

Example sheet 1

Secondary resources in some Old Kingdom quarries, Egypt

In many cases, quarrying requires input of other natural resources used in the production process. Defining the quarried resource as the primary, we can collectively name such secondary resources. These may be stone resources for stone tools, wood for smithies, stone for constructions and roads or grinding stones for food production. Secondary resources may be directly applied in the production process, or indirectly for sustaining the people doing it. Secondary resources may have

been exploited elaborately, such as the building stones used in the construction of forts and settlements in the large Roman quarries in the Eastern Desert, or modestly, and they may be imported or obtained locally. In principle, we separate between the use of secondary resources (as quarried or obtained for a specific purpose) and use of spoil material in the quarries for i.e. construction, but the border may be diffuse and should not be strictly drawn.

Examples of secondary resources

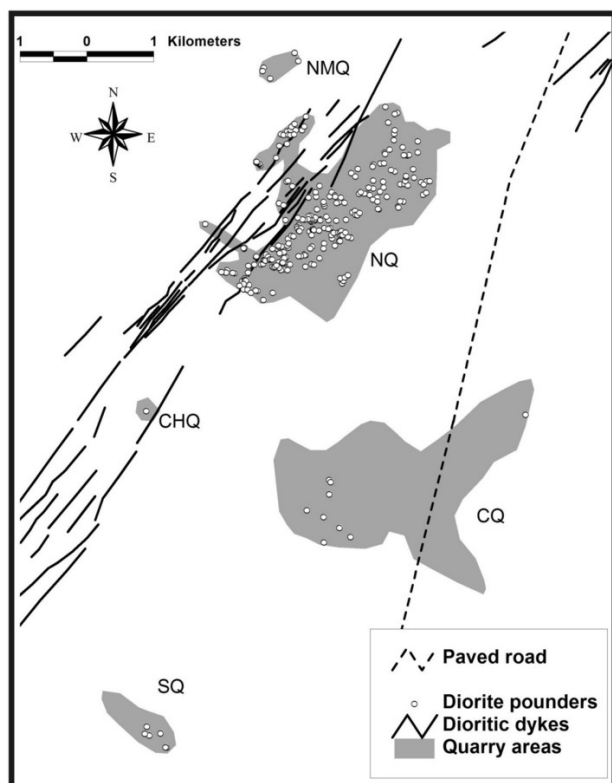
SECONDARY RESOURCE	Stone tools	Pounders/stone hammers Stone chisels
	Building stone	Houses Shelters Roads
	Domestic artifacts	Grinding stone/millstone Mortars Whetstone
	Clay	Ceramics Bricks
	Wood/charcoal	Smithy Fire setting Houses Lifting and transporting devices Wedges

In **Chephren's Quarry**, Egypt. the tools for working the gneiss are made from local resources; pounders are made from diorite (a series of dykes occurring in the western part of the area), granite (occurrences all over the area) and the Chephren Gneiss itself. In addition, rod-shaped hand-hammers, made from diorite and basalt, were applied. When viewing the distribution of tools from these different sources, we see a clear pattern

of use; the diorite was predominantly used near the source. Further away, granite and/or Chephren Gneiss were preferred. Thus, we may conclude that proximity was a more important aspect in the selection of tool materials than differences in quality. Other secondary resources, also obtained locally, include silicified sandstone for grinding implements and clay for ceramics.

Secondary resources at Chephren's Quarry, Egypt

SECONDARY RESOURCE	PURPOSE/USE	LOCATION
Diorite (dykes)	Stone tools (pounder, hammers) Stela	Local
Granite	Stone tools (pounders)	Local
Basalt	Stone tools (hammers)	Local
Silicified sandstone	Grinding stone	Local
Sandstone	Shelters	Local
Clay	Ceramics (bread moulds)	Local



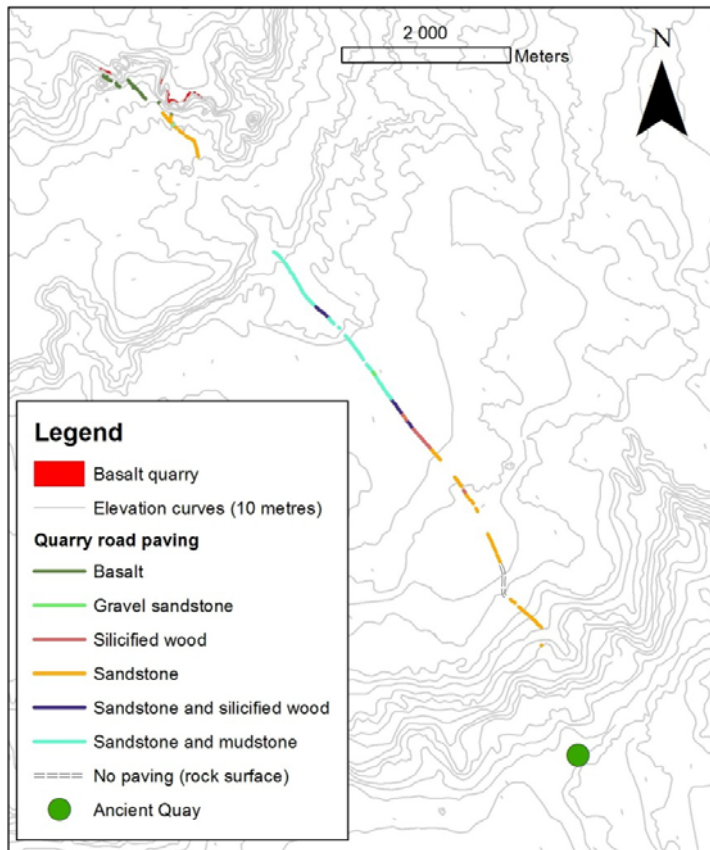
Observation of stone tools (small circles), Chephren's Quarry, made of diorite (dyke occurrences, black lines on the map). The use of this secondary resource for tools is decreasing the further away from the source one gets.

Moving north to the more or less contemporary basalt quarrying at Widan el Faras, we see a completely different pattern of stone tool use; the main type of tool found in the quarries are rather well fabricated pounders – most of them having contracted necks for the attachment of a haft. Interestingly, they all originate from the Precambrian rocks in the Eastern Desert and/or the Aswan area, far away from the quarries. Whether the reluctance of using local hard stone was related to quality, quarrying methods or social

aspects is difficult to know, but certainly this contrast in the production and use of stone tools at two contemporary sites raises important questions about connections between quarry sites in the Old Kingdom. At Widan el Faras, local resources are, however, used to a large extent in the construction of the quarry road. The construction material varies along the road, reflecting the most available resources near it. Notable, basalt rubble from scree deposits is used only in the uppermost part of the road.

Secondary resources at Widan el-Faras, Egypt

SECONDARY RESOURCE	PURPOSE/USE	LOCATION
Gabbro, diorite	Stone tools (shafted hammers)	Imported
Sandstone	Road construction	Local
Silicified wood	Road construction	Local



Rock types used as paving on the quarry road from Widan el Faras.