Technology and the American Civil War

April 12, 2014

Georgia Institute of Technology
Student Center Theatre and Piedmont Room
Atlanta, Georgia
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Civil War Round Table of Atlanta
Georgia Battlefields Association

The Symposium is supported by the
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Cover Photograph by George Barnard
View to the east from Fort X on the site of the Georgia Tech Habersham Bldg., 1864
Courtesy of the Library of Congress, Prints and Photographs Civil War Collection
PROGRAM

8:30  Registration and Continental Breakfast

Session 1: Field Operations and Communications
Moderator: John Miller (Georgia Tech)

9:15  Welcome and Introduction (Seymour E. Goodman)

9:30  Seymour E. Goodman (Georgia Tech)
Technology and the Conduct of the American Civil War

10:00  Ken Johnston (National Civil War Naval Museum, Port Columbus)
Inventing a New Navy

10:30  David Vaughan (Civil War Round Table of Atlanta/Vaughan Estate Sales)
Photography during the Civil War: Innocence Exposed

11:00  Discussion
11:15  Coffee break

Session 2: Medical Technologies and Treatments
Moderator: John Tone (Georgia Tech)

11:30  Shauna Devine (Western University, Ontario)
Photographing Medicine: Clinical Photography, Photomicrography, and the Development of New Investigative Techniques during the American Civil War

12:00  Mary-Elizabeth Ellard (Georgia Battlefields Association)
A Sorrowful War: Veterinary Medicine during the War of the Rebellion

12:30  Discussion
12:45  Lunch break
Artifact Display (Piedmont Room)

1:15  *Informal discussion of artifacts*

1:45  Coffee break

Panel Discussion: Artifacts of the Industrial Revolution:
Curating Civil War Technology
Moderator: Laura Hollengreen (Georgia Tech)

2:00  Gordon Jones (Atlanta History Center)

2:10  Ken Johnston/Jeff Seymour (National Civil War Naval Museum)

2:20  David Vaughan (Civil War Round Table of Atlanta)

2:30  Discussion

2:55  Conclusion

Walking Tour

3:00  Charlie Crawford (Georgia Battlefields Association)

*The Georgia Tech Campus in 1864*
Session 1: Field Operations and Communications

Moderator: John Miller (Georgia Institute of Technology)

Biography: John is a retired civil engineer and US Navy officer. He was awarded the Bronze Star Medal for service in Operation Iraqi Freedom. In 1975 he received his Bachelor in Civil Engineering degree and in 1976 his Master of Science in Civil Engineering degree, both from Georgia Tech. In 2011 he received his Master of Science degree in the History and Sociology of Technology and Science. His current studies include researching the use of the electro-mechanical telegraph as a revolution in military affairs and major command and control element in the Confederacy during the American Civil War.

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Seymour E. Goodman (Georgia Institute of Technology)

Technology and the conduct of the American Civil War

Abstract: A compact overview of how technology-based infrastructures were used to mobilize the economies of both sides and to conduct this large-scale war over four years. Both strategic and tactical uses will be discussed, along with why some of the wide range of technologies available at that time had great impact while others did not. Technologies to be considered, as both products and processes, include railroads, five different kinds of telegraphs, several optical technologies, a spectrum of the uses of steam engines, weapons and ammunition, metals, medical and manufacturing technologies, printing, balloons, cartography, command and control.

Biography: Seymour (Sy) Goodman is Professor of International Affairs and Computing at the Sam Nunn School of International Affairs and the College of Computing at the Georgia Institute of Technology. He serves as Co-Director of the Center for International Strategy, Technology, and Policy and Co-Director of the Georgia Tech Information Security Center. Professor Goodman has over 150 publications on international developments in information technologies and related public policy issues. More than a dozen funders have sponsored his work, including the National Science Foundation, the MacArthur Foundation, and the Departments of Energy, Homeland Security, and Defense. He recently served as Chair of the Committee on Improving Cybersecurity Research in the United States and is currently a member of the Computer Science and Telecommunications Board of the National Research Council of the National Academies of Science and Technology.
Professor Goodman is interested in case studies of how scientists and engineers work in the context of intense national security pressures, and the roles of science and technology in large-scale conflicts including the American Civil War, World War II, the Cold War, and more recent conflicts. Prof. Goodman was an undergraduate at Columbia University and obtained his PhD from the California Institute of Technology.

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Ken Johnston (National Civil War Naval Museum, Port Columbus)  
*Inventing a New Navy*

Abstract: This multi-media presentation centers on technological innovations and new uses of technologies afloat and ashore during the American Civil War. The US Navy of the 21st Century features ships with hybrid propulsion technology, composite armor, and stealth design—as did the 19th Century Navies of the American Civil War. The National Civil War Naval Museum presents a look at inventions and advancements in the navies of both North and South during the Civil War at large, with a special focus on Naval engineering as practiced here in Georgia. We’ll explore the little known and sometimes surprising antecedents of nautical technology in areas as diverse as nocturnal operations, photocopying, submarine warfare, and aircraft carriers, just to name a few.

