Laser Scanning of Historic Buildings – Part Two
by Bob Primak, for the Lexington Technology Users Group
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Continuing to the end of my talk about the use of laser scanning and computers to develop 3D images of historic buildings:

Other buildings which have been scanned to look into possible structural flaws. St. Paul's Cathedral, London. This building had issues related to the underlying soil and subsoil since it was first constructed. Architect Christopher Wren realized he had made a mistake when he decided where to build the cathedral. As a result, he made corrections during construction to compensate for the walls sinking unevenly into the clay subsoil of the area. So how well did he do, and how well has the building held up ever since?

First, the most recent scanning of St. Paul's with lasers.

Secrets of the Stones | Time Scanners: St. Paul's Cathedral
https://mass.pbslearningmedia.org/resource/6dcfe6a4-8d44-45b1-acc5-513408988508/secrets-of-the-stones-time-scanners-st-paul_s-cathedral/
(7 mins. video showing use of lasers to measure how far out of level the walls of St. Paul's ended up being.)There are links to other segments of the show, which cover how St. Paul's survived the London Blitz bombings during WW II and other aspects of the building's long history, told through the eyes of the laser scanning crew.

Just for comparison, I found an article about how folks used to do these surveys, and how difficult and demanding the measurements were, before advanced techniques like LiDAR and 3D reconstruction modeling were available. The survey referenced happened in the 1920s and took several years to complete. (Compare with just weeks, sometimes only days, for a modern laser survey to be conducted.)

Surveying equipment that saved St Paul's
Cathedral in the 1920s, research by Jane Insley, November 2013.
Edited for the website by Jagraj Gill.
https://www.stpauls.co.uk/history-collections/the-collections/object-collection/saving-st-pauls
The work of the 1921 commission (final report issued in 1925). Summary of a book on the subject.

This collection shows how things were done in the days before laser scanning methods. It was a lot more complicated in many ways, and the amount of precision needed was very demanding of the human engineers who did this work. They realized even then that the building was sitting on unstable ground and was leaning to one side.

An Exclusive Look Inside the Recovery Efforts to Save Notre Dame

https://time.com/longform/inside-notre-dame-exclusive-photos/

(continues)

Notre Dame Will Probably Look Exactly Like It Used To

https://www.popularmechanics.com/culture/a27633796/notre-dame-restoration/

Further discussion and questions and answers.

- Bob Primak - Sept. 11, 2019 -