

Norman Foster 1999 Laureate Essay

The Architecture of Sir Norman Foster

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Architect and Critic

Sir Norman Foster is celebrated for designing buildings detailed with the finesse of a trapeze—daring and even majestic high-wire apparatuses of steel parts tensed between articulate joints. Whether in projects built for small English towns or outposts of the global economy, the technological imagery is so consistent that his approach amounts to both an architectural signature and a design paradigm.

Ironically, the poetics of structure in a Foster building—the forces, their convergence, the expression—are based on the prosaics of componentry. From the firm's first years in the late 1960s, Foster Associates produced award-winning buildings put together systematically from off-the-shelf parts: the stock turn-buckles, cables, web joists and I-beams were assembled into structures at prices competitive with contractor buildings. The beauty of Foster's structures was cool, and even tough in the way athletes exhibit grace under pressure. The designs are gymnastics frozen in steel—strong, taut, lean.

But people working today in Foster's Commerzbank in Frankfurt appreciate the 53-story building for other reasons. Finished in 1997, the tallest office tower in Europe may project technological prowess, but occupants know the building better for its neighborly intimacies. The tower allows daily acts of freedom unusual for people confined to the closed environmental canisters that pass today for skyscrapers. Employees can meet for sandwiches and coffee in terraced gardens adjacent to their offices, enhanced by long vistas in nearly all directions. More remarkably, they can simply reach over and open a window to let in fresh air that will cross the floor and rise up through the flue-like atrium, to waft out windows lining other gardens spiraling up the tower. Natural cross ventilation may be a commonplace assumption in a house, but in high-rise architecture, where it has invariably been engineered out, the ordinary window is a tender mercy.

Breezes, an espresso and some chatter are the tip of a different kind of architectural iceberg—gentle, humanistic signs that Foster has predicated the Frankfurt tower on premises belied by the building's urbane technological detachment. Lobby, skin and a logo crown are among the few sections of a high-rise left for the architect to design after the cost engineers and real estate consultants run their figures. As a building type, the high-rise is the most formulaic of all, a tightly wrapped package with an elevator core centered in a stack of pancake floors sealed off from the environment by a curtain wall. But at the Commerzbank, Foster rearranged the usual anatomy of a skyscraper. He moved the elevator core with its bathrooms and stairwells from the center, leaving it vacant for the 53 stories, and then triangulated the three sides of the tower around the atrium while carving four-story gardens out of each side. The terraces, each a small, vertically local park serving its district of offices, fosters a democratic sense of village-like community within the larger geography of the building. By redistributing the central core to the corners of the triangular plan, Foster broke up the normally monolithic mass of the point tower so that each facade varies from the others in height and volume.

Many successful architects accept the conceptual envelope of a given building type, perhaps pushing it in certain places, but Foster has dared rethink the whole package, including what he calls "the social dimension." The Manchester-born architect first radicalized the morphology of the high-rise with the completion of the Hong Kong and Shanghai Banking Corporation building in 1986. At a time when many architects were figuring out how to slip classicized suits over the steel cage, Foster relegated the usual core of elevators to the corners of a four-poster scheme, liberating the center for a partial-height atrium. The building became a more porous structure with open plateaus on each floor that allowed easy expansion and contraction within column-free spaces. Foster designed the tower as a

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stack of bridge trusses supported at the ends by steel masts, and he kept the perimeter walls back from a revealed edge. He lifted the banking hall off the ground with a glass-bottomed underbelly that sheltered a public plaza whose angled escalators dramatize the entry.

Though simple in its systematicity, the 47-story cross section was rich and varied, with double-height stories regularly interspersed among single-height spaces. By building the structure from an assembly of parts that are not wrapped within a continuous skin, Foster opened what is usually a closed form, creating an armature of change—open, free-span decks filled with light and supplied with conduits for squadrons of mobile computers. He mixed notions of the point tower and office block with principles of the megastructure developed during the 1960s and '70s, in which fixed structure was conceived as a support system for changing configurations. Although the final use of the building remained only offices, Foster originally planned the tower as a small vertical city with restaurants, pool, gym and outdoor gardens. As built, an executive restaurant at the top overlooks a helipad, and the glass-roofed plaza has proved popular for demonstrations as well as picnics.

