

idea comes from Robert V. O'Neill's *A Hierarchical Concept of Ecosystems*. O'Neill and his co-authors noted that ecosystems could be better understood by observing the rates of change of different components. Hummingbirds and flowers are quick, redwood trees slow, and whole redwood forests even slower. Most interaction is within the same pace level—hummingbirds and flowers pay attention to each other, oblivious to redwoods, who are oblivious to them. Meanwhile the forest is attentive to climate change but not to the hasty fate of individual trees. The insight is this: *"The dynamics of the system will be dominated by the slow components, with the rapid components simply following along."*² Slow constrains quick; slow controls quick.

The same goes with buildings: the lethargic slow parts are in charge, not the dazzling rapid ones. Site dominates the Structure, which dominates the Skin, which dominates the Services, which dominate the Space plan, which dominates the Stuff. How a room is heated depends on how it relates to the heating and cooling Services, which depend on the energy efficiency of the Skin, which depends on the constraints of the Structure. You could add a seventh "S"—human Souls at the very end of the hierarchy, servants to our Stuff.

Still, influence does percolate the other direction. The slower processes of a building gradually integrate trends of rapid change within them. The speedy components propose, and the slow dispose. If an office keeps replacing its electronic Stuff often enough, finally management will insist that the Space plan acquire a raised floor to make the constant recabling easier, and that's when the air conditioning and electrical Services will be revamped to handle the higher load. Ecologist Buzz Holling points out that it is at the times of major changes in a system that the quick processes can most influence the slow.

The quick processes provide originality and challenge, the slow provide continuity and constraint. Buildings steady us, which we can probably use. But if we let our buildings come to a full stop, they stop us. It happened in command economies such as Eastern Europe's in the period 1945–1990. Since all buildings were state-owned, they were never maintained or altered by the tenants, who had no stake in them, and culture and the economy were paralyzed for decades.

Slow is healthy. Much of the wholesome evolution of cities can be explained by the steadfast persistence of Site. Property lines and thoroughfares in cities are inviolate even when hills are leveled and waterfronts filled in. After the Great Fire of London

in 1666, the city was rebuilt of brick, with widened streets but upon the old ground plan, and with meticulously preserved property lines. A wise move, says urban scholar Kevin Lynch: "Rebuilding was rapid and vigorous because each man could start again on his own familiar land."³ Exactly the same thing happened two-and-a-half centuries later in San Francisco, after its earthquake and fire of 1906.

Different Site arrangements lead to different city evolutions. Downtown New York City, with its very narrow long blocks, is uniquely dense and uniquely flexible. Quick-built San Francisco is kept adaptable, congenial, and conservative over the decades by its modest lot sizes, according to urban designer Anne Vernez Moudon:

*Small lots will support resilience because they allow many people to attend directly to their needs by designing, building, and maintaining their own environment. By ensuring that property remains in many hands, small lots bring important results: many people make many different decisions, thereby ensuring variety in the resulting environment. And many property owners slow down the rate of change by making large-scale real estate transactions difficult.*⁴

After Site comes Structure, at the base of which is the all-determining foundation. If it is out-of-square or out-of-level, it will plague the builders clear to the roof line and bother remodelers for the life of the building. If it is weak, it permanently limits the height of the building. If it lets in water or offers inadequate headroom for the basement, remedy is nearly impossible.

The mutability of Skin seems to be accelerating. Demographer Joel Garreau⁵ says that in "edge cities" (new office and commercial developments on the periphery of older cities) developers are accustomed to fine-tune their buildings by changing rugs and facades—a typical "facadectomy" might go upscale from pretentious marble veneer to dignified granite veneer to attract a richer tenant. Developers expect their building Skins to "ugly out" every fifteen years or so, and plan accordingly.

The longevity of buildings is often determined by how well they can absorb new Services technology. Otis Elevator contractors don't bother to make money on their first installation. They know you'll be back soon enough for improved elevators; their profits are in the inevitable renovations. Energy Services such as electricity and gas are driven constantly toward greater efficiency by their sheer expense—30 percent of operating costs, equal over a building's life