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| Institution: The University of Edinburgh |
| Unit of Assessment: 17 Archaeology |
| Title of case study: The Water Supply of Byzantine Constantinople |
| <p>1. Summary of the impact</p> <p>Research undertaken at the University of Edinburgh since 2007 on the Water Supply of Byzantine Constantinople, modern Istanbul, has led to impacts that include greater public awareness and understanding of the Byzantine past and its heritage for the city's visitors and residents. In a city of more than 15 million inhabitants water supply has always been of profound importance to its health and prosperity. This research has thus significantly influenced policy makers and NGOs actively engaged in developing the rural and urban environments of Europe's largest city, where environmental concerns have been at the heart of recent protests. These impacts have been achieved through various media, notably the curation of a public exhibition with more than 2500 visitors: <i>Waters for a Capital</i> in 2012-13 which was mounted at the Research Centre for Anatolian Civilizations (RCAC) in the centre of Istanbul.</p> |
| <p>2. Underpinning research</p> <p>Fieldwork in Thrace began in 1994 as the Anastasian Wall Project (initiated by Crow then at Newcastle University). Designed to document the outer defences of late antique Constantinople, it led to the study of the aqueducts located in the same region. After commencing work at the University of Edinburgh in 2007, Crow took forward this research and oversaw the publication of a monograph on the city's Water Supply System (Crow, Bardill & Bayliss 2008), recently described as constituting "an exciting new chapter in the history of the city" (Johnson <i>et al.</i> 2012 <i>Approaches to Byzantine architecture</i>, p.15).</p> <p>At the invitation of Derya Maktav (Professor of Remote Sensing, Istanbul Technical University), a successful collaborative application to TUBITAK (Turkish Science Foundation) in 2007 enabled the scope of this research to be extended by integrating archaeological survey with remote sensing and GIS, to provide enhanced mapping and a more robust database. This collaboration ensured better cartographic resolution, and a fuller understanding of the geographical setting and hydrological context of this elaborate supply system (this theme formed an important applied component of the public exhibition). As a direct result of the detailed knowledge of the archaeology of the regional water supply thus gained, it proved possible to use the Silivri area as a pilot study for the application of the technique of Historic Landscape Characterization (with funding from the AHRC: Crow & Turner 2009). This has produced a methodology which provides new ways of understanding historic landscape in Turkey and has direct relevance to the planning of a future new town west of Istanbul: Arnavutköy (5.4).</p> <p>Together, these research projects have achieved a far greater understanding of the construction and evolution of the hydraulic system and have thus made a key contribution to the fuller urban history of the late antique and medieval city.</p> |
| <p>3. References to the research</p> <p>Publications</p> <p>J. Crow, J. Bardill, & R. Bayliss 2008 <i>The Water Supply of Byzantine Constantinople</i>. London: Roman Society Monograph. (see REF2) (Turkish translation in preparation Koç University Press).</p> <p>D. Maktav, J. Crow, C. Kolay, B. Yegen, B. Onoz, F. Sunar, H. Coskun, H. Karadoğan, M. Cakan, I. Akar, C. Uysal, D. Güçlüer, B. Geze, & G. Ince, 2009 'Integration of RS and GIS for archaeological investigations', <i>International Journal of Remote Sensing</i>, 30 (7), 1663-75. DOI: 10.1080/01431160902909026</p> <p>J. Crow & S. Turner 2009 'Silivri and the Thracian hinterland of Istanbul: an historic landscape', <i>Anatolian Studies</i> 59, 167-81. (PDF available in JSTOR - http://www.jstor.org/stable/27896796)</p> <p>J. Crow 2012a 'Ruling the Waters: Managing the Water Supply of Constantinople, AD 330–1204"', <i>Water History</i> 4, 35-55 - Special Issue (ed. A. Wilson) on Water and Power in the Ancient World DOI 10.1007/s12685-012-0054-</p> |

J. Crow 2012b 'Water and Late Antique Constantinople: "It would be abominable for the inhabitants of this Beautiful City to be compelled to purchase water"' in, *Two Romes: Rome and Constantinople in Late Antiquity* (eds.) L. Grig and G. Kelly, New York OUP, 2012, 116-135. (PDF available from HEI)

Grants

The project has received major grants from Leverhulme Research Trust, British Institute at Ankara, British Academy and AHRC. Most recently we received grants from TUBITAK (Maktav PI, Crow Co-PI: totalling €100K), supplemented by a British Academy Small Grant of £7.5K to facilitate travel not funded by TUBITAK. The University of Edinburgh supported the development of the exhibition with a Knowledge Transfer Grant (£1.4K). Other costs of the exhibition were covered by RCAC and Koç Foundation.

