings. At the end of the day, one may spot, behind layers of political, cultural and climatic differences, one 'idea' (a common practical need) with different faces. Whatever initial role many of these buildings had, they end up today as different faces of yet another idea : identity, or remembrance.

Section four – entitled *Visual analysis of the collection* introduces a selection of visualisations, designed as tools for cross-examination and questioning.

The section is organised as a sort of *vis à vis* dialogue between a common sense question or assertion (eg. "recent transformations are better understood than old ones") and a visual answer. The whole section should be understood as illustrative of a method, rather than as conclusive on this or that theory, hypothesis or scientific position.

The publication is concluded by a thorough list of the references quoted (bibliography, iconography and cartography), by a table of illustrations, and by an index.

Method of analysis

Section one presents a method of analysis developed over the years in order to model and visualise the evolution of architectural objects. The method combines a systematic description of transformations, qualification and classification of references, and visualisation tools that support reasoning tasks inside an object's lifeline, and across the whole collection of objects.

In this section some fundamental epistemological issues will be discussed (diachronic bias, intersubjectivity, historical criticism, *etc.*). Details will be given on the choices we made in order to describe architectural transformations and to cope with classic uncertainty problems (trustworthiness, precision, credibility, *etc.*). Section one is concluded by a chapter presenting the set of time-oriented data visualisations designed for section two - catalogue, and by an overview of that catalogue's general layout.

Summary

Numerous scientific disciplines deal with the study of the past, each using their own methods. The diachronic method presented in this chapter, taking its inspiration from Ferdinand de Saussure' approach, helps studying changes of architectural objects in the course of time.

Building on the notions of diachrony, synchrony and panchrony, we describe the evolution of objects as chains of transformations and states. Transformation is seen as the diachronic function, subsequent states are seen as synchronic beings which retain the object's identity thanks to knowledge, intuition and experience - the panchronic level.

We apply this framework to the analysis of the evolution of architectural objects – i.e. how they get transformed on long time spans. In that context, a level of granulation has to be chosen. The level of granulation adopted in this work comprises transformations of architectural objects in terms of role, significance, and mutual relations in the urban structure.

We take into consideration a primary evolutionary factor – physical changes, that involve a change of appearance, and a secondary evolutionary factor - changes of function or ownership (social use). The former imply the emergence of new, separate evolutionary phases in the lifeline of an object, whereas the latter only pinpoint moments within one evolutionary phase.

As a consequence, transformations are classified and divided into two groups: leading transformations - these introducing changes in the form of the object, and resulting in the creation of a new evolutionary phase - and episodic transformations, which do not imply a change of evolutionary phase.