Biography: Ken Johnston is currently the Executive Director and Director of Programs and Education at the National Civil War Naval Museum, telling the stories of sailors, soldiers, slaves, and civilians in relation to the Navies of the Civil War. He graduated from LaGrange College, where he received the Ingrid Bergman Scholarship and the Irene Arnett Drama Award. He has done Museum Theatre and Historic Character Interpretation work for Colonial Williamsburg, Mount Vernon, the Smithsonian’s National Archives, National Portrait Gallery, and National Museum of American History as well as English Heritage-UK and the Atlanta History Center. Mr. Johnston is a member of the Screen Actors Guild-American Federation of Television and Radio Artists and has appeared on the National Geographic Channel, History Channel, Food Network, PBS, and Cartoon Network’s Adult Swim. He has also performed Shakespeare, jousted, and toured with a rock band in North America and Europe.

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David Vaughan (Civil War Round Table of Atlanta/Vaughan Estate Sales and Appraisals)

Photography during the Civil War: Innocence Exposed

Abstract: This presentation provides an in depth look into photography during the American Civil War. Barely two decades old when the war began, photography evolved during the conflict from innocent portraits to chronicles and documents of the raw horrors of war and its aftermath. Mr. Vaughan, a private image collector from Atlanta, will draw primarily from his own extensive image collection. He will discuss the complex and diverse role of the camera and its lasting impact on America's memory of the Civil War.

Biography: David Vaughan is a native Atlantan and lives in Virginia-Highlands with his wife Debbie, and son David. He is a graduate of the University of Georgia and recently served as President of the Civil War Round Table of Atlanta (2006-2007), the second oldest round table in the country. He also serves as a member of the University of Georgia Libraries' Board of Visitors, and owns and operates Vaughan Estate Sales and Appraisals, Inc, a certified appraisal service which specializes in identifying hidden treasures in estates, appraising historic memorabilia, and conducting estate sales. Mr. Vaughan began seriously collecting Confederate images over 25 years ago and has amassed the most published such private collection in the country. Mr. Vaughan has co-curated four Civil War image exhibits with Georgia-based museums. Currently, he has 25 images on loan to the Metropolitan Museum of Art for a landmark photography exhibition entitled Photography and the American Civil War; the traveling exhibition is on display at The New Orleans Museum of Art until May.

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Session 2: Medical Technologies and Treatments

Moderator: John Tone (Georgia Tech)

Biography: Dr. John Lawrence Tone is Professor of History in the School of History, Technology, and Society (HTS). He is also the Associate Dean of Undergraduate Studies in the Ivan Allen College of Liberal Arts since January 1, 2008. He specializes in Spanish and Cuban military history and the history of medicine. He has written several articles and books, including The Fatal Knot: The Guerrilla War in Navarre and the Defeat of Napoleon in Spain (1995), La guerrilla española (1999), and War and Genocide in Cuba (2006). The Fatal Knot was a selection of the History Book Club and received the Literary Prize of the International Napoleonic Society in 1999. He was inducted as a Fellow of the International Napoleonic Society in that same year. War and Genocide in Cuba received the Society for Military History Prize for the Best Book on a Non-US Subject in 2008. His current research is on the history of yellow fever. He has received grants from the Fulbright Foundation, the National Endowment for the Humanities, and the American Philosophical Society. He teaches courses on The French Revolution and Napoleon, Intellectual History, Modern Spain, Modern Cuba, and The History of Medicine.

Shauna Devine (Western University, Ontario)

Photographing Medicine: Clinical Photography, Photomicrography, and the Development of New Investigative Techniques during the American Civil War

Abstract: On May 21, 1862 Union Surgeon General William Hammond issued a circular letter directing doctors to send medical and surgical specimens to the new Army Medical Museum. Physicians were asked to look for the seat of disease in organs and tissues, to study lesions and learn pathology. Within this project, unique and interesting cases were documented through medical photography. Physicians were able to construct images of illnesses and demonstrate the specificity of disease forms. Seeing the limitations of localized pathology, some physicians developed new tools such as microscopy, histology and photomicrography (photography using a compound microscope) to elucidate pathological and physiological processes. Many photographs show the progression of specific treatments and the various stages of diseases. They also demonstrate routine procedures, interesting and unusual cases, and even operative and post-operative details. The photographs taken to preserve a medical record of the war, to help determine the amount of postwar pension payments, but most importantly to learn from Civil War bodies, proved an important stimulus for the development of scientific medicine. Many were used to illustrate the Medical and Surgical History of the War of the Rebellion, Army Medical Museum Catalogues and other leading medical and scientific journals. They
were also used for teaching in medical schools, as a resource for medical research and displayed at the Medical Museum, international expositions and medical congresses, all of which brought wartime medical work to the attention of the public as well as the medical and scientific communities. Civil War photographs provide a rich resource for understanding 19th-century medical practice, how physicians learned, how knowledge was produced and the scientific and technological possibilities of medicine.

