

RESEARCH REPORT SERIES no. 23-2012

KENILWORTH CASTLE, WARWICKSHIRE SURVEY OF POSSIBLE ELIZABETHAN STAIRWELL IN SOUTHWEST CORNER TOWER OF THE KEEP

Thomas Cromwell



INTERVENTION
AND ANALYSIS



ENGLISH HERITAGE

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**Kenilworth Castle
Warwickshire**

**Survey of possible Elizabethan stairwell in southwest corner
tower of the Keep**

Thomas Cromwell

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SUMMARY

The interior walls of a corner tower were surveyed to record a series of badly eroded holes in order to test whether they could be the supports for a timber staircase associated with improvements made for a visit by Elizabeth I.

CONTRIBUTORS

The author would like to thank Dave Fellows for his help with the fieldwork, and Bill Blake for advice and photography.

ACKNOWLEDGEMENTS

The author wishes to thank Richard K Morris for instigating the survey, and for his valuable input regarding possible stair structures and general history of the site.

ARCHIVE LOCATION

Fort Cumberland, Portsmouth

DATE OF SURVEY

May 2007

CONTACT DETAILS

Fort Cumberland, Portsmouth, PO4 9LD

Thomas Cromwell, tel: 02392 856752, email: tom.cromwell@english-heritage.org.uk

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INTRODUCTION

The Archaeological Projects team of English Heritage was asked by Dr. Richard K Morris to survey the interior faces of the stair tower in the southwest corner of the keep at Kenilworth Castle in order to create a digital framework for interpretive reconstructions of the stairs that are assumed to have occupied it in the 16th century.

The stairs are part of a theory regarding the rearrangement of the castle for Elizabeth's visit in the late 16th century, and were intended to provide her with a direct route from her private suite through the main first-floor chamber of the keep and down to the passage into the gardens along the north side of the castle. (R K Morris, *pers comm.*) The structure shows clearly that the first floor of the tower was a finished room with dressed-stone walls, but that the stonework from there down to the ground was a much rougher quality suggesting that it had been hollowed out of an originally solid lower level of the tower. Presumably it would have been dressed out in panelling or wall-hangings to hide the rough walls. The fact that the walls were not then fitted with dressed stone to match the areas above suggests that the work was a hurried effort for a particularly important visitor rather than a long-term change of design for the building.

The fieldwork was carried out on 23 & 24 May 2007 by Thomas Cromwell and Dave Fellows, with digital photography by Bill Blake of the Metric Survey team. Valuable interpretive input was provided on site by Dr Morris, who also undertook an unscaled reconstruction that differs from that presented here only in minor details. All beam-slot and window designations in Figs 2&3 are from R K Morris (*pers comm*).

The survey data was set out in AutoCAD. After data processing the four sides of the tower were laid out across a single view so that the beam slots could be compared across each elevation. (see figs 2&3)

DATA AND ASSUMPTIONS

If the interpreted stair design was right, it was clear that not enough holes survived to complete the framing. This may be due to a number of reasons, including erosion of the stonework that makes some of the holes appear as poorly defined depressions while others are still visible as beam slots. Also, the tower has been remodelled over time, including repair works as a guardianship site, and these have the effect of possibly re-facing (and thus masking) holes where the surface erosion required considerable stone refurbishment, especially on the south and east sides. Note also that the architectural stonework of openings such as the ground-floor entrance have been robbed out, leaving a much larger and irregular opening.

The survey data was limited by the location of the survey instrument within the base of the tower. Shots were necessarily oblique, and towards the top of the elevations they can only be an approximation of edges that in fact curve round. Much of this was to be corrected with photogrammetry, but the photographs proved unworkable in the software due to the extreme angles involved – a complex scaffolding tower would have to be erected within the stair tower to enable adequate access for stereo photography.

On the reconstruction, certain assumptions have been made. The “average” beam slot seems to be sized for a timber approximately 6 inches wide by 8 inches high (152mm wide x 203mm high), although severe erosion of the stone makes accurate measurement impossible. The stair structure itself could have been built up of a framework 6 inches high, topped with an inch-thick layer of cross-bearers onto which an inch-thick tread surface could be laid. This would yield a structure 8 inches in depth. A deeper structure with thicker timbers could have existed, but at the cost of head-room for the spaces between. Also, a stair riser height of $6\frac{3}{4}$ inches (171mm) was assumed, since multiples of three and four steps gave heights similar to the vertical separation between the beam slots. (Units of 6, 7, $7\frac{1}{4}$, $7\frac{1}{2}$, and 8 inches were calculated, but were not satisfactory.)