In both groups specific types of transformations are defined that emphasize differences we consider as essential in terms of effects and character. The resulting classification serves purposes of readability and comparability : making similarities and differences visible inside the collection, building on these comparisons to shed a new light on individuals objects.
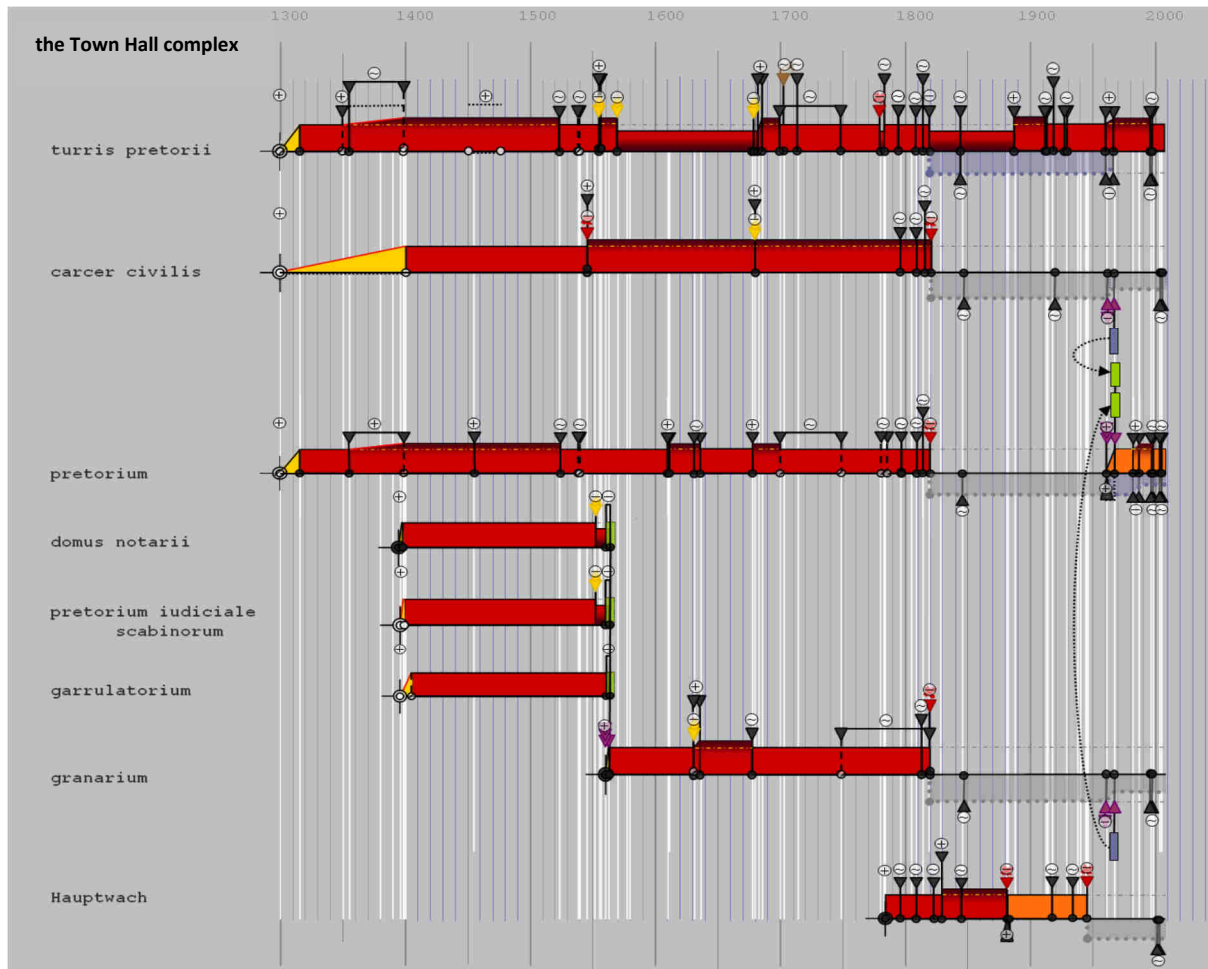
Fig. 10. A comparison of *diachrograms* corresponding to the various architectural objects that form the Town Hall complex. Prepared within the framework of the ATIP project. Historical analysis by W. Komorowski.
[*I. Dudek, J.Y. Blaise, 2007*]

leading transformations

transformations introducing essential morphological changes, leading to the creation of a new evolutionary phase

morphological transformation

a transformation introducing major physical changes
(*e.g.* construction, extension)

regressive transformation

a transformation leading to the creation of a new evolutionary phase by removing part of an object
(*e.g.* the demolition of a fragment of an object)

destructive transformation

a transformation which causes the removal of an object and the retrieval of the whole space occupied by it (*e.g.* demolition) or a total annihilation of an object

episodic transformations

transformations which can sporadically appear during one evolutionary phase, not leading to volunteer or major morphological changes that would imply a new evolutionary phase

degrading transformation

a transformation which causes the deterioration (aggravation) of the present state but does not result in the creation of a new evolutionary phase (e.g. a fire)

neutral transformations

transformations which do not cause any essential changes of morphology

recurring transformation

a transformation occurring regularly during the evolution of an object
(e.g. roof renovation)

