SITTING, STILL

HOW DO WE SOLVE A PROBLEM LIKE THE CHAIR?

by Galen Cranz

With a back, seat, legs, and arms, the chair is anthropomorphic; we like chairs because they remind us of ourselves. Architects in particular have an enduring fascination for this ubiquitous item. From Charles Eames to Shigeru Ban, they have created a succession of models, as sculptural statements and as solutions to design problems.

It's easy to see why: A chair doesn't take up as much space as a building, yet it is three-dimensional, unlike paper drawings, so it's a useful full-scale problem for studios in architecture and design schools. It combines issues of comfort, utility, style, price, and craftsmanship, so it miniaturizes many of the problems of architectural design. Construction experts can simply focus on joinery, while those interested in symbolism can look for ways to express artistic values. When the assignment is full scale, the body can test it for sturdiness and comfort.

It is a complex problem and therefore a challenge. As Ludwig Mies van der Rohe said, "A chair is a very difficult object. A skyscraper is almost easier. That is why

THIS SPREAD
Myrtle chair, by the Irish artist
Aleana Egan, 2014.
Photo: Courtesy the artist
and Kerlin Gallery, Dublin.

BACCHUS THRONE
Marble throne of a high priest of Bacchus, 18th-century reconstruction of a copy of Roman sculpture using antique items, Italy. Musée du Louvre, Paris. Photo: DeAgostini/Getty Images.

STROZZI PALACE CHAIR
Chair (Sgabello) attributed to the Workshop of Giuliano and Benedetto da Maiano, Florence, 15th century. Photo: © Metropolitan Museum of Art.

WASSILY CHAIR
Inspired by the tubular steel of his bicycle frame, Marcel Breuer's chair was named for his friend Wassily Kandinsky. Photo: Knoll, Inc.

Chippendale is famous." In my book *The Chair: Rethinking Culture, Body, and Design*, I identify a slew of such difficulties: Should the seat pan be flat, canted backward to stop forward slide, or tipped forward to protect the lumbar spine from rounding incorrectly? How high should the chair be to serve both tall and short people? Is a chair back necessary if most people bend forward over their work and their food? Should there be lumbar support or a hollow for the pelvis? Decisions made about any one of these factors affect the others.

Over time, "adjustability" became the way out of the contradictions posed in trying to create a chair for everyone. The epitome of this reasoning may well be Niels Diffrient's Freedom Chair and Don Chadwick and Bill Stumpf's Aeron Chair, which developed synchronized adjustability. Yet assumptions about the right-angle seated posture remained mostly unchallenged. At the Aspen Design Conference in 2001, I explained to Diffrient why he could no longer squat: It was the atrophy and tightness in his pelvis, legs, and spine—produced by a lifetime of sitting in chairs.

The designers at the main office-furniture manufacturers—Steelcase, Haworth, Knoll—knew as early as 1999 about the limitations of lumbar support, which artificially creates an external fix to an internal problem. But they claimed that "the market" wasn't ready for the idea of a chair without a back, or other forms of autonomous seating, which would include sit-stand options. I suspect that architects are drawn to the challenge of solving these problems much the way that generations of mathematicians might keep circling around an equation that has never been solved.

There has been so much social status associated with chairs over the course of their historical development that we have not been able to conceptualize the problem objectively. Most furniture historians believe the pharaohs of Egypt and kings of the Fertile Crescent were the earliest adopters, but evidence from Neolithic villages indicate that chairs are 5,000 years older than we thought. Small kiln-fired figures of women seated on chairs have been discovered in the graves of women in villages that date back to 7,500 BC in the former Yugoslavia.

We may never know the precise origin of a seat raised off the ground for one person, but we can assume that it denoted some kind of role differentiation: Chairs were for pharaohs, kings, and perhaps wise crones. Ancient Greek civilization developed the *clismos* chair for domestic use, and Romans kept both the throne and the *clismos* but relied much more on the pallet for resting and entertaining while reclining horizontally. Banquets were held in a special U-shaped structure called a triclinium. Guests lay semi-reclined on large bolsters with their heads toward the center of the U, where food and wine were served. The Last Supper was held in a triclinium, where Lazarus lay in the bosom of Jesus, but as our culture changed, artists have mostly represented the Last Supper as a chair and table banquet.