RECONSTRUCTION

The most likely arrangement (see fig 2) starts with a landing in front of the doors in the northeast corner that lead into the first floor main chamber and the recess in the south wall of the keep. There need to be two steps down as the stairs follow the east wall, turning clockwise around the tower as it descends. Steps down are then located at the midpoint of each wall, in a pattern of three steps each on the east and west faces, four on the south face, and a mix of three and four on the north face. The final descent is a long flight of six steps along the south face.

The width of the stair is not certain, but if the position of the steps in the centre of the walls is indicative of the space between the landings then these could have been about five feet (1.55m) wide, leaving a rectangular “light well” measuring about $1\frac{1}{2}\times 3$ feet (0.5m x 1m). This would assume a structure built around four timber uprights, each measuring perhaps 4 or 6 inches square. If so, then the steps at the base of the staircase had to follow the south wall rather than project out centrally to meet the door in the west wall. The three windows on the south wall (including the middle one which is now blocked) are spaced perfectly to provide light to each lift of stairs.

Head-room averages at just over $6\frac{1}{2}$ feet (or 2 metres), except at the first quarter-turn under the landing at the top (in the northeast corner), where the stairs have only 6 feet (1.8m) of clearance.

In the southwest corner, where the lowest run of stairs pass across the door in the west wall, there are two slots at the south end of the west wall that suggest the steps down were offset to the left of the doorway. If so, the steps would have had to be built on the corner rather than as a straight flight, which is unusual compared to the rest of the structure. It is equally possible that the steps were in the middle (to match the rest), and that the beam slots are simply missing with the robbed-out doorway, so this option is shown in the reconstructions.

At the lowest run on the north side the evidence suggests a flight of four steps instead of three as seen above, and the projecting stonework then limits the lowest flight on the east wall to only two steps. If however the north side had only three steps, the remaining step could be moved around to the east side for symmetry.

Given the constrained headroom it is unlikely that the undersides of the stairs forming the ceilings of the flights below were lavishly embellished with deep carvings or ornate hanging protrusions. The sides and banisters may have been more elaborately decorated, in keeping with the expectations of royalty.

TABLE OF BEAM-SLOT MEASUREMENTS

Beam-slot number	Height (cm)	Width (cm)	Depth (cm)	Comments
E1	28	24	n/a	
E2	26	27	n/a	Hole packed out (pigeon exclusion?)
E3	32	21	16	
E4	80	27	19	Elongated upwards
E5	85	34	19	Elongated upwards
S1	28	19	n/a	
S2	25	20	n/a	
S3	41	18	18	
S4	78	17	10	Badly eroded
S5	32	27	11	Hole packed out (pigeon exclusion?)
S6	81	16	21	Badly eroded
W1	n/a	n/a	n/a	Not visible
W2	38	20	n/a	
W3	35	20	13	Nicely cut
W4	29	28	16	Hole packed out (pigeon exclusion?)
W5	36	25	13	
W6	43	21	14	
W7	39	30	20	
N1	n/a	n/a	n/a	Not visible
N2	63	22	n/a	Elongated upward in taper
N3	34	34	20	Square shape
N4	56	23	20	Elongated upward in taper
N5	91	28	17	Elongated upward in taper
N6	88	26	20	Elongated upward in taper
N7	29	18	15	
N8	39	25	13	

