Historical-archaeological investigations at Akkerman (Bilhorod-Dnistrovsky) fortress, Ukraine, 2008

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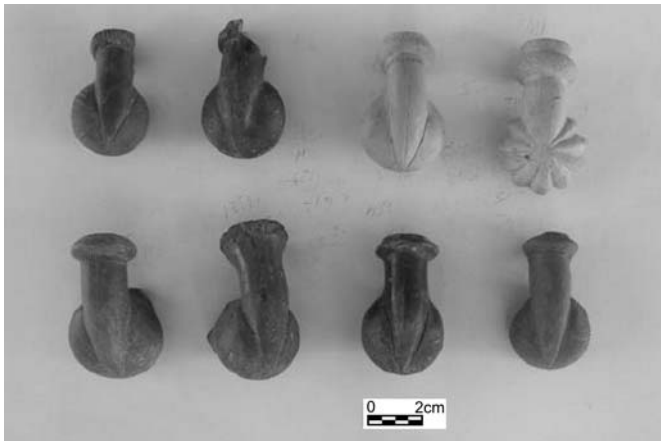
The 2007 season at Akkerman fortress saw the conclusion for the present of excavation in the shore ward known as the 'Port Yard', whose two significant buildings – a 'barbican' and an Ottoman bathhouse nearby – have yielded a rich hoard of finds over the several years that the Ukrainian and Turkish archaeological teams have worked there. In 2008 our investigation of the site was non-invasive. We expanded the architectural survey initiated in 2006 and the geophysical survey begun in 2007, while two new aspects of our research were the sampling of timber and mortar for laboratory analysis.

We reported last year that the original plan and structure of the barbican and bathhouse were now known. The shore wall and barbican are seen to be an architectural whole, and, when first built, the wall was low – about 3.5m high – and topped with crenellations. Visible above this row of crenellations is a second row, and the wall is topped by musket loopholes that were built subsequently. The crenellations must date from a time before muskets were considered efficient enough to supplant bows and arrows. A document written soon after the siege of 1484 when the Ottomans captured the fortress from the Moldavians reports that the shore wall was low and must be raised. It is therefore possible that the lower row of crenellations is original, dating from the Moldavian period, and the second Ottoman, being the raised wall ordered after the siege. If further investigation proves this to be correct, then the barbican is also of Moldavian construction. As to the bathhouse, both material and documentary evidence continue to point to its construction in the late 15th century.

Julian Bennett pointing at a filled-in embrasure in the lower row of crenellations of the shore wall

Storage of the ceramics and small finds is split between Kyiv and the museum in Bilhorod-Dnistrovsky. Both collections are in the process of being digitally rephotographed, and a full database is in preparation. Ceramics of a variety of types are abundant, along with artefacts of metal, bone, glass and stone. The collection of Ottoman tobacco pipe bowls – some 1,309 pieces – is among the largest number from a single site, and we understand (Dr Susie White, personal communication) that in a British context the pipe remnants would be stems not bowls – a thought-provoking contrast. Digging beyond the confines of the Port Yard would doubtless produce many more examples, but we are limited by our excavation permit to that section of the site.



