Beyond graphics: information

An overview of infovis practices in the field of the architectural heritage

partial data vs exhaustive geometry
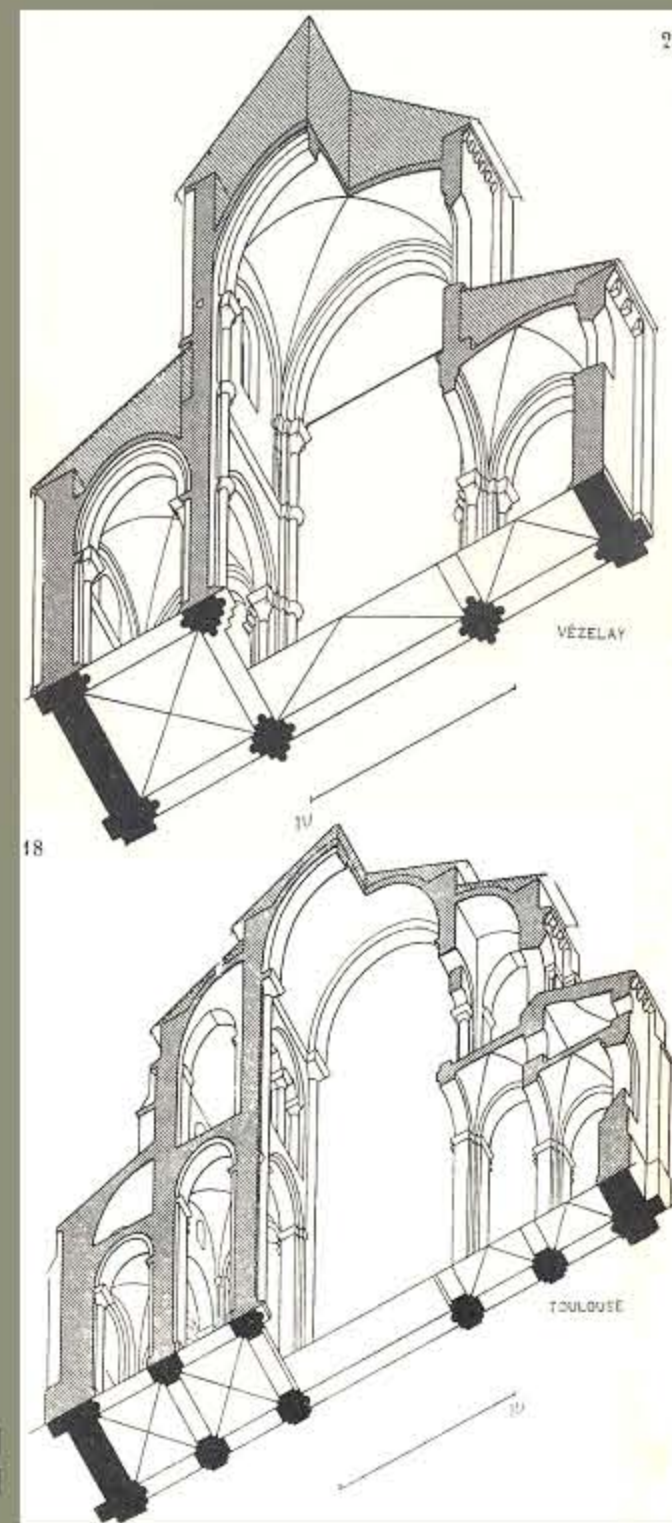
RESZEL XVI   Convex (+)   Concave (-)   0 + 5 (0 - - - + -)

representation vs. visualisation

?