on-site investigations

a "non-interventionist" transformation concerning archaeological relics
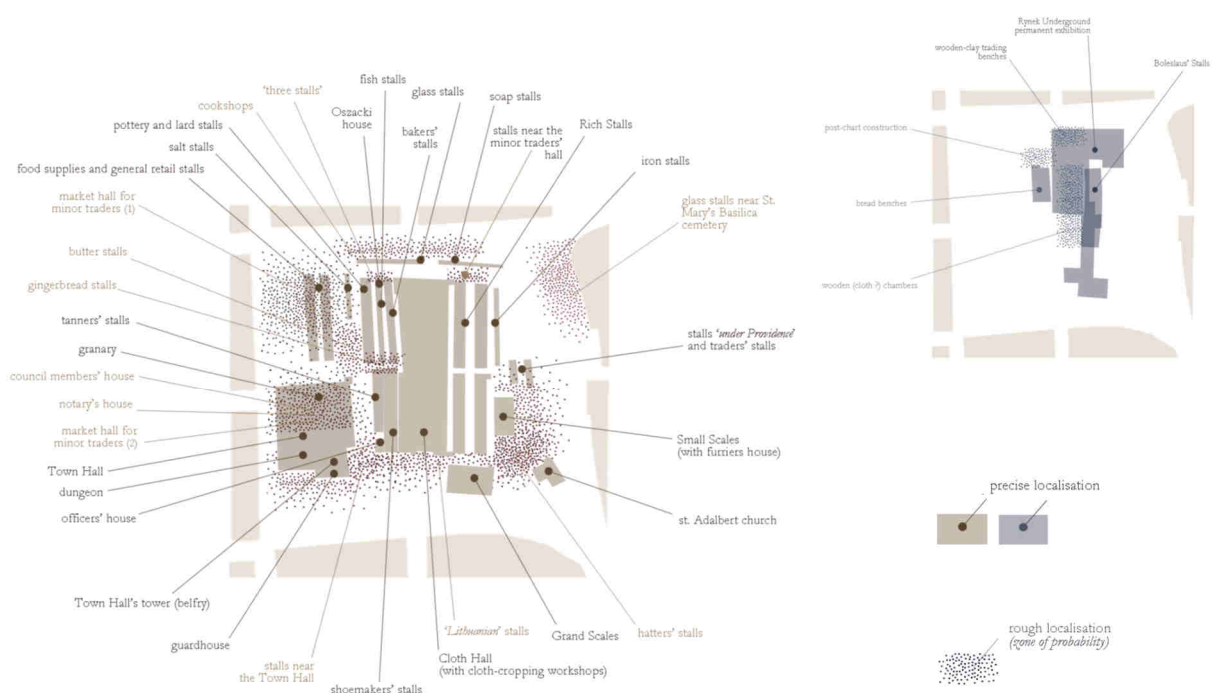
Fig. 14. Classes of transformations and corresponding colour codes
[*I. Dudek, J.Y. Blaise, 2011*]

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The catalogue of architectural objects

Section two sums up what we know of each object's evolution (localisation, lifeline and transformations, sources, illustrations, visualisations, *etc.*). The presentation we have adopted is this of a *catalogue*, with for each object the following content:

- Each object is identified by means of a *leading name*. When possible, we have tried to list the main alternative names, used at one time in history to identify the object.

- The object's relative localisation inside the Market Square is presented on a schematic map. For some objects, the localisation is approximate : it is represented as a "probability cloud".

- The information (facts and hypotheses) concerning the object's evolution over time is described in a twofold way. Short paragraphs mention the historical context (function and role of the object, details about guilds, crafts, *etc.*). *Chronological charts* then list historical sources backing up each transformation in a condensed way.

- Three different visualisations are used to summarise and distribute in time various doubts concerning the dating of events, the occurrence of a given event, or possible consequences of a given event.

- In the majority of cases we have also inserted illustrations showing how the objects may have looked like at each step of their evolution.

