

Looking Backward In Order to Move Forward: The Chicago Courtyard Apartment Building

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Chicago Courtyard Apartment Building — Photo by the Author

In the United States buildings consume about 30% of the total energy used.

Introduction:

My research on The Chicago Courtyard Apartment Building Type has inspired me to think about sustainability and the application of planning for sustainable buildings in a new and critical way. Specifically, I believe the planning of the Chicago Courtyard Apartment Building Type, which was developed before the wide scale application of air-conditioning technology, is superior to any other widely used American apartment planning type developed since that time.

Air-conditioning:

Air-conditioning was not technically and economically feasible until after 1930 so courtyard buildings had to rely on passive planning strategies to allow for naturally ventilated units. The designers of these buildings could not rely on mechanical ventilation and cooling to overcome poor unit design and orientation. While researching these buildings, I realized the strategies used to plan these buildings, relative to passive ventilation and natural day-lighting, could also be used as a model for contemporary sustainable apartment buildings.

Many modern environments would be totally uninhabitable without air-conditioning. These environments come at a cost both financially and in terms of the quality of the environment. We can all think of buildings that we must spend time in that do not have operable windows and require air-conditioning on days when it is pleasant outside. This type of building design was feasible when energy was inexpensive but when energy becomes so expensive that we cannot afford to run the mechanical systems we will be stuck with buildings that cannot be easily adapted for passive ventilation and day-lighting.

This is why the oldest buildings, with their shallow footprints and operable windows, may be a better platform for a high performance sustainable building than a building that was built 20 or even 10 years ago. Because using no energy, or as little energy as possible, is inherently sustainable apartment unit designs that can take advantage of natural ventilation have an advantage over unit designs that cannot. By utilizing higher standards for insulation and envelope construction the courtyard type might become a flexible and economical model type for contemporary sustainable multi-unit housing.

The Basic Planning Principals Explained:

Everyone spends time in buildings but many of us might not realize why we are more comfortable in one building over another. The planning of a building can go a long way to explain user comfort. A simple comparison.

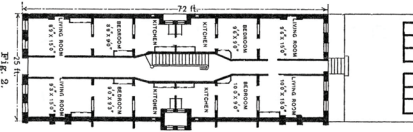


Illustration from *A History of Housing in New York City* by Richard Plunz

Buildings that feature internal hallways (double loaded corridors) generally prevent the possibility of cross ventilation and day-lighting especially when there are doors to the corridor.

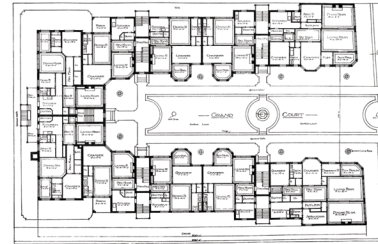


Illustration from *A Catalogue of Fine Apartment Homes*

Instead of utilizing a horizontal internal hallway the courtyard type relies on multiple vertical stair halls. This geometry allows each unit to have cross ventilation through the width of the building. The courtyard geometry is practical for ventilation reasons but it also provides a unique semi-public zone between the individual apartment and the street. By bending the street façade deep into the site the bulk of the building on the street is greatly reduced. The multiple entries make the scale of the typical courtyard building more residential and less institutional, a common challenge with large apartment buildings.

Conclusion:

The current sustainability paradigm shift is an opportunity to rethink the models upon we base our work. Researching the Chicago Courtyard Apartment Building reveals a flexible planning strategy that could also be an appropriate model for sustainable apartment building design.

Sources:

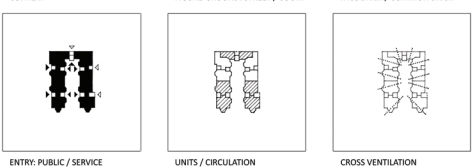
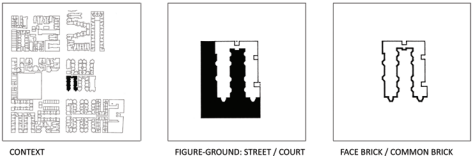
Cooper, Gail. *Air-Conditioning America: Engineers and the Controlled Environment, 1900-1960*. Baltimore: The John Hopkins University Press, 1998.

Gnat, Richard. *The Chicago Courtyard Apartment Building: A Type/Variant Analysis*. 2008.

McDonough, William. *Cradle to Cradle: Remaking the Way We Make Things*. New York: North Points Press, 2002.



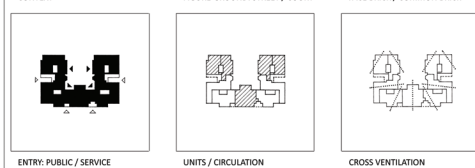
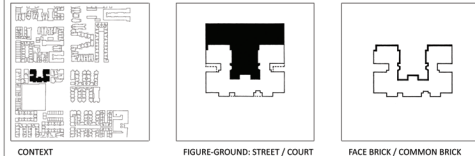
COURTYARD ON 124' DEEP CORNER LOT (RESIDENTIAL STREETS)



CHICAGO COURTYARD COURTYARD APARTMENT BUILDINGS - VARIANT ONE



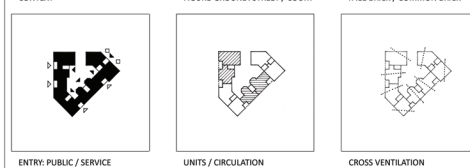
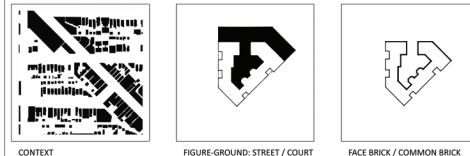
COURTYARD ON SHALLOW MID-BLOCK LOT (MIXED COMMERCIAL / RESIDENTIAL STREET)



CHICAGO COURTYARD COURTYARD APARTMENT BUILDINGS - VARIANT FOUR



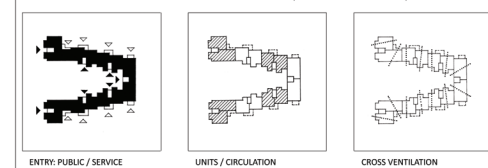
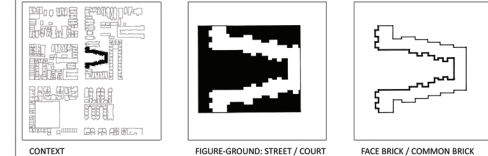
COURTYARD ON IRREGULAR CORNER LOT (COMMERCIAL AND RESIDENTIAL STREETS)



CHICAGO COURTYARD COURTYARD APARTMENT BUILDINGS - VARIANT FIVE



COURTYARD ON OVERSIZED MID-BLOCK LOT (RESIDENTIAL STREET) - LANDSCAPED COURTS AT REAR OF BUILDING



CHICAGO COURTYARD COURTYARD APARTMENT BUILDINGS - VARIANT SIX