Biography: Shauna Devine, an historian of Civil War and American medicine, is currently a Visiting Assistant Professor at the Schulich School of Medicine, and an adjunct professor in the Department of History, at Western University in Ontario. She received her Ph.D. in medical history from Western University, and has won awards for her work on Civil War. Her first book, Learning from the Wounded: The Civil War and the Rise of American Medical Science (University of North Carolina Press), examines the development of scientific medicine during the American Civil War and the impact of the war’s events on American medicine. Her next two projects examine the politics of vaccination in the Civil War south, and medical photography as an investigative resource in Civil War hospitals and the Army Medical Museum.

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Mary-Elizabeth Ellard (Georgia Battlefields Association)

**A Sorrowful War: Veterinary Medicine during the War of the Rebellion**

Abstract: The war effort relied heavily on the labor of horses and mules, yet care for those important resources was grossly inadequate. Poor animal husbandry by soldiers and officers, a shortage of trained veterinarians, lack of regard for the expertise of veterinarians, and a poor understanding of basic mechanisms of contagious disease all compromised the well-being and effectiveness of animals in both armies. The most extreme example was the Glanders Epidemic of 1861-1865 caused by stress conditions in the animals and a complete lack of infectious disease control. By the end of the conflict, however, lessons learned would inform the earliest successful efforts of what we now call biosecurity and would give birth to an organized veterinary medical profession in America.

Biography: Dr. Mary-Elizabeth Ellard is a native Atlantan. She graduated magna cum laude from Duke University with degrees in Religion and Zoology and later from the University of Georgia with a Masters in Veterinary Anatomy in 1987 and a Doctor of Veterinary Medicine in 1992. She did her externship at ZooAtlanta and then entered private veterinary practice in Atlanta, with a special interest in surgery. Dr. Ellard has served on the board of the Greater Atlanta Veterinary Medical Society. She is a member of the American Veterinary Medical Association, the American Veterinary Medical History Society and the Association of Shelter
Veterinarians. She also serves on the board of the Georgia Battlefields Association and is a member of the Atlanta Civil War Round Table.

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Panel Discussion: Artifacts of the Industrial Revolution: Curating Civil War Technology

Moderator: Laura Hollengreen (Georgia Institute of Technology)

Biography: Laura Hollengreen is a historian of medieval art and architecture, specializing in French Gothic work of the twelfth and thirteenth centuries. After temporary teaching stints at UC Riverside, UC Berkeley, and the University of Arizona (in both the Art Department and the School of Architecture), she joined the UA as Assistant Professor in the School of Architecture in Fall 2000; she was promoted to Associate Professor with tenure in 2006. In her final year at Arizona, she was Interim Director of the School of Architecture. She moved to Georgia Tech as an Associate Professor in Fall 2009. Dr. Hollengreen’s research and publications have focused on medieval biblical narrative in several media, the Gothic cathedral in its urban setting, and the sensual and spatial contexts of Jewish-Christian interaction in the High Middle Ages. She has published articles on architectural representation, the cathedral precinct at Chartres, and anti-Judaic ideology in a mid-thirteenth-century French Gothic manuscript, as well as on the pedagogy of Capstone work in architectural education. In addition, she has edited volumes on vernacular architecture in southern Arizona and on translation and the phenomenon of cultural transmission in medieval and Renaissance culture. Current projects include an article and book on the re-invention of Old Testament narrative in High Gothic art and a volume co-edited with Georgia Tech colleagues on world’s fairs.

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Gordon Jones (Atlanta History Center)

Abstract: Most museum audiences envision the American Civil War in terms of old-fashioned sabers, primitive sailing ships, and brutal amputations. Thus, one of the largest challenges curators face is helping audiences understand the state of technology in the 1860s, the fundamental technological changes taking place, and how this technology was unevenly distributed between North and South. In this session Dr. Jones will discuss how to introduce audiences to interchangeable parts,
ready-made clothing, or other aspects of the Industrial Revolution that formed prime ingredients in the Civil War and very much influenced its outcome.

