Marion Dean Ross Chapter of the Society of Architectural Historians

PANARCHY
and the
PRINCIPLES of FUTURE-PROOFING

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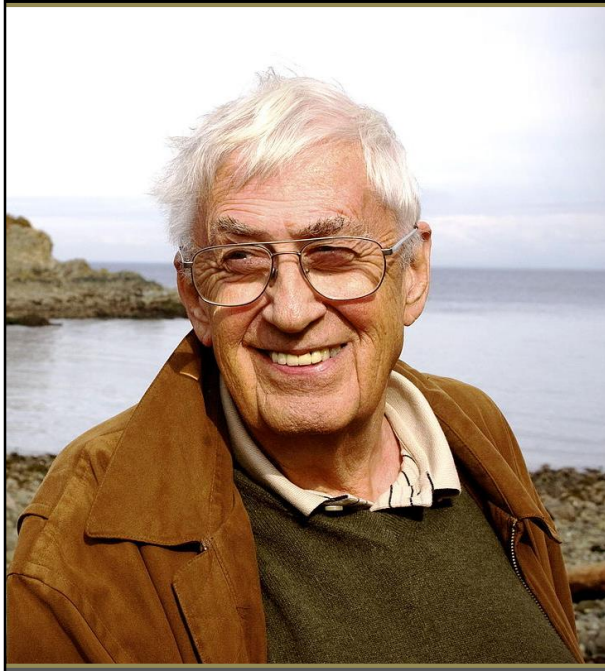
Life as usual…

In the heyday of a building or a site's life span, we don't focus on the potential for future decline. We focus on the thriving success and vivacity of it. For people living during the Roaring 20's, it was life as usual.

As historians and historic preservation architects, we document the significant aspects of our past. We look back and identify important moments, events, people, and artifacts in the context of broader historic events.

Even so, we don't necessarily focus on the transformations that occur over time. The cycles that our built environment is subject to.

Adaptive Cycles



Panarchy is a framework for adaptive cycles. It is the "process by which ecological and social systems grow, adapt, transform, and, ultimately, collapse over extended periods of time"

C.S. Holling

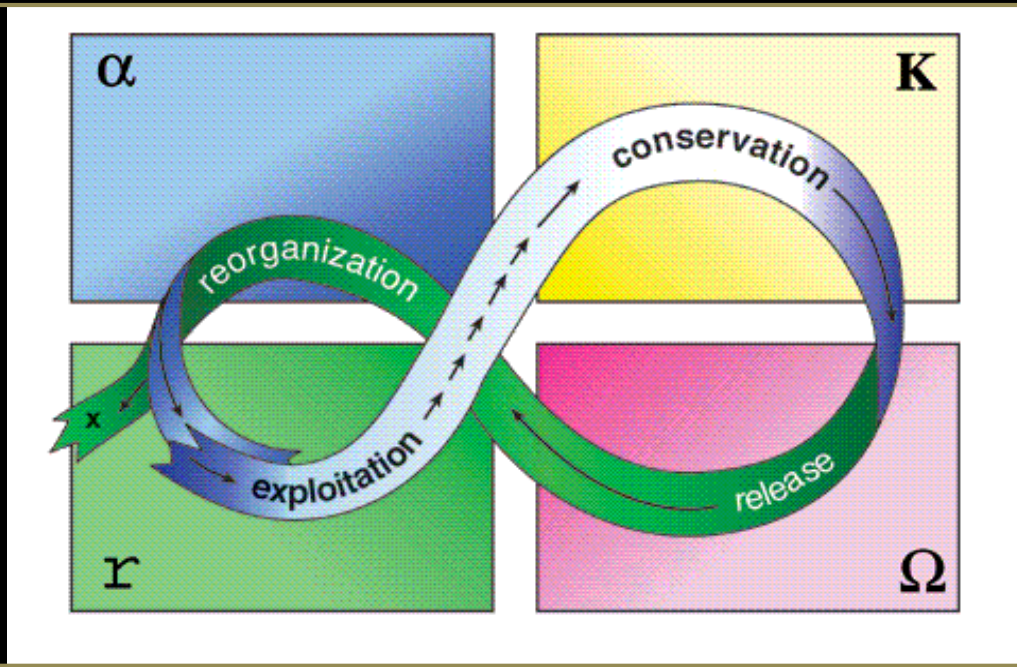
But there is a cycle as we adapt our built environment to meet the needs of today. These are called Adaptive Cycles.