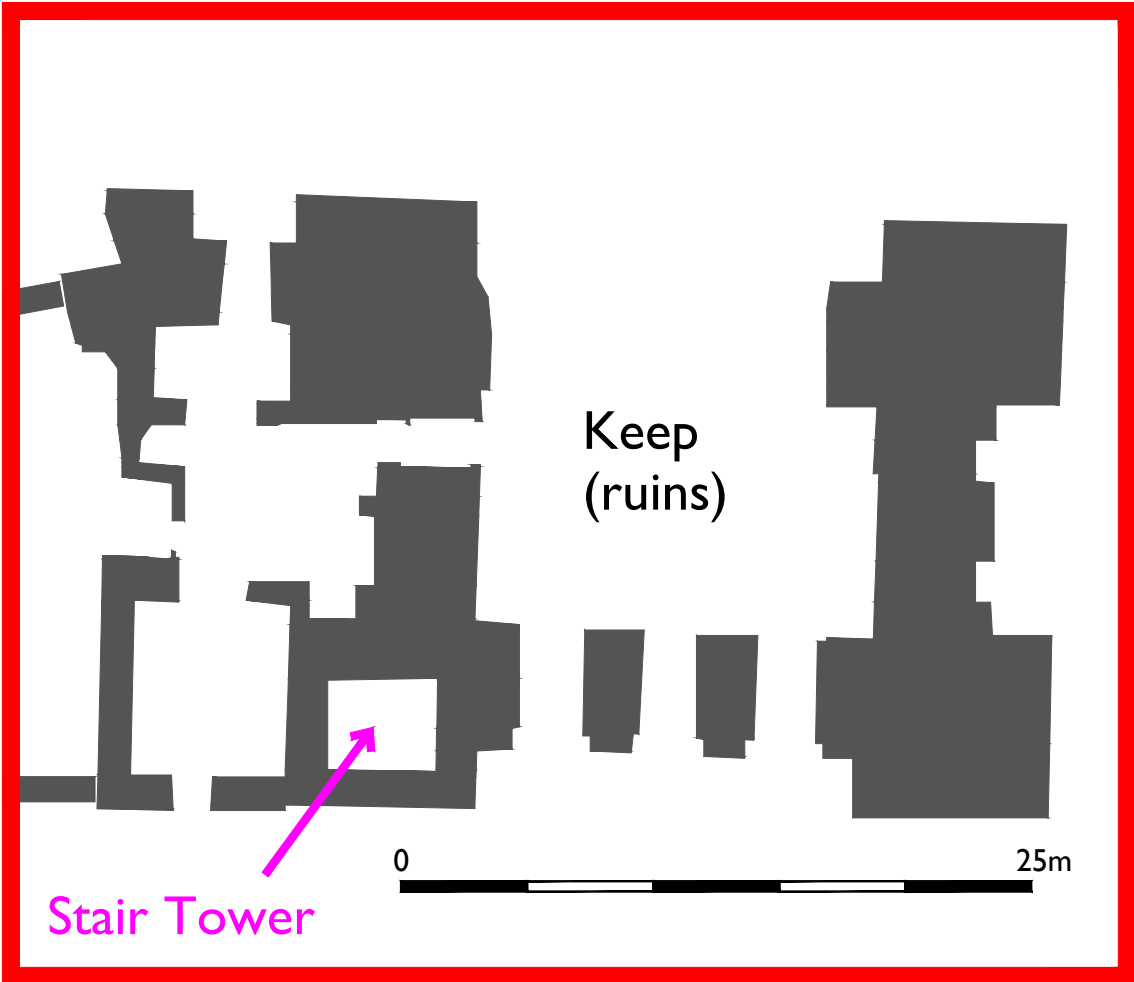
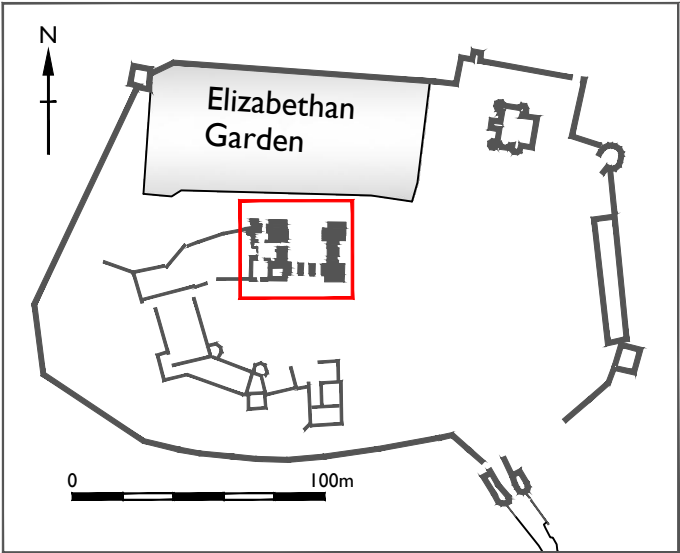


