

GLEN DASH FOUNDATION SURVEY: Data for First Accurate Archaeological Map of the Giza Plateau

The 2012 Glen Dash Foundation Survey took AERA back to its beginnings: the Giza Plateau Mapping Project, launched by Mark Lehner and David Goodman in 1984 to create an accurate map of the natural and man-made features of the entire Giza Plateau. Despite the intense interest in the pyramids over the centuries, no one had yet produced a good topographic map that showed the precise locations of the pyramids and other monuments at Giza.

Mark and David laid the groundwork for the map with a survey control network. But the map was never completed—more urgent projects demanded our attention. Thanks to the Glen Dash Foundation, the GDFS picked up where Mark and David left off. During Season 2012 the GDFS team collected much of the data needed to finally create the map.

The Local Grid

Mark and David began the Giza Plateau map by setting up a local grid that would be used to fix any point around the plateau with respect to any other. David based his grid on 11 primary control stations—chosen in part for their clear sight

Mohamed Abd el-Basat, Mark Lehner, and Mohsen Kamel search for traces of the Khafre Causeway in order for members of the Glen Dash Foundation Survey to map it.

lines—which formed a 5.4-kilometer (3.4-mile) loop around the plateau. The loop “closed” to one part in 326,762, meaning that we would be able to establish the location of any point on or near the plateau to within one centimeter. David also established 32 secondary control points. Once the grid was established, we could have quickly mapped the exact location of Giza’s pyramids, temples, causeways, and mastabas. But our attention shifted to excavation.

Excavations

In 1988 AERA began excavations in an area south of the Sphinx and discovered the previously unknown settlement of the pyramid builders, Heit el-Ghurab (aka the Lost City). This site was too important to not give it our full attention. For the first time we had the footprint of monument-building operations at Giza; the archaeological remains captured the “neural circuitry” of the organization that went into marshaling and coordinating manpower and resources to build the Giza pyramids. We had a window onto the development of ancient Egyptian bureaucracy, one of the world’s first states. But it could be lost if we did not act quickly; the Heit el-Ghurab site was threatened by the ever-expanding metropolis on the east, the tourist trade, and a rising water table underneath. It called for immediate and sustained salvage work. In 2005 we expanded our excavations west to the nearby 4th Dynasty Khentkawes Town site, which was rapidly eroding,



and in 2007 began work in the adjacent Menkaure Valley Temple.

So, as of 2011, we still had no accurate archaeological map of the Giza Plateau. We could not even answer the most oft asked question—where, exactly, are the Pyramids? In 2012 the Glen Dash Foundation Survey took up the challenge of finally answering those questions and gathering the data to complete the map.

The Survey

Beginning in February, Mark Lehner and the survey team reconnoitered each major pyramid, temple, causeway, and tomb to decide where best to take survey points on what we believe to be the original builders' lines. It was clear we would have our difficulties. After 4,500 years and millions of tourists, there is hardly a well defined edge or corner left at Giza. The 4th Dynasty tomb of Akhethetep and Meretites in the cemetery east of the Great Pyramid was a case in point. While maps of Giza show the tomb as a rectangular feature with well-defined walls, in fact nothing of its corners and few of its lines remain. To establish the tomb's true location on our maps, the best we would be able to do would be to take as many survey points around its periphery as possible, and then stitch them together by eye or by way of a statistical analysis.

The Great Pyramid itself was another example. Despite 200 years of archaeological scrutiny, we still do not know precisely its dimensions or the locations of its corners. Like

