

IN PERSPECTIVE

WINTER 2023

ARCHITECTURE AND THE ENVIRONMENT

That architecture and architects play an enormous role in climate change has become evident with the recognition that about 40% of greenhouse gases are generated by the built environment. So, what happens when

THIS becomes THIS



The CMA's "Architecture and the Environment" exhibit (under development) is directed at explaining aspects of the role of architecture in our ecosystem.

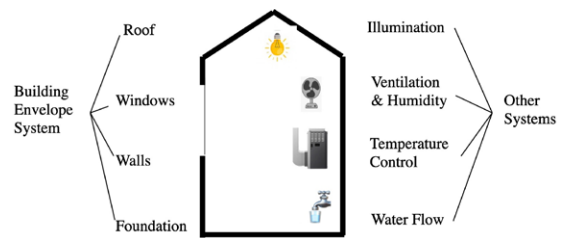
The opening display depicts the transition from a natural to a built environment on a 1:2000 scale model,



A built environment in miniature and a dollar.

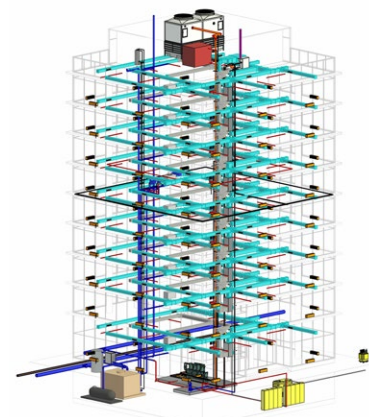
illustrating the most prominent effects. Though the part architecture plays in this process is pivotal, a wide range of mechanisms and their consequences come into play.

While a principal goal of architecture is the creation of controlled internal environments, our unremitting quest for comfort has spectacularly increased heating and cooling costs. An explanation of the building envelope and the principles of heat transfer introduce a presentation about the technology of building operations.



The building envelope.

Le Corbusier, in conceptualizing a house as a "machine for living in" would possibly be surprised at the complexity of the services required to operate contemporary tall buildings.



Plan for a transparent building services model.

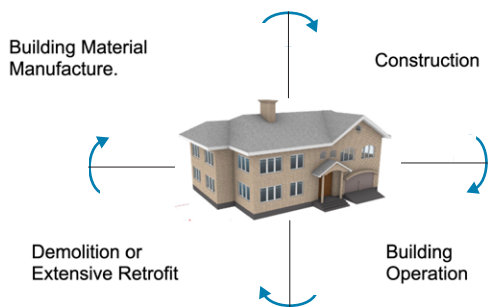
A transparent model of an office tower, with colour coded mechanical components, is used to explain the workings of the systems that maintain internal conditions at currently acceptable levels.

Buildings have emitted pollutants since prehistoric times. But the seriousness of the consequences is a recent discovery promoting the idea of sustainable designs. A model of the Bullitt Center illustrates various sustainability features and discusses their performance. This six floor office tower in Seattle is one example of the many real-world experiments in the construction of more efficient buildings.



Bullitt Center model under construction.

Scant attention has been paid to the life cycle of buildings which, in North America, averages around sixty years. The argument is often made that this turnover promotes the construction of more efficient structures.



The building life cycle.

However, the environmental cost of the rebuilds and the resulting waste is very large. It is not clear to what extent retrofits ameliorate the problem.

An interesting aspect of architecture is its influence on the human psyche. The evolution of building and urban

design has led to the majority of city dwellers living in cubicles, increasingly removed from contact with nature.

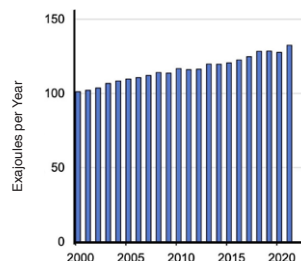


Home sweet home.

This has surely affected our value scales, blunting concern about environmental degradation.

Perhaps the situation we now find ourselves in ought to be taken as the starting point for a new paradigm in which buildings and cities are designed to recognize our biological nature and restore our connection to the earth.

Ultimately, however, there is a bottom line. At this time it is that, in spite of the many individual successes, the energy consumed by the operation of buildings continues to increase at a steady pace.



Total energy consumption by buildings in OECD nations.

It seems that efficiency gains are more than offset by the proliferation of buildings. This, in turn, is a function of world population growth and economic development.

While “climate change” is on just about everyone’s lips, it is evident that the problem is not well understood. Our exhibit seeks to improve public understanding and thereby promote organized efforts to find remedies.

Safeguarding the environment is a responsibility we should all share. However it is the designers of our buildings who are in a preeminent position to plan and guide us in this essential component of our culture.

- Peter Brueckner