Panarchy is a framework for adaptive cycles. It is the "process by which ecological and social systems grow, adapt, transform, and, ultimately, collapse over extended periods of time"

Panarchy was originally developed by CS Holling, a Canadian ecologist and Professor in Ecological Sciences at the University of Florida.

The framework of Panarchy helps to understand the change in ecological environments and how they were resilient to the impacts of environmental changes. Panarchy can be used to understand and manage change in ecological environments, but it can be applied to the built environment too.

The 4 Phases of the Adaptive Cycle



The 4 phases of the Adaptive Cycle include: entrepreneurial exploitation (r), organizational consolidation (K), creative destruction (Ω), and re- or de-structuring (α).

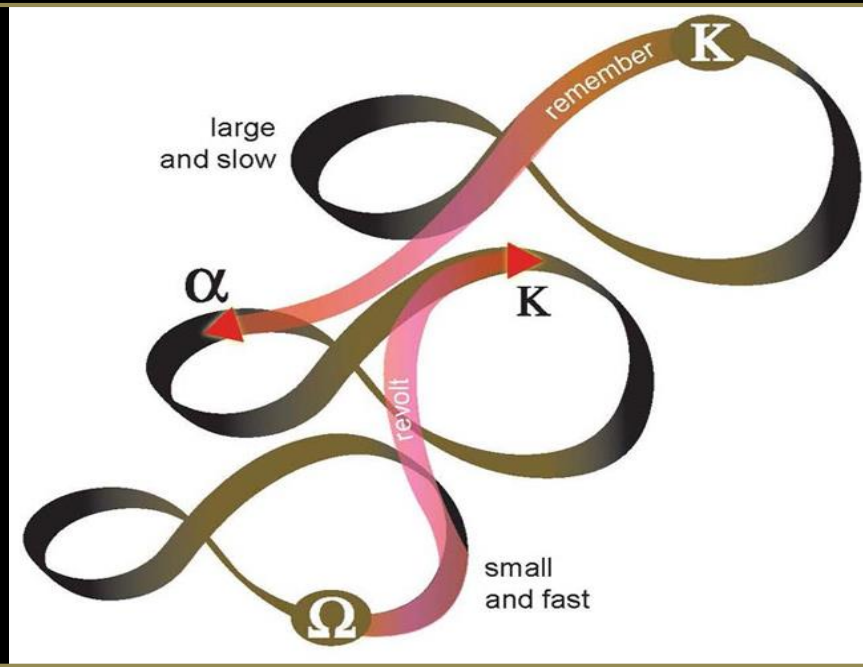
After the Conservation phase of the adaptive cycle, there are three potential types of change:

(1) abrupt and destructive change – like Hurricanes Irma and Harvey (very bad)
(2) incremental changes - which are smooth and fairly predictable (not too bad)
(3) transformational learning, or what we would call adaptive re-use (good)

Is there a way to mitigate or stop this apparently inevitable cycle?

No, it is impossible to totally stop deterioration. Deterioration is inevitable from the very moment of creation.

