

The Leaning Tower of St. William

Excavations of a 17th Century Stair Tower at St Williams

College, York, 1999

It's not often that archaeologists these days get called out to investigate why a building is falling down. This is exactly what we were asked to investigate, however, in conjunction with the consultant engineers, Ove Arup, in early January 1999 however. The building was a 17th century stair tower attached to the rear of St. William's College, which was subsiding to the north. Our job was to investigate the depth of its foundations and any archaeological deposits that may have built up beside it. The results were surprising for all concerned.

St. William's College is situated within the medieval precinct of York Minster, in the northern part of the city of York. It was begun in 1465, and originally consisted of a two-storey, half stone/half timber-frame structure built around a central courtyard. The college was founded by George and Richard Neville to provide accommodation for priests, other than vicars' choral, serving chantries in York Minster, and originally consisted of one provost and 23 fellows. Little of the original layout is now recognisable. It has been suggested that the north range originally housed a hall, kitchen and chapel, and that the original 24 residents were accommodated in the other ranges built around the central courtyard, but it is difficult to prove these ideas on structural grounds. Early changes to the College included the construction of two chimneys, the division of the hall into two storeys and the building of additional cellars. The brick stair tower was added to the north range of the College at a later date, probably between 1650 and 1670, and may have coincided with the building of the grand central entrance. The east range was divided into two dwellings in the 18th century and the south range into small tenements and shops in the late 18th and early 19th centuries. The medieval halls in the north and west ranges were formed during restoration work to the building after the church authorities purchased the property in 1902. The College is a significant, if much altered, survival of a college of chantry priests built on a courtyard plan, unique apart from the primarily academic colleges in Oxford and Cambridge, and is also a scheduled ancient monument. In recent years important Roman deposits have been excavated in

the vicinity, and above this a 3.5m build-up of deposits suggested that significant medieval and post-medieval deposits may survive.

The investigation comprised a single trench 1.5m square, positioned on the north-east side of the stair-tower, close to its north corner, which was completely hand excavated to a total depth of 1.10m. The majority of the surviving archaeological deposits were observed in section and were not excavated. This was due to the truncation of all archaeological deposits adjacent to the 17th century stair tower by an hitherto unknown modern (1970's) trench containing structures which attempted to support the 'leaning' tower. This left a 0.5m wide strip at the north-east end of the trench which contained the archaeological deposits.

The earliest deposits observed were thought to relate to build-ups of garden-soil and dumps of hearth ash and domestic waste within a backyard, with only one clay floor or surface breaking this sequence. The backyard type deposits were truncated by several pits and post-holes which were backfilled by demolition material, and then sealed by another dump or accumulation deposit of domestic rubbish and ash. A thick layer of demolition material then sealed the earlier dump or accumulation deposit. This was interpreted as a levelling deposit or a spread of waste construction materials possibly contemporary with the construction of the stair-case tower. A clear discontinuity of deposits between those interpreted as dumps, accumulations and levelling deposits, characteristic of a backyard area, and those that were distinctly of occupational character, was apparent in the visible section at this point. The dating evidence suggests a later post-medieval date for the occupation, and the clear difference between these and the earlier deposits signifies a functional change in the backyard area to the north-east of the College. It is suggested that this must be associated with a significant landscape change such as the construction of the 17th century stair tower. If this is the case then it is likely that the foundations for the stair-case tower were trench built, inserted into the ground in a shallow 0.50m deep vertically sided and flat bottomed foundation trench which probably pre-dated the levelling deposit.

The stair tower was constructed upon a primary foundation of irregular limestone blocks and broken brick, bonded with a moist white lime based mortar, all laid within

the putative wall construction trench. Above this a brick footing was constructed, two courses high, which directly underlay the actual brick stair tower wall.

The internal occupation deposits that probably post-date the construction of the stair tower wall and the levelling layer of demolition and waste construction material included six thin stratified floor and use deposits. These consisted of sand and mortar floors, interleaved with hearth rake-off and accumulation deposits which had a very high content of ash, clinker, coke, coal and slag. An operational hearth close to the trench area, probably functioning in a craft-industrial capacity within a workshop, would produce these types of deposits. A structure of unbonded broken brick fragments, one course in height, possibly forming a revetment, partition or defining a work-space within the craft-industrial workshop was then constructed, and subsequently sealed by further industrial and occupation deposits dated to the 19th or early 20th centuries. The brick structure and the workshop then appear to have been demolished, and a thick dump of demolition materials sealed the whole area. This marked the end of the industrial activity and occupation on the site.

A modern construction trench adjacent and parallel to the stair tower wall was then excavated removing a 1.0m wide strip of archaeological deposits. The base of the trench was filled by concrete which formed a solid beam encircling the north-east facing and north-west facing walls of the stair tower. It appears that this beam was not connected directly to the original foundations, did not act as underpinning and was set just below the base of the original foundations. However, it formed the base for the construction of six brick buttresses. The buttresses and concrete beam represent an early-mid 1970s attempt to support the subsiding wall of the stair tower, which obviously has not worked. The construction trench, the buttresses and the evaluation area were then backfilled with loose garden soil, which contained ring-pull type fizzy drinks cans, a 'type fossil' for the 1970s and a good if unusual form of dating evidence.

The investigation proved the presence of well stratified archaeological deposits in the vicinity of the stair tower. The earliest probably related to the later medieval period and consisted of a series of dumps and pits consistent with activity within the backyard of any medieval property. After the construction of the stair tower in the later 17th

century, a series of well stratified occupation deposits built up adjacent to the stair tower from the later 17th to the 19th centuries. These were connected with a craft-industrial workshop which utilised this part of the site. A modern attempt, in the 1970s, to support the subsiding stair tower was also uncovered which truncated deposits immediately adjacent to it and ironically did not appear to help to support the subsiding structure at all, but rather undermined it further. I wonder if a similar investigation in Pisa may also bring to light forgotten modern attempts there to stop Pisa's famous leaning tower from subsiding too. Could they learn from the leaning tower of St. William? Maybe YAT could carry out the investigation. Anyone fancy doing an excavation in Italy? Meanwhile, Ove Arup are designing a suitable underpinning to ensure that the tower will not move any further. It is to be installed in the near future.

Thanks are due to Ove Arup who were the consultant engineers, the site owners and instigators of the work The Dean and Chapter of York Minster and their consultant archaeologist Dr. Richard Hall, for the opportunity to investigate the mystery of the leaning tower of St. William. I would also like to pass on special thanks to the other half of the digging team Russell Marwood for his sense of humour and his hard work.

Neil Macnab.