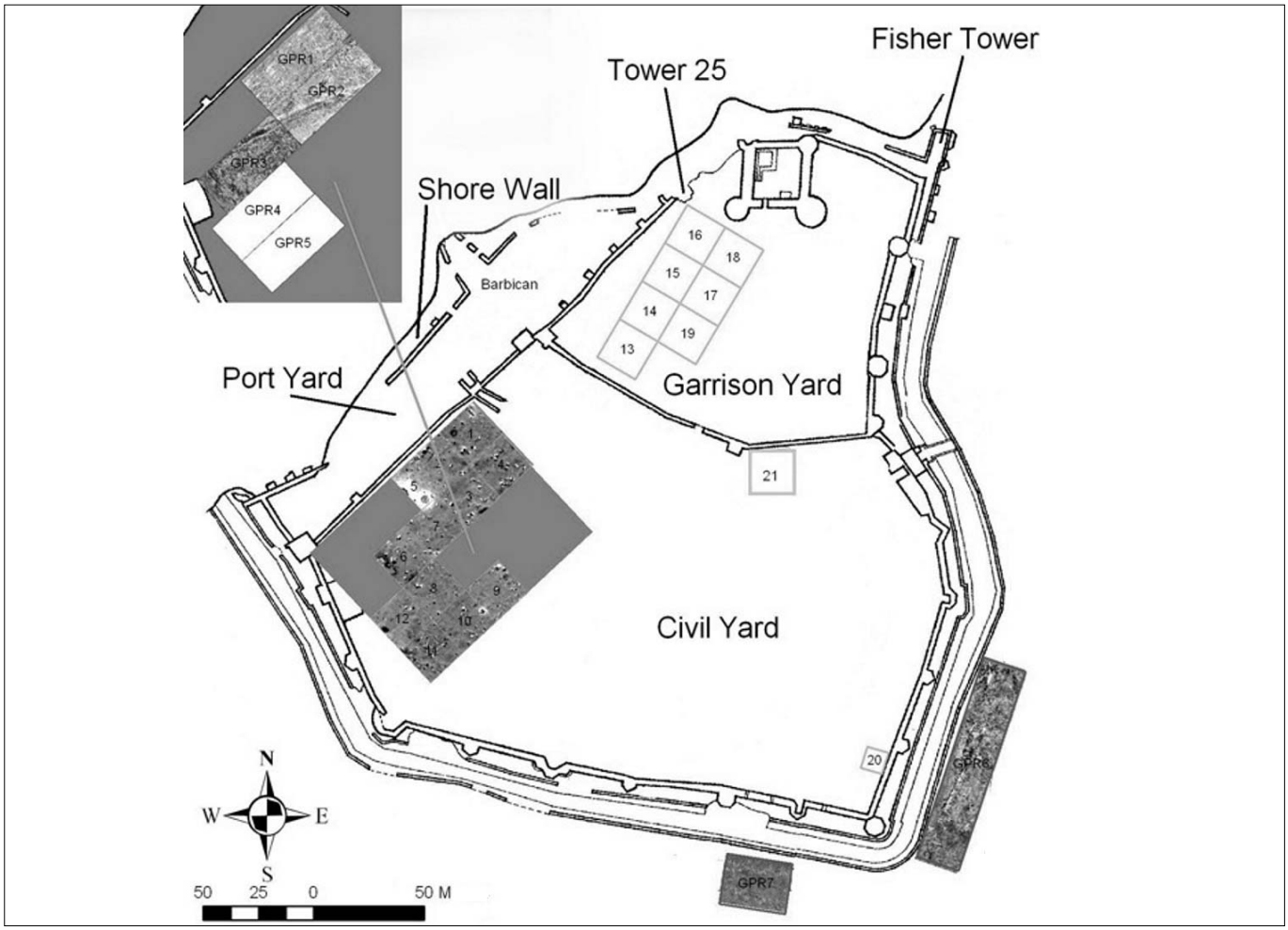
Pipes excavated in the Port Yard

Close observation of the main structural elements of the fortress (combined with evidence from the Ottoman documents) allows for tentative revision of our previous understanding of its chronological development to suggest six major phases: (1) a donjon-type tower whose surviving 10m-high northwest wall was later incorporated into the northwest curtain of the 'Garrison Yard' immediately northeast of tower 25; (2) development with the plan and defensive arrangements, including the parateichion and deep ditch, that exist today, the citadel being planned (if not actually completed) with at least two rectangular corner towers, on the south side, their lower courses being embedded in the bases of the circular ones that now exist, and the outer circuit and parateichion provided with projecting square towers; (3) assuming the citadel was originally built with rectangular towers, the building of the present circular ones – otherwise the next major construction phase at the site is represented by the rebuilding of three of the square towers along the east side of the Garrison Yard to an octagonal plan; (4) next, almost all the square towers on the 'Civil Yard' curtain were rebuilt from foundation level to a polygonal plan in 'banded masonry', with alternating horizontal courses of

Rectangular bases of the southeast and southwest towers of the citadel

tile and stonework: two of the new towers were built with loopholes for gunpowder weapons of the culverin class, another two were later adapted to form cannon-bearing redan-type structures; (5) almost all the curtain towers were demolished to curtain-walk level and their ground-floor chambers filled for supporting garrison cannon; (6) a terreplein and musket loopholes were provided along the curtain and the parateichion wall, together with a strengthening of the walls at key tactical points to support artillery batteries. As yet, only this final phase of the major structural alterations at the Akkerman fortress can be dated with some certainty, since Ottoman archival documents show it to be associated with a major refurbishment of the defences in the 1790s following two devastating wars with Russia that put Akkerman on the front line by fixing the border between the two empires at the Dnister river.