Deterioration – From the Moment of Creation



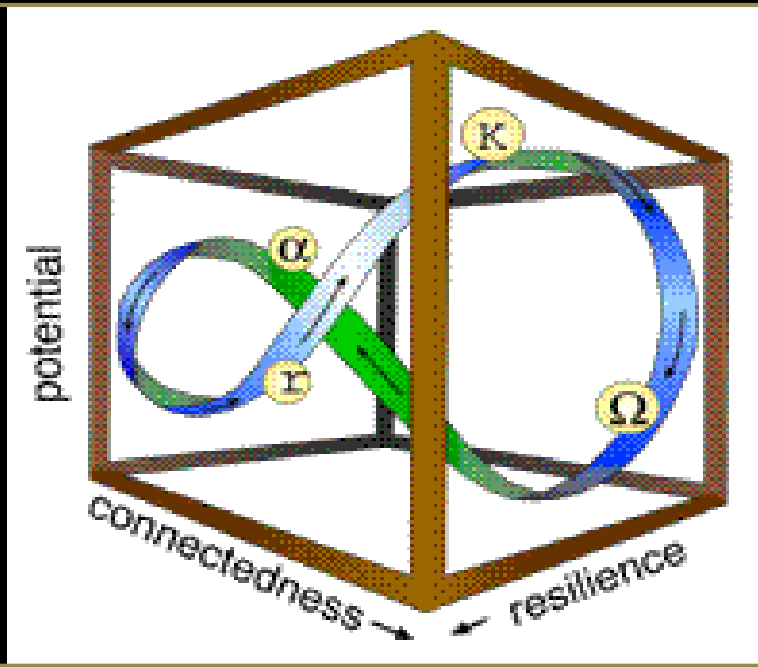
It is also important to understand that adaptive cycles occur at different scales of time and space.

Is there a way to mitigate or stop this apparently inevitable cycle?

No, it is impossible to totally stop deterioration. Deterioration is inevitable from the very moment of creation.

Can we extend the conservation phase, control or soften the release phase, and help support the reorganization phase of the adaptive cycle? Perhaps we can.

3 Dimensions of Adaptive Cycles



The understanding of adaptive cycles evolved to include 3 dimensions:

Potential: sets Limits to what is possible

Connectedness: degree of independence of system

Resilience: level of vulnerability of a system

As I worked on my master's degree, I was researching the concept of resilience as it applied to many different industries. I also found that resilience helped to extend the conservation phase of the adaptive cycle and slow down the release phase.

I found that contemporary definitions of resilience didn't encompass the many different aspects of the concept. Unsatisfied with the definitions of resilience, I developed a broader definition that I called future-proofing.

Future-Proofing – A Definition

Future-proofing is:

…the process of anticipating the future and developing methods of minimizing the negative effects while taking advantage of the positive effects of shocks and stresses due to future events.

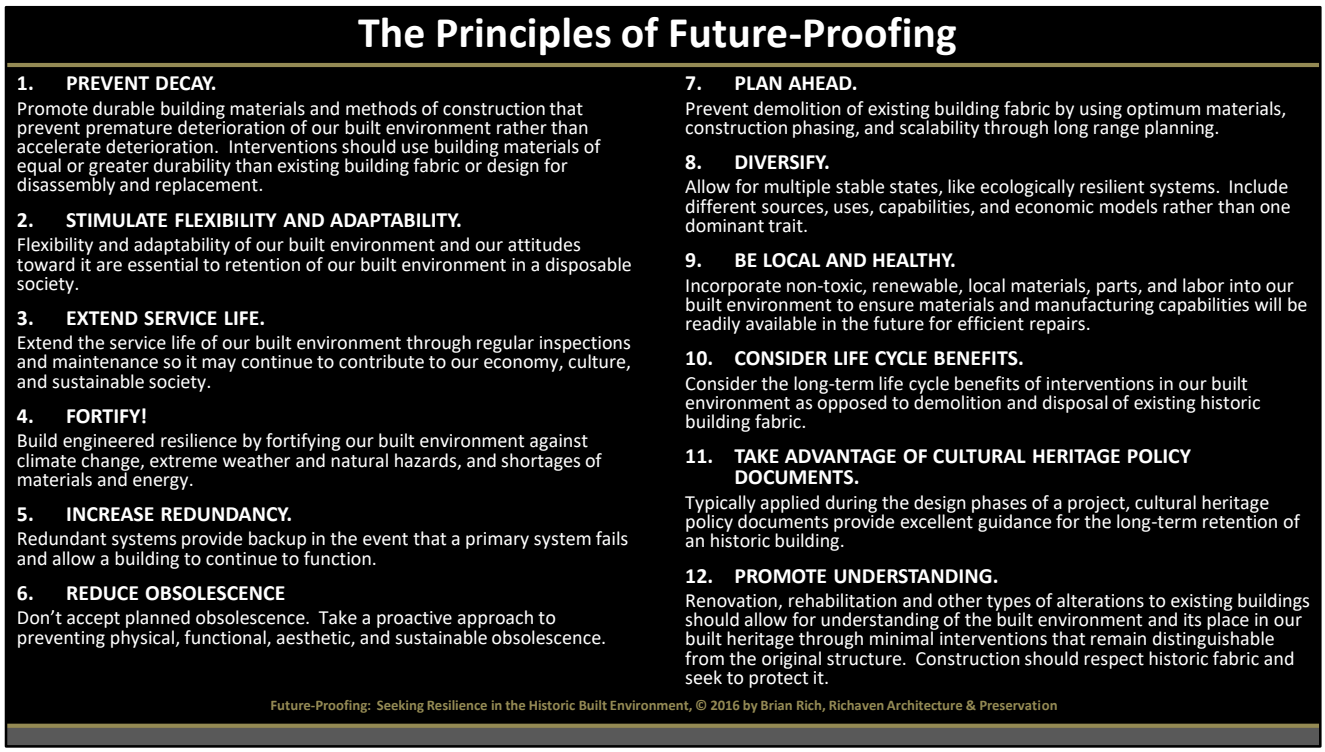
Future-proofing is a broader understanding of resilience that accounts for many more potential causes of a building's demise. At essence it's balancing respect for and acknowledgement of the cultural heritage value of an existing building while balancing modifications that allow the building to be used continually into the future.