Foster is an architect of flexibility, and his instincts to design for the inevitability of change are rooted both in the unselfconscious factory sheds of England's industrial revolution and in the modest steel Case Study Houses of Los Angeles by Pierre Koenig, Raphael Soriano, Craig Ellwood, and Charles and Ray Eames. While a student at Yale's architecture school in the early 1960s, Foster found the direction he would pursue for most of his career in an industrialized, off-the-peg approach conceived to raise construction standards and minimize costs. In the 1960s such assumptions were common, but instead of following the idealism of Mies van der Rohe's classicized steel structures, Foster pursued prefabrication. Rather than Mies' godly joints, he preferred California details—that is, more casual connections often determined in the field without any attempt at abstract purity. The Los Angeles houses did not have the closure of Mies' classical structures but were more open-ended and even ad hoc. Mies had cut such a wide swath that an architect of Foster's generation had more creative room in adjacent territory, and Foster found his path in an architecture built up from parts rather than deduced from any sense of a perfectible whole. Instead of the Miesian temple, Foster adopted the Eamesian Tinker Toy model, which allowed a much looser, more spontaneous approach that also meant plans could be easily changed.

Though Foster would practice the approach with what engineers call elegance, he did not think of himself as an artist (or even as an engineer). Like the anonymous designers of England's industrial sheds and the Californians, Foster was not shaping one-off forms but inventing and deploying systems. For him, the terrain of creativity was in the selection of the parts and their assembly. Foster's ability to design huge buildings—Chek Lap Kok in Hong Kong is the world's largest airport—rests in part on the infinite extendibility of modules. Foster designs fields of integrated parts rather than objects in a field. He does not struggle to stretch figural form beyond the limits of growth. In Robert Venturi's terms, he does not design a duck but creates a shed that he leaves undecorated. The integrity is in the parts and how he balances and sums them.

In architecture as in jurisprudence, precedent has a way of becoming unwritten law, and Foster has often innovated by breaking with precedent. If, by displacing the elevator core, he recast the traditional office tower, he also reinvented the traditional airport by reconceiving the usual morphology of its roof. At London's "third" airport, Stansted, he removed the air handling equipment and ducts that usually cram the ceiling, placing them within a service floor, and in so doing, he liberated the roof of cumbersome weight and volume. Foster devised a four-masted structural pod, with integrated lighting, air ducts and roof struts, which serves as the basic module for a building conceived as a capacious tent that seems tethered down rather than supported. Like architects of the Gothic cathedral, Foster essentially created a modular bay based on a columnar structure, and repeated the bay as demanded

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by the program. Triangular windows within the delicate roof structure allow sunlight to spill onto the floor; the architect up lit the ceiling to emphasize the floating effect.

Whether in airports, office buildings or museums, Foster often dissociates the floor plates from the roof enclosure, creating hangars of open space very much in the tradition of the industrial shed. At the recently completed Hong Kong International airport, spaces are vaulted with a gull-wing ceiling supported on arched trusses. Without being literal, the lightness of the structure suggests notions of flight. The graceful roof of the American Air Museum in Duxford, England, is based on a rotated curve that spans the voluminous space without interior supports.

In section, the roofs often curve into walls, forming light shells covering highly negotiable interiors. A building like the Daewoo Research and Development Headquarters in Seoul combines an overarching umbrella shape with Foster's interest in carving public spaces within the stack of floors. In the serene galleries of his addition to the Joslyn Art Museum in Omaha, Nebraska, another gull-winged ceiling springs from a central wall to feather daylight delivered by f-shaped fins adjacent to linear skylights: the liting curves add movement to the straightforward galleries. In many of his open structures, the ceilings reflect and carry the light.