Fig. 1: Kenilworth Castle keep, stair tower location plan

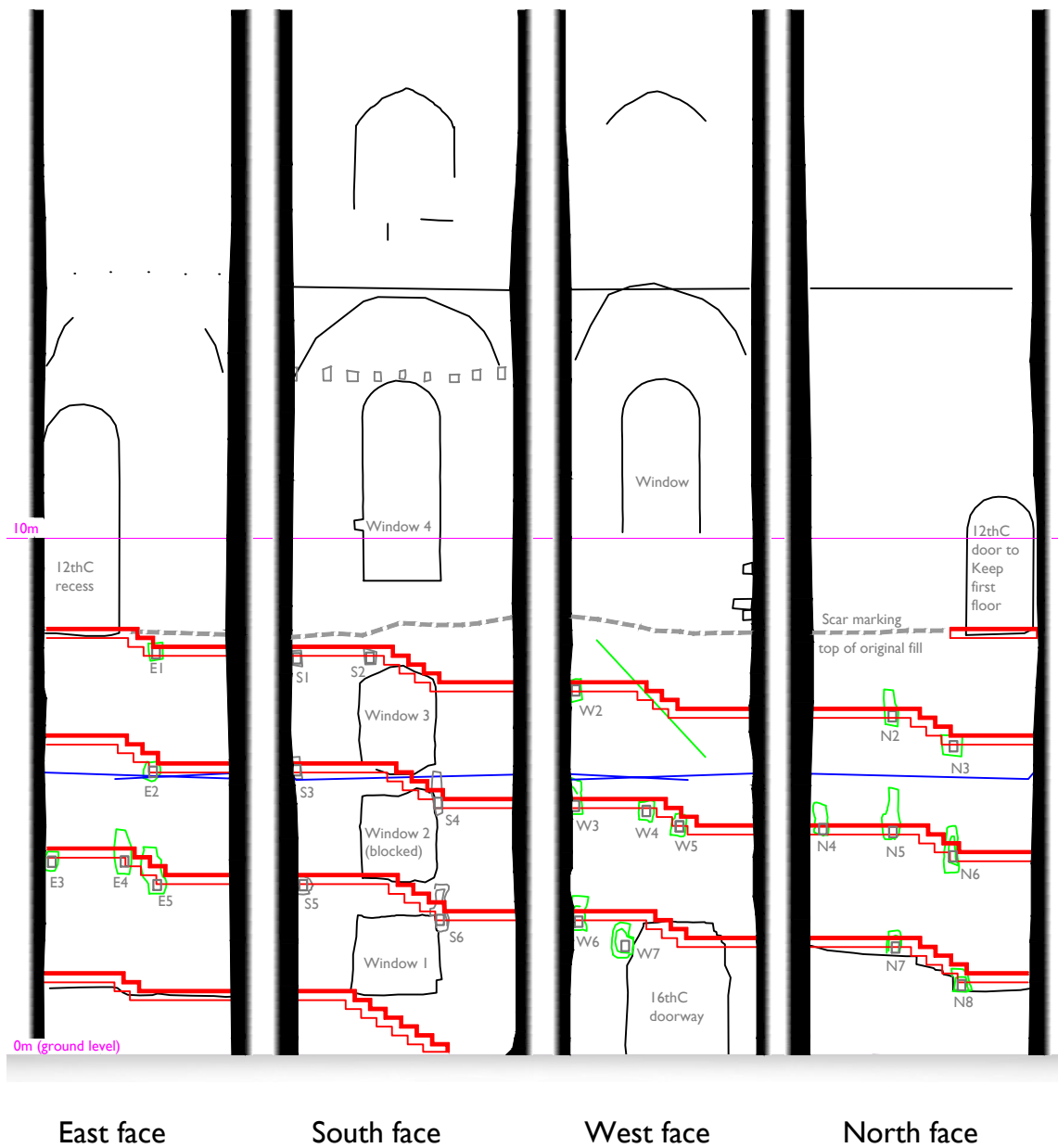


Fig. 2: Kenilworth Castle keep, SW corner stair tower surveyed elevations and stair reconstruction with half top landing

