

Acclimatization across Millennia: Thermal Zoning with Stereotomic Systems

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ABSTRACT

Since the widespread adoption of mechanical equipment for cooling buildings, thermal zoning has evolved into a design strategy that provides climate control and maintenance of steady-state interior environments regardless of building orientation or occupancy. Before the invention of mechanical cooling devices, early populations achieved thermal zoning by putting basic building attributes and material constituents to task, finely attuning earthen building assemblages to ever-changing climatic factors such as prevailing wind and solar path. The Bronze Age Anatolian settlement of Kaymakçı has been reconstructed and analyzed using environmental simulation platforms to disclose the passive acclimatization strategies deployed by early societies relative to variable climate inputs. This presentation reports the findings from this analysis and discusses how these attributes produce comfort levels that rival contemporary standards. Furthermore, the knowledge extracted from this early settlement has been adapted for contemporary construction to passively maintain thermal comfort in the newly constructed Asphodel Research Center located in West Central Turkey which generates a minimum net energy surplus of 120,000 kWh annually.