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'Future proofing': Present protections against challenges to come

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You can't predict the future, but you can prepare for it.

That's the thinking behind the concept of "future proofing" in design, architecture, engineering and construction: Taking steps now to prevent or lessen building damage or structural challenges yet to come.

And though architect and University of Washington staff member Brian Rich doesn't claim to have coined the term, he seeks to clarify future proofing, as it pertains

Architect – and architecture graduate student — Brian

to historic buildings, in a paper accepted for publication in the Journal of Preservation Education and Research.

Rich studied repairs to the the walrus heads adorning Seattle's Arctic Building as he compiled information for his journal article on "future proofing." ***Brian Rich***

Rich is an associate construction manager with the UW Capital Projects Office as well as a graduate student working on a master's degree in architecture with a certification in historic preservation. He has a professional background in preserving old buildings, especially theaters from the vaudeville age, and has his own architectural firm, called Richaven PLLC.

Future proofing, Rich said, is similar to the widely accepted term "resilience" — defined by the Resilient Design Institute as "the capacity to adapt to changing conditions and to maintain or regain functionality … to bounce back after a disturbance or interruption of some sort."

Rich sought a definition with a slightly different context. "Their understanding of resilience was very broad. I am looking more specifically at existing and historic structures — and how we can design interventions in those structures that would be beneficial, as opposed to causing more problems for the building."

He reviewed literature on the topic from recent years, "focusing on how the term is used in a multitude of different contexts, and trying to put together a coherent theory of future proofing," he said. "One of the cornerstones is flexibility and adaptability — leaving the building in a way that it can be changed in the future."

Ten principles of "future proofing" historic buildings, by Brian Rich

- Promote prevention of

Other basic principles of future proofing, Rich writes, include fortifying the "built environment" against climate change, considering long-term benefits and problems when intervening to improve historic

deterioration of our built environment.
- Allow understanding of the built environment and its place in our heritage.
- Stimulate flexibility and adaptability of our built environment and our attitudes toward it.
- Extend service life of our built environment.
- Fortify our built environment against climate change, extreme weather and shortages of materials and energy.
- Increase durability and redundancy of our built environment.
- Reduce the likelihood of obsolescence.
- Consider long-term life-cycle benefits of interventions in our built environment.
- Incorporate nontoxic, renewable, local materials, parts and labor into our built environment.
- Comply with applicable cultural heritage policy documents

structures, using nontoxic, and renewable materials, and staying mindful and respectful of the cultural heritage of the structure.

Rich added that the process seeks to accommodate coming challenges "both negative and positive." An economic downturn might result in a building being left without occupants or maintenance for years, causing it to deteriorate more quickly. Conversely, an upswing could bring a different use for which the building is also well suited — if it has been designed to last.

In his paper, Rich used the iconic walrus heads that adorn the third floor of Seattle's century-old Arctic Building as a case history, commenting on past rehabilitation efforts and suggesting 10 basic principles of future-proofing for historic buildings.

The building was constructed in 1917 as the headquarters of the Arctic Club, used for offices in subsequent decades and sold to the City of Seattle in 1988. Twenty-seven impressive terra cotta walrus heads with descending tusks grace the outside along the third floor, held in place with steel

reinforcements. That steel began corroding by the late 1970s, and the tusks started failing.

Repairs in the early 1980s included anchoring new tusks into place with stainless steel rods drilled into place from the top of the heads, and a gypsum/Portland cement grout mix — but "cracks began appearing almost immediately," Rich said. A 1995 investigation found that the gypsum had expanded in reaction to water that had seeped in from above. About a dozen of the walrus heads needed to be replaced.

Rich doesn't lay blame, especially since research on the expansive properties of gypsum was still new when the repairs were made.

But it got him thinking: "How can we have a process — a checklist or some criteria to help us think through the issues involved, so interventions don't damage buildings in the future.

"That's all I'm espousing here," he said. "People may shoot arrows at me, but that means they're thinking about it, and that's good. With the article I'm hoping to start a conversation."

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