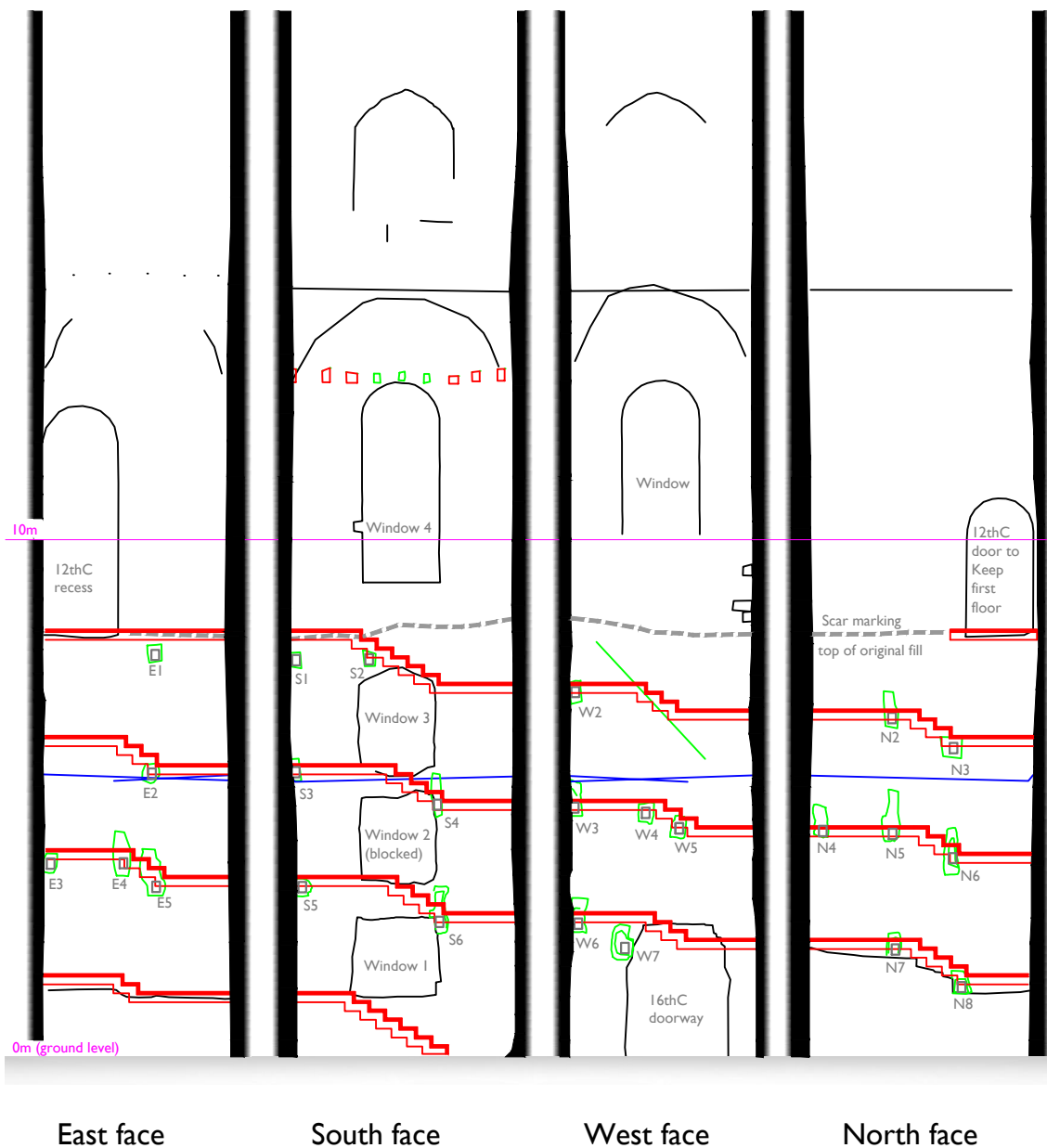


Fig. 3: Kenilworth Castle keep, SW corner stair tower surveyed elevations and stair alternate reconstruction with full top landing

