PROJECT REPORTS

CAMEL
CENTER FOR ANCIENT MIDDLE EASTERN LANDSCAPES

http://oi.uchicago.edu/research/camel

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CAMEL has become instrumental in facilitating access for people within the Institute and around the world to various spatial technologies and an ever-expanding corpus of digital collections of maps, aerial photos, and satellite images pertaining to the Near East. Both the numbers of users and the numbers of geospatial data sources housed within the CAMEL digital collections continued to expand during 2007–2008. At the same time, the dedicated CAMEL staff and volunteers have continued to work through the tedious yet critical task of cataloging the over 3,000 new sources of data created or acquired this year and expanding the CAMEL database to facilitate searches of the massive collection.

A majority of the new data sources this year were from the completion of the scanning of the over 3,700 maps held within the map collections of the Research Archives (fig. 1). The large-format scanner and plotter acquired through a Provost's Program for Academic Technology Innovation (ATI) grant was critical to this process, as described in the 2006–2007 *Annual Report*, allowing CAMEL personnel to scan most of the large maps as a single document. However, the scanning of these maps, many of which are difficult to find elsewhere, was only a portion of the overall effort. Once scanned, research often had to be conducted in order to discover missing information about

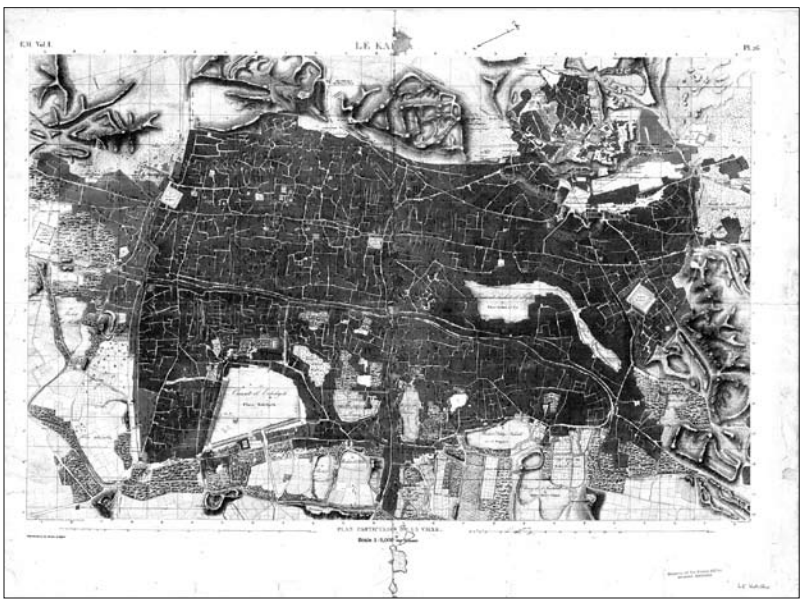

Figure 1. This 1829 map of Cairo is one of the earliest maps in CAMEL's holdings. It was produced during Napoleon's 1798 to 1801 expedition to Egypt. It shows the plans of neighborhoods and streets of the city as they existed in the early nineteenth century, information that cannot be found on more modern maps and satellite images