This catalogue lists only individual architectural objects the existence of which is confirmed at least by the one of the following criteria: a) archaeological relics; b) at least one textual source describing the artefact in a way that excludes the possibility of it being only a function inside another architectural object; c) iconographical or cartographical sources (excluding hypothetical reconstructions)!

Spatial distribution of the architectural objects.
[aut. *I. Dudek, J.Y. Blaise,* 2011]

Different faces of one 'idea'

Section three, presents a selection of analogous examples (European medieval public-use and commercial buildings) so as to help the reader weigh to which extent the layout of Krakow's marketplace, as well as its architectures, can be related to other sites. Market Square in Krakow is paradoxically at the same time a typical example of medieval marketplace and a unique site. But the frontline between what is common and what is unique can be seen as "somewhat fuzzy".

Among these examples readers should observe a number of unexpected similarities, as well as sharp contrasts in terms of form, usage and layout of buildings. At the end of the day, one may spot, behind layers of local political, cultural and climatic differences, one *'idea'* (a common practical need) with different faces, faces that here and there end up playing a major symbolic role. Noticeably, commercial and trade related buildings were indeed at the heart of every-day life and were intensively used. That is why they were often destroyed and repaired or rebuilt, rearranged and adapted to new functions or tastes. Those that survived - that were not dismantled or simply destroyed by fire, wars or simply time passing by, bear witness to manners of thinking and living that have now (partly) changed.

The fact that a certain number of commercial and trade related buildings that will be mentioned in this section are 20th century reconstructions clearly shows that functionality and usefulness of these buildings is not the only thing that makes them important for people today.

Whatever the region these buildings were built in, whatever the culture and ways of living they correspond to, whatever the initial function they may have had, they end up today as different faces of yet another idea: identity, and remembrance.
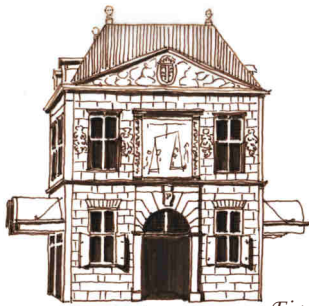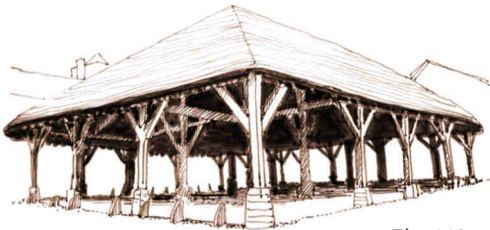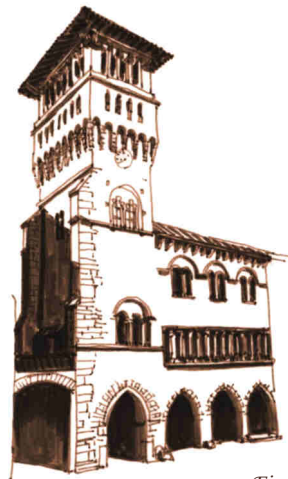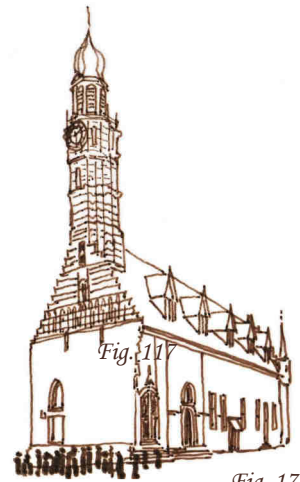