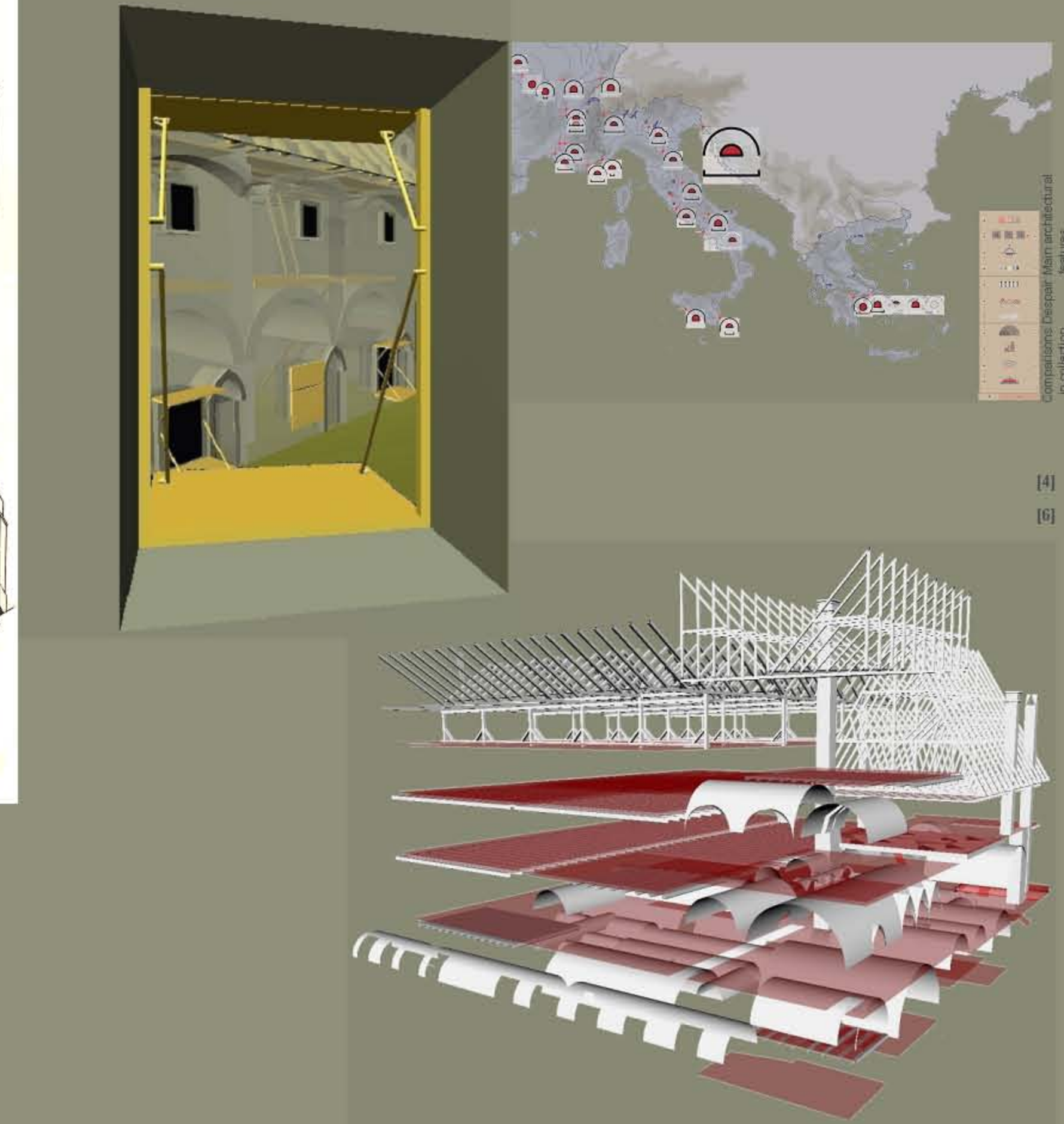Architectural modelling   Information visualisation