4. Details of the impact

In order to enhance the impact of this research, Crow, in collaboration with Maktav, curated an exhibition of maps, photographs and video displays: *Water for a Capital*. This was held in Istanbul (8.11.2012-18.2.2013). This exhibition, sponsored by the Koç Foundation, was located in their research centre in the heart of the modern city (at RCAC on Istiklal Caddesi, a pedestrianised street in the centre of the city). The exhibition aimed to:

- create public awareness and improve understanding of the major monuments of the Roman and Byzantine water supply systems located both in the forests west of Istanbul and also extending throughout the old city;
- highlight the application of new technologies for the mapping and presentation of the ancient water supply systems;
- help to develop a wider understanding of the ancient and medieval cities and their legacies within the Ottoman and contemporary city;
- stimulate a programme of conservation to ensure the long-term preservation and display of the surviving monuments.

Over 200 people attended the exhibition opening. Alongside the exhibition, we were able to bring together planners and administrators from the two regional municipalities (Çatalca and Arnavutköy) where the remains of aqueducts and channels are best preserved (5.1). While the final results of these meetings are still not fully realised, we expect these contacts will significantly help to underpin the long-term conservation of the key monuments and archaeological remains. Specifically, these contacts are already helping us to pursue the investigation of the economic benefits of sustainable tourism in these forest zones (5.2, 5.5). The exhibition was complemented by a one-day workshop on its key themes; this was held on 12.11.2012. It was attended by 75 individuals, including local academics and conservation professionals as well as others from the US and several European countries; students and members of the public also took part (5.8).

Two key displays revealed the extent of the water supply channels. One was printed on the floor covering: visitors walked across this map to enter the exhibition hall. In addition to photographs and text panels, a four minute video illustrated the progress of the channels and aqueduct bridges towards the city. This was created by Tayfun Öner, designer of the very successful *Byzantium 1200* website; the video display was an engaging element in the exhibition. The exhibition received media coverage in *Hurriyet Daily News*, *Cumhuriyet*, *Cornucopia*, *The Mail on Sunday* and the *Times Higher*. It featured in leading popular Turkish magazines (*Atlas* and *Aktüel Arkeoloji*) and a 5 page coloured article appeared in TURSAB Magazine of the Association of Turkish Travel Agencies (5.2).

2593 visitors were recorded in the visitor book (5.6) over the 83 days the exhibition was open. The busiest period was the final three weeks with 702 visitors. Visits from student and school groups including Istanbul, Bilgi and Koç Universities were not recorded individually and are estimated to have brought a further 500 individuals to the exhibition.

In 2013, RCAC employed a consultant, Şeyda Çetin, to encourage other European and international venues to present this exhibition. An invitation has already been received from the

Cyprus Institute (Nicosia) and it is proposed to present the exhibition there in Autumn 2014.

The reach of the research beyond the exhibition can be demonstrated through publications and broadcasts on Turkish television and in the press (5.3). Maktav was invited to address Çatalca municipal council on the outcomes of our collaborative research; this was followed by numerous enquiries from school teachers about the aqueducts in their region. Crow has been invited to write a chapter on the Byzantine water supply for a new bilingual *Istanbul History*, to be published by TDV ISAM (Islam Research Centre)/ ISAM Publishers and Istanbul Metropolitan City Council (5.7).

Following a public lecture by Crow at Mainz RGZM (2011), a new cgi image featuring a main aqueduct bridge was commissioned for a major new exhibition on *Byzantium* at the Schallaburg in Austria (2012). The designer Tayfun Öner (<http://www.byzantium1200.com/>) went on to collaborate in this exhibition video and later participated in the RCAC exhibition.

A measure of the significance of our research on the historic landscapes near Silivri and the water supply of Thrace was the invitation in 2011 to contribute to a policy guide for landscape management and conservation on behalf of the new Arnavutköy municipality in Istanbul (5.4) and to request Crow's advice on the content and display of a new district museum at Hadımköy due to open in Spring 2014 (5.9).

In this way the research on the water supply and the Thracian landscape is directly contributing to the formulation of policies for the provision of water and to enrich public knowledge and awareness of the historic landscape and environment in one of Istanbul's new towns, a key concern as the city's population is anticipated to grow from 15 to 23m by 2025.

