Not all it is cracked up to be: The disparity between specifications and performance for oolitic limestones used in construction

M. Gomez-Heras, B.J. Smith, H.A. Viles & B. Emery

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Stone and the personality of heritage

The perception of built heritage is deeply influenced by the stone types with which has been made.

Oxford Stone: Geological setting

Oxford buildings have been built with an often complex assemblage of different facies from different formations of the Jurassic in England.

Carbonatic platforms

Significant facies variability
Small scale quarries with metric banks
Production very discontinuous

Heterogeneity

“Bath”

- Mixed qualities in the same quarries
- Multiplicity of commercial names often lacking of straightforward relations
- Hard stone, freestone...
- Ownership by colleges
- Very heterogeneous up to the level of single ashlars

But often several stone types have been considered as being the same stone.
Heterogeneity

Common presence of punctual "defects" with implications to decay evolution

e.g.: larger size fossils, clay micro-beds.

History of use

Taynton (Cotswold)
Portland
Headington HS
Headington FS

Stone replacement

Incompatibility of materials?

Incompatibility of materials?

Jumping boundaries

Crusts "jump" stone boundaries
Importance of getting a “decayed” equilibrium surface. 

Excessive replacement of stones may feedback decay. 

The history of use of stone have implications on decay. 

Mixed qualities may condition the catastrophic decay of some stones. 

There is no such thing as “Oxford oolitic limestone”.

The accuracy of the historic information must be revised in cases with a complex array of similar materials at the macro-scale but petrographically very different.