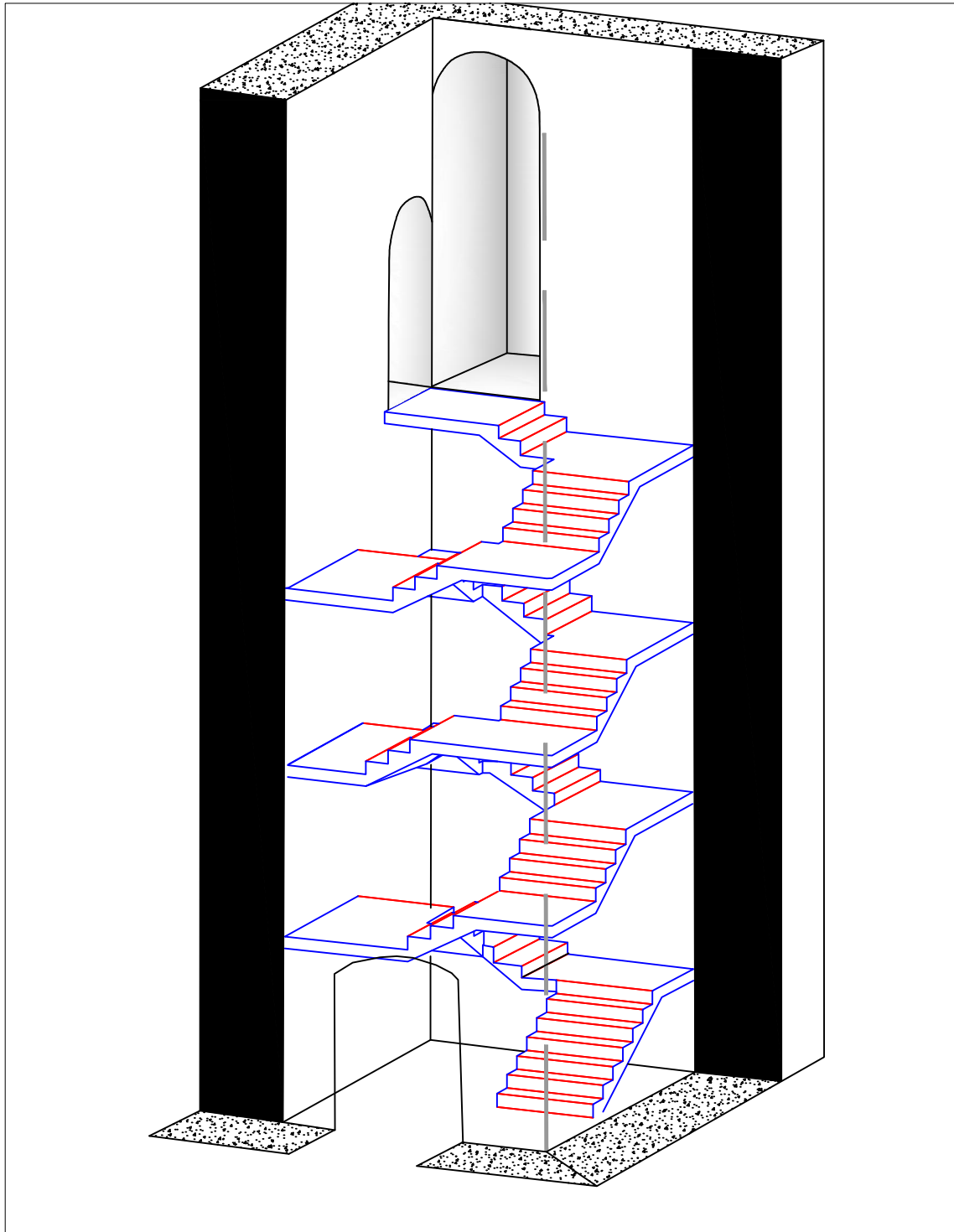


Fig 4. Isometric cut-away of stair tower viewed from the southwest, showing possible stair arrangement. Bannisters and supports omitted for clarity. Note that door at top is on the left - the archway on the right is a deep niche with solid back wall.



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- * Imaging and Visualisation (including Technical Survey, Graphics and Photography)
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