Aging cities, aging buildings and aging people all need attention. While new buildings can be built with the latest energy-efficient techniques, most cities are dominated by older, inefficient buildings. Retrofitting existing buildings is much more energy efficient than demolishing them. Even if a new building is 30% more efficient than an average building, it takes 10 to 80 years to overcome the negative climate change impacts resulting from its construction.

The 2015 Lyceum Competition invites students to imagine how our aging population can thrive in revitalized settings: “In the United States, 40 million people – 14% of the population – are 65 or older, with the number expected to double by 2050 to represent more than one-fifth of all Americans...

Taken together, can these two problems—the aging of a city and of its people—be addressed by a single architectural solution? What is a new program for aging? How can new senior living models allow for reorganization of family? How can non-traditional or self-constructed family groups be accommodated? How would architecture facilitate a profitable post-retirement work life? How can retirees remain an integrated and vibrant part of society?”

All students will follow the competition brief, “a hub for living, working, socializing, exercising, relaxing, and growing old for a diversity of lifestyles and family groups.” Students may choose to work on an existing Oregon building or the Empire State Building in New York City. Designs for the latter will be eligible for March 2015 submission and the first prize $12,000 traveling fellowship.

The studio introduces performance-based design by considering how to retrofit an existing multi-story urban building using shading structures as part of reinventing the building's expression, identity and function. Reducing cooling loads of these existing buildings becomes more critical as temperatures rise with climate change, and oil-based energy resources diminish. Shading windows, skylights and outdoor
spaces can reduce heat gain and glare, and produce cooling energy savings with minimum occupant disruption.

A physical and digital workflow introduces key factors early in the process and then revisits them with greater sophistication at multiple scales. Small groups will study precedents on design for aging, solar retrofits, and spaces activated by the sun's movement. Students will use Rhino/Grasshopper plug-ins to visualize local climatic factors for thermal comfort and analyze the solar radiation for each facade, roof and open space. Students will then tailor new facades according to their solar exposure and design interior spaces to maximize social interaction around aesthetic use of daylighting.

The process is informed by the Nancy Cheng’s previous co-housing/intentional community studios, the Shaping Light research project (http://tinyurl.com/shapinglight), subsequent research on using folding surfaces to mediate solar heat and harness daylighting at the Royal Melbourne Institute of Technology and teaching in China, Germany, and Australia.

Program and Solar Radiation shape external shading design. Image by Daniel Sykes

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