

Symposium on the History of Technology: Past, Present, and Future  
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## *Historic Preservation and the History of Technology*

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Thank you, Roe. I was honored to have been asked to present and honored to have been a student of yours many years ago, and I'm pleased to kick off this morning. I probably should have titled my talk "And Now for Something Completely Different."

As one of Roe's students here, I was always a bit of an outlier. I entered with significant experience in museums and historic preservation, and I knew my path would likely be outside of academia. I came as more of a public historian, and I never veered very much from that path. I wanted to be engaged with historic objects and places, their interpretation and use for general education, and to play a role helping people feel the power of artifacts in historic places that Dave Lucsko mentioned yesterday.

I wanted to make sure they continue to be a part of our landscape. The references yesterday to "things" really matter to me. I wouldn't consider myself an internalist, but things/objects really do matter. It's been over two decades since I received my degree here, and nearly four decades of involvement with historic preservation, and I think I bring a unique perspective to the discussion. To provide you a little bit of context in understanding that perspective, I wanted to give you a brief summary of my somewhat atypical path, at least for those here in the room.

My career has bounced back and forth between museum work and historic preservation, acquiring and caring for artifacts and documents, designing exhibits and teaching from a wide range of collections, including fine and decorative arts, industrial and maritime objects, and even

ecological and biological specimens, from valuable paintings to an 1848, 1,275-foot-long panorama to modern art. I've collected strange things from a 36-foot-long Archimedes screw pump to a collection of 800 shovels and the documents of their manufacturer. I've even cared for what may be the largest ship in a bottle - a half-sized whaling ship inside a museum.

I've played the role of gatekeeper between the dumpster and the archives, finding hidden treasure in strange things, (like an old turkey box), and on a larger scale, been a leading voice in discussions to determine if historic structures would continue to contribute to the landscape and serve as touchpoints to the past - or if they would be transformed into new uses, such as affordable housing - or if, sadly, I would lose the battle, and they would head to the landfill. I've also helped guide changes to landmark sites in Boston and impacted the city you see today, from Fenway Park to the Boston Public Library, the modernist Christian Science Center, even the famed Citgo sign.

On the federal level, I've played a part in the Federal Historic Tax Credit program, which has rehabilitated over 48,000 buildings across the country. As executive director of the Boston Preservation Alliance, I was involved with over \$5 billion of real estate development and regularly worked with developers, architects, planners, regulators, policymakers, and even politicians. In my current role, leading the Association for Preservation Technology, I help guide and train people who, day to day, make design and engineering decisions about historic structures of all types and sizes, including some of the most prominent buildings in the U.S. and beyond.

Washington, D.C. is rife with the work of APT members. State capitals, throughout the nation, have been touched by my colleagues, as have more unique sites and structures than you can imagine. From the micro, with paint analysis, to the macro. We also are growing in our work with disaster support and educational programs across all ages. We publish a journal that's peer-reviewed, and we periodically publish books. APT and our members are leaders in the application of cutting-edge modern analysis and technologies to preserve historic structures, while, at the same time, assuring traditional methods and materials are recognized for their benefits and, in many cases, desirability - and finding how to successfully mesh old and new.

So, when Roe invited me to speak, I had to ask myself if I really had anything to contribute. In some ways, my work in the history of technology was many lifetimes ago, my academic perspective very much in my past. On the other hand, I thought, "Well, 'technology' is right on my business cards." It's right there in the mission statement of APT, and one of our

many projects (that I think you would all enjoy) is the freely-accessed Building Technology Heritage Library, a collection of nearly 14,000 catalogs, plan books, technical building guides, and codes.

The invitation made me think, “How does or could history of technology, as an academic field, apply to my work? How does the mindset that I learned here impact me subconsciously,” - And then, thinking a little more, “Can the field, looking forward, more overtly provide insight to assist in the public policy and design decisions that challenge my world?”

So I'm going to quickly cover, in this brief time, three primary questions: How has my training as a historian of technology influenced my roles in museums and in historic preservation? Do topics in the history of technology impact design decisions and policymaking? Can the discipline apply its voice to help some of the challenges the preservation community faces?

Question one: Has my education in the field enhanced my ability to do my work? Have history of technology concepts, albeit 20 years old, helped me make better decisions with collections and exhibitions? Have they helped me advocate for historic preservation? Has it strengthened my influence with designers and real estate developers, policymakers, building conservators, and building engineers and scientists? Are the academic discussions even relevant?

And when managing a museum collection, deciding what will be available to future historians and what will go to the landfill, those can be ominous tasks. Influencing what buildings and historic landscapes are saved for future generations is quite daunting. So how does one assess the intellectual and cultural values, not just for today, but to questions not even asked, nor even conceived? How does one assess the educational, social, economic, and environmental value of a building or a landscape?

Now, of course, we can't, nor should we want to, save everything, but what's the measure? What's worth fighting for? Of course, as historians, we know the record of the past is filtered. But as someone who is charged with choosing what will survive, how have I applied my training to make that assessment?

I would often try to consider what a historian in the future might find of value, which is obviously an impossible task but a laudable one to try. As a historian of technology, I'm as likely to find an idiosyncratic tool mark or a curious hole in the ground or mound in the woods of equal value to a fine painting or a grand piece of architecture. To me, those small things matter, and

that's because I'm a historian of technology. Although, admittedly, this sometimes puzzled my peers.