Furniture was less prominent during the so-called Dark Ages. The chair was reinvented as a throne for kings, while commoners sat on overturned bushels or knelt directly on the ground. Storage boxes used in feudal halls, pushed up against walls, inspired the design of some chairs. The church choir stall included a flip seat on a hinge that could be used to sit at a right angle or to perch with the thighs halfway between sitting and standing. In Renaissance Italy, three-legged chairs were created for the Strozzi Palace in Florence.

Until the 18th century, chairs remained relatively rare, high-status items. All that changed with industrialization. Spring coil upholstery was invented, and upholstery also became cheap compared with hand-loomed textiles. Enter the overstuffed armchair of the 19th century. Further, society evolved to include clerical work, and the office chair was born.

In the 20th century, designers experimented with materials and new industrial processes. Marcel Breuer took advantage of the strength of steel tubing used to make bicycles to design

TULIP ARMLESS CHAIR
Working in molded plywood and plastic resin, designer Eero Saarinen vowed to address the "slum of legs" under the dining room table. Photo: Knoll, Inc.

FREEDOM TASK CHAIR
Niels Diffrient's synchronized adjustable desk chair, an attempt to create a chair for everyone. Photo: Humanscale.

MOGO
The Mogo portable seat requires sitters to support themselves by providing just one leg. Photo: Focal Upright.

the Cesca chair (named after his daughter Francesca) and the Wassily (named after his painter friend Wassily Kandinsky). Mies Van der Rohe designed a steel X to support a seat and back of leather upholstery. Eero Saarinen molded plywood and plastic resin, and others eventually experimented with inflatable plastics. In no case was the human body the focus of these experiments. Many architects find them "beautiful" sculpturally, but I can no longer see them that way, since I see the discomfort that is built into them.

The fundamental problem in chair design is the right-angle seated posture. No amount of ergonomic tinkering will solve the problem. The right-angle paradigm itself needs to be challenged. My book described the biomechanical problems associated with chair sitting, but recently, epidemiological studies have determined that there are even more serious metabolic problems: Sedentary behavior is associated with premature death from heart attack, stroke, and cancer. This is what people mean when they say "Sitting is the new smoking." Sitting still means muscles are not firing, which means the pancreas does not get the message to produce lipase, the enzyme needed by the liver to digest fats.

So now people "sit up and take notice." Actually, they're looking for more ways to stand up, and many furniture manufacturers are designing sit-stand options. Steelcase is even producing treadmill workstations, something unheard of 10 years ago. Since 2012 Focal Upright of Rhode Island has an active workstation that involves perching (halfway between sitting and standing) on a tractor-shaped seat that pivots on a single rod while the legs and feet are active as the other two parts of a tripod. The perch position is biomechanically better for the spine than the classic right-angle seated posture, and it may also be much better metabolically because active leg muscles signal the pancreas to produce lipase.

A Scottish study in 2006 got a lot of attention when it seemed to show that—contrary to what we were all told as

children—slumping might be more beneficial than sitting up straight. However, *slumping* is completely different than *slouching,* or rounding forward. The new research showed that strains on the lumbar vertebrae and discs were reduced when slouching back, with pelvis and legs thrust forward. This posture produces the open angle between thigh and trunk that takes pressure off spinal vertebrae. Rounding forward over our work is a completely different story. This compresses the front edge of the vertebrae, pressing discs backwards and setting us up for slipped discs and a host of other problems in the neck, shoulders, pelvis, and legs.

But whether slumping or collapsed, sitting still remains a problem. Yes, I intend that double meaning: Sitting still is *still* a problem. Is it possible to design a chair that is not deadly? Probably not. It is more important to design for a series of postures. Every posture carries with it some physiological strain. We need to move that strain through the body in the course of a day or an hour.

How do we design for movement? Think of offices as parcourses. In my seminar on body-conscious design, I ask my students to design rooms that support the body in five or six different postures. What if each room had a place to stand, another to perch, another for lounge position, sitting cross-legged, kneeling, and lying down? The Finns were the first people to uncouple the computer keyboard from the screen and hold the keyboard on their laps while in a lounge chair with their feet up. Today a bicyclist might lock his bike in place in front of a tall table that holds his computer so that he can spin in place while working.

The next step is to think about the relationships among these postures, so as to create a kind of choreography of work. Among other things, this means that no person should do exactly the same task for eight hours a day. As Peter Opsvik, the Norwegian designer of the Tripp Trapp, Balans, and Capsico chairs, has put it, succinctly: "The best posture is the next posture." ■