



# Preserving an African Legacy

by Michelle Dye

There's a spectacular mountain range linking South Africa and Lesotho that is known in some quarters as the Drakensberg, 'dragon mountain', and by Bantu-speakers as uKhahlamba, 'the row of upward-pointing spears'. But it is the San people who left the greatest legacy in these mountains: a treasure trove of priceless art. The San people lived in the uKhahlamba Drakensberg range for about 4000 years, during which

time they adorned more than 600 known sites with 40,000 individual paintings, the largest and most concentrated collection of rock art in sub-Saharan Africa. The paintings are outstanding in their quality. Their diversity of subject and their exquisite depiction of animals and human beings and their world-wide significance contributed to the uKhahlamba Drakensberg Park being listed as a UNESCO World Heritage Site in 2000. Leica Geosystems' cutting-edge HDS technology is helping to preserve this legacy.

At one of the rock art sites scanned by the project, a red-and-white eland is painted below a mythical figure with human, antelope and praying mantid features. Archaeologist Vicky Nardell says, "The feathered white lines emerging from the top of the figure may be seen as lines of energy or supernatural power. The simple lines connecting the figure and the eland probably signify the complex relationships between San shamans and 'potent' animals, like the eland. Below the antelope, several human figures are dancing."



Without doubt the finest and most accomplished rock artists in the land, the San painters worked in exceptional detail and with an extensive color palette. For paint they used a mixture of red and yellow ochre, charcoal, manganese oxide and clay, which was bound together with blood, fat, plant extract or egg; their brushes were feathers, animal hairs or grass stems. It is rare to see poor art in the Drakensberg, which suggests that not just anyone had the right to paint on the rock walls. These were sacred places, reserved for the masters to record deeply meaningful statements. The paintings depict hunting, dancing, fighting, food gathering and ritual or trance scenes of hunting or rainmaking. The animal that appears most often is the eland – the San not only relied on the large antelope for meat, but believed its blood and fat had a mystical potency.

Unfortunately much of the rock art has been damaged by vandalism, fire, encroaching vegetation and natural weathering. Exposed to the elements, the fragile paintings are gradually deteriorating as time passes. As it is not possible to restore them, it is of the utmost importance to digitally preserve the art so that the San legacy will not be lost. The University of KwaZulu-Natal and the African Conservation Trust have just completed a three-year project to create the first digitized archive of the San rock art in uKahlamba Drakensberg. It was a great success: more than 500 rock shelters and caves were documented and their condition assessed, and focused exploration led to the discovery of no fewer than 80 new sites. 3D laser scanning was used to create a

permanent, millimeter-accurate record of the paintings so that future generations will still be able to appreciate them.

Multiple scans were taken all around the rock shelters so the scanner could "see" the art from all angles. Millions of 3D points are initially displayed on a computer as a point cloud so dense it looks like a solid surface. The scans from each station are then stitched together to form a single point cloud of the whole site. Digital photographs taken from each scanner position are used to color the point cloud, transforming the yellow and orange raw scan data into a real-color computer model.

A virtual tour, a 360-degree digital 3D video, 3D terrain modeling and GPS plotting complete the technology package for each site. And GIS web-based mapping systems was then produced for the project as a whole. The extensive collection of data is housed at the KwaZulu-Natal Museum and shared with the province's heritage agency, Amafa aKwaZulu-Natali, and Ezemvelo KZN Wildlife, which manages the World Heritage Site. ■

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