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## **DOUGLAS PRESTON**



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Elkins and his partners teamed up with the Forbes family descendants who still had possession of the papers, and they began making plans to recover the treasure. Because the island, now a national park, had changed greatly over the years, many landmarks were gone. Elkins was keen to try out the latest technological advances in the remote sensing of metal buried under the ground. He and his partners spent years trying to raise money and obtain the necessary permits from the government of Costa Rica, which owns the island, but the project collapsed before reaching the point of an actual expedition. The treasure, if there, presumably remains undiscovered.

It was now 2010. Steve Elkins, at fifty-nine years old, had spent the last twenty years of his life and many thousands of dollars trying to solve two of the world's most enduring mysteries and he had nothing to show for it.

And then, in that same discouraging year, Elkins read an article in *Archaeology* magazine entitled "Lasers in the Jungle." The article described a powerful technology called lidar, or Light Detection and Ranging, which had just been used to map the Maya city of Caracol, in Belize. The lidar mapping of Caracol was a watershed moment in archaeology. The article electrified him: He realized he might finally have the tool he needed to locate Ciudad Blanca.

Explorers had discovered Caracol in the 1930s and realized it was one of the largest cities in the Maya realm. The article told the story of how, in the 1980s, the husband and wife team of Arlen and Diane Chase had begun the daunting project of mapping Caracol and its environs. For twenty-five years, the Chases and teams of assistants and students tramped through the rainforest, recording and measuring every wall, rock, cave, terrace, road, tomb, and structure they could find. By 2009 they had created some of the most detailed maps ever made of a Maya city.

But over the years of work, the Chases felt continually frustrated. The city was enormous, and they always had the uneasy sense there was a great deal they weren't finding, due to the thickness of the jungle and the struggle and dangers of mapping in such an environment. "We cut paths with machetes," they wrote, "scramble through thick underbrush, and wonder what we might be missing." They longed for a better way to map the city without, they said, "spending another twenty-five years in the field."

And so they turned to a new tool: lidar. Although lidar had been used for mapping the moon's surface and doing large-scale terrestrial charting, only in the previous decade had it gained the resolution necessary to resolve fine-scale archaeological features. It had been used to map the ruins of Copán after the hurricane, but that was about the extent of its use in Central America. The Chases joined forces with NASA and the National Center for Airborne Laser Mapping (NCALM) at the University of Houston to map Caracol using airborne lidar, a technology many times more powerful than the radar and satellite data available to Blom. The best ground resolution Blom could obtain in the mid-nineties was about ninety feet; lidar promised a resolution of better than three feet even under the forest canopy.

NCALM owned a small Cessna Skymaster that had had its guts ripped out to carry a big green box containing the million-dollar lidar machine. A pilot trained in lidar missions flew the aircraft from Houston to Belize, where he was joined by three mapping engineers. The team flew five missions over Caracol and its environs, scanning the rainforest with lasers, a process that took a little over a week.

When the images came back, the Chases were floored. "Seemingly without effort," they wrote, "the system produced

a detailed view of nearly eighty square miles—only 13 percent of which had previously been mapped—revealing topography, ancient structures, causeways, and agricultural terraces," as well as caves, terracing, buildings, tombs—tens of thousands of archaeological features that their ground-mapping had missed. In five days, lidar had accomplished seven times more than the Chases had achieved in twenty-five years.

Their paper declared lidar a "scientific revolution," and an "archaeological paradigm shift." It was, they said, the greatest archaeological advance since carbon-14 dating.