



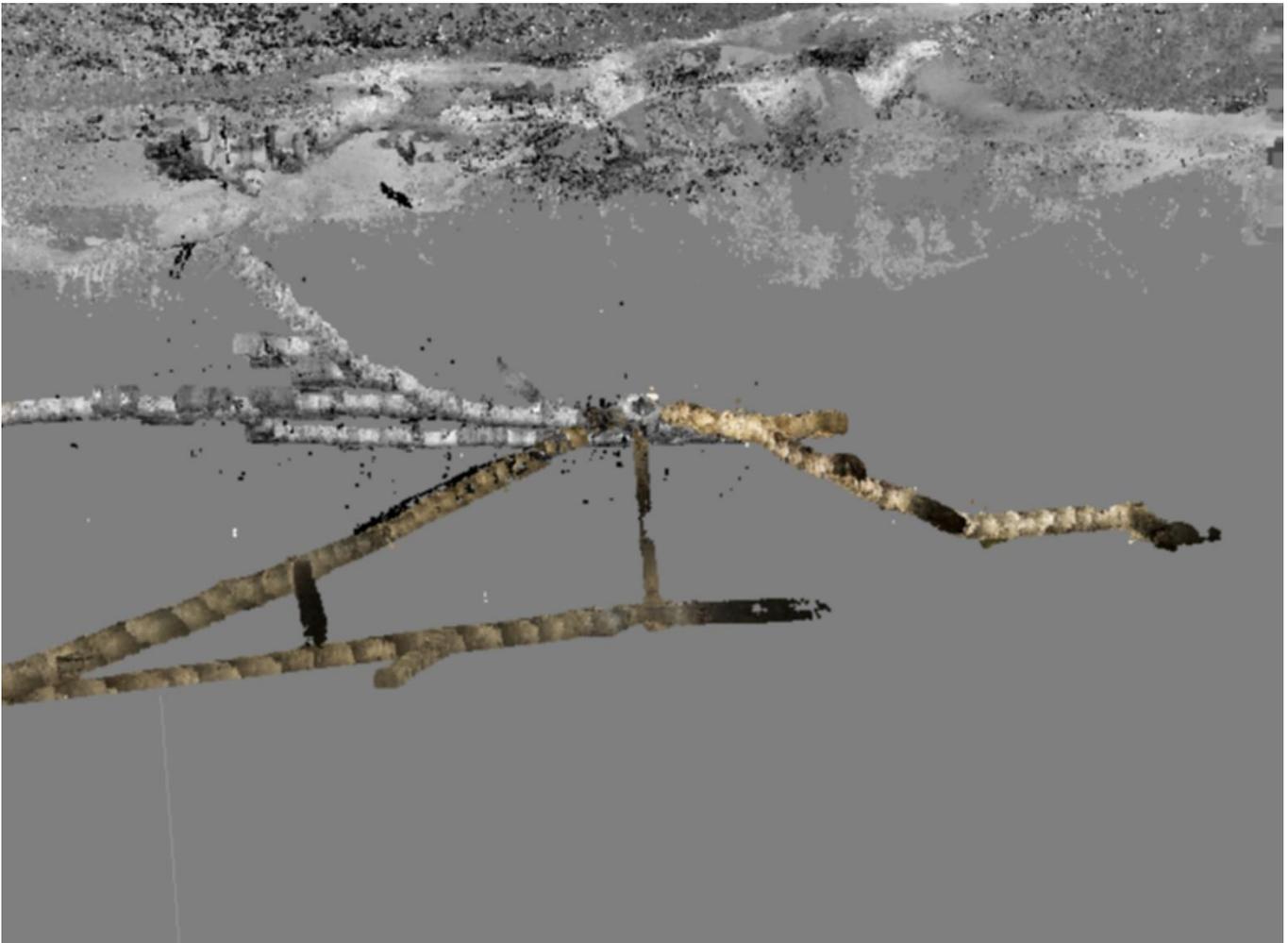
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ACCESSING THE PAST THROUGH VIRTUAL REALITY:

First World War landscapes

Todd Ogle, David Hicks, Thomas Tucker

Executive Director, Applied Research in Immersive Environments and Simulations
Professor, Curriculum and Instruction, [Virginia Tech](#)



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Mae'r ddogfen hon hefyd ar gael yn y Gymraeg | This document is also available in Welsh.

This paper describes, through two case-studies, the research and educational outreach emerging from our work in visualizing the past within the fields of archaeology and history using immersive technologies. The Virginia Tech team's work with our international partners integrates laser scanning, photogrammetry, ground-penetrating radar and 360-degree video to produce high-fidelity immersive experiences (virtual or augmented reality) for use within formal and informal learning environments (from schools to museums, and on archaeological and historic sites). These experiences: (1) allow for in-situ data collection and analysis; (2) introduce disciplinary and procedural ways of thinking; and (3) engage learners in archeo-inquiries through the compelling question, "If this Place Could Talk what would it tell us ... ?"

Our case studies illustrate our work at the hill of Vauquois in France and as part of the Dig Hill 80 project in Belgium, both part of the story of World War I. We will share various products of our work which have been used to support teaching and learning in both informal learning spaces including museums and formal learning spaces including classrooms and VR labs in both middle and high school settings.

We are developing an environment which will contribute to both the field work and post-excavation phases of archaeology, connecting to and drawing together potentially relevant ethnohistoric data from archival records, photos, models of artifacts, prior publications and reports for in-virtuo analysis of corroborating evidence and the results of fieldwork that can be rapidly identified and presented to the archaeologist for analysis and interpretation of a site and its artifacts, as well as creating rich experiences for outreach and education. The system will enable more reflexive archaeological practices wherein both field- and lab-based scientists are in close and regular collaboration via the immersive environment. As part of our presentation, our prototype environment will be demonstrated.



Biography

Todd Ogle is the Executive Director of the Applied Research in Immersive Environments and Simulations program and in the University Libraries at Virginia Tech. Additionally, he is an associate director for Immersive Experiences in the Center for Human-Computer Interaction at Virginia Tech and holds affiliate assistant professor appointments in the Department of Computer Science and in the Learning Sciences and Technologies program of the Virginia Tech School of Education. His research investigates the extent to which situational context provided through immersive experiences can help learners visualize and understand the past, the hidden present or future, concepts, or patterns.

David Hicks is Professor of Curriculum and Instruction in the School of Education at Virginia Tech, affiliate faculty of learning sciences and technologies in the School of Education and a member of the Center for Human Computer Interaction at Virginia Tech. He has expertise in instructional design within immersive environments, and a broad background in curriculum and instruction, the learning sciences, and human computer interaction to support designing scaffolds to facilitate learning/training within and across formal and informal spaces.

Thomas Tucker received his BFA from Kansas City Art Institute and his MFA from School of the Art Institute of Chicago where he was a Joan Mitchell MFA grant recipient. He has been evolving complex drawings into animation/kinetic sculptural pieces using 3D software and sound design for over a decade. Maintaining an international profile through his exhibitions and collaborative research often takes him to Japan and the Middle East. This includes: dealing with body mechanics using motion capture, using technology to create a responsive virtual heritage environment, using animation to describe internal organ movements, visualizing new traffic simulations and designing serious games.