Fig. 83

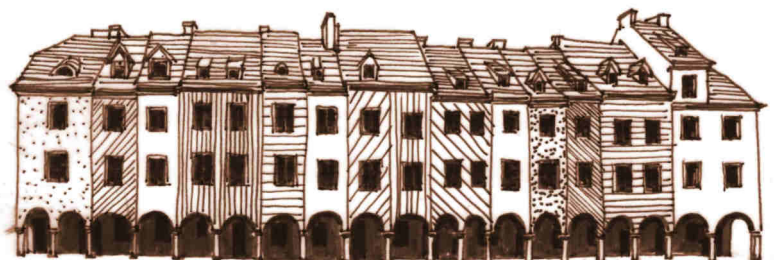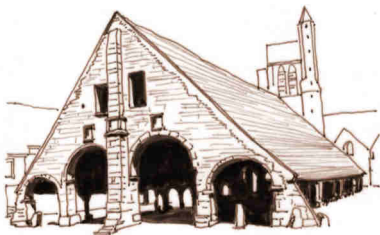*Fig. 151*

Fig. 117

Fig. 17

Fig. 113

Fig. 134

Visual analysis of the collection :
cross-examination and sense-making

Section four, introduces a selection of visualisations, designed as tools for cross-examination and questioning.

The section is organised as a sort of *vis à vis* dialogue between a common sense question or assertion (eg. "recent transformations are better understood than old ones") and a visual answer. The whole section should be understood as illustrative of a method, rather than as conclusive on this or that theory, hypothesis or scientific position.
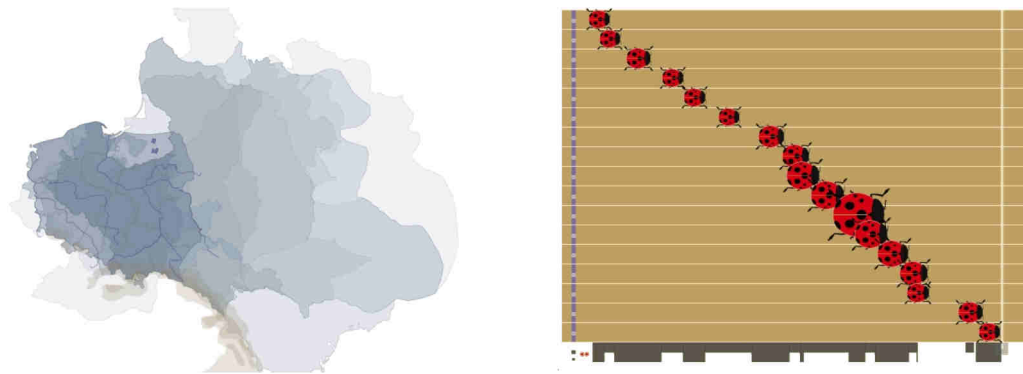
Note 5. The two visualisations *recount a story* for didactic purposes: this of the frontiers of Poland over time (16 key moments considered). Left, a *temporal density map* – the deeper the blue, the more often the area was part of Poland. Right, the *ladybug race metaphor*: the bigger the ladybug, the bigger the country's surface – the horizontal axis stands for time.

[J.Y. Blaise, I.Dudek, 2006]

	A	B	C	D	E	F	G	H	I
1	wieża ratuszowa	ratusz	Sukiennice	kabaty	kramy bogate	spichlerz	odwach	kamienne kramy (bolesławowskie)	rynek podziemny
2	kościół św. Wojciecha	wielka waga	jatki garbarskie	mała waga	jatki szewskie	kramy sukienne			
3	jatki piekarskie	jatki garncarskie	kramy żelazne	kramy mydlarskie	kramy solne	kramy kichlarskie	jatki wielorakie	jatki szklarskie	kramy warzeszne
4	kramy litewskie	kramy kapelusznicze	kramy maślane	kramy szklarskie	jatki rybne	kramy pod Opatrznością	ławy chlebowe	ławy kramarskie	dom Oraackich
5	dom oficerski	budowla polokacyjna							
6	kramy przed ratuszem	budy pod Smatruzem	smatruz	dom notariusza	dom ławników				

- unknown material and construction type
- wooden constructions
- originally wooden buildings transformed into brick or stone built edifices
- brick and stone edifices
- problematic dating

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