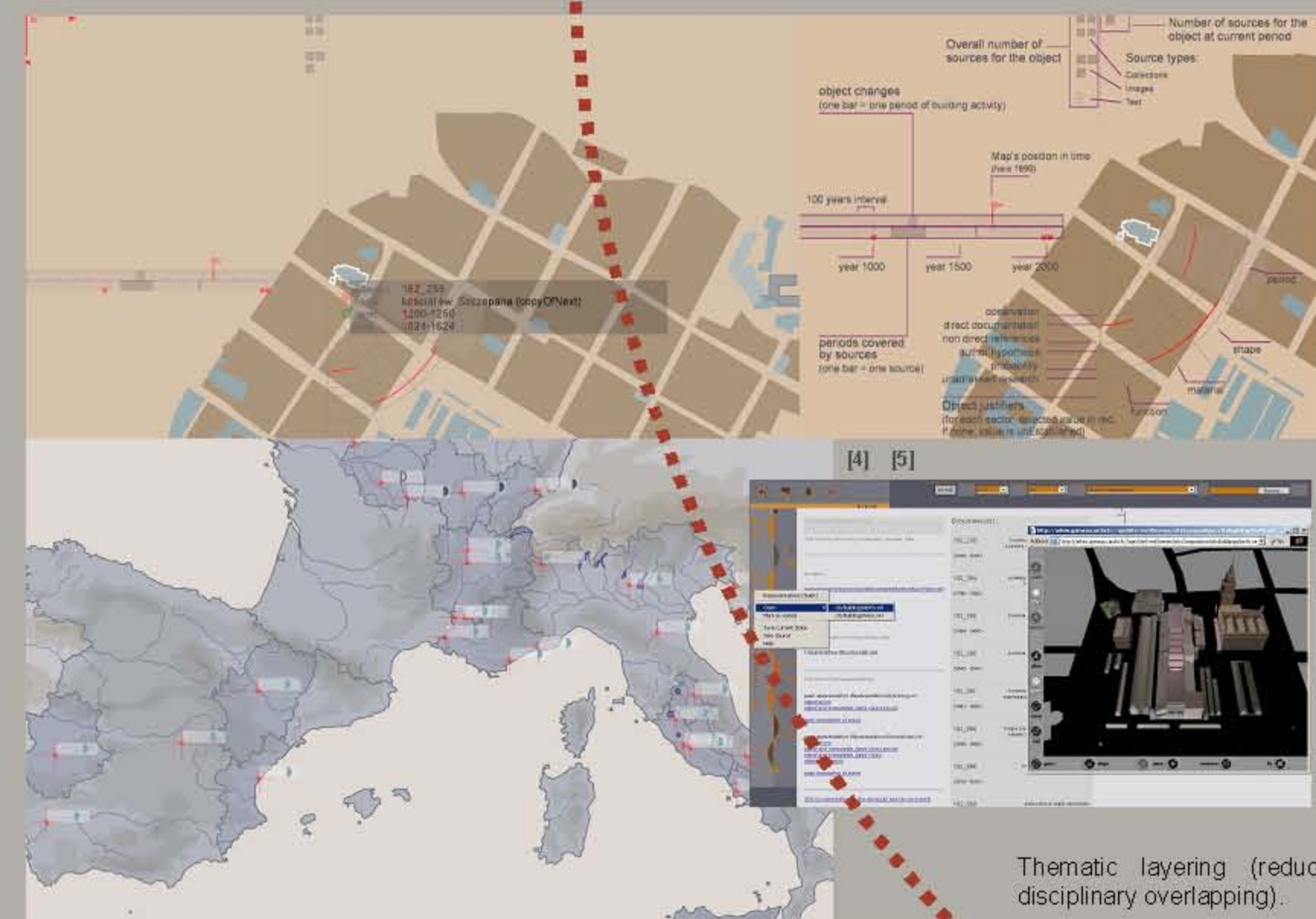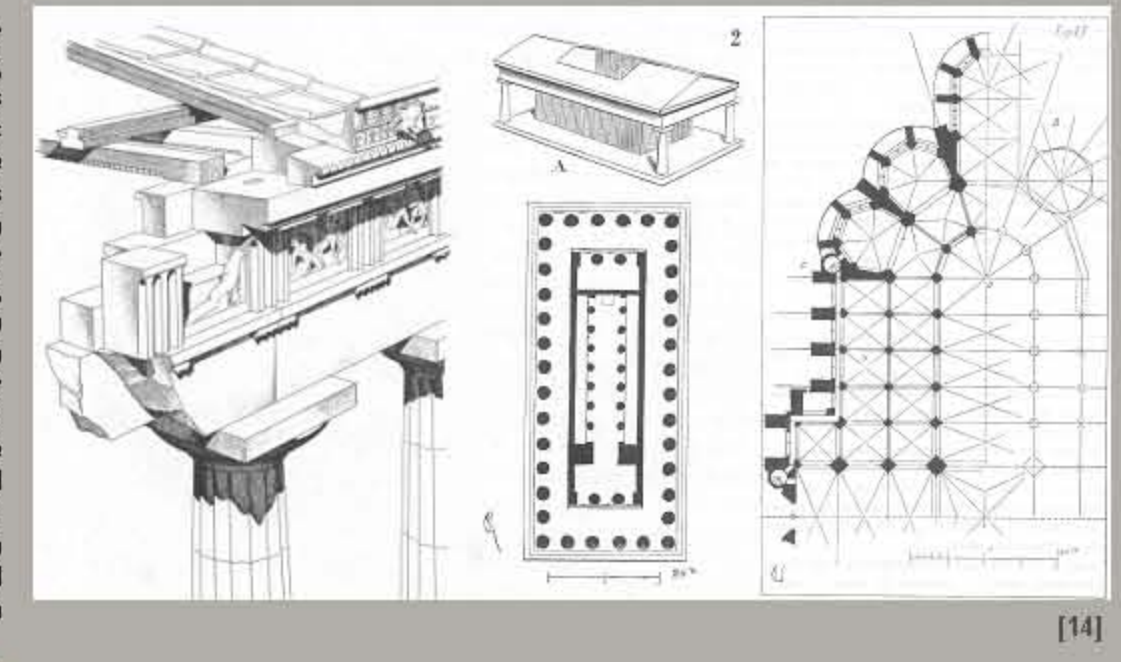
[6] [11]
[6] [14]

