

## Green Architecture from the Thawing Arctic: Reconstructing Traditions for Future Resilience

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**Abstract :** Historically, architects from Aalto to Gaudi to Wright have looked to the architectural knowledge of long-resident peoples for forms and structural principles specifically adapted to the regional climate, geology, materials availability, and culture. In this research, structures traditionally built by Inuit peoples in a remote region of the Canadian high Arctic provides a folio of architectural ideas that are increasingly relevant during these times of escalating carbon emissions and climate change. 'Green architecture from the Thawing Arctic' researches, draws, models, and reconstructs traditional buildings of Inuit (Eskimo) peoples in three remote, often inaccessible Arctic communities. Structures verified in pre-contact oral history and early written history are first recorded in architectural drawings, then modeled and, with the participation of Inuit young people, local scientists, and Elders, reconstructed as emergency shelters. Three full-sized building types are constructed: a driftwood and turf-clad A-frame (spring/summer); a stone/bone/turf house with inwardly spiraling walls and a fan-shaped floor plan (autumn); and a parabolic/catenary arch-shaped dome from willow, turf, and skins (autumn/winter). Each reconstruction is filmed and featured in a short video. Communities found that the reconstructed buildings and the method of involving young people and Elders in the reconstructions have on-going usefulness, as follows: 1) The reconstructions provide emergency shelters, particularly needed as climate change worsens storms, floods, and freeze-thaw cycles and scientists and food harvesters who must work out of the land become stranded more frequently; 2) People from the communities re-learned from their Elders how to use materials from close at hand to construct impromptu shelters; 3) Forms from tradition, such as windbreaks at entrances and using levels to trap warmth within winter buildings, can be adapted and used in modern community buildings and housing; and 4) The project initiates much-needed educational and employment opportunities in the applied sciences (engineering and architecture), construction, and climate change monitoring, all offered in a culturally-responsive way. Elders, architects, scientists, and young people added innovations to the traditions as they worked, thereby suggesting new sustainable, culturally-meaningful building forms and materials combinations that can be used for modern buildings. Adding to the growing interest in bio-mimicry, participants looked at properties of Arctic and subarctic materials such as moss (insulation), shrub bark (waterproofing), and willow withes (parabolic and catenary arched forms). 'Green Architecture from the Thawing Arctic' demonstrates the effective, useful architectural oeuvre of a resilient northern people. The research parallels efforts elsewhere in the world to revitalize long-resident peoples' architectural knowledge, in the interests of designing sustainable buildings that reflect culture, heritage, and identity.

**Keywords :** architectural culture and identity, climate change, forms from nature, Inuit architecture, locally sourced biodegradable materials, traditional architectural knowledge, traditional Inuit knowledge

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