Equally applicable to the historic built environment and new construction, the Principles of Future-proofing can offer guidance for how to develop and redevelop our built environment to prevent or at least slow down the effects of deterioration

Why do buildings last?

A building **LIVED IN…**
Is a building **LOVED…**
Is a building **LASTING…**

One of the core thoughts behind future-proofing is that….
.
.A building lived in, is a building loved, is a building lasting.
.
Abandoned and unoccupied buildings don't often have a lot of value.
Living in a building – using it – gives the building value.
And when a building is lived in and used, people care about it.
When someone cares about the building, they will take care of it – maximizing the service life of the building.



Through a couple years of thought and research on the subject, I developed the 12 Principles to capture what I had learned.

1. Prevent Decay
2. Stimulate Flexibility and Adaptability
3. Extend Service Life
4. Fortify
5. Increase Redundancy
6. Reduce Obsolescence
7. Plan Ahead
8. Diversify
9. Be Local and Healthy
10. Consider Life Cycle Benefits
11. Take Advantage of Cultural Heritage Policy Documents
12. Promote Understanding

Let me show you, though, some of my research, which demonstrates these Principles in practice….

At the Arctic Building in Seattle, I looked at preventing decay, extending service life, reducing obsolescence, and other principles.

Here, the design of the walrus heads could be considered problematic from the start.

The original mild steel rod anchors for the terra cotta tusks corroded and the tusks cracked and rained down.