A further initiative is the proposal to include the aqueduct channels and bridges as part of the new Trakya'nun Yolu - *Thracian Way*, a cultural footpath in development following the success of the *Lycian Way*. This *Way* is supported by Çatalca Council and the Turkish Forestry Commission. In a separate initiative, this *Way* is also supported by the Turkish Ministry of Culture as a component of a network of new cultural paths right across Turkey; cognate recent projects include the *Evllya Celebi Way* initiated by Dr Caroline Finkel, Hon. Fellow in Archaeology at Edinburgh (5.5).

The 120 completed pages of the Visitor Book (5.6) offer a rich source of corroboration of the impact of our research via the Exhibition. Statements include (in translation):

"I'm living right next to the Alibey dam located next to the arches. I knew the aqueducts go up to the Sultanahmet district, but I never knew where they came from. My curiosity pushed me to visit the aqueducts of Belgrad and look through the tunnels. I could not find much information on other resources, until I visited the exhibition "Waters for a Capital". Thank you so much to everyone who contributed." Doğan Irmak 2/1/2013.

"To the Team of Waters for a Capital exhibition, As a personnel of Çatalca Municipality and with my identity as being a member and a citizen of the district, I would like to thank you very much for your diligent and arduous work for organizing such a great exhibition and to transfer information about Çatalca's historical heritage to future generations. I hope this study will lead to transmit Çatalca's historical background to many people in the future." Erhan Güzel, Deputy Mayor of Çatalca.

One 10-year old child wrote: "I really like this exhibition. I found the flow of water really interesting. It gives really nice information. Now I know the old peninsula really well".

5. Sources to corroborate the impact

Archived material available from <http://tinyurl.com/q9pdy8z>

5.1 Report in Çatalca local on-line paper, showing exhibition opening with mayor and local officials and curator. <http://www.haberdar.com.tr/gundem/catalca-su-kemerleri-ile-tanitiliyor-h16654.html> or archived at <http://tinyurl.com/q8dnwwu>

Report on exhibition from regional government website. <http://www.catalca.gov.tr/bir-baskentin-su-yollari-sergisine-catalcadan-yogun-katilim.html> or archived at <http://tinyurl.com/pmr3bft>

5.2 <http://tinyurl.com/n8am65e> View of exhibits from RCAC website

<http://rcac.ku.edu.tr/events/exhibitions/watersforacapital> or archive at <http://tinyurl.com/n8am65e>
 5.2 Article in *Aktuel Arkeoloji* 2013, 1, p.42-43.PDF; in TURSAB Magazine, Association of Turkish Travel Agencies Jan 2013, issue 331, pp. 50-55. "It is a must-see exhibition". TURSAB bi-lingual account of aqueducts and archaeology of region

<http://www.tursab.org.tr/flip/dergi/sayi/80/tr/default.html> or archived at <http://tinyurl.com/nfcn573>

Hurriyet Dailynews English-language account of exhibition <http://tinyurl.com/qbdxvlz> or archived at <http://tinyurl.com/qbdxvlz>

Notice of exhibition with photo of exhibition panel from on-line newsletter <http://tinyurl.com/njkzpon> or archived at <http://tinyurl.com/pb5labh>

5.3 Two-page article in Hurriyet Pazar main Turkish national Sunday paper, 19/12/10 concerned with extraordinary length of system, the application of remote sensing technologies and with photographs of joint fieldwork with villagers during winter 2010.

"İstanbul'un Tarihi Su Yolları Haritalandı" interview with Prof Maktav in *XYZ Dergi* (August 2011) 14-21 Turkish Professional Geomatics Magazine, this project featured on the front cover.

<http://tinyurl.com/oh3phs6> or archived at <http://tinyurl.com/nb32few>

5.4 A. Aksoy, ed (2012). *Sürdürülebilir Kent Yapmak Arnavutköy İlçesi Yaklaşımı/Making a Sustainable City The Arnavutköy Approach* Arnavutköy Belediyesi (Municipality). (PDF available on request from HEI)

5.5 See e-mail from Çatalca Council Director of Tourism and Culture (11/7/13) (PDF available on request from HEI)

5.6 The Visitor Book (digitised pages are available for the sections quoted available as PDF on request from HEI).

Persons

5.7 Professor of Remote Sensing, Istanbul Technical University; see e-mail from Islam Research Centre (available on request from HEI).

5.8 Contact Director of RCAC, Istanbul.

See e-mail from archaeologist, İstanbul Metropolitan Municipality (PDF available on request from HEI)

5.9 Hadımköy Museum Consultant, İstanbul Bilgi University

Contact details and non-factual statements available on request from HEI.