[2] [9]

Spatial stratification (reducing spatial complexity).

Left, with these combinations of 2D and 3D (plan, section and axonometric view) A. Choisy sums up the essence of Romanesque church bays within unique, highly informative graphics, and enhances visual comparisons among a collection of items. Middle, E.Barberot's figure of a volute is drawn along with the instructions on how to draw it: the visual display describes the shape, and memorises the intellectual process to obtain it. Right images, summarising architectural features of antique theatres (top right), showing hidden parts, hiding foregrounds: reducing spatial complexity in order to favour information readability inside 3D visual displays.

[4] [6]

Thematic layering (reducing disciplinary overlapping).

Top, cross-examination of evidence about an object's evolution: chronology of its bibliography, types of sources, credibility. Middle left, interactive spatial distribution of a user-chosen architectural feature (stylistic affiliation). Middle right, the left « state of knowledge » spiral acts as a thematic browser on architectural objects. Bottom left, an exemplary, « no bling-bling », use of visual density in C.Sitte's study of urban layouts : the nature of the information to convey (relative position of churches within its urban space) acts as a guide in the choice of the variables to visualise. Bottom right, W.Borusiewiecz's effective visual comparison of vaulting.

Fig. 15.   Fig. 14.

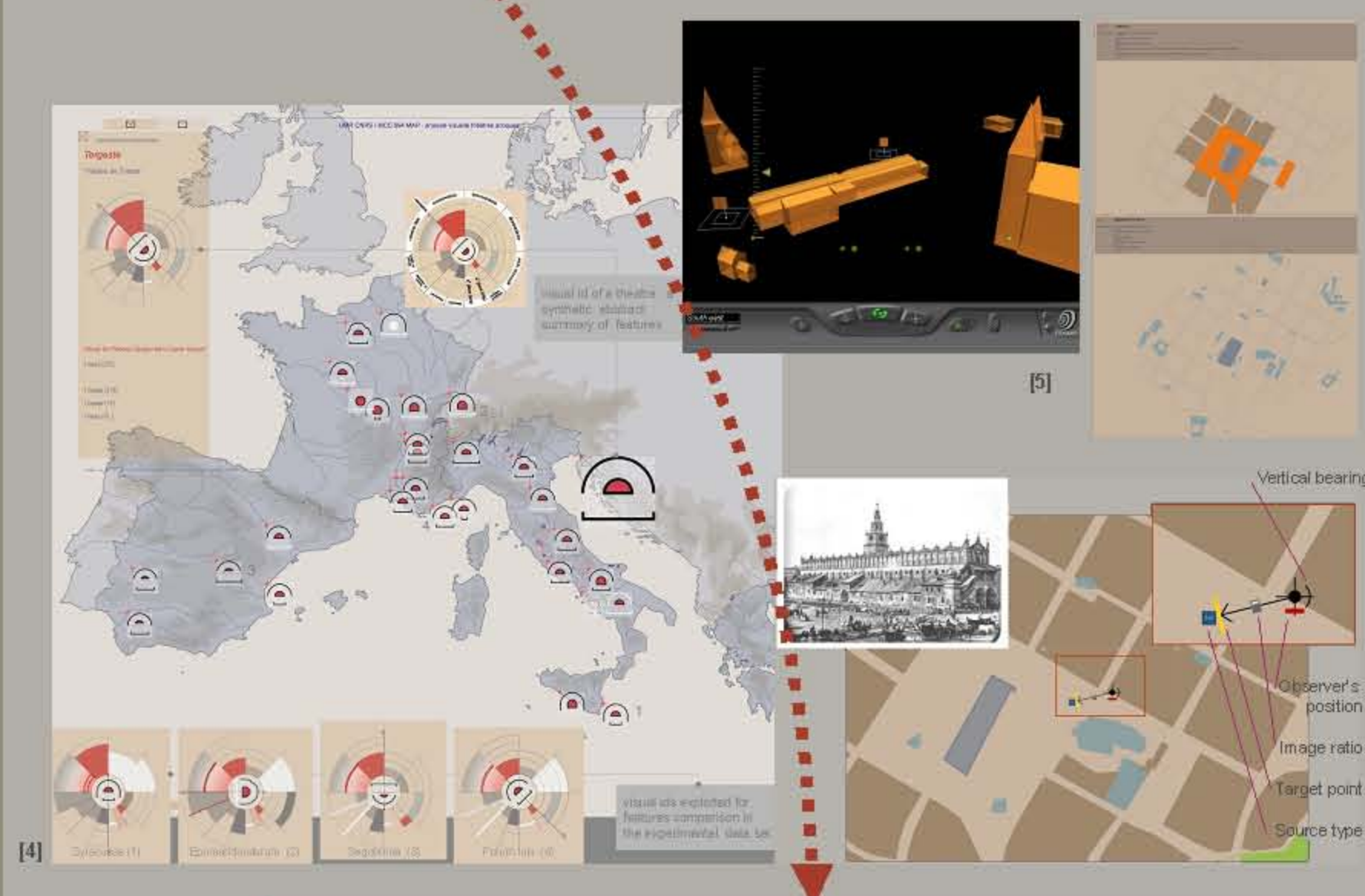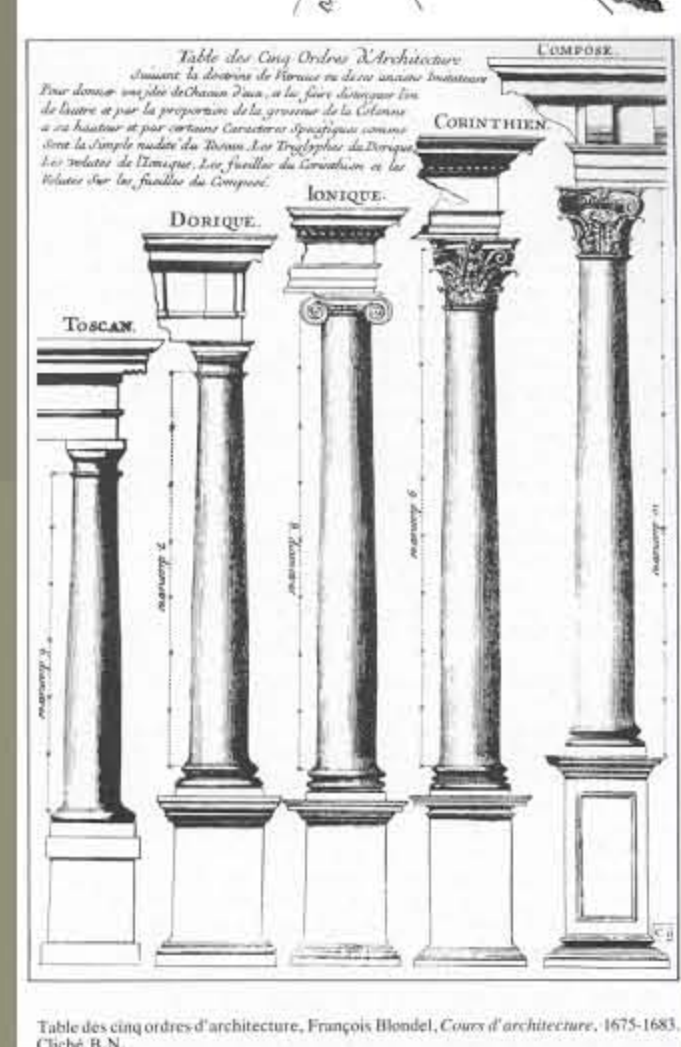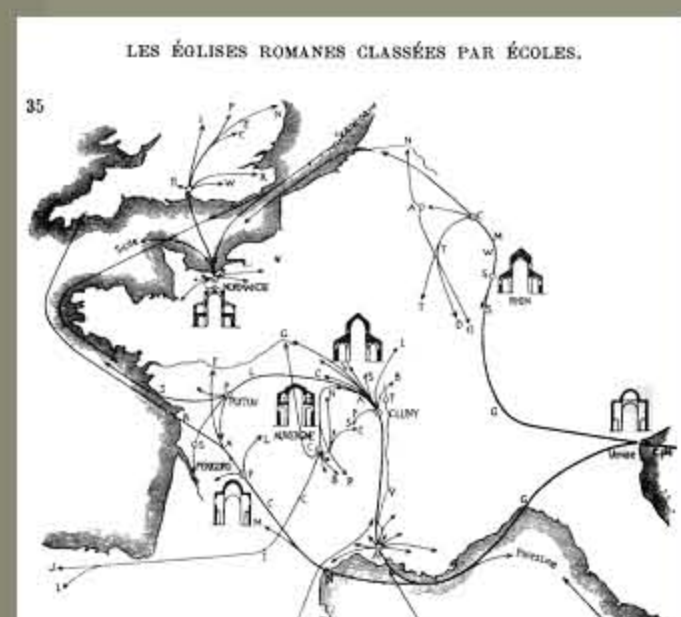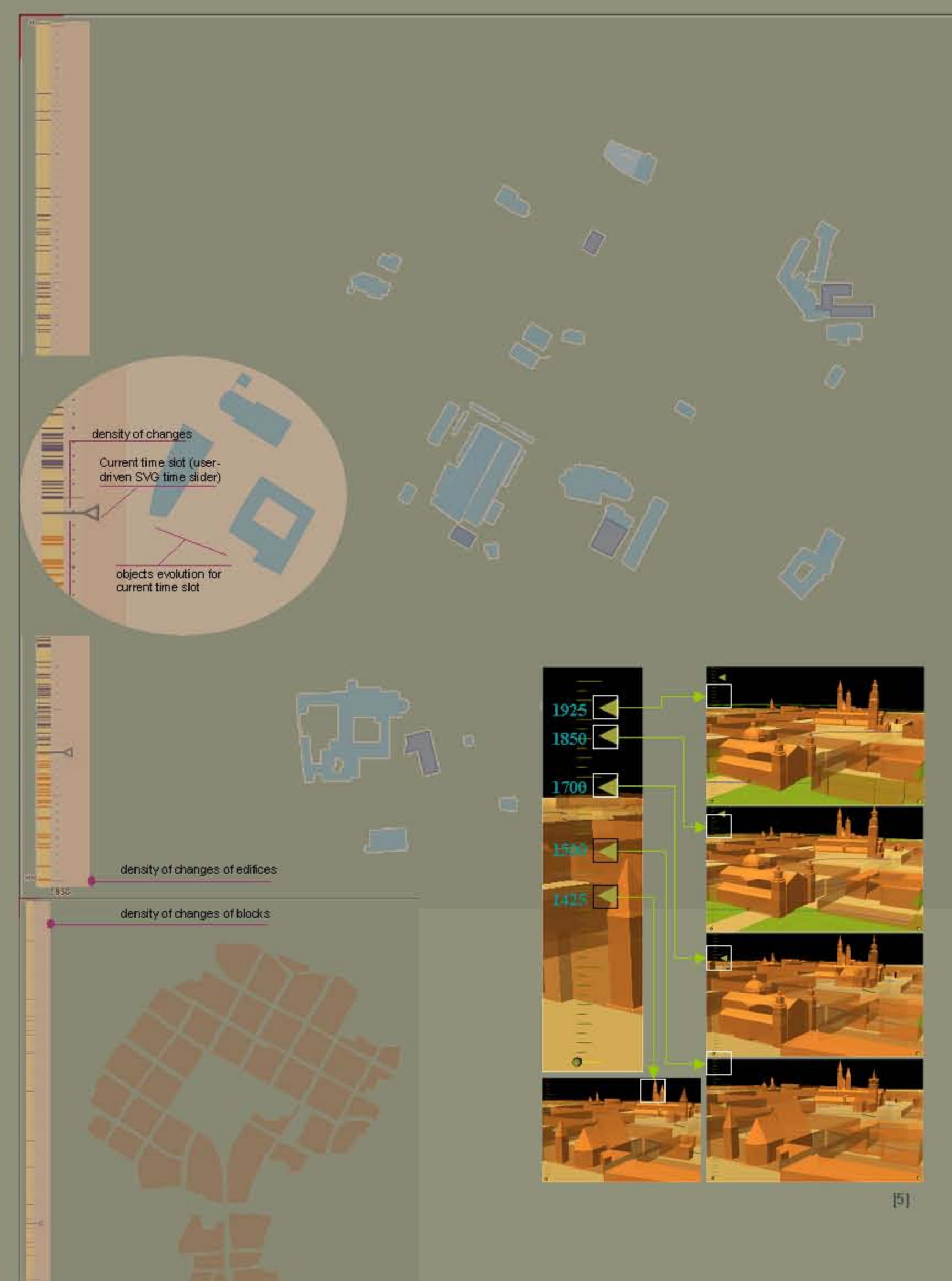LUCQUES : S. Michele.   PALERME : S. Cita.
[10] [8]
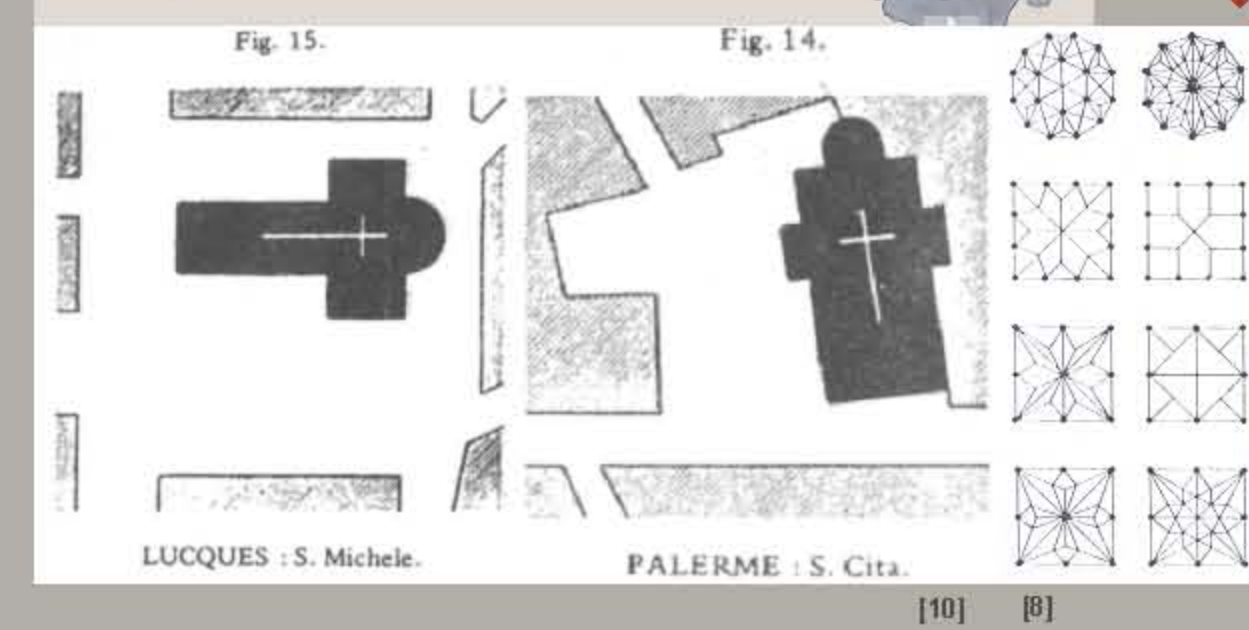
layering and separation*