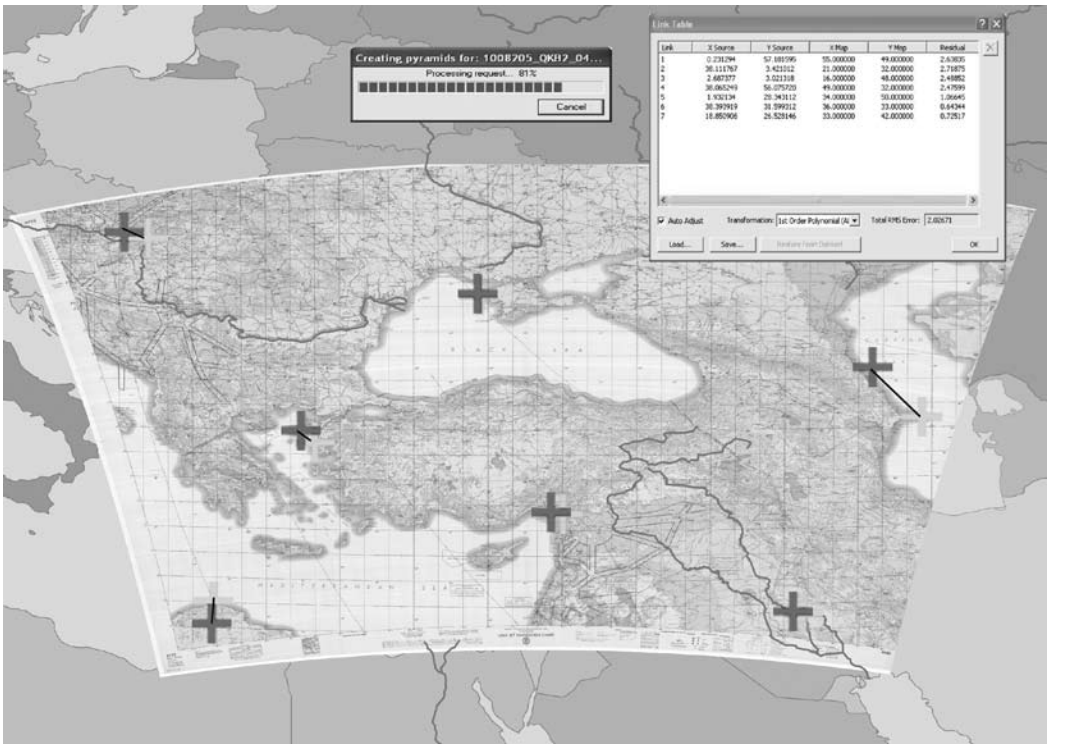

Figure 2. The process of georectification assigns real-world geographic coordinates to a digital image. Here, a CAMEL volunteer has assigned control points — points for which a real-world coordinate can be assigned (marked with a cross) — to georectify a scan of one of the maps in the CAMEL digital collection. The process often warps the original scan, but warps it in such a way that all the locations on the map are at their proper real-world coordinates

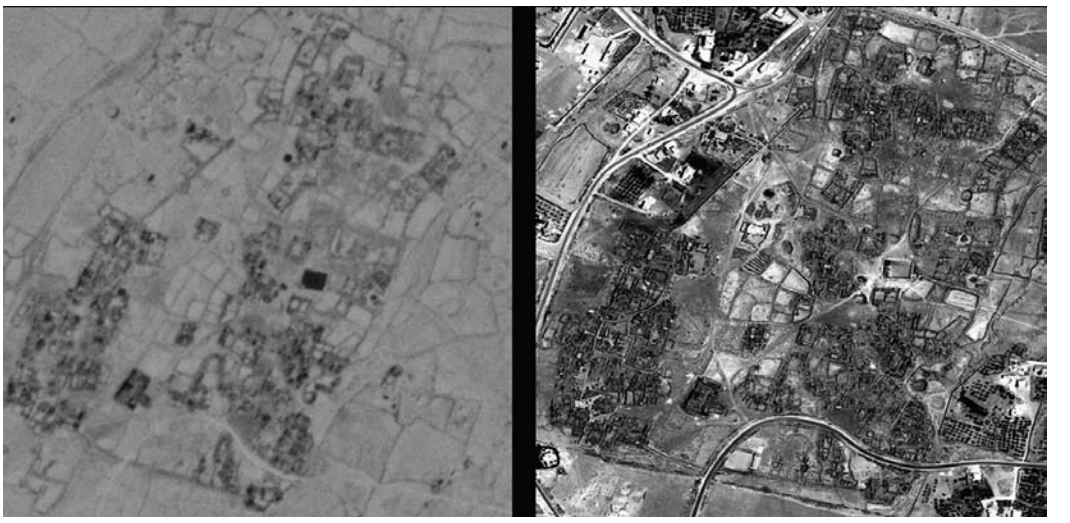

Figure 3. Images of the extensive standing basalt architecture at the Roman/Byzantine site of Umm el-Jimal in northern Jordan. On the left is an image of the site taken by a Corona KH-4B spy satellite in 1970, and on the right the same location as taken in 2003 by the Digital Globe Quickbird 2 satellite. Both the relative sharpness of these two high-resolution satellite images and the changes during the intervening decades can be noted in this comparison

each map and map series for the cataloging process. In addition, each map is being georectified by CAMEL personnel. Georectification is a process by which the map has its coordinates on the surface of the earth digitally encoded within the data file (fig. 2). This allows the digital overlay of different maps of the same area for comparison, as well as the overlay of other forms of geospatial data within Geographic Information System (GIS) software. Over half of the maps from the Research Archives have been georectified this year with the remainder to be completed within the next year.

