Appendix E: Comparative Foundation Evidence — MVT and KVT

This appendix presents comparative architectural and geoarchaeological evidence from the MVT and KVT. Both structures exhibit massive limestone foundations atypical of purely ritual courtyards, suggesting that hydraulic stability and load-bearing considerations were integral to their original design (Lehner 1997; AERA 2019–2020; refs. 1, 2). This comparative assessment supports the hypothesis that Giza's valley temples formed components of a coordinated harbour system rather than isolated mortuary installations.

E.1 Foundation Architecture

- **MVT:** AERA (2019–2020) excavations revealed oversized limestone foundations > 3 m deep, intended for a stone superstructure never completed due to Menkaure's death (2). Shepseskaf later finished it in mudbrick, reducing its engineering robustness.
- **KVT:** Limestone core with Aswan granite casing and a recessed U-shaped basin (59 m span; see Figure E1) fully realized the stone design concept that MVT had initiated.

E.2 Functional Interpretation

Both foundations reflect structural choices optimised for hydraulic stress resistance and heavy-load bearing. The MVT foundation indirectly suggests hydraulic functionality similar to the KVT, whereas the KVT provides direct evidence through its basin geometry for docking and unloading operations. Together they illustrate a shared engineering philosophy consistent with harbour design principles. These foundations likely operated within the same hydraulic regime later modelled in Appendix J, providing early evidence for functional continuity across dynasties.

E3. Comparative Summary (Table E1)

Table E1. Comparative architectural and functional features of the Menkaure and Khafre Valley Temples.

Feature	MVT	KVT	Interpretation
Foundation	Massive limestone blocks approximately 3 m deep (AERA 2019–2020)	Limestone core with Aswan granite casing and recessed basin (59 m span)	Oversized foundations exceed symbolic requirements → functional intent
Superstructure	Unfinished; completed in mudbrick by Shepseskaf	Fully stone-built with granite facing	Divergent execution, consistent engineering concept
Location	Terminus of Menkaure causeway	Terminus of Khafre causeway	Both positioned at hydraulic nodes linking Nile access to pyramids
Plan	Rectangular; limited hydraulic evidence	U-shaped recessed basin	Direct architectural evidence of harbour function
Traditional View	Mortuary/ritual temple unfinished at king's death	Mortuary/ritual temple	Symbolic interpretations ignore engineering aspects
Alternative View (this study)	Hydraulic and load-bearing foundation for potential harbour role	Basin for docking and cargo rotation	Shared engineering rationale aligned with harbour use

E.4 Interpretation and Implications

The use of massive limestone foundations at both sites demonstrates a coherent engineering logic within the Giza valley temples. These structural features exceed symbolic requirements, implying a design intention governed by hydraulic and load-bearing efficiency rather than ritual abstraction (3). Similar shifts to ritual use are observed at Dahshur and Lisht, where functional spaces were later repurposed (4). Together, these observations strengthen the premise advanced in Appendix J, positioning the Giza valley temples as integral elements of a mid-Holocene hydraulic network.

References

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3. Butzer K W. 1976. *Early Hydraulic Civilization in Egypt.* University of Chicago Press, Chicago.

4. Arnold D. 1991. *Building in Egypt: Pharaonic Stone Masonry.* Oxford University Press, New York.