A compatibility assessment through visual examples : past and current graphic practices illustrate where architectural modelling & information visualisation can meet.

* A tribute to E.R. Tufte

Informational separation

Top, three information-oriented visual displays by Viollet Le Duc (discrete elements, composition, proportion and design). Bottom left, in this comparative analysis of antique theatres, a graphic symbol delivers a first level of information on the location and typology. Selection of a location opens (top left of the image) a second layer of information in which features of each theatre are displayed one by one (period of construction, capacity, state of despair, etc.). Visual comparisons across the data set are then possible (bottom of the image). Middle, the selection of a bibliographic item (here a XIXth century photograph) results in the automatic creation of a 3D model containing the architectural content of the source: the graphic can then be queried to get "all other sources related to this architectural content". The graphic acts as a dynamic intermediate between information sets. Right, a comparison of the « spatial coverage » of the works of two authors, and below a symbol that positions a bibliographic item in the city.

[14]

Temporal stratification (diachronic readings).

Left, in this 2D (SVG) visual tool, an interactive time slider allows the user to observe changes over time of his selection of artefacts, with the time bar acting as an indicator of density of changes. Comparisons are then possible with other selections of artefacts. Middle, a basic, interactive time slider allows the observation of artefact changes over time within the 3D display (VRML). Right, in this masterly visualisation, A. Choisy recounts the spatio-temporal development of the main Romanesque schools with a combination of cartography and sections. Bottom right, a comparative visual display recounts the evolution of antique orders.

LES ÉGLISES ROMANES CLASSÉES PAR ÉCOLES.

density of changes
Current time slot (user-driven SVG time slider)
objects evolution for current time slot
density of changes of edifices
density of changes of blocks

1925 1850 1700 1520 1425
[5]

Vertical bearing
Observer's position
Image ratio
Target point
Source type

[5]

Table des Cinq Ordres d'Architecture, François Blondel, *Cours d'architecture*, 1675-1683. Cliché B.N.
[7]

Architectural modelling and infovis can fruitfully complement one another when dealing with what is **at the heart of historic artefacts : partial evidences**. Computer graphics can and will support such investigation if and only if they are designed, above all, as information visualisation disposals (may the visual result be realistic or not). **As an answer**, we identified the necessity to build up **a global methodological framework**: **Informative modelling**

Informative modelling applies to the study of historic architecture, where objects have most often been widely transformed, and consequently where what is known about objects remains partial. As a consequence, whereas in traditional architectural modelling a realistic representation of objects is considered as an end, in the informative modelling methodology the representation of architectural objects is used primarily as support for information search and visualisation, and does not strive for realism. Abstraction (the infovis legacy) and figuration (the architectural representation legacy) are integrated as alternative/mixable modes of representation, allowing partial knowledge to be communicated and important notions in historic sciences such as data uncertainty to be conveyed graphically. A grid of fourteen modelling rules (plus one) has been defined, designed as safeguards helping researchers to support their activity with sustainable and information-effective graphics. These rules are a best-practice, self-evaluation grid, encompassing a wide range of issues (information, models, representations, abstractions) see **www.map.archi.fr/mia/journal**

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[14] Viollet Le Duc, E, 1863-1977 [Discussion about architecture] *Entretiens sur l'architecture*, P. Mardaga.
Unreferenced graphics: authors (unpublished works)

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