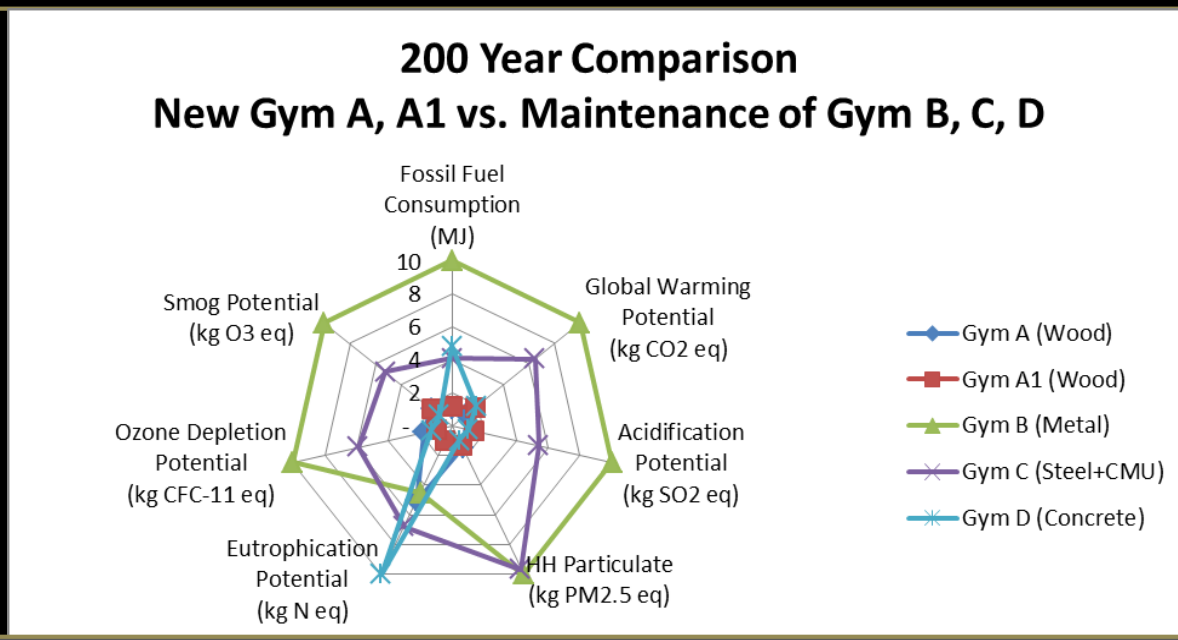
Repairs in 1982, shown in the inset detail, made the situation worse by installing moisture sensitive grout and grout fill holes exposed to the rain.

More damage began almost immediately due to expansive grout and over-filling of the void space.

Further repairs in 1995 developed a future-proof solution with stainless steel anchors and no grout.

Still, 17 of the 28 original walrus heads were lost to damage and had to be replaced.

Durability and Life Cycle Analysis



I also looked at the principle of durability through the lens of life cycle analysis.

Specifically, at how the environmental impacts of more durable buildings might compare to multiple replacements with a less durable building.

This graphic compares the Life Cycle impacts over a 200 year period.

Gym A and A1, includes full replacement, operations, and maintenance of the wood framed gym every 40 years.

Gym D includes Operations and Maintenance for an existing gym for 200 years.

What's clear from this analysis is that Gym types B and C (green and purple) had significantly higher environmental impacts.

It seems like Gym A and A1 are the winners in terms of environmental impacts… …until you consider the economic impact to build a new gym every 40 years….

When the full picture is considered, including cost, Gym D, the more durably constructed gym, appears to have among the least impacts overall, not to mention conserving embodied energy and avoiding the social and cultural impacts.

Curated Deterioration & Managed Ruins

What in the world do these concepts have to do with this conference?

The theme of this conference is sensitive adaptations and Faustian bargains….

Interventions in declining historic buildings and sites….

It's about renovations, rehabilitations, adaptive re-use, and perhaps even curated deterioration of our cultural heritage such as managed ruins.

One example here in Idaho is the Birch Creek charcoal kilns in Nicholia.

Faustian Bargains

The Faustian Bargain is often an attempt to save some aspect of a cultural heritage site while sacrificing other attributes and features.

One example is facadism (or façade-ectomy) as illustrated by the CSAV Headquarters in Valparaiso, Chile.

This is a more destructive form of the “release” phase of an adaptive cycle.

It attempts to avoid total demolition of the historic building.

Successful Adaptive Re-Use – University Heights

The Principles of Future-Proofing guide us to more sensitive interventions in our cultural heritage. This can slow and even arrest the destructive “release” phase.

Carefully designed adaptive re-use of historic buildings can extend their service lives.

One example is the University Heights Community Center in Seattle which transformed from a public school to a community center that provides below market leases for music, arts, and theatre programs as well as two schools and daycare facilities.

The adaptive re-use of UHeights is an excellent example of giving a building new purpose and exemplifies the future-proofing principles of flexibility, adaptability, and diversification as well as the concept of “loose fit, long life.”