One small example takes us back to that pile of boxes I showed earlier (the one with the old “turkey” box) in which I found a number of receipts for barrels of gasoline from the early twentieth century, and they became critical evidence for this book on historic gas and lighting systems and likely would have been discarded by a non-historian of technology. In my work today at APT, I keep in mind the core concept that innovation alone is insufficient for success, that larger technological, economic, and political systems are essential, and this certainly applies to the evolution and adoption of building technologies.

As most of you in the room know, skyscrapers, for example, sprout from a confluence of economic, political, social, and technological developments, not just their development and evolution in the past but today. No single component of a building lives in isolation. No single component of a building lives in isolation. Buildings are living and breathing, layered and interconnected systems, systems facing many challenges: an increasingly aggressive climate, seismic activity, heat, moisture, natural deterioration, and even economic pressures.

Failure to examine a building as a system inevitably leads to failure. Something as seemingly innocuous or even beneficial, such as adding insulation, can throw that system out of balance, trapping moisture within the walls and destroying buildings from within. So the concept of system analysis is essential to preservation, albeit without the reference to Tom Hughes and the broader academic concepts, but for me, it's a foundational concept, as I consider historic buildings in their past and future, and an idea that, for me, has its roots right down the hall, in [MIT building] E51.

Many of the core analytical skills of the field have served me well. When in debates about demolitions or preservation policy, even complex building codes, it's essential to know what's driving decisions, and I assure you, the driver is rarely what is openly stated, and the technologically best or right concept doesn't always win.

Question two: Do major foundational topics impact decision and policymaking in my world? Unfortunately, concepts considered basic here, such as technological determinism, the myth of inevitable progress, and the social construction of scientific facts, aren't part of the typical discourse of designers, policymakers, and the general public.

Now, with all the pressures today of climate change and goals of carbon reduction, everyone is grasping for the newest technology as the solution, dismissing traditional methods and materials, and assuming that old buildings have no place in our future energy-efficient world. Everyone in this room knows, when it comes to design and innovation, the inevitable march of technological progress can't be assumed, and that goes for buildings too. Now, that may be an obvious statement to historians of technology, but not to most others.

Thankfully, some designers are realizing that wantonly inserting the newest materials and methods in historic buildings can be disastrous. Mindless installation of steel to add strength because buildings don't meet code, ignoring the varying properties of different materials -- these are not good ideas, and assuming we know better today has led to many failures, endless cycles of repair, and unnecessarily high operational costs. Methodologically balancing older methods and materials with innovation is essential to success.

Traditional methods have much to teach us. Relying on thoughtful siting of buildings and natural ventilation, which was, of course, required before air conditioning, are valuable to look at. Now, you do realize that the cupola, at the top of this building, isn't just for good looks, right? There was a purpose for that (natural ventilation) -- utilizing natural materials, such as linseed oil paints, that allow water vapor to permeate rather than be trapped behind modern latex paints or recognizing the strength of timber as a long-lasting building material. Traditional methods matter.

Of course, new materials and techniques offer many opportunities and often save threatened historic buildings, but careful analysis and a holistic understanding of buildings, along with some significant skepticism, is critical, but buildings do play a major role in climate issues, contributing a lot of carbon. Yet one shouldn't assume that old buildings are energy hogs. In fact, reuse of existing buildings is often the most effective method, not new construction, saving both embodied carbon while preserving our heritage.

Newer methods of analysis, such as this free CARE tool, show that, with careful modifications, existing buildings can outperform new ones, and this data you see here is actually from a building you know just across the river at Boston University. Yet too many falsely assume what any historian of technology graduate student would question, that myth of technological progress: Newer is always better.

In fact, replacing the windows in your home usually makes no sense, despite the ads, and tearing down an old building for the newest net-zero design is not inherently beneficial. Many fail to see the social construction of these claims. No historian of technology should believe that a building with a LEED-certified label is a non-biased measure of environmental success or that building codes are impartially determined based solely on fact.

Self and financial interests, bias in analysis, and that core belief in technological progress are blinding to many. Concepts that you may have slain here long ago are alive and well in city halls, designer offices, and in the minds of the public. That often results in unnecessary demolitions or modern methods and materials blindly applied to historic structures with devastating results.

Here are a couple simple things to consider if you're dealing with a historic building: Modern mortars are too hard for old buildings and will destroy your brick. Advanced sealants and coatings provide short-term fixes and wreak long-term havoc. High-tech heating and cooling can drive problems that simply opening a window can solve. Building codes often unnecessarily stop adaptive reuse of historic structures.

Yet modern interventions can and should, and many of my members focus on, play a critical role in the long-term health of historic buildings, for they offer opportunities unavailable to original builders and designers. Creative interventions can stabilize structures and enhance seismic protections and gain energy efficiencies. Determining how to blend old and new is contingent on a host of factors, all within a socioeconomic, political, and regulatory system.

And that logically leads to my final question, and I guess a conclusion: Is there a place for the field to help in my work? To be more directly impactful? To be more relevant? For certain, there is. There's an important role for this group in the field beyond the academy, and I really encourage people to look outside and look at public policy and how they can have an effect.

Help us dispel that “progress myth” that's often the death knell to historic resources. Help us demonstrate that questioning assumptions about new technologies/innovations, is based on decades of study. Newer isn't always better, and interfaces between new and old methods require careful examination. Help us encourage people to recognize that buildings themselves are complex systems and that they live within an influential and often very biased system.

The general impression remains that newer is better, despite the fact that, here in academia, that perspective and its flaws feel like such well-worn paths that don't need repeating, but I can assure you, outside these walls, that isn't the case. Thank you. And just one final note: If you're interested in the Building Technology Heritage Library, that QR code will get you there.

I think you'll all find it fun.