A second major area of ongoing work within the CAMEL digital collections was the georectification of the 1,111 declassified U.S. spy satellite images. Over half these images were acquired last year through a grant from the Women's Board of the University of Chicago. The georectification of these data sources is an important ongoing project that will take several years to complete. Going hand in hand with these georectifications of spy satellite images from the 1960s through 1980s are the digitization and georectification of even earlier aerial photographs taken by Institute researchers from the 1920s on.

The acquisition of additional high-resolution commercial Quickbird satellite imagery was a final area of expansion among the CAMEL digital collections. Thirty images were acquired through the generosity of an ATI grant, while additional images were acquired through CAMEL on behalf of individuals and projects (fig. 3). Once again, CAMEL was also involved in a special tasking of the Quickbird satellite in order to acquire new imagery from the satellite in real time. In this case, the tasking was for the site of Umma in Iraq in support of the Museum's special exhibit, Catastrophe! The Looting and Destruction of Iraq's Past (fig. 4).

Figure 4. Recent developments in Iraq have left a number of archaeological sites vulnerable to damage and looting. Recent satellite images can help to quantify the damage that is occurring. This high-resolution Digital Globe Quickbird image of Umma (Tell Jokha) was acquired by the satellite on July 8, 2008, at the request of CAMEL for the special exhibit Catastrophe! The Looting and Destruction of Iraq's Past. It shows the systematic looting that has left a lunar landscape pocked by hundreds of pits interspersed throughout the late third-millennium remains. This image is being compared with an earlier satellite image taken in 2003 to assess what damage has taken place since that time

The requests for data and information that CAMEL received continued to increase to over sixty from around the world during 2007–2008. This is in addition to the scores of requests from within the Institute for use of the facilities, expertise, and specialized equipment that CAMEL provides. CAMEL also continues to support the teaching and research of students, individuals, and Institute project personnel through formal coursework and individualized training. This includes the Museum Education course taught by CAMEL Associate Director Joshua Trampier, "Spying on the Ancients," in fall 2007. In spring 2008 CAMEL also had the pleasure of hosting its very first Visiting Scholar, Jessie Birkett-Rees, an advanced doctoral student from the University of Melbourne in Australia.

Not all CAMEL's work was focused on the Near East. Some work was a bit closer to home, as CAMEL also provided expertise, data, and equipment in support of the College of the University of Chicago's archaeological field school at the site of the 1893 World's Columbian Exposition in Jackson Park. This excavation, led by Rebecca Graff, used Quickbird imagery provided by CAMEL along with a georectified map of the famous "White City" exposition buildings in a Global Positioning System (GPS)-enabled tablet PC in much the same way as was pioneered earlier in the year at Kerkenes Dağ in Turkey. In this case, however, CAMEL personnel used the tablet PC to locate many of the footprints of the exposition structures and pavilions in the grass and trees of Jackson Park (fig. 5). This information was then used to situate the excavations that have been ongoing there throughout portions of the year.

Figure 5. CAMEL personnel assisting Rebecca Graff and team members at the University of Chicago's archaeological field school in Jackson Park, the site of the 1893 World's Columbian Exposition. Using Digital Globe Quickbird data from CAMEL's collections and a georectified map of the exposition's buildings, the team used a GPS-enabled tablet PC to find the locations of the buildings behind the Museum of Science and Industry

CAMEL could not exist without our staff and volunteers who give of their time to make all these projects possible. During this year Joshua Trampier served as Associate Director and Robert Tate as Assistant Director of CAMEL. Elise MacArthur and Susan Penacho were our Senior Supervisors. Lori Calabria, Joseph Phillips, Joel Wright, Ndah Somdah, and Bryan Kraemer were Student Assistants. Our volunteers for 2007–2008 were: Alex Apostal, Alex Elwyn, Alex Muir, Alphonse Lembo, Deborah Friedrich, Gaby Cohen, Harold Sanders, Jim Boves, Julie Malakie, Kathryn Stanhagen, Larry Lissak, Marc Block, and Ronald Wideman. I would also like to personally thank all those who have donated financially or in contributions of data to the continued work of CAMEL throughout this year.