At UHeights, they adapt their programs to the building space that is available while making careful modifications that support the programs and pursuing ongoing preservation projects to preserve the building.

Sensitive Rehabilitations

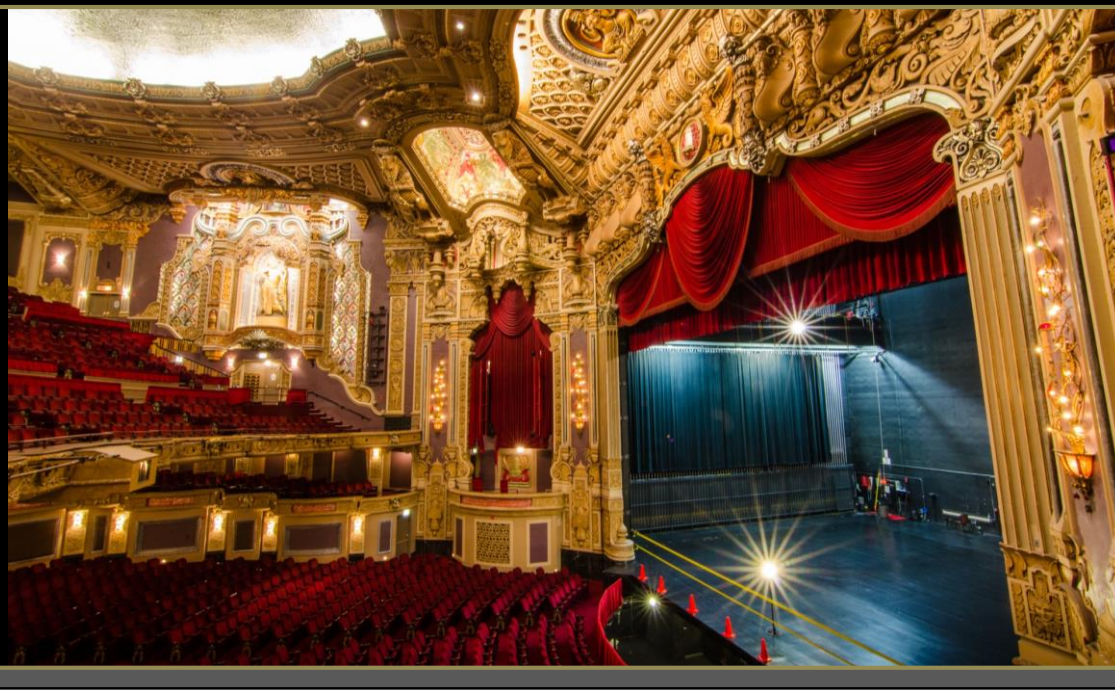
Rehabilitations and adaptive re-use of historic buildings are a controlled “release” and move a building or site directly to the “reorganization” phase.

From there it can exploit its advantages, become lived in, loved, and lasting.

The renovation of Guggenheim Hall at the University of Washington is an example of a sensitive rehabilitation that extended the life of a 1930s building on campus and rejuvenated the Aeronautics and Astronautics program.

Its renovation exemplified the future-proof principles of durability of the existing building systems, increased redundancy and decreased obsolescence (through updates of all building systems), and fortifying (in this case seismic retrofit).

Lived in, Loved, and Lasting



One last example: the Oriental Theatre in Chicago. It had been abandoned for more than 16 years.

The Oriental is a 1924 vaudeville theatre that was adapted for Broadway productions, including expanded stage areas, incorporation of modern lighting, rigging, and sound systems, and patron amenities without compromising the character of the space.

It is now a lived in, loved and lasting space at the heart of Chicago's Theatre District.

If panarchy is the framework through which to understand adaptive cycles

Then future-proofing is a lens through which one can understand sensitive rehabilitations that can help us work through the release phase of adaptive cycles.

With these tools, we can spur sensitive rehabilitations, avoid Faustian Bargains, and breathe new life into our historic built environment.