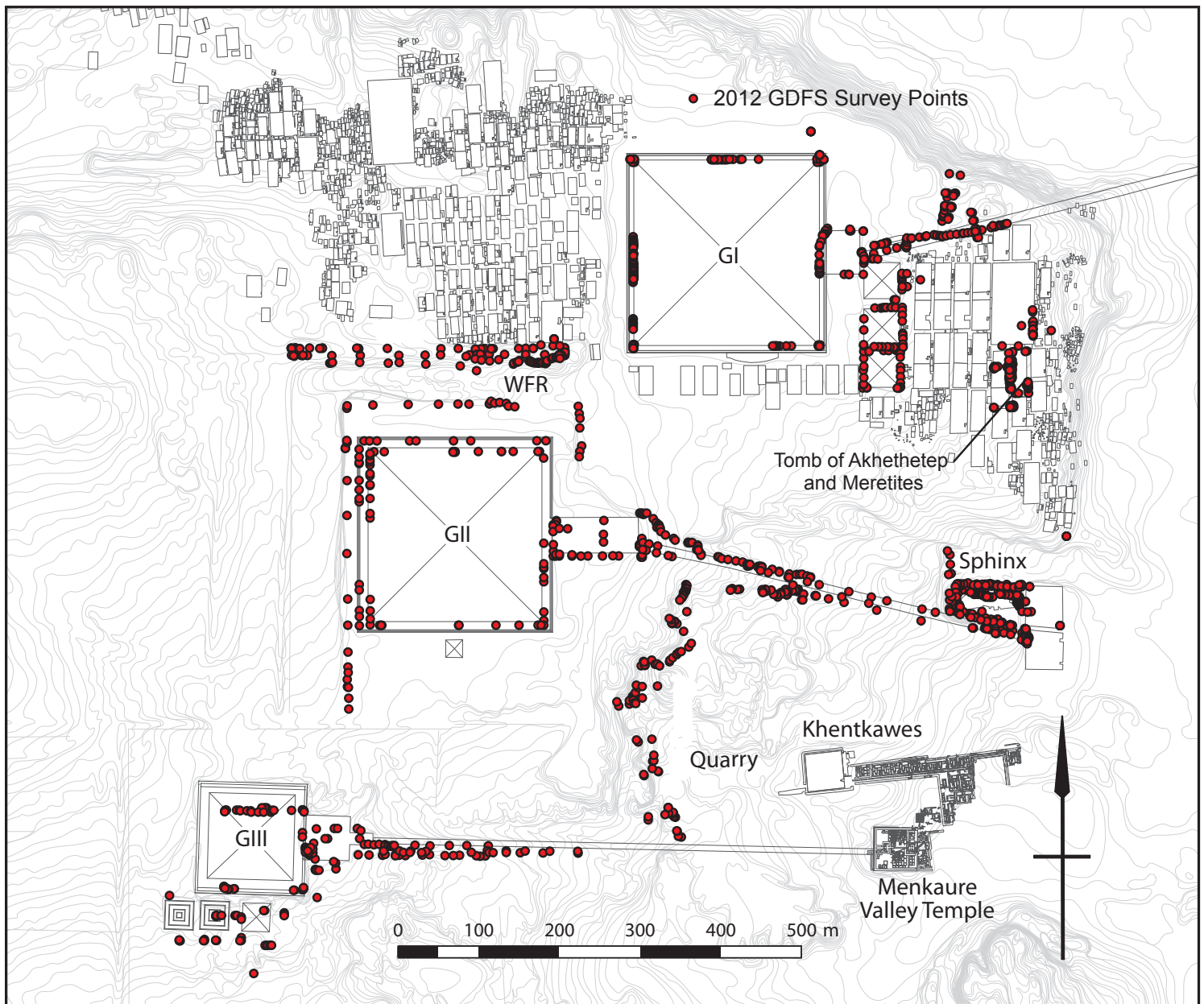


Top: Mohamed Abd el-Basat, Field School surveyor, sets up the reflector rod, while Giza survey trainee Mohamed Helmy Abd el-Halim, takes notes on the location of the survey point.

Middle: Amr Zakaria, survey graduate from the first Advanced Field School in 2006, and Giza trainee Mohamed Helmy Abd el-Halim, set up the total station on top of the southernmost pyramid of Khufu's Queens.

Bottom: Survey team members Becky, Glen, and Joan Dash pose in front of the Great Pyramid. They joined the survey in the third week of February.





Survey points taken by the 2012 Glen Dash Foundation Survey Project, shown in red. The 2012 survey reveals a need to shift southward the Menkaure Pyramid (GIII), temple, and causeway. WFR stands for Western Field Ramp, an ancient construction embankment along an unfinished colossal stone wall. Map prepared by Rebekah Miracle, AERA GIS.

the tomb of Akhethetep and Meretites, little of its outer casing survives. Here again, the best we could do was map as many points along its periphery as possible. Then we could project its original lines and corners by extrapolation.

As the survey team subsequently carried out the survey, they gave each point a number and documented it with a photograph, description, and date. They sketched each corner and wrote notes on where and why they took particular points.

This process would be repeated more than 200 times around the Great Pyramid and more than 1600 times as we worked our way across the plateau. The map above shows all the points the survey team measured. In most cases, Giza's monuments were about where we expected them to be. However, our new data gives us their exact location whereas before

we only knew their approximate positions. In a few cases, we were surprised by our findings. For example, our best available maps placed the Menkaure pyramid more than 20 meters (65.6 feet!) from its true location.

Despite the many points the team surveyed, they were unable to gather all the data needed to complete the map. They will resume next field season and finish the project. When all the survey data is entered into the AERA Geographical Information System, it will be used to produce new maps of Giza with unprecedented accuracy. These maps will be a great boon to Egyptologists and archaeologists as well as nonprofessionals interested in Giza. We are sure they will affect theories based on pyramid alignments.