Following on from the pilot geophysical survey undertaken in 2007, which employed a technique known as resistivity (Geoscan RM15 Resistivity Meter), this season we carried out a complementary survey using a combination of gradiometery (Geoscan FM36 Fluxgate Gradiometer) and ground-penetrating radar (Mala Remac GPR with, because of the terrain and underlying geology, a 500Mhz shielded antenna). The areas surveyed in the pilot were reinvestigated, in order to provide results comprising the three very different techniques. The resulting data were processed and added to the GIS-generated digital map created last season, using the ESRI ArcGIS desktop suite of programs. We have geo-



Plan of the fortress indicating gradiometry and GPR scans (blank squares indicate unprocessed quadrants)

referenced the available crude plans from archaeological investigations throughout the 20th century in order to mitigate any errors in interpretation and to act as a control point to anchor the results. Despite lack of access to detailed plans of these investigations, which can be withheld indefinitely, this geo-referencing is proving key during the ongoing interpretation of the results. All data gathered are still being processed and analysed, but it is clear that structures identified in the pilot study have been reaffirmed by the most recent survey.

Dendrochronology, based on tree-ring analysis of timber incorporated in built structures, can provide dating as reliable as the dated written record. Slices and cores were taken from 57 timbers at selected, accessible, points of the fortress. The majority proved to be oak, and Ottoman documents also indicate that oak was the wood most commonly used in construction works at Akkerman. A survey of existing tree-ring chronologies for oak in the wider region reveals that we can expect absolute dating from our samples. Chronologies exist for the upper Dnister (AD 890–1985), for Romania (Maramureş and Transylvania: AD 1410–1998), for southeastern Poland (AD 1100–1997) and the southern coast of the Black Sea (AD 1081–2004). Ottoman documents of the 18th century refer to Moldavia and Wallachia as the source of the oak used at Akkerman, and we eagerly wait to learn if this is borne out by the tree-ring analysis.

Preliminary analysis of the 19 mortar samples taken from locations selected on the basis of both architectural and documentary criteria shows them all to be of lime-carbonate-sand type, a category whose further division into sub-groups may allow us to relate each to a chronological period.

Our dendrochronologists report that the northeast bastion – now known to have been designated the Fisher Tower by the Ottomans – was deemed too risky to sample. As noted in our 2007 report, a special effects fire set by a film crew in early summer of that year caused severe harm here, and we wrote that permanent damage was likely to result. This has sadly been the case. The north face of the bastion was already cracked, but the fire burnt the timbers that are its carcass. In 2008 the powers-that-be decided that conservation was urgently required, and in the name of that admirable aim, workers with shovels began throwing the accumulated earth and all it contained, including the timbers, down from the top of the bastion into the moat at its base. There was no evidence that anyone was recording the work for archaeological purposes, and when we inspected these spoil heaps we found pottery sherds whose contextual history is now gone for ever. An ignominious fate for this remarkable monument.

Tomasz Wazny extracting a wood sample from the bottom of the latrine chute on the shore side of the citadel under the northwest tower

Acknowledgements

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A list of members of the Akkerman fortress project appears on our website at www.akkermanfortress.org. In addition to the co-directors named at the start of this article, contributors to this report were: Yuri Boltryk (vice-director, archaeologist: dendrochronology), Olena Fialko (archaeologist: ceramics and small finds); Severin Sagaydak (dendrochronologist); Iryna Karashevych (archaeologist: geodesic survey) – all from Institute of Archaeology, National Academy of Sciences of Ukraine – Roman Gutsulyak (chemist, State Research and Technical Centre for Conservation and Restoration of Monuments 'KONREST': mortars); Julian Bennett (archaeologist, Bilkent University: architectural survey); Tomasz Wazny (dendrochronologist, Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology, Cornell University); Alex Turner (archaeologist, S.A.T. Surveys: geodesic survey and geophysics); Richard Haddlesey (archaeologist, University of Winchester: geophysics).

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