While favoring roofs with a diagrammatic simplicity, Foster is an architect of complex sections. Just as he does not expose structure for the sake of shape, he is not a formalist about space: his variations in the section are functional. At the Commerzbank, the four-story sky courts break down the social scale of the tall building as they create micro environments. The architect reinforces a sense of community as he advances ecological goals.

An empirical rather than conceptual architect, Foster is uneasy about creating form and formal space without a practical purpose, and when the German government required a new dome of symbolic grandeur for the top of the Reichstag, Foster found his design logic in ecological and social pragmatics. He created a mirrored cone within a glass ovoid, to reflect natural light down to the assembly space; the cone also channels air within the chamber's system of natural ventilation. Helical promenades lead the public to a roof terrace, allowing a bird's-eye view into the deliberations below. The criss-crossing paths up the dome are characteristic of the way Foster uses systems of escalators and open stairways inside his buildings to create a democratic sense of community and general liveliness. Stairways are not tightly encapsulated but take part in a process of socialization already encouraged by sectional designs.

Foster's Carré d'Art in Nimes, a cultural center next to the ancient Roman temple, the Maison Carrée, perhaps best demonstrates his ability to orchestrate the space, program and circulation of a building to create a three-dimensional social matrix. On a busy day, the building teems with people wending their way bottom to top between galleries and cafés. The classical European city is, of course, rich in public spaces, but mostly at street level. Foster draws that civic life into his buildings vertically, creating a social concatenation of libraries, performance spaces and galleries, up to the roof terrace.

At a small scale, the Carré d'Art exemplifies the civic motivations Foster brought to a series of super-tall structures where he has tried to create an internal urbanism in towers intended for tens of thousands of people. First in 600-meter and 800-meter tall buildings designed for Tokyo (the larger with an anticipated daytime population of 52,000), then in an even bigger tower in Shanghai, and finally in a more "modest" 92-story tower proposed in London, Foster developed a series of skyscrapers in which spaces open sectionally to create interior townscapes. Buildings at this scale have the critical mass of a city, and just as the city comes to an intense focus at intersections, Foster proposed interior streets and plazas with shops, churches, markets, cafes, and theaters at transfer floors, where passengers switch elevators. Nolli, the eighteenth-century Italian cartographer, could well have mapped the sections of these behemoths as he did the piazzas, courtyards and streets of Rome, open spaces of public activity

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surrounded by occupied solids. Rather than being exhibitionistic about the technology that makes the super-tall building possible, Foster is searching for ways to humanize the verticality made possible by today's extraordinary confluences of capital and engineering.

Scale is what distinguishes Foster's current work from that of his California role models, whose work largely remained domestic. From his first projects in the 1960s, Foster had been ramping up in scale, and though he still handles small, prestigious institutional projects, it is the large and very large buildings that distinguish his portfolio. The Hong Kong and Shanghai Banking Corporation headquarters was a signal moment in architectural history because of its originality; within his opus, it marks the start of a globalized practice within an irreversibly globalized economy. (Foster and Partners now operates 24 hours a day, seven days a week, to serve what has become a worldwide clientele.)

His design logic has survived the jump in scale, but quantity has changed his design process. The sheer dimensions and conceptual scope of the Hong Kong and Shanghai Bank, for example, meant that it was more expedient, and less expensive to design the components than to try to find them on a shelf somewhere. In Hong Kong, which is not a manufacturing center, the constituent "off-the-rack" parts were shipped to the city, sometimes by air, for assembly, exemplifying the far-flung economy that the bank itself services. Still, the technological rhetoric of these very large architectural assemblies is not an end in itself. Foster's contribution is the invention of buildings that are organically whole, buildings rethought from the basic infrastructure down to the bolt. With an appropriate technology and new typologies, Foster not only integrates building systems, but also a range of issues that makes the buildings complete in many ways—they are green, flexible, socially considerate, and buoyant with natural light and fresh air.

What is unique about Foster's practice is the search for the qualities in the astounding quantities that new financial equations have made possible. The game has changed, and Sir Norman has consistently been able to adapt his architecture to a shifting set of conditions without loss of meaning and humanity.

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