Biography: Gordon L. Jones is the Senior Military Historian and Curator at the Atlanta History Center in Atlanta, Georgia, where he has worked since 1991. He is responsible for the care, exhibition, and research of approximately 12,000 objects of military origin, most of which relate to the American Civil War. Dr. Jones was the writer and curator of the 9,200 square-foot signature exhibition *Turning Point: The American Civil War*, which opened in 1996, as well as a number of temporary exhibitions, including *War in Our Backyards: Discovering Atlanta 1861-1865*. He holds a Ph.D. from the Graduate Institute of the Liberal Arts at Emory University, specializing in the Civil War in popular culture, and the processes of remembering, commemorating, and recreating the past. He also holds a B.A. in History from Furman University and an M.A. in Applied History and Museum Studies from the University of South Carolina.

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Ken Johnston (National Civil War Naval Museum)

Jeff Seymour (National Civil War Naval Museum)

Biography: Jeff Seymour received his BA and MA in history from Jacksonville State University. He has also done further graduate work in history and archival studies at Auburn University. He currently teaches at Columbus State University as an adjunct professor of history and has done so for the last ten years. He’s taught at the college level since 2001. Concurrently, he serves as the curator/archivist/historian/broom-pusher for the National Civil War Naval Museum in Columbus, Georgia. He has been serving in that capacity since 2006 and has worked for the museum since 2004. Mr. Seymour is the author of several book reviews on naval history and contributed to a handful of articles. He currently lives in the Columbus area with his wife and two children.

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David Vaughan (Civil War Round Table of Atlanta/Vaughan Estate Sales and Appraisals)

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Artifact Display

From the Atlanta History Center, brought by Gordon Jones

1. Morse patent model breech-loading fire arm; original US patent no. 20,503
2. two half shells, case shot and percussion fuse
3. three gun locks showing interchangeable parts

From the National Civil War Naval Museum, brought by Ken Johnston

1. 1 - 7” Brooke Rifle Shell
   Selma Arsenal manufacture
   16” height, 7” diameter
2. 7” Brooke Rifle Bolt
   Selma Arsenal manufacture
   14” height, 7” diameter
3. Turned & angled piece of deck armor from CSS Jackson
   Atlanta/Confederate Rolling Mill (Schofield & Markham) manufacture
   1’ 8” length, 10” height from angle, tapering from 7” to ½” in width, 2” thick
4. Straight section of casemate armor w/counter set rivets from CSS Jackson
   Confederate Naval Iron Works in Columbus Ga manufacture
   2’ 10” length, 7” width, 2” thick

Photographs from the Collection of David Vaughan

   Georgia Volunteer Infantry, C.S.A.
2. Unidentified Union Private with Stenciled Canteen, "RHK, Co. B"
3. Private. Rasho Crane, Musician in Co. D, 7th WI ... Died at Andersonville
   Prison – Grave #3828 ... CDV by J.S. Anderson, Racine, WI – 1864
4. Private Abrams B. Reading, Co. A, 21st MS, KIA at Savage Station,
   Virginia

6. Private William Houston House, Co. E, 16th Georgia Cavalry Battalion, C.S.A.

7. Unidentified Member of 5th NY, Duryee's Zouaves

8. Harry Gilmore, Captain 12th Virginia Cavalry & Colonel 2nd Maryland Cavalry ... Tinted Albumen Print by Matthew Brady
Walking Tour

Charlie Crawford (Georgia Battlefields Association)

The Georgia Tech Campus in 1864

Abstract: In the summer of 1864, the land now occupied by Georgia Tech contained Confederate fortifications, Federal trenches, and the no-man's land in between. The walking tour will trace the line of Confederate earthworks partially built in 1863, hastily improved on 21 July 1864, and gradually strengthened every day thereafter until the Confederates abandoned the city on the night of September 1-2. Maps of the opposing lines and photos taken by George Barnard in September 1864 will be included in a handout to accompany the tour.

Biography: Charlie Crawford is president of Georgia Battlefields Association, a non-profit battlefield preservation group, and editor of the Georgia Battlefields monthly newsletter. He has made over 100 presentations and led over 40 tours relating to the Civil War in Georgia. Mr. Crawford grew up near Philadelphia and has a B.S. in Applied Mathematics from Georgia Tech, as well as an M.S. in Systems Management from the University of Southern California. He served as an Air Force officer in Colorado, Vietnam, Hawaii, the Pentagon, Virginia, Germany, California, Maryland, Alabama, and Nebraska, retiring as a colonel and returning to Atlanta, where he is currently office manager for an information technology consulting company. He has authored and edited articles and papers on military and technical topics. In addition to being a member of the Georgia Battlefields Association and the Civil War Round Table of Atlanta, Charlie is a life member of the Civil War Trust and the Military Officers Association of America.
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